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3880

Storage Control Models 21 and 23
Logic Reference Manual

3880 LRM	Seq AA0020	PN 6315722 1 of 2	881142 13 Jan 84	A15612 17 Sep 84		

Preface

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Groups of pages can be ordered by including a description (section, volume) and the machine serial number.

Related Publications

A list of related publications can be found in the Maintenance Support Manual, REF section.

3880 LRM	Seq AA0020	PN 6315722 2 of 2	881142 13 Jan 84	A15612 17 Sep 84			

SEQNO	PGE OF	FICHE CD	FRM	PAGEID	TYP	CARD NAME	MODEL	FEATURE	VERSION	CARD LOC
EA010	1	1	A01	AA000	BLI	N/A	N/A	N/A	N/A	N/A
EA010	2	1	A03	EC200	CRD	PSC	2X	ALL	ALL	1A-B1C2
EA010	3	1	A05	EC200	XRL	PSC	2X	ALL	ALL	1A-B1C2
EA010	5	1	A09	EE200	CRD	PCC	2X	ALL	ALL	1A-B1E2
EA010	6	1	A11	EE200	XRL	PCC	2X	ALL	ALL	1A-B1E2
EA010	8	1	A15	EH200	CRD	FAPS	2X	EIGHT CHANNEL	EIGHT CHANNEL	1A-B1H2
EA010	9	1	A17	EH200	XRL	FAPS	2X	EIGHT CHANNEL	EIGHT CHANNEL	1A-B1H2
EA010	10	1	B01	EJ200	CRD	PSM	2X	ALL	ALL	1A-B1J2
EA010	11	1	B03	EJ200	XRL	PSM	2X	ALL	ALL	1A-B1J2
EA010	14	1	B09	EP200	CRD	MDAC	2X	ALL	ALL	1A-B1P2
EA010	15	1	B11	EP200	XRL	MDAC	2X	ALL	ALL	1A-B1P2
EA010	17	1	B15	EQ200	CRD	MDAR	2X	ALL	ALL	1A-B1Q2
EA010	18	1	B17	EQ200	XRL	MDAR	2X	ALL	ALL	1A-B1Q2
EA010	21	1	C05	ES200	CRD	DRR1	2X	ALL	ALL	1A-B1S2
EA010	22	1	C07	ES200	XRL	DRR1	2X	ALL	ALL	1A-B1S2
EA010	25	1	C13	ET200	CRD	DRR2	2X	ALL	ALL	1A-B1T2
EA010	26	1	C15	ET200	XRL	DRR2	2X	ALL	ALL	1A-B1T2

GLOSSARY OF ABBREVIATIONS USED

ABBR.	EXPLANATION
ASDM	AUXILIARY STORAGE DIRECTOR MICROCONTROLLER
BLI	BOARD LOGIC INDEX
CD	CARD (MICROFICHE)
CRD	CARD REFERENCE DIAGRAM
EM	ELECTRONIC MRAP
FRM	FRAME (MICROFICHE)
HDSCS	HIGH DENSITY STATIC CONTROL STORAGE
IR	INDIRECT REGISTER
MDM	VOLUME R30
PA	PORT ADAPTER (CMCD CARD)
SAR	STORAGE ADDRESS REGISTER
SB1	STORAGE BOARD 1
SD1	STORAGE DIRECTOR 1
SDM	STORAGE DIRECTOR MICROCONTROLLER
XRL	CROSS REFERENCE LIST
2X1	TWO CHANNEL SWITCH
4X1	TWO CHANNEL ADDITIONAL OR FOUR CHANNEL
8X1	FOUR CHANNEL ADDITIONAL OR EIGHT CHANNEL

NOTES USED ON CROSS REFERENCE PAGES

THE LEGEND ON THE CROSS REFERENCE PAGES
SHOW ( ) AS THE SOURCE(S) OF THE SIGNAL
AND * * AS THE CABLE SOCKET PINS

IN ADDITION THE FOLLOWING SPECIAL DESIGNATIONS
WILL ALSO SHOW ON THESE PAGES

ANANN FOLLOWED BY

+2-CH *ANANN* INDICATES PREWIRING FOR TWO CHANNEL ADDITIONAL

->MDM *AANNN* REFERENCES MDM PAGE

->MNT *DEV * INDICATES A LINE TO THE MAINTENANCE DEVICE

NOTE: THE LINE NAME IN THE MDM MANUAL FOR A GIVEN NET WILL IN GENERAL NOT MATCH THE LINE NAME IN THE LRM EXACTLY.

NOTE: MANY OF THE LINE NAMES ARE OF THE FORM
'+ PPS BBB LINE NAME'
WHERE 'PP' IS THE LAST TWO CHARACTERS OF THE PNAME OF THE SOURCE. 'S' IS THE BOARD POSITION ON THE SOURCE AND 'BBB' IS A BOARD WITH WHICH THE LINE IS ASSOCIATED.

```
003 - PSM 1 SELECT ------------------S12
004 + COUNT 1 ----------------------G08
005 - MAIN K402 PICKED --------------J09
006 - TURN ON 6V REG SENSE ----------J07
007 + 6V OVER VOLTS -----------------J11
008 + 12V OVER CURRENT --------------P02
010 + 5V UNDER VOLTS SD1 ------------U10
011 + PSM RESET ---------------------P13
012 - DATA LOCK ---------------------U02
013 - ENABLE BRD A4 -----------------B03
014 + COUNT 2 ----------------------J05
015 + 24V DC 2 ---------------------D09
016 + PSM CP CHAIN ------------------D13
017 + 5V OVER VOLTS -----------------G11
018 + 6V OVER CURRENT ---------------M02
020 + 5V UNDER VOLTS SD2 ------------U07
021 - TURN ON 2.25V AND 12V REGS ----J13
022 - MASK 1 ------------------------U11
023 - MASK 2 ------------------------S03
024 - MASK 3 ------------------------M13
025 + COUNT 4 ----------------------G06
026 + THERMAL FAILURE ---------------D12
028 + 5V OVER CURRENT ---------------J12
029 + REG BULK UNDER VOLTS ----------G07
030 - 5V UNDER VOLTS SD1 ------------U05
031 + 5V UNDER VOLTS BRD A4 ---------B09
032 + 10.24V REF --------------------B12
033 - ENABLE BRD A3 -----------------B02
034 - MASK 1 SD1 --------------------B08
035 + COUNT 8 ----------------------J06
036 + 12V REG BULK UNDER VOLTS ------U13
037 + 24V BIAS UNDER VOLTS ----------P04
038 + STACK CP CHAIN ----------------G05
040 - 5V UNDER VOLTS SD2 ------------S10
041 + 5V UNDER VOLTS BRD A3 ---------U04
042 + 12V OVER VOLTS ----------------J04
043 - MASK 1 SD2 --------------------D07
044 - MASK 3 SD1 --------------------M09
045 - MASK 3 SD2 --------------------M10
046 - 1.5V UNDER VOLTS BRD A4 -------P11
047 - 1.5V UNDER VOLTS BRD A3 -------S02
048 + 6V UNDER VOLTS BRD A4 ---------S05
049 + 6V UNDER VOLTS BRD A3 ---------S04
050 - 1.5V UNDER VOLTS SD1 ----------S06
051 - 1.5V UNDER VOLTS SD2 ----------S09
052 + 5V OVER CURRENT RETURN --------J10
053 + 5V OVER VOLTS RETURN ----------M04
054 + 6V OVER CURRENT RETURN --------J02
055 + 6V OVER VOLTS RETURN ----------G02
058 + 12V OVER CURRENT RETURN -------G12
059 + 12V OVER VOLTS RETURN ---------G13
060 + REG BULK UNDER VOLTS RETURN ---M05
```

PSC CARD

OVERVIEW

The PSC (Power Sense) card consists of sensor latch control logic, display logic, and drivers. The sense card monitors appropriate sense points on the power system for the two storage director boards B3 and B4 and for the A3 and A4 boards.

PRIMARY FUNCTIONS

- Sensors monitor under voltage, over voltage and over current conditions and the occurrence of certain timing events.
- Masks are used during power sequencing to prevent meaningless data out of the fault latches.
- After detecting a power system fault, the sense card takes one of the following actions: Type A fault issues a power on reset to the affected board and Type B fault turns power off to the effective power supply and locks fault data in the latches.
- When the PSM Select line is activated, the FRU fault data is made available to the maintenance device.

PRIMARY COMPONENTS

- Check circuits.
- Reference voltage generator.
- Error drivers to the maintenance device.

ERROR CHECKING

This card is dedicated to power sense checking.

```
B04 - BUS OUT BIT 0 ----------------- 003
D05 - BUS OUT BIT 1 ----------------- 004
B05 - BUS OUT BIT 2 ----------------- 005
D06 - BUS OUT BIT 3 ----------------- 006
P12 + TYPE C FAILURE 1 -------------- 007
G03 + 10.24V REF -------------------- 008
P09 + 8.9V REF ---------------------- 009
B10 + 7.6V REF ---------------------- 010
M03 + 6.6V REF ---------------------- 011
G04 + 5.4V REF ---------------------- 012
D10 + 4.6V REF ---------------------- 013
P06 + 2.7V REF ---------------------- 014
S07 - 1.5V UNDER VOLTS BRD A4 SNS -- 015
S08 - 1.5V UNDER VOLTS BRD A3 SNS -- 016
M11 + 6V UNDER VOLTS BRD A4 SNS ---- 017
S11 + 6V UNDER VOLTS BRD A3 SNS ---- 018
B11 - 1.5V UNDER VOLTS SD1 SNS ----- 019
G10 - 1.5V UNDER VOLTS SD2 SNS ----- 020
M12 - TYPE B FAILURE ---------------- 021
```

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- PSM 1 SELECT		
	C2S12	EC200-L003
	(P2J04)	EP200-R053
	E2P11	EE200-L047
	H2S12	EH200-L003
	Q2B10	EQ200-L048
L004		
+ COUNT 1		
	C2G08	EC200-L004
	(E2S09)	EE200-R044
	H2G08	EH200-L024
L005		
- MAIN K402 PICKED		
	C2J09	EC200-L005
	(E2P12)	EE200-R012
	E2S06	EE200-L004
L006		
- TURN ON 6V REG SENSE		
	C2J07	EC200-L006
	(E2G02)	EE200-R005
L007		
+ 6V OVER VOLTS		
	C2J11	EC200-L007
1A-B1	*A2B09*	
->MDM	*YA211*	
L008		
+ 12V OVER CURRENT		
	C2P02	EC200-L008
1A-B1	*A2B07*	
->MDM	*YA211*	
L010		
+ 5V UNDER VOLTS SD1		
	C2U10	EC200-L010
	J2U07	EJ200-L029
1A-B1	*D6E04*	
1A-B4	*J6C04*	
L011		
+ PSM RESET		
	C2P13	EC200-L011
	(E2U09)	EE200-R013
	H2P13	EH200-L007
	P2G05	EP200-L020
L012		
- DATA LOCK		
	C2U02	EC200-L012
	(E2J05)	EE200-R014
	E2B06	EE200-L005
	H2U02	EH200-L006
L013		
- ENABLE BRD A4		
	C2B03	EC200-L013
1A-B1	*L6E04*	
1A-A4	*A1D13*	
1A-A4	*A1E13*	

LINE/SIGNAL	PIN	SHEET/LINE
L014		
+ COUNT 2		
	C2J05	EC200-L014
	(E2S10)	EE200-R043
	H2J05	EH200-L023
L015		
+ 24V DC 2		
	C2D09	EC200-L015
	E2J07	EE200-L022
	H2D04	EH200-L020
	J2G12	EJ200-L014
1A-B1	*C1C11*	
->MDM	*YA151*	
L016		
+ PSM CP CHAIN		
	C2D13	EC200-L016
1A-B1	*A4D02*	
1A-B1	*A4D03*	
1A-B1	*A4D08*	
L017		
+ 5V OVER VOLTS		
	C2G11	EC200-L017
1A-B1	*A2B03*	
->MDM	*YA211*	
L018		
+ 6V OVER CURRENT		
	C2M02	EC200-L018
1A-B1	*A2D09*	
->MDM	*YA211*	
L020		
+ 5V UNDER VOLTS SD2		
	C2U07	EC200-L020
	J2P11	EJ200-L026
1A-B1	*H6A04*	
1A-B3	*J6C04*	
L021		
- TURN ON 2.25V AND 12V REGS		
	C2J13	EC200-L021
	(E2D13)	EE200-R006
L022		
- MASK 1		
	C2U11	EC200-L022
	(E2B09)	EE200-R009
L023		
- MASK 2		
	C2S03	EC200-L023
	(E2D09)	EE200-R010
L024		
- MASK 3		
	C2M13	EC200-L024
	(E2D12)	EE200-R011
L025		
+ COUNT 4		
	C2G06	EC200-L025
	(E2S12)	EE200-R042
	H2G06	EH200-L022

LINE/SIGNAL	PIN	SHEET/LINE
L026		
+ THERMAL FAILURE		
	C2D12	EC200-L026
	(E2B07)	EE200-R025
1A-B1	*F6C04*	
L028		
+ 5V OVER CURRENT		
	C2J12	EC200-L028
1A-B1	*A2D03*	
->MDM	*YA211*	
L029		
+ REG BULK UNDER VOLTS		
	C2G07	EC200-L029
1A-B1	*A2B05*	
->MDM	*YA211*	
L030		
- 5V UNDER VOLTS SD1		
	C2U05	EC200-L030
1A-B1	*D6E02*	
1A-B4	*J6C02*	
L031		
+ 5V UNDER VOLTS BRD A4		
	C2B09	EC200-L031
1A-B1	*M6E04*	
1A-A4	*B1E13*	
1A-A4	*R4D03*	
L032		
+ 10.24V REF		
	C2B12	EC200-L032
	(C2G03)	EC200-R008
	E2M02	EE200-L016
	E2G11	EE200-L019
	H2B12	EH200-L019
L033		
- ENABLE BRD A3		
	C2B02	EC200-L033
1A-B1	*L1E13*	
1A-A3	*A1D13*	
1A-A3	*A1E13*	
L034		
- MASK 1 SD1		
	C2B08	EC200-L034
	(E2B05)	EE200-R015
	H2B08	EH200-L005
L035		
+ COUNT 8		
	C2J06	EC200-L035
	(E2U11)	EE200-R041
	H2J06	EH200-L021
L036		
+ 12V REG BULK UNDER VOLTS		
	C2U13	EC200-L036
1A-B1	*A2D10*	
->MDM	*YA211*	

LINE/SIGNAL	PIN	SHEET/LINE
L037		
+ 24V BIAS UNDER VOLTS		
	C2P04	EC200-L037
1A-B1	*A2B10*	
->MDM	*YA211*	
L038		
+ STACK CP CHAIN		
	C2G05	EC200-L038
1A-B1	*A2D07*	
1A-B1	*A2D08*	
1A-B1	*A2D12*	
1A-B1	*A2D13*	
L040		
- 5V UNDER VOLTS SD2		
	C2S10	EC200-L040
1A-B1	*H6A02*	
1A-B3	*J6C02*	
L041		
+ 5V UNDER VOLTS BRD A3		
	C2U04	EC200-L041
1A-B1	*M1E13*	
1A-A3	*B1E13*	
1A-A3	*R4D03*	
L042		
+ 12V OVER VOLTS		
	C2J04	EC200-L042
1A-B1	*A2D05*	
->MDM	*YA211*	
L043		
- MASK 1 SD2		
	C2D07	EC200-L043
	(E2D06)	EE200-R017
	H2D07	EH200-L009
L044		
- MASK 3 SD1		
	C2M09	EC200-L044
	(E2U05)	EE200-R016
	H2M09	EH200-L012
	J2S07	EJ200-L027
	S2S13	ES200-L004
	T2U13	ET200-L021
L045		
- MASK 3 SD2		
	C2M10	EC200-L045
	(E2U13)	EE200-R018
	H2M10	EH200-L015
	J2J07	EJ200-L016
	S2U13	ES200-L021
	T2S13	ET200-L004
L046		
- 1.5V UNDER VOLTS BRD A4		
	C2P11	EC200-L046
1A-B1	*N6E04*	
1A-A4	*C1E13*	
1A-A4	*R3B13*	

LINE/SIGNAL	PIN	SHEET/LINE
L047		
- 1.5V UNDER VOLTS BRD A3		
	C2S02	EC200-L047
1A-B1	*N1E13*	
1A-A3	*C1E13*	
1A-A3	*R3B13*	
L048		
+ 6V UNDER VOLTS BRD A4		
	C2S05	EC200-L048
1A-B1	*N6C02*	
1A-A4	*C1C11*	
1A-A4	*R2D12*	
L049		
+ 6V UNDER VOLTS BRD A3		
	C2S04	EC200-L049
1A-B1	*N1C11*	
1A-A3	*C1C11*	
1A-A3	*R2D12*	
L050		
- 1.5V UNDER VOLTS SD1		
	C2S06	EC200-L050
1A-B1	*E6D04*	
1A-B4	*K6B04*	
L051		
- 1.5V UNDER VOLTS SD2		
	C2S09	EC200-L051
1A-B1	*H6E04*	
1A-B3	*K6B04*	
L052		
+ 5V OVER CURRENT RETURN		
	C2J10	EC200-L052
1A-B1	*A2D02*	
->MDM	*YA211*	
L053		
+ 5V OVER VOLTS RETURN		
	C2M04	EC200-L053
1A-B1	*A2B02*	
->MDM	*YA211*	
L054		
+ 6V OVER CURRENT RETURN		
	C2J02	EC200-L054
1A-B1	*A2D06*	
->MDM	*YA211*	
L055		
+ 6V OVER VOLTS RETURN		
	C2G02	EC200-L055
1A-B1	*A2B08*	
->MDM	*YA211*	
L058		
+ 12V OVER CURRENT RETURN		
	C2G12	EC200-L058
1A-B1	*A2B06*	
->MDM	*YA211*	

LINE/SIGNAL	PIN	SHEET/LINE
L059		
+ 12V OVER VOLTS RETURN		
	C2G13	EC200-L059
1A-B1	*A2D04*	
->MDM	*YA211*	
L060		
+ REG BULK UNDER VOLTS RETURN		
	C2M05	EC200-L060
1A-B1	*A2B04*	
->MDM	*YA211*	
R003		
- BUS OUT BIT 0		
	(C2B04)	EC200-R003
	(E2M10)	EE200-R036
	(H2B04)	EH200-R003
	(J2P09)	EJ200-R019
	(Q2X28)	EQ200-R006
	(S2D11)	ES200-R005
	(T2D11)	ET200-R005
	P2X28	EP200-L026
	Q2G08	EQ200-L007
R004		
- BUS OUT BIT 1		
	(C2D05)	EC200-R004
	(E2M08)	EE200-R037
	(H2D05)	EH200-R004
	(J2M02)	EJ200-R015
	(Q2X09)	EQ200-R007
	(S2J07)	ES200-R005
	(T2J07)	ET200-R005
	P2X09	EP200-L026
	Q2G09	EQ200-L007
R005		
- BUS OUT BIT 2		
	(C2B05)	EC200-R005
	(E2M09)	EE200-R038
	(H2B05)	EH200-R005
	(J2M03)	EJ200-R016
	(Q2X29)	EQ200-R008
	(S2J12)	ES200-R005
	(T2J12)	ET200-R005
	P2X29	EP200-L026
	Q2G07	EQ200-L007
R006		
- BUS OUT BIT 3		
	(C2D06)	EC200-R006
	(E2P06)	EE200-R039
	(H2D06)	EH200-R006
	(J2P06)	EJ200-R018
	(Q2Y03)	EQ200-R009
	(S2J11)	ES200-R005
	(T2J11)	ET200-R005
	P2Y03	EP200-L026
	Q2J09	EQ200-L007
R007		
+ TYPE C FAILURE 1		
	(C2P12)	EC200-R007
	E2B08	EE200-L006

LINE/SIGNAL	PIN	SHEET/LINE
R008		
+ 10.24V REF		
	(C2G03)	EC200-R008
	C2B12	EC200-L032
	E2M02	EE200-L016
	E2G11	EE200-L019
	H2B12	EH200-L019
R009		
+ 8.9V REF		
	(C2P09)	EC200-R009
R010		
+ 7.6V REF		
	(C2B10)	EC200-R010
	E2J12	EE200-L037
R011		
+ 6.6V REF		
	(C2M03)	EC200-R011
	E2J11	EE200-L038
R012		
+ 5.4V REF		
	(C2G04)	EC200-R012
	E2G07	EE200-L026
	E2U10	EE200-L027
	H2G04	EH200-L017
R013		
+ 4.6V REF		
	(C2D10)	EC200-R013
	E2J09	EE200-L025
	H2D10	EH200-L018
R014		
+ 2.7V REF		
	(C2P06)	EC200-R014
	E2D10	EE200-L024
	H2P06	EH200-L016
R015		
- 1.5V UNDER VOLTS BRD A4 SNS		
	(C2S07)	EC200-R015
	E2S02	EE200-L039
R016		
- 1.5V UNDER VOLTS BRD A3 SNS		
	(C2S08)	EC200-R016
	E2M13	EE200-L041
R017		
+ 6V UNDER VOLTS BRD A4 SNS		
	(C2M11)	EC200-R017
	E2S03	EE200-L043
R018		
+ 6V UNDER VOLTS BRD A3 SNS		
	(C2S11)	EC200-R018
	E2U02	EE200-L044
R019		
- 1.5V UNDER VOLTS SD1 SNS		
	(C2B11)	EC200-R019
	E2U12	EE200-L045

LINE/SIGNAL	PIN	SHEET/LINE
R020		
- 1.5V UNDER VOLTS SD2 SNS		
	(C2G10)	EC200-R020
	E2U04	EE200-L046
R021		
- TYPE B FAILURE		
	(C2M12)	EC200-R021
	(H2M12)	EH200-R007
	(J2D04)	EJ200-R006
	E2J04	EE200-L008

003 TEST POINT 7/9 ---------- M12
004 - MAIN K402 PICKED ---------- S06
005 - DATA LOCK ---------- B06
006 + TYPE C FAILURE 1 ---------- B08
007 + TYPE C FAILURE 2 UNUSED ------ D07
008 - TYPE B FAILURE ---------- J04
009 + TEST POINT 8 ---------- G04
010 + POWER ON RESET DELAY --------- M06
011 + 24V DC ---------- M11
012 + POWER SEL ---------- M05
013 - POWER ON ---------- M07
014 - POWER OFF ---------- P07
015 - K701 ---------- M04
016 + 10.24V REF ---------- M02
017 SWITCH 101A SD1 ---------- P05
018 SWITCH 102A SD2 ---------- P04
019 + 10.24V REF ---------- G11
020 - 5V MAINT UNDER VOLTS --------- P10
021 + 5V MAINT ---------- P02
022 + 24V DC 2 ---------- J07
023 + 5V MAINT ---------- G13
024 + 2.7V REF ---------- D10
025 + 4.6V REF ---------- J09
026 + 5.4V REF ---------- G07
027 + 5.4V REF ---------- U10
028 TEST POINT 5 ---------- G10
029 - BYPASS 1.4 SEC DELAY --------- J06
030 + OPTIONAL FEAT DELAY ---------- D05
031 + 6V UNDER VOLTS SD1 ---------- G09
032 + 6V UNDER VOLTS SD2 ---------- G08
035 + 12V UNDER VOLTS SD1 ---------- J13
036 + 12V UNDER VOLTS SD2 ---------- M03
037 + 7.6V REF ---------- J12
038 + 6.6V REF ---------- J11
039 - 1.5V UNDER VOLTS BRD A4 SNS -- S02
040 + TYPE A FAILURE SD1 ---------- S11
041 - 1.5V UNDER VOLTS BRD A3 SNS -- M13
042 + TYPE A FAILURE SD2 ---------- S13
043 + 6V UNDER VOLTS BRD A4 SNS ---- S03
044 + 6V UNDER VOLTS BRD A3 SNS ---- U02
045 - 1.5V UNDER VOLTS SD1 SNS ----- U12
046 - 1.5V UNDER VOLTS SD2 SNS ----- U04
047 - PSM 1 SELECT ---------- P11

PCC CARD

OVERVIEW

The PCC (Power Control Card) deglitches power switches, monitors voltages on the maintenance board, monitors system voltages (voltages to both SD's from a common source), controls power sequencing, and gates error data to the maintenance device.

PRIMARY FUNCTIONS

- Switch deglitch circuits remove extra pulses caused by bouncing switch contacts.
- Monitors +24v, +5v and -5v on the maintenance board for over voltage and under voltage conditions. If a fault is detected, it turns on a power check on the operator panel.
- System voltage check monitors +6v and +12v to both SD1 and SD2 boards. A fault initiates a Type A failure unless both SDs experience a fault on the same voltage, then a Type B fault is initiated.
- The sequence timing generator and associated logic turn system power on and off in proper sequence, removes Power-on-Reset after all voltages are active, and prevents detection of erroneous fault conditions due to power transients.

PRIMARY COMPONENTS

- Error Sensor logic and latches.
- Sequence Control logic.
- Drivers.
- Mask gates.

ERROR CHECKING

Most of this card is dedicated to monitoring power error conditions.

POWER CONTROL CRD EE200

B11 + POWER ON RESET DELAY --------- 003
B02 TEST POINT 7/9 ---------- 004
G02 - TURN ON 6V REG SENSE --------- 005
D13 - TURN ON 2.25V AND 12V REGS --- 006
S07 + BRD A4 POWER ON RESET -------- 007
U07 + BRD A3 POWER ON RESET -------- 008
B09 - MASK 1 ---------- 009
D09 - MASK 2 ---------- 010
D12 - MASK 3 ---------- 011
P12 - MAIN K402 PICKED ---------- 012
U09 + PSM RESET ---------- 013
J05 - DATA LOCK ---------- 014
B05 - MASK 1 SD1 ---------- 015
U05 - MASK 3 SD1 ---------- 016
D06 - MASK 1 SD2 ---------- 017
U13 - MASK 3 SD2 ---------- 018
B04 + SD1 POWER ON RESET ---------- 019
B03 + SD2 POWER ON RESET ---------- 020
G06 + OPTIONAL FEAT DELAY ---------- 021
B10 - START ---------- 022
D11 - START RETURN ---------- 023
D04 - PICK CONTACTOR ---------- 024
B07 + THERMAL FAILURE ---------- 025
G03 - TURN ON 6V SERIES REG -------- 027
B12 - TURN ON 12V SERIES REG ------- 028
J02 - HOLD ---------- 029
G05 - HOLD RETURN ---------- 030
P09 - ANY POWER FAILURE PRESENT ---- 031
S05 - BUS OUT BIT 4 ---------- 032
S08 - BUS OUT BIT 5 ---------- 033
S04 - BUS OUT BIT 6 ---------- 034
U06 - BUS OUT BIT 7 ---------- 035
M10 - BUS OUT BIT 0 ---------- 036
M08 - BUS OUT BIT 1 ---------- 037
M09 - BUS OUT BIT 2 ---------- 038
P06 - BUS OUT BIT 3 ---------- 039
P13 - BUS OUT BIT P ---------- 040
U11 + COUNT 8 ---------- 041
S12 + COUNT 4 ---------- 042
S10 + COUNT 2 ---------- 043
S09 + COUNT 1 ---------- 044

LINE/SIGNAL	PIN	SHEET/LINE
L003		
TEST POINT 7/9		
	E2M12	EE200-L003
	(E2B02)	EE200-R004
L004		
- MAIN K402 PICKED		
	E2S06	EE200-L004
	(E2P12)	EE200-R012
	C2J09	EC200-L005
L005		
- DATA LOCK		
	E2B06	EE200-L005
	(E2J05)	EE200-R014
	C2U02	EC200-L012
	H2U02	EH200-L006
L006		
+ TYPE C FAILURE 1		
	E2B08	EE200-L006
	(C2P12)	EC200-R007
L007		
+ TYPE C FAILURE 2 UNUSED		
	E2D07	EE200-L007
1A-B1	*E2D08*	
L008		
- TYPE B FAILURE		
	E2J04	EE200-L008
	(C2M12)	EC200-R021
	(H2M12)	EH200-R007
	(J2D04)	EJ200-R006
L009		
+ TEST POINT 8		
	E2G04	EE200-L009
L010		
+ POWER ON RESET DELAY		
	E2M06	EE200-L010
	(E2B11)	EE200-R003
L011		
+ 24V DC		
	E2M11	EE200-L011
1A-B1	*B1C11*	
->MDM	*YA151*	
L012		
+ POWER SEL		
	E2M05	EE200-L012
	J2G06	EJ200-L011
1A-B1	*A5D03*	
->MDM	*YA215*	
L013		
- POWER ON		
	E2M07	EE200-L013
	J2U09	EJ200-L030
1A-B1	*A5B07*	
->MDM	*YA215*	

LINE/SIGNAL	PIN	SHEET/LINE
L014		
- POWER OFF		
	E2P07	EE200-L014
1A-B1	*A5D07*	
->MDM	*YA215*	
L015		
- K701		
	E2M04	EE200-L015
	J2G02	EJ200-L009
1A-B1	*B4D03*	
->MDM	*YA215*	
L016		
+ 10.24V REF		
	E2M02	EE200-L016
	(C2G03)	EC200-R008
	C2B12	EC200-L032
	E2G11	EE200-L019
	H2B12	EH200-L019
L017		
SWITCH 101A SD1		
	E2P05	EE200-L017
1A-B1	*A5B11*	
->MDM	*YA215*	
L018		
SWITCH 102A SD2		
	E2P04	EE200-L018
1A-B1	*A5D13*	
->MDM	*YA215*	
L019		
+ 10.24V REF		
	E2G11	EE200-L019
	(C2G03)	EC200-R008
	C2B12	EC200-L032
	E2M02	EE200-L016
	H2B12	EH200-L019
L020		
- 5V MAINT UNDER VOLTS		
	E2P10	EE200-L020
1A-B1	*C1E11*	
->MDM	*YA151*	
L021		
+ 5V MAINT		
	E2P02	EE200-L021
	E2G13	EE200-L023
L022		
+ 24V DC 2		
	E2J07	EE200-L022
	C2D09	EC200-L015
	H2D04	EH200-L020
	J2G12	EJ200-L014
1A-B1	*C1C11*	
->MDM	*YA151*	
L023		
+ 5V MAINT		
	E2G13	EE200-L023
	E2P02	EE200-L021

LINE/SIGNAL	PIN	SHEET/LINE
L024		
+ 2.7V REF		
	E2D10	EE200-L024
	(C2P06)	EC200-R014
	H2P06	EH200-L016
L025		
+ 4.6V REF		
	E2J09	EE200-L025
	(C2D10)	EC200-R013
	H2D10	EH200-L018
L026		
+ 5.4V REF		
	E2G07	EE200-L026
	(C2G04)	EC200-R012
	E2U10	EE200-L027
	H2G04	EH200-L017
L027		
+ 5.4V REF		
	E2U10	EE200-L027
	(C2G04)	EC200-R012
	E2G07	EE200-L026
	H2G04	EH200-L017
L028		
TEST POINT 5		
	E2G10	EE200-L028
L029		
- BYPASS 1.4 SEC DELAY		
	E2J06	EE200-L029
L030		
+ OPTIONAL FEAT DELAY		
	E2D05	EE200-L030
	(E2G06)	EE200-R021
L031		
+ 6V UNDER VOLTS SD1		
	E2G09	EE200-L031
1A-B1	*E6D02*	
1A-B4	*K6B02*	
L032		
+ 6V UNDER VOLTS SD2		
	E2G08	EE200-L032
1A-B1	*H6E02*	
1A-B3	*K6B02*	
L035		
+ 12V UNDER VOLTS SD1		
	E2J13	EE200-L035
1A-B1	*F6A04*	
1A-B4	*K6D04*	
L036		
+ 12V UNDER VOLTS SD2		
	E2M03	EE200-L036
1A-B1	*J6B04*	
1A-B3	*K6D04*	

LINE/SIGNAL	PIN	SHEET/LINE
L037		
+ 7.6V REF		
	E2J12	EE200-L037
	(C2B10)	EC200-R010
L038		
+ 6.6V REF		
	E2J11	EE200-L038
	(C2M03)	EC200-R011
L039		
- 1.5V UNDER VOLTS BRD A4 SNS		
	E2S02	EE200-L039
	(C2S07)	EC200-R015
L040		
+ TYPE A FAILURE SD1		
	E2S11	EE200-L040
	(H2S07)	EH200-R009
L041		
- 1.5V UNDER VOLTS BRD A3 SNS		
	E2M13	EE200-L041
	(C2S08)	EC200-R016
L042		
+ TYPE A FAILURE SD2		
	E2S13	EE200-L042
	(H2S08)	EH200-R011
L043		
+ 6V UNDER VOLTS BRD A4 SNS		
	E2S03	EE200-L043
	(C2M11)	EC200-R017
L044		
+ 6V UNDER VOLTS BRD A3 SNS		
	E2U02	EE200-L044
	(C2S11)	EC200-R018
L045		
- 1.5V UNDER VOLTS SD1 SNS		
	E2U12	EE200-L045
	(C2B11)	EC200-R019
L046		
- 1.5V UNDER VOLTS SD2 SNS		
	E2U04	EE200-L046
	(C2G10)	EC200-R020
L047		
- PSM 1 SELECT		
	E2P11	EE200-L047
	(P2J04)	EP200-R053
	C2S12	EC200-L003
	H2S12	EH200-L003
	Q2B10	EQ200-L048
R003		
+ POWER ON RESET DELAY		
	(E2B11)	EE200-R003
	E2M06	EE200-L010

LINE/SIGNAL	PIN	SHEET/LINE
R004		
TEST POINT 7/9		
	(E2B02)	EE200-R004
	E2M12	EE200-L003
R005		
- TURN ON 6V REG SENSE		
	(E2G02)	EE200-R005
	C2J07	EC200-L006
R006		
- TURN ON 2.25V AND 12V REGS		
	(E2D13)	EE200-R006
	C2J13	EC200-L021
R007		
+ BRD A4 POWER ON RESET		
	(E2S07)	EE200-R007
1A-A4	G2S08	DG200-L026
1A-B1	*N6B02*	
1A-A4	*C1B11*	
R008		
+ BRD A3 POWER ON RESET		
	(E2U07)	EE200-R008
1A-A3	G2S08	CG200-L026
1A-B1	*N1B11*	
1A-A3	*C1B11*	
R009		
- MASK 1		
	(E2B09)	EE200-R009
	C2U11	EC200-L022
R010		
- MASK 2		
	(E2D09)	EE200-R010
	C2S03	EC200-L023
R011		
- MASK 3		
	(E2D12)	EE200-R011
	C2M13	EC200-L024
R012		
- MAIN K402 PICKED		
	(E2P12)	EE200-R012
	C2J09	EC200-L005
	E2S06	EE200-L004
R013		
+ PSM RESET		
	(E2U09)	EE200-R013
	C2P13	EC200-L011
	H2P13	EH200-L007
	P2G05	EP200-L020
R014		
- DATA LOCK		
	(E2J05)	EE200-R014
	C2U02	EC200-L012
	E2B06	EE200-L005
	H2U02	EH200-L006

LINE/SIGNAL	PIN	SHEET/LINE
R015		
- MASK 1 SD1		
	(E2B05)	EE200-R015
	C2B08	EC200-L034
	H2B08	EH200-L005
R016		
- MASK 3 SD1		
	(E2U05)	EE200-R016
	C2M09	EC200-L044
	H2M09	EH200-L012
	J2S07	EJ200-L027
	S2S13	ES200-L004
	T2U13	ET200-L021
R017		
- MASK 1 SD2		
	(E2D06)	EE200-R017
	C2D07	EC200-L043
	H2D07	EH200-L009
R018		
- MASK 3 SD2		
	(E2U13)	EE200-R018
	C2M10	EC200-L045
	H2M10	EH200-L015
	J2J07	EJ200-L016
	S2U13	ES200-L021
	T2S13	ET200-L004
R019		
+ SD1 POWER ON RESET		
	(E2B04)	EE200-R019
	J2U12	EJ200-L031
R020		
+ SD2 POWER ON RESET		
	(E2B03)	EE200-R020
	J2B12	EJ200-L006
R021		
+ OPTIONAL FEAT DELAY		
	(E2G06)	EE200-R021
	E2D05	EE200-L030
R022		
- START		
	(E2B10)	EE200-R022
1A-B1	*A5B09*	
->MDM	*YA215*	
R023		
- START RETURN		
	(E2D11)	EE200-R023
1A-B1	*A5B08*	
->MDM	*YA215*	
R024		
- PICK CONTACTOR		
	(E2D04)	EE200-R024
1A-B1	*B4B07*	
->MDM	*YA215*	

LINE/SIGNAL	PIN	SHEET/LINE
R025		
+ THERMAL FAILURE		
	(E2B07)	EE200-R025
	C2D12	EC200-L026
1A-B1	*F6C04*	
R027		
- TURN ON 6V SERIES REG		
	(E2G03)	EE200-R027
1A-B1	*A2B13*	
->MDM	*YA211*	
R028		
- TURN ON 12V SERIES REG		
	(E2B12)	EE200-R028
1A-B1	*A2B12*	
->MDM	*YA211*	
R029		
- HOLD		
	(E2J02)	EE200-R029
	(J2B06)	EJ200-R005
1A-B1	*B4D05*	
->MDM	*YA215*	
R030		
- HOLD RETURN		
	(E2G05)	EE200-R030
	(J2D06)	EJ200-R007
1A-B1	*B4D04*	
->MDM	*YA215*	
R031		
- ANY POWER FAILURE PRESENT		
	(E2P09)	EE200-R031
	(J2J04)	EJ200-R014
1A-B1	*A5B02*	
->MDM	*YA215*	
R032		
- BUS OUT BIT 4		
	(E2S05)	EE200-R032
	(J2M09)	EJ200-R017
	(S2B12)	ES200-R005
	(T2B12)	ET200-R005
	Q2B09	EQ200-L007
R033		
- BUS OUT BIT 5		
	(E2S08)	EE200-R033
	(J2G10)	EJ200-R011
	(S2J13)	ES200-R005
	(T2J13)	ET200-R005
	Q2D06	EQ200-L007
R034		
- BUS OUT BIT 6		
	(E2S04)	EE200-R034
	(J2G11)	EJ200-R012
	(S2J06)	ES200-R005
	(T2J06)	ET200-R005
	Q2B08	EQ200-L007

LINE/SIGNAL	PIN	SHEET/LINE
R035		
- BUS OUT BIT 7		
	(E2U06)	EE200-R035
	(J2G13)	EJ200-R013
	(S2B13)	ES200-R005
	(T2B13)	ET200-R005
	Q2B07	EQ200-L007
R036		
- BUS OUT BIT 0		
	(E2M10)	EE200-R036
	(C2B04)	EC200-R003
	(H2B04)	EH200-R003
	(J2P09)	EJ200-R019
	(Q2X28)	EQ200-R006
	(S2D11)	ES200-R005
	(T2D11)	ET200-R005
	P2X28	EP200-L026
	Q2G08	EQ200-L007
R037		
- BUS OUT BIT 1		
	(E2M08)	EE200-R037
	(C2D05)	EC200-R004
	(H2D05)	EH200-R004
	(J2M02)	EJ200-R015
	(Q2X09)	EQ200-R007
	(S2J07)	ES200-R005
	(T2J07)	ET200-R005
	P2X09	EP200-L026
	Q2G09	EQ200-L007
R038		
- BUS OUT BIT 2		
	(E2M09)	EE200-R038
	(C2B05)	EC200-R005
	(H2B05)	EH200-R005
	(J2M03)	EJ200-R016
	(Q2X29)	EQ200-R008
	(S2J12)	ES200-R005
	(T2J12)	ET200-R005
	P2X29	EP200-L026
	Q2G07	EQ200-L007
R039		
- BUS OUT BIT 3		
	(E2P06)	EE200-R039
	(C2D06)	EC200-R006
	(H2D06)	EH200-R006
	(J2P06)	EJ200-R018
	(Q2Y03)	EQ200-R009
	(S2J11)	ES200-R005
	(T2J11)	ET200-R005
	P2Y03	EP200-L026
	Q2J09	EQ200-L007
R040		
- BUS OUT BIT P		
	(E2P13)	EE200-R040
	(J2D12)	EJ200-R010
	(S2G12)	ES200-R005
	(T2G12)	ET200-R005
	Q2D09	EQ200-L007

LINE/SIGNAL	PIN	SHEET/LINE
R041		
+ COUNT 8		
	(E2U11)	EE200-R041
	C2J06	EC200-L035
	H2J06	EH200-L021
R042		
+ COUNT 4		
	(E2S12)	EE200-R042
	C2G06	EC200-L025
	H2G06	EH200-L022
R043		
+ COUNT 2		
	(E2S10)	EE200-R043
	C2J05	EC200-L014
	H2J05	EH200-L023
R044		
+ COUNT 1		
	(E2S09)	EE200-R044
	C2G08	EC200-L004
	H2G08	EH200-L024

003 - PSM 1 SELECT ----------S12
004 - 1.5V UNDER VOLTS BRD A2 -------P11
005 - MASK 1 SD1 ----------B08
006 - DATA LOCK ----------U02
007 + PSM RESET ----------P13
008 - 1.5V UNDER VOLTS BRD A1 -------S02
009 - MASK 1 SD2 ----------D07
010 + 5V UNDER VOLTS BRD A2 ---------B09
011 + 6V UNDER VOLTS BRD A2 ---------S05
012 - MASK 3 SD1 ----------M09
013 + 5V UNDER VOLTS BRD A1 ---------U04
014 + 6V UNDER VOLTS BRD A1 ---------S04
015 - MASK 3 SD2 ----------M10
016 + 2.7V REF ----------P06
017 + 5.4V REF ----------G04
018 + 4.6V REF ----------D10
019 + 10.24V REF ----------B12
020 + 24V DC 2 ----------D04
021 + COUNT 8 ----------J06
022 + COUNT 4 ----------G06
023 + COUNT 2 ----------J05
024 + COUNT 1 ----------G08

B04 - BUS OUT BIT 0 ---------- 003
D05 - BUS OUT BIT 1 ---------- 004
B05 - BUS OUT BIT 2 ---------- 005
D06 - BUS OUT BIT 3 ---------- 006
M12 - TYPE B FAILURE ---------- 007
S13 - TYPE A FAILURE SD1 UNUSED ---- 008
S07 + TYPE A FAILURE SD1 ---------- 009
U11 - TYPE A FAILURE SD2 UNUSED ---- 010
S08 + TYPE A FAILURE SD2 ---------- 011

FAPS CARD (FOUR CHANNEL ADDITIONAL POWER SENSE)

OVERVIEW

This card senses and latches under voltage conditions on the A1 and A2 boards and transmits this information to the PCC card.

PRIMARY FUNCTIONS

- Latches -1.5v uv, A1 board which is gated to the Error Bus Out as bit 1 count C (4C).
- Latches -1.5v uv, A2 board which is gated to the EBO as bit 0, count C (8C).
- Latches +5v uv, and +6v uv, A2 board which are gated to the EBO as bit 2, count B and C respectively (2B, 2C).
- Latches +5v uv, and +6v uv, A1 board which are gated to the EBO as bit 3, count B and C respectively (1B, 1C).

PRIMARY COMPONENTS

- Check and latch circuits

ERROR CHECKING

This card is dedicated to checking for error voltages and transmitting failures to PCC card.

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- PSM 1 SELECT		
	H2S12	EH200-L003
	(P2J04)	EP200-R053
	C2S12	EC200-L003
	E2P11	EE200-L047
	Q2B10	EQ200-L048
L004		
- 1.5V UNDER VOLTS BRD A2		
	H2P11	EH200-L004
1A-B1	*L6D02*	
TEST-	*Z4 *	
L005		
- MASK 1 SD1		
	H2B08	EH200-L005
	(E2B05)	EE200-R015
	C2B08	EC200-L034
L006		
- DATA LOCK		
	H2U02	EH200-L006
	(E2J05)	EE200-R014
	C2U02	EC200-L012
	E2B06	EE200-L005
L007		
+ PSM RESET		
	H2P13	EH200-L007
	(E2U09)	EE200-R013
	C2P13	EC200-L011
	P2G05	EP200-L020
L008		
- 1.5V UNDER VOLTS BRD A1		
	H2S02	EH200-L008
1A-B1	*L1D11*	
TEST-	*Y4 *	
1A-A1	*C1E13*	
1A-A1	*R3B13*	
1A-A2	*C1E13*	
1A-A2	*R3B13*	
1A-A3	*A1D11*	
1A-A3	*G1A13*	
1A-A4	*A1D11*	
1A-A4	*G1A13*	
L009		
- MASK 1 SD2		
	H2D07	EH200-L009
	(E2D06)	EE200-R017
	C2D07	EC200-L043
L010		
+ 5V UNDER VOLTS BRD A2		
	H2B09	EH200-L010
1A-B1	*M6D02*	
TEST-	*Z4 *	
L011		
+ 6V UNDER VOLTS BRD A2		
	H2S05	EH200-L011
1A-B1	*M6A04*	
TEST-	*Z4 *	

LINE/SIGNAL	PIN	SHEET/LINE
L012		
- MASK 3 SD1		
	H2M09	EH200-L012
	(E2U05)	EE200-R016
	C2M09	EC200-L044
	J2S07	EJ200-L027
	S2S13	ES200-L004
	T2U13	ET200-L021
L013		
+ 5V UNDER VOLTS BRD A1		
	H2U04	EH200-L013
1A-B1	*H1D11*	
TEST-	*Y4 *	
1A-A1	*B1E13*	
1A-A1	*R4D03*	
1A-A2	*B1E13*	
1A-A2	*R4D03*	
1A-A3	*B1D11*	
1A-A3	*F1A13*	
1A-A4	*B1D11*	
1A-A4	*F1A13*	
L014		
+ 6V UNDER VOLTS BRD A1		
	H2S04	EH200-L014
1A-B1	*H1A13*	
TEST-	*Y4 *	
1A-A1	*C1C11*	
1A-A1	*R2D12*	
1A-A2	*C1C11*	
1A-A2	*R2D12*	
1A-A3	*B1A13*	
1A-A3	*F1D11*	
1A-A4	*B1A13*	
1A-A4	*F1D11*	
L015		
- MASK 3 SD2		
	H2M10	EH200-L015
	(E2U13)	EE200-R018
	C2M10	EC200-L045
	J2J07	EJ200-L016
	S2U13	ES200-L021
	T2S13	ET200-L004
L016		
+ 2.7V REF		
	H2P06	EH200-L016
	(C2P06)	EC200-R014
	E2D10	EE200-L024
L017		
+ 5.4V REF		
	H2G04	EH200-L017
	(C2G04)	EC200-R012
	E2G07	EE200-L026
	E2U10	EE200-L027
L018		
+ 4.6V REF		
	H2D10	EH200-L018
	(C2D10)	EC200-R013
	E2J09	EE200-L025

LINE/SIGNAL	PIN	SHEET/LINE
L019		
+ 10.24V REF		
	H2B12	EH200-L019
	(C2G03)	EC200-R008
	C2B12	EC200-L032
	E2M02	EE200-L016
	E2G11	EE200-L019
L020		
+ 24V DC 2		
	H2D04	EH200-L020
	C2D09	EC200-L015
	E2J07	EE200-L022
	J2G12	EJ200-L014
1A-B1	*C1C11*	
->MDM	*YA151*	
L021		
+ COUNT 8		
	H2J06	EH200-L021
	(E2U11)	EE200-R041
	C2J06	EC200-L035
L022		
+ COUNT 4		
	H2G06	EH200-L022
	(E2S12)	EE200-R042
	C2G06	EC200-L025
L023		
+ COUNT 2		
	H2J05	EH200-L023
	(E2S10)	EE200-R043
	C2J05	EC200-L014
L024		
+ COUNT 1		
	H2G08	EH200-L024
	(E2S09)	EE200-R044
	C2G08	EC200-L004
R003		
- BUS OUT BIT 0		
	(H2B04)	EH200-R003
	(C2B04)	EC200-R003
	(E2M10)	EE200-R036
	(J2P09)	EJ200-R019
	(Q2X28)	EQ200-R006
	(S2D11)	ES200-R005
	(T2D11)	ET200-R005
	P2X28	EP200-L026
	Q2G08	EQ200-L007
R004		
- BUS OUT BIT 1		
	(H2D05)	EH200-R004
	(C2D05)	EC200-R004
	(E2M08)	EE200-R037
	(J2M02)	EJ200-R015
	(Q2X09)	EQ200-R007
	(S2J07)	ES200-R005
	(T2J07)	ET200-R005
	P2X09	EP200-L026
	Q2G09	EQ200-L007

LINE/SIGNAL	PIN	SHEET/LINE
R005		
- BUS OUT BIT 2		
	(H2B05)	EH200-R005
	(C2B05)	EC200-R005
	(E2M09)	EE200-R038
	(J2M03)	EJ200-R016
	(Q2X29)	EQ200-R008
	(S2J12)	ES200-R005
	(T2J12)	ET200-R005
	P2X29	EP200-L026
	Q2G07	EQ200-L007
R006		
- BUS OUT BIT 3		
	(H2D06)	EH200-R006
	(C2D06)	EC200-R006
	(E2P06)	EE200-R039
	(J2P06)	EJ200-R018
	(Q2Y03)	EQ200-R009
	(S2J11)	ES200-R005
	(T2J11)	ET200-R005
	P2Y03	EP200-L026
	Q2J09	EQ200-L007
R007		
- TYPE B FAILURE		
	(H2M12)	EH200-R007
	(C2M12)	EC200-R021
	(J2D04)	EJ200-R006
	E2J04	EE200-L008
R008		
- TYPE A FAILURE SD1 UNUSED		
	(H2S13)	EH200-R008
R009		
+ TYPE A FAILURE SD1		
	(H2S07)	EH200-R009
	E2S11	EE200-L040
R010		
- TYPE A FAILURE SD2 UNUSED		
	(H2U11)	EH200-R010
R011		
+ TYPE A FAILURE SD2		
	(H2S08)	EH200-R011
	E2S13	EE200-L042

```
003 + 5 UV CNTL ---------- B08
004 - 5 UV 01BB2(A,B) ========== * =
005 + 5 UV/OV 01BB2(A,B) ========== * =
006 + SD2 POWER ON RESET ---------- B12
007 + 5 UV/OV 01BA2(A,B) ========== * =
008 + 8.5 UV 01BB2(A,B) ========== * =
009 - K701 ---------- G02
010 + THERMAL B BOX ---------- G04
011 + POWER SEL ---------- G06
012 - DC PWR ON ---------- G07
013 - DC PWR OFF ---------- G08
014 + 24V DC 2 ---------- G12
015 + 1.7 UV/OV CNTL ---------- J05
016 - MASK 3 SD2 ---------- J07
017 + REG B10 OV ---------- J09
018 + FAN B GATE ---------- J12
019 + 8.5 UV 01BA2(A,B) ========== * =
020 - 5 UV 01BA2(A,B) ========== * =
021 - ALT PSM SELECT ---------- M08
022 - PSM 2 SELECT ---------- M10
023 + REG B20 OV ---------- P04
024 + REG B30 OV ---------- P05
025 + REG B40 OV ---------- P07
026 + 5V UNDER VOLTS SD2 ---------- P11
027 - MASK 3 SD1 ---------- S07
028 + THERMAL B GATE ---------- S12
029 + 5V UNDER VOLTS SD1 ---------- U07
030 - POWER ON ---------- U09
031 + SD1 POWER ON RESET ---------- U12
032 + 5 OV SENSE SD1 ---------- W02
033 + 1.7 OV SENSE SD1 ---------- W03
034 + THERMAL C BOX ---------- W22
035 + 1.7/+ 5 CP SD1 P/S ---------- W23
036 + 1.7 OI SD1 P/S ---------- W24
037 + 1.7 OV SD1 P/S ---------- W25
038 + 5 OI SD1 P/S ---------- W26
039 + 5 OV SD1 P/S ---------- W27
040 + 1.7 UV SENSE SD1 ---------- W30
041 + 5 UV SENSE SD1 ---------- W32
042 + 5 OV SENSE SD2 ---------- X02
043 + 1.7 OV SENSE SD2 ---------- X03
044 + 1.7/+ 5 CP SD2 P/S ---------- X22
045 + 1.7 OI SD2 P/S ---------- X24
046 + 1.7 OV SD2 P/S ---------- X25
047 + 5 OI SD2 P/S ---------- X26
048 + 5 OV SD2 P/S ---------- X27
049 + 1.7 UV SENSE SD2 ---------- X30
050 + 5 UV SENSE SD2 ---------- X32
051 TP 1 (HI ADD) ---------- Y22
052 - PICK 2K1 RTN ---------- Y24
053 TP14 ---------- Y26
054 TP18 (SS/RUN(-RUN)) ---------- Y27
055 TP19 (STEP) ---------- Y28
056 MAINT +5V TP IN ---------- Y33
057 + SWI OV CNTL ---------- Z22
058 + REG B20 OI ---------- Z23
059 + REG B30 OI ---------- Z24
060 + REG B10 OI ---------- Z25
061 + REG B40 OI ---------- Z26
062 + SWI UV CNTL ---------- Z27
063 + FAN B BOX ---------- Z28
064 + 5 CP CNTL ---------- Z29
065 MAINTENANCE + 5 UNDER VOLTS ---- G03
066 + 5 UV/OV 01BB2(A,B) ========== * =
067 + 5 UV/OV 01BA2(A,B) ========== * =
068 + 1.7 UV/OV CNTL ---------- S05
```

CSSS CARD

OVERVIEW

The CSSS card provides sequencing, sensing and maintenance device interface logic for Subsystem storage power.

PRIMARY FUNCTIONS

- Sequences the 'AREA A' and 'AREA B' on and off and monitors their power outputs.
- Determines the 'AREA B' power configuration.
- Sequences the two 'AREA C' series regulators on and off and monitors their power outputs.
- Generates SD1 and SD2 power status information for Subsystem storage.
- Generates the 'power on reset' for the Subsystem Storage.
- Supplies the Maintenance Device with Subsystem power information.

PRIMARY COMPONENTS

- 8049 Microprocessor.
- Data Demux and data buffer drivers.
- Voltage comparators.

ERROR CHECKING

The check conditions are reported in the power maps.

- 'AREA A' error condition checks:
  - +1.7v supply OV and UV sensed at the regulator and the Storage Control board.
  - +5.0v supply UV sensed at the Storage Control board.
- 'AREA B' error condition checks:
  - OI for any supply (-5.0v, +5.0v, +8.5v) and OV for the +5.0v supply sensed at the regulator.
  - -5.0v and +8.5v supplies UV sensed at the Storage board.
  - +5.0v supply OV and UV sensed at the Storage board.
  - Cooling fans, thermal switches and valid power configuration.
- 'B GATE' error condition checks:
  - Cooling fans and thermal switches.
- 'AREA C' error condition checks:
  - +1.7v and +5.0v supplies OV and OI sensed at the regulator.
  - +1.7v and +5.0v supplies OV and UV sensed at the Storage Director board.

```
B05 + POWER ON RESET SD1 ---------- 004
B06 - HOLD ---------- 005
D04 - TYPE B FAILURE---------- 006
D06 - HOLD RETURN ---------- 007
D10 - SD1 SS +5V POWER OFF ---------- 008
D11 - SD2 SS +5V POWER OFF ---------- 009
D12 - BUS OUT BIT P ---------- 010
G10 - BUS OUT BIT 5 ---------- 011
G11 - BUS OUT BIT 6 ---------- 012
G13 - BUS OUT BIT 7 ---------- 013
J04 - ANY POWER FAILURE PRESENT ---- 014
M02 - BUS OUT BIT 1 ---------- 015
M03 - BUS OUT BIT 2 ---------- 016
M09 - BUS OUT BIT 4 ---------- 017
P06 - BUS OUT BIT 3 ---------- 018
P09 - BUS OUT BIT 0 ---------- 019
S10 - PICK KA01 ---------- 020
U04 - SS POWER RESET ---------- 021
U13 + POWER ON RESET SD2 ---------- 022
W04 + 5 OV SENSE SD1 OUT ---------- 023
W05 + 1.7 OV SENSE SD1 OUT ---------- 024
W28 - PICK +1.7/+5 PWR SD1 ---------- 026
W29 + 1.7 UV SENSE SD1 OUT ---------- 027
W31 + 5 UV SENSE SD1 OUT ---------- 028
X04 + 5 OV SENSE SD2 OUT ---------- 029
X05 + 1.7 OV SENSE SD2 OUT ---------- 030
X28 - PICK +1.7/+5 PWR SD2 ---------- 032
X29 + 1.7 UV SENSE SD2 OUT ---------- 033
X31 + 5 UV SENSE SD2 OUT ---------- 034
Y02 TP1 OUT(HI ADD) ---------- 035
Y23 + 10.24 VOLT REF ---------- 036
Y04 - PICK K1 ---------- 037
Y06 Y06 Y07 Y08 GROUND ---------- 038
Y07 Y06 Y07 Y08 GROUND ---------- 039
Y08 Y06 Y07 Y08 GROUND ---------- 040
Y13 MAINT +5 OUT ---------- 041
Z30 - PICK KA03 ---------- 043
Z31 - PICK KA02 ---------- 044
S04 + SG1 SS POWER OFF ---------- 045
S09 + SG2 SS POWER OFF ---------- 046
```

POWER SEQUENCE MONITOR CRD EJ200

LINE/SIGNAL	PIN	SHEET/LINE
L003		
+ 5 UV CNTL		
	J2B08	EJ200-L003
1A-B1 *V5D03*		
1A-B1 *H1B13*		
->MDM *YC940*		
1B-A1 *V3D03*		
L004		
- 5 UV 01BB2 A		
	J2G05	EJ200-L004
1A-B1 *V5B03*		
1B-B2 *H2B06*		
1B-B2 *H1C11*		
1B-A1 *V3B03*		
L004		
- 5 UV 01BB2 B		
	J2B09	EJ200-L004
1A-B1 *V5B07*		
1B-B2 *M2B06*		
1B-B2 *H1C13*		
1B-A1 *V3B07*		
L005		
+ 5 UV/OV 01BB2 A		
	J2D09	EJ200-L005
	J2J13	EJ200-L066
1A-B1 *V5B02*		
1A-B1 *J1D11*		
->MDM *YC940*		
1B-B2 *G2D03*		
1B-B2 *H1A11*		
1B-A1 *V3B02*		
L005		
+ 5 UV/OV 01BB2 B		
	J2B11	EJ200-L005
	J2J06	EJ200-L066
1A-B1 *V5B05*		
1A-B1 *J1A13*		
->MDM *YC940*		
1B-B2 *L2D03*		
1B-B2 *H1A13*		
1B-A1 *V3B05*		
L006		
+ SD2 POWER ON RESET		
	J2B12	EJ200-L006
	(E2B03)	EE200-R020
L007		
+ 5 UV/OV 01BA2 A		
	J2D05	EJ200-L007
	J2M04	EJ200-L067
1A-B1 *V5B09*		
1A-B1 *J1E11*		
->MDM *YC940*		
1B-A1 *V3B09*		

LINE/SIGNAL	PIN	SHEET/LINE
L007		
+ 5 UV/OV 01BA2 B		
	J2P10	EJ200-L007
	J2U10	EJ200-L067
1A-B1 *V5B12*		
1A-B1 *H1E11*		
->MDM *YC940*		
1B-A1 *V3B12*		
L008		
+ 8.5 UV 01BB2 A		
	J2D07	EJ200-L008
1A-B1 *V5B04*		
1B-B2 *H2B11*		
1B-B2 *H1B11*		
1B-A1 *V3B04*		
L008		
+ 8.5 UV 01BB2 B		
	J2J10	EJ200-L008
1A-B1 *V5B08*		
1B-B2 *M2B11*		
1B-B2 *H1B13*		
1B-A1 *V3B08*		
L009		
- K701		
	J2G02	EJ200-L009
	E2M04	EE200-L015
1A-B1 *B4D03*		
->MDM *YA215*		
L010		
+ THERMAL B BOX		
	J2G04	EJ200-L010
1A-B1 *J1C13*		
->MDM *YC940*		
L011		
+ POWER SEL		
	J2G06	EJ200-L011
	E2M05	EE200-L012
1A-B1 *A5D03*		
->MDM *YA215*		
L012		
- DC PWR ON		
	J2G07	EJ200-L012
1A-B1 *H1A11*		
->MDM *YC940*		
L013		
- DC PWR OFF		
	J2G08	EJ200-L013
1A-B1 *H1B11*		
->MDM *YC940*		
L014		
+ 24V DC 2		
	J2G12	EJ200-L014
	C2D09	EC200-L015
	E2J07	EE200-L022
	H2D04	EH200-L020
1A-B1 *C1C11*		
->MDM *YA151*		

LINE/SIGNAL	PIN	SHEET/LINE
L015		
+ 1.7 UV/OV CNTL		
	J2J05	EJ200-L015
	J2S05	EJ200-L068
1A-B1 *V5B06*		
1A-B1 *J1E13*		
->MDM *YC940*		
1B-A1 *V3B06*		
L016		
- MASK 3 SD2		
	J2J07	EJ200-L016
	(E2U13)	EE200-R018
	C2M10	EC200-L045
	H2M10	EH200-L015
	S2U13	ES200-L021
	T2S13	ET200-L004
L017		
+ REG B10 OV		
	J2J09	EJ200-L017
1A-B1 *J1B13*		
->MDM *YC940*		
L018		
+ FAN B GATE		
	J2J12	EJ200-L018
1A-B1 *V5D09*		
1B-A1 *V3D09*		
L019		
+ 8.5 UV 01BA2 A		
	J2U11	EJ200-L019
1A-B1 *V5B11*		
1B-A1 *V3B11*		
L019		
+ 8.5 UV 01BA2 B		
	J2M05	EJ200-L019
1A-B1 *V5D04*		
1B-A1 *V3D04*		
L020		
- 5 UV 01BA2 A		
	J2M07	EJ200-L020
1A-B1 *V5B10*		
1B-A1 *V3B10*		
L020		
- 5 UV 01BA2 B		
	J2S08	EJ200-L020
1A-B1 *V5D02*		
1B-A1 *V3D02*		
L021		
- ALT PSM SELECT		
	J2M08	EJ200-L021
L022		
- PSM 2 SELECT		
	J2M10	EJ200-L022
	(P2D12)	EP200-R048

LINE/SIGNAL	PIN	SHEET/LINE
L023		
+ REG B20 OV		
	J2P04	EJ200-L023
1A-B1 *H1D13*		
->MDM *YC940*		
L024		
+ REG B30 OV		
	J2P05	EJ200-L024
1A-B1 *K1A11*		
->MDM *YC940*		
L025		
+ REG B40 OV		
	J2P07	EJ200-L025
1A-B1 *H1C11*		
->MDM *YC940*		
L026		
+ 5V UNDER VOLTS SD2		
	J2P11	EJ200-L026
	C2U07	EC200-L020
1A-B1 *H6A04*		
1A-B3 *J6C04*		
L027		
- MASK 3 SD1		
	J2S07	EJ200-L027
	(E2U05)	EE200-R016
	C2M09	EC200-L044
	H2M09	EH200-L012
	S2S13	ES200-L004
	T2U13	ET200-L021
L028		
+ THERMAL B GATE		
	J2S12	EJ200-L028
1A-B1 *V5B13*		
1B-A1 *V3B13*		
L029		
+ 5V UNDER VOLTS SD1		
	J2U07	EJ200-L029
	C2U10	EC200-L010
1A-B1 *D6E04*		
1A-B4 *J6C04*		
L030		
- POWER ON		
	J2U09	EJ200-L030
	E2M07	EE200-L013
1A-B1 *A5B07*		
->MDM *YA215*		
L031		
+ SD1 POWER ON RESET		
	J2U12	EJ200-L031
	(E2B04)	EE200-R019
L032		
+ 5 OV SENSE SD1		
	J2M02	EJ200-L032
->MDM *YC960*		

LINE/SIGNAL	PIN	SHEET/LINE
L033		
+ 1.7 OV SENSE SD1		
	J2N03	EJ200-L033
->MDM *YC960*		
L034		
+ THERMAL C BOX		
	J2M22	EJ200-L034
->MDM *YC960*		
L035		
+ 1.7/+ 5 CP SD1 P/S		
	J2M23	EJ200-L035
->MDM *YC960*		
L036		
+ 1.7 OI SD1 P/S		
	J2M24	EJ200-L036
->MDM *YC960*		
L037		
+ 1.7 OV SD1 P/S		
	J2M25	EJ200-L037
->MDM *YC960*		
L038		
+ 5 OI SD1 P/S		
	J2M26	EJ200-L038
->MDM *YC960*		
L039		
+ 5 OV SD1 P/S		
	J2M27	EJ200-L039
->MDM *YC960*		
L040		
+ 1.7 UV SENSE SD1		
	J2M30	EJ200-L040
->MDM *YC960*		
L041		
+ 5 UV SENSE SD1		
	J2M32	EJ200-L041
->MDM *YC960*		
L042		
+ 5 OV SENSE SD2		
	J2X02	EJ200-L042
->MDM *YC960*		
L043		
+ 1.7 OV SENSE SD2		
	J2X03	EJ200-L043
->MDM *YC960*		
L044		
+ 1.7/+ 5 CP SD2 P/S		
	J2X22	EJ200-L044
->MDM *YC960*		
L045		
+ 1.7 OI SD2 P/S		
	J2X24	EJ200-L045
->MDM *YC960*		

LINE/SIGNAL	PIN	SHEET/LINE
L046		
+ 1.7 OV SD2 P/S		
	J2X25	EJ200-L046
->MDM *YC960*		
L047		
+ 5 OI SD2 P/S		
	J2X26	EJ200-L047
->MDM *YC960*		
L048		
+ 5 OV SD2 P/S		
	J2X27	EJ200-L048
->MDM *YC960*		
L049		
+ 1.7 UV SENSE SD2		
	J2X30	EJ200-L049
->MDM *YC960*		
L050		
+ 5 UV SENSE SD2		
	J2X32	EJ200-L050
->MDM *YC960*		
L051		
TP 1 (HI ADD)		
	J2Y22	EJ200-L051
->MDM *YC960*		
L052		
- PICK 2K1 RTN		
	J2Y24	EJ200-L052
->MDM *YC960*		
L053		
TP14		
	J2Y26	EJ200-L053
L054		
TP18 (SS/RUN(-RUN))		
	J2Y27	EJ200-L054
->MDM *YC960*		
L055		
TP19 (STEP)		
	J2Y28	EJ200-L055
->MDM *YC960*		
L056		
MAINT +5V TP IN		
	J2Y33	EJ200-L056
->MDM *YC960*		
L057		
+ SWI OV CNTL		
	J2Z22	EJ200-L057
->MDM *YC960*		
L058		
+ REG B20 OI		
	J2Z23	EJ200-L058
->MDM *YC960*		

LINE/SIGNAL	PIN	SHEET/LINE
L059		
+ REG B30 OI		
	J2Z24	EJ200-L059
->MDM *YC960*		
L060		
+ REG B10 OI		
	J2Z25	EJ200-L060
->MDM *YC960*		
L061		
+ REG B40 OI		
	J2Z26	EJ200-L061
->MDM *YC960*		
L062		
+ SWI UV CNTL		
	J2Z27	EJ200-L062
->MDM *YC960*		
L063		
+ FAN B BOX		
	J2Z28	EJ200-L063
->MDM *YC960*		
L064		
+ 5 CP CNTL		
	J2Z29	EJ200-L064
->MDM *YC960*		
L065		
MAINTENANCE + 5 UNDER VOLTS		
	J2G03	EJ200-L065
1A-B1 *J2D03*		
L066		
+ 5 UV/OV 01BB2 A		
	J2J13	EJ200-L066
	J2D09	EJ200-L005
1A-B1 *V5B02*		
1A-B1 *J1D11*		
->MDM *YC940*		
1B-B2 *G2D03*		
1B-B2 *H1A11*		
1B-A1 *V3B02*		
L066		
+ 5 UV/OV 01BB2 B		
	J2J06	EJ200-L066
	J2B11	EJ200-L005
1A-B1 *V5B05*		
1A-B1 *J1A13*		
->MDM *YC940*		
1B-B2 *L2D03*		
1B-B2 *H1A13*		
1B-A1 *V3B05*		
L067		
+ 5 UV/OV 01BA2 A		
	J2M04	EJ200-L067
	J2D05	EJ200-L007
1A-B1 *V5B09*		
1A-B1 *J1E11*		
->MDM *YC940*		
1B-A1 *V3B09*		

LINE/SIGNAL	PIN	SHEET/LINE
L067		
+ 5 UV/OV 01BA2 B		
	J2U10	EJ200-L067
	J2P10	EJ200-L007
1A-B1 *V5B12*		
1A-B1 *H1E11*		
->MDM *YC940*		
1B-A1 *V3B12*		
L068		
+ 1.7 UV/OV CNTL		
	J2S05	EJ200-L068
	J2J05	EJ200-L015
1A-B1 *V5B06*		
1A-B1 *J1E13*		
->MDM *YC940*		
1B-A1 *V3B06*		
R004		
+ POWER ON RESET SD1		
	(J2B05)	EJ200-R004
	T2D05	ET200-L006
1A-B4	R2D02	HR200-L057
1A-B1 *F6B02*		
1A-B4 *B3D07*		
1A-B4 *K6E02*		
R005		
- HOLD		
	(J2B06)	EJ200-R005
	(E2J02)	EE200-R029
1A-B1 *B4D05*		
->MDM *YA215*		
R006		
- TYPE B FAILURE		
	(J2D04)	EJ200-R006
	(C2M12)	EC200-R021
	(H2M12)	EH200-R007
	E2J04	EE200-L008
R007		
- HOLD RETURN		
	(J2D06)	EJ200-R007
	(E2G05)	EE200-R030
1A-B1 *B4D04*		
->MDM *YA215*		
R008		
- SD1 SS +5V POWER OFF		
	(J2D10)	EJ200-R008
1A-B3	(M2S07)	GM200-R020
1B-A1	C2J06	JC200-L017
1B-A1	P2C09	JP200-L054
1A-B1 *V5D05*		
1A-B3 *M6C02*		
1B-A1 *V3D05*		
1B-A1 *A5D07*		
1B-A1 *B5D03*		

LINE/SIGNAL	PIN	SHEET/LINE
R009		
- SD2 SS +5V POWER OFF		
	(J2D11)	EJ200-R009
1A-B4	M2P05	HM200-L006
1A-B3	M2P05	GM200-L006
1A-B1 *V5D06*		
1A-B4 *L1B13*		
1A-B4 *N6B02*		
1A-B3 *L1B13*		
1A-B3 *N6B02*		
1B-A1 *V3D06*		
1B-A1 *B5D07*		
R010		
- BUS OUT BIT P		
	(J2D12)	EJ200-R010
	(E2P13)	EE200-R040
	(S2G12)	ES200-R005
	(T2G12)	ET200-R005
	Q2D09	EQ200-L007
R011		
- BUS OUT BIT 5		
	(J2G10)	EJ200-R011
	(E2S08)	EE200-R033
	(S2J13)	ES200-R005
	(T2J13)	ET200-R005
	Q2D06	EQ200-L007
R012		
- BUS OUT BIT 6		
	(J2G11)	EJ200-R012
	(E2S04)	EE200-R034
	(S2J06)	ES200-R005
	(T2J06)	ET200-R005
	Q2B08	EQ200-L007
R013		
- BUS OUT BIT 7		
	(J2G13)	EJ200-R013
	(E2U06)	EE200-R035
	(S2B13)	ES200-R005
	(T2B13)	ET200-R005
	Q2B07	EQ200-L007
R014		
- ANY POWER FAILURE PRESENT		
	(J2J04)	EJ200-R014
	(E2P09)	EE200-R031
1A-B1 *A5B02*		
->MDM *YA215*		
R015		
- BUS OUT BIT 1		
	(J2M02)	EJ200-R015
	(C2D05)	EC200-R004
	(E2M08)	EE200-R037
	(H2D05)	EH200-R004
	(Q2X09)	EQ200-R007
	(S2J07)	ES200-R005
	(T2J07)	ET200-R005
	P2X09	EP200-L026
	Q2G09	EQ200-L007

LINE/SIGNAL	PIN	SHEET/LINE
R016		
- BUS OUT BIT 2		
	(J2M03)	EJ200-R016
	(C2B05)	EC200-R005
	(E2M09)	EE200-R038
	(H2B05)	EH200-R005
	(Q2X29)	EQ200-R008
	(S2J12)	ES200-R005
	(T2J12)	ET200-R005
	P2X29	EP200-L026
	Q2G07	EQ200-L007
R017		
- BUS OUT BIT 4		
	(J2M09)	EJ200-R017
	(E2S05)	EE200-R032
	(S2B12)	ES200-R005
	(T2B12)	ET200-R005
	Q2B09	EQ200-L007
R018		
- BUS OUT BIT 3		
	(J2P06)	EJ200-R018
	(C2D06)	EC200-R006
	(E2P06)	EE200-R039
	(H2D06)	EH200-R006
	(Q2Y03)	EQ200-R009
	(S2J11)	ES200-R005
	(T2J11)	ET200-R005
	P2Y03	EP200-L026
	Q2J09	EQ200-L007
R019		
- BUS OUT BIT 0		
	(J2P09)	EJ200-R019
	(C2B04)	EC200-R003
	(E2M10)	EE200-R036
	(H2B04)	EH200-R003
	(Q2X28)	EQ200-R006
	(S2D11)	ES200-R005
	(T2D11)	ET200-R005
	P2X28	EP200-L026
	Q2G08	EQ200-L007
R020		
- PICK KA01		
	(J2S10)	EJ200-R020
1A-B1 *K1A13*		
->MDM *YC940*		
R021		
- SS POWER RESET		
	(J2U04)	EJ200-R021
1A-B4	M2G04	HM200-L056
1A-B3	M2G04	GM200-L056
1B-A1	P2B04	JP200-L053
1A-B1 *V5D07*		
1A-B4 *M6E04*		
1A-B3 *M6E04*		
1B-A1 *V3D07*		
1B-A1 *A5B05*		
1B-A1 *B5B05*		

LINE/SIGNAL	PIN	SHEET/LINE
R022		
+ POWER ON RESET SD2		
	(J2U13)	EJ200-R022
	S2D05	ES200-L006
1A-B3	R2D02	GR200-L057
1A-B1 *J6C02*		
1A-B3 *K6E02*		
R023		
+ 5 OV SENSE SD1 OUT		
	(J2W04)	EJ200-R023
->MDM *YC960*		
R024		
+ 1.7 OV SENSE SD1 OUT		
	(J2W05)	EJ200-R024
->MDM *YC960*		
R025		
GROUND		
	(J2W08)	EJ200-R025
	(J2X08)	EJ200-R031
	(J2Z08)	EJ200-R042
R026		
- PICK +1.7/+5 PWR SD1		
	(J2W28)	EJ200-R026
->MDM *YC960*		
R027		
+ 1.7 UV SENSE SD1 OUT		
	(J2W29)	EJ200-R027
->MDM *YC960*		
R028		
+ 5 UV SENSE SD1 OUT		
	(J2W31)	EJ200-R028
->MDM *YC960*		
R029		
+ 5 OV SENSE SD2 OUT		
	(J2X04)	EJ200-R029
->MDM *YC960*		
R030		
+ 1.7 OV SENSE SD2 OUT		
	(J2X05)	EJ200-R030
->MDM *YC960*		
R031		
GROUND		
	(J2X08)	EJ200-R031
	(J2W08)	EJ200-R025
	(J2Z08)	EJ200-R042
R032		
- PICK +1.7/+5 PWR SD2		
	(J2X28)	EJ200-R032
->MDM *YC960*		
R033		
+ 1.7 UV SENSE SD2 OUT		
	(J2X29)	EJ200-R033
->MDM *YC960*		

LINE/SIGNAL	PIN	SHEET/LINE
R034		
+ 5 UV SENSE SD2 OUT		
	(J2X31)	EJ200-R034
->MDM *YC960*		
R035		
TP1 OUT(HI ADD)		
	(J2Y02)	EJ200-R035
->MDM *YC960*		
R036		
+ 10.24 VOLT REF		
	(J2Y23)	EJ200-R036
->MDM *YC960*		
R037		
- PICK K1		
	(J2Y04)	EJ200-R037
->MDM *YC960*		
R038		
Y06 Y07 Y08 GROUND		
	(J2Y06)	EJ200-R038
	(J2Y07)	EJ200-R039
	(J2Y08)	EJ200-R040
R039		
Y06 Y07 Y08 GROUND		
	(J2Y07)	EJ200-R039
	(J2Y06)	EJ200-R038
	(J2Y08)	EJ200-R040
R040		
Y06 Y07 Y08 GROUND		
	(J2Y08)	EJ200-R040
	(J2Y06)	EJ200-R038
	(J2Y07)	EJ200-R039
R041		
MAINT +5 OUT		
	(J2Y13)	EJ200-R041
->MDM *YC960*		
R042		
GROUND		
	(J2Z08)	EJ200-R042
	(J2W08)	EJ200-R025
	(J2X08)	EJ200-R031
R043		
- PICK KA03		
	(J2Z30)	EJ200-R043
->MDM *YC960*		
R044		
- PICK KA02		
	(J2Z31)	EJ200-R044
->MDM *YC960*		

LINE/SIGNAL	PIN	SHEET/LINE
R045		
+ SG1 SS POWER OFF		
	(J2S04)	EJ200-R045
1A-B4	M2G05	HM200-L057
1A-B3	M2G05	GM200-L057
1A-B1	*V5D11*	
1A-B4	*M6B04*	
1A-B3	*M6B04*	
1B-A1	*V3D11*	
1B-A1	*A5B02*	
1B-A1	*B5B02*	
R046		
+ SG2 SS POWER OFF		
	(J2S09)	EJ200-R046
1A-B4	M2G08	HM200-L058
1A-B3	M2G08	GM200-L058
1A-B1	*V5D12*	
1A-B4	*M6C04*	
1A-B3	*M6C04*	
1B-A1	*V3D12*	
1B-A1	*A5B03*	
1B-A1	*B5B03*	

003 - MD DATA IN ---------- M12
004 - MD STATUS IN ---------- P10
005 - MD ENABLE INTERFACE ---------- M13
006 - MD SHIFT ---------- P11
007 + RESET ADR COMPARE STOP ------- W10
008 + ADDRESS COMPARE ON ---------- W11
009 - ACR SYNC PULSE ---------- Y31
010 + FORCE EBI BAD PARITY --------- X32
011 - EBI BIT P INT ---------- W30
012 - ANY CHECK (OUT) 1 ---------- Z12
013 - ANY CHECK (OUT) 2 ---------- Z31
014 - CONFIRM ---------- D02
015 - VALIDATE DATA ---------- P12
016 + MANUAL COMMAND VALID --------- Y06
017 + MANUAL DATA RECEIVED --------- Y07
018 + 9TH SHIFT ---------- Z30
019 + RESET CHECK LATCH ---------- Y26
020 + PSM RESET ---------- G05
021 - MDA CHECK B ---------- Y28
022 + PRIMARY 0 ---------- Y22
023 + PRIMARY 1 ---------- Y02
024 + PRIMARY 2 ---------- Y24
025 - DISKETTE DRIVE HEAD ENGAGE --- B04
026 - BUS OUT BIT (0-3) ========== * =
027 - DEVICE PRESENT ---------- P07
028 - TIMEOUT ENABLE ---------- X30
029 + MD PRESENT ---------- M10
030 + ALLOW SD TO SD ---------- Y25
031 + MDA SEL ANY SD ---------- W09
032 + MDA SEL SD-1 ---------- W03
033 + MDA SEL SD-2 ---------- W24
034 UNUSED MDAR/MDAC PIN A --------- W05
035 UNUSED MDAR/MDAC PIN B --------- W25
036 - DISKETTE DRIVE REQUEST A ----- B09
037 - DISKETTE DRIVE REQUEST B ----- J02
038 + RESET IML TIMEOUT ---------- X10
039 + TIMEOUT ERROR ---------- X06
040 - SELECTED ERROR ALERT --------- X26
041 + PSM SELECT ---------- X33
042 UNUSED MDAR/MDAC PIN C --------- X13
043 + SERDES OUT BIT 0 ---------- Z07
044 - MDA RUN METER ---------- P05
045 - T1 CLOCK POWERED A ---------- B13
046 - T1 CLOCK POWERED B ---------- B10
047 + FILE DATA ---------- P02
048 + INDEX (DISKETTE) ---------- P04
049 + FORCE CHECKS ON ---------- X11
050 + SERDES OUT BIT P ---------- W07
051 + SERDES OUT GEN P ---------- Z05
052 - 74123A OUT TP ---------- B07
053 - MDA CHECK A ---------- W33
054 + CLOCK T0 ---------- Z29
055 + CLOCK T1 ---------- Z10
056 + CLOCK T2 ---------- Z32
057 + CLOCK T3 ---------- Z13
058 - DISKETTE DRIVE REQUEST C ----- B12
059 - ANY CHECK (OUT) 3 ---------- Z27

MDAC CARD

OVERVIEW

The MDAC (Maintenance Device Adapter Control) card is one of two non-interchangeable logic cards that connects the maintenance device (MD) and the diskette drive to the storage director. The maintenance device adapter (MDA) allows storage director selection and control of the diskette drive, failing storage director selection by the operating storage director after an error alert and storage director selection and control by the maintenance device.

PRIMARY FUNCTIONS

- The storage director (SD) interface control logic contains controls for automatic or manual commands to a storage director.
- When the MD sends an automatic command to the storage director, the maintenance device adapter must first establish communications with the storage director. The process that establishes this communication path takes place in manual storage director commands which require entry of all the subcommands required to establish the communication path between the MDA and the storage director. The control portion of this logic block monitors the progress of this manual operation and checks the validity of the subcommands as they are entered.
- The primary decode logic decodes MDA primary command register data to determine what operation is to be done.
- The address compare controls develop the appropriate storage director command sequences to stop the storage director clock when the contents of the microcontroller instruction address register match the address-stop address entered through the MD.
- Gates the selected SD (any check) to the SD status register in the MDAR card.
- Provides a 5 microsecond delay to the SD and MD controls logic.
- Monitors the EBO bits 0-2 and head engage signal and provides a reset to the T.O. CNTR on the MDAR card for any activity on the input lines.
- Parity control provides EBI 'P' bit inversion if "force bad parity bit is on".
- The MD read/write control logic controls the exchange of information between the MD and the MDA by switching the MDA between read and write modes and controlling the flow of data based upon feedback signals from each other.
- "OR's" selected checks to a single check in the MDA check register.
- Monitors MD shift pulse, counts nine shifts, and generates timing pulses at 9th shift time for control of other logic.

PRIMARY COMPONENTS

- Drivers and Receivers.
- 5 ms Timer.
- MD Read/Write Control logic.
- IML Access and Select logic.

ERROR CHECKING

- SERDES "P" check compares predicted SERDES parity to the parity SERDES P bit to generate an error.
- Parity check of the 5 us counter bits.

Z02 + MD DATA IN ---------- 003
G08 - ADDRESS CMPR STOP PULSE ------ 004
W06 - FORCE STOP ---------- 005
Z24 + ADR CMPR SUCCESSFUL ---------- 006
W02 - NO EI/PWR ON RESET ---------- 007
Z06 - PWR ON RESET ---------- 008
= * - BUS IN BIT (P,1,6) ========== 009
Y11 - SELECTED ANY CHECK ---------- 010
Z03 - DEGATE REGISTER ADDRESS ------ 011
B05 - COMMAND VALID ---------- 012
X02 + EBO P CHECK ---------- 013
Z11 - 9 CNT (T1)/NO EI/POR --------- 014
M13 - 9 CNT (T2) B ---------- 015
M22 - LOAD REGISTER ---------- 016
Y30 - 9 CNT (T2) A ---------- 017
X24 - LATCHED VALIDATE DATA -------- 018
G12 - MD READ ---------- 019
G09 - MD WRITE ---------- 020
Z22 + SHIFT MODE ---------- 021
Z09 - ENABLE ERROR ALERT ---------- 022
Y13 - LOAD SERDES ---------- 023
G13 - MD STATUS OUT ---------- 024
D13 - DATA RECEIVED ---------- 025
Z26 + ONESHOT OSC ---------- 026
X05 - LATCHED CONFIRM ---------- 027
Z33 - DEGATE FUNNEL ADDRESS -------- 028
Y33 + SHIFT CNTR CLK ---------- 029
X22 - MDA CHECK INT ---------- 030
G02 + HEAD ENGAGE ---------- 031
J07 + ACCESS 0 ---------- 032
G07 + ACCESS 1 ---------- 033
J09 + ACCESS 2 ---------- 034
G10 + ACCESS 3 ---------- 035
W26 - DEVICE PRESENT ---------- 036
S13 - DISKETTE DRIVE SELECT 1 ------ 037
S08 - DISKETTE DRIVE SELECT 2 ------ 038
U10 - DISKETTE DRIVE BUSY 1 -------- 039
S03 - DISKETTE DRIVE BUSY 2 -------- 040
S02 - INHIBIT SD TO SD ---------- 041
U11 - INHIBIT SD TO SD 2 ---------- 042
Y09 + ANY IML ---------- 043
S04 - SELECT SD1 ---------- 044
U02 - SELECT SD2 ---------- 045
X03 + SEL IML TIMEOUT ---------- 046
X07 - RESET IML T.O. CNTR ---------- 047
D12 - PSM 2 SELECT ---------- 048
J10 - MD DATA OUT ---------- 049
Z25 + ERROR ALERT ---------- 050
Z28 + SD1 CLOCK ---------- 051
Y10 + SD2 CLOCK ---------- 052
J04 - PSM 1 SELECT ---------- 053
X25 + T.O. CNTR CLK ---------- 054
U06 - FILE DATA ---------- 055
D04 - FILE INDEX ---------- 056
Y29 - FORCE CHECKS ON ---------- 057
W32 - SERDES P CHECK GATED --------- 058
S07 - SELECT SD3 ---------- 059
U07 - SELECT SD4 ---------- 060
U05 - DISKETTE DRIVE BUSY 3 -------- 061
S12 - DISKETTE DRIVE BUSY 4 -------- 062
U04 - DISKETTE DRIVE SELECT 3 ------ 063
U09 - DISKETTE DRIVE SELECT 4 ------ 064
B08 - 74123A OUT TP ---------- 065

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- MD DATA IN		
	P2M12	EP200-L003
1A-B1 *V4B07*		
->MNT *DEV *		
L004		
- MD STATUS IN		
	P2P10	EP200-L004
1A-B1 *V4B02*		
->MNT *DEV *		
L005		
- MD ENABLE INTERFACE		
	P2M13	EP200-L005
1A-B1 *V4B09*		
->MNT *DEV *		
L006		
- MD SHIFT		
	P2P11	EP200-L006
1A-B1 *V4B06*		
->MNT *DEV *		
L007		
+ RESET ADR COMPARE STOP		
	P2M10	EP200-L007
	(Q2M10)	EQ200-R043
L008		
+ ADDRESS COMPARE ON		
	P2M11	EP200-L008
	(Q2M11)	EQ200-R042
L009		
- ACR SYNC PULSE		
	P2Y31	EP200-L009
	(Q2Y31)	EQ200-R048
	(Q2D12)	EQ200-R049
L010		
+ FORCE EBI BAD PARITY		
	P2X32	EP200-L010
	(Q2X32)	EQ200-R036
L011		
- EBI BIT P INT		
	P2M30	EP200-L011
	(Q2M30)	EQ200-R026
L012		
- ANY CHECK (OUT) 1		
	P2Z12	EP200-L012
	(Q2Z12)	EQ200-R018
	(S2G10)	ES200-R037
	Q2J05	EQ200-L015
L013		
- ANY CHECK (OUT) 2		
	P2Z31	EP200-L013
	(Q2Z31)	EQ200-R019
	(T2G10)	ET200-R037
	Q2G04	EQ200-L016

LINE/SIGNAL	PIN	SHEET/LINE
L014		
- CONFIRM		
	P2D02	EP200-L014
	(S2G05)	ES200-R003
	(T2G05)	ET200-R003
L015		
- VALIDATE DATA		
	P2P12	EP200-L015
	(S2B03)	ES200-R006
	(T2B03)	ET200-R006
L016		
+ MANUAL COMMAND VALID		
	P2Y06	EP200-L016
	(Q2Y06)	EQ200-R040
L017		
+ MANUAL DATA RECEIVED		
	P2Y07	EP200-L017
	(Q2Y07)	EQ200-R041
L018		
+ 9TH SHIFT		
	P2Z30	EP200-L018
	(Q2Z30)	EQ200-R051
L019		
+ RESET CHECK LATCH		
	P2Y26	EP200-L019
	(Q2Y26)	EQ200-R039
L020		
+ PSM RESET		
	P2G05	EP200-L020
	(E2U09)	EE200-R013
	C2P13	EC200-L011
	H2P13	EH200-L007
L021		
- MDA CHECK B		
	P2Y28	EP200-L021
	(Q2Y28)	EQ200-R033
L022		
+ PRIMARY 0		
	P2Y22	EP200-L022
	(Q2Y22)	EQ200-R045
L023		
+ PRIMARY 1		
	P2Y02	EP200-L023
	(Q2Y02)	EQ200-R046
L024		
+ PRIMARY 2		
	P2Y24	EP200-L024
	(Q2Y24)	EQ200-R047
L025		
- DISKETTE DRIVE HEAD ENGAGE		
	P2B04	EP200-L025
	(S2J05)	ES200-R007
	(T2J05)	ET200-R007

LINE/SIGNAL	PIN	SHEET/LINE
L026		
- BUS OUT BIT 0		
	P2X28	EP200-L026
	(C2B04)	EC200-R003
	(E2M10)	EE200-R036
	(H2B04)	EH200-R003
	(J2P09)	EJ200-R019
	(Q2X28)	EQ200-R006
	(S2D11)	ES200-R005
	(T2D11)	ET200-R005
	Q2G08	EQ200-L007
L026		
- BUS OUT BIT 1		
	P2X09	EP200-L026
	(C2D05)	EC200-R004
	(E2M08)	EE200-R037
	(H2D05)	EH200-R004
	(J2M02)	EJ200-R015
	(Q2X09)	EQ200-R007
	(S2J07)	ES200-R005
	(T2J07)	ET200-R005
	Q2G09	EQ200-L007
L026		
- BUS OUT BIT 2		
	P2X29	EP200-L026
	(C2B05)	EC200-R005
	(E2M09)	EE200-R038
	(H2B05)	EH200-R005
	(J2M03)	EJ200-R016
	(Q2X29)	EQ200-R008
	(S2J12)	ES200-R005
	(T2J12)	ET200-R005
	Q2G07	EQ200-L007
L026		
- BUS OUT BIT 3		
	P2Y03	EP200-L026
	(C2D06)	EC200-R006
	(E2P06)	EE200-R039
	(H2D06)	EH200-R006
	(J2P06)	EJ200-R018
	(Q2Y03)	EQ200-R009
	(S2J11)	ES200-R005
	(T2J11)	ET200-R005
	Q2J09	EQ200-L007
L027		
- DEVICE PRESENT		
	P2P07	EP200-L027
	(P2M26)	EP200-R036
	Q2M26	EQ200-L014
L028		
- TIMEOUT ENABLE		
	P2X30	EP200-L028
	(Q2X30)	EQ200-R015
L029		
+ MD PRESENT		
	P2M10	EP200-L029
1A-B1 *V4B13*		
->MNT *DEV *		

LINE/SIGNAL	PIN	SHEET/LINE
L030		
+ ALLOW SD TO SD		
	P2Y25	EP200-L030
	(Q2Y25)	EQ200-R017
L031		
+ MDA SEL ANY SD		
	P2M09	EP200-L031
	(Q2M09)	EQ200-R020
L032		
+ MDA SEL SD-1		
	P2M03	EP200-L032
	(Q2M03)	EQ200-R021
L033		
+ MDA SEL SD-2		
	P2M24	EP200-L033
	(Q2M24)	EQ200-R022
L034		
UNUSED MDAR/MDAC PIN A		
	P2M05	EP200-L034
	(Q2M05)	EQ200-R023
L035		
UNUSED MDAR/MDAC PIN B		
	P2M25	EP200-L035
	(Q2M25)	EQ200-R024
L036		
- DISKETTE DRIVE REQUEST A		
	P2B09	EP200-L036
	(S2B10)	ES200-R004
L037		
- DISKETTE DRIVE REQUEST B		
	P2J02	EP200-L037
	(T2B10)	ET200-R004
L038		
+ RESET IML TIMEOUT		
	P2X10	EP200-L038
	(Q2X10)	EQ200-R014
L039		
+ TIMEOUT ERROR		
	P2X06	EP200-L039
	(Q2X06)	EQ200-R004
L040		
- SELECTED ERROR ALERT		
	P2X26	EP200-L040
	(Q2X26)	EQ200-R044
	(S2G09)	ES200-R011
	(T2G09)	ET200-R011
	Q2G10	EQ200-L036
L041		
+ PSM SELECT		
	P2X33	EP200-L041
	(Q2X33)	EQ200-R037
L042		
UNUSED MDAR/MDAC PIN C		
	P2X13	EP200-L042
	(Q2X13)	EQ200-R038

LINE/SIGNAL	PIN	SHEET/LINE
L043		
+ SERDES OUT BIT 0		
	P2Z07	EP200-L043
	(Q2Z07)	EQ200-R027
L044		
- MDA RUN METER		
	P2P05	EP200-L044
	(S2M05)	ES200-R034
	(T2M05)	ET200-R034
L045		
- T1 CLOCK POWERED A		
	P2B13	EP200-L045
	(S2P09)	ES200-R035
L046		
- T1 CLOCK POWERED B		
	P2B10	EP200-L046
	(T2P09)	ET200-R035
L047		
+ FILE DATA		
	P2P02	EP200-L047
1A-B1 *V2D07*		
->MDM *YA217*		
L048		
+ INDEX (DISKETTE)		
	P2P04	EP200-L048
1A-B1 *V2B13*		
->MDM *YA217*		
L049		
+ FORCE CHECKS ON		
	P2X11	EP200-L049
	(Q2X11)	EQ200-R016
L050		
+ SERDES OUT BIT P		
	P2M07	EP200-L050
	(Q2M07)	EQ200-R029
L051		
+ SERDES OUT GEN P		
	P2Z05	EP200-L051
	(Q2Z05)	EQ200-R028
L052		
- 74123A OUT TP		
	P2B07	EP200-L052
	(P2B08)	EP200-R065
L053		
- MDA CHECK A		
	P2M33	EP200-L053
	(Q2M33)	EQ200-R032
L054		
+ CLOCK T0		
	P2Z29	EP200-L054
	(Q2Z29)	EQ200-R010
L055		
+ CLOCK T1		
	P2Z10	EP200-L055
	(Q2Z10)	EQ200-R011

LINE/SIGNAL	PIN	SHEET/LINE
L056		
+ CLOCK T2		
	P2Z32	EP200-L056
	(Q2Z32)	EQ200-R012
L057		
+ CLOCK T3		
	P2Z13	EP200-L057
	(Q2Z13)	EQ200-R013
L058		
- DISKETTE DRIVE REQUEST C		
	P2B12	EP200-L058
L059		
- ANY CHECK (OUT) 3		
	P2Z27	EP200-L059
	(Q2Z27)	EQ200-R052
	Q2J06	EQ200-L049
R003		
+ MD DATA IN		
	(P2Z02)	EP200-R003
	Q2Z02	EQ200-L026
R004		
- ADDRESS CMPR STOP PULSE		
	(P2G08)	EP200-R004
R005		
- FORCE STOP		
	(P2M06)	EP200-R005
	Q2M06	EQ200-L013
R006		
+ ADR CMPR SUCCESSFUL		
	(P2Z24)	EP200-R006
	Q2Z24	EQ200-L020
	Q2Z24	EQ200-L042
R007		
- NO EI/PWR ON RESET		
	(P2M02)	EP200-R007
	Q2M02	EQ200-L031
R008		
- PWR ON RESET		
	(P2Z06)	EP200-R008
	Q2Z06	EQ200-L023
R009		
- BUS IN BIT P		
	(P2M31)	EP200-R009
	(Q2M03)	EQ200-R003
	Q2M31	EQ200-L003
	S2U12	ES200-L013
	T2U12	ET200-L013
R009		
- BUS IN BIT 1		
	(P2S05)	EP200-R009
	(Q2S05)	EQ200-R025
	S2U07	ES200-L013
	T2U07	ET200-L013

LINE/SIGNAL	PIN	SHEET/LINE
R009		
- BUS IN BIT 6		
	(P2J11)	EP200-R009
	(Q2D13)	EQ200-R025
	S2U10	ES200-L013
	T2U10	ET200-L013
R010		
- SELECTED ANY CHECK		
	(P2Y11)	EP200-R010
	Q2Y11	EQ200-L017
R011		
- DEGATE REGISTER ADDRESS		
	(P2Z03)	EP200-R011
	Q2Z03	EQ200-L047
R012		
- COMMAND VALID		
	(P2B05)	EP200-R012
	S2B05	ES200-L012
	T2B05	ET200-L012
R013		
+ EBO P CHECK		
	(P2X02)	EP200-R013
	Q2X02	EQ200-L006
R014		
- 9 CNT (T1)/NO EI/POR		
	(P2Z11)	EP200-R014
	Q2Z11	EQ200-L045
R015		
- 9 CNT (T2) B		
	(P2W13)	EP200-R015
	Q2W13	EQ200-L028
R016		
- LOAD REGISTER		
	(P2M22)	EP200-R016
	Q2M22	EQ200-L035
R017		
- 9 CNT (T2) A		
	(P2Y30)	EP200-R017
	Q2Y30	EQ200-L030
R018		
- LATCHED VALIDATE DATA		
	(P2X24)	EP200-R018
	Q2X24	EQ200-L033
R019		
- MD READ		
	(P2G12)	EP200-R019
1A-B1	*V4B04*	
->MNT	*DEV *	
R020		
- MD WRITE		
	(P2G09)	EP200-R020
1A-B1	*V4B05*	
->MNT	*DEV *	

LINE/SIGNAL	PIN	SHEET/LINE
R021		
+ SHIFT MODE		
	(P2Z22)	EP200-R021
	Q2Z22	EQ200-L024
R022		
- ENABLE ERROR ALERT		
	(P2Z09)	EP200-R022
	Q2Z09	EQ200-L039
R023		
- LOAD SERDES		
	(P2Y13)	EP200-R023
	Q2Y13	EQ200-L025
R024		
- MD STATUS OUT		
	(P2G13)	EP200-R024
1A-B1	*V4B03*	
->MNT	*DEV *	
R025		
- DATA RECEIVED		
	(P2D13)	EP200-R025
	S2D12	ES200-L019
	T2D12	ET200-L019
R026		
+ ONESHOT OSC		
	(P2Z26)	EP200-R026
	Q2Z26	EQ200-L010
R027		
- LATCHED CONFIRM		
	(P2X05)	EP200-R027
	Q2X05	EQ200-L037
R028		
- DEGATE FUNNEL ADDRESS		
	(P2Z33)	EP200-R028
	Q2Z33	EQ200-L046
R029		
+ SHIFT CNTR CLK		
	(P2Y33)	EP200-R029
	Q2Y33	EQ200-L044
R030		
- MDA CHECK INT		
	(P2X22)	EP200-R030
	Q2X22	EQ200-L032
R031		
+ HEAD ENGAGE		
	(P2G02)	EP200-R031
1A-B1	*V2B10*	
->MDM	*YA217*	
R032		
+ ACCESS 0		
	(P2J07)	EP200-R032
1A-B1	*V2B02*	
->MDM	*YA217*	

LINE/SIGNAL	PIN	SHEET/LINE
R033		
+ ACCESS 1		
	(P2G07)	EP200-R033
1A-B1	*V2B06*	
->MDM	*YA217*	
R034		
+ ACCESS 2		
	(P2J09)	EP200-R034
1A-B1	*V2B04*	
->MDM	*YA217*	
R035		
+ ACCESS 3		
	(P2G10)	EP200-R035
1A-B1	*V2B05*	
->MDM	*YA217*	
R036		
- DEVICE PRESENT		
	(P2M26)	EP200-R036
	P2P07	EP200-L027
	Q2M26	EQ200-L014
R037		
- DISKETTE DRIVE SELECT 1		
	(P2S13)	EP200-R037
	S2B07	ES200-L027
R038		
- DISKETTE DRIVE SELECT 2		
	(P2S08)	EP200-R038
	T2B07	ET200-L027
R039		
- DISKETTE DRIVE BUSY 1		
	(P2U10)	EP200-R039
	S2B08	ES200-L028
R040		
- DISKETTE DRIVE BUSY 2		
	(P2S03)	EP200-R040
	T2B08	ET200-L028
R041		
- INHIBIT SD TO SD		
	(P2S02)	EP200-R041
	S2U11	ES200-L022
	T2U11	ET200-L022
R042		
- INHIBIT SD TO SD 2		
	(P2U11)	EP200-R042
R043		
+ ANY IML		
	(P2Y09)	EP200-R043
	Q2Y09	EQ200-L021
R044		
- SELECT SD1		
	(P2S04)	EP200-R044
	S2S04	ES200-L003

LINE/SIGNAL	PIN	SHEET/LINE
R045		
- SELECT SD2		
	(P2U02)	EP200-R045
	T2S04	ET200-L003
R046		
+ SEL IML TIMEOUT		
	(P2X03)	EP200-R046
	Q2X03	EQ200-L027
R047		
- RESET IML T.O. CNTR		
	(P2X07)	EP200-R047
	Q2X07	EQ200-L005
R048		
- PSM 2 SELECT		
	(P2D12)	EP200-R048
	J2M10	EJ200-L022
R049		
- MD DATA OUT		
	(P2J10)	EP200-R049
1A-B1	*V4B08*	
->MNT	*DEV *	
R050		
+ ERROR ALERT		
	(P2Z25)	EP200-R050
	Q2Z25	EQ200-L038
R051		
+ SD1 CLOCK		
	(P2Z28)	EP200-R051
	Q2Z28	EQ200-L008
R052		
+ SD2 CLOCK		
	(P2Y10)	EP200-R052
	Q2Y10	EQ200-L009
R053		
- PSM 1 SELECT		
	(P2J04)	EP200-R053
	C2S12	EC200-L003
	E2P11	EE200-L047
	H2S12	EH200-L003
	Q2B10	EQ200-L048
R054		
+ T.O. CNTR CLK		
	(P2X25)	EP200-R054
	Q2X25	EQ200-L004
R055		
- FILE DATA		
	(P2U06)	EP200-R055
	S2D09	ES200-L017
	T2D09	ET200-L017
R056		
- FILE INDEX		
	(P2D04)	EP200-R056
	S2B09	ES200-L018
	T2B09	ET200-L018

LINE/SIGNAL	PIN	SHEET/LINE
R057		
- FORCE CHECKS ON		
	(P2Y29)	EP200-R057
	Q2Y29	EQ200-L029
R058		
- SERDES P CHECK GATED		
	(P2M32)	EP200-R058
	Q2M32	EQ200-L022
R059		
- SELECT SD3		
	(P2S07)	EP200-R059
R060		
- SELECT SD4		
	(P2U07)	EP200-R060
R061		
- DISKETTE DRIVE BUSY 3		
	(P2U05)	EP200-R061
R062		
- DISKETTE DRIVE BUSY 4		
	(P2S12)	EP200-R062
R063		
- DISKETTE DRIVE SELECT 3		
	(P2U04)	EP200-R063
R064		
- DISKETTE DRIVE SELECT 4		
	(P2U09)	EP200-R064
R065		
- 74123A OUT TP		
	(P2B08)	EP200-R065
	P2B07	EP200-L052

003 - BUS IN BIT P ----------M31
004 + T.O. CNTR CLK ----------X25
005 - RESET IML T.O. CNTR ----------X07
006 + EBO P CHECK ----------X02
007 - BUS OUT BIT (0-7,P) ========== * =
008 + SD1 CLOCK ----------Z28
009 + SD2 CLOCK ----------Y10
010 + ONESHOT OSC ----------Z26
011 - DEGATE ONE SHOT TP ----------D07
012 - EXT BUS IN PARITY CHECK -------J11
013 - FORCE STOP ----------M06
014 - DEVICE PRESENT ----------M26
015 - ANY CHECK (OUT) 1 ----------J05
016 - ANY CHECK (OUT) 2 ----------G04
017 - SELECTED ANY CHECK ----------Y11
018 - INVALID COMMAND ----------J12
019 - CLOCK STOPPED ----------G13
020 + ADR CMPR SUCCESSFUL ----------Z24
021 + ANY IML ----------Y09
022 - SERDES P CHECK GATED ----------M32
023 - PWR ON RESET ----------Z06
024 + SHIFT MODE ----------Z22
025 - LOAD SERDES ----------Y13
026 + MD DATA IN ----------Z02
027 + SEL IML TIMEOUT ----------X03
028 - 9 CNT (T2) B ----------W13
029 - FORCE CHECKS ON ----------Y29
030 - 9 CNT (T2) A ----------Y30
031 - NO EI/PWR ON RESET ----------M02
032 - MDA CHECK INT ----------X22
033 - LATCHED VALIDATE DATA ---------X24
034 - IML MICROCODE DETECT ERROR ----J10
035 - LOAD REGISTER ----------M22
036 - SELECTED ERROR ALERT ----------G10
037 - LATCHED CONFIRM ----------X05
038 + ERROR ALERT ----------Z25
039 - ENABLE ERROR ALERT ----------Z09
040 - CHECK TWO INDICATOR ----------G12
041 - EXT IAR BUS BIT (0-15) ======= * =
042 + ADR CMPR SUCCESSFUL ----------Z24
043 - T1 CLOCK SELECTED ----------B12
044 + SHIFT CNTR CLK ----------Y33
045 - 9 CNT (T1)/NO EI/POR ----------Z11
046 - DEGATE FUNNEL ADDRESS ---------Z33
047 - DEGATE REGISTER ADDRESS -------Z03
048 - PSM 1 SELECT ---------- B10
049 - ANY CHECK (OUT) 3 ---------- J06
050 + REG ARRAY IN/SERDES OUT B0 --- P04
051 + REG ARRAY IN/SERDES OUT B1 --- P05
052 + REG ARRAY IN/SERDES OUT B2 --- P06
053 + REG ARRAY IN/SERDES OUT B3 --- P09
054 + REG ARRAY IN/SERDES OUT B4 --- M07
055 + REG ARRAY IN/SERDES OUT B5 --- M04
056 + REG ARRAY IN/SERDES OUT B6 --- J13
057 + REG ARRAY IN/SERDES OUT B7 --- B13

MDAR CARD

OVERVIEW

The MDAR (Maintenance Device Adapter R) card is one of two non-interchangeable logic cards that connects the maintenance device (MD) and the diskette drive to the storage director. The maintenance device adapter (MDA) allows storage director selection and control of the diskette drive, failing storage director selection by the operating storage director after an error alert and storage director selection and control by the MD during failure analysis.

PRIMARY FUNCTIONS

- Serial data from the MD enters the shift control logic on the Data In (Internal) line.
- Selects a clock signal from one of two SD's or a single shot oscillator, if neither SD functional, and generates necessary timing pulses for MDA control.
- The SERDES is a 8-bit, read/write shift register that converts serial MD data into parallel MDA data and parallel MDA data into serial MD data.
- Serial data enters SERDES at the 7-bit position. After the byte is assembled, the MDA sends the parallel byte to the appropriate registers.
- Parallel data is loaded into SERDES and shifted from the 0 bit position to the MD. The Shift mode line controls shifting or loading SERDES. If the line is active, SERDES is in shift mode and if inactive, line is active, SERDES is in shift mode and SERDES is either reading or writing an MDA data byte.
- Monitors IML Index and gives an error indication if 15 indexes occur and no reset is generated by MDAC card.
- EBO register and buffers receive the EBO bus from the SD's.
- Control register 3 is an 8-bit, read/write register that receives the following secondary commands from the MD:
  - + Reset IML timeout and + IML timeout override.
  - + force MDA checks on and + Allow SD to SD communication.
- Control register 1 is a 3-bit, read/write register that accepts the following secondary commands from the MD:
  - Select any SD, Select A0, and Select A1.

    The output of control register 1 (bits 0 through 7) is available to the MD through the data funnel.
  - The EBI (external bus in) register is an 8-bit, write only register that contains a command or data byte for the selected storage director. The output of the EBI register (bits 0 through 7) is available to the storage director on the external bus in lines.
  - The low address compare register is an 8-bit, read/write register that holds the eight low-order bits of a 16-bit address. The output (bits 0 through 7) is available to the MD through the data funnel and to the address compare equal logic.
  - The high address compare register is an 8-bit, read/write register that holds the eight high-order bits of a 16-bit address. The output of the high address compare register (bits 0 through 7) is available to the MD through the data funnel and to the address compare equal logic.

PRIMARY COMPONENTS

- SERDES, IML Timeout Counter, EBO and EBI Registers, Data funnel.
- Control Registers 1, 2, and 3, Low and High Add Compare Registers.
- Check and Status Register Funnel, Primary Command Register.

ERROR CHECKING

- External Bus Out, SERDES and Command Register are parity checked.
- Shift counter is error checked.

MAINTENANCE DEVICE R CRD EQ200

M03 - BUS IN BIT P ---------- 003
X06 + TIMEOUT ERROR ---------- 004
D04 - IML T.O./SHIFT CNTR CHECK ---- 005
X28 - BUS OUT BIT 0 ---------- 006
X09 - BUS OUT BIT 1 ---------- 007
X29 - BUS OUT BIT 2 ---------- 008
Y03 - BUS OUT BIT 3 ---------- 009
Z29 + CLOCK T0 ---------- 010
Z10 + CLOCK T1 ---------- 011
Z32 + CLOCK T2 ---------- 012
Z13 + CLOCK T3 ---------- 013
X10 + RESET IML TIMEOUT ---------- 014
X30 - TIMEOUT ENABLE ---------- 015
X11 + FORCE CHECKS ON ---------- 016
Y25 + ALLOW SD TO SD ---------- 017
Z12 - ANY CHECK (OUT) 1 ---------- 018
Z31 - ANY CHECK (OUT) 2 ---------- 019
N09 + MDA SEL ANY SD ---------- 020
N03 + MDA SEL SD-1 ---------- 021
M24 + MDA SEL SD-2 ---------- 022
M05 UNUSED MDAR/MDAC PIN A ---------- 023
M25 UNUSED MDAR/MDAC PIN B ---------- 024
= * - BUS IN BIT (0-7) ========== 025
M30 - EBI BIT P INT ---------- 026
Z07 + SERDES OUT BIT 0 ---------- 027
Z05 + SERDES OUT GEN P ---------- 028
M07 + SERDES OUT BIT P ---------- 029
D05 - COMMAND REG PARITY CHECK ----- 030
B05 - REG SEL A-B/SERDES P CHECK --- 031
M33 - MDA CHECK A ---------- 032
Y28 - MDA CHECK B ---------- 033
B02 - REG SEL A-B/SERDES P CHECK --- 034
B03 - REG SEL A-B/SERDES P CHECK --- 035
X32 + FORCE EBI BAD PARITY ---------- 036
X33 + PSM SELECT ---------- 037
X13 UNUSED MDAR/MDAC PIN C ---------- 038
Y26 + RESET CHECK LATCH ---------- 039
Y06 + MANUAL COMMAND VALID ---------- 040
Y07 + MANUAL DATA RECEIVED ---------- 041
W11 + ADDRESS COMPARE ON ---------- 042
W10 + RESET ADR COMPARE STOP ------- 043
X26 - SELECTED ERROR ALERT ---------- 044
Y22 + PRIMARY 0 ---------- 045
Y02 + PRIMARY 1 ---------- 046
Y24 + PRIMARY 2 ---------- 047
Y31 - ACR SYNC PULSE ---------- 048
D12 - ACR SYNC PULSE ---------- 049
D02 - IML T.O./SHIFT CNTR CHECK ---- 050
Z30 + 9TH SHIFT ---------- 051
Z27 - ANY CHECK (OUT) 3 ---------- 052
U04 + REG ARRAY IN/SERDES OUT B0 --- 053
U05 + REG ARRAY IN/SERDES OUT B1 --- 054
U09 + REG ARRAY IN/SERDES OUT B2 --- 055
U11 + REG ARRAY IN/SERDES OUT B3 --- 056
S04 + REG ARRAY IN/SERDES OUT B4 --- 057
S08 + REG ARRAY IN/SERDES OUT B5 --- 058
S09 + REG ARRAY IN/SERDES OUT B6 --- 059
M02 + REG ARRAY IN/SERDES OUT B7 --- 060

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- BUS IN BIT P		
	Q2M31	EQ200-L003
	(P2M31)	EP200-R009
	(Q2M03)	EQ200-R003
	S2U12	ES200-L013
	T2U12	ET200-L013
L004		
+ T.O. CNTR CLK		
	Q2X25	EQ200-L004
	(P2X25)	EP200-R054
L005		
- RESET IML T.O. CNTR		
	Q2X07	EQ200-L005
	(P2X07)	EP200-R047
L006		
+ EBO P CHECK		
	Q2X02	EQ200-L006
	(P2X02)	EP200-R013
L007		
- BUS OUT BIT 0		
	Q2G08	EQ200-L007
	(C2B04)	EC200-R003
	(E2M10)	EE200-R036
	(H2B04)	EH200-R003
	(J2P09)	EJ200-R019
	(Q2X28)	EQ200-R006
	(S2D11)	ES200-R005
	(T2D11)	ET200-R005
	P2X28	EP200-L026
L007		
- BUS OUT BIT 1		
	Q2G09	EQ200-L007
	(C2D05)	EC200-R004
	(E2M08)	EE200-R037
	(H2D05)	EH200-R004
	(J2M02)	EJ200-R015
	(Q2X09)	EQ200-R007
	(S2J07)	ES200-R005
	(T2J07)	ET200-R005
	P2X09	EP200-L026
L007		
- BUS OUT BIT 2		
	Q2G07	EQ200-L007
	(C2B05)	EC200-R005
	(E2M09)	EE200-R038
	(H2B05)	EH200-R005
	(J2M03)	EJ200-R016
	(Q2X29)	EQ200-R008
	(S2J12)	ES200-R005
	(T2J12)	ET200-R005
	P2X29	EP200-L026

LINE/SIGNAL	PIN	SHEET/LINE
L007		
- BUS OUT BIT 3		
	Q2J09	EQ200-L007
	(C2D06)	EC200-R006
	(E2P06)	EE200-R039
	(H2D06)	EH200-R006
	(J2P06)	EJ200-R018
	(Q2Y03)	EQ200-R009
	(S2J11)	ES200-R005
	(T2J11)	ET200-R005
	P2Y03	EP200-L026
L007		
- BUS OUT BIT 4		
	Q2B09	EQ200-L007
	(E2S05)	EE200-R032
	(J2M09)	EJ200-R017
	(S2B12)	ES200-R005
	(T2B12)	ET200-R005
L007		
- BUS OUT BIT 5		
	Q2D06	EQ200-L007
	(E2S08)	EE200-R033
	(J2G10)	EJ200-R011
	(S2J13)	ES200-R005
	(T2J13)	ET200-R005
L007		
- BUS OUT BIT 6		
	Q2B08	EQ200-L007
	(E2S04)	EE200-R034
	(J2G11)	EJ200-R012
	(S2J06)	ES200-R005
	(T2J06)	ET200-R005
L007		
- BUS OUT BIT 7		
	Q2B07	EQ200-L007
	(E2U06)	EE200-R035
	(J2G13)	EJ200-R013
	(S2B13)	ES200-R005
	(T2B13)	ET200-R005
L007		
- BUS OUT BIT P		
	Q2D09	EQ200-L007
	(E2P13)	EE200-R040
	(J2D12)	EJ200-R010
	(S2G12)	ES200-R005
	(T2G12)	ET200-R005
L008		
+ SD1 CLOCK		
	Q2Z28	EQ200-L008
	(P2Z28)	EP200-R051
L009		
+ SD2 CLOCK		
	Q2Y10	EQ200-L009
	(P2Y10)	EP200-R052
L010		
+ ONESHOT OSC		
	Q2Z26	EQ200-L010
	(P2Z26)	EP200-R026

LINE/SIGNAL	PIN	SHEET/LINE
L011		
- DEGATE ONE SHOT TP		
	Q2D07	EQ200-L011
L012		
- EXT BUS IN PARITY CHECK		
	Q2J11	EQ200-L012
	(S2D04)	ES200-R010
	(T2D04)	ET200-R010
L013		
- FORCE STOP		
	Q2W06	EQ200-L013
	(P2W06)	EP200-R005
L014		
- DEVICE PRESENT		
	Q2M26	EQ200-L014
	(P2M26)	EP200-R036
	P2P07	EP200-L027
L015		
- ANY CHECK (OUT) 1		
	Q2J05	EQ200-L015
	(Q2Z12)	EQ200-R018
	(S2G10)	ES200-R037
	P2Z12	EP200-L012
L016		
- ANY CHECK (OUT) 2		
	Q2G04	EQ200-L016
	(Q2Z31)	EQ200-R019
	(T2G10)	ET200-R037
	P2Z31	EP200-L013
L017		
- SELECTED ANY CHECK		
	Q2Y11	EQ200-L017
	(P2Y11)	EP200-R010
L018		
- INVALID COMMAND		
	Q2J12	EQ200-L018
	(S2B02)	ES200-R009
	(T2B02)	ET200-R009
L019		
- CLOCK STOPPED		
	Q2G13	EQ200-L019
	(S2G13)	ES200-R033
	(T2G13)	ET200-R033
L020		
+ ADR CMPR SUCCESSFUL		
	Q2Z24	EQ200-L020
	(P2Z24)	EP200-R006
	Q2Z24	EQ200-L042
L021		
+ ANY IML		
	Q2Y09	EQ200-L021
	(P2Y09)	EP200-R043
L022		
- SERDES P CHECK GATED		
	Q2M32	EQ200-L022
	(P2M32)	EP200-R058

LINE/SIGNAL	PIN	SHEET/LINE
L023		
- PWR ON RESET		
	Q2Z06	EQ200-L023
	(P2Z06)	EP200-R008
L024		
+ SHIFT MODE		
	Q2Z22	EQ200-L024
	(P2Z22)	EP200-R021
L025		
- LOAD SERDES		
	Q2Y13	EQ200-L025
	(P2Y13)	EP200-R023
L026		
+ MD DATA IN		
	Q2Z02	EQ200-L026
	(P2Z02)	EP200-R003
L027		
+ SEL IML TIMEOUT		
	Q2X03	EQ200-L027
	(P2X03)	EP200-R046
L028		
- 9 CNT (T2) B		
	Q2W13	EQ200-L028
	(P2W13)	EP200-R015
L029		
- FORCE CHECKS ON		
	Q2Y29	EQ200-L029
	(P2Y29)	EP200-R057
L030		
- 9 CNT (T2) A		
	Q2Y30	EQ200-L030
	(P2Y30)	EP200-R017
L031		
- NO EI/PWR ON RESET		
	Q2W02	EQ200-L031
	(P2W02)	EP200-R007
L032		
- MDA CHECK INT		
	Q2X22	EQ200-L032
	(P2X22)	EP200-R030
L033		
- LATCHED VALIDATE DATA		
	Q2X24	EQ200-L033
	(P2X24)	EP200-R018
L034		
- IML MICROCODE DETECT ERROR		
	Q2J10	EQ200-L034
	(S2G07)	ES200-R013
	(T2G07)	ET200-R013
L035		
- LOAD REGISTER		
	Q2M22	EQ200-L035
	(P2M22)	EP200-R016

LINE/SIGNAL	PIN	SHEET/LINE
L036		
- SELECTED ERROR ALERT		
	Q2G10	EQ200-L036
	(Q2X26)	EQ200-R044
	(S2G09)	ES200-R011
	(T2G09)	ET200-R011
	P2X26	EP200-L040
L037		
- LATCHED CONFIRM		
	Q2X05	EQ200-L037
	(P2X05)	EP200-R027
L038		
+ ERROR ALERT		
	Q2Z25	EQ200-L038
	(P2Z25)	EP200-R050
L039		
- ENABLE ERROR ALERT		
	Q2Z09	EQ200-L039
	(P2Z09)	EP200-R022
L040		
- CHECK TWO INDICATOR		
	Q2G12	EQ200-L040
	(S2D13)	ES200-R008
	(T2D13)	ET200-R008
L041		
- EXT IAR BUS BIT 0		
	Q2U02	EQ200-L041
	(S2P12)	ES200-R017
	(T2P12)	ET200-R017
L041		
- EXT IAR BUS BIT 1		
	Q2M09	EQ200-L041
	(S2P05)	ES200-R017
	(T2P05)	ET200-R017
L041		
- EXT IAR BUS BIT 2		
	Q2P13	EQ200-L041
	(S2M02)	ES200-R017
	(T2M02)	ET200-R017
L041		
- EXT IAR BUS BIT 3		
	Q2S03	EQ200-L041
	(S2M04)	ES200-R017
	(T2M04)	ET200-R017
L041		
- EXT IAR BUS BIT 4		
	Q2S12	EQ200-L041
	(S2M03)	ES200-R017
	(T2M03)	ET200-R017
L041		
- EXT IAR BUS BIT 5		
	Q2U06	EQ200-L041
	(S2M13)	ES200-R017
	(T2M13)	ET200-R017

LINE/SIGNAL	PIN	SHEET/LINE
L041		
- EXT IAR BUS BIT 6		
	Q2U12	EQ200-L041
	(S2M10)	ES200-R017
	(T2M10)	ET200-R017
L041		
- EXT IAR BUS BIT 7		
	Q2U13	EQ200-L041
	(S2P13)	ES200-R017
	(T2P13)	ET200-R017
L041		
- EXT IAR BUS BIT 8		
	Q2M10	EQ200-L041
	(S2P04)	ES200-R017
	(T2P04)	ET200-R017
L041		
- EXT IAR BUS BIT 9		
	Q2M13	EQ200-L041
	(S2M07)	ES200-R017
	(T2M07)	ET200-R017
L041		
- EXT IAR BUS BIT 10		
	Q2M12	EQ200-L041
	(S2P02)	ES200-R017
	(T2P02)	ET200-R017
L041		
- EXT IAR BUS BIT 11		
	Q2S02	EQ200-L041
	(S2P11)	ES200-R017
	(T2P11)	ET200-R017
L041		
- EXT IAR BUS BIT 12		
	Q2U07	EQ200-L041
	(S2P07)	ES200-R017
	(T2P07)	ET200-R017
L041		
- EXT IAR BUS BIT 13		
	Q2S10	EQ200-L041
	(S2P10)	ES200-R017
	(T2P10)	ET200-R017
L041		
- EXT IAR BUS BIT 14		
	Q2U10	EQ200-L041
	(S2M08)	ES200-R017
	(T2M08)	ET200-R017
L041		
- EXT IAR BUS BIT 15		
	Q2S13	EQ200-L041
	(S2P06)	ES200-R017
	(T2P06)	ET200-R017
L042		
+ ADR CMPR SUCCESSFUL		
	Q2Z24	EQ200-L042
	(P2Z24)	EP200-R006
	Q2Z24	EQ200-L020

LINE/SIGNAL	PIN	SHEET/LINE
L043		
- T1 CLOCK SELECTED		
	Q2B12	EQ200-L043
	(S2M09)	ES200-R019
	(T2M09)	ET200-R019
L044		
+ SHIFT CNTR CLK		
	Q2Y33	EQ200-L044
	(P2Y33)	EP200-R029
L045		
- 9 CNT (T1)/NO EI/POR		
	Q2Z11	EQ200-L045
	(P2Z11)	EP200-R014
L046		
- DEGATE FUNNEL ADDRESS		
	Q2Z33	EQ200-L046
	(P2Z33)	EP200-R028
L047		
- DEGATE REGISTER ADDRESS		
	Q2Z03	EQ200-L047
	(P2Z03)	EP200-R011
L048		
- PSM 1 SELECT		
	Q2B10	EQ200-L048
	(P2J04)	EP200-R053
	C2S12	EC200-L003
	E2P11	EE200-L047
	H2S12	EH200-L003
L049		
- ANY CHECK (OUT) 3		
	Q2J06	EQ200-L049
	(Q2Z27)	EQ200-R052
	P2Z27	EP200-L059
L050		
+ REG ARRAY IN/SERDES OUT B0		
	Q2P04	EQ200-L050
	(Q2U04)	EQ200-R053
L051		
+ REG ARRAY IN/SERDES OUT B1		
	Q2P05	EQ200-L051
	(Q2U05)	EQ200-R054
L052		
+ REG ARRAY IN/SERDES OUT B2		
	Q2P06	EQ200-L052
	(Q2U09)	EQ200-R055
L053		
+ REG ARRAY IN/SERDES OUT B3		
	Q2P09	EQ200-L053
	(Q2U11)	EQ200-R056
L054		
+ REG ARRAY IN/SERDES OUT B4		
	Q2M07	EQ200-L054
	(Q2S04)	EQ200-R057
L055		
+ REG ARRAY IN/SERDES OUT B5		
	Q2M04	EQ200-L055
	(Q2S08)	EQ200-R058
L056		
+ REG ARRAY IN/SERDES OUT B6		
	Q2J13	EQ200-L056
	(Q2S09)	EQ200-R059
L057		
+ REG ARRAY IN/SERDES OUT B7		
	Q2B13	EQ200-L057
	(Q2M02)	EQ200-R060
R003		
- BUS IN BIT P		
	(Q2M03)	EQ200-R003
	(P2M31)	EP200-R009
	Q2M31	EQ200-L003
	S2U12	ES200-L013
	T2U12	ET200-L013
R004		
+ TIMEOUT ERROR		
	(Q2X06)	EQ200-R004
	P2X06	EP200-L039
R005		
- IML T.O./SHIFT CNTR CHECK		
	(Q2D04)	EQ200-R005
	(Q2D02)	EQ200-R050
R006		
- BUS OUT BIT 0		
	(Q2X28)	EQ200-R006
	(C2B04)	EC200-R003
	(E2M10)	EE200-R036
	(H2B04)	EH200-R003
	(J2P09)	EJ200-R019
	(S2D11)	ES200-R005
	(T2D11)	ET200-R005
	P2X28	EP200-L026
	Q2G08	EQ200-L007
R007		
- BUS OUT BIT 1		
	(Q2X09)	EQ200-R007
	(C2D05)	EC200-R004
	(E2M08)	EE200-R037
	(H2D05)	EH200-R004
	(J2M02)	EJ200-R015
	(S2J07)	ES200-R005
	(T2J07)	ET200-R005
	P2X09	EP200-L026
	Q2G09	EQ200-L007
R008		
- BUS OUT BIT 2		
	(Q2X29)	EQ200-R008
	(C2B05)	EC200-R005
	(E2M09)	EE200-R038
	(H2B05)	EH200-R005
	(J2M03)	EJ200-R016
	(S2J12)	ES200-R005
	(T2J12)	ET200-R005
	P2X29	EP200-L026
	Q2G07	EQ200-L007
R009		
- BUS OUT BIT 3		
	(Q2Y03)	EQ200-R009
	(C2D06)	EC200-R006
	(E2P06)	EE200-R039
	(H2D06)	EH200-R006
	(J2P06)	EJ200-R018
	(S2J11)	ES200-R005
	(T2J11)	ET200-R005
	P2Y03	EP200-L026
	Q2J09	EQ200-L007
R010		
+ CLOCK T0		
	(Q2Z29)	EQ200-R010
	P2Z29	EP200-L054
R011		
+ CLOCK T1		
	(Q2Z10)	EQ200-R011
	P2Z10	EP200-L055
R012		
+ CLOCK T2		
	(Q2Z32)	EQ200-R012
	P2Z32	EP200-L056
R013		
+ CLOCK T3		
	(Q2Z13)	EQ200-R013
	P2Z13	EP200-L057
R014		
+ RESET IML TIMEOUT		
	(Q2X10)	EQ200-R014
	P2X10	EP200-L038
R015		
- TIMEOUT ENABLE		
	(Q2X30)	EQ200-R015
	P2X30	EP200-L028
R016		
+ FORCE CHECKS ON		
	(Q2X11)	EQ200-R016
	P2X11	EP200-L049
R017		
+ ALLOW SD TO SD		
	(Q2Y25)	EQ200-R017
	P2Y25	EP200-L030
R018		
- ANY CHECK (OUT) 1		
	(Q2Z12)	EQ200-R018
	(S2G10)	ES200-R037
	P2Z12	EP200-L012
	Q2J05	EQ200-L015
R019		
- ANY CHECK (OUT) 2		
	(Q2Z31)	EQ200-R019
	(T2G10)	ET200-R037
	P2Z31	EP200-L013
	Q2G04	EQ200-L016
R020		
+ MDA SEL ANY SD		
	(Q2N09)	EQ200-R020
	P2N09	EP200-L031
R021		
+ MDA SEL SD-1		
	(Q2N03)	EQ200-R021
	P2N03	EP200-L032
R022		
+ MDA SEL SD-2		
	(Q2N24)	EQ200-R022
	P2N24	EP200-L033
R023		
UNUSED MDAR/MDAC PIN A		
	(Q2N05)	EQ200-R023
	P2N05	EP200-L034
R024		
UNUSED MDAR/MDAC PIN B		
	(Q2N25)	EQ200-R024
	P2N25	EP200-L035
R025		
- BUS IN BIT 0		
	(Q2P12)	EQ200-R025
	S2S07	ES200-L013
	T2S07	ET200-L013
R025		
- BUS IN BIT 1		
	(Q2S05)	EQ200-R025
	(P2S05)	EP200-R009
	S2U07	ES200-L013
	T2U07	ET200-L013
R025		
- BUS IN BIT 2		
	(Q2M05)	EQ200-R025
	S2S08	ES200-L013
	T2S08	ET200-L013
R025		
- BUS IN BIT 3		
	(Q2M08)	EQ200-R025
	S2U06	ES200-L013
	T2U06	ET200-L013
R025		
- BUS IN BIT 4		
	(Q2P10)	EQ200-R025
	S2S09	ES200-L013
	T2S09	ET200-L013
R025		
- BUS IN BIT 5		
	(Q2P11)	EQ200-R025
	S2U09	ES200-L013
	T2U09	ET200-L013
R025		
- BUS IN BIT 6		
	(Q2D13)	EQ200-R025
	(P2J11)	EP200-R009
	S2U10	ES200-L013
	T2U10	ET200-L013
R025		
- BUS IN BIT 7		
	(Q2D11)	EQ200-R025
	S2S10	ES200-L013
	T2S10	ET200-L013
R026		
- EBI BIT P INT		
	(Q2M30)	EQ200-R026
	P2M30	EP200-L011
R027		
+ SERDES OUT BIT 0		
	(Q2Z07)	EQ200-R027
	P2Z07	EP200-L043
R028		
+ SERDES OUT GEN P		
	(Q2Z05)	EQ200-R028
	P2Z05	EP200-L051
R029		
+ SERDES OUT BIT P		
	(Q2N07)	EQ200-R029
	P2N07	EP200-L050
R030		
- COMMAND REG PARITY CHECK		
	(Q2D05)	EQ200-R030
R031		
- REG SEL A-B/SERDES P CHECK		
	(Q2B05)	EQ200-R031
	(Q2B02)	EQ200-R034
	(Q2B03)	EQ200-R035
R032		
- MDA CHECK A		
	(Q2M33)	EQ200-R032
	P2M33	EP200-L053
R033		
- MDA CHECK B		
	(Q2Y28)	EQ200-R033
	P2Y28	EP200-L021
R034		
- REG SEL A-B/SERDES P CHECK		
	(Q2B02)	EQ200-R034
	(Q2B05)	EQ200-R031
	(Q2B03)	EQ200-R035
R035		
- REG SEL A-B/SERDES P CHECK		
	(Q2B03)	EQ200-R035
	(Q2B05)	EQ200-R031
	(Q2B02)	EQ200-R034
R036		
+ FORCE EBI BAD PARITY		
	(Q2X32)	EQ200-R036
	P2X32	EP200-L010
R037		
+ PSM SELECT		
	(Q2X33)	EQ200-R037
	P2X33	EP200-L041
R038		
UNUSED MDAR/MDAC PIN C		
	(Q2X13)	EQ200-R038
	P2X13	EP200-L042
R039		
+ RESET CHECK LATCH		
	(Q2Y26)	EQ200-R039
	P2Y26	EP200-L019
R040		
+ MANUAL COMMAND VALID		
	(Q2Y06)	EQ200-R040
	P2Y06	EP200-L016
R041		
+ MANUAL DATA RECEIVED		
	(Q2Y07)	EQ200-R041
	P2Y07	EP200-L017
R042		
+ ADDRESS COMPARE ON		
	(Q2M11)	EQ200-R042
	P2M11	EP200-L008
R043		
+ RESET ADR COMPARE STOP		
	(Q2M10)	EQ200-R043
	P2M10	EP200-L007
R044		
- SELECTED ERROR ALERT		
	(Q2X26)	EQ200-R044
	(S2G09)	ES200-R011
	(T2G09)	ET200-R011
	P2X26	EP200-L040
	Q2G10	EQ200-L036
R045		
+ PRIMARY 0		
	(Q2Y22)	EQ200-R045
	P2Y22	EP200-L022

LINE/SIGNAL	PIN	SHEET/LINE
R046		
+ PRIMARY 1		
	(Q2Y02)	EQ200-R046
	P2Y02	EP200-L023
R047		
+ PRIMARY 2		
	(Q2Y24)	EQ200-R047
	P2Y24	EP200-L024
R048		
- ACR SYNC PULSE		
	(Q2Y31)	EQ200-R048
	(Q2D12)	EQ200-R049
	P2Y31	EP200-L009
R049		
- ACR SYNC PULSE		
	(Q2D12)	EQ200-R049
	(Q2Y31)	EQ200-R048
	P2Y31	EP200-L009
R050		
- IML T.O./SHIFT CNTR CHECK		
	(Q2D02)	EQ200-R050
	(Q2D04)	EQ200-R005
R051		
+ 9TH SHIFT		
	(Q2Z30)	EQ200-R051
	P2Z30	EP200-L018
R052		
- ANY CHECK (OUT) 3		
	(Q2Z27)	EQ200-R052
	P2Z27	EP200-L059
	Q2J06	EQ200-L049
R053		
+ REG ARRAY IN/SERDES OUT B0		
	(Q2U04)	EQ200-R053
	Q2P04	EQ200-L050
R054		
+ REG ARRAY IN/SERDES OUT B1		
	(Q2U05)	EQ200-R054
	Q2P05	EQ200-L051
R055		
+ REG ARRAY IN/SERDES OUT B2		
	(Q2U09)	EQ200-R055
	Q2P06	EQ200-L052
R056		
+ REG ARRAY IN/SERDES OUT B3		
	(Q2U11)	EQ200-R056
	Q2P09	EQ200-L053
R057		
+ REG ARRAY IN/SERDES OUT B4		
	(Q2S04)	EQ200-R057
	Q2M07	EQ200-L054
R058		
+ REG ARRAY IN/SERDES OUT B5		
	(Q2S08)	EQ200-R058
	Q2M04	EQ200-L055
R059		
+ REG ARRAY IN/SERDES OUT B6		
	(Q2S09)	EQ200-R059
	Q2J13	EQ200-L056
R060		
+ REG ARRAY IN/SERDES OUT B7		
	(Q2M02)	EQ200-R060
	Q2B13	EQ200-L057

```
003 - SELECT SD1 -------------------- S04
004 - MASK 3 SD1 -------------------- S13
005 - CONFIRM (OUT) SD1 ------------- W24
006 + POWER ON RESET SD2 ------------ D05
007 - EXT BUS OUT (SD1) BIT (0-7,P)  * =
008 - VALIDATE DATA SD1 ------------- W27
009 + DISKETTE DRIVE HEAD ENGAGE SD1 W25
010 - UNUSED ------------------------ D07
011 - INHIBIT P CORRECTION ---------- S12
012 - COMMAND VALID ----------------- B05
013 - BUS IN BIT (0-7,P) ========== * =
014 + CS ADDRESS (SD1) BIT (0-15) == * =
015 + BRANCH SUCCESSFUL SD1 -------- Y09
016 + CLOCK T1 SD1 ------------------ Y26
017 - FILE DATA --------------------- D09
018 - FILE INDEX -------------------- B09
019 - DATA RECEIVED ----------------- D12
020 + ERROR ALERT RESPONSE (OUT) SD2 J04
021 - MASK 3 SD2 -------------------- U13
022 - INHIBIT SD TO SD ------------- U11
023 + COMMAND VALID (OUT) B -------- G04
024 - ERROR ALERT (OUT) SD2 -------- G08
025 + CONFIRM (OUT) B --------------- Z13
026 + BUS OUT B BIT (0-7,P) ======== * =
027 - DISKETTE DRIVE SELECT 1 ------ B07
028 - DISKETTE DRIVE BUSY 1 -------- B08
029 + CLOCK STOPPED SD1 ------------- Y07
030 + RUN METER SD1 ----------------- Y03
031 - COMMAND VALID (OUT) SD1 ------ W23
032 + ERROR ALERT RESPONSE (OUT) SD1 W06
033 - INVALID COMMAND SD1 ---------- W03
034 - IML MICROCODE DETECTED ERR SD1 W04
035 + DISKETTE DRIVE REQUEST SD1 --- W07
036 + EXT BUS IN PC SD1 ------------ X06
037 - ERROR ALERT (OUT) SD1 -------- W28
038 + CHECK TWO TO INDICATOR SD1 --- X05
```

DRR1 CARD

OVERVIEW

The DRR1 (Driver Receiver #1) card performs the following functions for Storage Director 1: Gates initial microcode load (IML) data and control lines from the diskette drive selected by the storage director, isolates the storage director from the maintenance connection, gates the maintenance lines from the maintenance device (MD) to the storage director, connects SD1 and SD2 for transmitting or receiving output from FRU and error registers (failure data) and disconnects the channel attached to the failing storage director if the operating storage director is busy for longer than 500 ms.

PRIMARY FUNCTIONS

- The storage director error gate, controlled by the 'Inhibit SD to SD line', connects SD1 to SD2 for failure data exchange. This connection is made only when the Inhibit line is inactive.
- The Inhibit line operates in three modes: IML mode, CE mode, and Normal mode.
  - During IML and CE modes, the Inhibit line is active. This deselects the storage director error gate and isolates the storage directors.

    Any check 1 error generated on a storage director during either mode cannot be recognized by the operating storage director. The error gate in the operating storage director blocks the Error Alert (Out) line from the failing storage director, thus the Error Alert (In) line to the operating storage director remains inactive.
  - During Normal mode, the Inhibit line is inactive. This allows communication between storage directors through the error gate. The 500 ms timer ensures that the 'Allow Disconnect In' line is activated 500 ms after the 'Error Alert (Out)' line is activated.

    The storage director maintenance gate, controlled by the 'Select SD1' line, gates IML data and control lines and isolates the storage director from the maintenance connection. When the Select line is active, the maintenance gate connects the storage director to the MD or the diskette drive.
- The Select line operates in three modes: IML mode, CE mode, and Normal mode.
  - IML mode begins when the diskette drive has accepted a request from the storage director. The diskette drive response activates the Select line, which allows the maintenance gate to connect the IML data and control lines to the storage director.
  - IML mode ends when the diskette drive completes an information transfer to the storage director. The Select line is deactivated which deselects the maintenance gate and blocks the IML lines until the next IML request.
  - CE mode begins when the MD selects the storage director by activating the Select line. The MD now has direct control over the storage director.
  - CE mode ends when the MD deselects the storage director. This deactivates the Select line, which deselects the maintenance control lines until the next MD selection.

PRIMARY COMPONENTS

- Storage Director Error Gate.
- 500 ms Timer.
- Storage Director Maintenance Gate.

ERROR CHECKING

No error checking is done on this card, but the lines 'Error Alert Out' and 'IML Microcode Detected Error' pass through Check Two to the indicator. The lines are OR'ed to generate an "Any Check" line.


```
G05 - CONFIRM ----------------------- 003
B10 - DISKETTE DRIVE REQUEST A ------ 004
*   - BUS OUT BIT (0-7,P) ========== 005
B03 - VALIDATE DATA ----------------- 006
J05 - DISKETTE DRIVE HEAD ENGAGE --- 007
D13 - CHECK TWO INDICATOR ----------- 008
B02 - INVALID COMMAND --------------- 009
D04 - EXT BUS IN PARITY CHECK ------- 010
G09 - SELECTED ERROR ALERT ---------- 011
M22 - SEL UNUSED SD1 ---------------- 012
G07 - IML MICROCODE DETECT ERROR --- 013
X07 - INHIBIT P CORRECTION SD1 ------ 014
X29 + COMMAND VALID (IN) SD1 -------- 015
*   + EXT BUS IN (SD1) BIT (0-7,P) = 016
= * - EXT IAR BUS BIT (0-15) ======= 017
M12 - BRANCH CONDITION MET ---------- 018
M09 - T1 CLOCK SELECTED ------------- 019
W13 + DISKETTE DRIVE DATA SD1 ------- 020
M33 + DISKETTE DRIVE INDEX SD1 ------ 021
X23 + DATA RECEIVED (IN) SD1 -------- 022
J10 - ERROR ALERT (OUT) SD1 --------- 023
X04 + ERROR ALERT RESPONSE SD1 ------ 024
X24 - ERROR ALERT (IN) SD1 ---------- 025
X02 + CONFIRM (IN) SD1 -------------- 026
Z33 + CONFIRM (OUT) A --------------- 027
*   + BUS OUT A BIT (0-7,P) ======== 028
D02 + COMMAND VALID (OUT) A --------- 029
X22 + DISKETTE DRIVE SELECTED SD1 -- 030
X03 + DISKETTE DRIVE BUSY SD1 ------- 031
X25 + SD1 SELECTED ------------------ 032
G13 - CLOCK STOPPED ----------------- 033
M05 - MDA RUN METER ----------------- 034
P09 - T1 CLOCK POWERED A ------------ 035
D06 + ERROR ALERT RESPONSE (OUT) SD1 036
G10 - ANY CHECK (OUT) 1 ------------- 037
```

DRIVER RECEIVER SD1 CRD ES200

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- SELECT SD1		
	S2S04	ES200-L003
	(P2S04)	EP200-R044
L004		
- MASK 3 SD1		
	S2S13	ES200-L004
	(E2U05)	EE200-R016
	C2M09	EC200-L044
	H2M09	EH200-L012
	J2S07	EJ200-L027
	T2U13	ET200-L021
L005		
- CONFIRM (OUT) SD1		
	S2M24	ES200-L005
1A-B4	(R2M24)	HR200-R004
L006		
+ POWER ON RESET SD2		
	S2D05	ES200-L006
	(J2U13)	EJ200-R022
1A-B3	R2D02	GR200-L057
1A-B1	*J6C02*	
1A-B3	*K6E02*	
L007		
- EXT BUS OUT (SD1) BIT 0		
	S2M31	ES200-L007
1A-B4	(R2M31)	HR200-R041
L007		
- EXT BUS OUT (SD1) BIT 1		
	S2M29	ES200-L007
1A-B4	(R2M29)	HR200-R041
L007		
- EXT BUS OUT (SD1) BIT 2		
	S2M12	ES200-L007
1A-B4	(R2M12)	HR200-R041
L007		
- EXT BUS OUT (SD1) BIT 3		
	S2M10	ES200-L007
1A-B4	(R2M10)	HR200-R041
L007		
- EXT BUS OUT (SD1) BIT 4		
	S2M32	ES200-L007
1A-B4	(R2M32)	HR200-R041
L007		
- EXT BUS OUT (SD1) BIT 5		
	S2M09	ES200-L007
1A-B4	(R2M09)	HR200-R041
L007		
- EXT BUS OUT (SD1) BIT 6		
	S2M11	ES200-L007
1A-B4	(R2M11)	HR200-R041
L007		
- EXT BUS OUT (SD1) BIT 7		
	S2M30	ES200-L007
1A-B4	(R2M30)	HR200-R041
L007		
- EXT BUS OUT (SD1) BIT P		
	S2M05	ES200-L007
1A-B4	(R2M05)	HR200-R041
L008		
- VALIDATE DATA SD1		
	S2M27	ES200-L008
1A-B4	(R2M27)	HR200-R008
L009		
+ DISKETTE DRIVE HEAD ENGAGE SD1		
	S2M25	ES200-L009
1A-B4	(R2M25)	HR200-R011
L010		
- UNUSED		
	S2D07	ES200-L010
	T2D07	ET200-L010
L011		
- INHIBIT P CORRECTION		
	S2S12	ES200-L011
	T2S12	ET200-L011
L012		
- COMMAND VALID		
	S2B05	ES200-L012
	(P2B05)	EP200-R012
	T2B05	ET200-L012
L013		
- BUS IN BIT 0		
	S2S07	ES200-L013
	(Q2P12)	EQ200-R025
	T2S07	ET200-L013
L013		
- BUS IN BIT 1		
	S2U07	ES200-L013
	(P2S05)	EP200-R009
	(Q2S05)	EQ200-R025
	T2U07	ET200-L013
L013		
- BUS IN BIT 2		
	S2S08	ES200-L013
	(Q2M05)	EQ200-R025
	T2S08	ET200-L013
L013		
- BUS IN BIT 3		
	S2U06	ES200-L013
	(Q2M08)	EQ200-R025
	T2U06	ET200-L013
L013		
- BUS IN BIT 4		
	S2S09	ES200-L013
	(Q2P10)	EQ200-R025
	T2S09	ET200-L013
L013		
- BUS IN BIT 5		
	S2U09	ES200-L013
	(Q2P11)	EQ200-R025
	T2U09	ET200-L013
L013		
- BUS IN BIT 6		
	S2U10	ES200-L013
	(P2J11)	EP200-R009
	(Q2D13)	EQ200-R025
	T2U10	ET200-L013
L013		
- BUS IN BIT 7		
	S2S10	ES200-L013
	(Q2D11)	EQ200-R025
	T2S10	ET200-L013
L013		
- BUS IN BIT P		
	S2U12	ES200-L013
	(P2M31)	EP200-R009
	(Q2M03)	EQ200-R003
	Q2M31	EQ200-L003
	T2U12	ET200-L013
L014		
+ CS ADDRESS (SD1) BIT 0		
	S2Y04	ES200-L014
1A-B4	(Q2M04)	HQ200-R034
1A-B4	(Q2Y25)	HQ200-R035
1A-B4	R2Y25	HR200-L028
L014		
+ CS ADDRESS (SD1) BIT 1		
	S2Y31	ES200-L014
1A-B4	(Q2M31)	HQ200-R034
1A-B4	(Q2Y06)	HQ200-R035
1A-B4	R2Y06	HR200-L028
L014		
+ CS ADDRESS (SD1) BIT 2		
	S2Y30	ES200-L014
1A-B4	(Q2M30)	HQ200-R034
1A-B4	(Q2Y05)	HQ200-R035
1A-B4	R2Y05	HR200-L028
L014		
+ CS ADDRESS (SD1) BIT 3		
	S2Y05	ES200-L014
1A-B4	(Q2M05)	HQ200-R034
1A-B4	(Q2Y24)	HQ200-R035
1A-B4	R2Y24	HR200-L028
L014		
+ CS ADDRESS (SD1) BIT 4		
	S2Y13	ES200-L014
1A-B4	(Q2M13)	HQ200-R034
L014		
+ CS ADDRESS (SD1) BIT 5		
	S2Y22	ES200-L014
1A-B4	(Q2M22)	HQ200-R034
L014		
+ CS ADDRESS (SD1) BIT 6		
	S2Y32	ES200-L014
1A-B4	(Q2M32)	HQ200-R034
L014		
+ CS ADDRESS (SD1) BIT 7		
	S2Y10	ES200-L014
1A-B4	(Q2M10)	HQ200-R034
L014		
+ CS ADDRESS (SD1) BIT 8		
	S2Y25	ES200-L014
1A-B4	(Q2M25)	HQ200-R034
L014		
+ CS ADDRESS (SD1) BIT 9		
	S2Y06	ES200-L014
1A-B4	(Q2M06)	HQ200-R034
L014		
+ CS ADDRESS (SD1) BIT 10		
	S2Y02	ES200-L014
1A-B4	(Q2M02)	HQ200-R034
L014		
+ CS ADDRESS (SD1) BIT 11		
	S2Y29	ES200-L014
1A-B4	(Q2M29)	HQ200-R034
L014		
+ CS ADDRESS (SD1) BIT 12		
	S2Y33	ES200-L014
1A-B4	(Q2M33)	HQ200-R034
L014		
+ CS ADDRESS (SD1) BIT 13		
	S2Y11	ES200-L014
1A-B4	(Q2M11)	HQ200-R034
L014		
+ CS ADDRESS (SD1) BIT 14		
	S2Y28	ES200-L014
1A-B4	(Q2M28)	HQ200-R034
L014		
+ CS ADDRESS (SD1) BIT 15		
	S2Y24	ES200-L014
1A-B4	(Q2M24)	HQ200-R034
L015		
+ BRANCH SUCCESSFUL SD1		
	S2Y09	ES200-L015
1A-B4	(Q2M09)	HQ200-R006
L016		
+ CLOCK T1 SD1		
	S2Y26	ES200-L016
1A-B4	(Q2M26)	HQ200-R003
L017		
- FILE DATA		
	S2D09	ES200-L017
	(P2U06)	EP200-R055
	T2D09	ET200-L017
L018		
- FILE INDEX		
	S2B09	ES200-L018
	(P2D04)	EP200-R056
	T2B09	ET200-L018
L019		
- DATA RECEIVED		
	S2D12	ES200-L019
	(P2D13)	EP200-R025
	T2D12	ET200-L019
L020		
+ ERROR ALERT RESPONSE (OUT) SD2		
	S2J04	ES200-L020
	(T2D06)	ET200-R036
1A-B3	(R2M06)	GR200-R006
	T2M06	ET200-L032
L021		
- MASK 3 SD2		
	S2U13	ES200-L021
	(E2U13)	EE200-R018
	C2M10	EC200-L045
	H2M10	EH200-L015
	J2J07	EJ200-L016
	T2S13	ET200-L004
L022		
- INHIBIT SD TO SD		
	S2U11	ES200-L022
	(P2S02)	EP200-R041
	T2U11	ET200-L022
L023		
+ COMMAND VALID (OUT) B		
	S2G04	ES200-L023
	(T2D02)	ET200-R029
L024		
- ERROR ALERT (OUT) SD2		
	S2G08	ES200-L024
	(T2J10)	ET200-R023
1A-B3	(R2M28)	GR200-R037
	T2M28	ET200-L037
L025		
+ CONFIRM (OUT) B		
	S2Z13	ES200-L025
	(T2Z33)	ET200-R027
L026		
+ BUS OUT B BIT 0		
	S2Z05	ES200-L026
	(T2Z25)	ET200-R028
L026		
+ BUS OUT B BIT 1		
	S2Z10	ES200-L026
	(T2Z30)	ET200-R028
L026		
+ BUS OUT B BIT 2		
	S2Z03	ES200-L026
	(T2Z23)	ET200-R028
L026		
+ BUS OUT B BIT 3		
	S2Z12	ES200-L026
	(T2Z32)	ET200-R028
L026		
+ BUS OUT B BIT 4		
	S2Z11	ES200-L026
	(T2Z31)	ET200-R028
L026		
+ BUS OUT B BIT 5		
	S2Z04	ES200-L026
	(T2Z24)	ET200-R028
L026		
+ BUS OUT B BIT 6		
	S2Z09	ES200-L026
	(T2Z29)	ET200-R028
L026		
+ BUS OUT B BIT 7		
	S2Z07	ES200-L026
	(T2Z27)	ET200-R028
L026		
+ BUS OUT B BIT P		
	S2Z02	ES200-L026
	(T2Z22)	ET200-R028
L027		
- DISKETTE DRIVE SELECT 1		
	S2B07	ES200-L027
	(P2S13)	EP200-R037
L028		
- DISKETTE DRIVE BUSY 1		
	S2B08	ES200-L028
	(P2U10)	EP200-R039
L029		
+ CLOCK STOPPED SD1		
	S2Y07	ES200-L029
1A-B4	(Q2M07)	HQ200-R005
L030		
+ RUN METER SD1		
	S2Y03	ES200-L030
1A-B4	(Q2M03)	HQ200-R004
L031		
- COMMAND VALID (OUT) SD1		
	S2M23	ES200-L031
1A-B4	(R2M23)	HR200-R005
L032		
+ ERROR ALERT RESPONSE (OUT) SD1		
	S2M06	ES200-L032
	(S2D06)	ES200-R036
1A-B4	(R2M06)	HR200-R006
	T2J04	ET200-L020
L033		
- INVALID COMMAND SD1		
	S2M03	ES200-L033
1A-B4	(R2M03)	HR200-R009
L034		
- IML MICROCODE DETECTED ERR SD1		
	S2M04	ES200-L034
1A-B4	(R2M04)	HR200-R010

LINE/SIGNAL	PIN	SHEET/LINE
L035		
+ DISKETTE DRIVE REQUEST SD1		
	S2M07	ES200-L035
1A-B4	(R2M07)	HR200-R012
L036		
+ EXT BUS IN PC SD1		
	S2X06	ES200-L036
1A-B4	(R2X06)	HR200-R019
L037		
- ERROR ALERT (OUT) SD1		
	S2M28	ES200-L037
	(S2J10)	ES200-R023
1A-B4	(R2M28)	HR200-R037
	T2G08	ET200-L024
L038		
+ CHECK TWO TO INDICATOR SD1		
	S2X05	ES200-L038
1A-B4	(R2X05)	HR200-R018
R003		
- CONFIRM		
	(S2G05)	ES200-R003
	(T2G05)	ET200-R003
	P2D02	EP200-L014
R004		
- DISKETTE DRIVE REQUEST A		
	(S2B10)	ES200-R004
	P2B09	EP200-L036
R005		
- BUS OUT BIT 0		
	(S2D11)	ES200-R005
	(C2B04)	EC200-R003
	(E2M10)	EE200-R036
	(H2B04)	EH200-R003
	(J2P09)	EJ200-R019
	(Q2X28)	EQ200-R006
	(T2D11)	ET200-R005
	P2X28	EP200-L026
	Q2G08	EQ200-L007
R005		
- BUS OUT BIT 1		
	(S2J07)	ES200-R005
	(C2D05)	EC200-R004
	(E2M08)	EE200-R037
	(H2D05)	EH200-R004
	(J2M02)	EJ200-R015
	(Q2X09)	EQ200-R007
	(T2J07)	ET200-R005
	P2X09	EP200-L026
	Q2G09	EQ200-L007

LINE/SIGNAL	PIN	SHEET/LINE
R005		
- BUS OUT BIT 2		
	(S2J12)	ES200-R005
	(C2B05)	EC200-R005
	(E2M09)	EE200-R038
	(H2B05)	EH200-R005
	(J2M03)	EJ200-R016
	(Q2X29)	EQ200-R008
	(T2J12)	ET200-R005
	P2X29	EP200-L026
	Q2G07	EQ200-L007
R005		
- BUS OUT BIT 3		
	(S2J11)	ES200-R005
	(C2D06)	EC200-R006
	(E2P06)	EE200-R039
	(H2D06)	EH200-R006
	(J2P06)	EJ200-R018
	(Q2Y03)	EQ200-R009
	(T2J11)	ET200-R005
	P2Y03	EP200-L026
	Q2J09	EQ200-L007
R005		
- BUS OUT BIT 4		
	(S2B12)	ES200-R005
	(E2S05)	EE200-R032
	(J2M09)	EJ200-R017
	(T2B12)	ET200-R005
	Q2B09	EQ200-L007
R005		
- BUS OUT BIT 5		
	(S2J13)	ES200-R005
	(E2S08)	EE200-R033
	(J2G10)	EJ200-R011
	(T2J13)	ET200-R005
	Q2D06	EQ200-L007
R005		
- BUS OUT BIT 6		
	(S2J06)	ES200-R005
	(E2S04)	EE200-R034
	(J2G11)	EJ200-R012
	(T2J06)	ET200-R005
	Q2B08	EQ200-L007
R005		
- BUS OUT BIT 7		
	(S2B13)	ES200-R005
	(E2U06)	EE200-R035
	(J2G13)	EJ200-R013
	(T2B13)	ET200-R005
	Q2B07	EQ200-L007
R005		
- BUS OUT BIT P		
	(S2G12)	ES200-R005
	(E2P13)	EE200-R040
	(J2D12)	EJ200-R010
	(T2G12)	ET200-R005
	Q2D09	EQ200-L007

LINE/SIGNAL	PIN	SHEET/LINE
R006		
- VALIDATE DATA		
	(S2B03)	ES200-R006
	(T2B03)	ET200-R006
	P2P12	EP200-L015
R007		
- DISKETTE DRIVE HEAD ENGAGE		
	(S2J05)	ES200-R007
	(T2J05)	ET200-R007
	P2B04	EP200-L025
R008		
- CHECK TWO INDICATOR		
	(S2D13)	ES200-R008
	(T2D13)	ET200-R008
	Q2G12	EQ200-L040
R009		
- INVALID COMMAND		
	(S2B02)	ES200-R009
	(T2B02)	ET200-R009
	Q2J12	EQ200-L018
R010		
- EXT BUS IN PARITY CHECK		
	(S2D04)	ES200-R010
	(T2D04)	ET200-R010
	Q2J11	EQ200-L012
R011		
- SELECTED ERROR ALERT		
	(S2G09)	ES200-R011
	(Q2X26)	EQ200-R044
	(T2G09)	ET200-R011
	P2X26	EP200-L040
	Q2G10	EQ200-L036
R012		
- SEL UNUSED SD1		
	(S2M22)	ES200-R012
R013		
- IML MICROCODE DETECT ERROR		
	(S2G07)	ES200-R013
	(T2G07)	ET200-R013
	Q2J10	EQ200-L034
R014		
- INHIBIT P CORRECTION SD1		
	(S2X07)	ES200-R014
1A-B4	R2X07	HR200-L030
R015		
+ COMMAND VALID (IN) SD1		
	(S2X29)	ES200-R015
1A-B4	R2X29	HR200-L007
R016		
+ EXT BUS IN (SD1) BIT 0		
	(S2X09)	ES200-R016
1A-B4	R2X09	HR200-L031
R016		
+ EXT BUS IN (SD1) BIT 1		
	(S2X28)	ES200-R016
1A-B4	R2X28	HR200-L031

LINE/SIGNAL	PIN	SHEET/LINE
R016		
+ EXT BUS IN (SD1) BIT 2		
	(S2X33)	ES200-R016
1A-B4	R2X33	HR200-L031
R016		
+ EXT BUS IN (SD1) BIT 3		
	(S2X10)	ES200-R016
1A-B4	R2X10	HR200-L031
R016		
+ EXT BUS IN (SD1) BIT 4		
	(S2X11)	ES200-R016
1A-B4	R2X11	HR200-L031
R016		
+ EXT BUS IN (SD1) BIT 5		
	(S2X32)	ES200-R016
1A-B4	R2X32	HR200-L031
R016		
+ EXT BUS IN (SD1) BIT 6		
	(S2X13)	ES200-R016
1A-B4	R2X13	HR200-L031
R016		
+ EXT BUS IN (SD1) BIT 7		
	(S2X30)	ES200-R016
1A-B4	R2X30	HR200-L031
R016		
+ EXT BUS IN (SD1) BIT P		
	(S2X27)	ES200-R016
1A-B4	R2X27	HR200-L031
R017		
- EXT IAR BUS BIT 0		
	(S2P12)	ES200-R017
	(T2P12)	ET200-R017
	Q2U02	EQ200-L041
R017		
- EXT IAR BUS BIT 1		
	(S2P05)	ES200-R017
	(T2P05)	ET200-R017
	Q2M09	EQ200-L041
R017		
- EXT IAR BUS BIT 2		
	(S2M02)	ES200-R017
	(T2M02)	ET200-R017
	Q2P13	EQ200-L041
R017		
- EXT IAR BUS BIT 3		
	(S2M04)	ES200-R017
	(T2M04)	ET200-R017
	Q2S03	EQ200-L041
R017		
- EXT IAR BUS BIT 4		
	(S2M03)	ES200-R017
	(T2M03)	ET200-R017
	Q2S12	EQ200-L041

LINE/SIGNAL	PIN	SHEET/LINE
R017		
- EXT IAR BUS BIT 5		
	(S2M13)	ES200-R017
	(T2M13)	ET200-R017
	Q2U06	EQ200-L041
R017		
- EXT IAR BUS BIT 6		
	(S2M10)	ES200-R017
	(T2M10)	ET200-R017
	Q2U12	EQ200-L041
R017		
- EXT IAR BUS BIT 7		
	(S2P13)	ES200-R017
	(T2P13)	ET200-R017
	Q2U13	EQ200-L041
R017		
- EXT IAR BUS BIT 8		
	(S2P04)	ES200-R017
	(T2P04)	ET200-R017
	Q2M10	EQ200-L041
R017		
- EXT IAR BUS BIT 9		
	(S2M07)	ES200-R017
	(T2M07)	ET200-R017
	Q2M13	EQ200-L041
R017		
- EXT IAR BUS BIT 10		
	(S2P02)	ES200-R017
	(T2P02)	ET200-R017
	Q2M12	EQ200-L041
R017		
- EXT IAR BUS BIT 11		
	(S2P11)	ES200-R017
	(T2P11)	ET200-R017
	Q2S02	EQ200-L041
R017		
- EXT IAR BUS BIT 12		
	(S2P07)	ES200-R017
	(T2P07)	ET200-R017
	Q2U07	EQ200-L041
R017		
- EXT IAR BUS BIT 13		
	(S2P10)	ES200-R017
	(T2P10)	ET200-R017
	Q2S10	EQ200-L041
R017		
- EXT IAR BUS BIT 14		
	(S2M08)	ES200-R017
	(T2M08)	ET200-R017
	Q2U10	EQ200-L041
R017		
- EXT IAR BUS BIT 15		
	(S2P06)	ES200-R017
	(T2P06)	ET200-R017
	Q2S13	EQ200-L041

LINE/SIGNAL	PIN	SHEET/LINE
R018		
- BRANCH CONDITION MET		
	(S2M12)	ES200-R018
	(T2M12)	ET200-R018
R019		
- T1 CLOCK SELECTED		
	(S2M09)	ES200-R019
	(T2M09)	ET200-R019
	Q2B12	EQ200-L043
R020		
+ DISKETTE DRIVE DATA SD1		
	(S2M13)	ES200-R020
1A-B4	R2M13	HR200-L014
R021		
+ DISKETTE DRIVE INDEX SD1		
	(S2M33)	ES200-R021
1A-B4	R2M33	HR200-L015
R022		
+ DATA RECEIVED (IN) SD1		
	(S2X23)	ES200-R022
1A-B4	R2X23	HR200-L004
R023		
- ERROR ALERT (OUT) SD1		
	(S2J10)	ES200-R023
1A-B4	(R2M28)	HR200-R037
	S2M28	ES200-L037
	T2G08	ET200-L024
R024		
+ ERROR ALERT RESPONSE SD1		
	(S2X04)	ES200-R024
1A-B4	R2X04	HR200-L041
R025		
- ERROR ALERT (IN) SD1		
	(S2X24)	ES200-R025
1A-B4	R2X24	HR200-L036
R026		
+ CONFIRM (IN) SD1		
	(S2X02)	ES200-R026
1A-B4	R2X02	HR200-L005
R027		
+ CONFIRM (OUT) A		
	(S2Z33)	ES200-R027
	T2Z13	ET200-L025
R028		
+ BUS OUT A BIT 0		
	(S2Z25)	ES200-R028
	T2Z05	ET200-L026
R028		
+ BUS OUT A BIT 1		
	(S2Z30)	ES200-R028
	T2Z10	ET200-L026
R028		
+ BUS OUT A BIT 2		
	(S2Z23)	ES200-R028
	T2Z03	ET200-L026

LINE/SIGNAL	PIN	SHEET/LINE
R028		
+ BUS OUT A BIT 3		
	(S2Z32)	ES200-R028
	T2Z12	ET200-L026
R028		
+ BUS OUT A BIT 4		
	(S2Z31)	ES200-R028
	T2Z11	ET200-L026
R028		
+ BUS OUT A BIT 5		
	(S2Z24)	ES200-R028
	T2Z04	ET200-L026
R028		
+ BUS OUT A BIT 6		
	(S2Z29)	ES200-R028
	T2Z09	ET200-L026
R028		
+ BUS OUT A BIT 7		
	(S2Z27)	ES200-R028
	T2Z07	ET200-L026
R028		
+ BUS OUT A BIT P		
	(S2Z22)	ES200-R028
	T2Z02	ET200-L026
R029		
+ COMMAND VALID (OUT) A		
	(S2D02)	ES200-R029
	T2G04	ET200-L023
R030		
+ DISKETTE DRIVE SELECTED SD1		
	(S2X22)	ES200-R030
1A-B4	R2X22	HR200-L016
R031		
+ DISKETTE DRIVE BUSY SD1		
	(S2X03)	ES200-R031
1A-B4	R2X03	HR200-L017
R032		
+ SD1 SELECTED		
	(S2X25)	ES200-R032
1A-B4	R2X25	HR200-L035
R033		
- CLOCK STOPPED		
	(S2G13)	ES200-R033
	(T2G13)	ET200-R033
	Q2G13	EQ200-L019
R034		
- MDA RUN METER		
	(S2M05)	ES200-R034
	(T2M05)	ET200-R034
	P2P05	EP200-L044
R035		
- T1 CLOCK POWERED A		
	(S2P09)	ES200-R035
	P2B13	EP200-L045

LINE/SIGNAL	PIN	SHEET/LINE
R036		
+ ERROR ALERT RESPONSE (OUT) SD1		
	(S2D06)	ES200-R036
1A-B4	(R2M06)	HR200-R006
	S2M06	ES200-L032
	T2J04	ET200-L020
R037		
- ANY CHECK (OUT) 1		
	(S2G10)	ES200-R037
	(Q2Z12)	EQ200-R018
	P2Z12	EP200-L012
	Q2J05	EQ200-L015

3880	Seq EA010 24 of 28	6315712 Part No.	881142 12DEC83	881215 27APR84	A15612 17SEP84			2X MODELS	ALL FEATURES	ALL VERSION	1A-B1S2 CARD LOC

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```
003 - SELECT SD2 ---------------------S04
004 - MASK 3 SD2 ---------------------S13
005 - CONFIRM (OUT) SD2 -------------M24
006 + POWER ON RESET SD1 ------------ D05
007 - EXT BUS OUT (SD2) BIT (0-7,P) =*
008 - VALIDATE DATA SD2 -------------M27
009 + DISKETTE DRIVE HEAD ENGAGE SD2-M25
010 - UNUSED -------------------------D07
011 - INHIBIT P CORRECTION ----------S12
012 - COMMAND VALID -----------------B05
013 - BUS IN BIT (0-7,P) ============*
014 + CS ADDRESS (SD2) BIT (0-15) ===*
015 + BRANCH SUCCESSFUL SD2 ---------Y09
016 + CLOCK T1 SD2 ------------------Y26
017 - FILE DATA ---------------------D09
018 - FILE INDEX --------------------B09
019 - DATA RECEIVED ------------------D12
020 + ERROR ALERT RESPONSE (OUT) SD1-J04
021 - MASK 3 SD1 --------------------U13
022 - INHIBIT SD TO SD --------------U11
023 + COMMAND VALID (OUT) A ---------G04
024 - ERROR ALERT (OUT) SD1 ---------G08
025 + CONFIRM (OUT) A ---------------Z13
026 + BUS OUT A BIT (0-7,P) =========*
027 - DISKETTE DRIVE SELECT 2 -------B07
028 - DISKETTE DRIVE BUSY 2 ---------B08
029 + CLOCK STOPPED SD2 -------------Y07
030 + RUN METER SD2 -----------------Y03
031 - COMMAND VALID (OUT) SD2 ------ M23
032 + ERROR ALERT RESPONSE (OUT) SD2 M06
033 - INVALID COMMAND SD2 ---------- M03
034 - IML MICROCODE DETECTED ERR SD2 M04
035 + DISKETTE DRIVE REQUEST SD2 --- M07
036 + EXT BUS IN PC SD2 ------------ X06
037 - ERROR ALERT (OUT) SD2 -------- M28
038 + CHECK TWO TO INDICATOR SD2 --- X05
```

DRR2 CARD

OVERVIEW

The DRR2 (Driver Receiver #2) card performs the following functions for Storage Director 2: Gates initial microcode load (IML) data and control lines from the diskette drive selected by the storage director, isolates the storage director from the maintenance connection, gates the maintenance lines from the maintenance device (MD) to the storage director, connects SD1 and SD2 for transmitting or receiving output from FRU and error registers (failure data) and disconnects the channel attached to the failing storage director if the operating storage director is busy for longer than 500 ms.

PRIMARY FUNCTIONS

- The storage director error gate, controlled by the 'Inhibit SD to SD line', connects SD1 to SD2 for failure data exchange. This connection is made only when the Inhibit line is inactive.
- The Inhibit line operates in three modes: IML mode, CE mode, and Normal mode.
  - During IML and CE modes, the Inhibit line is active. This deselects the storage director error gate and isolates the storage directors.

    Any check 1 error generated on a storage director during either mode cannot be recognized by the operating storage director. The error gate in the operating storage director blocks the Error Alert (Out) line from the failing storage director, thus the Error Alert (In) line to the operating storage director remains inactive.
  - During Normal mode, the Inhibit line is inactive. This allows communication between storage directors through the error gate. The 500 ms timer ensures that the 'Allow Disconnect In' line is activated 500 ms after the 'Error Alert (Out)' line is activated.

    The storage director maintenance gate, controlled by the 'Select SD1' line, gates IML data and control lines and isolates the storage director from the maintenance connection. When the Select line is active, the maintenance gate connects the storage director to the MD or the diskette drive.
- The Select line operates in three modes: IML mode, CE mode, and Normal mode.
  - IML mode begins when the diskette drive has accepted a request from the storage director. The diskette drive response activates the Select line, which allows the maintenance gate to connect the IML data and control lines to the storage director.
  - IML mode ends when the diskette drive completes an information transfer to the storage director. The Select line is deactivated which deselects the maintenance gate and blocks the IML lines until the next IML request.
  - CE mode begins when the MD selects the storage director by activating the Select line. The MD now has direct control over the storage director.
  - CE mode ends when the MD deselects the storage director. This deactivates the Select line, which deselects the maintenance control lines until the next MD selection.

PRIMARY COMPONENTS

- Storage Director Error Gate.
- 500 ms Timer.
- Storage Director Maintenance Gate.

ERROR CHECKING

No error checking is done on this card, but the lines 'Error Alert Out' and 'IML Microcode Detected Error' pass through Check Two to the indicator. The lines are OR'ed to generate an "Any Check" line.

```
                                    DRIVER RECEIVER SD2   CRD ET200
G05 - CONFIRM ---------------------- 003
B10 - DISKETTE DRIVE REQUEST B ----- 004
*   - BUS OUT BIT (0-7,P) ========== 005
B03 - VALIDATE DATA ---------------- 006
J05 - DISKETTE DRIVE HEAD ENGAGE --- 007
D13 - CHECK TWO INDICATOR ---------- 008
B02 - INVALID COMMAND -------------- 009
D04 - EXT BUS IN PARITY CHECK ------ 010
G09 - SELECTED ERROR ALERT --------- 011
M22 - SEL UNUSED SD2 --------------- 012
G07 - IML MICROCODE DETECT ERROR --- 013
X07 - INHIBIT P CORRECTION SD2 ----- 014
X29 + COMMAND VALID (IN) SD2 ------- 015
*   + EXT BUS IN (SD2) BIT (0-7,P) = 016
= * - EXT IAR BUS BIT (0-15) ======= 017
M12 - BRANCH CONDITION MET --------- 018
M09 - T1 CLOCK SELECTED ------------ 019
M13 + DISKETTE DRIVE DATA SD2 ------ 020
M33 + DISKETTE DRIVE INDEX SD2 ----- 021
X23 + DATA RECEIVED (IN) SD2 ------- 022
J10 - ERROR ALERT (OUT) SD2 -------- 023
X04 + ERROR ALERT RESPONSE SD2 ----- 024
X24 - ERROR ALERT (IN) SD2 --------- 025
X02 + CONFIRM (IN) SD2 ------------- 026
Z33 + CONFIRM (OUT) B -------------- 027
*   + BUS OUT B BIT (0-7,P) ======== 028
D02 + COMMAND VALID (OUT) B -------- 029
X22 + DISKETTE DRIVE SELECTED SD2 -- 030
X03 + DISKETTE DRIVE BUSY SD2 ------ 031
X25 + SD2 SELECTED ----------------- 032
G13 - CLOCK STOPPED ---------------- 033
M05 - MDA RUN METER ---------------- 034
P09 - T1 CLOCK POWERED B ----------- 035
D06 + ERROR ALERT RESPONSE (OUT) SD2 036
G10 - ANY CHECK (OUT) 2 ------------ 037
```

DRIVER RECEIVER SD2 CRD ET200

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- SELECT SD2		
	T2S04	ET200-L003
	(P2U02)	EP200-R045
L004		
- MASK 3 SD2		
	T2S13	ET200-L004
	(E2U13)	EE200-R018
	C2M10	EC200-L045
	H2M10	EH200-L015
	J2J07	EJ200-L016
	S2U13	ES200-L021
L005		
- CONFIRM (OUT) SD2		
	T2M24	ET200-L005
1A-B3	(R2M24)	GR200-R004
L006		
+ POWER ON RESET SD1		
	T2D05	ET200-L006
	(J2B05)	EJ200-R004
1A-B4	R2D02	HR200-L057
1A-B1	*F6B02*	
1A-B4	*B3D07*	
1A-B4	*K6E02*	
L007		
- EXT BUS OUT (SD2) BIT 0		
	T2M31	ET200-L007
1A-B3	(R2M31)	GR200-R041
L007		
- EXT BUS OUT (SD2) BIT 1		
	T2M29	ET200-L007
1A-B3	(R2M29)	GR200-R041
L007		
- EXT BUS OUT (SD2) BIT 2		
	T2M12	ET200-L007
1A-B3	(R2M12)	GR200-R041
L007		
- EXT BUS OUT (SD2) BIT 3		
	T2M10	ET200-L007
1A-B3	(R2M10)	GR200-R041
L007		
- EXT BUS OUT (SD2) BIT 4		
	T2M32	ET200-L007
1A-B3	(R2M32)	GR200-R041
L007		
- EXT BUS OUT (SD2) BIT 5		
	T2M09	ET200-L007
1A-B3	(R2M09)	GR200-R041
L007		
- EXT BUS OUT (SD2) BIT 6		
	T2M11	ET200-L007
1A-B3	(R2M11)	GR200-R041
L007		
- EXT BUS OUT (SD2) BIT 7		
	T2M30	ET200-L007
1A-B3	(R2M30)	GR200-R041

LINE/SIGNAL	PIN	SHEET/LINE
L007		
- EXT BUS OUT (SD2) BIT P		
	T2M05	ET200-L007
1A-B3	(R2M05)	GR200-R041
L008		
- VALIDATE DATA SD2		
	T2M27	ET200-L008
1A-B3	(R2M27)	GR200-R008
L009		
+ DISKETTE DRIVE HEAD ENGAGE SD2		
	T2M25	ET200-L009
1A-B3	(R2M25)	GR200-R011
L010		
- UNUSED		
	T2D07	ET200-L010
	S2D07	ES200-L010
L011		
- INHIBIT P CORRECTION		
	T2S12	ET200-L011
	S2S12	ES200-L011
L012		
- COMMAND VALID		
	T2B05	ET200-L012
	(P2B05)	EP200-R012
	S2B05	ES200-L012
L013		
- BUS IN BIT 0		
	T2S07	ET200-L013
	(Q2P12)	EQ200-R025
	S2S07	ES200-L013
L013		
- BUS IN BIT 1		
	T2U07	ET200-L013
	(P2S05)	EP200-R009
	(Q2S05)	EQ200-R025
	S2U07	ES200-L013
L013		
- BUS IN BIT 2		
	T2S08	ET200-L013
	(Q2M05)	EQ200-R025
	S2S08	ES200-L013
L013		
- BUS IN BIT 3		
	T2U06	ET200-L013
	(Q2M08)	EQ200-R025
	S2U06	ES200-L013
L013		
- BUS IN BIT 4		
	T2S09	ET200-L013
	(Q2P10)	EQ200-R025
	S2S09	ES200-L013
L013		
- BUS IN BIT 5		
	T2U09	ET200-L013
	(Q2P11)	EQ200-R025
	S2U09	ES200-L013

LINE/SIGNAL	PIN	SHEET/LINE
L013		
- BUS IN BIT 6		
	T2U10	ET200-L013
	(P2J11)	EP200-R009
	(Q2D13)	EQ200-R025
	S2U10	ES200-L013
L013		
- BUS IN BIT 7		
	T2S10	ET200-L013
	(Q2D11)	EQ200-R025
	S2S10	ES200-L013
L013		
- BUS IN BIT P		
	T2U12	ET200-L013
	(P2M31)	EP200-R009
	(Q2M03)	EQ200-R003
	Q2M31	EQ200-L003
	S2U12	ES200-L013
L014		
+ CS ADDRESS (SD2) BIT 0		
	T2Y04	ET200-L014
1A-B3	(Q2M04)	GQ200-R034
1A-B3	(Q2Y25)	GQ200-R035
1A-B3	R2Y25	GR200-L028
L014		
+ CS ADDRESS (SD2) BIT 1		
	T2Y31	ET200-L014
1A-B3	(Q2M31)	GQ200-R034
1A-B3	(Q2Y06)	GQ200-R035
1A-B3	R2Y06	GR200-L028
L014		
+ CS ADDRESS (SD2) BIT 2		
	T2Y30	ET200-L014
1A-B3	(Q2M30)	GQ200-R034
1A-B3	(Q2Y05)	GQ200-R035
1A-B3	R2Y05	GR200-L028
L014		
+ CS ADDRESS (SD2) BIT 3		
	T2Y05	ET200-L014
1A-B3	(Q2M05)	GQ200-R034
1A-B3	(Q2Y24)	GQ200-R035
1A-B3	R2Y24	GR200-L028
L014		
+ CS ADDRESS (SD2) BIT 4		
	T2Y13	ET200-L014
1A-B3	(Q2M13)	GQ200-R034
L014		
+ CS ADDRESS (SD2) BIT 5		
	T2Y22	ET200-L014
1A-B3	(Q2M22)	GQ200-R034
L014		
+ CS ADDRESS (SD2) BIT 6		
	T2Y32	ET200-L014
1A-B3	(Q2M32)	GQ200-R034

LINE/SIGNAL	PIN	SHEET/LINE
L014		
+ CS ADDRESS (SD2) BIT 7		
	T2Y10	ET200-L014
1A-B3	(Q2M10)	GQ200-R034
L014		
+ CS ADDRESS (SD2) BIT 8		
	T2Y25	ET200-L014
1A-B3	(Q2M25)	GQ200-R034
L014		
+ CS ADDRESS (SD2) BIT 9		
	T2Y06	ET200-L014
1A-B3	(Q2M06)	GQ200-R034
L014		
+ CS ADDRESS (SD2) BIT 10		
	T2Y02	ET200-L014
1A-B3	(Q2M02)	GQ200-R034
L014		
+ CS ADDRESS (SD2) BIT 11		
	T2Y29	ET200-L014
1A-B3	(Q2M29)	GQ200-R034
L014		
+ CS ADDRESS (SD2) BIT 12		
	T2Y33	ET200-L014
1A-B3	(Q2M33)	GQ200-R034
L014		
+ CS ADDRESS (SD2) BIT 13		
	T2Y11	ET200-L014
1A-B3	(Q2M11)	GQ200-R034
L014		
+ CS ADDRESS (SD2) BIT 14		
	T2Y28	ET200-L014
1A-B3	(Q2M28)	GQ200-R034
L014		
+ CS ADDRESS (SD2) BIT 15		
	T2Y24	ET200-L014
1A-B3	(Q2M24)	GQ200-R034
L015		
+ BRANCH SUCCESSFUL SD2		
	T2Y09	ET200-L015
1A-B3	(Q2M09)	GQ200-R006
L016		
+ CLOCK T1 SD2		
	T2Y26	ET200-L016
1A-B3	(Q2M26)	GQ200-R003
L017		
- FILE DATA		
	T2D09	ET200-L017
	(P2U06)	EP200-R055
	S2D09	ES200-L017
L018		
- FILE INDEX		
	T2B09	ET200-L018
	(P2D04)	EP200-R056
	S2B09	ES200-L018

LINE/SIGNAL	PIN	SHEET/LINE
L019		
- DATA RECEIVED		
	T2D12	ET200-L019
	(P2D13)	EP200-R025
	S2D12	ES200-L019
L020		
+ ERROR ALERT RESPONSE (OUT) SD1		
	T2J04	ET200-L020
	(S2D06)	ES200-R036
1A-B4	(R2W06)	HR200-R006
	S2W06	ES200-L032
L021		
- MASK 3 SD1		
	T2U13	ET200-L021
	(E2U05)	EE200-R016
	C2M09	EC200-L044
	H2M09	EH200-L012
	J2S07	EJ200-L027
	S2S13	ES200-L004
L022		
- INHIBIT SD TO SD		
	T2U11	ET200-L022
	(P2S02)	EP200-R041
	S2U11	ES200-L022
L023		
+ COMMAND VALID (OUT) A		
	T2G04	ET200-L023
	(S2D02)	ES200-R029
L024		
- ERROR ALERT (OUT) SD1		
	T2G08	ET200-L024
	(S2J10)	ES200-R023
1A-B4	(R2W28)	HR200-R037
	S2W28	ES200-L037
L025		
+ CONFIRM (OUT) A		
	T2Z13	ET200-L025
	(S2Z33)	ES200-R027
L026		
+ BUS OUT A BIT 0		
	T2Z05	ET200-L026
	(S2Z25)	ES200-R028
L026		
+ BUS OUT A BIT 1		
	T2Z10	ET200-L026
	(S2Z30)	ES200-R028
L026		
+ BUS OUT A BIT 2		
	T2Z03	ET200-L026
	(S2Z23)	ES200-R028
L026		
+ BUS OUT A BIT 3		
	T2Z12	ET200-L026
	(S2Z32)	ES200-R028

LINE/SIGNAL	PIN	SHEET/LINE
L026		
+ BUS OUT A BIT 4		
	T2Z11	ET200-L026
	(S2Z31)	ES200-R028
L026		
+ BUS OUT A BIT 5		
	T2Z04	ET200-L026
	(S2Z24)	ES200-R028
L026		
+ BUS OUT A BIT 6		
	T2Z09	ET200-L026
	(S2Z29)	ES200-R028
L026		
+ BUS OUT A BIT 7		
	T2Z07	ET200-L026
	(S2Z27)	ES200-R028
L026		
+ BUS OUT A BIT P		
	T2Z02	ET200-L026
	(S2Z22)	ES200-R028
L027		
- DISKETTE DRIVE SELECT 2		
	T2B07	ET200-L027
	(P2S08)	EP200-R038
L028		
- DISKETTE DRIVE BUSY 2		
	T2B08	ET200-L028
	(P2S03)	EP200-R040
L029		
+ CLOCK STOPPED SD2		
	T2Y07	ET200-L029
1A-B3	(Q2M07)	GQ200-R005
L030		
+ RUN METER SD2		
	T2Y03	ET200-L030
1A-B3	(Q2M03)	GQ200-R004
L031		
- COMMAND VALID (OUT) SD2		
	T2M23	ET200-L031
1A-B3	(R2M23)	GR200-R005
L032		
+ ERROR ALERT RESPONSE (OUT) SD2		
	T2M06	ET200-L032
	(T2D06)	ET200-R036
1A-B3	(R2M06)	GR200-R006
	S2J04	ES200-L020
L033		
- INVALID COMMAND SD2		
	T2M03	ET200-L033
1A-B3	(R2M03)	GR200-R009
L034		
- IML MICROCODE DETECTED ERR SD2		
	T2M04	ET200-L034
1A-B3	(R2M04)	GR200-R010

LINE/SIGNAL	PIN	SHEET/LINE
L035		
+ DISKETTE DRIVE REQUEST SD2		
	T2M07	ET200-L035
1A-B3	(R2M07)	GR200-R012
L036		
+ EXT BUS IN PC SD2		
	T2X06	ET200-L036
1A-B3	(R2X06)	GR200-R019
L037		
- ERROR ALERT (OUT) SD2		
	T2M28	ET200-L037
	(T2J10)	ET200-R023
1A-B3	(R2M28)	GR200-R037
	S2G08	ES200-L024
L038		
+ CHECK TWO TO INDICATOR SD2		
	T2X05	ET200-L038
1A-B3	(R2X05)	GR200-R018
R003		
- CONFIRM		
	(T2G05)	ET200-R003
	(S2G05)	ES200-R003
	P2D02	EP200-L014
R004		
- DISKETTE DRIVE REQUEST B		
	(T2B10)	ET200-R004
	P2J02	EP200-L037
R005		
- BUS OUT BIT 0		
	(T2D11)	ET200-R005
	(C2B04)	EC200-R003
	(E2M10)	EE200-R036
	(H2B04)	EH200-R003
	(J2P09)	EJ200-R019
	(Q2X28)	EQ200-R006
	(S2D11)	ES200-R005
	P2X28	EP200-L026
	Q2G08	EQ200-L007
R005		
- BUS OUT BIT 1		
	(T2J07)	ET200-R005
	(C2D05)	EC200-R004
	(E2M08)	EE200-R037
	(H2D05)	EH200-R004
	(J2M02)	EJ200-R015
	(Q2X09)	EQ200-R007
	(S2J07)	ES200-R005
	P2X09	EP200-L026
	Q2G09	EQ200-L007

LINE/SIGNAL	PIN	SHEET/LINE
R005		
- BUS OUT BIT 2		
	(T2J12)	ET200-R005
	(C2B05)	EC200-R005
	(E2M09)	EE200-R038
	(H2B05)	EH200-R005
	(J2M03)	EJ200-R016
	(Q2X29)	EQ200-R008
	(S2J12)	ES200-R005
	P2X29	EP200-L026
	Q2G07	EQ200-L007
R005		
- BUS OUT BIT 3		
	(T2J11)	ET200-R005
	(C2D06)	EC200-R006
	(E2P06)	EE200-R039
	(H2D06)	EH200-R006
	(J2P06)	EJ200-R018
	(Q2Y03)	EQ200-R009
	(S2J11)	ES200-R005
	P2Y03	EP200-L026
	Q2J09	EQ200-L007
R005		
- BUS OUT BIT 4		
	(T2B12)	ET200-R005
	(E2S05)	EE200-R032
	(J2M09)	EJ200-R017
	(S2B12)	ES200-R005
	Q2B09	EQ200-L007
R005		
- BUS OUT BIT 5		
	(T2J13)	ET200-R005
	(E2S08)	EE200-R033
	(J2G10)	EJ200-R011
	(S2J13)	ES200-R005
	Q2D06	EQ200-L007
R005		
- BUS OUT BIT 6		
	(T2J06)	ET200-R005
	(E2S04)	EE200-R034
	(J2G11)	EJ200-R012
	(S2J06)	ES200-R005
	Q2B08	EQ200-L007
R005		
- BUS OUT BIT 7		
	(T2B13)	ET200-R005
	(E2U06)	EE200-R035
	(J2G13)	EJ200-R013
	(S2B13)	ES200-R005
	Q2B07	EQ200-L007
R005		
- BUS OUT BIT P		
	(T2G12)	ET200-R005
	(E2P13)	EE200-R040
	(J2D12)	EJ200-R010
	(S2G12)	ES200-R005
	Q2D09	EQ200-L007

LINE/SIGNAL	PIN	SHEET/LINE
R006		
- VALIDATE DATA		
	(T2B03)	ET200-R006
	(S2B03)	ES200-R006
	P2P12	EP200-L015
R007		
- DISKETTE DRIVE HEAD ENGAGE		
	(T2J05)	ET200-R007
	(S2J05)	ES200-R007
	P2B04	EP200-L025
R008		
- CHECK TWO INDICATOR		
	(T2D13)	ET200-R008
	(S2D13)	ES200-R008
	Q2G12	EQ200-L040
R009		
- INVALID COMMAND		
	(T2B02)	ET200-R009
	(S2B02)	ES200-R009
	Q2J12	EQ200-L018
R010		
- EXT BUS IN PARITY CHECK		
	(T2D04)	ET200-R010
	(S2D04)	ES200-R010
	Q2J11	EQ200-L012
R011		
- SELECTED ERROR ALERT		
	(T2G09)	ET200-R011
	(Q2X26)	EQ200-R044
	(S2G09)	ES200-R011
	P2X26	EP200-L040
	Q2G10	EQ200-L036
R012		
- SEL UNUSED SD2		
	(T2M22)	ET200-R012
R013		
- IML MICROCODE DETECT ERROR		
	(T2G07)	ET200-R013
	(S2G07)	ES200-R013
	Q2J10	EQ200-L034
R014		
- INHIBIT P CORRECTION SD2		
	(T2X07)	ET200-R014
1A-B3	R2X07	GR200-L030
R015		
+ COMMAND VALID (IN) SD2		
	(T2X29)	ET200-R015
1A-B3	R2X29	GR200-L007
R016		
+ EXT BUS IN (SD2) BIT 0		
	(T2X09)	ET200-R016
1A-B3	R2X09	GR200-L031
R016		
+ EXT BUS IN (SD2) BIT 1		
	(T2X28)	ET200-R016
1A-B3	R2X28	GR200-L031

LINE/SIGNAL	PIN	SHEET/LINE
R016		
+ EXT BUS IN (SD2) BIT 2		
	(T2X33)	ET200-R016
1A-B3	R2X33	GR200-L031
R016		
+ EXT BUS IN (SD2) BIT 3		
	(T2X10)	ET200-R016
1A-B3	R2X10	GR200-L031
R016		
+ EXT BUS IN (SD2) BIT 4		
	(T2X11)	ET200-R016
1A-B3	R2X11	GR200-L031
R016		
+ EXT BUS IN (SD2) BIT 5		
	(T2X32)	ET200-R016
1A-B3	R2X32	GR200-L031
R016		
+ EXT BUS IN (SD2) BIT 6		
	(T2X13)	ET200-R016
1A-B3	R2X13	GR200-L031
R016		
+ EXT BUS IN (SD2) BIT 7		
	(T2X30)	ET200-R016
1A-B3	R2X30	GR200-L031
R016		
+ EXT BUS IN (SD2) BIT P		
	(T2X27)	ET200-R016
1A-B3	R2X27	GR200-L031
R017		
- EXT IAR BUS BIT 0		
	(T2P12)	ET200-R017
	(S2P12)	ES200-R017
	Q2U02	EQ200-L041
R017		
- EXT IAR BUS BIT 1		
	(T2P05)	ET200-R017
	(S2P05)	ES200-R017
	Q2M09	EQ200-L041
R017		
- EXT IAR BUS BIT 2		
	(T2M02)	ET200-R017
	(S2M02)	ES200-R017
	Q2P13	EQ200-L041
R017		
- EXT IAR BUS BIT 3		
	(T2M04)	ET200-R017
	(S2M04)	ES200-R017
	Q2S03	EQ200-L041
R017		
- EXT IAR BUS BIT 4		
	(T2M03)	ET200-R017
	(S2M03)	ES200-R017
	Q2S12	EQ200-L041

LINE/SIGNAL	PIN	SHEET/LINE
R017		
- EXT IAR BUS BIT 5		
	(T2M13)	ET200-R017
	(S2M13)	ES200-R017
	Q2U06	EQ200-L041
R017		
- EXT IAR BUS BIT 6		
	(T2M10)	ET200-R017
	(S2M10)	ES200-R017
	Q2U12	EQ200-L041
R017		
- EXT IAR BUS BIT 7		
	(T2P13)	ET200-R017
	(S2P13)	ES200-R017
	Q2U13	EQ200-L041
R017		
- EXT IAR BUS BIT 8		
	(T2P04)	ET200-R017
	(S2P04)	ES200-R017
	Q2M10	EQ200-L041
R017		
- EXT IAR BUS BIT 9		
	(T2M07)	ET200-R017
	(S2M07)	ES200-R017
	Q2M13	EQ200-L041
R017		
- EXT IAR BUS BIT 10		
	(T2P02)	ET200-R017
	(S2P02)	ES200-R017
	Q2M12	EQ200-L041
R017		
- EXT IAR BUS BIT 11		
	(T2P11)	ET200-R017
	(S2P11)	ES200-R017
	Q2S02	EQ200-L041
R017		
- EXT IAR BUS BIT 12		
	(T2P07)	ET200-R017
	(S2P07)	ES200-R017
	Q2U07	EQ200-L041
R017		
- EXT IAR BUS BIT 13		
	(T2P10)	ET200-R017
	(S2P10)	ES200-R017
	Q2S10	EQ200-L041
R017		
- EXT IAR BUS BIT 14		
	(T2M08)	ET200-R017
	(S2M08)	ES200-R017
	Q2U10	EQ200-L041
R017		
- EXT IAR BUS BIT 15		
	(T2P06)	ET200-R017
	(S2P06)	ES200-R017
	Q2S13	EQ200-L041

LINE/SIGNAL	PIN	SHEET/LINE
R018		
- BRANCH CONDITION MET		
	(T2M12)	ET200-R018
	(S2M12)	ES200-R018
R019		
- T1 CLOCK SELECTED		
	(T2M09)	ET200-R019
	(S2M09)	ES200-R019
	Q2B12	EQ200-L043
R020		
+ DISKETTE DRIVE DATA SD2		
	(T2M13)	ET200-R020
1A-B3	R2M13	GR200-L014
R021		
+ DISKETTE DRIVE INDEX SD2		
	(T2M33)	ET200-R021
1A-B3	R2M33	GR200-L015
R022		
+ DATA RECEIVED (IN) SD2		
	(T2X23)	ET200-R022
1A-B3	R2X23	GR200-L004
R023		
- ERROR ALERT (OUT) SD2		
	(T2J10)	ET200-R023
1A-B3	(R2M28)	GR200-R037
	S2G08	ES200-L024
	T2M28	ET200-L037
R024		
+ ERROR ALERT RESPONSE SD2		
	(T2X04)	ET200-R024
1A-B3	R2X04	GR200-L041
R025		
- ERROR ALERT (IN) SD2		
	(T2X24)	ET200-R025
1A-B3	R2X24	GR200-L036
R026		
+ CONFIRM (IN) SD2		
	(T2X02)	ET200-R026
1A-B3	R2X02	GR200-L005
R027		
+ CONFIRM (OUT) B		
	(T2Z33)	ET200-R027
	S2Z13	ES200-L025
R028		
+ BUS OUT B BIT 0		
	(T2Z25)	ET200-R028
	S2Z05	ES200-L026
R028		
+ BUS OUT B BIT 1		
	(T2Z30)	ET200-R028
	S2Z10	ES200-L026
R028		
+ BUS OUT B BIT 2		
	(T2Z23)	ET200-R028
	S2Z03	ES200-L026

LINE/SIGNAL	PIN	SHEET/LINE
R028		
+ BUS OUT B BIT 3		
	(T2Z32)	ET200-R028
	S2Z12	ES200-L026
R028		
+ BUS OUT B BIT 4		
	(T2Z31)	ET200-R028
	S2Z11	ES200-L026
R028		
+ BUS OUT B BIT 5		
	(T2Z24)	ET200-R028
	S2Z04	ES200-L026
R028		
+ BUS OUT B BIT 6		
	(T2Z29)	ET200-R028
	S2Z09	ES200-L026
R028		
+ BUS OUT B BIT 7		
	(T2Z27)	ET200-R028
	S2Z07	ES200-L026
R028		
+ BUS OUT B BIT P		
	(T2Z22)	ET200-R028
	S2Z02	ES200-L026
R029		
+ COMMAND VALID (OUT) B		
	(T2D02)	ET200-R029
	S2G04	ES200-L023
R030		
+ DISKETTE DRIVE SELECTED SD2		
	(T2X22)	ET200-R030
1A-B3	R2X22	GR200-L016
R031		
+ DISKETTE DRIVE BUSY SD2		
	(T2X03)	ET200-R031
1A-B3	R2X03	GR200-L017
R032		
+ SD2 SELECTED		
	(T2X25)	ET200-R032
1A-B3	R2X25	GR200-L035
R033		
- CLOCK STOPPED		
	(T2G13)	ET200-R033
	(S2G13)	ES200-R033
	Q2G13	EQ200-L019
R034		
- MDA RUN METER		
	(T2M05)	ET200-R034
	(S2M05)	ES200-R034
	P2P05	EP200-L044
R035		
- T1 CLOCK POWERED B		
	(T2P09)	ET200-R035
	P2B10	EP200-L046

LINE/SIGNAL	PIN	SHEET/LINE
R036		
+ ERROR ALERT RESPONSE (OUT) SD2		
	(T2D06)	ET200-R036
1A-B3	(R2H06)	GR200-R006
	S2J04	ES200-L020
	T2H06	ET200-L032
R037		
- ANY CHECK (OUT) 2		
	(T2G10)	ET200-R037
	(Q2Z31)	EQ200-R019
	P2Z31	EP200-L013
	Q2G04	EQ200-L016

SEQNO	PGE OF	FICHE CD	FRM	PAGEID	TYP	CARD NAME	MODEL	FEATURE	VERSION	CARD LOC
GA030	1	1	A01	AA000	BLI	N/A	N/A	N/A	N/A	N/A
GA030	3	1	A05	GC200	CRD	TCR	2X	2 CHANNEL	N-R TAILGATE	1A-B3C2
GA030	4	1	A07	GC200	XRL	TCR	2X	2 CHANNEL	N-R TAILGATE	1A-B3C2
GA030	5	1	A09	GC400	CRD	SBP	2X	2 CHANNEL	N-R TAILGATE	1A-B3C4
GA030	6	1	A11	GC400	XRL	SBP	2X	2 CHANNEL	N-R TAILGATE	1A-B3C4
GA030	7	1	A13	GC500	CRD	SBP	2X	2 CHANNEL	N-R TAILGATE	1A-B3C5
GA030	8	1	A15	GC500	XRL	SBP	2X	2 CHANNEL	N-R TAILGATE	1A-B3C5
GA030	9	1	A17	GD200	CRD	CIF	2X	2 CHANNEL	N-R TAILGATE	1A-B3D2
GA030	10	1	B01	GD200	XRL	CIF	2X	2 CHANNEL	N-R TAILGATE	1A-B3D2
GA030	12	1	B05	GE200	CRD	CIF	2X	2 CHANNEL	N-R TAILGATE	1A-B3E2
GA030	13	1	B07	GE200	XRL	CIF	2X	2 CHANNEL	N-R TAILGATE	1A-B3E2
GA030	15	1	B11	GF200	CRD	CSC	2X	2 CHANNEL	N-R TAILGATE	1A-B3F2
GA030	16	1	B13	GF200	XRL	CSC	2X	2 CHANNEL	N-R TAILGATE	1A-B3F2
GA030	18	1	B17	GG210	CRD	CDX	2X	2 CHANNEL	N-R TAILGATE	1A-B3G2
GA030	19	1	C01	GG210	XRL	CDX	2X	2 CHANNEL	N-R TAILGATE	1A-B3G2
GA030	21	1	C05	GH220	CRD	CSR	2X	2 CHANNEL	N-R TAILGATE	1A-B3H2
GA030	22	1	C07	GH220	XRL	CSR	2X	2 CHANNEL	N-R TAILGATE	1A-B3H2
GA030	25	1	C13	GJ200	CRD	DXA	2X	2 CHANNEL	N-R TAILGATE	1A-B3J2
GA030	26	1	C15	GJ200	XRL	DXA	2X	2 CHANNEL	N-R TAILGATE	1A-B3J2
GA030	29	1	D03	GK200	CRD	DXD	2X	2 CHANNEL	N-R TAILGATE	1A-B3K2
GA030	30	1	D05	GK200	XRL	DXD	2X	2 CHANNEL	N-R TAILGATE	1A-B3K2
GA030	33	1	D11	GL200	CRD	CMAA	2X	2 CHANNEL	N-R TAILGATE	1A-B3L2
GA030	34	1	D13	GL200	XRL	CMAA	2X	2 CHANNEL	N-R TAILGATE	1A-B3L2
GA030	36	1	D17	GM200	CRD	CMCA	2X	2 CHANNEL	N-R TAILGATE	1A-B3M2
GA030	37	1	E01	GM200	XRL	CMCA	2X	2 CHANNEL	N-R TAILGATE	1A-B3M2
GA030	40	1	E07	GN200	CRD	CMCD	2X	2 CHANNEL	N-R TAILGATE	1A-B3N2
GA030	41	1	E09	GN200	XRL	CMCD	2X	2 CHANNEL	N-R TAILGATE	1A-B3N2
GA030	44	2	A01	AA000	BLI	N/A	N/A	N/A	N/A	N/A
GA030	46	2	A05	GP200	CRD	CLK	2X	2 CHANNEL	N-R TAILGATE	1A-B3P2
GA030	47	2	A07	GP200	XRL	CLK	2X	2 CHANNEL	N-R TAILGATE	1A-B3P2
GA030	49	2	A11	GQ200	CRD	SDM	2X	2 CHANNEL	N-R TAILGATE	1A-B3Q2
GA030	50	2	A13	GQ200	XRL	SDM	2X	2 CHANNEL	N-R TAILGATE	1A-B3Q2
GA030	53	2	B01	GR200	CRD	MNT	2X	2 CHANNEL	N-R TAILGATE	1A-B3R2
GA030	54	2	B03	GR200	XRL	MNT	2X	2 CHANNEL	N-R TAILGATE	1A-B3R2
GA030	57	2	B09	GS200	CRD	SCS1	2X	2 CHANNEL	N-R TAILGATE	1A-B3S2
GA030	58	2	B11	GS200	XRL	SCS1	2X	2 CHANNEL	N-R TAILGATE	1A-B3S2
GA030	59	2	B13	GT200	CRD	SCS2	2X	2 CHANNEL	N-R TAILGATE	1A-B3T2
GA030	60	2	B15	GT200	XRL	SCS2	2X	2 CHANNEL	N-R TAILGATE	1A-B3T2
GA030	61	2	B17	GU200	CRD	DCSR	2X	2 CHANNEL	N-R TAILGATE	1A-B3U2
GA030	62	2	C01	GU200	XRL	DCSR	2X	2 CHANNEL	N-R TAILGATE	1A-B3U2
GA030	64	2	C05	GV200	CRD	DCT	2X	2 CHANNEL	N-R TAILGATE	1A-B3V2
GA030	65	2	C07	GV200	XRL	DCT	2X	2 CHANNEL	N-R TAILGATE	1A-B3V2
GA030	67	2	C11	GX200	CRD	DDCU	2X	2 CHANNEL	N-R TAILGATE	1A-B3X2
GA030	68	2	C13	GX200	XRL	DDCU	2X	2 CHANNEL	N-R TAILGATE	1A-B3X2

GLOSSARY OF ABBREVIATIONS USED

ABBR.	EXPLANATION
ASDM	AUXILIARY STORAGE DIRECTOR MICROCONTROLLER
BLI	BOARD LOGIC INDEX
CD	CARD (MICROFICHE)
CRD	CARD REFERENCE DIAGRAM
EW	ELECTRONIC WRAP
FRM	FRAME (MICROFICHE)
HDSCS	HIGH DENSITY STATIC CONTROL STORAGE
IR	INDIRECT REGISTER
MDM	VOLUME R30
PA	PORT ADAPTER (CMCD CARD)
SAR	STORAGE ADDRESS REGISTER
SB1	STORAGE BOARD 1
SD1	STORAGE DIRECTOR 1
SDM	STORAGE DIRECTOR MICROCONTROLLER
XRL	CROSS REFERENCE LIST
2X1	TWO CHANNEL SWITCH
4X1	TWO CHANNEL ADDITIONAL OR FOUR CHANNEL

NOTES USED ON CROSS REFERENCE PAGES

THE LEGEND ON THE CROSS REFERENCE PAGES
SHOW ( ) AS THE SOURCE(S) OF THE SIGNAL
AND * * AS THE CABLE SOCKET PINS

IN ADDITION THE FOLLOWING SPECIAL DESIGNATIONS
WILL ALSO SHOW ON THESE PAGES

ANANN FOLLOWED BY
+2-CH *ANANN* INDICATES PREWIRING FOR TWO CHANNEL ADDITIONAL
->MDM *AANNNN* REFERENCES MDM PAGE

->MNT *DEV * INDICATES A LINE TO THE MAINTENANCE DEVICE

NOTE: THE LINE NAME IN THE MDM MANUAL FOR A GIVEN NET WILL IN GENERAL NOT MATCH THE LINE NAME IN THE LRM EXACTLY.

NOTE: MANY OF THE LINE NAMES ARE OF THE FORM
'+ PPS BBB LINE NAME'
WHERE 'PP' IS THE LAST TWO CHARACTERS OF THE PNAME OF THE SOURCE. 'S' IS THE BOARD POSITION ON THE SOURCE AND 'BBB' IS A BOARD WITH WHICH THE LINE IS ASSOCIATED.

SEQNO	PGE OF	FICHE CD	FRM	PAGEID	TYP	CARD NAME	MODEL	FEATURE	VERSION	CARD LOC
GA030	70	2	C17	GX210	CRD	DDCV	2X	2 CHANNEL	N-R TAILGATE	1A-B3X2
GA030	71	2	D01	GX210	XRL	DDCV	2X	2 CHANNEL	N-R TAILGATE	1A-B3X2

GLOSSARY OF ABBREVIATIONS USED

ABBR.	EXPLANATION
ASDM	AUXILIARY STORAGE DIRECTOR MICROCONTROLLER
BLI	BOARD LOGIC INDEX
CD	CARD (MICROFICHE)
CRD	CARD REFERENCE DIAGRAM
EW	ELECTRONIC WRAP
FRM	FRAME (MICROFICHE)
HDSCS	HIGH DENSITY STATIC CONTROL STORAGE
IR	INDIRECT REGISTER
MDM	VOLUME R30
PA	PORT ADAPTER (CMCD CARD)
SAR	STORAGE ADDRESS REGISTER
SB1	STORAGE BOARD 1
SD1	STORAGE DIRECTOR 1
SDM	STORAGE DIRECTOR MICROCONTROLLER
XRL	CROSS REFERENCE LIST
2X1	TWO CHANNEL SWITCH
4X1	TWO CHANNEL ADDITIONAL OR FOUR CHANNEL

NOTES USED ON CROSS REFERENCE PAGES

THE LEGEND ON THE CROSS REFERENCE PAGES
SHOW ( ) AS THE SOURCE(S) OF THE SIGNAL
AND * * AS THE CABLE SOCKET PINS

IN ADDITION THE FOLLOWING SPECIAL DESIGNATIONS
WILL ALSO SHOW ON THESE PAGES

```
        *ANANN*          FOLLOWED BY
   +2-CH *ANANN* INDICATES PREWIRING FOR TWO CHANNEL ADDITIONAL

   ->MDM *AANNN* REFERENCES MDM PAGE

   ->MNT *DEV  * INDICATES A LINE TO THE MAINTENANCE DEVICE
```

NOTE: THE LINE NAME IN THE MDM MANUAL FOR A GIVEN NET WILL IN GENERAL NOT MATCH THE LINE NAME IN THE LRM EXACTLY.

NOTE: MANY OF THE LINE NAMES ARE OF THE FORM
'+ PPS BPB LINE NAME'
WHERE 'PP' IS THE LAST TWO CHARACTERS OF THE PNAME OF THE SOURCE. 'S' IS THE BOARD POSITION ON THE SOURCE AND 'BBB' IS A BOARD WITH WHICH THE LINE IS ASSOCIATED.

```
003 + REG 17 CTRL BIT 4 -------------G03
004 + REG 17 CTRL BIT 2 -------------G04
005 + REG 17 CTRL BIT 1 -------------J05
006 + REG 17 CTRL BIT P -------------J06
007 + LD EXT REG CLK C --------------B12
008 + EXT REG ADR 17 ----------------J02
009 + CIF/-SC/TCR CLOCK T2 ----------J04
010 + CIF/-SC/TCR CLOCK T4 ----------G05
011 + ALU OUT BITS 0:1 PARITY -------G02
012 - CHECK RESET --------------------J10
013 + SELECTIVE RESET LATCHED -------J11
014 + GATED CHECK 1 ------------------J09
015 + SPECIAL RESET ------------------G10
016 + RESET --------------------------G09
017 + CIF A SUPPRESS OUT ------------B05
018 + CIF B SUPPRESS OUT ------------B07
019 + CIF/-SC/TCR CLOCK T6 ----------J07
020 + CIF A RAW SYSTEM RESET --------D09
021 + CIF B RAW SYSTEM RESET --------D10
022 - ALU OUT BIT 0 ------------------B02
023 - ALU OUT BIT 1 ------------------D02
024 + CIF A NOTICE OF HDWR BUSY -----D06
025 + CIF B NOTICE OF HDWR BUSY -----D07
026 + CIF A SELECTED -----------------G07
027 + CIF B SELECTED -----------------G08
```

TCR CARD

OVERVIEW

The TCR card (two-channel condition register) contains four condition registers, a portion of the request in logic, logic gating and suppress out, and check circuits.

PRIMARY FUNCTIONS

- The allow disable register (CR1) contains a bit for each channel interface, when on, it does not allow the interface to be disabled with the current channel operation is complete.
- The unsupressible request in register (CR2) is used in the generation of the Request In signal.
- The control unit end register (CR3) is set when storage control ending status is presented.
- The suppressible request in register (CR6) generates and sends the Request in signal to the CSC card.
- Sends Request In and Suppress Out signals to the CIF card.

PRIMARY COMPONENTS

- Four registers described above.
- Long line drivers
- Inverters
- Register 17 decode and check

ERROR CHECKING

The majority of the TCR card logic is duplicated and compared. Any miscompare or a parity check from the decode or R17 check logic causes a TCR card check.

```
D12 - TCR CARD CHECK ---------------- 003
B09 - REG 17 (SD2) BIT 0 ------------ 004
B10 - REG 17 (SD2) BIT 1 ------------ 005
J12 + REQUEST IN CIF A (R17-SD2) --- 006
J13 + REQUEST IN CIF B (R17-SD2) --- 007
B04 - IML IN PROGRESS --------------- 008
D13 - SUPPRESS OUT ------------------ 009
G12 + ALLOW DISABLE CIF A (R17-SD2)  010
G13 + ALLOW DISABLE CIF B (R17-SD2)  011
```

LINE/SIGNAL	PIN	SHEET/LINE
L003		
+ REG 17 CTRL BIT 4		
	C2G03	GC200-L003
	(F2G07)	GF200-R027
L004		
+ REG 17 CTRL BIT 2		
	C2G04	GC200-L004
	(F2G08)	GF200-R028
L005		
+ REG 17 CTRL BIT 1		
	C2J05	GC200-L005
	(F2G09)	GF200-R029
L006		
+ REG 17 CTRL BIT P		
	C2J06	GC200-L006
	(F2G10)	GF200-R030
L007		
+ LD EXT REG CLK C		
	C2B12	GC200-L007
	(Q2U10)	GQ200-R014
	F2P04	GF200-L035
	H2M13	GH220-L013
L008		
+ EXT REG ADR 17		
	C2J02	GC200-L008
	(F2M07)	GF200-R032
L009		
+ CIF/-SC/TCR CLOCK T2		
	C2J04	GC200-L009
	(P2P11)	GP200-R015
	D2P02	GD200-L043
	E2P02	GE200-L043
	F2S04	GF200-L037
L010		
+ CIF/-SC/TCR CLOCK T4		
	C2G05	GC200-L010
	(P2P09)	GP200-R016
	D2M03	GD200-L044
	E2M03	GE200-L044
	F2P06	GF200-L038
L011		
+ ALU OUT BITS 0:1 PARITY		
	C2G02	GC200-L011
	(F2D10)	GF200-R042

LINE/SIGNAL	PIN	SHEET/LINE
L012		
- CHECK RESET		
	C2J10	GC200-L012
	(H2Y10)	GH220-R063
	(R2J05)	GR200-R028
	D2J06	GD200-L034
	E2J06	GE200-L034
	F2M04	GF200-L056
	G2B13	GG210-L015
	H2U12	GH220-L061
	J2Y10	GJ200-L024
	K2Y10	GK200-L023
	L2D02	GL200-L003
	N2M13	GN200-L024
	V2G08	GV200-L033
	X2S13	GX200-L017
L013		
+ SELECTIVE RESET LATCHED		
	C2J11	GC200-L013
	(F2S02)	GF200-R016
	R2D07	GR200-L040
L014		
+ GATED CHECK 1		
	C2J09	GC200-L014
	(R2P07)	GR200-R036
	F2J06	GF200-L041
L015		
+ SPECIAL RESET		
	C2G10	GC200-L015
	(R2B12)	GR200-R027
	D2G09	GD200-L032
	E2G09	GE200-L032
	F2M03	GF200-L055
	P2J05	GP200-L017
	X2P10	GX200-L051
L016		
+ RESET		
	C2G09	GC200-L016
	(R2B07)	GR200-R022
	D2M05	GD200-L031
	E2M05	GE200-L031
	F2M02	GF200-L054
	G2J13	GG210-L017
	H2S03	GH220-L060
	M2P11	GM200-L011
	P2J09	GP200-L022
	V2G13	GV200-L006
	X2M02	GX200-L005
L017		
+ CIF A SUPPRESS OUT		
	C2B05	GC200-L017
	(D2D06)	GD200-R010
1A-B3	*B2D10*	
+2-CH	*B2D10*	

LINE/SIGNAL	PIN	SHEET/LINE
L018		
+ CIF B SUPPRESS OUT		
	C2B07	GC200-L018
	(E2D06)	GE200-R010
1A-B3	*B2B13*	
+2-CH	*B2B13*	
L019		
+ CIF/-SC/TCR CLOCK T6		
	C2J07	GC200-L019
	(P2P07)	GP200-R017
	D2F04	GD200-L045
	E2P04	GE200-L045
	F2U06	GF200-L040
L020		
+ CIF A RAW SYSTEM RESET		
	C2D09	GC200-L020
	(D2B03)	GD200-R011
1A-B3	*B2D02*	
+2-CH	*B2D02*	
L021		
+ CIF B RAW SYSTEM RESET		
	C2D10	GC200-L021
	(E2B03)	GE200-R011
1A-B3	*B2B05*	
+2-CH	*B2B05*	
L022		
- ALU OUT BIT 0		
	C2B02	GC200-L022
	(Q2B04)	GQ200-R008
	F2D02	GF200-L019
	H2P12	GH220-L017
	J2U07	GJ200-L041
	N2B07	GN200-L012
	R2M02	GR200-L024
	V2D13	GV200-L007
	X2D13	GX200-L028
L023		
- ALU OUT BIT 1		
	C2D02	GC200-L023
	(Q2D05)	GQ200-R008
	F2D04	GF200-L020
	H2P13	GH220-L018
	J2U09	GJ200-L041
	N2D05	GN200-L013
	R2G12	GR200-L024
	V2B05	GV200-L008
	X2B05	GX200-L028
L024		
+ CIF A NOTICE OF HDWR BUSY		
	C2D06	GC200-L024
	(D2D04)	GD200-R009
1A-B3	*B2D06*	
+2-CH	*B2D06*	
L025		
+ CIF B NOTICE OF HDWR BUSY		
	C2D07	GC200-L025
	(E2D04)	GE200-R009
1A-B3	*B2B09*	
+2-CH	*B2B09*	

LINE/SIGNAL	PIN	SHEET/LINE
L026		
+ CIF A SELECTED		
	C2G07	GC200-L026
	(F2J07)	GF200-R009
	D2F06	GD200-L033
	E2U09	GE200-L006
L027		
+ CIF B SELECTED		
	C2G08	GC200-L027
	(F2G12)	GF200-R010
	D2U09	GD200-L006
	E2P06	GE200-L033
R003		
- TCR CARD CHECK		
	(C2D12)	GC200-R003
	F2P02	GF200-L048
R004		
- REG 17 (SD2) BIT 0		
	(C2B09)	GC200-R004
	F2J04	GF200-L050
R005		
- REG 17 (SD2) BIT 1		
	(C2B10)	GC200-R005
	F2J05	GF200-L051
R006		
+ REQUEST IN CIF A (R17-SD2)		
	(C2J12)	GC200-R006
	D2U04	GD200-L039
1A-B3	*A5D06*	
+2-CH	*A5D06*	
R007		
+ REQUEST IN CIF B (R17-SD2)		
	(C2J13)	GC200-R007
	E2U04	GE200-L039
1A-B3	*A5B09*	
+2-CH	*A5B09*	
R008		
- IML IN PROGRESS		
	(C2B04)	GC200-R008
	R2B04	GR200-L039
R009		
- SUPPRESS OUT		
	(C2D13)	GC200-R009
	F2D13	GF200-L011
R010		
+ ALLOW DISABLE CIF A (R17-SD2)		
	(C2G12)	GC200-R010
	D2S03	GD200-L010
1A-B3	*A5D02*	
+2-CH	*A5D02*	
R011		
+ ALLOW DISABLE CIF B (R17-SD2)		
	(C2G13)	GC200-R011
	E2S03	GE200-L010
1A-B3	*A5B05*	
+2-CH	*A5B05*	

003 + SELECT SIGNAL FROM CHAN B ---- B12
004 + POWER ON RESET POWERED --------B04

SBP CARD WITH ELECTRONIC WRAP

OVERVIEW

The SBP (select out bypass) card contains the necessary relays and discrete components required to supply the following functions:

- Electrical bypass for the Select Out or Select In signals when the storage control is powered off.
- Selection priority for the storage control. The storage control can be connected to either the Select Out or Select In portion of the select loop.

PRIMARY FUNCTIONS

- The Power On Reset and the CIF Diagnostic Wrap Mode lines are ORed together to control the automatic relay pick sequence for relays K1 and S1. The Power On Reset line originates in the maintenance card. When Power On Reset is active, the line indicates that the power is off.
- The drop, pick, and allow select delays supply a 10 ms delay between relay pick and drop signals to allow for relay contact bounce.
- During a power-off sequence or during the diagnostic wrap mode, the select signal relay logically disconnects the storage control from the channel interface.

  The select signal relay closes the Select Out bypass circuit, opens the connection from the Select Out signal to the select out receiver, and grounds the interface drivers.

- Relays S1, S2, and K1-K2 pick CKT

  The Relay Pick circuits are controlled by the Power On Reset or the CIF Diagnostic Wrap Mode lines. When the power is off or the Diagnostic Wrap mode is active, the relay K1 contacts close and relay S1 contacts open. When relay K1 contacts close, the Select Out or Select In signal is bypassed. When the power is on and the Diagnostic Wrap mode is inactive, relay S1 contacts are closed and relay K1 contacts are open.

PRIMARY COMPONENTS

- Relays
- Delay logic
- Inverters

ERROR CHECKING

- None

NOTE

Board is factory pre-wired "TO TRAP SELECT OUT CONNECT".

B05 + CHAN B SELECT SIGNAL --------- 003
B10 + CHAN B SELECT SIGNAL PROPAGATE 004
B08 - SBP ENABLE GATE TO CIF B ----- 005
D13 + SBP ENABLE GATE TO CIF B ----- 006
B02 - DRIVER 1 TEST POINT B -------- 007
B07 - CIF B DIAG WRAP MODE TO SBP -- 008
B09 - DRIVER 2 TEST POINT B -------- 009
D02 - SS 1 TEST POINT B ------------ 010
D05 - SS 2 TEST POINT B ------------ 011
D06 - SS 3 TEST POINT B ------------ 012
D07 + SS 3 TEST POINT B ------------ 013
B13 - ENABLE TEST POINT B ---------- 014
D10 - SBP ALLOW SELECT TO CIF B ---- 015

SELECT OUT BYPASS B XRL GC400

LINE/SIGNAL	PIN	SHEET/LINE
L003		
+ SELECT SIGNAL FROM CHAN B		
	C4B12	GC400-L003
	1A-B3 *B4D09*	
	1A-B3 *E1C11*	
	1A-B3 *E1B13*	
	1T-A2 *HB09 *	
	1T-A2 *KD09 *	
L004		
+ POWER ON RESET POWERED		
	C4B04	GC400-L004
	(P2B10)	GP200-R042
	C5B04	GC500-L004
	P2U07	GP200-L023
	U2D04	GU200-L022
R003		
+ CHAN B SELECT SIGNAL		
	(C4B05)	GC400-R003
	E2P09	GE200-L012
R004		
+ CHAN B SELECT SIGNAL PROPAGATE		
	(C4B10)	GC400-R004
	(E2M08)	GE200-R027
	1A-B3 *B4D10*	
	1A-B3 *E1D11*	
	1A-B3 *E1C13*	
	1T-A2 *HB09 *	
R005		
- SBP ENABLE GATE TO CIF B		
	(C4B08)	GC400-R005
R006		
+ SBP ENABLE GATE TO CIF B		
	(C4D13)	GC400-R006
	E2M07	GE200-L026
R007		
- DRIVER 1 TEST POINT B		
	(C4B02)	GC400-R007
R008		
- CIF B DIAG WRAP MODE TO SBP		
	(C4B07)	GC400-R008
	(E2S02)	GE200-R038
R009		
- DRIVER 2 TEST POINT B		
	(C4B09)	GC400-R009
R010		
- SS 1 TEST POINT B		
	(C4D02)	GC400-R010
R011		
- SS 2 TEST POINT B		
	(C4D05)	GC400-R011
R012		
- SS 3 TEST POINT B		
	(C4D06)	GC400-R012

LINE/SIGNAL	PIN	SHEET/LINE
R013		
+ SS 3 TEST POINT B		
	(C4D07)	GC400-R013
R014		
- ENABLE TEST POINT B		
	(C4B13)	GC400-R014
R015		
- SBP ALLOW SELECT TO CIF B		
	(C4D10)	GC400-R015
	E2S05	GE200-L011

003 + SELECT SIGNAL FROM CHAN A ---- B12
004 + POWER ON RESET POWERED --------B04

SBP CARD WITH ELECTRONIC WRAP

OVERVIEW

The SBP (select out bypass) card contains the necessary relays and discrete components required to supply the following functions:

- Electrical bypass for the Select Out or Select In signals when the storage control is powered off.
- Selection priority for the storage control. The storage control can be connected to either the Select Out or Select In portion of the select loop.

PRIMARY FUNCTIONS

- The Power On Reset and the CIF Diagnostic Wrap Mode lines are ORed together to control the automatic relay pick sequence for relays K1 and S1. The Power On Reset line originates in the maintenance card. When Power On Reset is active, the line indicates that the power is off.
- The drop, pick, and allow select delays supply a 10 ms delay between relay pick and drop signals to allow for relay contact bounce.
- During a power-off sequence or during the diagnostic wrap mode, the select signal relay logically disconnects the storage control from the channel interface.

  The select signal relay closes the Select Out bypass circuit, opens the connection from the Select Out signal to the select out receiver, and grounds the interface drivers.

- Relays S1, S2, and K1-K2 pick CKT

  The Relay Pick circuits are controlled by the Power On Reset or the CIF Diagnostic Wrap Mode lines. When the power is off or the Diagnostic Wrap mode is active, the relay K1 contacts close and relay S1 contacts open. When relay K1 contacts close, the Select Out or Select In signal is bypassed. When the power is on and the Diagnostic Wrap mode is inactive, relay S1 contacts are closed and relay K1 contacts are open.

PRIMARY COMPONENTS

- Relays
- Delay logic
- Inverters

ERROR CHECKING

- None

NOTE

Board is factory pre-wired "TO TRAP SELECT OUT CONNECT".

B05 + CHAN A SELECT SIGNAL --------- 003
B10 + CHAN A SELECT SIGNAL PROPAGATE 004
B08 - SBP ENABLE GATE TO CIF A ----- 005
D13 + SBP ENABLE GATE TO CIF A ----- 006
B02 - DRIVER 1 TEST POINT A -------- 007
B07 - CIF A DIAG WRAP MODE TO SBP -- 008
B09 - DRIVER 2 TEST POINT A -------- 009
D02 - SS 1 TEST POINT A ------------ 010
D05 - SS 2 TEST POINT A ------------ 011
D06 - SS 3 TEST POINT A ------------ 012
D07 + SS 3 TEST POINT A ------------ 013
B13 - ENABLE TEST POINT A ---------- 014
D10 - SBP ALLOW SELECT TO CIF A ---- 015

SELECT OUT BYPASS A XRL GC500

LINE/SIGNAL	PIN	SHEET/LINE
L003		
+ SELECT SIGNAL FROM CHAN A		
	C5B12	GC500-L003
1A-B3	*A4D09*	
1A-B3	*D1C11*	
1A-B3	*D1B13*	
1T-A2	*DB09 *	
1T-A2	*FD09 *	
L004		
+ POWER ON RESET POWERED		
	C5B04	GC500-L004
	(R2B10)	GR200-R042
	C4B04	GC400-L004
	P2U07	GP200-L023
	U2D04	GU200-L022
R003		
+ CHAN A SELECT SIGNAL		
	(C5B05)	GC500-R003
	D2P09	GD200-L012
R004		
+ CHAN A SELECT SIGNAL PROPAGATE		
	(C5B10)	GC500-R004
	(D2M08)	GD200-R027
1A-B3	*A4D10*	
1A-B3	*D1D11*	
1A-B3	*D1C13*	
1T-A2	*FD09 *	
R005		
- SBP ENABLE GATE TO CIF A		
	(C5B08)	GC500-R005
R006		
+ SBP ENABLE GATE TO CIF A		
	(C5D13)	GC500-R006
	D2M07	GD200-L026
R007		
- DRIVER 1 TEST POINT A		
	(C5B02)	GC500-R007
R008		
- CIF A DIAG WRAP MODE TO SBP		
	(C5B07)	GC500-R008
	(D2S02)	GD200-R038
R009		
- DRIVER 2 TEST POINT A		
	(C5B09)	GC500-R009
R010		
- SS 1 TEST POINT A		
	(C5D02)	GC500-R010
R011		
- SS 2 TEST POINT A		
	(C5D05)	GC500-R011
R012		
- SS 3 TEST POINT A		
	(C5D06)	GC500-R012

LINE/SIGNAL	PIN	SHEET/LINE
R013		
+ SS 3 TEST POINT A		
	(C5D07)	GC500-R013
R014		
- ENABLE TEST POINT A		
	(C5B13)	GC500-R014
R015		
- SBP ALLOW SELECT TO CIF A		
	(C5D10)	GC500-R015
	D2S05	GD200-L011

```
003 + SYSTEM RESET LATCH (-SC) ------X10
004 + CHAN DISCONNECT IN (-SC) ------X26
005 + FORCE PROPAGATE SEL OUT (-SC) -X07
006 + CIF B SELECTED ----------------U09
007 + FORCE DISABLE (-SC) -----------X06
008 - DISABLE CIF A (OP-PNL) SD2 --- U06
009 - ENABLE CIF A (OP-PNL) SD2 ---- S07
010 + ALLOW DISABLE CIF A (R17-SD2)  S03
011 - SBP ALLOW SELECT TO CIF A -----S05
012 + CHAN A SELECT SIGNAL ----------P09
013 + CHAN A HOLD OUT ---------------S12
014 + CHAN A ADDRESS OUT ------------M10
015 + CHAN A OPERATIONAL OUT --------U13
016 + CHAN A SUPPRESS OUT -----------M12
017 + CHAN A BUS OUT BIT (0-7,P) ====*
018 + CHAN A METERING OUT ----------U05
019 + CHAN A DATA OUT ---------------S10
020 + CHAN A SERVICE OUT ------------P13
021 + CHAN A COMMAND OUT ------------P11
022 + READ OR FORCE SWITCHES (-SC) --X11
023 + SET BUS IN DESKEW REG (CDX) ---Y28
024 + CHAN ADDRESS IN (-SC) ---------X24
025 + CHAN STATUS IN (-SC) ----------X25
026 + SBP ENABLE GATE TO CIF A ------M07
027 + ALLOW RUN CHANNEL (CDX) -------Y29
028 + WRITE OR SEARCH (CDX) ---------Y26
029 + READ AND NOT EOT --------------Y22
030 - GATE LRC TO BUS OUT (CSR) -----M09
031 + RESET -------------------------M05
032 + SPECIAL RESET -----------------G09
033 + CIF A SELECTED ----------------P06
034 - CHECK RESET --------------------J06
035 + CHAN DATA IN (CDX) ------------Y25
036 + CHAN SERVICE IN (CDX) ---------Y24
037 + CHAN BUS IN (CSR) BIT (0-7,P) =*
038 + CHAN OPERATIONAL IN (-SC) -----W33
039 + REQUEST IN CIF A (R17-SD2) --- U04
040 + STORAGE DIRECTOR BUSY (-SC) ---X05
041 + LONG SELECT (-SC) -------------X09
042 + CIF/-SC/TCR CLOCK T0 ----------J10
043 + CIF/-SC/TCR CLOCK T2 ----------P02
044 + CIF/-SC/TCR CLOCK T4 ----------M03
045 + CIF/-SC/TCR CLOCK T6 ----------P04
046 + CIF STOPPED ------------------ U02
```

CIF CARD (WITH EW)

OVERVIEW

The CIF card is the physical interface between the storage director and the Channel. There is one CIF card for each channel interface of the SD.

PRIMARY FUNCTIONS

- Monitors the channel interface for channel initiated selection (select-out, address out, and address on bus out match address set in CIF Address switches).
- Monitors the SD for Control unit initiated selections (Microcontroller/SDM Request-In sequence).
- Enables/disables interface. The interface is disabled by the following conditions.
  - Switch 8 of the address switches being on
  - OP panel switch being off and 'allow disable' line activity (no pending interrupts)
  - During IML, power on reset, or diagnostics
  - Forced disable-set by a second check-1 error during check-1 error recovery
- Connects the channel bus out and channel bus in to the channel data transfer (CDX) card
- Connects the channel tags out and channel tags in buses to the channel sequence control (CSC) card
- Transfers data between the channel and the CDX card
- Transfers status and control information between the channel and the channel sequence control (CSC) card
- Informs the storage director microcontroller (SDM) card of a system reset, a halt I/O, or selective reset
- Generates the short busy sequence when the microcontroller/SDM is busy during channel initiated selection
- Generates diagnostic tag and bus conditions for electronic channel wrap

PRIMARY COMPONENTS

- Channel drivers and receivers (NPL)
- Storage director address switches
- Address comparator
- Bus out deskew register
- Longitudinal redundancy check register
- Diagnostic tag and bus registers

ERROR CHECKING

- Bus out parity-(sense byte 18, bit 5, Format 2) Checked during command out time and automatic data transfer. Address out parity will not cause a bus out error, but will dis-allow an address compare.
- Bus in parity-(sense byte 11, bit 0, channel check-1) Checked during address-in, status-in, and automatic data transfer.
- CIF card check-(sense byte 11, bit 1, channel check-1) Bit 1 indicates the CIF card detected one of the following check conditions:
  - CIF clock check
  - CIF propagate select out failure
  - System reset logic failure
  - Pending system reset logic failure
  - Channel bus in (to the channel) parity check
  - Channel bus in (from the CDX card) parity check
  - Read or Force Switches line from CSC card is active during data transfer
  - CIF selected line is active with CU selected to other CIF line active

```
W25 - HALT I/O (TO -SC) ------------ 003
W26 - CHAN BUS OUT PC (TO -SC) ----- 004
X33 - ADDRESS OUT - TRAPPED (TO -SC) 005
X13 - SELECT OUT TRAPPED (TO -SC) -- 006
U10 - CIF A DISABLED (IND) SD2 ----- 007
G03 + CIF A REQUESTS SERVICE ------- 008
D04 + CIF A NOTICE OF HDWR BUSY ---- 009
D06 + CIF A SUPPRESS OUT ----------- 010
B03 + CIF A RAW SYSTEM RESET ------- 011
W22 - SYSTEM RESET (TO -SC) -------- 012
W24 - SELECTIVE RESET (TO -SC) ----- 013
D02 - CLOCK CHECK TWO -------------- 014
W03 - CHAN BUS OUT (TO CDX) BIT 0 -- 015
W05 - CHAN BUS OUT (TO CDX) BIT 1 -- 016
W06 - CHAN BUS OUT (TO CDX) BIT 2 -- 017
W07 - CHAN BUS OUT (TO CDX) BIT 3 -- 018
W09 - CHAN BUS OUT (TO CDX) BIT 4 -- 019
W10 - CHAN BUS OUT (TO CDX) BIT 5 -- 020
W11 - CHAN BUS OUT (TO CDX) BIT 6 -- 021
W13 - CHAN BUS OUT (TO CDX) BIT 7 -- 022
W02 - CHAN BUS OUT (TO CDX) BIT P -- 023
Y33 - DATA OUT (TO CDX/-SC) -------- 024
Y32 - SERVICE OUT (TO CDX/-SC) ----- 025
Y30 - COMMAND OUT (TO CDX/-SC) ----- 026
M08 + CHAN A SELECT SIGNAL PROPAGATE 027
U11 + CHAN A DISCONNECT IN --------- 028
P05 + CHAN A STATUS IN ------------- 029
M04 + CHAN A ADDRESS IN ------------ 030
S08 + CHAN A DATA IN --------------- 031
P07 + CHAN A SERVICE IN ------------ 032
*   + CHAN A BUS IN BIT (0-7,P) ==== 033
U07 + CHAN A REQUEST IN ------------ 034
M02 + CHAN A OPERATIONAL IN -------- 035
S04 + CHAN A METERING IN ----------- 036
J13 + CHAN A MARK IN --------------- 037
S02 - CIF A DIAG WRAP MODE TO SBP -- 038
W32 - ADDRESS OUT (TO CDX/-SC) ----- 039
X22 - CIF CARD CHECK (TO -SC) ------ 040
W28 - CHAN BUS IN PC (TO -SC) ------ 041
S13 - RUN METER -------------------- 042
```

LINE/SIGNAL	PIN	SHEET/LINE
L003		
+ SYSTEM RESET LATCH (-SC)		
	D2X10	GD200-L003
	(F2X10)	GF200-R036
	E2X10	GE200-L003
L004		
+ CHAN DISCONNECT IN (-SC)		
	D2X26	GD200-L004
	(F2X26)	GF200-R005
	E2X26	GE200-L004
L005		
+ FORCE PROPAGATE SEL OUT (-SC)		
	D2X07	GD200-L005
	(F2X07)	GF200-R007
	E2X07	GE200-L005
L006		
+ CIF B SELECTED		
	D2U09	GD200-L006
	(F2G12)	GF200-R010
	E2P06	GE200-L033
	C2G08	GC200-L027
L007		
+ FORCE DISABLE (-SC)		
	D2X06	GD200-L007
	(F2X06)	GF200-R014
	E2X06	GE200-L007
L008		
- DISABLE CIF A (OP-PNL) SD2		
	D2U06	GD200-L008
1A-B3 *A1A11*		
->MDM *YA171*		
L009		
- ENABLE CIF A (OP-PNL) SD2		
	D2S07	GD200-L009
1A-B3 *A1A13*		
->MDM *YA171*		
L010		
+ ALLOW DISABLE CIF A (R17-SD2)		
	D2S03	GD200-L010
	(C2G12)	GC200-R010
1A-B3 *A5D02*		
+2-CH *A5D02*		
L011		
- SBP ALLOW SELECT TO CIF A		
	D2S05	GD200-L011
	(C5D10)	GC500-R015
L012		
+ CHAN A SELECT SIGNAL		
	D2P09	GD200-L012
	(C5B05)	GC500-R003
L013		
+ CHAN A HOLD OUT		
	D2S12	GD200-L013
1A-B3 *A5B12*		
1T-A2 *DJ12 *		
1T-A2 *FG12 *		

LINE/SIGNAL	PIN	SHEET/LINE
L014		
+ CHAN A ADDRESS OUT		
	D2M10	GD200-L014
1A-B3 *A4B10*		
1T-A2 *DD10 *		
1T-A2 *FB10 *		
L015		
+ CHAN A OPERATIONAL OUT		
	D2U13	GD200-L015
1A-B3 *A5D13*		
1T-A2 *DG13 *		
1T-A2 *FJ13 *		
L016		
+ CHAN A SUPPRESS OUT		
	D2M12	GD200-L016
1A-B3 *A4B12*		
1T-A2 *DD12 *		
1T-A2 *FB12 *		
L017		
+ CHAN A BUS OUT BIT 0		
	D2D05	GD200-L017
1A-B3 *A2D05*		
1T-A2 *CB04 *		
1T-A2 *ED04 *		
L017		
+ CHAN A BUS OUT BIT 1		
	D2B04	GD200-L017
1A-B3 *A2B04*		
1T-A2 *CD05 *		
1T-A2 *EB05 *		
L017		
+ CHAN A BUS OUT BIT 2		
	D2D07	GD200-L017
1A-B3 *A2D07*		
1T-A2 *CB06 *		
1T-A2 *ED06 *		
L017		
+ CHAN A BUS OUT BIT 3		
	D2B08	GD200-L017
1A-B3 *A2B08*		
1T-A2 *CD08 *		
1T-A2 *EB08 *		
L017		
+ CHAN A BUS OUT BIT 4		
	D2D09	GD200-L017
1A-B3 *A2D09*		
1T-A2 *CB09 *		
1T-A2 *ED09 *		
L017		
+ CHAN A BUS OUT BIT 5		
	D2B10	GD200-L017
1A-B3 *A2B10*		
1T-A2 *CD10 *		
1T-A2 *EB10 *		

LINE/SIGNAL	PIN	SHEET/LINE
L017		
+ CHAN A BUS OUT BIT 6		
	D2D11	GD200-L017
1A-B3 *A2D11*		
1T-A2 *CB11 *		
1T-A2 *ED11 *		
L017		
+ CHAN A BUS OUT BIT 7		
	D2B12	GD200-L017
1A-B3 *A2B12*		
1T-A2 *CD12 *		
1T-A2 *EB12 *		
L017		
+ CHAN A BUS OUT BIT P		
	D2B02	GD200-L017
1A-B3 *A2B02*		
1T-A2 *CD03 *		
1T-A2 *EB03 *		
L018		
+ CHAN A METERING OUT		
	D2U05	GD200-L018
1A-B3 *A5D05*		
1T-A2 *DG04 *		
1T-A2 *FJ04 *		
L019		
+ CHAN A DATA OUT		
	D2S10	GD200-L019
1A-B3 *A5B10*		
1T-A2 *DJ10 *		
1T-A2 *FG10 *		
L020		
+ CHAN A SERVICE OUT		
	D2P13	GD200-L020
1A-B3 *A4D13*		
1T-A2 *DB13 *		
1T-A2 *FD13 *		
L021		
+ CHAN A COMMAND OUT		
	D2P11	GD200-L021
1A-B3 *A4D11*		
1T-A2 *DB11 *		
1T-A2 *FD11 *		
L022		
+ READ OR FORCE SWITCHES (-SC)		
	D2X11	GD200-L022
	(F2X11)	GF200-R003
	E2X11	GE200-L022
L023		
+ SET BUS IN DESKEW REG (CDX)		
	D2Y28	GD200-L023
	(G2Y28)	GG210-R043
	E2Y28	GE200-L023
L024		
+ CHAN ADDRESS IN (-SC)		
	D2X24	GD200-L024
	(F2X24)	GF200-R026
	E2X24	GE200-L024

LINE/SIGNAL	PIN	SHEET/LINE
L025		
+ CHAN STATUS IN (-SC)		
	D2X25	GD200-L025
	(F2X25)	GF200-R013
	E2X25	GE200-L025
L026		
+ SBP ENABLE GATE TO CIF A		
	D2M07	GD200-L026
	(C5D13)	GC500-R006
L027		
+ ALLOW RUN CHANNEL (CDX)		
	D2Y29	GD200-L027
	(G2Y29)	GG210-R037
	E2Y29	GE200-L027
L028		
+ WRITE OR SEARCH (CDX)		
	D2Y26	GD200-L028
	(G2Y26)	GG210-R049
	E2Y26	GE200-L028
L029		
+ READ AND NOT EOT		
	D2Y22	GD200-L029
	(G2Z30)	GG210-R032
	(H2Z30)	GH220-R048
	E2Y22	GE200-L029
	G2Y22	GG210-L038
L030		
- GATE LRC TO BUS OUT (CSR)		
	D2M09	GD200-L030
	(H2M05)	GH220-R058
	E2M09	GE200-L030
	G2B02	GG210-L034
L031		
+ RESET		
	D2M05	GD200-L031
	(R2B07)	GR200-R022
	E2M05	GE200-L031
	C2G09	GC200-L016
	F2M02	GF200-L054
	G2J13	GG210-L017
	H2S03	GH220-L060
	M2P11	GM200-L011
	P2J09	GP200-L022
	V2G13	GV200-L006
	X2M02	GX200-L005
L032		
+ SPECIAL RESET		
	D2G09	GD200-L032
	(R2B12)	GR200-R027
	E2G09	GE200-L032
	C2G10	GC200-L015
	F2M03	GF200-L055
	P2J05	GP200-L017
	X2P10	GX200-L051

LINE/SIGNAL	PIN	SHEET/LINE
L033		
+ CIF A SELECTED		
	D2P06	GD200-L033
	(F2J07)	GF200-R009
	E2U09	GE200-L006
	C2G07	GC200-L026
L034		
- CHECK RESET		
	D2J06	GD200-L034
	(H2Y10)	GH220-R063
	(R2J05)	GR200-R028
	E2J06	GE200-L034
	C2J10	GC200-L012
	F2M04	GF200-L056
	G2B13	GG210-L015
	H2U12	GH220-L061
	J2Y10	GJ200-L024
	K2Y10	GK200-L023
	L2D02	GL200-L003
	N2M13	GN200-L024
	V2G08	GV200-L033
	X2S13	GX200-L017
L035		
+ CHAN DATA IN (CDX)		
	D2Y25	GD200-L035
	(G2Y25)	GG210-R033
	E2Y25	GE200-L035
	F2Y25	GF200-L015
L036		
+ CHAN SERVICE IN (CDX)		
	D2Y24	GD200-L036
	(G2Y24)	GG210-R034
	E2Y24	GE200-L036
	F2Y24	GF200-L014
L037		
+ CHAN BUS IN (CSR) BIT 0		
	D2Y03	GD200-L037
	(G2Z03)	GG210-R003
	(H2Z03)	GH220-R008
	E2Y03	GE200-L037
	G2Y03	GG210-L003
L037		
+ CHAN BUS IN (CSR) BIT 1		
	D2Y05	GD200-L037
	(G2Z05)	GG210-R004
	(H2Z05)	GH220-R009
	E2Y05	GE200-L037
	G2Y05	GG210-L004
L037		
+ CHAN BUS IN (CSR) BIT 2		
	D2Y06	GD200-L037
	(G2Z06)	GG210-R005
	(H2Z06)	GH220-R010
	E2Y06	GE200-L037
	G2Y06	GG210-L005

LINE/SIGNAL	PIN	SHEET/LINE
L037		
+ CHAN BUS IN (CSR) BIT 3		
	D2Y07	GD200-L037
	(G2Z07)	GG210-R006
	(H2Z07)	GH220-R011
	E2Y07	GE200-L037
	G2Y07	GG210-L006
L037		
+ CHAN BUS IN (CSR) BIT 4		
	D2Y09	GD200-L037
	(G2Z09)	GG210-R007
	(H2Z09)	GH220-R012
	E2Y09	GE200-L037
	G2Y09	GG210-L007
L037		
+ CHAN BUS IN (CSR) BIT 5		
	D2Y10	GD200-L037
	(G2Z10)	GG210-R008
	(H2Z10)	GH220-R013
	E2Y10	GE200-L037
	G2Y10	GG210-L008
L037		
+ CHAN BUS IN (CSR) BIT 6		
	D2Y11	GD200-L037
	(G2Z11)	GG210-R009
	(H2Z11)	GH220-R014
	E2Y11	GE200-L037
	G2Y11	GG210-L009
L037		
+ CHAN BUS IN (CSR) BIT 7		
	D2Y13	GD200-L037
	(G2Z13)	GG210-R010
	(H2Z13)	GH220-R015
	E2Y13	GE200-L037
	G2Y13	GG210-L010
L037		
+ CHAN BUS IN (CSR) BIT P		
	D2Y02	GD200-L037
	(G2Z02)	GG210-R011
	(H2Z02)	GH220-R016
	E2Y02	GE200-L037
	G2Y02	GG210-L011
L038		
+ CHAN OPERATIONAL IN (-SC)		
	D2W33	GD200-L038
	(F2W33)	GF200-R006
	E2W33	GE200-L038
L039		
+ REQUEST IN CIF A (R17-SD2)		
	D2U04	GD200-L039
	(C2J12)	GC200-R006
1A-B3 *A5D06*		
+2-CH *A5D06*		
L040		
+ STORAGE DIRECTOR BUSY (-SC)		
	D2X05	GD200-L040
	(F2X05)	GF200-R046
	E2X05	GE200-L040

LINE/SIGNAL	PIN	SHEET/LINE
L041		
+ LONG SELECT (-SC)		
	D2X09	GD200-L041
	(F2X09)	GF200-R045
	E2X09	GE200-L041
L042		
+ CIF/-SC/TCR CLOCK T0		
	D2J10	GD200-L042
	(P2S03)	GP200-R014
	E2J10	GE200-L042
	F2P05	GF200-L036
L043		
+ CIF/-SC/TCR CLOCK T2		
	D2P02	GD200-L043
	(P2P11)	GP200-R015
	E2P02	GE200-L043
	C2J04	GC200-L009
	F2S04	GF200-L037
L044		
+ CIF/-SC/TCR CLOCK T4		
	D2N03	GD200-L044
	(P2P09)	GP200-R016
	E2N03	GE200-L044
	C2G05	GC200-L010
	F2P06	GF200-L038
L045		
+ CIF/-SC/TCR CLOCK T6		
	D2P04	GD200-L045
	(P2P07)	GP200-R017
	E2P04	GE200-L045
	C2J07	GC200-L019
	F2U06	GF200-L040
L046		
+ CIF STOPPED		
	D2U02	GD200-L046
	(P2P05)	GP200-R042
	E2U02	GE200-L046
R003		
- HALT I/O (TO -SC)		
	(D2W25)	GD200-R003
	(E2W25)	GE200-R003
	F2W25	GF200-L016
R004		
- CHAN BUS OUT PC (TO -SC)		
	(D2W26)	GD200-R004
	(E2W26)	GE200-R004
	F2W26	GF200-L047
R005		
- ADDRESS OUT - TRAPPED (TO -SC)		
	(D2X33)	GD200-R005
	(E2X33)	GE200-R005
	F2X33	GF200-L008
R006		
- SELECT OUT TRAPPED (TO -SC)		
	(D2X13)	GD200-R006
	(E2X13)	GE200-R006
	F2X13	GF200-L010
R007		
- CIF A DISABLED (IND) SD2		
	(D2U10)	GD200-R007
1A-B3	*A1E11*	
->MDM	*YA171*	
R008		
+ CIF A REQUESTS SERVICE		
	(D2G03)	GD200-R008
	F2D11	GF200-L004
1A-B3	*B3D02*	
+2-CH	*B3D02*	
R009		
+ CIF A NOTICE OF HDWR BUSY		
	(D2D04)	GD200-R009
	C2D06	GC200-L024
1A-B3	*B2D06*	
+2-CH	*B2D06*	
R010		
+ CIF A SUPPRESS OUT		
	(D2D06)	GD200-R010
	C2B05	GC200-L017
1A-B3	*B2D10*	
+2-CH	*B2D10*	
R011		
+ CIF A RAW SYSTEM RESET		
	(D2B03)	GD200-R011
	C2D09	GC200-L020
1A-B3	*B2D02*	
+2-CH	*B2D02*	
R012		
- SYSTEM RESET (TO -SC)		
	(D2W22)	GD200-R012
	(E2W22)	GE200-R012
	F2W22	GF200-L018
R013		
- SELECTIVE RESET (TO -SC)		
	(D2W24)	GD200-R013
	(E2W24)	GE200-R013
	F2W24	GF200-L017
R014		
- CLOCK CHECK TWO		
	(D2D02)	GD200-R014
	(E2D02)	GE200-R014
	(F2D02)	GF200-R041
	(G2S05)	GG210-R023
	(X2S09)	GX200-R032
	K2S12	GK200-L012
R015		
- CHAN BUS OUT (TO CDX) BIT 0		
	(D2W03)	GD200-R015
	(E2W03)	GE200-R015
	G2W03	GG210-L018
R016		
- CHAN BUS OUT (TO CDX) BIT 1		
	(D2W05)	GD200-R016
	(E2W05)	GE200-R016
	G2W05	GG210-L019
R017		
- CHAN BUS OUT (TO CDX) BIT 2		
	(D2W06)	GD200-R017
	(E2W06)	GE200-R017
	G2W06	GG210-L020
R018		
- CHAN BUS OUT (TO CDX) BIT 3		
	(D2W07)	GD200-R018
	(E2W07)	GE200-R018
	G2W07	GG210-L021
R019		
- CHAN BUS OUT (TO CDX) BIT 4		
	(D2W09)	GD200-R019
	(E2W09)	GE200-R019
	G2W09	GG210-L022
R020		
- CHAN BUS OUT (TO CDX) BIT 5		
	(D2W10)	GD200-R020
	(E2W10)	GE200-R020
	G2W10	GG210-L023
R021		
- CHAN BUS OUT (TO CDX) BIT 6		
	(D2W11)	GD200-R021
	(E2W11)	GE200-R021
	G2W11	GG210-L024
R022		
- CHAN BUS OUT (TO CDX) BIT 7		
	(D2W13)	GD200-R022
	(E2W13)	GE200-R022
	G2W13	GG210-L025
R023		
- CHAN BUS OUT (TO CDX) BIT P		
	(D2W02)	GD200-R023
	(E2W02)	GE200-R023
	G2W02	GG210-L026
R024		
- DATA OUT (TO CDX/-SC)		
	(D2Y33)	GD200-R024
	(E2Y33)	GE200-R024
	F2Y33	GF200-L013
	G2Y33	GG210-L013
R025		
- SERVICE OUT (TO CDX/-SC)		
	(D2Y32)	GD200-R025
	(E2Y32)	GE200-R025
	F2Y32	GF200-L012
	G2Y32	GG210-L012
R026		
- COMMAND OUT (TO CDX/-SC)		
	(D2Y30)	GD200-R026
	(E2Y30)	GE200-R026
	F2Y30	GF200-L009
	G2Y30	GG210-L014
R027		
+ CHAN A SELECT SIGNAL PROPAGATE		
	(D2M08)	GD200-R027
	(C5B10)	GC500-R004
1A-B3	*A4D10*	
1A-B3	*D1D11*	
1A-B3	*D1C13*	
1T-A2	*FD09 *	
R028		
+ CHAN A DISCONNECT IN		
	(D2U11)	GD200-R028
1A-B3	*A5D11*	
1T-A2	*DG11 *	
1T-A2	*FJ11 *	
R029		
+ CHAN A STATUS IN		
	(D2P05)	GD200-R029
1A-B3	*A4D05*	
1T-A2	*DB04 *	
1T-A2	*FD04 *	
R030		
+ CHAN A ADDRESS IN		
	(D2M04)	GD200-R030
1A-B3	*A4B04*	
1T-A2	*DD05 *	
1T-A2	*FB05 *	
R031		
+ CHAN A DATA IN		
	(D2S08)	GD200-R031
1A-B3	*A5B08*	
1T-A2	*DJ08 *	
1T-A2	*FG08 *	
R032		
+ CHAN A SERVICE IN		
	(D2P07)	GD200-R032
1A-B3	*A4D07*	
1T-A2	*DB06 *	
1T-A2	*FD06 *	
R033		
+ CHAN A BUS IN BIT 0		
	(D2J05)	GD200-R033
1A-B3	*A3D05*	
1T-A2	*CG04 *	
1T-A2	*EJ04 *	
R033		
+ CHAN A BUS IN BIT 1		
	(D2G04)	GD200-R033
1A-B3	*A3B04*	
1T-A2	*CJ05 *	
1T-A2	*EG05 *	
R033		
+ CHAN A BUS IN BIT 2		
	(D2J07)	GD200-R033
1A-B3	*A3D07*	
1T-A2	*CG06 *	
1T-A2	*EJ06 *	
R033		
+ CHAN A BUS IN BIT 3		
	(D2G08)	GD200-R033
1A-B3	*A3B08*	
1T-A2	*CJ08 *	
1T-A2	*EG08 *	
R033		
+ CHAN A BUS IN BIT 4		
	(D2J09)	GD200-R033
1A-B3	*A3D09*	
1T-A2	*CG09 *	
1T-A2	*EJ09 *	
R033		
+ CHAN A BUS IN BIT 5		
	(D2G10)	GD200-R033
1A-B3	*A3B10*	
1T-A2	*CJ10 *	
1T-A2	*EG10 *	
R033		
+ CHAN A BUS IN BIT 6		
	(D2J11)	GD200-R033
1A-B3	*A3D11*	
1T-A2	*CG11 *	
1T-A2	*EJ11 *	
R033		
+ CHAN A BUS IN BIT 7		
	(D2G12)	GD200-R033
1A-B3	*A3B12*	
1T-A2	*CG12 *	
1T-A2	*EJ12 *	
R033		
+ CHAN A BUS IN BIT P		
	(D2G02)	GD200-R033
1A-B3	*A3B02*	
1T-A2	*CJ03 *	
1T-A2	*EG03 *	
R034		
+ CHAN A REQUEST IN		
	(D2U07)	GD200-R034
1A-B3	*A5D07*	
1T-A2	*DG06 *	
1T-A2	*FJ06 *	
R035		
+ CHAN A OPERATIONAL IN		
	(D2M02)	GD200-R035
1A-B3	*A4B02*	
1T-A2	*DD03 *	
1T-A2	*FB03 *	
R036		
+ CHAN A METERING IN		
	(D2S04)	GD200-R036
1A-B3	*A5B04*	
1T-A2	*DJ05 *	
1T-A2	*FG05 *	
R037		
+ CHAN A MARK IN		
	(D2J13)	GD200-R037
1A-B3	*A3D13*	
1T-A2	*CG13 *	
1T-A2	*EJ13 *	
R038		
- CIF A DIAG WRAP MODE TO SBP		
	(D2S02)	GD200-R038
	(C5B07)	GC500-R008
R039		
- ADDRESS OUT (TO CDX/-SC)		
	(D2W32)	GD200-R039
	(E2W32)	GE200-R039
	F2W32	GF200-L003
	G2W32	GG210-L037
R040		
- CIF CARD CHECK (TO -SC)		
	(D2X22)	GD200-R040
	(E2X22)	GE200-R040
	F2X22	GF200-L042
R041		
- CHAN BUS IN PC (TO -SC)		
	(D2W28)	GD200-R041
	(E2W28)	GE200-R041
	F2W28	GF200-L046
R042		
- RUN METER		
	(D2S13)	GD200-R042
	(E2S13)	GE200-R042
	(R2Z03)	GR200-R003
	Q2Z03	GQ200-L004
	R2S03	GR200-L003

```
003 + SYSTEM RESET LATCH (-SC) ------X10
004 + CHAN DISCONNECT IN (-SC) ------X26
005 + FORCE PROPAGATE SEL OUT (-SC) -X07
006 + CIF A SELECTED ----------------U09
007 + FORCE DISABLE (-SC) -----------X06
008 - DISABLE CIF B (OP-PNL) SD2 --- U06
009 - ENABLE CIF B (OP-PNL) SD2 ---- S07
010 + ALLOW DISABLE CIF B (R17-SD2)  S03
011 - SBP ALLOW SELECT TO CIF B -----S05
012 + CHAN B SELECT SIGNAL ----------P09
013 + CHAN B HOLD OUT ---------------S12
014 + CHAN B ADDRESS OUT ------------M10
015 + CHAN B OPERATIONAL OUT --------U13
016 + CHAN B SUPPRESS OUT -----------M12
017 + CHAN B BUS OUT BIT (0-7,P) ====*
018 + CHAN B METERING OUT -----------U05
019 + CHAN B DATA OUT ---------------S10
020 + CHAN B SERVICE OUT ------------P13
021 + CHAN B COMMAND OUT ------------P11
022 + READ OR FORCE SWITCHES (-SC) --X11
023 + SET BUS IN DESKEW REG (CDX) ---Y28
024 + CHAN ADDRESS IN (-SC) ---------X24
025 + CHAN STATUS IN (-SC) ----------X25
026 + SBP ENABLE GATE TO CIF B ------M07
027 + ALLOW RUN CHANNEL (CDX) -------Y29
028 + WRITE OR SEARCH (CDX) ---------Y26
029 + READ AND NOT EOT --------------Y22
030 - GATE LRC TO BUS OUT (CSR) -----M09
031 + RESET -------------------------M05
032 + SPECIAL RESET -----------------G09
033 + CIF B SELECTED ----------------P06
034 - CHECK RESET --------------------J06
035 + CHAN DATA IN (CDX) ------------Y25
036 + CHAN SERVICE IN (CDX) ---------Y24
037 + CHAN BUS IN (CSR) BIT (0-7,P) =*
038 + CHAN OPERATIONAL IN (-SC) -----W33
039 + REQUEST IN CIF B (R17-SD2) --- U04
040 + STORAGE DIRECTOR BUSY (-SC) ---X05
041 + LONG SELECT (-SC) -------------X09
042 + CIF/-SC/TCR CLOCK T0 ----------J10
043 + CIF/-SC/TCR CLOCK T2 ----------P02
044 + CIF/-SC/TCR CLOCK T4 ----------M03
045 + CIF/-SC/TCR CLOCK T6 ----------P04
046 + CIF STOPPED ------------------ U02
```

CIF CARD (WITH EW)

OVERVIEW

The CIF card is the physical interface between the storage director and the Channel. There is one CIF card for each channel interface of the SD.

PRIMARY FUNCTIONS

- Monitors the channel interface for channel initiated selection (select-out, address out, and address on bus out match address set in CIF Address switches).
- Monitors the SD for Control unit initiated selections (Microcontroller/SDM Request-In sequence).
- Enables/disables interface. The interface is disabled by the following conditions.
  - Switch 8 of the address switches being on
  - OP panel switch being off and 'allow disable' line activity (no pending interrupts)
  - During IML, power on reset, or diagnostics
  - Forced disable-set by a second check-1 error during check-1 error recovery
- Connects the channel bus out and channel bus in to the channel data transfer (CDX) card
- Connects the channel tags out and channel tags in buses to the channel sequence control (CSC) card
- Transfers data between the channel and the CDX card
- Transfers status and control information between the channel and the channel sequence control (CSC) card
- Informs the storage director microcontroller (SDM) card of a system reset, a halt I/O, or selective reset
- Generates the short busy sequence when the microcontroller/SDM is busy during channel initiated selection
- Generates diagnostic tag and bus conditions for electronic channel wrap

PRIMARY COMPONENTS

- Channel drivers and receivers (NPL)
- Storage director address switches
- Address comparator
- Bus out deskew register
- Longitudinal redundancy check register
- Diagnostic tag and bus registers

ERROR CHECKING

- Bus out parity-(sense byte 18, bit 5, Format 2) Checked during command out time and automatic data transfer. Address out parity will not cause a bus out error, but will dis-allow an address compare.
- Bus in parity-(sense byte 11, bit 0, channel check-1) Checked during address-in, status-in, and automatic data transfer.
- CIF card check-(sense byte 11, bit 1, channel check-1) Bit 1 indicates the CIF card detected one of the following check conditions:
  - CIF clock check
  - CIF propagate select out failure
  - System reset logic failure
  - Pending system reset logic failure
  - Channel bus in (to the channel) parity check
  - Channel bus in (from the CDX card) parity check
  - Read or Force Switches line from CSC card is active during data transfer
  - CIF selected line is active with CU selected to other CIF line active

```
W25 - HALT I/O (TO -SC) ------------ 003
W26 - CHAN BUS OUT PC (TO -SC) ----- 004
X33 - ADDRESS OUT - TRAPPED (TO -SC) 005
X13 - SELECT OUT TRAPPED (TO -SC) -- 006
U10 - CIF B DISABLED (IND) SD2 ----- 007
G03 + CIF B REQUESTS SERVICE ------- 008
D04 + CIF B NOTICE OF HDWR BUSY ---- 009
D06 + CIF B SUPPRESS OUT ----------- 010
B03 + CIF B RAW SYSTEM RESET ------- 011
W22 - SYSTEM RESET (TO -SC) -------- 012
W24 - SELECTIVE RESET (TO -SC) ----- 013
D02 - CLOCK CHECK TWO -------------- 014
W03 - CHAN BUS OUT (TO CDX) BIT 0 -- 015
W05 - CHAN BUS OUT (TO CDX) BIT 1 -- 016
W06 - CHAN BUS OUT (TO CDX) BIT 2 -- 017
W07 - CHAN BUS OUT (TO CDX) BIT 3 -- 018
W09 - CHAN BUS OUT (TO CDX) BIT 4 -- 019
W10 - CHAN BUS OUT (TO CDX) BIT 5 -- 020
W11 - CHAN BUS OUT (TO CDX) BIT 6 -- 021
W13 - CHAN BUS OUT (TO CDX) BIT 7 -- 022
W02 - CHAN BUS OUT (TO CDX) BIT P -- 023
Y33 - DATA OUT (TO CDX/-SC) -------- 024
Y32 - SERVICE OUT (TO CDX/-SC) ----- 025
Y30 - COMMAND OUT (TO CDX/-SC) ----- 026
M08 + CHAN B SELECT SIGNAL PROPAGATE 027
U11 + CHAN B DISCONNECT IN --------- 028
P05 + CHAN B STATUS IN ------------- 029
M04 + CHAN B ADDRESS IN ------------ 030
S08 + CHAN B DATA IN --------------- 031
P07 + CHAN B SERVICE IN ------------ 032
*   + CHAN B BUS IN BIT (0-7,P) ==== 033
U07 + CHAN B REQUEST IN ------------ 034
M02 + CHAN B OPERATIONAL IN -------- 035
S04 + CHAN B METERING IN ----------- 036
J13 + CHAN B MARK IN --------------- 037
S02 - CIF B DIAG WRAP MODE TO SBP -- 038
W32 - ADDRESS OUT (TO CDX/-SC) ----- 039
X22 - CIF CARD CHECK (TO -SC) ------ 040
W28 - CHAN BUS IN PC (TO -SC) ------ 041
S13 - RUN METER -------------------- 042
```

LINE/SIGNAL	PIN	SHEET/LINE
L003		
+ SYSTEM RESET LATCH (-SC)		
	E2X10	GE200-L003
	(F2X10)	GF200-R036
	D2X10	GD200-L003
L004		
+ CHAN DISCONNECT IN (-SC)		
	E2X26	GE200-L004
	(F2X26)	GF200-R005
	D2X26	GD200-L004
L005		
+ FORCE PROPAGATE SEL OUT (-SC)		
	E2X07	GE200-L005
	(F2X07)	GF200-R007
	D2X07	GD200-L005
L006		
+ CIF A SELECTED		
	E2U09	GE200-L006
	(F2J07)	GF200-R009
	D2P06	GD200-L033
	C2G07	GC200-L026
L007		
+ FORCE DISABLE (-SC)		
	E2X06	GE200-L007
	(F2X06)	GF200-R014
	D2X06	GD200-L007
L008		
- DISABLE CIF B (OP-PNL) SD2		
	E2U06	GE200-L008
1A-B3 *A1D11*		
->MDM *YA171*		
L009		
- ENABLE CIF B (OP-PNL) SD2		
	E2S07	GE200-L009
1A-B3 *A1D13*		
->MDM *YA171*		
L010		
+ ALLOW DISABLE CIF B (R17-SD2)		
	E2S03	GE200-L010
	(C2G13)	GC200-R011
1A-B3 *A5B05*		
+2-CH *A5B05*		
L011		
- SBP ALLOW SELECT TO CIF B		
	E2S05	GE200-L011
	(C4D10)	GC400-R015
L012		
+ CHAN B SELECT SIGNAL		
	E2F09	GE200-L012
	(C4B05)	GC400-R003
L013		
+ CHAN B HOLD OUT		
	E2S12	GE200-L013
1A-B3 *B5B12*		
1T-A2 *HJ12 *		
1T-A2 *KG12 *		

LINE/SIGNAL	PIN	SHEET/LINE
L014		
+ CHAN B ADDRESS OUT		
	E2M10	GE200-L014
1A-B3 *B4B10*		
1T-A2 *HD10 *		
1T-A2 *KB10 *		
L015		
+ CHAN B OPERATIONAL OUT		
	E2U13	GE200-L015
1A-B3 *B5D13*		
1T-A2 *HG13 *		
1T-A2 *KJ13 *		
L016		
+ CHAN B SUPPRESS OUT		
	E2M12	GE200-L016
1A-B3 *B4B12*		
1T-A2 *HD12 *		
1T-A2 *KB12 *		
L017		
+ CHAN B BUS OUT BIT 0		
	E2D05	GE200-L017
1A-B3 *B2D05*		
1T-A2 *GB04 *		
1T-A2 *JD04 *		
L017		
+ CHAN B BUS OUT BIT 1		
	E2B04	GE200-L017
1A-B3 *B2B04*		
1T-A2 *GD05 *		
1T-A2 *JB05 *		
L017		
+ CHAN B BUS OUT BIT 2		
	E2D07	GE200-L017
1A-B3 *B2D07*		
1T-A2 *GB06 *		
1T-A2 *JD06 *		
L017		
+ CHAN B BUS OUT BIT 3		
	E2B08	GE200-L017
1A-B3 *B2B08*		
1T-A2 *GD08 *		
1T-A2 *JB08 *		
L017		
+ CHAN B BUS OUT BIT 4		
	E2D09	GE200-L017
1A-B3 *B2D09*		
1T-A2 *GB09 *		
1T-A2 *JD09 *		
L017		
+ CHAN B BUS OUT BIT 5		
	E2B10	GE200-L017
1A-B3 *B2B10*		
1T-A2 *GD10 *		
1T-A2 *JB10 *		

LINE/SIGNAL	PIN	SHEET/LINE
L017		
+ CHAN B BUS OUT BIT 6		
	E2D11	GE200-L017
1A-B3 *B2D11*		
1T-A2 *GB11 *		
1T-A2 *JD11 *		
L017		
+ CHAN B BUS OUT BIT 7		
	E2B12	GE200-L017
1A-B3 *B2B12*		
1T-A2 *GD12 *		
1T-A2 *JB12 *		
L017		
+ CHAN B BUS OUT BIT P		
	E2B02	GE200-L017
1A-B3 *B2B02*		
1T-A2 *GD03 *		
1T-A2 *JB03 *		
L018		
+ CHAN B METERING OUT		
	E2U05	GE200-L018
1A-B3 *B5D05*		
1T-A2 *HG04 *		
1T-A2 *KJ04 *		
L019		
+ CHAN B DATA OUT		
	E2S10	GE200-L019
1A-B3 *B5B10*		
1T-A2 *HJ10 *		
1T-A2 *KG10 *		
L020		
+ CHAN B SERVICE OUT		
	E2P13	GE200-L020
1A-B3 *B4D13*		
1T-A2 *HB13 *		
1T-A2 *KD13 *		
L021		
+ CHAN B COMMAND OUT		
	E2P11	GE200-L021
1A-B3 *B4D11*		
1T-A2 *HB11 *		
1T-A2 *KD11 *		
L022		
+ READ OR FORCE SWITCHES (-SC)		
	E2X11	GE200-L022
	(F2X11)	GF200-R003
	D2X11	GD200-L022
L023		
+ SET BUS IN DESKEW REG (CDX)		
	E2Y28	GE200-L023
	(G2Y28)	GG210-R043
	D2Y28	GD200-L023
L024		
+ CHAN ADDRESS IN (-SC)		
	E2X24	GE200-L024
	(F2X24)	GF200-R026
	D2X24	GD200-L024

LINE/SIGNAL	PIN	SHEET/LINE
L025		
+ CHAN STATUS IN (-SC)		
	E2X25	GE200-L025
	(F2X25)	GF200-R013
	D2X25	GD200-L025
L026		
+ SBP ENABLE GATE TO CIF B		
	E2M07	GE200-L026
	(C4D13)	GC400-R006
L027		
+ ALLOW RUN CHANNEL (CDX)		
	E2Y29	GE200-L027
	(G2Y29)	GG210-R037
	D2Y29	GD200-L027
L028		
+ WRITE OR SEARCH (CDX)		
	E2Y26	GE200-L028
	(G2Y26)	GG210-R049
	D2Y26	GD200-L028
L029		
+ READ AND NOT EOT		
	E2Y22	GE200-L029
	(G2Z30)	GG210-R032
	(H2Z30)	GH220-R048
	D2Y22	GD200-L029
	G2Y22	GG210-L038
L030		
- GATE LRC TO BUS OUT (CSR)		
	E2M09	GE200-L030
	(H2M05)	GH220-R058
	D2M09	GD200-L030
	G2B02	GG210-L034
L031		
+ RESET		
	E2M05	GE200-L031
	(R2B07)	GR200-R022
	D2M05	GD200-L031
	C2G09	GC200-L016
	F2M02	GF200-L054
	G2J13	GG210-L017
	H2S03	GH220-L060
	M2P11	GM200-L011
	P2J09	GP200-L022
	V2G13	GV200-L006
	X2M02	GX200-L005
L032		
+ SPECIAL RESET		
	E2G09	GE200-L032
	(R2B12)	GR200-R027
	D2G09	GD200-L032
	C2G10	GC200-L015
	F2M03	GF200-L055
	P2J05	GP200-L017
	X2P10	GX200-L051

LINE/SIGNAL	PIN	SHEET/LINE
L033		
+ CIF B SELECTED		
	E2P06	GE200-L033
	(F2G12)	GF200-R010
	D2U09	GD200-L006
	C2G08	GC200-L027
L034		
- CHECK RESET		
	E2J06	GE200-L034
	(H2Y10)	GH220-R063
	(R2J05)	GR200-R028
	D2J06	GD200-L034
	C2J10	GC200-L012
	F2M04	GF200-L056
	G2B13	GG210-L015
	H2U12	GH220-L061
	J2Y10	GJ200-L024
	K2Y10	GK200-L023
	L2D02	GL200-L003
	N2M13	GN200-L024
	V2G08	GV200-L033
	X2S13	GX200-L017
L035		
+ CHAN DATA IN (CDX)		
	E2Y25	GE200-L035
	(G2Y25)	GG210-R033
	D2Y25	GD200-L035
	F2Y25	GF200-L015
L036		
+ CHAN SERVICE IN (CDX)		
	E2Y24	GE200-L036
	(G2Y24)	GG210-R034
	D2Y24	GD200-L036
	F2Y24	GF200-L014
L037		
+ CHAN BUS IN (CSR) BIT 0		
	E2Y03	GE200-L037
	(G2Z03)	GG210-R003
	(H2Z03)	GH220-R008
	D2Y03	GD200-L037
	G2Y03	GG210-L003
L037		
+ CHAN BUS IN (CSR) BIT 1		
	E2Y05	GE200-L037
	(G2Z05)	GG210-R004
	(H2Z05)	GH220-R009
	D2Y05	GD200-L037
	G2Y05	GG210-L004
L037		
+ CHAN BUS IN (CSR) BIT 2		
	E2Y06	GE200-L037
	(G2Z06)	GG210-R005
	(H2Z06)	GH220-R010
	D2Y06	GD200-L037
	G2Y06	GG210-L005

LINE/SIGNAL	PIN	SHEET/LINE
L037		
+ CHAN BUS IN (CSR) BIT 3		
	E2Y07	GE200-L037
	(G2Z07)	GG210-R006
	(H2Z07)	GH220-R011
	D2Y07	GD200-L037
	G2Y07	GG210-L006
L037		
+ CHAN BUS IN (CSR) BIT 4		
	E2Y09	GE200-L037
	(G2Z09)	GG210-R007
	(H2Z09)	GH220-R012
	D2Y09	GD200-L037
	G2Y09	GG210-L007
L037		
+ CHAN BUS IN (CSR) BIT 5		
	E2Y10	GE200-L037
	(G2Z10)	GG210-R008
	(H2Z10)	GH220-R013
	D2Y10	GD200-L037
	G2Y10	GG210-L008
L037		
+ CHAN BUS IN (CSR) BIT 6		
	E2Y11	GE200-L037
	(G2Z11)	GG210-R009
	(H2Z11)	GH220-R014
	D2Y11	GD200-L037
	G2Y11	GG210-L009
L037		
+ CHAN BUS IN (CSR) BIT 7		
	E2Y13	GE200-L037
	(G2Z13)	GG210-R010
	(H2Z13)	GH220-R015
	D2Y13	GD200-L037
	G2Y13	GG210-L010
L037		
+ CHAN BUS IN (CSR) BIT P		
	E2Y02	GE200-L037
	(G2Z02)	GG210-R011
	(H2Z02)	GH220-R016
	D2Y02	GD200-L037
	G2Y02	GG210-L011
L038		
+ CHAN OPERATIONAL IN (-SC)		
	E2W33	GE200-L038
	(F2W33)	GF200-R006
	D2W33	GD200-L038
L039		
+ REQUEST IN CIF B (R17-SD2)		
	E2U04	GE200-L039
	(C2J13)	GC200-R007
1A-B3 *A5B09*		
+2-CH *A5B09*		
L040		
+ STORAGE DIRECTOR BUSY (-SC)		
	E2X05	GE200-L040
	(F2X05)	GF200-R046
	D2X05	GD200-L040

LINE/SIGNAL	PIN	SHEET/LINE
L041		
+ LONG SELECT (-SC)		
	E2X09	GE200-L041
	(F2X09)	GF200-R045
	D2X09	GD200-L041
L042		
+ CIF/-SC/TCR CLOCK T0		
	E2J10	GE200-L042
	(P2S03)	GP200-R014
	D2J10	GD200-L042
	F2P05	GF200-L036
L043		
+ CIF/-SC/TCR CLOCK T2		
	E2P02	GE200-L043
	(P2P11)	GP200-R015
	D2P02	GD200-L043
	C2J04	GC200-L009
	F2S04	GF200-L037
L044		
+ CIF/-SC/TCR CLOCK T4		
	E2M03	GE200-L044
	(P2P09)	GP200-R016
	D2M03	GD200-L044
	C2G05	GC200-L010
	F2P06	GF200-L038
L045		
+ CIF/-SC/TCR CLOCK T6		
	E2P04	GE200-L045
	(P2P07)	GP200-R017
	D2P04	GD200-L045
	C2J07	GC200-L019
	F2U06	GF200-L040
L046		
+ CIF STOPPED		
	E2U02	GE200-L046
	(P2P05)	GP200-R042
	D2U02	GD200-L046
R003		
- HALT I/O (TO -SC)		
	(E2W25)	GE200-R003
	(D2W25)	GD200-R003
	F2W25	GF200-L016
R004		
- CHAN BUS OUT PC (TO -SC)		
	(E2W26)	GE200-R004
	(D2W26)	GD200-R004
	F2W26	GF200-L047
R005		
- ADDRESS OUT - TRAPPED (TO -SC)		
	(E2X33)	GE200-R005
	(D2X33)	GD200-R005
	F2X33	GF200-L008
R006		
- SELECT OUT TRAPPED (TO -SC)		
	(E2X13)	GE200-R006
	(D2X13)	GD200-R006
	F2X13	GF200-L010

LINE/SIGNAL	PIN	SHEET/LINE
R007		
- CIF B DISABLED (IND) SD2		
	(E2U10)	GE200-R007
1A-B3	*B1A11*	
->MDM	*YA171*	
R008		
+ CIF B REQUESTS SERVICE		
	(E2G03)	GE200-R008
	F2D12	GF200-L005
1A-B3	*B3D06*	
+2-CH	*B3D06*	
R009		
+ CIF B NOTICE OF HDWR BUSY		
	(E2D04)	GE200-R009
	C2D07	GC200-L025
1A-B3	*B2B09*	
+2-CH	*B2B09*	
R010		
+ CIF B SUPPRESS OUT		
	(E2D06)	GE200-R010
	C2B07	GC200-L018
1A-B3	*B2B13*	
+2-CH	*B2B13*	
R011		
+ CIF B RAW SYSTEM RESET		
	(E2B03)	GE200-R011
	C2D10	GC200-L021
1A-B3	*B2B05*	
+2-CH	*B2B05*	
R012		
- SYSTEM RESET (TO -SC)		
	(E2W22)	GE200-R012
	(D2W22)	GD200-R012
	F2W22	GF200-L018
R013		
- SELECTIVE RESET (TO -SC)		
	(E2W24)	GE200-R013
	(D2W24)	GD200-R013
	F2W24	GF200-L017
R014		
- CLOCK CHECK TWO		
	(E2D02)	GE200-R014
	(D2D02)	GD200-R014
	(F2B02)	GF200-R041
	(G2S05)	GG210-R023
	(X2S09)	GX200-R032
	K2S12	GK200-L012
R015		
- CHAN BUS OUT (TO CDX) BIT 0		
	(E2W03)	GE200-R015
	(D2W03)	GD200-R015
	G2W03	GG210-L018
R016		
- CHAN BUS OUT (TO CDX) BIT 1		
	(E2W05)	GE200-R016
	(D2W05)	GD200-R016
	G2W05	GG210-L019

LINE/SIGNAL	PIN	SHEET/LINE
R017		
- CHAN BUS OUT (TO CDX) BIT 2		
	(E2W06)	GE200-R017
	(D2W06)	GD200-R017
	G2W06	GG210-L020
R018		
- CHAN BUS OUT (TO CDX) BIT 3		
	(E2W07)	GE200-R018
	(D2W07)	GD200-R018
	G2W07	GG210-L021
R019		
- CHAN BUS OUT (TO CDX) BIT 4		
	(E2W09)	GE200-R019
	(D2W09)	GD200-R019
	G2W09	GG210-L022
R020		
- CHAN BUS OUT (TO CDX) BIT 5		
	(E2W10)	GE200-R020
	(D2W10)	GD200-R020
	G2W10	GG210-L023
R021		
- CHAN BUS OUT (TO CDX) BIT 6		
	(E2W11)	GE200-R021
	(D2W11)	GD200-R021
	G2W11	GG210-L024
R022		
- CHAN BUS OUT (TO CDX) BIT 7		
	(E2W13)	GE200-R022
	(D2W13)	GD200-R022
	G2W13	GG210-L025
R023		
- CHAN BUS OUT (TO CDX) BIT P		
	(E2W02)	GE200-R023
	(D2W02)	GD200-R023
	G2W02	GG210-L026
R024		
- DATA OUT (TO CDX/-SC)		
	(E2Y33)	GE200-R024
	(D2Y33)	GD200-R024
	F2Y33	GF200-L013
	G2Y33	GG210-L013
R025		
- SERVICE OUT (TO CDX/-SC)		
	(E2Y32)	GE200-R025
	(D2Y32)	GD200-R025
	F2Y32	GF200-L012
	G2Y32	GG210-L012
R026		
- COMMAND OUT (TO CDX/-SC)		
	(E2Y30)	GE200-R026
	(D2Y30)	GD200-R026
	F2Y30	GF200-L009
	G2Y30	GG210-L014

LINE/SIGNAL	PIN	SHEET/LINE
R027		
+ CHAN B SELECT SIGNAL PROPAGATE		
	(E2M08)	GE200-R027
	(C4B10)	GC400-R004
1A-B3	*B4D10*	
1A-B3	*E1D11*	
1A-B3	*E1C13*	
1T-A2	*HB09 *	
R028		
+ CHAN B DISCONNECT IN		
	(E2U11)	GE200-R028
1A-B3	*B5D11*	
1T-A2	*HG11 *	
1T-A2	*KJ11 *	
R029		
+ CHAN B STATUS IN		
	(E2P05)	GE200-R029
1A-B3	*B4D05*	
1T-A2	*HB04 *	
1T-A2	*KD04 *	
R030		
+ CHAN B ADDRESS IN		
	(E2M04)	GE200-R030
1A-B3	*B4B04*	
1T-A2	*HD05 *	
1T-A2	*KB05 *	
R031		
+ CHAN B DATA IN		
	(E2S08)	GE200-R031
1A-B3	*B5B08*	
1T-A2	*HJ08 *	
1T-A2	*KG08 *	
R032		
+ CHAN B SERVICE IN		
	(E2P07)	GE200-R032
1A-B3	*B4D07*	
1T-A2	*HB06 *	
1T-A2	*KD06 *	
R033		
+ CHAN B BUS IN BIT 0		
	(E2J05)	GE200-R033
1A-B3	*B3D05*	
1T-A2	*GG04 *	
1T-A2	*JJ04 *	
R033		
+ CHAN B BUS IN BIT 1		
	(E2G04)	GE200-R033
1A-B3	*B3B04*	
1T-A2	*GJ05 *	
1T-A2	*JG05 *	
R033		
+ CHAN B BUS IN BIT 2		
	(E2J07)	GE200-R033
1A-B3	*B3D07*	
1T-A2	*GG06 *	
1T-A2	*JJ06 *	

LINE/SIGNAL	PIN	SHEET/LINE
R033		
+ CHAN B BUS IN BIT 3		
	(E2G08)	GE200-R033
1A-B3	*B3B08*	
1T-A2	*GJ08 *	
1T-A2	*JG08 *	
R033		
+ CHAN B BUS IN BIT 4		
	(E2J09)	GE200-R033
1A-B3	*B3D09*	
1T-A2	*GG09 *	
1T-A2	*JJ09 *	
R033		
+ CHAN B BUS IN BIT 5		
	(E2G10)	GE200-R033
1A-B3	*B3B10*	
1T-A2	*GJ10 *	
1T-A2	*JG10 *	
R033		
+ CHAN B BUS IN BIT 6		
	(E2J11)	GE200-R033
1A-B3	*B3D11*	
1T-A2	*GG11 *	
1T-A2	*JJ11 *	
R033		
+ CHAN B BUS IN BIT 7		
	(E2G12)	GE200-R033
1A-B3	*B3B12*	
1T-A2	*GJ12 *	
1T-A2	*JG12 *	
R033		
+ CHAN B BUS IN BIT P		
	(E2G02)	GE200-R033
1A-B3	*B3B02*	
1T-A2	*GJ03 *	
1T-A2	*JG03 *	
R034		
+ CHAN B REQUEST IN		
	(E2U07)	GE200-R034
1A-B3	*B5D07*	
1T-A2	*HG06 *	
1T-A2	*KJ06 *	
R035		
+ CHAN B OPERATIONAL IN		
	(E2M02)	GE200-R035
1A-B3	*B4B02*	
1T-A2	*HD03 *	
1T-A2	*KB03 *	
R036		
+ CHAN B METERING IN		
	(E2S04)	GE200-R036
1A-B3	*B5B04*	
1T-A2	*KG05 *	
1T-A2	*HJ05 *	

LINE/SIGNAL	PIN	SHEET/LINE
R037		
+ CHAN B MARK IN		
	(E2J13)	GE200-R037
1A-B3	*B3D13*	
1T-A2	*GG13 *	
1T-A2	*JJ13 *	
R038		
- CIF B DIAG WRAP MODE TO SBP		
	(E2S02)	GE200-R038
	(C4B07)	GC400-R008
R039		
- ADDRESS OUT (TO CDX/-SC)		
	(E2W32)	GE200-R039
	(D2W32)	GD200-R039
	F2W32	GF200-L003
	G2W32	GG210-L037
R040		
- CIF CARD CHECK (TO -SC)		
	(E2X22)	GE200-R040
	(D2X22)	GD200-R040
	F2X22	GF200-L042
R041		
- CHAN BUS IN PC (TO -SC)		
	(E2W28)	GE200-R041
	(D2W28)	GD200-R041
	F2W28	GF200-L046
R042		
- RUN METER		
	(E2S13)	GE200-R042
	(D2S13)	GD200-R042
	(R2Z03)	GR200-R003
	Q2Z03	GQ200-L004
	R2S03	GR200-L003

003 - ADDRESS OUT (TO CDX/-SC) ------W32
004 + CIF A REQUESTS SERVICE --------D11
005 + CIF B REQUESTS SERVICE --------D12
006 + CIF C REQUESTS SERVICE --------B12
007 + CIF D REQUESTS SERVICE --------B13
008 - ADDRESS OUT - TRAPPED (TO -SC)-X33
009 - COMMAND OUT (TO CDX/-SC) ------Y30
010 - SELECT OUT TRAPPED (TO -SC) ---X13
011 - SUPPRESS OUT ------------------D13
012 - SERVICE OUT (TO CDX/-SC) ------Y32
013 - DATA OUT (TO CDX/-SC) ---------Y33
014 + CHAN SERVICE IN (CDX) ---------Y24
015 + CHAN DATA IN (CDX) ------------Y25
016 - HALT I/O (TO -SC) -------------W25
017 - SELECTIVE RESET (TO -SC) ------W24
018 - SYSTEM RESET (TO -SC) ---------W22
019 - ALU OUT BIT 0 ------------------D02
020 - ALU OUT BIT 1 ------------------D04
021 - ALU OUT BIT 2 ------------------D05
022 - ALU OUT BIT 3 ------------------D06
023 - ALU OUT BIT 4 ------------------D07
024 - ALU OUT BIT 5 ------------------B07
025 - ALU OUT BIT 6 ------------------B08
026 - ALU OUT BIT 7 ------------------B09
027 - ALU OUT BIT P ------------------B10
028 - EXT REG ADDRESS BIT 0 ---------P09
029 - EXT REG ADDRESS BIT 1 ---------P10
030 - EXT REG ADDRESS BIT 2 ---------P11
031 - EXT REG ADDRESS BIT 3 ---------P12
032 - EXT REG ADDRESS BIT 4 ---------P13
033 - DEGATE CHAN EXT REGS (UNUSED) -S07
034 + LD EXT REG CLK A --------------U07
035 + LD EXT REG CLK C --------------P04
036 + CIF/-SC/TCR CLOCK T0 ----------P05
037 + CIF/-SC/TCR CLOCK T2 ----------S04
038 + CIF/-SC/TCR CLOCK T4 ----------P06
039 + CIF/-SC/TCR CLOCK T5 ----------M10
040 + CIF/-SC/TCR CLOCK T6 ----------U06
041 + GATED CHECK 1 ------------------J06
042 - CIF CARD CHECK (TO -SC) -------X22
043 - CSR CARD CHECK 1 --------------U10
044 - CDX CARD CHECK ----------------U12
045 - CHAN CLOCK CHECK A-D (TO -SC) -U13
046 - CHAN BUS IN PC (TO -SC) -------W28
047 - CHAN BUS OUT PC (TO -SC) ------W26
048 - TCR CARD CHECK ----------------P02
049 - TACR CARD CHECK ---------------X32
050 - REG 17 (SD2) BIT 0 ----------- J04
051 - REG 17 (SD2) BIT 1 ------------J05
052 - REG 17 (SD2) BIT 2 ------------X02
053 - REG 17 (SD2) BIT 3 ------------X03
054 + RESET --------------------------M02
055 + SPECIAL RESET ------------------M03
056 - CHECK RESET --------------------M04

CSC CARD

OVERVIEW

The CSC (channel sequence control) card provides the storage director with channel status and control information. It also monitors data transfer for errors.

PRIMARY FUNCTIONS

- Provides interface selection logic and connection control logic.
- Out tag lines, Halt I/O, Selective Reset and System Reset are latched and then sent to channel status registers.
- Decodes and gates external registers 16 through 23.
- Register 17 contains type-1 check logic and presents this information on ALU Bus In lines.
- The ALU and parity generator generates and checks parity for the ALU Bus Out lines.
- Disconnect In logic performs a disconnect - in sequence when the storage director detects a check condition and then waits for a selective reset.
- Chaining logic to perform entire chaining sequence.

PRIMARY COMPONENTS

- Card contains the following registers: CS1, CS2, CS3, CC1, CC2, and Register 17.

ERROR CHECKING

- Clocks are checked for out of sequence or failure to turn on conditions.
- In tag check logic uses Channel Service In and Data In lines to check for concurrence with Address In or Status In lines.
- Register 17 logic generates a type-1 check to the channel check latch when one of the following lines are active: CIF Card Check, CSR Card Check, CDX Card Check, Clock Check A-D, Clock Check E-H, or Bus In Parity Check. Bus Out parity Check, TCR Card Check, FCR/ECR Card Check FACR Card Check will also generate a type-1 check.

X11 + READ OR FORCE SWITCHES (-SC) - 003
J13 - SEL OUT TRAPPED INTERRUPT 2 -- 004
X26 + CHAN DISCONNECT IN (-SC) ----- 005
W33 + CHAN OPERATIONAL IN (-SC) ---- 006
X07 + FORCE PROPAGATE SEL OUT (-SC) 007
S03 + HIGH SPEED CHAN ACTIVE ------- 008
J07 + CIF A SELECTED ---------------- 009
G12 + CIF B SELECTED ---------------- 010
X29 + CIF C SELECTED ---------------- 011
X30 + CIF D SELECTED ---------------- 012
X25 + CHAN STATUS IN (-SC) --------- 013
X06 + FORCE DISABLE (-SC) ---------- 014
S05 + SELECTIVE OR SYSTEM RESET ---- 015
S02 + SELECTIVE RESET LATCHED ------ 016
J02 - ALU IN1 BIT 0 ----------------- 017
G02 - ALU IN1 BIT 1 ----------------- 018
G03 - ALU IN1 BIT 2 ----------------- 019
G04 - ALU IN1 BIT 3 ----------------- 020
G05 - ALU IN1 BIT 4 ----------------- 021
J09 - ALU IN1 BIT 5 ----------------- 022
J10 - ALU IN1 BIT 6 ----------------- 023
J11 - ALU IN1 BIT 7 ----------------- 024
J12 - ALU IN1 BIT P ----------------- 025
X24 + CHAN ADDRESS IN (-SC) -------- 026
G07 + REG 17 CTRL BIT 4 ------------ 027
G08 + REG 17 CTRL BIT 2 ------------ 028
G09 + REG 17 CTRL BIT 1 ------------ 029
G10 + REG 17 CTRL BIT P ------------ 030
M05 + EXT REG ACTIVE --------------- 031
M07 + EXT REG ADR 17 --------------- 032
M08 + EXT REG ADR 18 --------------- 033
M09 + EXT REG ADR 19 --------------- 034
D09 - SET CHAN BUS OUT REGISTER ---- 035
X10 + SYSTEM RESET LATCH (-SC) ----- 036
U04 + SYSTEM RESET (-SC) ----------- 037
S13 + HALT I/O LATCH --------------- 038
U02 - CHAN CHECK/TIMER INTERRUPT 1 - 039
S09 - CHECK TWO -------------------- 040
B02 - CLOCK CHECK TWO -------------- 041
D10 + ALU OUT BITS 0:1 PARITY ------ 042
X28 + ALU OUT BITS 2:3 PARITY ------ 043
B03 + ALU BUS OUT PARITY CHECK ----- 044
X09 + LONG SELECT (-SC) ------------ 045
X05 + STORAGE DIRECTOR BUSY (-SC) -- 046
G13 - GATE CHAN BUS OUT TO BUS IN -- 047
U09 + DISABLE RUN CHANNEL ---------- 048

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- ADDRESS OUT (TO CDX/-SC)		
	F2W32	GF200-L003
	(D2W32)	GD200-R039
	(E2W32)	GE200-R039
	G2W32	GG210-L037
L004		
+ CIF A REQUESTS SERVICE		
	F2D11	GF200-L004
	(D2G03)	GD200-R008
1A-B3	*B3D02*	
+2-CH	*B3D02*	
L005		
+ CIF B REQUESTS SERVICE		
	F2D12	GF200-L005
	(E2G03)	GE200-R008
1A-B3	*B3D06*	
+2-CH	*B3D06*	
L006		
+ CIF C REQUESTS SERVICE		
	F2B12	GF200-L006
1A-B3	*B3B05*	
+2-CH	*B3B05*	
L007		
+ CIF D REQUESTS SERVICE		
	F2B13	GF200-L007
1A-B3	*B3B09*	
+2-CH	*B3B09*	
L008		
- ADDRESS OUT - TRAPPED (TO -SC)		
	F2X33	GF200-L008
	(D2X33)	GD200-R005
	(E2X33)	GE200-R005
L009		
- COMMAND OUT (TO CDX/-SC)		
	F2Y30	GF200-L009
	(D2Y30)	GD200-R026
	(E2Y30)	GE200-R026
	G2Y30	GG210-L014
L010		
- SELECT OUT TRAPPED (TO -SC)		
	F2X13	GF200-L010
	(D2X13)	GD200-R006
	(E2X13)	GE200-R006
L011		
- SUPPRESS OUT		
	F2D13	GF200-L011
	(C2D13)	GC200-R009
L012		
- SERVICE OUT (TO CDX/-SC)		
	F2Y32	GF200-L012
	(D2Y32)	GD200-R025
	(E2Y32)	GE200-R025
	G2Y32	GG210-L012

LINE/SIGNAL	PIN	SHEET/LINE
L013		
- DATA OUT (TO CDX/-SC)		
	F2Y33	GF200-L013
	(D2Y33)	GD200-R024
	(E2Y33)	GE200-R024
	G2Y33	GG210-L013
L014		
+ CHAN SERVICE IN (CDX)		
	F2Y24	GF200-L014
	(G2Y24)	GG210-R034
	D2Y24	GD200-L036
	E2Y24	GE200-L036
L015		
+ CHAN DATA IN (CDX)		
	F2Y25	GF200-L015
	(G2Y25)	GG210-R033
	D2Y25	GD200-L035
	E2Y25	GE200-L035
L016		
- HALT I/O (TO -SC)		
	F2W25	GF200-L016
	(D2W25)	GD200-R003
	(E2W25)	GE200-R003
L017		
- SELECTIVE RESET (TO -SC)		
	F2W24	GF200-L017
	(D2W24)	GD200-R013
	(E2W24)	GE200-R013
L018		
- SYSTEM RESET (TO -SC)		
	F2W22	GF200-L018
	(D2W22)	GD200-R012
	(E2W22)	GE200-R012
L019		
- ALU OUT BIT 0		
	F2D02	GF200-L019
	(Q2B04)	GQ200-R008
	C2B02	GC200-L022
	H2P12	GH220-L017
	J2U07	GJ200-L041
	N2D07	GN200-L012
	R2M02	GR200-L024
	V2D13	GV200-L007
	X2D13	GX200-L028
L020		
- ALU OUT BIT 1		
	F2D04	GF200-L020
	(Q2D05)	GQ200-R008
	C2D02	GC200-L023
	H2P13	GH220-L018
	J2U09	GJ200-L041
	N2D05	GN200-L013
	R2G12	GR200-L024
	V2D05	GV200-L008
	X2B05	GX200-L028

LINE/SIGNAL	PIN	SHEET/LINE
L021		
- ALU OUT BIT 2		
	F2D05	GF200-L021
	(Q2D06)	GQ200-R008
	H2U02	GH220-L019
	J2P12	GJ200-L041
	N2D09	GN200-L014
	R2G13	GR200-L024
	V2D10	GV200-L009
	X2D10	GX200-L028
L022		
- ALU OUT BIT 3		
	F2D06	GF200-L022
	(Q2B05)	GQ200-R008
	H2U05	GH220-L020
	J2U02	GJ200-L041
	N2D10	GN200-L015
	R2M04	GR200-L024
	V2J02	GV200-L010
	X2J02	GX200-L028
L023		
- ALU OUT BIT 4		
	F2D07	GF200-L023
	(Q2D04)	GQ200-R008
	H2U06	GH220-L021
	J2B12	GJ200-L041
	N2D06	GN200-L016
	R2M03	GR200-L024
	V2B08	GV200-L011
	X2B08	GX200-L028
L024		
- ALU OUT BIT 5		
	F2B07	GF200-L024
	(Q2B03)	GQ200-R008
	H2U07	GH220-L022
	J2D06	GJ200-L041
	N2B09	GN200-L017
	R2P04	GR200-L024
	V2B03	GV200-L012
	X2B03	GX200-L028
L025		
- ALU OUT BIT 6		
	F2B08	GF200-L025
	(Q2D02)	GQ200-R008
	H2U09	GH220-L023
	N2G02	GN200-L018
	R2P02	GR200-L024
	V2D05	GV200-L013
	X2D05	GX200-L028
L026		
- ALU OUT BIT 7		
	F2B09	GF200-L026
	(Q2B02)	GQ200-R008
	J2B05	GJ200-L041
	N2B13	GN200-L019
	R2P05	GR200-L024
	V2D06	GV200-L014

LINE/SIGNAL	PIN	SHEET/LINE
L027		
- ALU OUT BIT P		
	F2B10	GF200-L027
	(Q2U04)	GQ200-R008
	N2D13	GN200-L020
	R2M05	GR200-L024
	V2B02	GV200-L015
L028		
- EXT REG ADDRESS BIT 0		
	F2P09	GF200-L028
	(Q2P12)	GQ200-R016
	K2B12	GK200-L003
	N2P12	GN200-L003
	R2M13	GR200-L009
	V2J07	GV200-L024
L029		
- EXT REG ADDRESS BIT 1		
	F2P10	GF200-L029
	(Q2M05)	GQ200-R016
	K2D13	GK200-L003
	N2M05	GN200-L004
	R2P11	GR200-L009
	V2J09	GV200-L025
L030		
- EXT REG ADDRESS BIT 2		
	F2P11	GF200-L030
	(Q2P05)	GQ200-R016
	K2B13	GK200-L003
	N2P05	GN200-L005
	R2M12	GR200-L009
	V2J10	GV200-L026
L031		
- EXT REG ADDRESS BIT 3		
	F2P12	GF200-L031
	(Q2M04)	GQ200-R016
	K2B10	GK200-L003
	N2M04	GN200-L006
	R2P10	GR200-L009
	V2J11	GV200-L027
L032		
- EXT REG ADDRESS BIT 4		
	F2P13	GF200-L032
	(Q2P04)	GQ200-R016
	K2D12	GK200-L003
	N2P04	GN200-L007
	R2P09	GR200-L009
	V2J12	GV200-L028
L033		
- DEGATE CHAN EXT REGS (UNUSED)		
	F2S07	GF200-L033
	K2B04	GK200-L028
L034		
+ LD EXT REG CLK A		
	F2U07	GF200-L034
	(Q2U09)	GQ200-R012

LINE/SIGNAL	PIN	SHEET/LINE
L035		
+ LD EXT REG CLK C		
	F2P04	GF200-L035
	(Q2U10)	GQ200-R014
	C2B12	GC200-L007
	H2M13	GH220-L013
L036		
+ CIF/-SC/TCR CLOCK T0		
	F2P05	GF200-L036
	(P2S03)	GP200-R014
	D2J10	GD200-L042
	E2J10	GE200-L042
L037		
+ CIF/-SC/TCR CLOCK T2		
	F2S04	GF200-L037
	(P2P11)	GP200-R015
	D2P02	GD200-L043
	E2P02	GE200-L043
	C2J04	GC200-L009
L038		
+ CIF/-SC/TCR CLOCK T4		
	F2P06	GF200-L038
	(P2P09)	GP200-R016
	D2M03	GD200-L044
	E2M03	GE200-L044
	C2G05	GC200-L010
L039		
+ CIF/-SC/TCR CLOCK T5		
	F2M10	GF200-L039
	(P2B12)	GP200-R052
L040		
+ CIF/-SC/TCR CLOCK T6		
	F2U06	GF200-L040
	(P2P07)	GP200-R017
	D2P04	GD200-L045
	E2P04	GE200-L045
	C2J07	GC200-L019
L041		
+ GATED CHECK 1		
	F2J06	GF200-L041
	(R2P07)	GR200-R036
	C2J09	GC200-L014
L042		
- CIF CARD CHECK (TO -SC)		
	F2X22	GF200-L042
	(D2X22)	GD200-R040
	(E2X22)	GE200-R040
L043		
- CSR CARD CHECK 1		
	F2U10	GF200-L043
	(H2P10)	GH220-R036
L044		
- CDX CARD CHECK		
	F2U12	GF200-L044
	(G2U05)	GG210-R025

LINE/SIGNAL	PIN	SHEET/LINE
L045		
- CHAN CLOCK CHECK A-D (TO -SC)		
	F2U13	GF200-L045
L046		
- CHAN BUS IN PC (TO -SC)		
	F2W28	GF200-L046
	(D2W28)	GD200-R041
	(E2W28)	GE200-R041
L047		
- CHAN BUS OUT PC (TO -SC)		
	F2W26	GF200-L047
	(D2W26)	GD200-R004
	(E2W26)	GE200-R004
L048		
- TCR CARD CHECK		
	F2P02	GF200-L048
	(C2D12)	GC200-R003
L049		
- TACR CARD CHECK		
	F2X32	GF200-L049
L050		
- REG 17 (SD2) BIT 0		
	F2J04	GF200-L050
	(C2B09)	GC200-R004
L051		
- REG 17 (SD2) BIT 1		
	F2J05	GF200-L051
	(C2B10)	GC200-R005
L052		
- REG 17 (SD2) BIT 2		
	F2X02	GF200-L052
L053		
- REG 17 (SD2) BIT 3		
	F2X03	GF200-L053
L054		
+ RESET		
	F2M02	GF200-L054
	(R2B07)	GR200-R022
	D2M05	GD200-L031
	E2M05	GE200-L031
	C2G09	GC200-L016
	G2J13	GG210-L017
	H2S03	GH220-L060
	M2P11	GM200-L011
	P2J09	GP200-L022
	V2G13	GV200-L006
	X2M02	GX200-L005
L055		
+ SPECIAL RESET		
	F2M03	GF200-L055
	(R2B12)	GR200-R027
	D2G09	GD200-L032
	E2G09	GE200-L032
	C2G10	GC200-L015
	P2J05	GP200-L017
	X2P10	GX200-L051

LINE/SIGNAL	PIN	SHEET/LINE
L056		
- CHECK RESET		
	F2M04	GF200-L056
	(H2Y10)	GH220-R063
	(R2J05)	GR200-R028
	D2J06	GD200-L034
	E2J06	GE200-L034
	C2J10	GC200-L012
	G2B13	GG210-L015
	H2U12	GH220-L061
	J2Y10	GJ200-L024
	K2Y10	GK200-L023
	L2D02	GL200-L003
	N2M13	GN200-L024
	V2G08	GV200-L033
	X2S13	GX200-L017
R003		
+ READ OR FORCE SWITCHES (-SC)		
	(F2X11)	GF200-R003
	D2X11	GD200-L022
	E2X11	GE200-L022
R004		
- SEL OUT TRAPPED INTERRUPT 2		
	(F2J13)	GF200-R004
	J2M10	GJ200-L066
R005		
+ CHAN DISCONNECT IN (-SC)		
	(F2X26)	GF200-R005
	D2X26	GD200-L004
	E2X26	GE200-L004
R006		
+ CHAN OPERATIONAL IN (-SC)		
	(F2W33)	GF200-R006
	D2W33	GD200-L038
	E2W33	GE200-L038
R007		
+ FORCE PROPAGATE SEL OUT (-SC)		
	(F2X07)	GF200-R007
	D2X07	GD200-L005
	E2X07	GE200-L005
R008		
+ HIGH SPEED CHAN ACTIVE		
	(F2S03)	GF200-R008
	G2G10	GG210-L040
	H2S08	GH220-L004
	J2D02	GJ200-L056
R009		
+ CIF A SELECTED		
	(F2J07)	GF200-R009
	D2P06	GD200-L033
	E2U09	GE200-L006
	C2G07	GC200-L026
R010		
+ CIF B SELECTED		
	(F2G12)	GF200-R010
	D2U09	GD200-L006
	E2P06	GE200-L033
	C2G08	GC200-L027

LINE/SIGNAL	PIN	SHEET/LINE
R011		
+ CIF C SELECTED		
	(F2X29)	GF200-R011
R012		
+ CIF D SELECTED		
	(F2X30)	GF200-R012
R013		
+ CHAN STATUS IN (-SC)		
	(F2X25)	GF200-R013
	D2X25	GD200-L025
	E2X25	GE200-L025
R014		
+ FORCE DISABLE (-SC)		
	(F2X06)	GF200-R014
	D2X06	GD200-L007
	E2X06	GE200-L007
R015		
+ SELECTIVE OR SYSTEM RESET		
	(F2S05)	GF200-R015
	M2G03	GM200-L004
R016		
+ SELECTIVE RESET LATCHED		
	(F2S02)	GF200-R016
	C2J11	GC200-L013
	R2D07	GR200-L040
R017		
- ALU IN1 BIT 0		
	(F2J02)	GF200-R017
	(H2D04)	GH220-R027
	(J2S05)	GJ200-R016
	(K2J02)	GK200-R016
	Q2M07	GQ200-L007
R018		
- ALU IN1 BIT 1		
	(F2G02)	GF200-R018
	(H2D05)	GH220-R028
	(J2S12)	GJ200-R016
	(K2G03)	GK200-R016
	Q2P07	GQ200-L007
R019		
- ALU IN1 BIT 2		
	(F2G03)	GF200-R019
	(H2D06)	GH220-R029
	(J2P10)	GJ200-R016
	(K2J05)	GK200-R016
	Q2M12	GQ200-L007
R020		
- ALU IN1 BIT 3		
	(F2G04)	GF200-R020
	(H2D09)	GH220-R030
	(J2S03)	GJ200-R016
	(K2G09)	GK200-R016
	Q2M09	GQ200-L007

LINE/SIGNAL	PIN	SHEET/LINE
R021		
- ALU IN1 BIT 4		
	(F2G05)	GF200-R021
	(H2D10)	GH220-R031
	(J2B10)	GJ200-R016
	(K2J06)	GK200-R016
	Q2M13	GQ200-L007
R022		
- ALU IN1 BIT 5		
	(F2J09)	GF200-R022
	(H2D12)	GH220-R032
	(J2B03)	GJ200-R016
	(K2G08)	GK200-R016
	Q2P13	GQ200-L007
R023		
- ALU IN1 BIT 6		
	(F2J10)	GF200-R023
	(H2D13)	GH220-R033
	(J2D04)	GJ200-R016
	(K2G07)	GK200-R016
	Q2S02	GQ200-L007
R024		
- ALU IN1 BIT 7		
	(F2J11)	GF200-R024
	(H2J02)	GH220-R034
	(J2B04)	GJ200-R016
	(K2J07)	GK200-R016
	Q2U02	GQ200-L007
R025		
- ALU IN1 BIT P		
	(F2J12)	GF200-R025
	(H2J04)	GH220-R035
	(J2S07)	GJ200-R016
	(K2G02)	GK200-R016
	Q2S03	GQ200-L007
R026		
+ CHAN ADDRESS IN (-SC)		
	(F2X24)	GF200-R026
	D2X24	GD200-L024
	E2X24	GE200-L024
R027		
+ REG 17 CTRL BIT 4		
	(F2G07)	GF200-R027
	C2G03	GC200-L003
R028		
+ REG 17 CTRL BIT 2		
	(F2G08)	GF200-R028
	C2G04	GC200-L004
R029		
+ REG 17 CTRL BIT 1		
	(F2G09)	GF200-R029
	C2J05	GC200-L005
R030		
+ REG 17 CTRL BIT P		
	(F2G10)	GF200-R030
	C2J06	GC200-L006

LINE/SIGNAL	PIN	SHEET/LINE
R031		
+ EXT REG ACTIVE		
	(F2M05)	GF200-R031
	R2J13	GR200-L020
R032		
+ EXT REG ADR 17		
	(F2M07)	GF200-R032
	C2J02	GC200-L008
R033		
+ EXT REG ADR 18		
	(F2M08)	GF200-R033
	H2S04	GH220-L015
	V2S05	GV200-L034
R034		
+ EXT REG ADR 19		
	(F2M09)	GF200-R034
	H2S05	GH220-L011
	J2U06	GJ200-L039
R035		
- SET CHAN BUS OUT REGISTER		
	(F2D09)	GF200-R035
	G2B12	GG210-L033
R036		
+ SYSTEM RESET LATCH (-SC)		
	(F2X10)	GF200-R036
	D2X10	GD200-L003
	E2X10	GE200-L003
R037		
+ SYSTEM RESET (-SC)		
	(F2U04)	GF200-R037
	R2U04	GR200-L038
R038		
+ HALT I/O LATCH		
	(F2S13)	GF200-R038
	G2S13	GG210-L035
	H2S13	GH220-L057
R039		
- CHAN CHECK/TIMER INTERRUPT 1		
	(F2U02)	GF200-R039
	(P2S13)	GP200-R058
	R2S12	GR200-L012
R040		
- CHECK TWO		
	(F2S09)	GF200-R040
	(J2U10)	GJ200-R017
	(N2D04)	GN200-R010
	(X2J09)	GX200-R021
	R2S09	GR200-L027
R041		
- CLOCK CHECK TWO		
	(F2B02)	GF200-R041
	(D2D02)	GD200-R014
	(E2D02)	GE200-R014
	(G2S05)	GG210-R023
	(X2S09)	GX200-R032
	K2S12	GK200-L012

LINE/SIGNAL	PIN	SHEET/LINE
R042		
+ ALU OUT BITS 0:1 PARITY		
	(F2D10)	GF200-R042
	C2G02	GC200-L011
R043		
+ ALU OUT BITS 2:3 PARITY		
	(F2X28)	GF200-R043
R044		
+ ALU BUS OUT PARITY CHECK		
	(F2B03)	GF200-R044
	R2G04	GR200-L043
R045		
+ LONG SELECT (-SC)		
	(F2X09)	GF200-R045
	D2X09	GD200-L041
	E2X09	GE200-L041
R046		
+ STORAGE DIRECTOR BUSY (-SC)		
	(F2X05)	GF200-R046
	D2X05	GD200-L040
	E2X05	GE200-L040
R047		
- GATE CHAN BUS OUT TO BUS IN		
	(F2G13)	GF200-R047
	H2J06	GH220-L012
R048		
+ DISABLE RUN CHANNEL		
	(F2U09)	GF200-R048
	G2U02	GG210-L016

```
003 + CHAN BUS IN (CSR) BIT 0 -------Y03
004 + CHAN BUS IN (CSR) BIT 1 -------Y05
005 + CHAN BUS IN (CSR) BIT 2 -------Y06
006 + CHAN BUS IN (CSR) BIT 3 -------Y07
007 + CHAN BUS IN (CSR) BIT 4 -------Y09
008 + CHAN BUS IN (CSR) BIT 5 -------Y10
009 + CHAN BUS IN (CSR) BIT 6 -------Y11
010 + CHAN BUS IN (CSR) BIT 7 -------Y13
011 + CHAN BUS IN (CSR) BIT P -------Y02
012 - SERVICE OUT (TO CDX/-SC) ------Y32
013 - DATA OUT (TO CDX/-SC) ---------Y33
014 - COMMAND OUT (TO CDX/-SC) ------Y30
015 - CHECK RESET --------------------B13
016 + DISABLE RUN CHANNEL -----------U02
017 + RESET -------------------------J13
018 - CHAN BUS OUT (TO CDX) BIT 0 ---W03
019 - CHAN BUS OUT (TO CDX) BIT 1 ---W05
020 - CHAN BUS OUT (TO CDX) BIT 2 ---W06
021 - CHAN BUS OUT (TO CDX) BIT 3 ---W07
022 - CHAN BUS OUT (TO CDX) BIT 4 ---W09
023 - CHAN BUS OUT (TO CDX) BIT 5 ---W10
024 - CHAN BUS OUT (TO CDX) BIT 6 ---W11
025 - CHAN BUS OUT (TO CDX) BIT 7 ---W13
026 - CHAN BUS OUT (TO CDX) BIT P ---W02
027 + CDX/CSR CLOCK T0 --------------G02
028 + CDX/CSR CLOCK T2 --------------G03
029 + CDX/CSR CLOCK T4 --------------G04
030 + CDX/CSR CLOCK T6 --------------G05
031 - NEED DATA GATED ---------------J02
032 - CDN SD2 ND/DR GATED CHANNEL -- J04
033 - SET CHAN BUS OUT REGISTER -----B12
034 - GATE LRC TO BUS OUT (CSR) -----B02
035 + HALT I/O LATCH ----------------S13
036 + LOAD ZERO TO CBO RETURN -------M13
037 - ADDRESS OUT (TO CDX/-SC) ------W32
038 + READ AND NOT EOT --------------Y22
039 - CHAN BYTE COUNT ZERO ----------S02
040 + HIGH SPEED CHAN ACTIVE --------G10
041 + GATE FINAL SET BI DESKEW IN ---P04
042 + WRT OR SEARCH AND NOT EOT -----Z29
043 + NEED 3 BYTES GATED ------------J10
044 + 3 BYTES READY -----------------J11
045 + CXC REG (CSR) BIT 0 -----------X03
046 + CXC REG (CSR) BIT 1 -----------X05
047 + CXC REG (CSR) BIT 2 -----------X06
048 + CXC REG (CSR) BIT 3 -----------X07
049 + CXC REG (CSR) BIT 4 -----------X09
050 + CXC REG (CSR) BIT 5 -----------X10
051 + CXC REG (CSR) BIT 6 -----------X11
052 + CXC REG (CSR) BIT 7 -----------X13
053 + CXC REG (CSR) BIT P -----------X02
054 + OFFSET INTERLOCK MODE GATED -- U09
055 - HALT CHANNEL REQUESTS (TO CDX) B04
```

CDX CARD

OVERVIEW

The CDX (channel data transfer) card transfers data between the channel and the device interface. Major functions are data transfer communication with the channel and communication with the data transfer logic. The CDX card also contains logic to start the read, write, and search operations.

PRIMARY FUNCTIONS

- Latches CBO (channel bus out) data into buffer registers A, B, C or D (write operation).
- CBO is loaded from registers A, B, C, or D (read operation).
- Sends reset lines to most logic blocks when any reset or IML command is active.
- Speed control register to perform data transfers within the channel at the data rate of the attached device.
- Mode decode logic for mode setting (i.e., read write, search equal, search high, or search high or equal).
- In tag control alternates Data In/Service In.
- Stop control logic generates the End Of Transfer line.

PRIMARY COMPONENTS

- Buffer Registers A, B, C, D
- CBO register
- Fill/empty buffer pointers and status registers

ERROR CHECKING

The following checks will generate a CDX card check:

- CBO load compare check
- Clock check
- CXC parity check
- Pending count parity check
- Timer/SPC parity check
- Increment pending over limit check


```
Z03 + CHAN BUS IN (CSR) BIT 0 ------ 003
Z05 + CHAN BUS IN (CSR) BIT 1 ------ 004
Z06 + CHAN BUS IN (CSR) BIT 2 ------ 005
Z07 + CHAN BUS IN (CSR) BIT 3 ------ 006
Z09 + CHAN BUS IN (CSR) BIT 4 ------ 007
Z10 + CHAN BUS IN (CSR) BIT 5 ------ 008
Z11 + CHAN BUS IN (CSR) BIT 6 ------ 009
Z13 + CHAN BUS IN (CSR) BIT 7 ------ 010
Z02 + CHAN BUS IN (CSR) BIT P ------ 011
U10 + SERVICE OUT TAG DELAYED 100NS  012
S09 + CHAN OVERRUN ----------------- 013
X24 + CBO REG (CDX) BIT 0 ---------- 014
X25 + CBO REG (CDX) BIT 1 ---------- 015
X26 + CBO REG (CDX) BIT 2 ---------- 016
X28 + CBO REG (CDX) BIT 3 ---------- 017
X29 + CBO REG (CDX) BIT 4 ---------- 018
X30 + CBO REG (CDX) BIT 5 ---------- 019
X32 + CBO REG (CDX) BIT 6 ---------- 020
X33 + CBO REG (CDX) BIT 7 ---------- 021
X22 + CBO REG (CDX) BIT P ---------- 022
S05 - CLOCK CHECK TWO -------------- 023
Z25 + CLK T0 OR T4 POWERED (CDX) --- 024
U05 - CDX CARD CHECK --------------- 025
S07 + TRUNCATION LATCH ------------- 026
U11 + TRUNCATION LATCH (UNUSED) ---- 027
S03 - TAKE DATA (CDX) -------------- 028
S04 - DATA TAKEN (CDX) ------------- 029
S10 + TAKE DATA OR DATA TAKEN ------ 030
J05 + CHECK CBO PARITY TIME -------- 031
Z30 + READ AND NOT EOT ------------- 032
Y25 + CHAN DATA IN (CDX) ----------- 033
Y24 + CHAN SERVICE IN (CDX) -------- 034
B07 - LOAD ZERO TO CBO ------------- 035
Z28 - HALT I/O CHECK --------------- 036
Y29 + ALLOW RUN CHANNEL (CDX) ------ 037
J06 + CHECK CBI PARITY ------------- 038
P05 + GATE FINAL SET BI DESKEW OUT - 039
G07 + CDX END OF TRANSFER ---------- 040
J07 - CDX INPUT EOT ---------------- 041
M02 + DECREMENT BYTE COUNTER ------- 042
Y28 + SET BUS IN DESKEW REG (CDX) -- 043
G09 + CHECK BYTE COUNT PARITY ------ 044
P02 + GO OR FINISH DECODE ---------- 045
B09 - LOAD CBI ---------------------- 046
Z24 + SEARCH (CDX) ----------------- 047
Z26 + WRITE (CDX) ------------------ 048
Y26 + WRITE OR SEARCH (CDX) -------- 049
P13 - WAIT OR NOT START ------------ 050
```

LINE/SIGNAL	PIN	SHEET/LINE
L003		
+ CHAN BUS IN (CSR) BIT 0		
	G2Y03	GG210-L003
	(G2Z03)	GG210-R003
	(H2Z03)	GH220-R008
	D2Y03	GD200-L037
	E2Y03	GE200-L037
L004		
+ CHAN BUS IN (CSR) BIT 1		
	G2Y05	GG210-L004
	(G2Z05)	GG210-R004
	(H2Z05)	GH220-R009
	D2Y05	GD200-L037
	E2Y05	GE200-L037
L005		
+ CHAN BUS IN (CSR) BIT 2		
	G2Y06	GG210-L005
	(G2Z06)	GG210-R005
	(H2Z06)	GH220-R010
	D2Y06	GD200-L037
	E2Y06	GE200-L037
L006		
+ CHAN BUS IN (CSR) BIT 3		
	G2Y07	GG210-L006
	(G2Z07)	GG210-R006
	(H2Z07)	GH220-R011
	D2Y07	GD200-L037
	E2Y07	GE200-L037
L007		
+ CHAN BUS IN (CSR) BIT 4		
	G2Y09	GG210-L007
	(G2Z09)	GG210-R007
	(H2Z09)	GH220-R012
	D2Y09	GD200-L037
	E2Y09	GE200-L037
L008		
+ CHAN BUS IN (CSR) BIT 5		
	G2Y10	GG210-L008
	(G2Z10)	GG210-R008
	(H2Z10)	GH220-R013
	D2Y10	GD200-L037
	E2Y10	GE200-L037
L009		
+ CHAN BUS IN (CSR) BIT 6		
	G2Y11	GG210-L009
	(G2Z11)	GG210-R009
	(H2Z11)	GH220-R014
	D2Y11	GD200-L037
	E2Y11	GE200-L037
L010		
+ CHAN BUS IN (CSR) BIT 7		
	G2Y13	GG210-L010
	(G2Z13)	GG210-R010
	(H2Z13)	GH220-R015
	D2Y13	GD200-L037
	E2Y13	GE200-L037

LINE/SIGNAL	PIN	SHEET/LINE
L011		
+ CHAN BUS IN (CSR) BIT P		
	G2Y02	GG210-L011
	(G2Z02)	GG210-R011
	(H2Z02)	GH220-R016
	D2Y02	GD200-L037
	E2Y02	GE200-L037
L012		
- SERVICE OUT (TO CDX/-SC)		
	G2Y32	GG210-L012
	(D2Y32)	GD200-R025
	(E2Y32)	GE200-R025
	F2Y32	GF200-L012
L013		
- DATA OUT (TO CDX/-SC)		
	G2Y33	GG210-L013
	(D2Y33)	GD200-R024
	(E2Y33)	GE200-R024
	F2Y33	GF200-L013
L014		
- COMMAND OUT (TO CDX/-SC)		
	G2Y30	GG210-L014
	(D2Y30)	GD200-R026
	(E2Y30)	GE200-R026
	F2Y30	GF200-L009
L015		
- CHECK RESET		
	G2B13	GG210-L015
	(H2Y10)	GH220-R063
	(R2J05)	GR200-R028
	D2J06	GD200-L034
	E2J06	GE200-L034
	C2J10	GC200-L012
	F2M04	GF200-L056
	H2U12	GH220-L061
	J2Y10	GJ200-L024
	K2Y10	GK200-L023
	L2D02	GL200-L003
	N2M13	GN200-L024
	V2G08	GV200-L033
	X2S13	GX200-L017
L016		
+ DISABLE RUN CHANNEL		
	G2U02	GG210-L016
	(F2U09)	GF200-R048
L017		
+ RESET		
	G2J13	GG210-L017
	(R2B07)	GR200-R022
	D2M05	GD200-L031
	E2M05	GE200-L031
	C2G09	GC200-L016
	F2M02	GF200-L054
	H2S03	GH220-L060
	M2P11	GM200-L011
	P2J09	GP200-L022
	V2G13	GV200-L006
	X2M02	GX200-L005

LINE/SIGNAL	PIN	SHEET/LINE
L018		
- CHAN BUS OUT (TO CDX) BIT 0		
	G2W03	GG210-L018
	(D2W03)	GD200-R015
	(E2W03)	GE200-R015
L019		
- CHAN BUS OUT (TO CDX) BIT 1		
	G2W05	GG210-L019
	(D2W05)	GD200-R016
	(E2W05)	GE200-R016
L020		
- CHAN BUS OUT (TO CDX) BIT 2		
	G2W06	GG210-L020
	(D2W06)	GD200-R017
	(E2W06)	GE200-R017
L021		
- CHAN BUS OUT (TO CDX) BIT 3		
	G2W07	GG210-L021
	(D2W07)	GD200-R018
	(E2W07)	GE200-R018
L022		
- CHAN BUS OUT (TO CDX) BIT 4		
	G2W09	GG210-L022
	(D2W09)	GD200-R019
	(E2W09)	GE200-R019
L023		
- CHAN BUS OUT (TO CDX) BIT 5		
	G2W10	GG210-L023
	(D2W10)	GD200-R020
	(E2W10)	GE200-R020
L024		
- CHAN BUS OUT (TO CDX) BIT 6		
	G2W11	GG210-L024
	(D2W11)	GD200-R021
	(E2W11)	GE200-R021
L025		
- CHAN BUS OUT (TO CDX) BIT 7		
	G2W13	GG210-L025
	(D2W13)	GD200-R022
	(E2W13)	GE200-R022
L026		
- CHAN BUS OUT (TO CDX) BIT P		
	G2W02	GG210-L026
	(D2W02)	GD200-R023
	(E2W02)	GE200-R023
L027		
+ CDX/CSR CLOCK T0		
	G2G02	GG210-L027
	(P2S02)	GP200-R026
	H2M09	GH220-L062
L028		
+ CDX/CSR CLOCK T2		
	G2G03	GG210-L028
	(P2M07)	GP200-R027
	H2M08	GH220-L063

LINE/SIGNAL	PIN	SHEET/LINE
L029		
+ CDX/CSR CLOCK T4		
	G2G04	GG210-L029
	(P2U04)	GP200-R028
	H2M10	GH220-L064
L030		
+ CDX/CSR CLOCK T6		
	G2G05	GG210-L030
	(P2U02)	GP200-R029
	H2M12	GH220-L065
L031		
- NEED DATA GATED		
	G2J02	GG210-L031
	(H2P11)	GH220-R003
L032		
- CDN SD2 ND/DR GATED CHANNEL		
	G2J04	GG210-L032
	(N2G04)	GN200-R040
	H2B10	GH220-L005
L033		
- SET CHAN BUS OUT REGISTER		
	G2B12	GG210-L033
	(F2D09)	GF200-R035
L034		
- GATE LRC TO BUS OUT (CSR)		
	G2B02	GG210-L034
	(H2M05)	GH220-R058
	D2M09	GD200-L030
	E2M09	GE200-L030
L035		
+ HALT I/O LATCH		
	G2S13	GG210-L035
	(F2S13)	GF200-R038
	H2S13	GH220-L057
L036		
+ LOAD ZERO TO CBO RETURN		
	G2M13	GG210-L036
	(H2M03)	GH220-R064
L037		
- ADDRESS OUT (TO CDX/-SC)		
	G2W32	GG210-L037
	(D2W32)	GD200-R039
	(E2W32)	GE200-R039
	F2W32	GF200-L003
L038		
+ READ AND NOT EOT		
	G2Y22	GG210-L038
	(G2Z30)	GG210-R032
	(H2Z30)	GH220-R048
	D2Y22	GD200-L029
	E2Y22	GE200-L029
L039		
- CHAN BYTE COUNT ZERO		
	G2S02	GG210-L039
	(H2U13)	GH220-R017

LINE/SIGNAL	PIN	SHEET/LINE
L040		
+ HIGH SPEED CHAN ACTIVE		
	G2G10	GG210-L040
	(F2S03)	GF200-R008
	H2S08	GH220-L004
	J2D02	GJ200-L056
L041		
+ GATE FINAL SET BI DESKEW IN		
	G2P04	GG210-L041
	(H2J10)	GH220-R059
L042		
+ WRT OR SEARCH AND NOT EOT		
	G2Z29	GG210-L042
	(H2Z29)	GH220-R047
L043		
+ NEED 3 BYTES GATED		
	G2J10	GG210-L043
	(H2B13)	GH220-R004
L044		
+ 3 BYTES READY		
	G2J11	GG210-L044
	(H2B07)	GH220-R005
L045		
+ CXC REG (CSR) BIT 0		
	G2X03	GG210-L045
	(H2X03)	GH220-R037
L046		
+ CXC REG (CSR) BIT 1		
	G2X05	GG210-L046
	(H2X05)	GH220-R038
L047		
+ CXC REG (CSR) BIT 2		
	G2X06	GG210-L047
	(H2X06)	GH220-R039
L048		
+ CXC REG (CSR) BIT 3		
	G2X07	GG210-L048
	(H2X07)	GH220-R040
L049		
+ CXC REG (CSR) BIT 4		
	G2X09	GG210-L049
	(H2X09)	GH220-R041
L050		
+ CXC REG (CSR) BIT 5		
	G2X10	GG210-L050
	(H2X10)	GH220-R042
L051		
+ CXC REG (CSR) BIT 6		
	G2X11	GG210-L051
	(H2X11)	GH220-R043
L052		
+ CXC REG (CSR) BIT 7		
	G2X13	GG210-L052
	(H2X13)	GH220-R044

LINE/SIGNAL	PIN	SHEET/LINE
L053		
+ CXC REG (CSR) BIT P		
	G2X02	GG210-L053
	(H2X02)	GH220-R045
L054		
+ OFFSET INTERLOCK MODE GATED		
	G2U09	GG210-L054
	(N2S04)	GN200-R063
L055		
- HALT CHANNEL REQUESTS (TO CDX)		
	G2B04	GG210-L055
	(N2P11)	GN200-R041
R003		
+ CHAN BUS IN (CSR) BIT 0		
	(G2Z03)	GG210-R003
	(H2Z03)	GH220-R008
	D2Y03	GD200-L037
	E2Y03	GE200-L037
	G2Y03	GG210-L003
R004		
+ CHAN BUS IN (CSR) BIT 1		
	(G2Z05)	GG210-R004
	(H2Z05)	GH220-R009
	D2Y05	GD200-L037
	E2Y05	GE200-L037
	G2Y05	GG210-L004
R005		
+ CHAN BUS IN (CSR) BIT 2		
	(G2Z06)	GG210-R005
	(H2Z06)	GH220-R010
	D2Y06	GD200-L037
	E2Y06	GE200-L037
	G2Y06	GG210-L005
R006		
+ CHAN BUS IN (CSR) BIT 3		
	(G2Z07)	GG210-R006
	(H2Z07)	GH220-R011
	D2Y07	GD200-L037
	E2Y07	GE200-L037
	G2Y07	GG210-L006
R007		
+ CHAN BUS IN (CSR) BIT 4		
	(G2Z09)	GG210-R007
	(H2Z09)	GH220-R012
	D2Y09	GD200-L037
	E2Y09	GE200-L037
	G2Y09	GG210-L007
R008		
+ CHAN BUS IN (CSR) BIT 5		
	(G2Z10)	GG210-R008
	(H2Z10)	GH220-R013
	D2Y10	GD200-L037
	E2Y10	GE200-L037
	G2Y10	GG210-L008

LINE/SIGNAL	PIN	SHEET/LINE
R009		
+ CHAN BUS IN (CSR) BIT 6		
	(G2Z11)	GG210-R009
	(H2Z11)	GH220-R014
	D2Y11	GD200-L037
	E2Y11	GE200-L037
	G2Y11	GG210-L009
R010		
+ CHAN BUS IN (CSR) BIT 7		
	(G2Z13)	GG210-R010
	(H2Z13)	GH220-R015
	D2Y13	GD200-L037
	E2Y13	GE200-L037
	G2Y13	GG210-L010
R011		
+ CHAN BUS IN (CSR) BIT P		
	(G2Z02)	GG210-R011
	(H2Z02)	GH220-R016
	D2Y02	GD200-L037
	E2Y02	GE200-L037
	G2Y02	GG210-L011
R012		
+ SERVICE OUT TAG DELAYED 100NS		
	(G2U10)	GG210-R012
	H2J05	GH220-L030
R013		
+ CHAN OVERRUN		
	(G2S09)	GG210-R013
	J2S10	GJ200-L044
R014		
+ CBO REG (CDX) BIT 0		
	(G2X24)	GG210-R014
	H2X24	GH220-L045
R015		
+ CBO REG (CDX) BIT 1		
	(G2X25)	GG210-R015
	H2X25	GH220-L046
R016		
+ CBO REG (CDX) BIT 2		
	(G2X26)	GG210-R016
	H2X26	GH220-L047
R017		
+ CBO REG (CDX) BIT 3		
	(G2X28)	GG210-R017
	H2X28	GH220-L048
R018		
+ CBO REG (CDX) BIT 4		
	(G2X29)	GG210-R018
	H2X29	GH220-L049
R019		
+ CBO REG (CDX) BIT 5		
	(G2X30)	GG210-R019
	H2X30	GH220-L050

LINE/SIGNAL	PIN	SHEET/LINE
R020		
+ CBO REG (CDX) BIT 6		
	(G2X32)	GG210-R020
	H2X32	GH220-L051
R021		
+ CBO REG (CDX) BIT 7		
	(G2X33)	GG210-R021
	H2X33	GH220-L052
R022		
+ CBO REG (CDX) BIT P		
	(G2X22)	GG210-R022
	H2X22	GH220-L053
R023		
- CLOCK CHECK TWO		
	(G2S05)	GG210-R023
	(D2D02)	GD200-R014
	(E2D02)	GE200-R014
	(F2B02)	GF200-R041
	(X2S09)	GX200-R032
	K2S12	GK200-L012
R024		
+ CLK TO OR T4 POWERED (CDX)		
	(G2Z25)	GG210-R024
	H2Z25	GH220-L054
R025		
- CDX CARD CHECK		
	(G2U05)	GG210-R025
	F2U12	GF200-L044
R026		
+ TRUNCATION LATCH		
	(G2S07)	GG210-R026
	H2D02	GH220-L059
	J2B07	GJ200-L047
R027		
+ TRUNCATION LATCH (UNUSED)		
	(G2U11)	GG210-R027
R028		
- TAKE DATA (CDX)		
	(G2S03)	GG210-R028
	H2S10	GH220-L003
R029		
- DATA TAKEN (CDX)		
	(G2S04)	GG210-R029
R030		
+ TAKE DATA OR DATA TAKEN		
	(G2S10)	GG210-R030
	H2G07	GH220-L042
	J2U05	GJ200-L003
	K2U09	GK200-L030
	N2S11	GN200-L025
R031		
+ CHECK CBO PARITY TIME		
	(G2J05)	GG210-R031
	H2J13	GH220-L032

LINE/SIGNAL	PIN	SHEET/LINE
R032		
+ READ AND NOT EOT		
	(G2Z30)	GG210-R032
	(H2Z30)	GH220-R048
	D2Y22	GD200-L029
	E2Y22	GE200-L029
	G2Y22	GG210-L038
R033		
+ CHAN DATA IN (CDX)		
	(G2Y25)	GG210-R033
	D2Y25	GD200-L035
	E2Y25	GE200-L035
	F2Y25	GF200-L015
R034		
+ CHAN SERVICE IN (CDX)		
	(G2Y24)	GG210-R034
	D2Y24	GD200-L036
	E2Y24	GE200-L036
	F2Y24	GF200-L014
R035		
- LOAD ZERO TO CBO		
	(G2B07)	GG210-R035
	H2G03	GH220-L044
R036		
- HALT I/O CHECK		
	(G2Z28)	GG210-R036
	H2Z28	GH220-L066
R037		
+ ALLOW RUN CHANNEL (CDX)		
	(G2Y29)	GG210-R037
	D2Y29	GD200-L027
	E2Y29	GE200-L027
R038		
+ CHECK CBI PARITY		
	(G2J06)	GG210-R038
	H2D11	GH220-L028
R039		
+ GATE FINAL SET BI DESKEW OUT		
	(G2P05)	GG210-R039
R040		
+ CDX END OF TRANSFER		
	(G2G07)	GG210-R040
	H2S02	GH220-L055
R041		
- CDX INPUT EOT		
	(G2J07)	GG210-R041
R042		
+ DECREMENT BYTE COUNTER		
	(G2M02)	GG210-R042
	H2S07	GH220-L014
R043		
+ SET BUS IN DESKEW REG (CDX)		
	(G2Y28)	GG210-R043
	D2Y28	GD200-L023
	E2Y28	GE200-L023

LINE/SIGNAL	PIN	SHEET/LINE
R044		
+ CHECK BYTE COUNT PARITY		
	(G2G09)	GG210-R044
	H2M07	GH220-L010
R045		
+ GO OR FINISH DECODE		
	(G2P02)	GG210-R045
	H2S12	GH220-L058
R046		
- LOAD CBI		
	(G2B09)	GG210-R046
	H2P06	GH220-L027
R047		
+ SEARCH (CDX)		
	(G2Z24)	GG210-R047
	H2Z24	GH220-L043
R048		
+ WRITE (CDX)		
	(G2Z26)	GG210-R048
	H2Z26	GH220-L016
R049		
+ WRITE OR SEARCH (CDX)		
	(G2Y26)	GG210-R049
	D2Y26	GD200-L028
	E2Y26	GE200-L028
R050		
- WAIT OR NOT START		
	(G2P13)	GG210-R050
	H2S09	GH220-L056

003 - TAKE DATA (CDX) ----------S10
004 + HIGH SPEED CHAN ACTIVE --------S08
005 - CDN SD2 ND/DR GATED CHANNEL -- B10
006 + MCS REG BIT 4 ----------U04
007 - TAKE DATA (DDC) ----------D07
008 + DATA TAKEN (ADT) ----------Y26
009 - CDN SD2 ND/DR GATED DEVICE --- B03
010 + CHECK BYTE COUNT PARITY -------M07
011 + EXT REG ADR 19 ----------S05
012 - GATE CHAN BUS OUT TO BUS IN ---J06
013 + LD EXT REG CLK C ----------M13
014 + DECREMENT BYTE COUNTER --------S07
015 + EXT REG ADR 18 ----------S04
016 + WRITE (CDX) ----------Z26
017 - ALU OUT BIT 0 ----------P12
018 - ALU OUT BIT 1 ----------P13
019 - ALU OUT BIT 2 ----------U02
020 - ALU OUT BIT 3 ----------U05
021 - ALU OUT BIT 4 ----------U06
022 - ALU OUT BIT 5 ----------U07
023 - ALU OUT BIT 6 ----------U09
024 - CDN SD2 ALU OUT BIT 7 (CH/DEV) U10
025 - CDN SD2 ALU OUT BIT P (CH/DEV) U11
026 + EXT ADR DECODE 7 ----------Y25
027 - LOAD CBI ----------P06
028 + CHECK CBI PARITY ----------D11
029 + EXT ADR DECODE 6 ----------Y06
030 + SERVICE OUT TAG DELAYED 100NS -J05
031 + EXT REG SELECT ----------M04
032 + CHECK CBO PARITY TIME ---------J13
033 - CHAN DXR BUS BIT 0 ----------Y28
034 - CHAN DXR BUS BIT 1 ----------Y30
035 - CHAN DXR BUS BIT 2 ----------Y32
036 - CHAN DXR BUS BIT 3 ----------Y33
037 - CHAN DXR BUS BIT 4 ----------Y07
038 - CHAN DXR BUS BIT 5 ----------Y09
039 - CHAN DXR BUS BIT 6 ----------Y11
040 - CHAN DXR BUS BIT 7 ----------Y13
041 - CHAN DXR BUS BIT P ----------P09
042 + TAKE DATA OR DATA TAKEN -------G07
043 + SEARCH (CDX) ----------Z24
044 - LOAD ZERO TO CBO ----------G03
045 + CBO REG (CDX) BIT 0 ----------X24
046 + CBO REG (CDX) BIT 1 ----------X25
047 + CBO REG (CDX) BIT 2 ----------X26
048 + CBO REG (CDX) BIT 3 ----------X28
049 + CBO REG (CDX) BIT 4 ----------X29
050 + CBO REG (CDX) BIT 5 ----------X30
051 + CBO REG (CDX) BIT 6 ----------X32
052 + CBO REG (CDX) BIT 7 ----------X33
053 + CBO REG (CDX) BIT P ----------X22
054 + CLK T0 OR T4 POWERED (CDX) ----Z25
055 + CDX END OF TRANSFER ----------S02
056 - WAIT OR NOT START ----------S09
057 + HALT I/O LATCH ----------S13
058 + GO OR FINISH DECODE ----------S12
059 + TRUNCATION LATCH ----------D02
060 + RESET ----------S03
061 - CHECK RESET ----------U12
062 + CDX/CSR CLOCK T0 ----------M09
063 + CDX/CSR CLOCK T2 ----------M08
064 + CDX/CSR CLOCK T4 ----------M10
065 + CDX/CSR CLOCK T6 ----------M12
066 - HALT I/O CHECK ----------Z28

CSR CARD

OVERVIEW

The CSR (Channel Search) card contains registers and logic used in controlling data transfer. It also monitors data transfer for errors.

PRIMARY FUNCTIONS

- The CCL (channel count low) and CCH (channel count high) are loaded with the number of bytes to be transferred to and/or from the channel.
- The CXC (channel transfer control) is used to control the CDX (channel data transfer) hardware.
- The CBI logic generates the CBI register bit lines to the compare logic.
- Buffer limiting control logic to limit the logical storage capacity of ADT (automatic data transfer) hardware to 3 bytes of data.
- ALU in selector gates which bus lines (CBI or CBO) are gates into ALU.
- End of transfer controls.

PRIMARY COMPONENTS

- Registers CXC, CBI, LRC
- Counters CCL, CCH

ERROR CHECKING

- The CSR card check-2 logic monitors the CSR card for incorrect parity in CCL and CCH registers or in an unsuccessful compare.
- The CSR card check-1 logic monitors the CBI, CB0, and CXC register for incorrect parity.
- Channel data check logic generates the channel data check line when an incorrect LRC (longitudinal redundancy check) occurs or a Halt I/O check line is active.

P11 - NEED DATA GATED ---------- 003
B13 + NEED 3 BYTES GATED ---------- 004
B07 + 3 BYTES READY ---------- 005
B05 - DATA READY LATCHED ---------- 006
Y05 + CSR CARD CHECK 2 ---------- 007
Z03 + CHAN BUS IN (CSR) BIT 0 ------ 008
Z05 + CHAN BUS IN (CSR) BIT 1 ------ 009
Z06 + CHAN BUS IN (CSR) BIT 2 ------ 010
Z07 + CHAN BUS IN (CSR) BIT 3 ------ 011
Z09 + CHAN BUS IN (CSR) BIT 4 ------ 012
Z10 + CHAN BUS IN (CSR) BIT 5 ------ 013
Z11 + CHAN BUS IN (CSR) BIT 6 ------ 014
Z13 + CHAN BUS IN (CSR) BIT 7 ------ 015
Z02 + CHAN BUS IN (CSR) BIT P ------ 016
U13 - CHAN BYTE COUNT ZERO --------- 017
G02 - CHAN DXR BUS BIT 0 ---------- 018
G04 - CHAN DXR BUS BIT 1 ---------- 019
G05 - CHAN DXR BUS BIT 2 ---------- 020
G08 - CHAN DXR BUS BIT 3 ---------- 021
G09 - CHAN DXR BUS BIT 4 ---------- 022
G10 - CHAN DXR BUS BIT 5 ---------- 023
G12 - CHAN DXR BUS BIT 6 ---------- 024
G13 - CHAN DXR BUS BIT 7 ---------- 025
M02 - CHAN DXR BUS BIT P ---------- 026
D04 - ALU IN1 BIT 0 ---------- 027
D05 - ALU IN1 BIT 1 ---------- 028
D06 - ALU IN1 BIT 2 ---------- 029
D09 - ALU IN1 BIT 3 ---------- 030
D10 - ALU IN1 BIT 4 ---------- 031
D12 - ALU IN1 BIT 5 ---------- 032
D13 - ALU IN1 BIT 6 ---------- 033
J02 - ALU IN1 BIT 7 ---------- 034
J04 - ALU IN1 BIT P ---------- 035
P10 - CSR CARD CHECK 1 ---------- 036
X03 + CXC REG (CSR) BIT 0 ---------- 037
X05 + CXC REG (CSR) BIT 1 ---------- 038
X06 + CXC REG (CSR) BIT 2 ---------- 039
X07 + CXC REG (CSR) BIT 3 ---------- 040
X09 + CXC REG (CSR) BIT 4 ---------- 041
X10 + CXC REG (CSR) BIT 5 ---------- 042
X11 + CXC REG (CSR) BIT 6 ---------- 043
X13 + CXC REG (CSR) BIT 7 ---------- 044
X02 + CXC REG (CSR) BIT P ---------- 045
B12 + WRITE (RUN) ---------- 046
Z29 + WRT OR SEARCH AND NOT EOT ---- 047
Z30 + READ AND NOT EOT ---------- 048
J07 - CHAN DXR BUS BIT 0 ---------- 049
J09 - CHAN DXR BUS BIT 1 ---------- 050
J11 - CHAN DXR BUS BIT 2 ---------- 051
J12 - CHAN DXR BUS BIT 3 ---------- 052
P02 - CHAN DXR BUS BIT 4 ---------- 053
P04 - CHAN DXR BUS BIT 5 ---------- 054
P05 - CHAN DXR BUS BIT 6 ---------- 055
P07 - CHAN DXR BUS BIT 7 ---------- 056
Y02 + CHAN COMPARE SUCCESSFUL ------ 057
M05 - GATE LRC TO BUS OUT (CSR) ---- 058
J10 + GATE FINAL SET BI DESKEW IN -- 059
Y24 + CDX END OF TRANSFER (CSR) ---- 060
Y03 + ODD PTY - TRNC EOT CMPR SUCC - 061
Y29 + MACHINE RESET REPOWERED ------ 062
Y10 - CHECK RESET ---------- 063
M03 + LOAD ZERO TO CBO RETURN ------ 064
Y22 + CHAN DATA CHECK ---------- 065

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- TAKE DATA (CDX)		
	H2S10	GH220-L003
	(G2S03)	GG210-R028
L004		
+ HIGH SPEED CHAN ACTIVE		
	H2S08	GH220-L004
	(F2S03)	GF200-R008
	G2G10	GG210-L040
	J2D02	GJ200-L056
L005		
- CDN SD2 ND/DR GATED CHANNEL		
	H2B10	GH220-L005
	(N2G04)	GN200-R040
	G2J04	GG210-L032
L006		
+ MCS REG BIT 4		
	H2U04	GH220-L006
	(V2S08)	GV200-R034
L007		
- TAKE DATA (DDC)		
	H2D07	GH220-L007
	(X2U10)	GX200-R025
	K2D09	GK200-L005
	N2S12	GN200-L035
L008		
+ DATA TAKEN (ADT)		
	H2Y26	GH220-L008
	(K2Y26)	GK200-R003
L009		
- CDN SD2 ND/DR GATED DEVICE		
	H2B03	GH220-L009
	(N2S05)	GN200-R044
	X2U05	GX200-L039
L010		
+ CHECK BYTE COUNT PARITY		
	H2M07	GH220-L010
	(G2G09)	GG210-R044
L011		
+ EXT REG ADR 19		
	H2S05	GH220-L011
	(F2M09)	GF200-R034
	J2U06	GJ200-L039
L012		
- GATE CHAN BUS OUT TO BUS IN		
	H2J06	GH220-L012
	(F2G13)	GF200-R047
L013		
+ LD EXT REG CLK C		
	H2M13	GH220-L013
	(Q2U10)	GQ200-R014
	C2B12	GC200-L007
	F2P04	GF200-L035

LINE/SIGNAL	PIN	SHEET/LINE
L014		
+ DECREMENT BYTE COUNTER		
	H2S07	GH220-L014
	(G2M02)	GG210-R042
L015		
+ EXT REG ADR 18		
	H2S04	GH220-L015
	(F2M08)	GF200-R033
	V2S05	GV200-L034
L016		
+ WRITE (CDX)		
	H2Z26	GH220-L016
	(G2Z26)	GG210-R048
L017		
- ALU OUT BIT 0		
	H2P12	GH220-L017
	(Q2B04)	GQ200-R008
	C2B02	GC200-L022
	F2D02	GF200-L019
	J2U07	GJ200-L041
	N2B07	GN200-L012
	R2M02	GR200-L024
	V2D13	GV200-L007
	X2D13	GX200-L028
L018		
- ALU OUT BIT 1		
	H2P13	GH220-L018
	(Q2D05)	GQ200-R008
	C2D02	GC200-L023
	F2D04	GF200-L020
	J2U09	GJ200-L041
	N2D05	GN200-L013
	R2G12	GR200-L024
	V2B05	GV200-L008
	X2B05	GX200-L028
L019		
- ALU OUT BIT 2		
	H2U02	GH220-L019
	(Q2D06)	GQ200-R008
	F2D05	GF200-L021
	J2P12	GJ200-L041
	N2D09	GN200-L014
	R2G13	GR200-L024
	V2D10	GV200-L009
	X2D10	GX200-L028
L020		
- ALU OUT BIT 3		
	H2U05	GH220-L020
	(Q2B05)	GQ200-R008
	F2D06	GF200-L022
	J2U02	GJ200-L041
	N2D10	GN200-L015
	R2M04	GR200-L024
	V2J02	GV200-L010
	X2J02	GX200-L028

LINE/SIGNAL	PIN	SHEET/LINE
L021		
- ALU OUT BIT 4		
	H2U06	GH220-L021
	(Q2D04)	GQ200-R008
	F2D07	GF200-L023
	J2B12	GJ200-L041
	N2D06	GN200-L016
	R2M03	GR200-L024
	V2B08	GV200-L011
	X2B08	GX200-L028
L022		
- ALU OUT BIT 5		
	H2U07	GH220-L022
	(Q2B03)	GQ200-R008
	F2B07	GF200-L024
	J2D06	GJ200-L041
	N2B09	GN200-L017
	R2P04	GR200-L024
	V2B03	GV200-L012
	X2B03	GX200-L028
L023		
- ALU OUT BIT 6		
	H2U09	GH220-L023
	(Q2D02)	GQ200-R008
	F2B08	GF200-L025
	N2G02	GN200-L018
	R2P02	GR200-L024
	V2D05	GV200-L013
	X2D05	GX200-L028
L024		
- CDN SD2 ALU OUT BIT 7 (CH/DEV)		
	H2U10	GH220-L024
	(N2B11)	GN200-R008
	X2D06	GX200-L052
L025		
- CDN SD2 ALU OUT BIT P (CH/DEV)		
	H2U11	GH220-L025
	(N2D11)	GN200-R009
	X2B02	GX200-L053
L026		
+ EXT ADR DECODE 7		
	H2Y25	GH220-L026
	(K2Y25)	GK200-R044
L027		
- LOAD CBI		
	H2P06	GH220-L027
	(G2B09)	GG210-R046
L028		
+ CHECK CBI PARITY		
	H2D11	GH220-L028
	(G2J06)	GG210-R038
L029		
+ EXT ADR DECODE 6		
	H2Y06	GH220-L029
	(K2Y06)	GK200-R043

LINE/SIGNAL	PIN	SHEET/LINE
L030		
+ SERVICE OUT TAG DELAYED 100NS		
	H2J05	GH220-L030
	(G2U10)	GG210-R012
L031		
+ EXT REG SELECT		
	H2M04	GH220-L031
	(Q2Z22)	GQ200-R018
	(R2S02)	GR200-R015
	K2U13	GK200-L009
	N2B04	GN200-L011
	R2Z22	GR200-L021
L032		
+ CHECK CBO PARITY TIME		
	H2J13	GH220-L032
	(G2J05)	GG210-R031
L033		
- CHAN DXR BUS BIT 0		
	H2Y28	GH220-L033
	(H2G02)	GH220-R018
	(H2J07)	GH220-R049
	(K2Y28)	GK200-R008
	(N2G12)	GN200-R021
L034		
- CHAN DXR BUS BIT 1		
	H2Y30	GH220-L034
	(H2G04)	GH220-R019
	(H2J09)	GH220-R050
	(K2Y30)	GK200-R008
	(N2J10)	GN200-R022
L035		
- CHAN DXR BUS BIT 2		
	H2Y32	GH220-L035
	(H2G05)	GH220-R020
	(H2J11)	GH220-R051
	(K2Y32)	GK200-R008
	(N2J12)	GN200-R023
L036		
- CHAN DXR BUS BIT 3		
	H2Y33	GH220-L036
	(H2G08)	GH220-R021
	(H2J12)	GH220-R052
	(K2Y33)	GK200-R008
	(N2J06)	GN200-R024
L037		
- CHAN DXR BUS BIT 4		
	H2Y07	GH220-L037
	(H2G09)	GH220-R022
	(H2P02)	GH220-R053
	(K2Y07)	GK200-R008
	(N2G03)	GN200-R025
L038		
- CHAN DXR BUS BIT 5		
	H2Y09	GH220-L038
	(H2G10)	GH220-R023
	(H2P04)	GH220-R054
	(K2Y09)	GK200-R008
	(N2J07)	GN200-R026

LINE/SIGNAL	PIN	SHEET/LINE
L039		
- CHAN DXR BUS BIT 6		
	H2Y11	GH220-L039
	(H2G12)	GH220-R024
	(H2P05)	GH220-R055
	(K2Y11)	GK200-R008
	(N2J05)	GN200-R027
L040		
- CHAN DXR BUS BIT 7		
	H2Y13	GH220-L040
	(H2G13)	GH220-R025
	(H2P07)	GH220-R056
	(K2Y13)	GK200-R008
	(N2M11)	GN200-R028
L041		
- CHAN DXR BUS BIT P		
	H2P09	GH220-L041
	(H2M02)	GH220-R026
	(K2G10)	GK200-R008
	(N2G05)	GN200-R029
L042		
+ TAKE DATA OR DATA TAKEN		
	H2G07	GH220-L042
	(G2S10)	GG210-R030
	J2U05	GJ200-L003
	K2U09	GK200-L030
	N2S11	GN200-L025
L043		
+ SEARCH (CDX)		
	H2Z24	GH220-L043
	(G2Z24)	GG210-R047
L044		
- LOAD ZERO TO CBO		
	H2G03	GH220-L044
	(G2B07)	GG210-R035
L045		
+ CBO REG (CDX) BIT 0		
	H2X24	GH220-L045
	(G2X24)	GG210-R014
L046		
+ CBO REG (CDX) BIT 1		
	H2X25	GH220-L046
	(G2X25)	GG210-R015
L047		
+ CBO REG (CDX) BIT 2		
	H2X26	GH220-L047
	(G2X26)	GG210-R016
L048		
+ CBO REG (CDX) BIT 3		
	H2X28	GH220-L048
	(G2X28)	GG210-R017
L049		
+ CBO REG (CDX) BIT 4		
	H2X29	GH220-L049
	(G2X29)	GG210-R018

LINE/SIGNAL	PIN	SHEET/LINE
L050		
+ CBO REG (CDX) BIT 5		
	H2X30	GH220-L050
	(G2X30)	GG210-R019
L051		
+ CBO REG (CDX) BIT 6		
	H2X32	GH220-L051
	(G2X32)	GG210-R020
L052		
+ CBO REG (CDX) BIT 7		
	H2X33	GH220-L052
	(G2X33)	GG210-R021
L053		
+ CBO REG (CDX) BIT P		
	H2X22	GH220-L053
	(G2X22)	GG210-R022
L054		
+ CLK TO OR T4 POWERED (CDX)		
	H2Z25	GH220-L054
	(G2Z25)	GG210-R024
L055		
+ CDX END OF TRANSFER		
	H2S02	GH220-L055
	(G2G07)	GG210-R040
L056		
- WAIT OR NOT START		
	H2S09	GH220-L056
	(G2P13)	GG210-R050
L057		
+ HALT I/O LATCH		
	H2S13	GH220-L057
	(F2S13)	GF200-R038
	G2S13	GG210-L035
L058		
+ GO OR FINISH DECODE		
	H2S12	GH220-L058
	(G2P02)	GG210-R045
L059		
+ TRUNCATION LATCH		
	H2D02	GH220-L059
	(G2S07)	GG210-R026
	J2B07	GJ200-L047
L060		
+ RESET		
	H2S03	GH220-L060
	(R2B07)	GR200-R022
	D2M05	GD200-L031
	E2M05	GE200-L031
	C2G09	GC200-L016
	F2M02	GF200-L054
	G2J13	GG210-L017
	M2P11	GM200-L011
	P2J09	GP200-L022
	V2G13	GV200-L006
	X2M02	GX200-L005

LINE/SIGNAL	PIN	SHEET/LINE
L061		
- CHECK RESET		
	H2U12	GH220-L061
	(H2Y10)	GH220-R063
	(R2J05)	GR200-R028
	D2J06	GD200-L034
	E2J06	GE200-L034
	C2J10	GC200-L012
	F2M04	GF200-L056
	G2B13	GG210-L015
	J2Y10	GJ200-L024
	K2Y10	GK200-L023
	L2D02	GL200-L003
	N2M13	GN200-L024
	V2G08	GV200-L033
	X2S13	GX200-L017
L062		
+ CDX/CSR CLOCK T0		
	H2M09	GH220-L062
	(P2S02)	GP200-R026
	G2G02	GG210-L027
L063		
+ CDX/CSR CLOCK T2		
	H2M08	GH220-L063
	(P2M07)	GP200-R027
	G2G03	GG210-L028
L064		
+ CDX/CSR CLOCK T4		
	H2M10	GH220-L064
	(P2U04)	GP200-R028
	G2G04	GG210-L029
L065		
+ CDX/CSR CLOCK T6		
	H2M12	GH220-L065
	(P2U02)	GP200-R029
	G2G05	GG210-L030
L066		
- HALT I/O CHECK		
	H2Z28	GH220-L066
	(G2Z28)	GG210-R036
R003		
- NEED DATA GATED		
	(H2P11)	GH220-R003
	G2J02	GG210-L031
R004		
+ NEED 3 BYTES GATED		
	(H2B13)	GH220-R004
	G2J10	GG210-L043
R005		
+ 3 BYTES READY		
	(H2B07)	GH220-R005
	G2J11	GG210-L044
R006		
- DATA READY LATCHED		
	(H2B05)	GH220-R006
	X2S03	GX200-L040
R007		
+ CSR CARD CHECK 2		
	(H2Y05)	GH220-R007
	J2Y05	GJ200-L060
R008		
+ CHAN BUS IN (CSR) BIT 0		
	(H2Z03)	GH220-R008
	(G2Z03)	GG210-R003
	D2Y03	GD200-L037
	E2Y03	GE200-L037
	G2Y03	GG210-L003
R009		
+ CHAN BUS IN (CSR) BIT 1		
	(H2Z05)	GH220-R009
	(G2Z05)	GG210-R004
	D2Y05	GD200-L037
	E2Y05	GE200-L037
	G2Y05	GG210-L004
R010		
+ CHAN BUS IN (CSR) BIT 2		
	(H2Z06)	GH220-R010
	(G2Z06)	GG210-R005
	D2Y06	GD200-L037
	E2Y06	GE200-L037
	G2Y06	GG210-L005
R011		
+ CHAN BUS IN (CSR) BIT 3		
	(H2Z07)	GH220-R011
	(G2Z07)	GG210-R006
	D2Y07	GD200-L037
	E2Y07	GE200-L037
	G2Y07	GG210-L006
R012		
+ CHAN BUS IN (CSR) BIT 4		
	(H2Z09)	GH220-R012
	(G2Z09)	GG210-R007
	D2Y09	GD200-L037
	E2Y09	GE200-L037
	G2Y09	GG210-L007
R013		
+ CHAN BUS IN (CSR) BIT 5		
	(H2Z10)	GH220-R013
	(G2Z10)	GG210-R008
	D2Y10	GD200-L037
	E2Y10	GE200-L037
	G2Y10	GG210-L008
R014		
+ CHAN BUS IN (CSR) BIT 6		
	(H2Z11)	GH220-R014
	(G2Z11)	GG210-R009
	D2Y11	GD200-L037
	E2Y11	GE200-L037
	G2Y11	GG210-L009
R015		
+ CHAN BUS IN (CSR) BIT 7		
	(H2Z13)	GH220-R015
	(G2Z13)	GG210-R010
	D2Y13	GD200-L037
	E2Y13	GE200-L037
	G2Y13	GG210-L010
R016		
+ CHAN BUS IN (CSR) BIT P		
	(H2Z02)	GH220-R016
	(G2Z02)	GG210-R011
	D2Y02	GD200-L037
	E2Y02	GE200-L037
	G2Y02	GG210-L011
R017		
- CHAN BYTE COUNT ZERO		
	(H2U13)	GH220-R017
	G2S02	GG210-L039
R018		
- CHAN DXR BUS BIT 0		
	(H2G02)	GH220-R018
	(H2J07)	GH220-R049
	(K2Y28)	GK200-R008
	(N2G12)	GN200-R021
	H2Y28	GH220-L033
R019		
- CHAN DXR BUS BIT 1		
	(H2G04)	GH220-R019
	(H2J09)	GH220-R050
	(K2Y30)	GK200-R008
	(N2J10)	GN200-R022
	H2Y30	GH220-L034
R020		
- CHAN DXR BUS BIT 2		
	(H2G05)	GH220-R020
	(H2J11)	GH220-R051
	(K2Y32)	GK200-R008
	(N2J12)	GN200-R023
	H2Y32	GH220-L035
R021		
- CHAN DXR BUS BIT 3		
	(H2G08)	GH220-R021
	(H2J12)	GH220-R052
	(K2Y33)	GK200-R008
	(N2J06)	GN200-R024
	H2Y33	GH220-L036
R022		
- CHAN DXR BUS BIT 4		
	(H2G09)	GH220-R022
	(H2P02)	GH220-R053
	(K2Y07)	GK200-R008
	(N2G03)	GN200-R025
	H2Y07	GH220-L037
R023		
- CHAN DXR BUS BIT 5		
	(H2G10)	GH220-R023
	(H2P04)	GH220-R054
	(K2Y09)	GK200-R008
	(N2J07)	GN200-R026
	H2Y09	GH220-L038
R024		
- CHAN DXR BUS BIT 6		
	(H2G12)	GH220-R024
	(H2P05)	GH220-R055
	(K2Y11)	GK200-R008
	(N2J05)	GN200-R027
	H2Y11	GH220-L039
R025		
- CHAN DXR BUS BIT 7		
	(H2G13)	GH220-R025
	(H2P07)	GH220-R056
	(K2Y13)	GK200-R008
	(N2M11)	GN200-R028
	H2Y13	GH220-L040
R026		
- CHAN DXR BUS BIT P		
	(H2M02)	GH220-R026
	(K2G10)	GK200-R008
	(N2G05)	GN200-R029
	H2P09	GH220-L041
R027		
- ALU IN1 BIT 0		
	(H2D04)	GH220-R027
	(F2J02)	GF200-R017
	(J2S05)	GJ200-R016
	(K2J02)	GK200-R016
	Q2M07	GQ200-L007
R028		
- ALU IN1 BIT 1		
	(H2D05)	GH220-R028
	(F2G02)	GF200-R018
	(J2S12)	GJ200-R016
	(K2G03)	GK200-R016
	Q2P07	GQ200-L007
R029		
- ALU IN1 BIT 2		
	(H2D06)	GH220-R029
	(F2G03)	GF200-R019
	(J2P10)	GJ200-R016
	(K2J05)	GK200-R016
	Q2M12	GQ200-L007
R030		
- ALU IN1 BIT 3		
	(H2D09)	GH220-R030
	(F2G04)	GF200-R020
	(J2S03)	GJ200-R016
	(K2G09)	GK200-R016
	Q2M09	GQ200-L007
R031		
- ALU IN1 BIT 4		
	(H2D10)	GH220-R031
	(F2G05)	GF200-R021
	(J2B10)	GJ200-R016
	(K2J06)	GK200-R016
	Q2M13	GQ200-L007
R032		
- ALU IN1 BIT 5		
	(H2D12)	GH220-R032
	(F2J09)	GF200-R022
	(J2B03)	GJ200-R016
	(K2G08)	GK200-R016
	Q2P13	GQ200-L007
R033		
- ALU IN1 BIT 6		
	(H2D13)	GH220-R033
	(F2J10)	GF200-R023
	(J2D04)	GJ200-R016
	(K2G07)	GK200-R016
	Q2S02	GQ200-L007
R034		
- ALU IN1 BIT 7		
	(H2J02)	GH220-R034
	(F2J11)	GF200-R024
	(J2B04)	GJ200-R016
	(K2J07)	GK200-R016
	Q2U02	GQ200-L007
R035		
- ALU IN1 BIT P		
	(H2J04)	GH220-R035
	(F2J12)	GF200-R025
	(J2S07)	GJ200-R016
	(K2G02)	GK200-R016
	Q2S03	GQ200-L007
R036		
- CSR CARD CHECK 1		
	(H2P10)	GH220-R036
	F2U10	GF200-L043
R037		
+ CXC REG (CSR) BIT 0		
	(H2X03)	GH220-R037
	G2X03	GG210-L045
R038		
+ CXC REG (CSR) BIT 1		
	(H2X05)	GH220-R038
	G2X05	GG210-L046
R039		
+ CXC REG (CSR) BIT 2		
	(H2X06)	GH220-R039
	G2X06	GG210-L047
R040		
+ CXC REG (CSR) BIT 3		
	(H2X07)	GH220-R040
	G2X07	GG210-L048
R041		
+ CXC REG (CSR) BIT 4		
	(H2X09)	GH220-R041
	G2X09	GG210-L049
R042		
+ CXC REG (CSR) BIT 5		
	(H2X10)	GH220-R042
	G2X10	GG210-L050
R043		
+ CXC REG (CSR) BIT 6		
	(H2X11)	GH220-R043
	G2X11	GG210-L051
R044		
+ CXC REG (CSR) BIT 7		
	(H2X13)	GH220-R044
	G2X13	GG210-L052
R045		
+ CXC REG (CSR) BIT P		
	(H2X02)	GH220-R045
	G2X02	GG210-L053
R046		
+ WRITE (RUN)		
	(H2B12)	GH220-R046
	J2D07	GJ200-L065
R047		
+ WRT OR SEARCH AND NOT EOT		
	(H2Z29)	GH220-R047
	G2Z29	GG210-L042
R048		
+ READ AND NOT EOT		
	(H2Z30)	GH220-R048
	(G2Z30)	GG210-R032
	D2Y22	GD200-L029
	E2Y22	GE200-L029
	G2Y22	GG210-L038
R049		
- CHAN DXR BUS BIT 0		
	(H2J07)	GH220-R049
	(H2G02)	GH220-R018
	(K2Y28)	GK200-R008
	(N2G12)	GN200-R021
	H2Y28	GH220-L033
R050		
- CHAN DXR BUS BIT 1		
	(H2J09)	GH220-R050
	(H2G04)	GH220-R019
	(K2Y30)	GK200-R008
	(N2J10)	GN200-R022
	H2Y30	GH220-L034
R051		
- CHAN DXR BUS BIT 2		
	(H2J11)	GH220-R051
	(H2G05)	GH220-R020
	(K2Y32)	GK200-R008
	(N2J12)	GN200-R023
	H2Y32	GH220-L035

LINE/SIGNAL	PIN	SHEET/LINE
R052		
- CHAN DXR BUS BIT 3		
	(H2J12)	GH220-R052
	(H2G08)	GH220-R021
	(K2Y33)	GK200-R008
	(N2J06)	GN200-R024
	H2Y33	GH220-L036
R053		
- CHAN DXR BUS BIT 4		
	(H2P02)	GH220-R053
	(H2G09)	GH220-R022
	(K2Y07)	GK200-R008
	(N2G03)	GN200-R025
	H2Y07	GH220-L037
R054		
- CHAN DXR BUS BIT 5		
	(H2P04)	GH220-R054
	(H2G10)	GH220-R023
	(K2Y09)	GK200-R008
	(N2J07)	GN200-R026
	H2Y09	GH220-L038
R055		
- CHAN DXR BUS BIT 6		
	(H2P05)	GH220-R055
	(H2G12)	GH220-R024
	(K2Y11)	GK200-R008
	(N2J05)	GN200-R027
	H2Y11	GH220-L039
R056		
- CHAN DXR BUS BIT 7		
	(H2P07)	GH220-R056
	(H2G13)	GH220-R025
	(K2Y13)	GK200-R008
	(N2M11)	GN200-R028
	H2Y13	GH220-L040
R057		
+ CHAN COMPARE SUCCESSFUL		
	(H2Y02)	GH220-R057
	J2Y02	GJ200-L052
R058		
- GATE LRC TO BUS OUT (CSR)		
	(H2M05)	GH220-R058
	D2M09	GD200-L030
	E2M09	GE200-L030
	G2B02	GG210-L034
R059		
+ GATE FINAL SET BI DESKEW IN		
	(H2J10)	GH220-R059
	G2P04	GG210-L041
R060		
+ CDX END OF TRANSFER (CSR)		
	(H2Y24)	GH220-R060
	J2Y24	GJ200-L046
R061		
+ ODD PTY - TRNC EOT CMPR SUCC		
	(H2Y03)	GH220-R061
	J2Y03	GJ200-L051

LINE/SIGNAL	PIN	SHEET/LINE
R062		
+ MACHINE RESET REPOWERED		
	(H2Y29)	GH220-R062
	J2Y29	GJ200-L022
	K2Y29	GK200-L024
R063		
- CHECK RESET		
	(H2Y10)	GH220-R063
	(R2J05)	GR200-R028
	D2J06	GD200-L034
	E2J06	GE200-L034
	C2J10	GC200-L012
	F2M04	GF200-L056
	G2B13	GG210-L015
	H2U12	GH220-L061
	J2Y10	GJ200-L024
	K2Y10	GK200-L023
	L2D02	GL200-L003
	N2M13	GN200-L024
	V2G08	GV200-L033
	X2S13	GX200-L017
R064		
+ LOAD ZERO TO CBO RETURN		
	(H2M03)	GH220-R064
	G2M13	GG210-L036
R065		
+ CHAN DATA CHECK		
	(H2Y22)	GH220-R065
	J2Y22	GJ200-L063

```
003 + TAKE DATA OR DATA TAKEN -------U05
004 - RUN CHANNEL L1 ----------------W11
005 - CLOCK (T0,T4,T6) ============== * =
006 + ADT CLOCK T0 OR T4 ------------J06
007 + ADT CLOCK T1 OR T5 ------------M07
008 + ADT CLOCK T2 OR T6 ------------G05
009 + ADT CLOCK T3 OR T7 ------------J07
010 + GATE BAP TO CAR ---------------Z25
011 + GATE BAP TO CAR (P) -----------Z06
012 + GATE CBP TO CAR ---------------Z30
013 + GATE CBP TO CAR (P) -----------Z10
014 + GATE DBP TO CAR ---------------Z28
015 - LOAD CAR TO BAP ---------------W26
016 - LOAD CAR TO BAP (P) -----------Z24
017 - LOAD CAR TO CBP ---------------Z03
018 - LOAD CAR TO CBP (P) -----------Z13
019 - LOAD CAR TO DBP ---------------W06
020 - LOAD CAR TO DBP (P) -----------W05
021 - 16K INSTALLED -----------------G09
022 + MACHINE RESET REPOWERED ------ Y29
023 - 32K INSTALLED -----------------J09
024 - CHECK RESET --------------------Y10
025 + ADT CLK T3D2 OR T7D2 ----------J10
026 - INCREMENT ----------------------Z07
027 - INCREMENT (P) -----------------Z09
028 + BAP TOGGLE (P) ----------------Z26
029 + BAP TOGGLE ----------------------Z05
030 + CBP TOGGLE ----------------------X03
031 + DBP TOGGLE ----------------------X07
032 + BC1 FULL ------------------------Z02
033 + BC2 EMPTY -----------------------Z33
034 + LD EXT REG CLK B --------------J04
035 + CBP XREG DECODE ---------------W13
036 + DBP XREG DECODE ---------------W33
037 + XREG DECODE 02 ----------------W32
038 + XREG DECODE 03 ----------------W07
039 + EXT REG ADR 19 ----------------U06
040 + DDC END OF TRANSFER -----------P09
041 - ALU OUT BIT (0-5,7) ========== * =
042 + ARRAY WRITE --------------------Z29
043 + DATA OVERRUN -------------------S09
044 + CHAN OVERRUN -------------------S10
045 + DDC CARD CHECK ----------------D10
046 + CDX END OF TRANSFER (CSR) -----Y24
047 + TRUNCATION LATCH --------------B07
048 + DDC BUS IN PC -----------------M12
049 + DCT CARD CHECK ----------------U11
050 + SYNC IN CHECK -----------------B02
051 + ODD PTY - TRNC EOT CMPR SUCC --Y03
052 + CHAN COMPARE SUCCESSFUL -------Y02
053 + ARRAY OUT PARITY CHECK --------X10
054 + DXD CARD CHECK ----------------X28
055 + FIRST SYNC IN 1 ---------------P13
056 + HIGH SPEED CHAN ACTIVE --------D02
057 + FIRST SYNC IN 2 ---------------M09
058 + CLOCK CHECK LATCHED -----------X30
059 + ANY READ DATA CHECK LATCHED ---S02
060 + CSR CARD CHECK 2 -------------Y05
061 + CHANNEL/BUFFER CHECK ----------X33
062 + DEVICE/BUFFER CHECK -----------X32
063 + CHAN DATA CHECK ---------------Y22
064 - END OP LATCHED T4 -------------M08
065 + WRITE (RUN) --------------------D07
066 - SEL OUT TRAPPED INTERRUPT 2 ---M10
067 - CDN SD2 ALU OUT BIT 6 (ADT) -- D05
068 - CDN SD2 ALU OUT BIT P (ADT) -- S08
069 + CHK BIT 7 -------------------- B08
070 - TIE DOWN 4 -------------------- D11
071 + GATE DTG REG ------------------ P06
072 + ENBL PAD CNT AFTER DEVICE EOT  U12
```

DXA CARD

OVERVIEW

The Data Transfer Address (DXA) card generates addresses for storing into and fetching out of the data buffer and/or the ASDM control store.

PRIMARY FUNCTIONS

The DXA card in conjunction with the DXD card controls the automatic data transfer functions of the storage director. The DXA card's primary function is addressing the buffer/ASDM control store during data transfers to and from the channel, the device, and/or subsystem storage. The DXA card is also responsible for most of the error checking and error information collection of data transfer error conditions.

PRIMARY COMPONENTS

The DXA card consists primarily of registers.

- DXC - Data transfer control
- BAP - Buffer address pointer
- CBP - Channel buffer pointer
- DBP - Device buffer pointer
- XCS - Transfer complete status
- XES - Transfer error status
- CHK - Check-2 error conditions
- TFR - Toggle/FRU register

ERROR CHECKING

The following Check-2 errors are detected and/or collected by the DXA card.

- Data overrun
- Channel overrun
- Channel data check
- DDC bus-in parity
- Channel buffer parity
- Device buffer parity
- Array out parity
- Clock check
- DXA card check
- DXD card check
- DCT card check
- DDC card check
- CSR card check
- Sync-in check

```
X25 + BLOCK FIRST 3 BYTES ---------- 003
*   - CHIP SELECT (0-3) ============ 004
*   - ARRAY ADDRESS BIT (2-13) ===== 005
D12 - CARD SELECT 0 ---------------- 006
B13 - CARD SELECT 1 ---------------- 007
P04 - LOAD DOR --------------------- 008
P05 - WRITE ENABLE ----------------- 009
*   + ARRAY OUT GATE (0-3) ========= 010
X29 + DOR INPUT LOW ---------------- 011
X09 + DOR INPUT HIGH --------------- 012
X02 + CAR PARITY ------------------- 013
W28 + DBP=CBP P1 ------------------- 014
Z22 + DBP=CBP P2 ------------------- 015
*   - ALU IN1 BIT (0-7,P) ========== 016
U10 - CHECK TWO -------------------- 017
*   + ALU OUT BIT (0-7,P) ========== 018
*   + DXC BIT (5-7) ================ 019
P07 - INT REQ LEVEL 2 -------------- 020
U04 + OFFSET INTERLOCK MODE -------- 021
```

LINE/SIGNAL	PIN	SHEET/LINE
L003		
+ TAKE DATA OR DATA TAKEN		
	J2U05	GJ200-L003
	(G2S10)	GG210-R030
	H2G07	GH220-L042
	K2U09	GK200-L030
	N2S11	GN200-L025
L004		
- RUN CHANNEL L1		
	J2W11	GJ200-L004
	(K2W11)	GK200-R045
L005		
- CLOCK T0		
	J2X13	GJ200-L005
	(K2X13)	GK200-R005
L005		
- CLOCK T4		
	J2X11	GJ200-L005
	(K2X11)	GK200-R005
L005		
- CLOCK T6		
	J2X26	GJ200-L005
	(K2X26)	GK200-R005
L006		
+ ADT CLOCK T0 OR T4		
	J2J06	GJ200-L006
	(P2S08)	GP200-R030
	K2S08	GK200-L019
L007		
+ ADT CLOCK T1 OR T5		
	J2M07	GJ200-L007
	(P2U09)	GP200-R056
	K2S13	GK200-L020
L008		
+ ADT CLOCK T2 OR T6		
	J2G05	GJ200-L008
	(P2U06)	GP200-R031
	K2M02	GK200-L021
L009		
+ ADT CLOCK T3 OR T7		
	J2J07	GJ200-L009
	(P2U11)	GP200-R057
	K2U11	GK200-L022
L010		
+ GATE BAP TO CAR		
	J2Z25	GJ200-L010
	(K2Z25)	GK200-R024
L011		
+ GATE BAP TO CAR (P)		
	J2Z06	GJ200-L011
	(K2Z06)	GK200-R025
L012		
+ GATE CBP TO CAR		
	J2Z30	GJ200-L012
	(K2Z30)	GK200-R026

LINE/SIGNAL	PIN	SHEET/LINE
L013		
+ GATE CBP TO CAR (P)		
	J2Z10	GJ200-L013
	(K2Z10)	GK200-R027
L014		
+ GATE DBP TO CAR		
	J2Z28	GJ200-L014
	(K2Z28)	GK200-R028
L015		
- LOAD CAR TO BAP		
	J2W26	GJ200-L015
	(K2W26)	GK200-R031
L016		
- LOAD CAR TO BAP (P)		
	J2Z24	GJ200-L016
	(K2Z24)	GK200-R032
L017		
- LOAD CAR TO CBP		
	J2Z03	GJ200-L017
	(K2Z03)	GK200-R033
L018		
- LOAD CAR TO CBP (P)		
	J2Z13	GJ200-L018
	(K2Z13)	GK200-R034
L019		
- LOAD CAR TO DBP		
	J2W06	GJ200-L019
	(K2W06)	GK200-R035
L020		
- LOAD CAR TO DBP (P)		
	J2W05	GJ200-L020
	(K2W05)	GK200-R036
L021		
- 16K INSTALLED		
	J2G09	GJ200-L021
L022		
+ MACHINE RESET REPOWERED		
	J2Y29	GJ200-L022
	(H2Y29)	GH220-R062
	K2Y29	GK200-L024
L023		
- 32K INSTALLED		
	J2J09	GJ200-L023

LINE/SIGNAL	PIN	SHEET/LINE
L024		
- CHECK RESET		
	J2Y10	GJ200-L024
	(H2Y10)	GH220-R063
	(R2J05)	GR200-R028
	D2J06	GD200-L034
	E2J06	GE200-L034
	C2J10	GC200-L012
	F2N04	GF200-L056
	G2B13	GG210-L015
	H2U12	GH220-L061
	K2Y10	GK200-L023
	L2D02	GL200-L003
	N2M13	GN200-L024
	V2G08	GV200-L033
	X2S13	GX200-L017
L025		
+ ADT CLK T3D2 OR T7D2		
	J2J10	GJ200-L025
	(P2G05)	GP200-R053
L026		
- INCREMENT		
	J2Z07	GJ200-L026
	(K2Z07)	GK200-R029
L027		
- INCREMENT (P)		
	J2Z09	GJ200-L027
	(K2Z09)	GK200-R030
L028		
+ BAP TOGGLE (P)		
	J2Z26	GJ200-L028
	(K2Z26)	GK200-R012
L029		
+ BAP TOGGLE		
	J2Z05	GJ200-L029
	(K2Z05)	GK200-R011
L030		
+ CBP TOGGLE		
	J2X03	GJ200-L030
	(K2X03)	GK200-R013
L031		
+ DBP TOGGLE		
	J2X07	GJ200-L031
	(K2X07)	GK200-R017
L032		
+ BC1 FULL		
	J2Z02	GJ200-L032
	(K2Z02)	GK200-R015
L033		
+ BC2 EMPTY		
	J2Z33	GJ200-L033
	(K2Z33)	GK200-R014
L034		
+ LD EXT REG CLK B		
	J2J04	GJ200-L034
	(Q2S09)	GQ200-R013
	K2U10	GK200-L026

LINE/SIGNAL	PIN	SHEET/LINE
L035		
+ CBP XREG DECODE		
	J2W13	GJ200-L035
	(K2W13)	GK200-R039
L036		
+ DBP XREG DECODE		
	J2W33	GJ200-L036
	(K2W33)	GK200-R040
L037		
+ XREG DECODE 02		
	J2W32	GJ200-L037
	(K2W32)	GK200-R041
L038		
+ XREG DECODE 03		
	J2W07	GJ200-L038
	(K2W07)	GK200-R042
L039		
+ EXT REG ADR 19		
	J2U06	GJ200-L039
	(F2M09)	GF200-R034
	H2S05	GH220-L011
L040		
+ DDC END OF TRANSFER		
	J2P09	GJ200-L040
	(X2S07)	GX200-R028
L041		
- ALU OUT BIT 0		
	J2U07	GJ200-L041
	(Q2B04)	GQ200-R008
	C2D02	GC200-L022
	F2D02	GF200-L019
	H2P12	GH220-L017
	N2B07	GN200-L012
	R2M02	GR200-L024
	V2D13	GV200-L007
	X2D13	GX200-L028
L041		
- ALU OUT BIT 1		
	J2U09	GJ200-L041
	(Q2D05)	GQ200-R008
	C2D02	GC200-L023
	F2D04	GF200-L020
	H2P13	GH220-L018
	N2D05	GN200-L013
	R2G12	GR200-L024
	V2B05	GV200-L008
	X2B05	GX200-L028
L041		
- ALU OUT BIT 2		
	J2P12	GJ200-L041
	(Q2D06)	GQ200-R008
	F2D05	GF200-L021
	H2U02	GH220-L019
	N2D09	GN200-L014
	R2G13	GR200-L024
	V2D10	GV200-L009
	X2D10	GX200-L028

LINE/SIGNAL	PIN	SHEET/LINE
L041		
- ALU OUT BIT 3		
	J2U02	GJ200-L041
	(Q2B05)	GQ200-R008
	F2D06	GF200-L022
	H2U05	GH220-L020
	N2D10	GN200-L015
	R2M04	GR200-L024
	V2J02	GV200-L010
	X2J02	GX200-L023
L041		
- ALU OUT BIT 4		
	J2B12	GJ200-L041
	(Q2D04)	GQ200-R008
	F2D07	GF200-L023
	H2U06	GH220-L021
	N2D06	GN200-L016
	R2M03	GR200-L024
	V2B08	GV200-L011
	X2B08	GX200-L028
L041		
- ALU OUT BIT 5		
	J2D06	GJ200-L041
	(Q2B03)	GQ200-R008
	F2B07	GF200-L024
	H2U07	GH220-L022
	N2B09	GN200-L017
	R2P04	GR200-L024
	V2B03	GV200-L012
	X2B03	GX200-L028
L041		
- ALU OUT BIT 7		
	J2B05	GJ200-L041
	(Q2B02)	GQ200-R008
	F2B09	GF200-L026
	N2B13	GN200-L019
	R2P05	GR200-L024
	V2D06	GV200-L014
L042		
+ ARRAY WRITE		
	J2Z29	GJ200-L042
	(K2Z29)	GK200-R046
L043		
+ DATA OVERRUN		
	J2S09	GJ200-L043
	(X2S10)	GX200-R029
L044		
+ CHAN OVERRUN		
	J2S10	GJ200-L044
	(G2S09)	GG210-R013
L045		
+ DDC CARD CHECK		
	J2D10	GJ200-L045
	(X2U04)	GX200-R045
L046		
+ CDX END OF TRANSFER (CSR)		
	J2Y24	GJ200-L046
	(H2Y24)	GH220-R060

LINE/SIGNAL	PIN	SHEET/LINE
L047		
+ TRUNCATION LATCH		
	J2B07	GJ200-L047
	(G2S07)	GG210-R026
	H2D02	GH220-L059
L048		
+ DDC BUS IN PC		
	J2M12	GJ200-L048
	(X2U06)	GX200-R031
L049		
+ DCT CARD CHECK		
	J2U11	GJ200-L049
	(V2G09)	GV200-R017
L050		
+ SYNC IN CHECK		
	J2B02	GJ200-L050
	(X2S12)	GX200-R030
L051		
+ ODD PTY - TRNC EOT CMPR SUCC		
	J2Y03	GJ200-L051
	(H2Y03)	GH220-R061
L052		
+ CHAN COMPARE SUCCESSFUL		
	J2Y02	GJ200-L052
	(H2Y02)	GH220-R057
L053		
+ ARRAY OUT PARITY CHECK		
	J2X10	GJ200-L053
	(K2X10)	GK200-R007
L054		
+ DXD CARD CHECK		
	J2X28	GJ200-L054
	(K2X28)	GK200-R021
L055		
+ FIRST SYNC IN 1		
	J2P13	GJ200-L055
	(X2J06)	GX200-R022
L056		
+ HIGH SPEED CHAN ACTIVE		
	J2D02	GJ200-L056
	(F2S03)	GF200-R008
	G2G10	GG210-L040
	H2S08	GH220-L004
L057		
+ FIRST SYNC IN 2		
	J2M09	GJ200-L057
	(X2J11)	GX200-R023
L058		
+ CLOCK CHECK LATCHED		
	J2X30	GJ200-L058
	(K2X30)	GK200-R020

LINE/SIGNAL	PIN	SHEET/LINE
L059		
+ ANY READ DATA CHECK LATCHED		
	J2S02	GJ200-L059
	(P2B02)	GP200-R012
L060		
+ CSR CARD CHECK 2		
	J2Y05	GJ200-L060
	(H2Y05)	GH220-R007
L061		
+ CHANNEL/BUFFER CHECK		
	J2X33	GJ200-L061
	(K2X33)	GK200-R009
L062		
+ DEVICE/BUFFER CHECK		
	J2X32	GJ200-L062
	(K2X32)	GK200-R010
L063		
+ CHAN DATA CHECK		
	J2Y22	GJ200-L063
	(H2Y22)	GH220-R065
L064		
- END OP LATCHED T4		
	J2M08	GJ200-L064
	(X2J12)	GX200-R044
L065		
+ WRITE (RUN)		
	J2D07	GJ200-L065
	(H2B12)	GH220-R046
L066		
- SEL OUT TRAPPED INTERRUPT 2		
	J2M10	GJ200-L066
	(F2J13)	GF200-R004
L067		
- CDN SD2 ALU OUT BIT 6 (ADT)		
	J2D05	GJ200-L067
	(N2B08)	GN200-R006
L068		
- CDN SD2 ALU OUT BIT P (ADT)		
	J2S08	GJ200-L068
	(N2J02)	GN200-R007
L069		
+ CHK BIT 7		
	J2B08	GJ200-L069
	(L2D05)	GL200-R003
L070		
- TIE DOWN 4		
	J2D11	GJ200-L070
L071		
+ GATE DTG REG		
	J2P06	GJ200-L071
	(V2P09)	GV200-R021
	X2P09	GX200-L044

LINE/SIGNAL	PIN	SHEET/LINE
L072		
+ ENBL PAD CNT AFTER DEVICE EOT		
	J2U12	GJ200-L072
	(V2S07)	GV200-R033
R003		
+ BLOCK FIRST 3 BYTES		
	(J2X25)	GJ200-R003
	K2X25	GK200-L004
R004		
- CHIP SELECT 0		
	(J2J11)	GJ200-R004
	L2U07	GL200-L005
	L2Z05	GL200-L039
	M2Z05	GM200-L033
R004		
- CHIP SELECT 1		
	(J2D13)	GJ200-R004
	L2M11	GL200-L006
	L2Z25	GL200-L040
	M2Z25	GM200-L034
R004		
- CHIP SELECT 2		
	(J2G03)	GJ200-R004
	L2P10	GL200-L007
	L2Z24	GL200-L041
	M2Z24	GM200-L035
R004		
- CHIP SELECT 3		
	(J2G08)	GJ200-R004
	L2P06	GL200-L008
	L2Z03	GL200-L042
	M2Z03	GM200-L036
R005		
- ARRAY ADDRESS BIT 2		
	(J2G12)	GJ200-R005
	L2M12	GL200-L010
	L2Z06	GL200-L044
	M2Z06	GM200-L037
R005		
- ARRAY ADDRESS BIT 3		
	(J2J12)	GJ200-R005
	L2P13	GL200-L011
	L2Z02	GL200-L045
	M2Z02	GM200-L038
R005		
- ARRAY ADDRESS BIT 4		
	(J2M05)	GJ200-R005
	L2U05	GL200-L012
	L2Z30	GL200-L046
	M2Z30	GM200-L039
R005		
- ARRAY ADDRESS BIT 5		
	(J2G10)	GJ200-R005
	L2S02	GL200-L013
	L2Z13	GL200-L047
	M2Z13	GM200-L040

LINE/SIGNAL	PIN	SHEET/LINE
R005		
- ARRAY ADDRESS BIT 6		
	(J2B09)	GJ200-R005
	L2S03	GL200-L014
	L2Z33	GL200-L048
	M2Z33	GM200-L041
R005		
- ARRAY ADDRESS BIT 7		
	(J2D09)	GJ200-R005
	L2U04	GL200-L015
	L2Z10	GL200-L049
	M2Z10	GM200-L042
R005		
- ARRAY ADDRESS BIT 8		
	(J2M04)	GJ200-R005
	L2M08	GL200-L016
	L2Z32	GL200-L050
	M2Z32	GM200-L043
R005		
- ARRAY ADDRESS BIT 9		
	(J2J13)	GJ200-R005
	L2M09	GL200-L017
	L2Z29	GL200-L051
	M2Z29	GM200-L044
R005		
- ARRAY ADDRESS BIT 10		
	(J2M02)	GJ200-R005
	L2M13	GL200-L018
	L2Z26	GL200-L052
	M2Z26	GM200-L045
R005		
- ARRAY ADDRESS BIT 11		
	(J2P02)	GJ200-R005
	L2P11	GL200-L019
	L2Z09	GL200-L053
	M2Z09	GM200-L046
R005		
- ARRAY ADDRESS BIT 12		
	(J2G13)	GJ200-R005
	L2S04	GL200-L020
	L2Z07	GL200-L054
	M2Z07	GM200-L047
R005		
- ARRAY ADDRESS BIT 13		
	(J2M03)	GJ200-R005
	L2S08	GL200-L021
	L2Z28	GL200-L055
	M2Z28	GM200-L048
R006		
- CARD SELECT 0		
	(J2D12)	GJ200-R006
	L2S05	GL200-L009
	L2Z22	GL200-L043
	M2Z22	GM200-L049
R007		
- CARD SELECT 1		
	(J2B13)	GJ200-R007

LINE/SIGNAL	PIN	SHEET/LINE
R008		
- LOAD DOR		
	(J2P04)	GJ200-R008
	K2P11	GK200-L015
R009		
- WRITE ENABLE		
	(J2P05)	GJ200-R009
	K2U12	GK200-L037
	L2U06	GL200-L022
	M2J10	GM200-L016
R010		
+ ARRAY OUT GATE 0		
	(J2G07)	GJ200-R010
R010		
+ ARRAY OUT GATE 1		
	(J2G02)	GJ200-R010
R010		
+ ARRAY OUT GATE 2		
	(J2J02)	GJ200-R010
R010		
+ ARRAY OUT GATE 3		
	(J2G04)	GJ200-R010
R011		
+ DOR INPUT LOW		
	(J2X29)	GJ200-R011
	K2X29	GK200-L016
R012		
+ DOR INPUT HIGH		
	(J2X09)	GJ200-R012
	K2X09	GK200-L017
R013		
+ CAR PARITY		
	(J2X02)	GJ200-R013
	K2X02	GK200-L013
	L2X02	GL200-L056
R014		
+ DBP=CBP P1		
	(J2W28)	GJ200-R014
	K2W28	GK200-L034
R015		
+ DBP=CBP P2		
	(J2Z22)	GJ200-R015
	K2Z22	GK200-L035
R016		
- ALU IN1 BIT 0		
	(J2S05)	GJ200-R016
	(F2J02)	GF200-R017
	(H2D04)	GH220-R027
	(K2J02)	GK200-R016
	Q2M07	GQ200-L007

LINE/SIGNAL	PIN	SHEET/LINE
R016		
- ALU IN1 BIT 1		
	(J2S12)	GJ200-R016
	(F2G02)	GF200-R018
	(H2D05)	GH220-R028
	(K2G03)	GK200-R016
	Q2P07	GQ200-L007
R016		
- ALU IN1 BIT 2		
	(J2P10)	GJ200-R016
	(F2G03)	GF200-R019
	(H2D06)	GH220-R029
	(K2J05)	GK200-R016
	Q2M12	GQ200-L007
R016		
- ALU IN1 BIT 3		
	(J2S03)	GJ200-R016
	(F2G04)	GF200-R020
	(H2D09)	GH220-R030
	(K2G09)	GK200-R016
	Q2M09	GQ200-L007
R016		
- ALU IN1 BIT 4		
	(J2B10)	GJ200-R016
	(F2G05)	GF200-R021
	(H2D10)	GH220-R031
	(K2J06)	GK200-R016
	Q2M13	GQ200-L007
R016		
- ALU IN1 BIT 5		
	(J2B03)	GJ200-R016
	(F2J09)	GF200-R022
	(H2D12)	GH220-R032
	(K2G08)	GK200-R016
	Q2P13	GQ200-L007
R016		
- ALU IN1 BIT 6		
	(J2D04)	GJ200-R016
	(F2J10)	GF200-R023
	(H2D13)	GH220-R033
	(K2G07)	GK200-R016
	Q2S02	GQ200-L007
R016		
- ALU IN1 BIT 7		
	(J2B04)	GJ200-R016
	(F2J11)	GF200-R024
	(H2J02)	GH220-R034
	(K2J07)	GK200-R016
	Q2U02	GQ200-L007
R016		
- ALU IN1 BIT P		
	(J2S07)	GJ200-R016
	(F2J12)	GF200-R025
	(H2J04)	GH220-R035
	(K2G02)	GK200-R016
	Q2S03	GQ200-L007

LINE/SIGNAL	PIN	SHEET/LINE
R017		
- CHECK TWO		
	(J2U10)	GJ200-R017
	(F2S09)	GF200-R040
	(N2D04)	GN200-R010
	(X2J09)	GX200-R021
	R2S09	GR200-L027
R018		
+ ALU OUT BIT 0		
	(J2W29)	GJ200-R018
	K2W29	GK200-L025
R018		
+ ALU OUT BIT 1		
	(J2W24)	GJ200-R018
	K2W24	GK200-L025
R018		
+ ALU OUT BIT 2		
	(J2W25)	GJ200-R018
	K2W25	GK200-L025
R018		
+ ALU OUT BIT 3		
	(J2W09)	GJ200-R018
	K2W09	GK200-L025
R018		
+ ALU OUT BIT 4		
	(J2W10)	GJ200-R018
	K2W10	GK200-L025
R018		
+ ALU OUT BIT 5		
	(J2W30)	GJ200-R018
	K2W30	GK200-L025
R018		
+ ALU OUT BIT 6		
	(J2W03)	GJ200-R018
	K2W03	GK200-L025
R018		
+ ALU OUT BIT 7		
	(J2W02)	GJ200-R018
	K2W02	GK200-L025
R018		
+ ALU OUT BIT P		
	(J2W22)	GJ200-R018
	K2W22	GK200-L025
R019		
+ DXC BIT 5		
	(J2Z11)	GJ200-R019
	K2Z11	GK200-L029
R019		
+ DXC BIT 6		
	(J2X22)	GJ200-R019
	K2X22	GK200-L014
R019		
+ DXC BIT 7		
	(J2X24)	GJ200-R019
	K2X24	GK200-L036

LINE/SIGNAL	PIN	SHEET/LINE
R020		
- INT REQ LEVEL 2		
	(J2P07)	GJ200-R020
	(M2G02)	GM200-R016
	R2U12	GR200-L013
R021		
+ OFFSET INTERLOCK MODE		
	(J2U04)	GJ200-R021
	N2S03	GN200-L052

DATA TRANSFER ADDRESS XRL GJ200

```
003 - EXT REG ADDRESS BIT (0-4) =====*
004 + BLOCK FIRST 3 BYTES -----------X25
005 - TAKE DATA (DDC) ---------------D09
006 - DATA TAKEN (DDC) --------------B08
007 - CAM SD2 ARRAY OUT (0-7,P) ==== * =
008 - TAKE DATA/DATA TKN DEV (AUX) - B09
009 + EXT REG SELECT ----------------U13
010 - TAKE DATA/DATA TKN CHAN (AUX)  S09
011 + PAD COUNT=ZERO ----------------P06
012 - CLOCK CHECK TWO ---------------S12
013 + CAR PARITY --------------------X02
014 + DXC BIT 6 ---------------------X22
015 - LOAD DOR ----------------------P11
016 + DOR INPUT LOW -----------------X29
017 + DOR INPUT HIGH ----------------X09
018 + ENBL PAD CNT AFTER CHAN EOT ---J04
019 + ADT CLOCK T0 OR T4 ------------S08
020 + ADT CLOCK T1 OR T5 ------------S13
021 + ADT CLOCK T2 OR T6 ------------M02
022 + ADT CLOCK T3 OR T7 ------------U11
023 - CHECK RESET -------------------Y10
024 + MACHINE RESET REPOWERED ------ Y29
025 + ALU OUT BIT (0-7,P) ========== * =
026 + LD EXT REG CLK B --------------U10
027 - EXT REG ADR PARITY ------------D10
028 - DEGATE CHAN EXT REGS (UNUSED) -B04
029 + DXC BIT 5 ---------------------Z11
030 + TAKE DATA OR DATA TAKEN -------U09
031 + GATE DTI REG/PAD COUNTER ------G05
032 + DEVICE COUNT < 64 -------------M05
033 - AUX COUNT < 64 (UNUSED) -------S07
034 + DBP=CBP P1 --------------------W28
035 + DBP=CBP P2 --------------------Z22
036 + DXC BIT 7 ---------------------X24
037 - WRITE ENABLE ------------------U12
```

DXD CARD

OVERVIEW

The Data Transfer Data (DXD) card is the controls and data path into and out of the data buffer and the ASDM control store.

PRIMARY FUNCTIONS

The DXD card supplies a data path to and from the data buffer or ASDM control store and the channel interface and/or subsystem storage. It also supplies a data path to and from the data buffer or ASDM control store and the device interface and/or subsystem storage. It also controls the pad/drop functions associated with 3375 and 3380 record formats.

PRIMARY COMPONENTS

Registers

- Data In Register
- Data Out Register
- Buffer ALU Register 1 & 2
- Device Buffer CRC
- Channel Buffer CRC

Latches

- Run device
- Run channel
- Buffer empty/full controls

ERROR CHECKING

The following Check-2 errors are detected on the DXD card.

- DXD card check
- Clock check
- Channel/Buffer check
- Device/Buffer check
- Array Out Parity check


```
Y26 + DATA TAKEN (ADT) ------------- 003
J09 + DECREMENT PAD COUNTER -------- 004
= * - CLOCK (T0,T4,T6) ============== 005
*   - DEV DXR BUS BIT (0-7,P) ====== 006
X10 + ARRAY OUT PARITY CHECK ------- 007
*   - CHAN DXR BUS BIT (0-7,P) ===== 008
X33 + CHANNEL/BUFFER CHECK --------- 009
X32 + DEVICE/BUFFER CHECK ---------- 010
Z05 + BAP TOGGLE ------------------- 011
Z26 + BAP TOGGLE (P) --------------- 012
X03 + CBP TOGGLE ------------------- 013
Z33 + BC2 EMPTY -------------------- 014
Z02 + BC1 FULL --------------------- 015
*   - ALU IN1 BIT (0-7,P) ========== 016
X07 + DBP TOGGLE ------------------- 017
*   - ARRAY IN BIT (0-7,P) ========= 018
D11 + EXT REG GROUP 0 SELECTED ----- 019
X30 + CLOCK CHECK LATCHED ---------- 020
X28 + DXD CARD CHECK --------------- 021
S10 + GATE PCR TO ALU IN ----------- 022
U07 - SELECT PCR ------------------- 023
Z25 + GATE BAP TO CAR -------------- 024
Z06 + GATE BAP TO CAR (P) ---------- 025
Z30 + GATE CBP TO CAR -------------- 026
Z10 + GATE CBP TO CAR (P) ---------- 027
Z28 + GATE DBP TO CAR -------------- 028
Z07 - INCREMENT -------------------- 029
Z09 - INCREMENT (P) ---------------- 030
W26 - LOAD CAR TO BAP -------------- 031
Z24 - LOAD CAR TO BAP (P) ---------- 032
Z03 - LOAD CAR TO CBP -------------- 033
Z13 - LOAD CAR TO CBP (P) ---------- 034
W06 - LOAD CAR TO DBP -------------- 035
W05 - LOAD CAR TO DBP (P) ---------- 036
J11 - NEED DATA/DATA READY CDX ----- 037
D06 - NEED DATA/DATA READY DDC ----- 038
W13 + CBP XREG DECODE -------------- 039
W33 + DBP XREG DECODE -------------- 040
W32 + XREG DECODE 02 --------------- 041
W07 + XREG DECODE 03 --------------- 042
Y06 + EXT ADR DECODE 6 ------------- 043
Y25 + EXT ADR DECODE 7 ------------- 044
W11 - RUN CHANNEL L1 --------------- 045
Z29 + ARRAY WRITE ------------------ 046
U06 + 3 BYTES NEEDED/READY --------- 047
```

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- EXT REG ADDRESS BIT 0		
	K2B12	GK200-L003
	(Q2P12)	GQ200-R016
	F2P09	GF200-L028
	N2P12	GN200-L003
	R2M13	GR200-L009
	V2J07	GV200-L024
L003		
- EXT REG ADDRESS BIT 1		
	K2D13	GK200-L003
	(Q2M05)	GQ200-R016
	F2P10	GF200-L029
	N2M05	GN200-L004
	R2P11	GR200-L009
	V2J09	GV200-L025
L003		
- EXT REG ADDRESS BIT 2		
	K2B13	GK200-L003
	(Q2P05)	GQ200-R016
	F2P11	GF200-L030
	N2P05	GN200-L005
	R2M12	GR200-L009
	V2J10	GV200-L026
L003		
- EXT REG ADDRESS BIT 3		
	K2B10	GK200-L003
	(Q2M04)	GQ200-R016
	F2P12	GF200-L031
	N2M04	GN200-L006
	R2P10	GR200-L009
	V2J11	GV200-L027
L003		
- EXT REG ADDRESS BIT 4		
	K2D12	GK200-L003
	(Q2P04)	GQ200-R016
	F2P13	GF200-L032
	N2P04	GN200-L007
	R2P09	GR200-L009
	V2J12	GV200-L028
L004		
+ BLOCK FIRST 3 BYTES		
	K2X25	GK200-L004
	(J2X25)	GJ200-R003
L005		
- TAKE DATA (DDC)		
	K2D09	GK200-L005
	(X2U10)	GX200-R025
	H2D07	GH220-L007
	N2S12	GN200-L035
L006		
- DATA TAKEN (DDC)		
	K2B08	GK200-L006
	(X2S08)	GX200-R026
	N2U06	GN200-L036
	V2B10	GV200-L003

LINE/SIGNAL	PIN	SHEET/LINE
L007		
- CAM SD2 ARRAY OUT 0		
	K2P09	GK200-L007
	(L2S11)	GL200-R005
	(M2S04)	GM200-R003
L007		
- CAM SD2 ARRAY OUT 1		
	K2U05	GK200-L007
	(L2S13)	GL200-R005
	(M2U05)	GM200-R003
L007		
- CAM SD2 ARRAY OUT 2		
	K2M12	GK200-L007
	(L2U10)	GL200-R005
	(M2U04)	GM200-R003
L007		
- CAM SD2 ARRAY OUT 3		
	K2S05	GK200-L007
	(L2U12)	GL200-R005
	(M2S05)	GM200-R003
L007		
- CAM SD2 ARRAY OUT 4		
	K2S03	GK200-L007
	(L2U13)	GL200-R005
	(M2M09)	GM200-R003
L007		
- CAM SD2 ARRAY OUT 5		
	K2U02	GK200-L007
	(L2S09)	GL200-R005
	(M2P10)	GM200-R003
L007		
- CAM SD2 ARRAY OUT 6		
	K2M09	GK200-L007
	(L2P12)	GL200-R005
	(M2M10)	GM200-R003
L007		
- CAM SD2 ARRAY OUT 7		
	K2M08	GK200-L007
	(L2M07)	GL200-R005
	(M2P09)	GM200-R003
L007		
- CAM SD2 ARRAY OUT P		
	K2U04	GK200-L007
	(L2P07)	GL200-R005
	(M2U13)	GM200-R003
L008		
- TAKE DATA/DATA TKN DEV (AUX)		
	K2B09	GK200-L008
	(N2P07)	GN200-R043
L009		
+ EXT REG SELECT		
	K2U13	GK200-L009
	(Q2Z22)	GQ200-R018
	(R2S02)	GR200-R015
	H2M04	GH220-L031
	N2B04	GN200-L011
	R2Z22	GR200-L021

LINE/SIGNAL	PIN	SHEET/LINE
L010		
- TAKE DATA/DATA TKN CHAN (AUX)		
	K2S09	GK200-L010
	(N2P10)	GN200-R039
L011		
+ PAD COUNT=ZERO		
	K2P06	GK200-L011
	(V2P10)	GV200-R025
L012		
- CLOCK CHECK TWO		
	K2S12	GK200-L012
	(D2D02)	GD200-R014
	(E2D02)	GE200-R014
	(F2D02)	GF200-R041
	(G2S05)	GG210-R023
	(X2S09)	GX200-R032
L013		
+ CAR PARITY		
	K2X02	GK200-L013
	(J2X02)	GJ200-R013
	L2X02	GL200-L056
L014		
+ DXC BIT 6		
	K2X22	GK200-L014
	(J2X22)	GJ200-R019
L015		
- LOAD DOR		
	K2P11	GK200-L015
	(J2P04)	GJ200-R008
L016		
+ DOR INPUT LOW		
	K2X29	GK200-L016
	(J2X29)	GJ200-R011
L017		
+ DOR INPUT HIGH		
	K2X09	GK200-L017
	(J2X09)	GJ200-R012
L018		
+ ENBL PAD CNT AFTER CHAN EOT		
	K2J04	GK200-L018
	(V2S04)	GV200-R032
L019		
+ ADT CLOCK T0 OR T4		
	K2S08	GK200-L019
	(P2S08)	GP200-R030
	J2J06	GJ200-L006
L020		
+ ADT CLOCK T1 OR T5		
	K2S13	GK200-L020
	(P2U09)	GP200-R056
	J2M07	GJ200-L007
L021		
+ ADT CLOCK T2 OR T6		
	K2M02	GK200-L021
	(P2U06)	GP200-R031
	J2G05	GJ200-L008

LINE/SIGNAL	PIN	SHEET/LINE
L022		
+ ADT CLOCK T3 OR T7		
	K2U11	GK200-L022
	(P2U11)	GP200-R057
	J2J07	GJ200-L009
L023		
- CHECK RESET		
	K2Y10	GK200-L023
	(H2Y10)	GH220-R063
	(R2J05)	GR200-R028
	D2J06	GD200-L034
	E2J06	GE200-L034
	C2J10	GC200-L012
	F2M04	GF200-L056
	G2B13	GG210-L015
	H2U12	GH220-L061
	J2Y10	GJ200-L024
	L2D02	GL200-L003
	N2M13	GN200-L024
	V2G08	GV200-L033
	X2S13	GX200-L017
L024		
+ MACHINE RESET REPOWERED		
	K2Y29	GK200-L024
	(H2Y29)	GH220-R062
	J2Y29	GJ200-L022
L025		
+ ALU OUT BIT 0		
	K2W29	GK200-L025
	(J2W29)	GJ200-R018
L025		
+ ALU OUT BIT 1		
	K2W24	GK200-L025
	(J2W24)	GJ200-R018
L025		
+ ALU OUT BIT 2		
	K2W25	GK200-L025
	(J2W25)	GJ200-R018
L025		
+ ALU OUT BIT 3		
	K2W09	GK200-L025
	(J2W09)	GJ200-R018
L025		
+ ALU OUT BIT 4		
	K2W10	GK200-L025
	(J2W10)	GJ200-R018
L025		
+ ALU OUT BIT 5		
	K2W30	GK200-L025
	(J2W30)	GJ200-R018
L025		
+ ALU OUT BIT 6		
	K2W03	GK200-L025
	(J2W03)	GJ200-R018

LINE/SIGNAL	PIN	SHEET/LINE
L025		
+ ALU OUT BIT 7		
	K2W02	GK200-L025
	(J2W02)	GJ200-R018
L025		
+ ALU OUT BIT P		
	K2W22	GK200-L025
	(J2W22)	GJ200-R018
L026		
+ LD EXT REG CLK B		
	K2U10	GK200-L026
	(Q2S09)	GQ200-R013
	J2J04	GJ200-L034
L027		
- EXT REG ADR PARITY		
	K2D10	GK200-L027
	(Q2P06)	GQ200-R017
	N2P06	GN200-L008
	R2M09	GR200-L010
L028		
- DEGATE CHAN EXT REGS (UNUSED)		
	K2B04	GK200-L028
	F2S07	GF200-L033
L029		
+ DXC BIT 5		
	K2Z11	GK200-L029
	(J2Z11)	GJ200-R019
L030		
+ TAKE DATA OR DATA TAKEN		
	K2U09	GK200-L030
	(G2S10)	GG210-R030
	H2G07	GH220-L042
	J2U05	GJ200-L003
	N2S11	GN200-L025
L031		
+ GATE DTI REG/PAD COUNTER		
	K2G05	GK200-L031
	(V2M07)	GV200-R022
	X2M07	GX200-L015
	X2M07	GX200-L045
L032		
+ DEVICE COUNT < 64		
	K2M05	GK200-L032
	(V2G03)	GV200-R014
	M2B13	GM200-L005
L033		
- AUX COUNT < 64 (UNUSED)		
	K2S07	GK200-L033
L034		
+ DBP=CBP P1		
	K2W28	GK200-L034
	(J2W28)	GJ200-R014
L035		
+ DBP=CBP P2		
	K2Z22	GK200-L035
	(J2Z22)	GJ200-R015

LINE/SIGNAL	PIN	SHEET/LINE
L036		
+ DXC BIT 7		
	K2X24	GK200-L036
	(J2X24)	GJ200-R019
L037		
- WRITE ENABLE		
	K2U12	GK200-L037
	(J2P05)	GJ200-R009
	L2U06	GL200-L022
	M2J10	GM200-L016
R003		
+ DATA TAKEN (ADT)		
	(K2Y26)	GK200-R003
	H2Y26	GH220-L008
R004		
+ DECREMENT PAD COUNTER		
	(K2J09)	GK200-R004
	V2G02	GV200-L018
R005		
- CLOCK T0		
	(K2X13)	GK200-R005
	J2X13	GJ200-L005
R005		
- CLOCK T4		
	(K2X11)	GK200-R005
	J2X11	GJ200-L005
R005		
- CLOCK T6		
	(K2X26)	GK200-R005
	J2X26	GJ200-L005
R006		
- DEV DXR BUS BIT 0		
	(K2G13)	GK200-R006
	(N2G09)	GN200-R030
	(X2J07)	GX200-R003
	X2B12	GX200-L050
R006		
- DEV DXR BUS BIT 1		
	(K2P05)	GK200-R006
	(N2G11)	GN200-R031
	(X2J04)	GX200-R004
	X2D07	GX200-L050
R006		
- DEV DXR BUS BIT 2		
	(K2P02)	GK200-R006
	(N2G10)	GN200-R032
	(X2G02)	GX200-R005
	X2D11	GX200-L050
R006		
- DEV DXR BUS BIT 3		
	(K2J12)	GK200-R006
	(N2J09)	GN200-R033
	(X2G05)	GX200-R006
	X2B13	GX200-L050

LINE/SIGNAL	PIN	SHEET/LINE
R006		
- DEV DXR BUS BIT 4		
	(K2J13)	GK200-R006
	(N2J13)	GN200-R034
	(X2G09)	GX200-R007
	X2B10	GX200-L050
R006		
- DEV DXR BUS BIT 5		
	(K2J10)	GK200-R006
	(N2P09)	GN200-R035
	(X2G08)	GX200-R008
	X2B07	GX200-L050
R006		
- DEV DXR BUS BIT 6		
	(K2M04)	GK200-R006
	(N2G13)	GN200-R036
	(X2G04)	GX200-R009
	X2D09	GX200-L050
R006		
- DEV DXR BUS BIT 7		
	(K2M03)	GK200-R006
	(N2M08)	GN200-R037
	(X2G03)	GX200-R010
	X2D02	GX200-L050
R006		
- DEV DXR BUS BIT P		
	(K2P04)	GK200-R006
	(N2M09)	GN200-R038
	(X2J05)	GX200-R011
	X2B04	GX200-L050
R007		
+ ARRAY OUT PARITY CHECK		
	(K2X10)	GK200-R007
	J2X10	GJ200-L053
R008		
- CHAN DXR BUS BIT 0		
	(K2Y28)	GK200-R008
	(H2G02)	GH220-R018
	(H2J07)	GH220-R049
	(N2G12)	GN200-R021
	H2Y28	GH220-L033
R008		
- CHAN DXR BUS BIT 1		
	(K2Y30)	GK200-R008
	(H2G04)	GH220-R019
	(H2J09)	GH220-R050
	(N2J10)	GN200-R022
	H2Y30	GH220-L034
R008		
- CHAN DXR BUS BIT 2		
	(K2Y32)	GK200-R008
	(H2G05)	GH220-R020
	(H2J11)	GH220-R051
	(N2J12)	GN200-R023
	H2Y32	GH220-L035
R008		
- CHAN DXR BUS BIT 3		
	(K2Y33)	GK200-R008
	(H2G08)	GH220-R021
	(H2J12)	GH220-R052
	(N2J06)	GN200-R024
	H2Y33	GH220-L036
R008		
- CHAN DXR BUS BIT 4		
	(K2Y07)	GK200-R008
	(H2G09)	GH220-R022
	(H2P02)	GH220-R053
	(N2G03)	GN200-R025
	H2Y07	GH220-L037
R008		
- CHAN DXR BUS BIT 5		
	(K2Y09)	GK200-R008
	(H2G10)	GH220-R023
	(H2P04)	GH220-R054
	(N2J07)	GN200-R026
	H2Y09	GH220-L038
R008		
- CHAN DXR BUS BIT 6		
	(K2Y11)	GK200-R008
	(H2G12)	GH220-R024
	(H2P05)	GH220-R055
	(N2J05)	GN200-R027
	H2Y11	GH220-L039
R008		
- CHAN DXR BUS BIT 7		
	(K2Y13)	GK200-R008
	(H2G13)	GH220-R025
	(H2P07)	GH220-R056
	(N2M11)	GN200-R028
	H2Y13	GH220-L040
R008		
- CHAN DXR BUS BIT P		
	(K2G10)	GK200-R008
	(H2M02)	GH220-R026
	(N2G05)	GN200-R029
	H2P09	GH220-L041
R009		
+ CHANNEL/BUFFER CHECK		
	(K2X33)	GK200-R009
	J2X33	GJ200-L061
R010		
+ DEVICE/BUFFER CHECK		
	(K2X32)	GK200-R010
	J2X32	GJ200-L062
R011		
+ BAP TOGGLE		
	(K2Z05)	GK200-R011
	J2Z05	GJ200-L029
R012		
+ BAP TOGGLE (P)		
	(K2Z26)	GK200-R012
	J2Z26	GJ200-L028
R013		
+ CBP TOGGLE		
	(K2X03)	GK200-R013
	J2X03	GJ200-L030
R014		
+ BC2 EMPTY		
	(K2Z33)	GK200-R014
	J2Z33	GJ200-L033
R015		
+ BC1 FULL		
	(K2Z02)	GK200-R015
	J2Z02	GJ200-L032
R016		
- ALU IN1 BIT 0		
	(K2J02)	GK200-R016
	(F2J02)	GF200-R017
	(H2D04)	GH220-R027
	(J2S05)	GJ200-R016
	Q2M07	GQ200-L007
R016		
- ALU IN1 BIT 1		
	(K2G03)	GK200-R016
	(F2G02)	GF200-R018
	(H2D05)	GH220-R028
	(J2S12)	GJ200-R016
	Q2P07	GQ200-L007
R016		
- ALU IN1 BIT 2		
	(K2J05)	GK200-R016
	(F2G03)	GF200-R019
	(H2D06)	GH220-R029
	(J2P10)	GJ200-R016
	Q2M12	GQ200-L007
R016		
- ALU IN1 BIT 3		
	(K2G09)	GK200-R016
	(F2G04)	GF200-R020
	(H2D09)	GH220-R030
	(J2S03)	GJ200-R016
	Q2M09	GQ200-L007
R016		
- ALU IN1 BIT 4		
	(K2J06)	GK200-R016
	(F2G05)	GF200-R021
	(H2D10)	GH220-R031
	(J2B10)	GJ200-R016
	Q2M13	GQ200-L007
R016		
- ALU IN1 BIT 5		
	(K2G08)	GK200-R016
	(F2J09)	GF200-R022
	(H2D12)	GH220-R032
	(J2B03)	GJ200-R016
	Q2P13	GQ200-L007
R016		
- ALU IN1 BIT 6		
	(K2G07)	GK200-R016
	(F2J10)	GF200-R023
	(H2D13)	GH220-R033
	(J2D04)	GJ200-R016
	Q2S02	GQ200-L007
R016		
- ALU IN1 BIT 7		
	(K2J07)	GK200-R016
	(F2J11)	GF200-R024
	(H2J02)	GH220-R034
	(J2B04)	GJ200-R016
	Q2U02	GQ200-L007
R016		
- ALU IN1 BIT P		
	(K2G02)	GK200-R016
	(F2J12)	GF200-R025
	(H2J04)	GH220-R035
	(J2S07)	GJ200-R016
	Q2S03	GQ200-L007
R017		
+ DBP TOGGLE		
	(K2X07)	GK200-R017
	J2X07	GJ200-L031
R018		
- ARRAY IN BIT 0		
	(K2D05)	GK200-R018
	L2M10	GL200-L023
	M2D02	GM200-L018
R018		
- ARRAY IN BIT 1		
	(K2D04)	GK200-R018
	L2P05	GL200-L024
	M2D07	GM200-L019
R018		
- ARRAY IN BIT 2		
	(K2B02)	GK200-R018
	L2P09	GL200-L025
	M2B07	GM200-L020
R018		
- ARRAY IN BIT 3		
	(K2B05)	GK200-R018
	L2U09	GL200-L026
	M2B02	GM200-L021
R018		
- ARRAY IN BIT 4		
	(K2B07)	GK200-R018
	L2S07	GL200-L027
	M2D05	GM200-L022
R018		
- ARRAY IN BIT 5		
	(K2B03)	GK200-R018
	L2U02	GL200-L028
	M2D09	GM200-L023
R018		
- ARRAY IN BIT 6		
	(K2D07)	GK200-R018
	L2S06	GL200-L029
	M2B06	GM200-L024
R018		
- ARRAY IN BIT 7		
	(K2D02)	GK200-R018
	L2S12	GL200-L030
	M2B05	GM200-L025
R018		
- ARRAY IN BIT P		
	(K2G04)	GK200-R018
	L2S10	GL200-L031
	M2D04	GM200-L017
R019		
+ EXT REG GROUP 0 SELECTED		
	(K2D11)	GK200-R019
	R2P13	GR200-L019
R020		
+ CLOCK CHECK LATCHED		
	(K2X30)	GK200-R020
	J2X30	GJ200-L058
R021		
+ DXD CARD CHECK		
	(K2X28)	GK200-R021
	J2X28	GJ200-L054
R022		
+ GATE PCR TO ALU IN		
	(K2S10)	GK200-R022
	V2D11	GV200-L020
R023		
- SELECT PCR		
	(K2U07)	GK200-R023
	V2B07	GV200-L021
R024		
+ GATE BAP TO CAR		
	(K2Z25)	GK200-R024
	J2Z25	GJ200-L010
R025		
+ GATE BAP TO CAR (P)		
	(K2Z06)	GK200-R025
	J2Z06	GJ200-L011
R026		
+ GATE CBP TO CAR		
	(K2Z30)	GK200-R026
	J2Z30	GJ200-L012
R027		
+ GATE CBP TO CAR (P)		
	(K2Z10)	GK200-R027
	J2Z10	GJ200-L013
R028		
+ GATE DBP TO CAR		
	(K2Z28)	GK200-R028
	J2Z28	GJ200-L014
R029		
- INCREMENT		
	(K2Z07)	GK200-R029
	J2Z07	GJ200-L026
R030		
- INCREMENT (P)		
	(K2Z09)	GK200-R030
	J2Z09	GJ200-L027
R031		
- LOAD CAR TO BAP		
	(K2W26)	GK200-R031
	J2W26	GJ200-L015
R032		
- LOAD CAR TO BAP (P)		
	(K2Z24)	GK200-R032
	J2Z24	GJ200-L016
R033		
- LOAD CAR TO CBP		
	(K2Z03)	GK200-R033
	J2Z03	GJ200-L017
R034		
- LOAD CAR TO CBP (P)		
	(K2Z13)	GK200-R034
	J2Z13	GJ200-L018
R035		
- LOAD CAR TO DBP		
	(K2W06)	GK200-R035
	J2W06	GJ200-L019
R036		
- LOAD CAR TO DBP (P)		
	(K2W05)	GK200-R036
	J2W05	GJ200-L020
R037		
- NEED DATA/DATA READY CDX		
	(K2J11)	GK200-R037
	N2J11	GN200-L026
R038		
- NEED DATA/DATA READY DDC		
	(K2D06)	GK200-R038
	N2D07	GN200-L037
R039		
+ CBP XREG DECODE		
	(K2W13)	GK200-R039
	J2W13	GJ200-L035
R040		
+ DBP XREG DECODE		
	(K2W33)	GK200-R040
	J2W33	GJ200-L036

DATA TRANSFER DATA XRL GK200

LINE/SIGNAL	PIN	SHEET/LINE
R041		
+ XREG DECODE 02		
	(K2W32)	GK200-R041
	J2W32	GJ200-L037
R042		
+ XREG DECODE 03		
	(K2W07)	GK200-R042
	J2W07	GJ200-L038
R043		
+ EXT ADR DECODE 6		
	(K2Y06)	GK200-R043
	H2Y06	GH220-L029
R044		
+ EXT ADR DECODE 7		
	(K2Y25)	GK200-R044
	H2Y25	GH220-L026
R045		
- RUN CHANNEL L1		
	(K2W11)	GK200-R045
	J2W11	GJ200-L004
R046		
+ ARRAY WRITE		
	(K2Z29)	GK200-R046
	J2Z29	GJ200-L042
R047		
+ 3 BYTES NEEDED/READY		
	(K2U06)	GK200-R047

```
003 - CHECK RESET ------------------ D02
004 - CDN SD2 T CLOCK REDRIVEN (0:7) * =
005 - CHIP SELECT 0 ---------------- U07
006 - CHIP SELECT 1 ---------------- M11
007 - CHIP SELECT 2 ---------------- P10
008 - CHIP SELECT 3 ---------------- P06
009 - CARD SELECT 0 ---------------- S05
010 - ARRAY ADDRESS BIT 2 ---------- M12
011 - ARRAY ADDRESS BIT 3 ---------- P13
012 - ARRAY ADDRESS BIT 4 ---------- U05
013 - ARRAY ADDRESS BIT 5 ---------- S02
014 - ARRAY ADDRESS BIT 6 ---------- S03
015 - ARRAY ADDRESS BIT 7 ---------- U04
016 - ARRAY ADDRESS BIT 8 ---------- M08
017 - ARRAY ADDRESS BIT 9 ---------- M09
018 - ARRAY ADDRESS BIT 10 --------- M13
019 - ARRAY ADDRESS BIT 11 --------- P11
020 - ARRAY ADDRESS BIT 12 --------- S04
021 - ARRAY ADDRESS BIT 13 --------- S08
022 - WRITE ENABLE ----------------- U06
023 - ARRAY IN BIT 0 --------------- M10
024 - ARRAY IN BIT 1 --------------- P05
025 - ARRAY IN BIT 2 --------------- P09
026 - ARRAY IN BIT 3 --------------- U09
027 - ARRAY IN BIT 4 --------------- S07
028 - ARRAY IN BIT 5 --------------- U02
029 - ARRAY IN BIT 6 --------------- S06
030 - ARRAY IN BIT 7 --------------- S12
031 - ARRAY IN BIT P --------------- S10
032 + CDN SD2 REG ADDRESS (P,0:7) == * =
033 + CDN SD2 REGISTER READ GATE --- Y06
034 + CDN SD2 REGISTER WRITE GATE -- Y26
035 + CDN SD2 REGISTER R/W CLOCK --- Y07
036 + CDN SD2 NATIVE CHECK -------- Y10
  -  + CAM SD2 SD/CNTL MACHINE RESET  Y03
038 - CAM SD2 DIAGNOSTIC FORCE (3:7) * =
039 - CHIP SELECT 0 ---------------- Z05
040 - CHIP SELECT 1 ---------------- Z25
041 - CHIP SELECT 2 ---------------- Z24
042 - CHIP SELECT 3 ---------------- Z03
043 - CARD SELECT 0 ---------------- Z22
044 - ARRAY ADDRESS BIT 2 ---------- Z06
045 - ARRAY ADDRESS BIT 3 ---------- Z02
046 - ARRAY ADDRESS BIT 4 ---------- Z30
047 - ARRAY ADDRESS BIT 5 ---------- Z13
048 - ARRAY ADDRESS BIT 6 ---------- Z33
049 - ARRAY ADDRESS BIT 7 ---------- Z10
050 - ARRAY ADDRESS BIT 8 ---------- Z32
051 - ARRAY ADDRESS BIT 9 ---------- Z29
052 - ARRAY ADDRESS BIT 10 --------- Z26
053 - ARRAY ADDRESS BIT 11 --------- Z09
054 - ARRAY ADDRESS BIT 12 --------- Z07
055 - ARRAY ADDRESS BIT 13 --------- Z28
056 + CAR PARITY ------------------- X02
```

CMAA CARD

OVERVIEW

The CMAA Card shares with the 3880 microprocessor the DASD gap processing workload.

PRIMARY FUNCTIONS

The CMAA Card provides ...

- An auxiliary microprocessor to share the gap processing with the main 3880 microprocessor processor,
- The ability to store data from the device into ASDM control store while transferring data from the device to cache or to the channel.
- A means of reporting sense and status information to the SDM (via the CMCD card),
- A means of reporting hardware detected checks (as CHK REG Bit 7) when running in non-caching mode.

PRIMARY COMPONENTS

- ASDM
- Control Storage (CS)
- Local Storage Registers (LSR)
- CACTL: ASDM Control Register
- ACTL: ASDM Control Register Shadow
- CARD1: ASDM Read Register 1
- ARD1: ASDM Read Register 1 Shadow
- CARD2: ASDM Read Register 2
- ARD2: ASDM Read Register 2 Shadow
- AWR1: ASDM Write Register 1
- CAWR1: ASDM Write Register 1 Shadow
- AWR2: ASDM Write Register 2
- CAWR2: ASDM Write Register 2 Shadow
- CAAJCK: ADT/ASDM Check Register
- External Register Address Decode
- ADT Buffer Chip Select Decode.
- Timing & Controls.

ERROR CHECKING

- Register read/write controls (CMAAJCK bit 0), R/W clock with both read gate and write gate or with neither gate.
- Register Address Bus parity check (CMAAJCK bit 0), incorrect parity during R/W clock.
- Register Data Bus parity check (CMAAJCK bit 0) incorrect parity on the register data bus during a read or write of an indirect register on this card.
- ASDM Local Store Register Address parity check (CMAAJCK bit 1)
- ASDM External Register Address parity check (CMAAJCK bit 1)
- ASDM Internal Check (CMAAJCK bit 2)
- Check of incorrect parity on the busses going into the ASDM from Control Store (CS), Local Storage Registers (LSR), or the CRGA Module (CMAAJCK bit 2)
- Parity check on the 'Array In' bus as it goes into ASDM's CS. (CMAAJCK bit 3)
- Duplicate decode check on the Internal Register Address bus. (CMAAJCK bit 4)
- ASDM CS Address parity check on either a read or write operation (CMAAJCK bit 6)
- CAR Address parity check on write ops to ASDM's CS (CMAAJCK bit 7)
  - Multiple Decode Checks
  - Invert CAR parity

```
D05 + CHK BIT 7 -------------------- 003
B11 + CMAA IR CHECK ---------------- 004
= * - CAM SD2 ARRAY OUT (P,0:7) ==== 005
= * - DATA EVEN BUS OUT (P,0:7) ==== 006
= * - DATA ODD BUS OUT (P,0:7) ===== 007
U11 - SET REGISTER GATE ------------ 008
D11 - REGISTER LOAD COMMAND -------- 009
D10 - EXTERNAL REGISTER SELECT ----- 010
G03 - INTERRUPT RESPONSE ----------- 011
= * + CDN SD2 REG R/W DATA (P,0:7) = 012
Y13 - CAM SD2 REG READ CLOCK DELAYED 013
Y05 - CDN SD2 REGISTER ADR DECODED - 014
B08 - EXTERNAL REGISTER ADDRESS P -- 015
D07 - EXTERNAL REGISTER ADDRESS 0 -- 016
J02 - EXTERNAL REGISTER ADDRESS 1 -- 017
D06 - EXTERNAL REGISTER ADDRESS 2 -- 018
B13 - EXTERNAL REGISTER ADDRESS 3 -- 019
D13 - EXTERNAL REGISTER ADDRESS 4 -- 020
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LINE/SIGNAL	PIN	SHEET/LINE
L003		
- CHECK RESET		
	L2D02	GL200-L003
	(H2Y10)	GH220-R063
	(R2J05)	GR200-R028
	D2J06	GD200-L034
	E2J06	GE200-L034
	C2J10	GC200-L012
	F2M04	GF200-L056
	G2B13	GG210-L015
	H2U12	GH220-L061
	J2Y10	GJ200-L024
	K2Y10	GK200-L023
	N2M13	GN200-L024
	V2G08	GV200-L033
	X2S13	GX200-L017
L004		
- CDN SD2 T CLOCK REDRIVEN 0		
	L2Y33	GL200-L004
	(N2Y33)	GN200-R059
	M2Y33	GM200-L050
L004		
- CDN SD2 T CLOCK REDRIVEN 1		
	L2B05	GL200-L004
	(N2M07)	GN200-R059
L004		
- CDN SD2 T CLOCK REDRIVEN 2		
	L2Y02	GL200-L004
	(N2Y02)	GN200-R059
	M2Y02	GM200-L051
L004		
- CDN SD2 T CLOCK REDRIVEN 3		
	L2B04	GL200-L004
	(N2P02)	GN200-R059
	M2M12	GM200-L052
L004		
- CDN SD2 T CLOCK REDRIVEN 4		
	L2Y32	GL200-L004
	(N2Y32)	GN200-R059
	M2Y32	GM200-L053
L004		
- CDN SD2 T CLOCK REDRIVEN 5		
	L2D09	GL200-L004
	(N2M02)	GN200-R059
L004		
- CDN SD2 T CLOCK REDRIVEN 6		
	L2Y22	GL200-L004
	(N2Y22)	GN200-R059
	M2Y22	GM200-L054
L004		
- CDN SD2 T CLOCK REDRIVEN 7		
	L2D04	GL200-L004
	(N2M03)	GN200-R059
	M2U02	GM200-L055

LINE/SIGNAL	PIN	SHEET/LINE
L005		
- CHIP SELECT 0		
	L2U07	GL200-L005
	(J2J11)	GJ200-R004
	L2Z05	GL200-L039
	M2Z05	GM200-L033
L006		
- CHIP SELECT 1		
	L2M11	GL200-L006
	(J2D13)	GJ200-R004
	L2Z25	GL200-L040
	M2Z25	GM200-L034
L007		
- CHIP SELECT 2		
	L2P10	GL200-L007
	(J2G03)	GJ200-R004
	L2Z24	GL200-L041
	M2Z24	GM200-L035
L008		
- CHIP SELECT 3		
	L2P06	GL200-L008
	(J2G08)	GJ200-R004
	L2Z03	GL200-L042
	M2Z03	GM200-L036
L009		
- CARD SELECT 0		
	L2S05	GL200-L009
	(J2D12)	GJ200-R006
	L2Z22	GL200-L043
	M2Z22	GM200-L049
L010		
- ARRAY ADDRESS BIT 2		
	L2M12	GL200-L010
	(J2G12)	GJ200-R005
	L2Z06	GL200-L044
	M2Z06	GM200-L037
L011		
- ARRAY ADDRESS BIT 3		
	L2P13	GL200-L011
	(J2J12)	GJ200-R005
	L2Z02	GL200-L045
	M2Z02	GM200-L038
L012		
- ARRAY ADDRESS BIT 4		
	L2U05	GL200-L012
	(J2M05)	GJ200-R005
	L2Z30	GL200-L046
	M2Z30	GM200-L039
L013		
- ARRAY ADDRESS BIT 5		
	L2S02	GL200-L013
	(J2G10)	GJ200-R005
	L2Z13	GL200-L047
	M2Z13	GM200-L040

LINE/SIGNAL	PIN	SHEET/LINE
L014		
- ARRAY ADDRESS BIT 6		
	L2S03	GL200-L014
	(J2B09)	GJ200-R005
	L2Z33	GL200-L048
	M2Z33	GM200-L041
L015		
- ARRAY ADDRESS BIT 7		
	L2U04	GL200-L015
	(J2D09)	GJ200-R005
	L2Z10	GL200-L049
	M2Z10	GM200-L042
L016		
- ARRAY ADDRESS BIT 8		
	L2M08	GL200-L016
	(J2M04)	GJ200-R005
	L2Z32	GL200-L050
	M2Z32	GM200-L043
L017		
- ARRAY ADDRESS BIT 9		
	L2M09	GL200-L017
	(J2J13)	GJ200-R005
	L2Z29	GL200-L051
	M2Z29	GM200-L044
L018		
- ARRAY ADDRESS BIT 10		
	L2M13	GL200-L018
	(J2M02)	GJ200-R005
	L2Z26	GL200-L052
	M2Z26	GM200-L045
L019		
- ARRAY ADDRESS BIT 11		
	L2P11	GL200-L019
	(J2P02)	GJ200-R005
	L2Z09	GL200-L053
	M2Z09	GM200-L046
L020		
- ARRAY ADDRESS BIT 12		
	L2S04	GL200-L020
	(J2G13)	GJ200-R005
	L2Z07	GL200-L054
	M2Z07	GM200-L047
L021		
- ARRAY ADDRESS BIT 13		
	L2S08	GL200-L021
	(J2M03)	GJ200-R005
	L2Z28	GL200-L055
	M2Z28	GM200-L048
L022		
- WRITE ENABLE		
	L2U06	GL200-L022
	(J2P05)	GJ200-R009
	K2U12	GK200-L037
	M2J10	GM200-L016

LINE/SIGNAL	PIN	SHEET/LINE
L023		
- ARRAY IN BIT 0		
	L2M10	GL200-L023
	(K2D05)	GK200-R018
	M2D02	GM200-L018
L024		
- ARRAY IN BIT 1		
	L2P05	GL200-L024
	(K2D04)	GK200-R018
	M2D07	GM200-L019
L025		
- ARRAY IN BIT 2		
	L2P09	GL200-L025
	(K2B02)	GK200-R018
	M2B07	GM200-L020
L026		
- ARRAY IN BIT 3		
	L2U09	GL200-L026
	(K2B05)	GK200-R018
	M2B02	GM200-L021
L027		
- ARRAY IN BIT 4		
	L2S07	GL200-L027
	(K2B07)	GK200-R018
	M2D05	GM200-L022
L028		
- ARRAY IN BIT 5		
	L2U02	GL200-L028
	(K2B03)	GK200-R018
	M2D09	GM200-L023
L029		
- ARRAY IN BIT 6		
	L2S06	GL200-L029
	(K2D07)	GK200-R018
	M2B06	GM200-L024
L030		
- ARRAY IN BIT 7		
	L2S12	GL200-L030
	(K2D02)	GK200-R018
	M2B05	GM200-L025
L031		
- ARRAY IN BIT P		
	L2S10	GL200-L031
	(K2G04)	GK200-R018
	M2D04	GM200-L017
L032		
+ CDN SD2 REG ADDRESS P		
	L2W02	GL200-L032
	(N2W02)	GN200-R005
	M2W02	GM200-L032
L032		
+ CDN SD2 REG ADDRESS 0		
	L2W24	GL200-L032
	(N2W24)	GN200-R005
	M2W24	GM200-L032

LINE/SIGNAL	PIN	SHEET/LINE
L032		
+ CDN SD2 REG ADDRESS 1		
	L2W29	GL200-L032
	(N2W29)	GN200-R005
	M2W29	GM200-L032
L032		
+ CDN SD2 REG ADDRESS 2		
	L2W30	GL200-L032
	(N2W30)	GN200-R005
	M2W30	GM200-L032
L032		
+ CDN SD2 REG ADDRESS 3		
	L2W10	GL200-L032
	(N2W10)	GN200-R005
	M2W10	GM200-L032
L032		
+ CDN SD2 REG ADDRESS 4		
	L2W11	GL200-L032
	(N2W11)	GN200-R005
	M2W11	GM200-L032
L032		
+ CDN SD2 REG ADDRESS 5		
	L2W09	GL200-L032
	(N2W09)	GN200-R005
	M2W09	GM200-L032
L032		
+ CDN SD2 REG ADDRESS 6		
	L2W05	GL200-L032
	(N2W05)	GN200-R005
	M2W05	GM200-L032
L032		
+ CDN SD2 REG ADDRESS 7		
	L2W33	GL200-L032
	(N2W33)	GN200-R005
	M2W33	GM200-L032
L033		
+ CDN SD2 REGISTER READ GATE		
	L2Y06	GL200-L033
	(N2Y06)	GN200-R045
	M2Y06	GM200-L030
L034		
+ CDN SD2 REGISTER WRITE GATE		
	L2Y26	GL200-L034
	(N2Y26)	GN200-R046
	M2Y26	GM200-L029
L035		
+ CDN SD2 REGISTER R/W CLOCK		
	L2Y07	GL200-L035
	(N2Y07)	GN200-R047
	M2Y07	GM200-L028
L036		
+ CDN SD2 NATIVE CHECK		
	L2Y10	GL200-L036
	(N2Y10)	GN200-R053

LINE/SIGNAL	PIN	SHEET/LINE
L037		
+ CAM SD2 SD/CNTL MACHINE RESET		
	L2Y03	GL200-L037
	(M2Y03)	GM200-R034
	N2Y03	GN200-L041
L038		
- CAM SD2 DIAGNOSTIC FORCE 3		
	L2Y29	GL200-L038
	(M2Y29)	GM200-R036
	N2Y29	GN200-L042
L038		
- CAM SD2 DIAGNOSTIC FORCE 4		
	L2Y30	GL200-L038
	(M2Y30)	GM200-R036
	N2Y30	GN200-L042
L038		
- CAM SD2 DIAGNOSTIC FORCE 5		
	L2Y24	GL200-L038
	(M2Y24)	GM200-R036
	N2Y24	GN200-L042
L038		
- CAM SD2 DIAGNOSTIC FORCE 6		
	L2Y09	GL200-L038
	(M2Y09)	GM200-R036
	N2Y09	GN200-L042
L038		
- CAM SD2 DIAGNOSTIC FORCE 7		
	L2Y25	GL200-L038
	(M2Y25)	GM200-R036
	N2Y25	GN200-L042
L039		
- CHIP SELECT 0		
	L2Z05	GL200-L039
	(J2J11)	GJ200-R004
	L2U07	GL200-L005
	M2Z05	GM200-L033
L040		
- CHIP SELECT 1		
	L2Z25	GL200-L040
	(J2D13)	GJ200-R004
	L2M11	GL200-L006
	M2Z25	GM200-L034
L041		
- CHIP SELECT 2		
	L2Z24	GL200-L041
	(J2G03)	GJ200-R004
	L2P10	GL200-L007
	M2Z24	GM200-L035
L042		
- CHIP SELECT 3		
	L2Z03	GL200-L042
	(J2G08)	GJ200-R004
	L2P06	GL200-L008
	M2Z03	GM200-L036

LINE/SIGNAL	PIN	SHEET/LINE
L043		
- CARD SELECT 0		
	L2Z22	GL200-L043
	(J2D12)	GJ200-R006
	L2S05	GL200-L009
	M2Z22	GM200-L049
L044		
- ARRAY ADDRESS BIT 2		
	L2Z06	GL200-L044
	(J2G12)	GJ200-R005
	L2M12	GL200-L010
	M2Z06	GM200-L037
L045		
- ARRAY ADDRESS BIT 3		
	L2Z02	GL200-L045
	(J2J12)	GJ200-R005
	L2P13	GL200-L011
	M2Z02	GM200-L038
L046		
- ARRAY ADDRESS BIT 4		
	L2Z30	GL200-L046
	(J2M05)	GJ200-R005
	L2U05	GL200-L012
	M2Z30	GM200-L039
L047		
- ARRAY ADDRESS BIT 5		
	L2Z13	GL200-L047
	(J2G10)	GJ200-R005
	L2S02	GL200-L013
	M2Z13	GM200-L040
L048		
- ARRAY ADDRESS BIT 6		
	L2Z33	GL200-L048
	(J2B09)	GJ200-R005
	L2S03	GL200-L014
	M2Z33	GM200-L041
L049		
- ARRAY ADDRESS BIT 7		
	L2Z10	GL200-L049
	(J2D09)	GJ200-R005
	L2U04	GL200-L015
	M2Z10	GM200-L042
L050		
- ARRAY ADDRESS BIT 8		
	L2Z32	GL200-L050
	(J2N04)	GJ200-R005
	L2N08	GL200-L016
	M2Z32	GM200-L043
L051		
- ARRAY ADDRESS BIT 9		
	L2Z29	GL200-L051
	(J2J13)	GJ200-R005
	L2M09	GL200-L017
	M2Z29	GM200-L044

LINE/SIGNAL	PIN	SHEET/LINE
L052		
- ARRAY ADDRESS BIT 10		
	L2Z26	GL200-L052
	(J2M02)	GJ200-R005
	L2M13	GL200-L018
	M2Z26	GM200-L045
L053		
- ARRAY ADDRESS BIT 11		
	L2Z09	GL200-L053
	(J2P02)	GJ200-R005
	L2P11	GL200-L019
	M2Z09	GM200-L046
L054		
- ARRAY ADDRESS BIT 12		
	L2Z07	GL200-L054
	(J2G13)	GJ200-R005
	L2S04	GL200-L020
	M2Z07	GM200-L047
L055		
- ARRAY ADDRESS BIT 13		
	L2Z28	GL200-L055
	(J2M03)	GJ200-R005
	L2S08	GL200-L021
	M2Z28	GM200-L048
L056		
+ CAR PARITY		
	L2X02	GL200-L056
	(J2X02)	GJ200-R013
	K2X02	GK200-L013
R003		
+ CHK BIT 7		
	(L2D05)	GL200-R003
	J2B08	GJ200-L069
R004		
+ CMAA IR CHECK		
	(L2B11)	GL200-R004
	N2B03	GN200-L022
R005		
- CAM SD2 ARRAY OUT P		
	(L2P07)	GL200-R005
	(M2U13)	GM200-R003
	K2U04	GK200-L007
R005		
- CAM SD2 ARRAY OUT 0		
	(L2S11)	GL200-R005
	(M2S04)	GM200-R003
	K2P09	GK200-L007
R005		
- CAM SD2 ARRAY OUT 1		
	(L2S13)	GL200-R005
	(M2U05)	GM200-R003
	K2U05	GK200-L007
R005		
- CAM SD2 ARRAY OUT 2		
	(L2U10)	GL200-R005
	(M2U04)	GM200-R003
	K2M12	GK200-L007

LINE/SIGNAL	PIN	SHEET/LINE
R005		
- CAM SD2 ARRAY OUT 3		
	(L2U12)	GL200-R005
	(M2S05)	GM200-R003
	K2S05	GK200-L007
R005		
- CAM SD2 ARRAY OUT 4		
	(L2U13)	GL200-R005
	(M2M09)	GM200-R003
	K2S03	GK200-L007
R005		
- CAM SD2 ARRAY OUT 5		
	(L2S09)	GL200-R005
	(M2P10)	GM200-R003
	K2U02	GK200-L007
R005		
- CAM SD2 ARRAY OUT 6		
	(L2P12)	GL200-R005
	(M2M10)	GM200-R003
	K2M09	GK200-L007
R005		
- CAM SD2 ARRAY OUT 7		
	(L2M07)	GL200-R005
	(M2P09)	GM200-R003
	K2M08	GK200-L007
R006		
- DATA EVEN BUS OUT P		
	(L2J09)	GL200-R006
R006		
- DATA EVEN BUS OUT 0		
	(L2B12)	GL200-R006
R006		
- DATA EVEN BUS OUT 1		
	(L2G02)	GL200-R006
R006		
- DATA EVEN BUS OUT 2		
	(L2D12)	GL200-R006
R006		
- DATA EVEN BUS OUT 3		
	(L2J06)	GL200-R006
R006		
- DATA EVEN BUS OUT 4		
	(L2G07)	GL200-R006
R006		
- DATA EVEN BUS OUT 5		
	(L2B09)	GL200-R006
R006		
- DATA EVEN BUS OUT 6		
	(L2G04)	GL200-R006
R006		
- DATA EVEN BUS OUT 7		
	(L2J07)	GL200-R006

LINE/SIGNAL	PIN	SHEET/LINE
R007		
- DATA ODD BUS OUT P		
	(L2J04)	GL200-R007
R007		
- DATA ODD BUS OUT 0		
	(L2B02)	GL200-R007
R007		
- DATA ODD BUS OUT 1		
	(L2B10)	GL200-R007
R007		
- DATA ODD BUS OUT 2		
	(L2B06)	GL200-R007
R007		
- DATA ODD BUS OUT 3		
	(L2B03)	GL200-R007
R007		
- DATA ODD BUS OUT 4		
	(L2B07)	GL200-R007
R007		
- DATA ODD BUS OUT 5		
	(L2G05)	GL200-R007
R007		
- DATA ODD BUS OUT 6		
	(L2G08)	GL200-R007
R007		
- DATA ODD BUS OUT 7		
	(L2J05)	GL200-R007
R008		
- SET REGISTER GATE		
	(L2U11)	GL200-R008
R009		
- REGISTER LOAD COMMAND		
	(L2D11)	GL200-R009
R010		
- EXTERNAL REGISTER SELECT		
	(L2D10)	GL200-R010
R011		
- INTERRUPT RESPONSE		
	(L2G03)	GL200-R011
R012		
+ CDN SD2 REG R/W DATA P		
	(L2W25)	GL200-R012
	(M2W25)	GM200-R042
	(N2W25)	GN200-R011
	(N2W25)	GN200-R052
R012		
+ CDN SD2 REG R/W DATA 0		
	(L2W07)	GL200-R012
	(M2W07)	GM200-R042
	(N2W07)	GN200-R011
	(N2W07)	GN200-R052

LINE/SIGNAL	PIN	SHEET/LINE
R012		
+ CDN SD2 REG R/W DATA 1		
	(L2W03)	GL200-R012
	(M2W03)	GM200-R042
	(N2W03)	GN200-R011
	(N2W03)	GN200-R052
R012		
+ CDN SD2 REG R/W DATA 2		
	(L2W06)	GL200-R012
	(M2W06)	GM200-R042
	(N2W06)	GN200-R011
	(N2W06)	GN200-R052
R012		
+ CDN SD2 REG R/W DATA 3		
	(L2W32)	GL200-R012
	(M2W32)	GM200-R042
	(N2W32)	GN200-R011
	(N2W32)	GN200-R052
R012		
+ CDN SD2 REG R/W DATA 4		
	(L2W13)	GL200-R012
	(M2W13)	GM200-R042
	(N2W13)	GN200-R011
	(N2W13)	GN200-R052
R012		
+ CDN SD2 REG R/W DATA 5		
	(L2W22)	GL200-R012
	(M2W22)	GM200-R042
	(N2W22)	GN200-R011
	(N2W22)	GN200-R052
R012		
+ CDN SD2 REG R/W DATA 6		
	(L2W28)	GL200-R012
	(M2W28)	GM200-R042
	(N2W28)	GN200-R011
	(N2W28)	GN200-R052
R012		
+ CDN SD2 REG R/W DATA 7		
	(L2W26)	GL200-R012
	(M2W26)	GM200-R042
	(N2W26)	GN200-R011
	(N2W26)	GN200-R052
R013		
- CAM SD2 REG READ CLOCK DELAYED		
	(L2Y13)	GL200-R013
	(M2Y13)	GM200-R035
	(N2Y13)	GN200-R054
R014		
- CDN SD2 REGISTER ADR DECODED		
	(L2Y05)	GL200-R014
	(N2Y05)	GN200-R048
	M2Y05	GM200-L031
R015		
- EXTERNAL REGISTER ADDRESS P		
	(L2B08)	GL200-R015

LINE/SIGNAL	PIN	SHEET/LINE
R016		
- EXTERNAL REGISTER ADDRESS 0		
	(L2D07)	GL200-R016
R017		
- EXTERNAL REGISTER ADDRESS 1		
	(L2J02)	GL200-R017
R018		
- EXTERNAL REGISTER ADDRESS 2		
	(L2D06)	GL200-R018
R019		
- EXTERNAL REGISTER ADDRESS 3		
	(L2B13)	GL200-R019
R020		
- EXTERNAL REGISTER ADDRESS 4		
	(L2D13)	GL200-R020

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003 + CAM SD2 COMMUNICATION CHECK -- J11
004 + SELECTIVE OR SYSTEM RESET ---- G03
005 + DEVICE COUNT < 64 ------------ B13
006 - SD2 SS +5V POWER OFF --------- P05
007 - PCF SD2 PARITY ERROR --------- U07
008 - PCF SD2 READ PARITY ERROR ---- S08
009 + CHECK ONE IND ----------------- J04
010 + SD2 INDICATOR ----------------- U10
011 + RESET ------------------------ P11
012 - CDN SD# SECOND COMM R/W CLOCK  M02
013 - CAM SD# COMM R/W CLOCK ------- D06
014 - CAM SD# COMM WRITE GATE ------ M11
015 - CAM SD# COMM READ GATE ------- P13
016 - WRITE ENABLE ----------------- J10
017 - ARRAY IN BIT P --------------- D04
018 - ARRAY IN BIT 0 --------------- D02
019 - ARRAY IN BIT 1 --------------- D07
020 - ARRAY IN BIT 2 --------------- B07
021 - ARRAY IN BIT 3 --------------- B02
022 - ARRAY IN BIT 4 --------------- D05
023 - ARRAY IN BIT 5 --------------- D09
024 - ARRAY IN BIT 6 --------------- B06
025 - ARRAY IN BIT 7 --------------- B05
026 - PCF SD2 REG READ CLOCK DELAYED X06
027 + SD2 CABLE CHECK -------------- X08
028 + CDN SD2 REGISTER R/W CLOCK --- Y07
029 + CDN SD2 REGISTER WRITE GATE -- Y26
030 + CDN SD2 REGISTER READ GATE --- Y06
031 - CDN SD2 REGISTER ADR DECODED - Y05
032 + CDN SD2 REG ADDRESS (P,0:7) == * =
033 - CHIP SELECT 0 ---------------- Z05
034 - CHIP SELECT 1 ---------------- Z25
035 - CHIP SELECT 2 ---------------- Z24
036 - CHIP SELECT 3 ---------------- Z03
037 - ARRAY ADDRESS BIT 2 ---------- Z06
038 - ARRAY ADDRESS BIT 3 ---------- Z02
039 - ARRAY ADDRESS BIT 4 ---------- Z30
040 - ARRAY ADDRESS BIT 5 ---------- Z13
041 - ARRAY ADDRESS BIT 6 ---------- Z33
042 - ARRAY ADDRESS BIT 7 ---------- Z10
043 - ARRAY ADDRESS BIT 8 ---------- Z32
044 - ARRAY ADDRESS BIT 9 ---------- Z29
045 - ARRAY ADDRESS BIT 10 --------- Z26
046 - ARRAY ADDRESS BIT 11 --------- Z09
047 - ARRAY ADDRESS BIT 12 --------- Z07
048 - ARRAY ADDRESS BIT 13 --------- Z28
049 - CARD SELECT 0 ---------------- Z22
050 - CDN SD2 T CLOCK REDRIVEN 0 --- Y33
051 - CDN SD2 T CLOCK REDRIVEN 2 --- Y02
052 - CDN SD2 T CLOCK REDRIVEN 3 --- M12
053 - CDN SD2 T CLOCK REDRIVEN 4 --- Y32
054 - CDN SD2 T CLOCK REDRIVEN 6 --- Y22
055 - CDN SD2 T CLOCK REDRIVEN 7 --- U02
056 - SS POWER RESET --------------- G04
057 + SG1 SS POWER OFF ------------- G05
058 + SG2 SS POWER OFF ------------- G08
```

CMCA CARD

OVERVIEW

The CMCA (communication adapter) card is the indirect register interface between the storage director and the control board and between the two storage directors. The card also provides the data buffer for the DXA/DXD cards.

PRIMARY FUNCTIONS

- Indirect register interface to the control board.
- Communication between the two storage directors.
- Reset generation for the CMAA, CMCD, and CMCA cards.
- 1024 byte data buffer. This is the array that the DXA and DXD cards use to buffer data during data transfers.

PRIMARY COMPONENTS

- Indirect register bus drivers and receivers (three-state). The CMCA drives the indirect register address and control lines from the storage director to control board. It also controls the indirect register data bus going and coming from the control board to the SD.
- Communication bus drivers and receivers (three-state). There are two cables linking SD1 to SD2 for the purpose of communication between storage directors. Most of the communication logic is on SD2, however both SDs will use the cables for the communication data bus and associated controls. Since these lines may be sourced on either SD1 or SD2 their signal names are labled CAM SD#. Other communication control lines are named for their source.
- 256 byte communication buffer (functional on SD2 and shared by both storage directors).
- Auto-incrementing address register for the communication buffer.
- Communication control tie-breaking. Both SDs may request control of the communication buffer and address register, however only one request at a time will be granted.
- Message waiting notification to the other storage director. Each storage director may set bit 0 in CSTAT3 of the other SD to notify it that a message is waiting. This bit is sent back to the first SD to set bit 1 in CSTAT3 to indicate that the message had been sent. The message waiting indications for both SDs are latched on SD2. If SD2 is powered off the indications will be lost.
- Diagnostic register.
- 57 millisecond timer which sets an overflow bit.
- Timed "Selective or System Reset" inhibit.
- 1024 byte data buffer.
- Parity inversion on the output of the data buffer to preserve hashed parity when reading the buffer with and address of '4000'x to '43FF'x.
- "Controlled Machine Reset" generation for the CMCA, CMAA, and CMCD cards.
- "Level Two Interrupt" generation.

ERROR CHECKING

- CA IR Check (bit 0 CCOMACK) This bit will become active if
  - a missing read gate or write gate
  - both read gate and write gate active
  - incorrect parity on the indirect address bus (good parity is positive active even)
  - incorrect parity on the data bus during a read or write of an indirect register on this card.
- CA Duplicate IR Addr Decode Check (bit 4 CCOMACK) This bit and bit 0 are reported to the CMCD card as the CMCA IR CHECK.
- Port Control IR Parity Check (bit 5 CCOMACK) This bit latches a check from the CMPC card.
- Port Control IR Read Parity Check (bit 6 CCOMACK) This bit latches a check from the CMPC card. It along with bit 5 are reported to the CMCD as PORT CONTROL IR SUM CHECK.
- SD Indicator Check (bit 7 CCOMACK) This bit is set if the bits 1 and 2 in CSTAT4 are the same.

Bits 0,1,4,and 7 ORed and sent to CMCD to set common check. The communication check is reported as bit 4 of CSTAT4. It is set by

- a data parity error when reading or writing the communication address register or buffer.
- an address parity error from the address register when reading or writing the communication buffer.
- communication read gate and write gate both active or inactive during communication R/W clock.
- both storage directors having thier request honored at the same time.


```
= * - CAM SD2 ARRAY OUT (P,0:7) ==== 003
P12 + CAM SD2 RANGE DECODE CHECK --- 004
P07 - CAM SD2 COMM READ CLOCK DELAY  005
M08 + CAM SD2 COMMUNICATION CHECK -- 006
U11 + CAM SD1 COMM CABLE CHECK ----- 007
P06 + CAM SD2 COMM CABLE 2 --------- 008
S11 + CAM SD1 COMM CABLE 1 --------- 009
M04 - CAM SD2 REQUEST HONORED ------ 010
S09 - CAM SD2 MSG WAITING FOR SD1 -- 011
M05 - CAM SD1 MSG WAITING FOR SD2 -- 012
P04 - CAM SD1 RST MSG WAIT FOR SD1 - 013
U06 - CAM SD1 RST MSG WAIT FOR SD2 - 014
M13 + CAM SD2 SELECT/SYS RESET GATED 015
G02 - INT REQ LEVEL 2 -------------- 016
M07 - CAM SD1 COMM REQUEST --------- 017
G11 - CAM SD1 FORCE SD2 REQUEST OFF  018
G13 - CAM SD1 FORCE SD2 REQUEST ON - 019
S07 - SD1 SS +5V POWER OFF --------- 020
G10 + CAM SD1 REQUEST HONORED ACTIVE 021
J13 - CAM SD2 REQUEST HONORED (CD) - 022
S06 - CAM SD1 MSG WAIT FOR SD1 ECHO  023
U09 - CAM SD2 MSG WAIT FOR SD2 ECHO  024
G07 - CAM SD# COMM R/W CLOCK ------- 025
J06 - CAM SD# COMM WRITE GATE ------ 026
J07 - CAM SD# COMM READ GATE ------- 027
P02 - CAM SD# SELECT ADDRESS REG --- 028
G12 - CAM SD# SELECT COMM BUFFER --- 029
G09 - CAM SD2 REG ADR DECODED ON SD  030
J02 + PORT CONTROL IR SUM CHECK ---- 031
= * - CAM SD# COMM R/W DATA (P,0:7)  032
= * - CAM SD2 REG R/W DATA (P,0:7) = 033
Y03 + CAM SD2 SD/CNTL MACHINE RESET  034
Y13 - CAM SD2 REG READ CLOCK DELAYED 035
= * - CAM SD2 DIAGNOSTIC FORCE (3:7) 036
Y28 + CAM SD2 CMCA CARD CHECK ------ 037
D10 - CAM SD2 REGISTER R/W CLOCK --- 038
D11 - CAM SD2 REGISTER WRITE GATE -- 039
B08 - CAM SD2 REGISTER READ GATE --- 040
= * - CAM SD2 REG ADDRESS (P,0:7) == 041
= * + CDN SD2 REG R/W DATA (P,0:7) = 042
J05 + CMCA IR CHECK ---------------- 043
```

LINE/SIGNAL	PIN	SHEET/LINE
L003		
+ CAM SD2 COMMUNICATION CHECK		
	M2J11	GM200-L003
1A-B4	(M2M08)	HM200-R006
	(M2M08)	GM200-R006
1A-B4	M2J11	HM200-L003
1A-B3	*H1D13*	
1A-B4	*H1D13*	
L004		
+ SELECTIVE OR SYSTEM RESET		
	M2G03	GM200-L004
	(F2S05)	GF200-R015
L005		
+ DEVICE COUNT < 64		
	M2B13	GM200-L005
	(V2G03)	GV200-R014
	K2M05	GK200-L032
L006		
- SD2 SS +5V POWER OFF		
	M2P05	GM200-L006
1A-B1	(J2D11)	EJ200-R009
1A-B4	M2P05	HM200-L006
1A-B3	*L1B13*	
1A-B3	*N6B02*	
1A-B4	*L1B13*	
1A-B4	*N6B02*	
1B-A1	*V3D06*	
1B-A1	*B5D07*	
1A-B1	*V5D06*	
L007		
- PCF SD2 PARITY ERROR		
	M2U07	GM200-L007
1B-A1	(F2P12)	JF200-R015
1A-B3	*M6E02*	
1B-A1	*B5D05*	
L008		
- PCF SD2 READ PARITY ERROR		
	M2S08	GM200-L008
1B-A1	(F2P10)	JF200-R016
1A-B3	*M6D02*	
1B-A1	*B5D04*	
L009		
+ CHECK ONE IND		
	M2J04	GM200-L009
	(R2U02)	GR200-R038
	V2S13	GV200-L035
L010		
+ SD2 INDICATOR		
	M2U10	GM200-L010
1A-B3	*N6A02*	
1B-A1	*B5D06*	

LINE/SIGNAL	PIN	SHEET/LINE
L011		
+ RESET		
	M2P11	GM200-L011
	(R2B07)	GR200-R022
	C2G09	GC200-L016
	F2M02	GF200-L054
	G2J13	GG210-L017
	H2S03	GH220-L060
	P2J09	GP200-L022
	V2G13	GV200-L006
	X2M02	GX200-L005
L012		
- CDN SD# SECOND COMM R/W CLOCK		
	M2M02	GM200-L012
1A-B4	(N2B12)	HN200-R004
	(N2B12)	GN200-R004
1A-B4	M2M02	HM200-L012
1A-B3	*K1A11*	
1A-B4	*K1A11*	
L013		
- CAM SD# COMM R/W CLOCK		
	M2D06	GM200-L013
1A-B4	(M2G07)	HM200-R025
	(M2G07)	GM200-R025
1A-B4	M2D06	HM200-L013
1A-B3	*J1E11*	
1A-B4	*J1E11*	
L014		
- CAM SD# COMM WRITE GATE		
	M2M11	GM200-L014
1A-B4	(M2J06)	HM200-R026
	(M2J06)	GM200-R026
1A-B4	M2M11	HM200-L014
1A-B3	*K1B11*	
1A-B4	*K1B11*	
L015		
- CAM SD# COMM READ GATE		
	M2P13	GM200-L015
1A-B4	(M2J07)	HM200-R027
	(M2J07)	GM200-R027
1A-B4	M2P13	HM200-L015
1A-B3	*J1D11*	
1A-B4	*J1D11*	
L016		
- WRITE ENABLE		
	M2J10	GM200-L016
	(J2P05)	GJ200-R009
	K2U12	GK200-L037
	L2U06	GL200-L022
L017		
- ARRAY IN BIT P		
	M2D04	GM200-L017
	(K2G04)	GK200-R018
	L2S10	GL200-L031
L018		
- ARRAY IN BIT 0		
	M2D02	GM200-L018
	(K2D05)	GK200-R018
	L2M10	GL200-L023

LINE/SIGNAL	PIN	SHEET/LINE
L019		
- ARRAY IN BIT 1		
	M2D07	GM200-L019
	(K2D04)	GK200-R018
	L2P05	GL200-L024
L020		
- ARRAY IN BIT 2		
	M2B07	GM200-L020
	(K2B02)	GK200-R018
	L2P09	GL200-L025
L021		
- ARRAY IN BIT 3		
	M2B02	GM200-L021
	(K2B05)	GK200-R018
	L2U09	GL200-L026
L022		
- ARRAY IN BIT 4		
	M2D05	GM200-L022
	(K2B07)	GK200-R018
	L2S07	GL200-L027
L023		
- ARRAY IN BIT 5		
	M2D09	GM200-L023
	(K2B03)	GK200-R018
	L2U02	GL200-L028
L024		
- ARRAY IN BIT 6		
	M2B06	GM200-L024
	(K2D07)	GK200-R018
	L2S06	GL200-L029
L025		
- ARRAY IN BIT 7		
	M2B05	GM200-L025
	(K2D02)	GK200-R018
	L2S12	GL200-L030
L026		
- PCF SD2 REG READ CLOCK DELAYED		
	M2X06	GM200-L026
1B-A1	(F2M11)	JF200-R014
1B-A1	*B2B06*	
L027		
+ SD2 CABLE CHECK		
	M2X08	GM200-L027
	N2Z08	GN200-L048
	N2X08	GN200-L049
1A-B3	*N6C04*	
1B-A1	*B5B08*	
1B-A1	*B4B08*	
1B-A1	*B3B08*	
1B-A1	*B2B08*	
L028		
+ CDN SD2 REGISTER R/W CLOCK		
	M2Y07	GM200-L028
	(N2Y07)	GN200-R047
	L2Y07	GL200-L035

LINE/SIGNAL	PIN	SHEET/LINE
L029		
+ CDN SD2 REGISTER WRITE GATE		
	M2Y26	GM200-L029
	(N2Y26)	GN200-R046
	L2Y26	GL200-L034
L030		
+ CDN SD2 REGISTER READ GATE		
	M2Y06	GM200-L030
	(N2Y06)	GN200-R045
	L2Y06	GL200-L033
L031		
- CDN SD2 REGISTER ADR DECODED		
	M2Y05	GM200-L031
	(L2Y05)	GL200-R014
	(N2Y05)	GN200-R048
L032		
+ CDN SD2 REG ADDRESS P		
	M2W02	GM200-L032
	(N2W02)	GN200-R005
	L2W02	GL200-L032
L032		
+ CDN SD2 REG ADDRESS 0		
	M2W24	GM200-L032
	(N2W24)	GN200-R005
	L2W24	GL200-L032
L032		
+ CDN SD2 REG ADDRESS 1		
	M2W29	GM200-L032
	(N2W29)	GN200-R005
	L2W29	GL200-L032
L032		
+ CDN SD2 REG ADDRESS 2		
	M2W30	GM200-L032
	(N2W30)	GN200-R005
	L2W30	GL200-L032
L032		
+ CDN SD2 REG ADDRESS 3		
	M2W10	GM200-L032
	(N2W10)	GN200-R005
	L2W10	GL200-L032
L032		
+ CDN SD2 REG ADDRESS 4		
	M2W11	GM200-L032
	(N2W11)	GN200-R005
	L2W11	GL200-L032
L032		
+ CDN SD2 REG ADDRESS 5		
	M2W09	GM200-L032
	(N2W09)	GN200-R005
	L2W09	GL200-L032
L032		
+ CDN SD2 REG ADDRESS 6		
	M2W05	GM200-L032
	(N2W05)	GN200-R005
	L2W05	GL200-L032

LINE/SIGNAL	PIN	SHEET/LINE
L032		
+ CDN SD2 REG ADDRESS 7		
	M2W33	GM200-L032
	(N2W33)	GN200-R005
	L2W33	GL200-L032
L033		
- CHIP SELECT 0		
	M2Z05	GM200-L033
	(J2J11)	GJ200-R004
	L2U07	GL200-L005
	L2Z05	GL200-L039
L034		
- CHIP SELECT 1		
	M2Z25	GM200-L034
	(J2D13)	GJ200-R004
	L2M11	GL200-L006
	L2Z25	GL200-L040
L035		
- CHIP SELECT 2		
	M2Z24	GM200-L035
	(J2G03)	GJ200-R004
	L2P10	GL200-L007
	L2Z24	GL200-L041
L036		
- CHIP SELECT 3		
	M2Z03	GM200-L036
	(J2G08)	GJ200-R004
	L2P06	GL200-L008
	L2Z03	GL200-L042
L037		
- ARRAY ADDRESS BIT 2		
	M2Z06	GM200-L037
	(J2G12)	GJ200-R005
	L2M12	GL200-L010
	L2Z06	GL200-L044
L038		
- ARRAY ADDRESS BIT 3		
	M2Z02	GM200-L038
	(J2J12)	GJ200-R005
	L2P13	GL200-L011
	L2Z02	GL200-L045
L039		
- ARRAY ADDRESS BIT 4		
	M2Z30	GM200-L039
	(J2M05)	GJ200-R005
	L2U05	GL200-L012
	L2Z30	GL200-L046
L040		
- ARRAY ADDRESS BIT 5		
	M2Z13	GM200-L040
	(J2G10)	GJ200-R005
	L2S02	GL200-L013
	L2Z13	GL200-L047

LINE/SIGNAL	PIN	SHEET/LINE
L041		
- ARRAY ADDRESS BIT 6		
	M2Z33	GM200-L041
	(J2B09)	GJ200-R005
	L2S03	GL200-L014
	L2Z33	GL200-L048
L042		
- ARRAY ADDRESS BIT 7		
	M2Z10	GM200-L042
	(J2D09)	GJ200-R005
	L2U04	GL200-L015
	L2Z10	GL200-L049
L043		
- ARRAY ADDRESS BIT 8		
	M2Z32	GM200-L043
	(J2M04)	GJ200-R005
	L2M08	GL200-L016
	L2Z32	GL200-L050
L044		
- ARRAY ADDRESS BIT 9		
	M2Z29	GM200-L044
	(J2J13)	GJ200-R005
	L2M09	GL200-L017
	L2Z29	GL200-L051
L045		
- ARRAY ADDRESS BIT 10		
	M2Z26	GM200-L045
	(J2M02)	GJ200-R005
	L2M13	GL200-L018
	L2Z26	GL200-L052
L046		
- ARRAY ADDRESS BIT 11		
	M2Z09	GM200-L046
	(J2P02)	GJ200-R005
	L2P11	GL200-L019
	L2Z09	GL200-L053
L047		
- ARRAY ADDRESS BIT 12		
	M2Z07	GM200-L047
	(J2G13)	GJ200-R005
	L2S04	GL200-L020
	L2Z07	GL200-L054
L048		
- ARRAY ADDRESS BIT 13		
	M2Z28	GM200-L048
	(J2M03)	GJ200-R005
	L2S08	GL200-L021
	L2Z28	GL200-L055
L049		
- CARD SELECT 0		
	M2Z22	GM200-L049
	(J2D12)	GJ200-R006
	L2S05	GL200-L009
	L2Z22	GL200-L043

LINE/SIGNAL	PIN	SHEET/LINE
L050		
- CDN SD2 T CLOCK REDRIVEN 0		
	M2Y33	GM200-L050
	(N2Y33)	GN200-R059
	L2Y33	GL200-L004
L051		
- CDN SD2 T CLOCK REDRIVEN 2		
	M2Y02	GM200-L051
	(N2Y02)	GN200-R059
	L2Y02	GL200-L004
L052		
- CDN SD2 T CLOCK REDRIVEN 3		
	M2M12	GM200-L052
	(N2P02)	GN200-R059
	L2B04	GL200-L004
L053		
- CDN SD2 T CLOCK REDRIVEN 4		
	M2Y32	GM200-L053
	(N2Y32)	GN200-R059
	L2Y32	GL200-L004
L054		
- CDN SD2 T CLOCK REDRIVEN 6		
	M2Y22	GM200-L054
	(N2Y22)	GN200-R059
	L2Y22	GL200-L004
L055		
- CDN SD2 T CLOCK REDRIVEN 7		
	M2U02	GM200-L055
	(N2M03)	GN200-R059
	L2D04	GL200-L004
L056		
- SS POWER RESET		
	M2G04	GM200-L056
1A-B1	(J2U04)	EJ200-R021
1A-B4	M2G04	HM200-L056
1B-A1	P2B04	JP200-L053
1A-B3	*M6E04*	
1A-B4	*M6E04*	
1B-A1	*V3D07*	
1B-A1	*A5B05*	
1B-A1	*B5B05*	
1A-B1	*V5D07*	
L057		
+ SG1 SS POWER OFF		
	M2G05	GM200-L057
1A-B1	(J2S04)	EJ200-R045
1A-B4	M2G05	HM200-L057
1A-B3	*M6B04*	
1A-B4	*M6B04*	
1B-A1	*V3D11*	
1B-A1	*A5B02*	
1B-A1	*B5B02*	
1A-B1	*V5D11*	

LINE/SIGNAL	PIN	SHEET/LINE
L058		
+ SG2 SS POWER OFF		
	M2G08	GM200-L058
1A-B1	(J2S09)	EJ200-R046
1A-B4	M2G08	HM200-L058
1A-B3	*M6C04*	
1A-B4	*M6C04*	
1B-A1	*V3D12*	
1B-A1	*A5B03*	
1B-A1	*B5B03*	
1A-B1	*V5D12*	
R003		
- CAM SD2 ARRAY OUT P		
	(M2U13)	GM200-R003
	(L2P07)	GL200-R005
	K2U04	GK200-L007
R003		
- CAM SD2 ARRAY OUT 0		
	(M2S04)	GM200-R003
	(L2S11)	GL200-R005
	K2P09	GK200-L007
R003		
- CAM SD2 ARRAY OUT 1		
	(M2U05)	GM200-R003
	(L2S13)	GL200-R005
	K2U05	GK200-L007
R003		
- CAM SD2 ARRAY OUT 2		
	(M2U04)	GM200-R003
	(L2U10)	GL200-R005
	K2M12	GK200-L007
R003		
- CAM SD2 ARRAY OUT 3		
	(M2S05)	GM200-R003
	(L2U12)	GL200-R005
	K2S05	GK200-L007
R003		
- CAM SD2 ARRAY OUT 4		
	(M2M09)	GM200-R003
	(L2U13)	GL200-R005
	K2S03	GK200-L007
R003		
- CAM SD2 ARRAY OUT 5		
	(M2P10)	GM200-R003
	(L2S09)	GL200-R005
	K2U02	GK200-L007
R003		
- CAM SD2 ARRAY OUT 6		
	(M2M10)	GM200-R003
	(L2P12)	GL200-R005
	K2M09	GK200-L007
R003		
- CAM SD2 ARRAY OUT 7		
	(M2P09)	GM200-R003
	(L2M07)	GL200-R005
	K2M08	GK200-L007

LINE/SIGNAL	PIN	SHEET/LINE
R004		
+ CAM SD2 RANGE DECODE CHECK		
	(M2P12)	GM200-R004
	N2P13	GN200-L021
R005		
- CAM SD2 COMM READ CLOCK DELAY		
	(M2P07)	GM200-R005
1A-B4	(M2P07)	HM200-R005
1A-B3	*J1C11*	
1A-B4	*J1C11*	
R006		
+ CAM SD2 COMMUNICATION CHECK		
	(M2M08)	GM200-R006
1A-B4	(M2M08)	HM200-R006
1A-B4	M2J11	HM200-L003
	M2J11	GM200-L003
1A-B3	*H1D13*	
1A-B4	*H1D13*	
R007		
+ CAM SD1 COMM CABLE CHECK		
	(M2U11)	GM200-R007
1A-B4	(M2U11)	HM200-R007
1A-B3	*G1C13*	
1A-B4	*G1C13*	
R008		
+ CAM SD2 COMM CABLE 2		
	(M2P06)	GM200-R008
1A-B4	(M2P06)	HM200-R008
1A-B3	*K1D13*	
1A-B4	*K1D13*	
R009		
+ CAM SD1 COMM CABLE 1		
	(M2S11)	GM200-R009
1A-B4	(M2S11)	HM200-R009
1A-B3	*G1E13*	
1A-B4	*G1E13*	
R010		
- CAM SD2 REQUEST HONORED		
	(M2M04)	GM200-R010
1A-B4	(M2M04)	HM200-R010
1A-B3	*L1A13*	
1A-B4	*L1A13*	
R011		
- CAM SD2 MSG WAITING FOR SD1		
	(M2S09)	GM200-R011
1A-B4	(M2S09)	HM200-R011
1A-B3	*L1D11*	
1A-B4	*L1D13*	
R012		
- CAM SD1 MSG WAITING FOR SD2		
	(M2M05)	GM200-R012
1A-B4	(M2M05)	HM200-R012
1A-B3	*K1E11*	
1A-B4	*K1E11*	

LINE/SIGNAL	PIN	SHEET/LINE
R013		
- CAM SD1 RST MSG WAIT FOR SD1		
	(M2P04)	GM200-R013
1A-B4	(M2P04)	HM200-R013
1A-B3	*G1B13*	
1A-B4	*H1E13*	
R014		
- CAM SD1 RST MSG WAIT FOR SD2		
	(M2U06)	GM200-R014
1A-B4	(M2U06)	HM200-R014
1A-B3	*L1B11*	
1A-B4	*L1B11*	
R015		
+ CAM SD2 SELECT/SYS RESET GATED		
	(M2N13)	GM200-R015
	R2B08	GR200-L037
R016		
- INT REQ LEVEL 2		
	(M2G02)	GM200-R016
	(J2P07)	GJ200-R020
	R2U12	GR200-L013
R017		
- CAM SD1 COMM REQUEST		
	(M2M07)	GM200-R017
1A-B4	(M2M07)	HM200-R017
1A-B3	*K1C11*	
1A-B4	*K1C11*	
R018		
- CAM SD1 FORCE SD2 REQUEST OFF		
	(M2G11)	GM200-R018
1A-B4	(M2G11)	HM200-R018
1A-B3	*F1D13*	
1A-B4	*H1A13*	
R019		
- CAM SD1 FORCE SD2 REQUEST ON		
	(M2G13)	GM200-R019
1A-B4	(M2G13)	HM200-R019
1A-B3	*H1E11*	
1A-B4	*H1E11*	
R020		
- SD1 SS +5V POWER OFF		
	(M2S07)	GM200-R020
1A-B1	(J2D10)	EJ200-R008
1B-A1	C2J06	JC200-L017
1B-A1	P2C09	JP200-L054
1A-B3	*M6C02*	
1B-A1	*V3D05*	
1B-A1	*A5D07*	
1B-A1	*B5D03*	
1A-B1	*V5D05*	
R021		
+ CAM SD1 REQUEST HONORED ACTIVE		
	(M2G10)	GM200-R021
1A-B4	(M2G10)	HM200-R021
1A-B3	*L1C11*	
1A-B4	*L1C11*	

LINE/SIGNAL	PIN	SHEET/LINE
R022		
- CAM SD2 REQUEST HONORED (CD)		
	(M2J13)	GM200-R022
	N2M10	GN200-L009
R023		
- CAM SD1 MSG WAIT FOR SD1 ECHO		
	(M2S06)	GM200-R023
1A-B4	(M2S06)	HM200-R023
1A-B3	*L1A11*	
1A-B4	*L1A11*	
R024		
- CAM SD2 MSG WAIT FOR SD2 ECHO		
	(M2U09)	GM200-R024
1A-B4	(M2U09)	HM200-R024
1A-B3	*L1C13*	
1A-B4	*L1C13*	
R025		
- CAM SD# COMM R/W CLOCK		
	(M2G07)	GM200-R025
1A-B4	(M2G07)	HM200-R025
1A-B4	M2D06	HM200-L013
	M2D06	GM200-L013
1A-B3	*J1E11*	
1A-B4	*J1E11*	
R026		
- CAM SD# COMM WRITE GATE		
	(M2J06)	GM200-R026
1A-B4	(M2J06)	HM200-R026
1A-B4	M2M11	HM200-L014
	M2M11	GM200-L014
1A-B3	*K1B11*	
1A-B4	*K1B11*	
R027		
- CAM SD# COMM READ GATE		
	(M2J07)	GM200-R027
1A-B4	(M2J07)	HM200-R027
1A-B4	M2P13	HM200-L015
	M2P13	GM200-L015
1A-B3	*J1D11*	
1A-B4	*J1D11*	
R028		
- CAM SD# SELECT ADDRESS REG		
	(M2P02)	GM200-R028
1A-B4	(M2P02)	HM200-R028
1A-B3	*K1B13*	
1A-B4	*K1E13*	
R029		
- CAM SD# SELECT COMM BUFFER		
	(M2G12)	GM200-R029
1A-B4	(M2G12)	HM200-R029
1A-B3	*K1C13*	
1A-B4	*K1C13*	
R030		
- CAM SD2 REG ADR DECODED ON SD		
	(M2G09)	GM200-R030
1B-A1	S2P09	JS200-L030
1A-B3	*M6B02*	
1B-A1	*B5D02*	

LINE/SIGNAL	PIN	SHEET/LINE
R031		
+ PORT CONTROL IR SUM CHECK		
	(M2J02)	GM200-R031
	N2B05	GN200-L023
R032		
- CAM SD# COMM R/W DATA P		
	(M2M03)	GM200-R032
1A-B4	(M2M03)	HM200-R032
1A-B3	*F1D11*	
1A-B4	*F1D11*	
R032		
- CAM SD# COMM R/W DATA 0		
	(M2B03)	GM200-R032
1A-B4	(M2B03)	HM200-R032
1A-B3	*F1E11*	
1A-B4	*F1E11*	
R032		
- CAM SD# COMM R/W DATA 1		
	(M2B04)	GM200-R032
1A-B4	(M2B04)	HM200-R032
1A-B3	*H1B13*	
1A-B4	*H1B13*	
R032		
- CAM SD# COMM R/W DATA 2		
	(M2D12)	GM200-R032
1A-B4	(M2D12)	HM200-R032
1A-B3	*G1B11*	
1A-B4	*G1B11*	
R032		
- CAM SD# COMM R/W DATA 3		
	(M2D13)	GM200-R032
1A-B4	(M2D13)	HM200-R032
1A-B3	*G1C11*	
1A-B4	*G1C11*	
R032		
- CAM SD# COMM R/W DATA 4		
	(M2J12)	GM200-R032
1A-B4	(M2J12)	HM200-R032
1A-B3	*G1D11*	
1A-B4	*G1D11*	
R032		
- CAM SD# COMM R/W DATA 5		
	(M2S02)	GM200-R032
1A-B4	(M2S02)	HM200-R032
1A-B3	*H1A11*	
1A-B4	*H1A11*	
R032		
- CAM SD# COMM R/W DATA 6		
	(M2S03)	GM200-R032
1A-B4	(M2S03)	HM200-R032
1A-B3	*H1B11*	
1A-B4	*H1B11*	

LINE/SIGNAL	PIN	SHEET/LINE
R032		
- CAM SD# COMM R/W DATA 7		
	(M2J09)	GM200-R032
1A-B4	(M2J09)	HM200-R032
1A-B3	*H1C11*	
1A-B4	*H1C11*	
R033		
- CAM SD2 REG R/W DATA P		
	(M2X02)	GM200-R033
1B-A1	(F2U05)	JF200-R003
1B-A1	*B2B02*	
R033		
- CAM SD2 REG R/W DATA 0		
	(M2X29)	GM200-R033
1B-A1	(F2M04)	JF200-R003
1B-A1	*B2D09*	
R033		
- CAM SD2 REG R/W DATA 1		
	(M2X12)	GM200-R033
1B-A1	(F2U07)	JF200-R003
1B-A1	*B2B12*	
R033		
- CAM SD2 REG R/W DATA 2		
	(M2X32)	GM200-R033
1B-A1	(F2S06)	JF200-R003
1B-A1	*B2D12*	
R033		
- CAM SD2 REG R/W DATA 3		
	(M2X11)	GM200-R033
1B-A1	(F2S07)	JF200-R003
1B-A1	*B2B11*	
R033		
- CAM SD2 REG R/W DATA 4		
	(M2X31)	GM200-R033
1B-A1	(F2S05)	JF200-R003
1B-A1	*B2D11*	
R033		
- CAM SD2 REG R/W DATA 5		
	(M2X10)	GM200-R033
1B-A1	(F2U06)	JF200-R003
1B-A1	*B2B10*	
R033		
- CAM SD2 REG R/W DATA 6		
	(M2X30)	GM200-R033
1B-A1	(F2S03)	JF200-R003
1B-A1	*B2D10*	
R033		
- CAM SD2 REG R/W DATA 7		
	(M2X07)	GM200-R033
1B-A1	(F2U04)	JF200-R003
1B-A1	*B2D07*	
R034		
+ CAM SD2 SD/CNTL MACHINE RESET		
	(M2Y03)	GM200-R034
	L2Y03	GL200-L037
	N2Y03	GN200-L041

LINE/SIGNAL	PIN	SHEET/LINE
R035		
- CAM SD2 REG READ CLOCK DELAYED		
	(M2Y13)	GM200-R035
	(L2Y13)	GL200-R013
	(N2Y13)	GN200-R054
R036		
- CAM SD2 DIAGNOSTIC FORCE 3		
	(M2Y29)	GM200-R036
	L2Y29	GL200-L038
	N2Y29	GN200-L042
R036		
- CAM SD2 DIAGNOSTIC FORCE 4		
	(M2Y30)	GM200-R036
	L2Y30	GL200-L038
	N2Y30	GN200-L042
R036		
- CAM SD2 DIAGNOSTIC FORCE 5		
	(M2Y24)	GM200-R036
	L2Y24	GL200-L038
	N2Y24	GN200-L042
R036		
- CAM SD2 DIAGNOSTIC FORCE 6		
	(M2Y09)	GM200-R036
	L2Y09	GL200-L038
	N2Y09	GN200-L042
R036		
- CAM SD2 DIAGNOSTIC FORCE 7		
	(M2Y25)	GM200-R036
	L2Y25	GL200-L038
	N2Y25	GN200-L042
R037		
+ CAM SD2 CMCA CARD CHECK		
	(M2Y28)	GM200-R037
	N2Y28	GN200-L038
R038		
- CAM SD2 REGISTER R/W CLOCK		
	(M2D10)	GM200-R038
1B-A1	F2J11	JF200-L004
1A-B3	*N6D02*	
1B-A1	*B5D09*	
R039		
- CAM SD2 REGISTER WRITE GATE		
	(M2D11)	GM200-R039
1B-A1	F2J07	JF200-L006
1A-B3	*N6E02*	
1B-A1	*B5D10*	
R040		
- CAM SD2 REGISTER READ GATE		
	(M2B08)	GM200-R040
1B-A1	F2C08	JF200-L005
1A-B3	*P6A02*	
1B-A1	*B5D11*	
R041		
- CAM SD2 REG ADDRESS P		
	(M2X33)	GM200-R041
1B-A1	F2B07	JF200-L003
1B-A1	*B2D13*	

LINE/SIGNAL	PIN	SHEET/LINE
R041		
- CAM SD2 REG ADDRESS 0		
	(M2X27)	GM200-R041
1B-A1	F2D04	JF200-L003
1B-A1	*B2D07*	
R041		
- CAM SD2 REG ADDRESS 1		
	(M2X25)	GM200-R041
1B-A1	F2B03	JF200-L003
1B-A1	*B2D05*	
R041		
- CAM SD2 REG ADDRESS 2		
	(M2X26)	GM200-R041
1B-A1	F2B04	JF200-L003
1B-A1	*B2D06*	
R041		
- CAM SD2 REG ADDRESS 3		
	(M2X05)	GM200-R041
1B-A1	F2B09	JF200-L003
1B-A1	*B2B05*	
R041		
- CAM SD2 REG ADDRESS 4		
	(M2X24)	GM200-R041
1B-A1	F2B08	JF200-L003
1B-A1	*B2D04*	
R041		
- CAM SD2 REG ADDRESS 5		
	(M2X03)	GM200-R041
1B-A1	F2D09	JF200-L003
1B-A1	*B2B03*	
R041		
- CAM SD2 REG ADDRESS 6		
	(M2X22)	GM200-R041
1B-A1	F2D11	JF200-L003
1B-A1	*B2D02*	
R041		
- CAM SD2 REG ADDRESS 7		
	(M2X23)	GM200-R041
1B-A1	F2D13	JF200-L003
1B-A1	*B2D03*	
R042		
+ CDN SD2 REG R/W DATA P		
	(M2N25)	GM200-R042
	(L2N25)	GL200-R012
	(N2N25)	GN200-R011
	(N2N25)	GN200-R052
R042		
+ CDN SD2 REG R/W DATA 0		
	(M2N07)	GM200-R042
	(L2N07)	GL200-R012
	(N2N07)	GN200-R011
	(N2N07)	GN200-R052

LINE/SIGNAL	PIN	SHEET/LINE
R042		
+ CDN SD2 REG R/W DATA 1		
	(M2N03)	GM200-R042
	(L2N03)	GL200-R012
	(N2N03)	GN200-R011
	(N2N03)	GN200-R052
R042		
+ CDN SD2 REG R/W DATA 2		
	(M2N06)	GM200-R042
	(L2N06)	GL200-R012
	(N2N06)	GN200-R011
	(N2N06)	GN200-R052
R042		
+ CDN SD2 REG R/W DATA 3		
	(M2N32)	GM200-R042
	(L2N32)	GL200-R012
	(N2N32)	GN200-R011
	(N2N32)	GN200-R052
R042		
+ CDN SD2 REG R/W DATA 4		
	(M2N13)	GM200-R042
	(L2N13)	GL200-R012
	(N2N13)	GN200-R011
	(N2N13)	GN200-R052
R042		
+ CDN SD2 REG R/W DATA 5		
	(M2N22)	GM200-R042
	(L2N22)	GL200-R012
	(N2N22)	GN200-R011
	(N2N22)	GN200-R052
R042		
+ CDN SD2 REG R/W DATA 6		
	(M2N28)	GM200-R042
	(L2N28)	GL200-R012
	(N2N28)	GN200-R011
	(N2N28)	GN200-R052
R042		
+ CDN SD2 REG R/W DATA 7		
	(M2N26)	GM200-R042
	(L2N26)	GL200-R012
	(N2N26)	GN200-R011
	(N2N26)	GN200-R052
R043		
+ CMCA IR CHECK		
	(M2J05)	GM200-R043
	N2B06	GN200-L050

```
003 - EXT REG ADDRESS BIT 0 -------- P12
004 - EXT REG ADDRESS BIT 1 -------- M05
005 - EXT REG ADDRESS BIT 2 -------- P05
006 - EXT REG ADDRESS BIT 3 -------- M04
007 - EXT REG ADDRESS BIT 4 -------- P04
008 - EXT REG ADR PARITY ----------- P06
009 - CAM SD2 REQUEST HONORED (CD) - M10
010 + LD EXT REG CLK D ------------- B02
011 + EXT REG SELECT --------------- B04
012 - ALU OUT BIT 0 ---------------- B07
013 - ALU OUT BIT 1 ---------------- D05
014 - ALU OUT BIT 2 ---------------- D09
015 - ALU OUT BIT 3 ---------------- D10
016 - ALU OUT BIT 4 ---------------- D06
017 - ALU OUT BIT 5 ---------------- B09
018 - ALU OUT BIT 6 ---------------- G02
019 - ALU OUT BIT 7 ---------------- B13
020 - ALU OUT BIT P ---------------- D13
021 + CAM SD2 RANGE DECODE CHECK --- P13
022 + CMAA IR CHECK ---------------- B03
023 + PORT CONTROL IR SUM CHECK ---- B05
024 - CHECK RESET ------------------ M13
025 + TAKE DATA OR DATA TAKEN ------ S11
026 - NEED DATA/DATA READY CDX ----- J11
027 + DDC CLOCK T0 ----------------- U07
028 + DDC CLOCK T1 ----------------- G07
029 + DDC CLOCK T2 ----------------- S07
030 + DDC CLOCK T3 ----------------- B10
031 + DDC CLOCK T4 ----------------- M12
032 + DDC CLOCK T5 ----------------- J04
033 + DDC CLOCK T6 ----------------- U09
034 + DDC CLOCK T7 ----------------- G08
035 - TAKE DATA (DDC) -------------- S12
036 - DATA TAKEN (DDC) ------------- U06
037 - NEED DATA/DATA READY DDC ----- D07
038 + CAM SD2 CMCA CARD CHECK ------ Y28
039 + SAS SD2 CNTL BD IR CHECK ----- X24
040 + SAS SD2 SUMMARY CHECK DR ----- X26
041 + CAM SD2 SD/CNTL MACHINE RESET  Y03
042 - CAM SD2 DIAGNOSTIC FORCE (3:7) * =
043 - PBG SD2 DATA RDY/TKN UPPER --- X22
044 - PBG SD2 LAST DATA BYTE TKN UP  X23
045 - PBG SD2 HALT CHANNEL --------- Z05
046 - PBH SD2 DATA RDY/TKN LOWER --- X33
047 - PBH SD2 LAST DATA BYTE TKN LO  X27
048 + SD2 CABLE CHECK -------------- Z08
049 + SD2 CABLE CHECK -------------- X08
050 + CMCA IR CHECK ---------------- B06
051 - C2Q EXPANDED STORAGE INSTALLED Z02
052 + OFFSET INTERLOCK MODE -------- S03
053 - COMMON STATUS REG 5 INPUTS 5 - D02
054 - COMMON STATUS REG 5 INPUTS 6 - Z03
```

CMCD CARD

OVERVIEW

The CMCD card is the interface between the storage director and Subsystem Storage. All data and control/status information uses this interface. Each storage director contains one CMCD card which supports both an upper (channel) and lower (device) data path to/from subsystem storage.

PRIMARY FUNCTIONS

- It serves as the interface between the 3880 storage director microprocessor (SDM) and all the control and status registers.
- It generates the controls to allow 'auto' data transfers:
  - 'Bypass': data transfers between the channel or device and subsystem storage.
  - 'Forked': data stores to subsystem storage when writing or reading DASD.
- It generates the controls to allow 'manual' data transfers.
- It allows for CRC checking both the upper and lower data paths.
- It allows for storage director to storage director communication.

PRIMARY COMPONENTS

- Channel and device DXR bus transceivers.
- Upper and lower data bus (to/from port buffer) transceivers.
- Two buffer registers and controls for both the upper and lower data paths.
- CRC generator/checker for each of the upper and lower data paths.
- SDM external registers '1B'x and '0F'x.
- Special register 'CSPRDIC' for collecting status information.
- It contains the following control registers:
  - UOPCTL (upper op control reg)
  - UCTL (upper control reg)
  - LOPCTL (lower op control reg)
  - LCTL (lower control reg)
- It contains the following check registers:
  - UPACK (upper check register)
  - LPACK (lower check register)
  - CPACK1 (common PA check register 1)
  - CPACK2 (common PA check register 2)
- It provides the following special operations:
  - CSPHLD (special op hold '1B'x shadow)
  - CSPRES (special op restore '1B'x)
  - CSPRDC (special op read communication)
  - CSPWRC (special op write communication)

ERROR CHECKING

The CMCD card provides for extensive on card error detection. Error information can be subdivided into three classes: Upper, Lower, and Common errors.

- Upper/Lower Check Register UPACK/LPACK
  - Channel/Device DXR/PA Parity Check
  - Upper/Lower SRC Check
  - Channel/Device DXR/PA Over/Underrun Check
  - PA/PB Overrun Check
  - PA/PB Data In/Out Parity Check
- Common check registers CPACK1/CPACK2
  - Port Adapter IR Check
  - SDM Alu Out Parity Check
  - Ext Reg Selection Check
  - IR Data Out Parity Check
  - Read Clock Delay Check
  - ALU Out Control Check
  - Ext Reg Read Parity Check
  - Clock Check
  - CD Duplicate IR Addr Decode Check
  - Range Select Check


```
D12 - XREG SELECTED (1B/0F DECODE) - 003
B12 - CDN SD# SECOND COMM R/W CLOCK  004
= * + CDN SD2 REG ADDRESS (P,0:7) == 005
B08 - CDN SD2 ALU OUT BIT 6 (ADT) -- 006
J02 - CDN SD2 ALU OUT BIT P (ADT) -- 007
B11 - CDN SD2 ALU OUT BIT 7 (CH/DEV) 008
D11 - CDN SD2 ALU OUT BIT P (CH/DEV) 009
D04 - CHECK TMO -------------------- 010
= * + CDN SD2 REG R/W DATA (P,0:7) = 011
S10 - ALU IN2 BIT 0 ---------------- 012
S09 - ALU IN2 BIT 1 ---------------- 013
U10 - ALU IN2 BIT 2 ---------------- 014
U12 - ALU IN2 BIT 3 ---------------- 015
U13 - ALU IN2 BIT 4 ---------------- 016
S13 - ALU IN2 BIT 5 ---------------- 017
S08 - ALU IN2 BIT 6 ---------------- 018
U05 - ALU IN2 BIT 7 ---------------- 019
U02 - ALU IN2 BIT P ---------------- 020
G12 - CHAN DXR BUS BIT 0 ----------- 021
J10 - CHAN DXR BUS BIT 1 ----------- 022
J12 - CHAN DXR BUS BIT 2 ----------- 023
J06 - CHAN DXR BUS BIT 3 ----------- 024
G03 - CHAN DXR BUS BIT 4 ----------- 025
J07 - CHAN DXR BUS BIT 5 ----------- 026
J05 - CHAN DXR BUS BIT 6 ----------- 027
M11 - CHAN DXR BUS BIT 7 ----------- 028
G05 - CHAN DXR BUS BIT P ----------- 029
G09 - DEV DXR BUS BIT 0 ------------ 030
G11 - DEV DXR BUS BIT 1 ------------ 031
G10 - DEV DXR BUS BIT 2 ------------ 032
J09 - DEV DXR BUS BIT 3 ------------ 033
J13 - DEV DXR BUS BIT 4 ------------ 034
P09 - DEV DXR BUS BIT 5 ------------ 035
G13 - DEV DXR BUS BIT 6 ------------ 036
M08 - DEV DXR BUS BIT 7 ------------ 037
M09 - DEV DXR BUS BIT P ------------ 038
P10 - TAKE DATA/DATA TKN CHAN (AUX)  039
G04 - CDN SD2 ND/DR GATED CHANNEL -- 040
P11 - HALT CHANNEL REQUESTS (TO CDX) 041
= * - CDN SD2 R/W DATA LOWER (0-7,P) 042
P07 - TAKE DATA/DATA TKN DEV (AUX) - 043
S05 - CDN SD2 ND/DR GATED DEVICE --- 044
Y06 + CDN SD2 REGISTER READ GATE --- 045
Y26 + CDN SD2 REGISTER WRITE GATE -- 046
Y07 + CDN SD2 REGISTER R/W CLOCK --- 047
Y05 - CDN SD2 REGISTER ADR DECODED - 048
X25 + CDN SD2 CHECK COMMON --------- 049
S02 + CDN SD2 CHECK UPPER ---------- 050
Z32 + CDN SD2 CHECK LOWER ---------- 051
= * + CDN SD2 REG R/W DATA (P,0:7) = 052
Y10 + CDN SD2 NATIVE CHECK --------- 053
Y13 - CAM SD2 REG READ CLOCK DELAYED 054
= * - CDN SD2 R/W DATA UPPER (0-7,P) 055
X12 - CDN SD2 DATA RDY/TKN UPPER --- 056
X05 - CDN SD2 R/W CLOCK UPPER ------ 057
X11 - CDN SD2 DATA XFER COMPLETE UPR 058
= * - CDN SD2 T CLOCK REDRIVEN (0:7) 059
Z23 - CDN SD2 DATA RDY/TKN LOWER --- 060
Z22 - CDN SD2 R/W CLOCK LOWER ------ 061
Z06 - CDN SD2 DATA XFER COMPLETE LWR 062
S04 + OFFSET INTERLOCK MODE GATED -- 063
```

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- EXT REG ADDRESS BIT 0		
	N2P12	GN200-L003
	(Q2P12)	GQ200-R016
	F2P09	GF200-L028
	K2B12	GK200-L003
	R2M13	GR200-L009
	V2J07	GV200-L024
L004		
- EXT REG ADDRESS BIT 1		
	N2M05	GN200-L004
	(Q2M05)	GQ200-R016
	F2P10	GF200-L029
	K2D13	GK200-L003
	R2P11	GR200-L009
	V2J09	GV200-L025
L005		
- EXT REG ADDRESS BIT 2		
	N2P05	GN200-L005
	(Q2P05)	GQ200-R016
	F2P11	GF200-L030
	K2B13	GK200-L003
	R2M12	GR200-L009
	V2J10	GV200-L026
L006		
- EXT REG ADDRESS BIT 3		
	N2M04	GN200-L006
	(Q2M04)	GQ200-R016
	F2P12	GF200-L031
	K2B10	GK200-L003
	R2P10	GR200-L009
	V2J11	GV200-L027
L007		
- EXT REG ADDRESS BIT 4		
	N2P04	GN200-L007
	(Q2P04)	GQ200-R016
	F2P13	GF200-L032
	K2D12	GK200-L003
	R2P09	GR200-L009
	V2J12	GV200-L028
L008		
- EXT REG ADR PARITY		
	N2P06	GN200-L008
	(Q2P06)	GQ200-R017
	K2D10	GK200-L027
	R2M09	GR200-L010
L009		
- CAM SD2 REQUEST HONORED (CD)		
	N2M10	GN200-L009
	(M2J13)	GM200-R022
L010		
+ LD EXT REG CLK D		
	N2B02	GN200-L010
	(Q2U06)	GQ200-R015
	R2M08	GR200-L011
	V2M10	GV200-L019
	X2M10	GX200-L027

LINE/SIGNAL	PIN	SHEET/LINE
L011		
+ EXT REG SELECT		
	N2B04	GN200-L011
	(Q2Z22)	GQ200-R018
	(R2S02)	GR200-R015
	H2M04	GH220-L031
	K2U13	GK200-L009
	R2Z22	GR200-L021
L012		
- ALU OUT BIT 0		
	N2B07	GN200-L012
	(Q2B04)	GQ200-R008
	C2B02	GC200-L022
	F2D02	GF200-L019
	H2P12	GH220-L017
	J2U07	GJ200-L041
	R2M02	GR200-L024
	V2D13	GV200-L007
	X2D13	GX200-L028
L013		
- ALU OUT BIT 1		
	N2D05	GN200-L013
	(Q2D05)	GQ200-R008
	C2D02	GC200-L023
	F2D04	GF200-L020
	H2P13	GH220-L018
	J2U09	GJ200-L041
	R2G12	GR200-L024
	V2B05	GV200-L008
	X2B05	GX200-L028
L014		
- ALU OUT BIT 2		
	N2D09	GN200-L014
	(Q2D06)	GQ200-R008
	F2D05	GF200-L021
	H2U02	GH220-L019
	J2P12	GJ200-L041
	R2G13	GR200-L024
	V2D10	GV200-L009
	X2D10	GX200-L028
L015		
- ALU OUT BIT 3		
	N2D10	GN200-L015
	(Q2B05)	GQ200-R008
	F2D06	GF200-L022
	H2U05	GH220-L020
	J2U02	GJ200-L041
	R2M04	GR200-L024
	V2J02	GV200-L010
	X2J02	GX200-L028
L016		
- ALU OUT BIT 4		
	N2D06	GN200-L016
	(Q2D04)	GQ200-R008
	F2D07	GF200-L023
	H2U06	GH220-L021
	J2B12	GJ200-L041
	R2M03	GR200-L024
	V2B08	GV200-L011
	X2B08	GX200-L028

LINE/SIGNAL	PIN	SHEET/LINE
L017		
- ALU OUT BIT 5		
	N2B09	GN200-L017
	(Q2B03)	GQ200-R008
	F2B07	GF200-L024
	H2U07	GH220-L022
	J2D06	GJ200-L041
	R2P04	GR200-L024
	V2B03	GV200-L012
	X2B03	GX200-L028
L018		
- ALU OUT BIT 6		
	N2G02	GN200-L018
	(Q2D02)	GQ200-R008
	F2B08	GF200-L025
	H2U09	GH220-L023
	R2P02	GR200-L024
	V2D05	GV200-L013
	X2D05	GX200-L028
L019		
- ALU OUT BIT 7		
	N2B13	GN200-L019
	(Q2B02)	GQ200-R008
	F2B09	GF200-L026
	J2B05	GJ200-L041
	R2P05	GR200-L024
	V2D06	GV200-L014
L020		
- ALU OUT BIT P		
	N2D13	GN200-L020
	(Q2U04)	GQ200-R008
	F2B10	GF200-L027
	R2M05	GR200-L024
	V2B02	GV200-L015
L021		
+ CAM SD2 RANGE DECODE CHECK		
	N2P13	GN200-L021
	(M2P12)	GM200-R004
L022		
+ CMAA IR CHECK		
	N2B03	GN200-L022
	(L2B11)	GL200-R004
L023		
+ PORT CONTROL IR SUM CHECK		
	N2B05	GN200-L023
	(M2J02)	GM200-R031
L024		
- CHECK RESET		
	N2M13	GN200-L024
	(H2Y10)	GH220-R063
	(R2J05)	GR200-R028
	C2J10	GC200-L012
	F2M04	GF200-L056
	G2B13	GG210-L015
	H2U12	GH220-L061
	J2Y10	GJ200-L024
	K2Y10	GK200-L023
	L2D02	GL200-L003
	V2G08	GV200-L033
	X2S13	GX200-L017

LINE/SIGNAL	PIN	SHEET/LINE
L025		
+ TAKE DATA OR DATA TAKEN		
	N2S11	GN200-L025
	(G2S10)	GG210-R030
	H2G07	GH220-L042
	J2U05	GJ200-L003
	K2U09	GK200-L030
L026		
- NEED DATA/DATA READY CDX		
	N2J11	GN200-L026
	(K2J11)	GK200-R037
L027		
+ DDC CLOCK T0		
	N2U07	GN200-L027
	(P2S09)	GP200-R018
	X2D04	GX200-L016
	X2D04	GX200-L031
L028		
+ DDC CLOCK T1		
	N2G07	GN200-L028
	(P2G07)	GP200-R044
	X2U13	GX200-L032
L029		
+ DDC CLOCK T2		
	N2S07	GN200-L029
	(P2S07)	GP200-R019
	V2G07	GV200-L030
	X2G07	GX200-L033
L030		
+ DDC CLOCK T3		
	N2B10	GN200-L030
	(P2B10)	GP200-R045
	V2U04	GV200-L016
	X2S04	GX200-L034
L031		
+ DDC CLOCK T4		
	N2M12	GN200-L031
	(P2M12)	GP200-R020
	X2U07	GX200-L035
L032		
+ DDC CLOCK T5		
	N2J04	GN200-L032
	(P2J04)	GP200-R046
	X2S05	GX200-L036
L033		
+ DDC CLOCK T6		
	N2U09	GN200-L033
	(P2U10)	GP200-R021
	V2U09	GV200-L029
	X2U09	GX200-L037
L034		
+ DDC CLOCK T7		
	N2G08	GN200-L034
	(P2G08)	GP200-R047
	V2U02	GV200-L017
	X2S02	GX200-L038

LINE/SIGNAL	PIN	SHEET/LINE
L035		
- TAKE DATA (DDC)		
	N2S12	GN200-L035
	(X2U10)	GX200-R025
	H2D07	GH220-L007
	K2D09	GK200-L005
L036		
- DATA TAKEN (DDC)		
	N2U06	GN200-L036
	(X2S08)	GX200-R026
	K2B08	GK200-L006
	V2B10	GV200-L003
L037		
- NEED DATA/DATA READY DDC		
	N2D07	GN200-L037
	(K2D06)	GK200-R038
L038		
+ CAM SD2 CMCA CARD CHECK		
	N2Y28	GN200-L038
	(M2Y28)	GM200-R037
L039		
+ SAS SD2 CNTL BD IR CHECK		
	N2X24	GN200-L039
1B-A1	(S2G10)	JS200-R021
1B-A1	*B3D04*	
L040		
+ SAS SD2 SUMMARY CHECK DR		
	N2X26	GN200-L040
1B-A1	(S2P11)	JS200-R019
1B-A1	*B3D06*	
L041		
+ CAM SD2 SD/CNTL MACHINE RESET		
	N2Y03	GN200-L041
	(M2Y03)	GM200-R034
	L2Y03	GL200-L037
L042		
- CAM SD2 DIAGNOSTIC FORCE 3		
	N2Y29	GN200-L042
	(M2Y29)	GM200-R036
	L2Y29	GL200-L038
L042		
- CAM SD2 DIAGNOSTIC FORCE 4		
	N2Y30	GN200-L042
	(M2Y30)	GM200-R036
	L2Y30	GL200-L038
L042		
- CAM SD2 DIAGNOSTIC FORCE 5		
	N2Y24	GN200-L042
	(M2Y24)	GM200-R036
	L2Y24	GL200-L038
L042		
- CAM SD2 DIAGNOSTIC FORCE 6		
	N2Y09	GN200-L042
	(M2Y09)	GM200-R036
	L2Y09	GL200-L038

LINE/SIGNAL	PIN	SHEET/LINE
L042		
- CAM SD2 DIAGNOSTIC FORCE 7		
	N2Y25	GN200-L042
	(M2Y25)	GM200-R036
	L2Y25	GL200-L038
L043		
- FBG SD2 DATA RDY/TKN UPPER		
	N2X22	GN200-L043
1B-A1	(G2J09)	JG200-R005
1B-A1	*B3D02*	
L044		
- FBG SD2 LAST DATA BYTE TKN UP		
	N2X23	GN200-L044
1B-A1	(G2J10)	JG200-R006
1B-A1	*B3D03*	
L045		
- FBG SD2 HALT CHANNEL		
	N2Z05	GN200-L045
1B-A1	(G2S04)	JG200-R016
1B-A1	*B4B05*	
L046		
- FBH SD2 DATA RDY/TKN LOWER		
	N2X33	GN200-L046
1B-A1	(H2J09)	JH200-R005
1B-A1	*B3D13*	
L047		
- FBH SD2 LAST DATA BYTE TKN LO		
	N2X27	GN200-L047
1B-A1	(H2J10)	JH200-R006
1B-A1	*B3D07*	
L048		
+ SD2 CABLE CHECK		
	N2Z08	GN200-L048
	M2X08	GM200-L027
	N2X08	GN200-L049
1A-B3	*N6C04*	
1B-A1	*B5B08*	
1B-A1	*B4B08*	
1B-A1	*B3B08*	
1B-A1	*B2B08*	
L049		
+ SD2 CABLE CHECK		
	N2X08	GN200-L049
	M2X08	GM200-L027
	N2Z08	GN200-L048
1A-B3	*N6C04*	
1B-A1	*B5B08*	
1B-A1	*B4B08*	
1B-A1	*B3B08*	
1B-A1	*B2B08*	
L050		
+ CMCA IR CHECK		
	N2B06	GN200-L050
	(M2J05)	GM200-R043

LINE/SIGNAL	PIN	SHEET/LINE
L051		
- C2Q EXPANDED STORAGE INSTALLED		
	N2Z02	GN200-L051
1A-B4	N2Z02	HN200-L051
1B-A1	*Q2S13*	
1B-A1	*A4B02*	
1B-A1	*B4B02*	
L052		
+ OFFSET INTERLOCK MODE		
	N2S03	GN200-L052
	(J2U04)	GJ200-R021
L053		
- COMMON STATUS REG 5 INPUTS 5		
	N2D02	GN200-L053
L054		
- COMMON STATUS REG 5 INPUTS 6		
	N2Z03	GN200-L054
R003		
- XREG SELECTED (1B/0F DECODE)		
	(N2D12)	GN200-R003
	R2M10	GR200-L029
R004		
- CDN SD# SECOND COMM R/W CLOCK		
	(N2B12)	GN200-R004
1A-B4	(N2B12)	HN200-R004
1A-B4	M2M02	HM200-L012
	M2M02	GM200-L012
1A-B3	*K1A11*	
1A-B4	*K1A11*	
R005		
+ CDN SD2 REG ADDRESS P		
	(N2W02)	GN200-R005
	L2W02	GL200-L032
	M2W02	GM200-L032
R005		
+ CDN SD2 REG ADDRESS 0		
	(N2W24)	GN200-R005
	L2W24	GL200-L032
	M2W24	GM200-L032
R005		
+ CDN SD2 REG ADDRESS 1		
	(N2W29)	GN200-R005
	L2W29	GL200-L032
	M2W29	GM200-L032
R005		
+ CDN SD2 REG ADDRESS 2		
	(N2W30)	GN200-R005
	L2W30	GL200-L032
	M2W30	GM200-L032
R005		
+ CDN SD2 REG ADDRESS 3		
	(N2W10)	GN200-R005
	L2W10	GL200-L032
	M2W10	GM200-L032

LINE/SIGNAL	PIN	SHEET/LINE
R005		
+ CDN SD2 REG ADDRESS 4		
	(N2W11)	GN200-R005
	L2W11	GL200-L032
	M2W11	GM200-L032
R005		
+ CDN SD2 REG ADDRESS 5		
	(N2W09)	GN200-R005
	L2W09	GL200-L032
	M2W09	GM200-L032
R005		
+ CDN SD2 REG ADDRESS 6		
	(N2W05)	GN200-R005
	L2W05	GL200-L032
	M2W05	GM200-L032
R005		
+ CDN SD2 REG ADDRESS 7		
	(N2W33)	GN200-R005
	L2W33	GL200-L032
	M2W33	GM200-L032
R006		
- CDN SD2 ALU OUT BIT 6 (ADT)		
	(N2B08)	GN200-R006
	J2D05	GJ200-L067
R007		
- CDN SD2 ALU OUT BIT P (ADT)		
	(N2J02)	GN200-R007
	J2S08	GJ200-L068
R008		
- CDN SD2 ALU OUT BIT 7 (CH/DEV)		
	(N2B11)	GN200-R008
	H2U10	GH220-L024
	X2D06	GX200-L052
R009		
- CDN SD2 ALU OUT BIT P (CH/DEV)		
	(N2D11)	GN200-R009
	H2U11	GH220-L025
	X2B02	GX200-L053
R010		
- CHECK TWO		
	(N2D04)	GN200-R010
	(F2S09)	GF200-R040
	(J2U10)	GJ200-R017
	(X2J09)	GX200-R021
	R2S09	GR200-L027
R011		
+ CDN SD2 REG R/W DATA P		
	(N2W25)	GN200-R011
	(L2W25)	GL200-R012
	(M2W25)	GM200-R042
	(N2W25)	GN200-R052
R011		
+ CDN SD2 REG R/W DATA 0		
	(N2W07)	GN200-R011
	(L2W07)	GL200-R012
	(M2W07)	GM200-R042
	(N2W07)	GN200-R052

LINE/SIGNAL	PIN	SHEET/LINE
R011		
+ CDN SD2 REG R/W DATA 1		
	(N2W03)	GN200-R011
	(L2W03)	GL200-R012
	(M2W03)	GM200-R042
	(N2W03)	GN200-R052
R011		
+ CDN SD2 REG R/W DATA 2		
	(N2W06)	GN200-R011
	(L2W06)	GL200-R012
	(M2W06)	GM200-R042
	(N2W06)	GN200-R052
R011		
+ CDN SD2 REG R/W DATA 3		
	(N2W32)	GN200-R011
	(L2W32)	GL200-R012
	(M2W32)	GM200-R042
	(N2W32)	GN200-R052
R011		
+ CDN SD2 REG R/W DATA 4		
	(N2W13)	GN200-R011
	(L2W13)	GL200-R012
	(M2W13)	GM200-R042
	(N2W13)	GN200-R052
R011		
+ CDN SD2 REG R/W DATA 5		
	(N2W22)	GN200-R011
	(L2W22)	GL200-R012
	(M2W22)	GM200-R042
	(N2W22)	GN200-R052
R011		
+ CDN SD2 REG R/W DATA 6		
	(N2W28)	GN200-R011
	(L2W28)	GL200-R012
	(M2W28)	GM200-R042
	(N2W28)	GN200-R052
R011		
+ CDN SD2 REG R/W DATA 7		
	(N2W26)	GN200-R011
	(L2W26)	GL200-R012
	(M2W26)	GM200-R042
	(N2W26)	GN200-R052
R012		
- ALU IN2 BIT 0		
	(N2S10)	GN200-R012
	(R2S10)	GR200-R016
	(R2Z10)	GR200-R017
	(V2M04)	GV200-R003
	(X2M04)	GX200-R012
	Q2Z10	GQ200-L008
R013		
- ALU IN2 BIT 1		
	(N2S09)	GN200-R013
	(R2U07)	GR200-R016
	(R2Z07)	GR200-R017
	(V2J13)	GV200-R004
	(X2J13)	GX200-R013
	Q2Z07	GQ200-L008

LINE/SIGNAL	PIN	SHEET/LINE
R014		
- ALU IN2 BIT 2		
	(N2U10)	GN200-R014
	(R2U09)	GR200-R016
	(R2Z09)	GR200-R017
	(V2G12)	GV200-R005
	(X2G12)	GX200-R014
	Q2Z09	GQ200-L008
R015		
- ALU IN2 BIT 3		
	(N2U12)	GN200-R015
	(R2U10)	GR200-R016
	(R2Z30)	GR200-R017
	(V2P05)	GV200-R006
	(X2P05)	GX200-R015
	Q2Z30	GQ200-L008
R016		
- ALU IN2 BIT 4		
	(N2U13)	GN200-R016
	(R2S13)	GR200-R016
	(R2Z33)	GR200-R017
	(V2M05)	GV200-R007
	(X2M05)	GX200-R016
	Q2Z33	GQ200-L008
R017		
- ALU IN2 BIT 5		
	(N2S13)	GN200-R017
	(R2U13)	GR200-R016
	(R2Z13)	GR200-R017
	(V2M03)	GV200-R008
	(X2M03)	GX200-R017
	Q2Z13	GQ200-L008
R018		
- ALU IN2 BIT 6		-
	(N2S08)	GN200-R018
	(R2S07)	GR200-R016
	(R2Z28)	GR200-R017
	(V2G10)	GV200-R009
	(X2G10)	GX200-R018
	Q2Z28	GQ200-L008
R019		
- ALU IN2 BIT 7		
	(N2U05)	GN200-R019
	(R2U05)	GR200-R016
	(R2Z05)	GR200-R017
	(V2P02)	GV200-R010
	(X2P02)	GX200-R019
	Q2Z05	GQ200-L008
R020		
- ALU IN2 BIT P		
	(N2U02)	GN200-R020
	(R2S08)	GR200-R016
	(R2Z06)	GR200-R017
	(V2P04)	GV200-R011
	(X2P04)	GX200-R020
	Q2Z06	GQ200-L008

LINE/SIGNAL	PIN	SHEET/LINE
R021		
- CHAN DXR BUS BIT 0		
	(N2G12)	GN200-R021
	(H2G02)	GH220-R018
	(H2J07)	GH220-R049
	(K2Y28)	GK200-R008
	H2Y28	GH220-L033
R022		
- CHAN DXR BUS BIT 1		
	(N2J10)	GN200-R022
	(H2G04)	GH220-R019
	(H2J09)	GH220-R050
	(K2Y30)	GK200-R008
	H2Y30	GH220-L034
R023		
- CHAN DXR BUS BIT 2		
	(N2J12)	GN200-R023
	(H2G05)	GH220-R020
	(H2J11)	GH220-R051
	(K2Y32)	GK200-R008
	H2Y32	GH220-L035
R024		
- CHAN DXR BUS BIT 3		
	(N2J06)	GN200-R024
	(H2G08)	GH220-R021
	(H2J12)	GH220-R052
	(K2Y33)	GK200-R008
	H2Y33	GH220-L036
R025		
- CHAN DXR BUS BIT 4		
	(N2G03)	GN200-R025
	(H2G09)	GH220-R022
	(H2P02)	GH220-R053
	(K2Y07)	GK200-R008
	H2Y07	GH220-L037
R026		
- CHAN DXR BUS BIT 5		
	(N2J07)	GN200-R026
	(H2G10)	GH220-R023
	(H2P04)	GH220-R054
	(K2Y09)	GK200-R008
	H2Y09	GH220-L038
R027		
- CHAN DXR BUS BIT 6		
	(N2J05)	GN200-R027
	(H2G12)	GH220-R024
	(H2P05)	GH220-R055
	(K2Y11)	GK200-R008
	H2Y11	GH220-L039
R028		
- CHAN DXR BUS BIT 7		
	(N2M11)	GN200-R028
	(H2G13)	GH220-R025
	(H2P07)	GH220-R056
	(K2Y13)	GK200-R008
	H2Y13	GH220-L040

LINE/SIGNAL	PIN	SHEET/LINE
R029		
- CHAN DXR BUS BIT P		
	(N2G05)	GN200-R029
	(H2M02)	GH220-R026
	(K2G10)	GK200-R008
	H2P09	GH220-L041
R030		
- DEV DXR BUS BIT 0		
	(N2G09)	GN200-R030
	(K2G13)	GK200-R006
	(X2J07)	GX200-R003
	X2B12	GX200-L050
R031		
- DEV DXR BUS BIT 1		
	(N2G11)	GN200-R031
	(K2P05)	GK200-R006
	(X2J04)	GX200-R004
	X2D07	GX200-L050
R032		
- DEV DXR BUS BIT 2		
	(N2G10)	GN200-R032
	(K2P02)	GK200-R006
	(X2G02)	GX200-R005
	X2D11	GX200-L050
R033		
- DEV DXR BUS BIT 3		
	(N2J09)	GN200-R033
	(K2J12)	GK200-R006
	(X2G05)	GX200-R006
	X2B13	GX200-L050
R034		
- DEV DXR BUS BIT 4		
	(N2J13)	GN200-R034
	(K2J13)	GK200-R006
	(X2G09)	GX200-R007
	X2B10	GX200-L050
R035		
- DEV DXR BUS BIT 5		
	(N2P09)	GN200-R035
	(K2J10)	GK200-R006
	(X2G08)	GX200-R008
	X2B07	GX200-L050
R036		
- DEV DXR BUS BIT 6		
	(N2G13)	GN200-R036
	(K2M04)	GK200-R006
	(X2G04)	GX200-R009
	X2D09	GX200-L050
R037		
- DEV DXR BUS BIT 7		
	(N2M08)	GN200-R037
	(K2M03)	GK200-R006
	(X2G03)	GX200-R010
	X2D02	GX200-L050

LINE/SIGNAL	PIN	SHEET/LINE
R038		
- DEV DXR BUS BIT P		
	(N2M09)	GN200-R038
	(K2P04)	GK200-R006
	(X2J05)	GX200-R011
	X2B04	GX200-L050
R039		
- TAKE DATA/DATA TKN CHAN (AUX)		
	(N2P10)	GN200-R039
	K2S09	GK200-L010
R040		
- CDN SD2 ND/DR GATED CHANNEL		
	(N2G04)	GN200-R040
	G2J04	GG210-L032
	H2B10	GH220-L005
R041		
- HALT CHANNEL REQUESTS (TO CDX)		
	(N2P11)	GN200-R041
	G2B04	GG210-L055
R042		
- CDN SD2 R/W DATA LOWER 0		
	(N2Z30)	GN200-R042
1B-A1	(H2M03)	JH200-R004
1B-A1	*B4D10*	
R042		
- CDN SD2 R/W DATA LOWER 1		
	(N2Z29)	GN200-R042
1B-A1	(H2M05)	JH200-R004
1B-A1	*B4D09*	
R042		
- CDN SD2 R/W DATA LOWER 2		
	(N2Z27)	GN200-R042
1B-A1	(H2P07)	JH200-R004
1B-A1	*B4D07*	
R042		
- CDN SD2 R/W DATA LOWER 3		
	(N2Z26)	GN200-R042
1B-A1	(H2P04)	JH200-R004
1B-A1	*B4D06*	
R042		
- CDN SD2 R/W DATA LOWER 4		
	(N2Z11)	GN200-R042
1B-A1	(H2M08)	JH200-R004
1B-A1	*B4B11*	
R042		
- CDN SD2 R/W DATA LOWER 5		
	(N2Z12)	GN200-R042
1B-A1	(H2P10)	JH200-R004
1B-A1	*B4B12*	
R042		
- CDN SD2 R/W DATA LOWER 6		
	(N2Z25)	GN200-R042
1B-A1	(H2J11)	JH200-R004
1B-A1	*B4D05*	

LINE/SIGNAL	PIN	SHEET/LINE
R042		
- CDN SD2 R/W DATA LOWER 7		
	(N2Z24)	GN200-R042
1B-A1	(H2J12)	JH200-R004
1B-A1	*B4D04*	
R042		
- CDN SD2 R/W DATA LOWER P		
	(N2Z31)	GN200-R042
1B-A1	(H2M07)	JH200-R004
1B-A1	*B4D11*	
R043		
- TAKE DATA/DATA TKN DEV (AUX)		
	(N2P07)	GN200-R043
	K2B09	GK200-L008

SEQNO	PGE OF	FICHE CD	FICHE FRM	PAGEID	TYP	CARD NAME	MODEL	FEATURE	VERSION	CARD LOC
GA030	1	1	A01	AA000	BLI	N/A	N/A	N/A	N/A	N/A
GA030	3	1	A05	GC200	CRD	TCR	2X	2 CHANNEL	N-R TAILGATE	1A-B3C2
GA030	4	1	A07	GC200	XRL	TCR	2X	2 CHANNEL	N-R TAILGATE	1A-B3C2
GA030	5	1	A09	GC400	CRD	SBP	2X	2 CHANNEL	N-R TAILGATE	1A-B3C4
GA030	6	1	A11	GC400	XRL	SBP	2X	2 CHANNEL	N-R TAILGATE	1A-B3C4
GA030	7	1	A13	GC500	CRD	SBP	2X	2 CHANNEL	N-R TAILGATE	1A-B3C5
GA030	8	1	A15	GC500	XRL	SBP	2X	2 CHANNEL	N-R TAILGATE	1A-B3C5
GA030	9	1	A17	GD200	CRD	CIF	2X	2 CHANNEL	N-R TAILGATE	1A-B3D2
GA030	10	1	B01	GD200	XRL	CIF	2X	2 CHANNEL	N-R TAILGATE	1A-B3D2
GA030	12	1	B05	GE200	CRD	CIF	2X	2 CHANNEL	N-R TAILGATE	1A-B3E2
GA030	13	1	B07	GE200	XRL	CIF	2X	2 CHANNEL	N-R TAILGATE	1A-B3E2
GA030	15	1	B11	GF200	CRD	CSC	2X	2 CHANNEL	N-R TAILGATE	1A-B3F2
GA030	16	1	B13	GF200	XRL	CSC	2X	2 CHANNEL	N-R TAILGATE	1A-B3F2
GA030	18	1	B17	GG210	CRD	CDX	2X	2 CHANNEL	N-R TAILGATE	1A-B3G2
GA030	19	1	C01	GG210	XRL	CDX	2X	2 CHANNEL	N-R TAILGATE	1A-B3G2
GA030	21	1	C05	GH220	CRD	CSR	2X	2 CHANNEL	N-R TAILGATE	1A-B3H2
GA030	22	1	C07	GH220	XRL	CSR	2X	2 CHANNEL	N-R TAILGATE	1A-B3H2
GA030	25	1	C13	GJ200	CRD	DXA	2X	2 CHANNEL	N-R TAILGATE	1A-B3J2
GA030	26	1	C15	GJ200	XRL	DXA	2X	2 CHANNEL	N-R TAILGATE	1A-B3J2
GA030	29	1	D03	GK200	CRD	DXD	2X	2 CHANNEL	N-R TAILGATE	1A-B3K2
GA030	30	1	D05	GK200	XRL	DXD	2X	2 CHANNEL	N-R TAILGATE	1A-B3K2
GA030	33	1	D11	GL200	CRD	CMAA	2X	2 CHANNEL	N-R TAILGATE	1A-B3L2
GA030	34	1	D13	GL200	XRL	CMAA	2X	2 CHANNEL	N-R TAILGATE	1A-B3L2
GA030	36	1	D17	GM200	CRD	CMCA	2X	2 CHANNEL	N-R TAILGATE	1A-B3M2
GA030	37	1	E01	GM200	XRL	CMCA	2X	2 CHANNEL	N-R TAILGATE	1A-B3M2
GA030	40	1	E07	GN200	CRD	CMCD	2X	2 CHANNEL	N-R TAILGATE	1A-B3N2
GA030	41	1	E09	GN200	XRL	CMCD	2X	2 CHANNEL	N-R TAILGATE	1A-B3N2
GA030	44	2	A01	AA000	BLI	N/A	N/A	N/A	N/A	N/A
GA030	46	2	A05	GP200	CRD	CLK	2X	2 CHANNEL	N-R TAILGATE	1A-B3P2
GA030	47	2	A07	GP200	XRL	CLK	2X	2 CHANNEL	N-R TAILGATE	1A-B3P2
GA030	49	2	A11	GQ200	CRD	SDM	2X	2 CHANNEL	N-R TAILGATE	1A-B3Q2
GA030	50	2	A13	GQ200	XRL	SDM	2X	2 CHANNEL	N-R TAILGATE	1A-B3Q2
GA030	53	2	B01	GR200	CRD	MNT	2X	2 CHANNEL	N-R TAILGATE	1A-B3R2
GA030	54	2	B03	GR200	XRL	MNT	2X	2 CHANNEL	N-R TAILGATE	1A-B3R2
GA030	57	2	B09	GS200	CRD	SCS1	2X	2 CHANNEL	N-R TAILGATE	1A-B3S2
GA030	58	2	B11	GS200	XRL	SCS1	2X	2 CHANNEL	N-R TAILGATE	1A-B3S2
GA030	59	2	B13	GT200	CRD	SCS2	2X	2 CHANNEL	N-R TAILGATE	1A-B3T2
GA030	60	2	B15	GT200	XRL	SCS2	2X	2 CHANNEL	N-R TAILGATE	1A-B3T2
GA030	61	2	B17	GU200	CRD	DCSR	2X	2 CHANNEL	N-R TAILGATE	1A-B3U2
GA030	62	2	C01	GU200	XRL	DCSR	2X	2 CHANNEL	N-R TAILGATE	1A-B3U2
GA030	64	2	C05	GV200	CRD	DCT	2X	2 CHANNEL	N-R TAILGATE	1A-B3V2
GA030	65	2	C07	GV200	XRL	DCT	2X	2 CHANNEL	N-R TAILGATE	1A-B3V2
GA030	67	2	C11	GX200	CRD	DDCU	2X	2 CHANNEL	N-R TAILGATE	1A-B3X2
GA030	68	2	C13	GX200	XRL	DDCU	2X	2 CHANNEL	N-R TAILGATE	1A-B3X2

GLOSSARY OF ABBREVIATIONS USED

ABBR.	EXPLANATION
ASDM	AUXILIARY STORAGE DIRECTOR MICROCONTROLLER
BLI	BOARD LOGIC INDEX
CD	CARD (MICROFICHE)
CRD	CARD REFERENCE DIAGRAM
EW	ELECTRONIC WRAP
FRM	FRAME (MICROFICHE)
HDSCS	HIGH DENSITY STATIC CONTROL STORAGE
IR	INDIRECT REGISTER
MDM	VOLUME R30
PA	PORT ADAPTER (CMCD CARD)
SAR	STORAGE ADDRESS REGISTER
SB1	STORAGE BOARD 1
SD1	STORAGE DIRECTOR 1
SDM	STORAGE DIRECTOR MICROCONTROLLER
XRL	CROSS REFERENCE LIST
2X1	TWO CHANNEL SWITCH
4X1	TWO CHANNEL ADDITIONAL OR FOUR CHANNEL

NOTES USED ON CROSS REFERENCE PAGES

THE LEGEND ON THE CROSS REFERENCE PAGES
SHOW ( ) AS THE SOURCE(S) OF THE SIGNAL
AND * * AS THE CABLE SOCKET PINS

IN ADDITION THE FOLLOWING SPECIAL DESIGNATIONS
WILL ALSO SHOW ON THESE PAGES

ANANN FOLLOWED BY
+2-CH *ANANN* INDICATES FRENIRING FOR TWO CHANNEL ADDITIONAL

->MDM *AANNN* REFERENCES MDM PAGE

->MNT *DEV * INDICATES A LINE TO THE MAINTENANCE DEVICE

NOTE: THE LINE NAME IN THE MDM MANUAL FOR A GIVEN NET WILL IN GENERAL NOT MATCH THE LINE NAME IN THE LRM EXACTLY.

NOTE: MANY OF THE LINE NAMES ARE OF THE FORM
'+ PPS BBB LINE NAME'
WHERE 'PP' IS THE LAST TWO CHARACTERS OF THE PNAME OF THE SOURCE. 'S' IS THE BOARD POSITION ON THE SOURCE AND 'BBB' IS A BOARD WITH WHICH THE LINE IS ASSOCIATED.

SEQNO	PGE OF	FICHE CD	FRM	PAGEID	TYP	CARD NAME	MODEL	FEATURE	VERSION	CARD LOC
GA030	70	2	C17	GX210	CRD	DDCV	2X	2 CHANNEL	N-R TAILGATE	1A-B3X2
GA030	71	2	D01	GX210	XRL	DDCV	2X	2 CHANNEL	N-R TAILGATE	1A-B3X2

B O A R D L O G I C I N D E X P A G E BLI AA000

GLOSSARY OF ABBREVIATIONS USED

ABBR.	EXPLANATION
ASDM	AUXILIARY STORAGE DIRECTOR MICROCONTROLLER
BLI	BOARD LOGIC INDEX
CD	CARD (MICROFICHE)
CRD	CARD REFERENCE DIAGRAM
EW	ELECTRONIC WRAP
FRM	FRAME (MICROFICHE)
HDSCS	HIGH DENSITY STATIC CONTROL STORAGE
IR	INDIRECT REGISTER
MDM	VOLUME R30
PA	PORT ADAPTER (CMCD CARD)
SAR	STORAGE ADDRESS REGISTER
SB1	STORAGE BOARD 1
SD1	STORAGE DIRECTOR 1
SDM	STORAGE DIRECTOR MICROCONTROLLER
XRL	CROSS REFERENCE LIST
2X1	TWO CHANNEL SWITCH
4X1	TWO CHANNEL ADDITIONAL OR FOUR CHANNEL

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IN ADDITION THE FOLLOWING SPECIAL DESIGNATIONS
WILL ALSO SHOW ON THESE PAGES

ANANN FOLLOWED BY
+2-CH *ANANN* INDICATES PREWIRING FOR TWO CHANNEL ADDITIONAL

->MDM *AANNN* REFERENCES MDM PAGE

->MNT *DEV * INDICATES A LINE TO THE MAINTENANCE DEVICE

NOTE: THE LINE NAME IN THE MDM MANUAL FOR A GIVEN NET WILL IN GENERAL NOT MATCH THE LINE NAME IN THE LRM EXACTLY.

NOTE: MANY OF THE LINE NAMES ARE OF THE FORM
'+ PPS BBB LINE NAME'
WHERE 'PP' IS THE LAST TWO CHARACTERS OF THE PNAME OF THE SOURCE. 'S' IS THE BOARD POSITION ON THE SOURCE AND 'BBB' IS A BOARD WITH WHICH THE LINE IS ASSOCIATED.

003 - CS ADDRESS BIT 0 ----------M02
004 - CS ADDRESS BIT 1 ----------J10
005 - REFRESH REQUIRED ----------M09
006 - CS WRITE ----------G02
007 - REFRESH ADDRESS CHECK ---------S10
008 - KEY BIT CHECK ----------D11
009 - ANY READ DATA CHECK ----------B03
010 - UNCORRECTABLE READ DATA CHK ---D05
011 - REFRESH TIMER CHECK ----------J11
012 - SELECTION CHECK ----------M10
013 - CS ADDRESS BIT 2 ----------J02
014 - CS ADDRESS BIT 3 ----------D13
015 - CS ADDRESS BIT PARITY ---------B07
016 - DCS DATA IN P CHK ----------D02
017 + SPECIAL RESET ----------J05
018 - DCS SELECT ----------U05
019 + MAINTENANCE START ----------P02
020 + START ----------P06
021 + STOP ----------P04
022 + RESET ----------J09
023 + POWER ON RESET POWERED --------U07
024 + ENABLE TIMER ----------S12

CLK CARD

OVERVIEW

The CLK (clock) card provides timing signals to the functional areas of the storage director. The clocks are controlled by the maintenance card to allow selective starting and stopping of different groups of clocks. A self-starting 36.36 megahertz oscillator is the timing source for the storage director, and runs continuously with power on. In addition, the clock card controls the DSCR storage card. This involves controlling card selects, and refresh select to the DCSR card, as well as controlling starting and stopping of the SDM clocks.

PRIMARY FUNCTIONS

- Start and stop control provided by three sources:
  - Power on reset
  - Maintenance commands
  - Dynamic storage cycles
- Maintenance commands:
  - Start - starts all clocks
  - Maintenance Start - starts SDM (storage director microcontroller) clock
  - Stop - stops all clocks except CIF, DRC, ADT and MNT
  - SDM Sequential Reset - resets the SDM clock
- Dynamic storage control circuits send a Hold SDM signal to the clock controls when the SDM card initiates a dynamic storage cycle.
- SDM clock generates the clock signals for the storage director microcontroller and the control signals for the even and odd clocks.
- Even clock provides clock signals for the CIF CSC, DRC, MNT, CDX, CSR, ADT and DCC cards.
- Odd clock provides clocking signals to the CIF, CSC, MNT, CDX, CSR, ADT, and DCC cards.

PRIMARY COMPONENTS

- 36.36 megahertz oscillator
- Storage director microcontroller clock
- Odd clock
- Even clock
- Dynamic control store control chip

ERROR CHECKING

- Generates a clock card check when a DCS cycle is initiated by the SDM.
- DCS storage check logic re-powers check signals from the DCSR card as follows:
  - Refresh address check, refresh timer check and key bit check are combined into DCSR card check
  - Selection check is ORed into clock card check
  - Uncorrectable read data check is re-powered
  - Any read data check is sampled and latched at the end of every DCS storage cycle.
- DCS address check checks for odd parity on CS address bits 2 through 15 and CS write.
- DCS data check latch indicates bad data is stored in DCS storage. It can only be reset with a special reset.

D09 - DCS DATA IN P CHK LATCHED ---- 003
M13 - DCS SELECT 1 ---------- 004
G04 - DCS SELECT 0 ---------- 005
B13 + REFRESH TIMER CLOCK ---------- 006
S05 - REFRESH SELECT ---------- 007
D04 - DCS CYCLE ---------- 008
M05 + KEYBIT ---------- 009
G12 + DCSR CARD CHECK ---------- 010
D07 + UNCORRECTABLE DATA CHECK ----- 011
B02 + ANY READ DATA CHECK LATCHED -- 012
J07 - DCS ADDRESS PARITY ---------- 013
S03 + CIF/-SC/TCR CLOCK T0 ---------- 014
P11 + CIF/-SC/TCR CLOCK T2 ---------- 015
P09 + CIF/-SC/TCR CLOCK T4 ---------- 016
P07 + CIF/-SC/TCR CLOCK T6 ---------- 017
S09 + DDC CLOCK T0 ---------- 018
S07 + DDC CLOCK T2 ---------- 019
M12 + DDC CLOCK T4 ---------- 020
U10 + DDC CLOCK T6 ---------- 021
M08 + MNT CLOCK T0 ---------- 022
P12 + MNT CLOCK T2 ---------- 023
S04 + MNT CLOCK T4 ---------- 024
P10 + MNT CLOCK T6 ---------- 025
S02 + CDX/CSR CLOCK T0 ---------- 026
M07 + CDX/CSR CLOCK T2 ---------- 027
U04 + CDX/CSR CLOCK T4 ---------- 028
U02 + CDX/CSR CLOCK T6 ---------- 029
S08 + ADT CLOCK T0 OR T4 ---------- 030
U06 + ADT CLOCK T2 OR T6 ---------- 031
G09 + CLK CARD CHECK ---------- 032
B09 + SDM CLOCK TC EARLY ---------- 033
P13 + SDM CLOCK TA ---------- 034
G10 + SDM CLOCK TB ---------- 035
J12 + SDM CLOCK TC ---------- 036
U13 + SDM CLOCK TD ---------- 037
M04 + SDM CLOCK TD SHAVED ---------- 038
J13 + STOP DDC ---------- 039
G13 - STOP LATCHED ---------- 040
B08 + SDM STOPPED ---------- 041
P05 + CIF STOPPED ---------- 042
M03 + INVALID SEQUENCE ---------- 043
G07 + DDC CLOCK T1 ---------- 044
B10 + DDC CLOCK T3 ---------- 045
J04 + DDC CLOCK T5 ---------- 046
G08 + DDC CLOCK T7 ---------- 047
D06 + MNT CLOCK T1 ---------- 048
G03 + MNT CLOCK T3 ---------- 049
J06 + MNT CLOCK T5 ---------- 050
D12 + MNT CLOCK T7 ---------- 051
B12 + CIF/-SC/TCR CLOCK T5 ---------- 052
G05 + ADT CLK T3D2 OR T7D2 ---------- 053
D10 + MNT CLOCK T4D2 ---------- 054
B05 - CLOCK T1 ---------- 055
U09 + ADT CLOCK T1 OR T5 ---------- 056
U11 + ADT CLOCK T3 OR T7 ---------- 057
S13 - CHAN CHECK/TIMER INTERRUPT 1 - 058
U12 - WESTPORT SELECT 2 ---------- 059

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- CS ADDRESS BIT 0		
	P2M02	GP200-L003
	(Q2D07)	GQ200-R033
L004		
- CS ADDRESS BIT 1		
	P2J10	GP200-L004
	(Q2B07)	GQ200-R033
L005		
- REFRESH REQUIRED		
	P2M09	GP200-L005
	(U2B12)	GU200-R044
L006		
- CS WRITE		
	P2G02	GP200-L006
	(Q2S08)	GQ200-R037
	R2D13	GR200-L022
	S2B02	GS200-L005
	T2B02	GT200-L007
	U2D05	GU200-L019
	U2J13	GU200-L020
L007		
- REFRESH ADDRESS CHECK		
	P2S10	GP200-L007
	(U2D12)	GU200-R007
L008		
- KEY BIT CHECK		
	P2D11	GP200-L008
	(U2B05)	GU200-R040
L009		
- ANY READ DATA CHECK		
	P2B03	GP200-L009
	(U2S07)	GU200-R027
L010		
- UNCORRECTABLE READ DATA CHK		
	P2D05	GP200-L010
	(U2D02)	GU200-R028
L011		
- REFRESH TIMER CHECK		
	P2J11	GP200-L011
	(U2J09)	GU200-R046
L012		
- SELECTION CHECK		
	P2M10	GP200-L012
	(U2B07)	GU200-R043
L013		
- CS ADDRESS BIT 2		
	P2J02	GP200-L013
	(Q2D09)	GQ200-R033
	U2P02	GU200-L003
L014		
- CS ADDRESS BIT 3		
	P2D13	GP200-L014
	(Q2B08)	GQ200-R033
	U2M03	GU200-L004

LINE/SIGNAL	PIN	SHEET/LINE
L015		
- CS ADDRESS BIT PARITY		
	P2B07	GP200-L015
	(Q2S13)	GQ200-R036
	S2U12	GS200-L006
	T2U12	GT200-L004
L016		
- DCS DATA IN P CHK		
	P2D02	GP200-L016
	(U2G05)	GU200-R026
L017		
+ SPECIAL RESET		
	P2J05	GP200-L017
	(R2B12)	GR200-R027
	D2G09	GD200-L032
	E2G09	GE200-L032
	C2G10	GC200-L015
	F2M03	GF200-L055
	X2P10	GX200-L051
L018		
- DCS SELECT		
	P2U05	GP200-L018
	(Q2S12)	GQ200-R031
L019		
+ MAINTENANCE START		
	P2P02	GP200-L019
	(R2J07)	GR200-R026
L020		
+ START		
	P2P06	GP200-L020
	(R2D10)	GR200-R025
L021		
+ STOP		
	P2P04	GP200-L021
	(R2G03)	GR200-R024
L022		
+ RESET		
	P2J09	GP200-L022
	(R2B07)	GR200-R022
	D2M05	GD200-L031
	E2M05	GE200-L031
	C2G09	GC200-L016
	F2M02	GF200-L054
	G2J13	GG210-L017
	H2S03	GH220-L060
	M2P11	GM200-L011
	V2G13	GV200-L006
	X2M02	GX200-L005
L023		
+ POWER ON RESET POWERED		
	P2U07	GP200-L023
	(R2B10)	GR200-R042
	C4B04	GC400-L004
	C5B04	GC500-L004
	U2D04	GU200-L022

LINE/SIGNAL	PIN	SHEET/LINE
L024		
+ ENABLE TIMER		
	P2S12	GP200-L024
	(V2S02)	GV200-R030
R003		
- DCS DATA IN P CHK LATCHED		
	(P2D09)	GP200-R003
	R2S05	GR200-L056
R004		
- DCS SELECT 1		
	(P2M13)	GP200-R004
	U2J07	GU200-L023
R005		
- DCS SELECT 0		
	(P2G04)	GP200-R005
	U2G03	GU200-L024
R006		
+ REFRESH TIMER CLOCK		
	(P2B13)	GP200-R006
	U2J04	GU200-L028
R007		
- REFRESH SELECT		
	(P2S05)	GP200-R007
	U2B09	GU200-L021
R008		
- DCS CYCLE		
	(P2D04)	GP200-R008
	R2G02	GR200-L008
R009		
+ KEYBIT		
	(P2M05)	GP200-R009
	U2M13	GU200-L018
R010		
+ DCSR CARD CHECK		
	(P2G12)	GP200-R010
	R2J12	GR200-L051
R011		
+ UNCORRECTABLE DATA CHECK		
	(P2D07)	GP200-R011
	R2J11	GR200-L047
R012		
+ ANY READ DATA CHECK LATCHED		
	(P2B02)	GP200-R012
	J2S02	GJ200-L059
R013		
- DCS ADDRESS PARITY		
	(P2J07)	GP200-R013
	U2M07	GU200-L017
R014		
+ CIF/-SC/TCR CLOCK T0		
	(P2S03)	GP200-R014
	D2J10	GD200-L042
	E2J10	GE200-L042
	F2P05	GF200-L036

LINE/SIGNAL	PIN	SHEET/LINE
R015		
+ CIF/-SC/TCR CLOCK T2		
	(P2P11)	GP200-R015
	D2P02	GD200-L043
	E2P02	GE200-L043
	C2J04	GC200-L009
	F2S04	GF200-L037
R016		
+ CIF/-SC/TCR CLOCK T4		
	(P2P09)	GP200-R016
	D2M03	GD200-L044
	E2M03	GE200-L044
	C2G05	GC200-L010
	F2P06	GF200-L038
R017		
+ CIF/-SC/TCR CLOCK T6		
	(P2P07)	GP200-R017
	D2P04	GD200-L045
	E2P04	GE200-L045
	C2J07	GC200-L019
	F2U06	GF200-L040
R018		
+ DDC CLOCK T0		
	(P2S09)	GP200-R018
	N2U07	GN200-L027
	X2D04	GX200-L016
	X2D04	GX200-L031
R019		
+ DDC CLOCK T2		
	(P2S07)	GP200-R019
	N2S07	GN200-L029
	V2G07	GV200-L030
	X2G07	GX200-L033
R020		
+ DDC CLOCK T4		
	(P2M12)	GP200-R020
	N2M12	GN200-L031
	X2U07	GX200-L035
R021		
+ DDC CLOCK T6		
	(P2U10)	GP200-R021
	N2U09	GN200-L033
	V2U09	GV200-L029
	X2U09	GX200-L037
R022		
+ MNT CLOCK T0		
	(P2M08)	GP200-R022
	R2B13	GR200-L048
R023		
+ MNT CLOCK T2		
	(P2P12)	GP200-R023
	R2J06	GR200-L048
	X2U11	GX200-L029
R024		
+ MNT CLOCK T4		
	(P2S04)	GP200-R024
	R2G08	GR200-L048
	X2U12	GX200-L030

LINE/SIGNAL	PIN	SHEET/LINE
R025		
+ MNT CLOCK T6		
	(P2P10)	GP200-R025
	R2G07	GR200-L048
R026		
+ CDX/CSR CLOCK T0		
	(P2S02)	GP200-R026
	G2G02	GG210-L027
	H2M09	GH220-L062
R027		
+ CDX/CSR CLOCK T2		
	(P2M07)	GP200-R027
	G2G03	GG210-L028
	H2M08	GH220-L063
R028		
+ CDX/CSR CLOCK T4		
	(P2U04)	GP200-R028
	G2G04	GG210-L029
	H2M10	GH220-L064
R029		
+ CDX/CSR CLOCK T6		
	(P2U02)	GP200-R029
	G2G05	GG210-L030
	H2M12	GH220-L065
R030		
+ ADT CLOCK T0 OR T4		
	(P2S08)	GP200-R030
	J2J06	GJ200-L006
	K2S08	GK200-L019
R031		
+ ADT CLOCK T2 OR T6		
	(P2U06)	GP200-R031
	J2G05	GJ200-L008
	K2M02	GK200-L021
R032		
+ CLK CARD CHECK		
	(P2G09)	GP200-R032
	R2P06	GR200-L050
R033		
+ SDM CLOCK TC EARLY		
	(P2B09)	GP200-R033
	Q2G02	GQ200-L013
R034		
+ SDM CLOCK TA		
	(P2P13)	GP200-R034
	(Q2U05)	GQ200-R021
R035		
+ SDM CLOCK TB		
	(P2G10)	GP200-R035
	(Q2U12)	GQ200-R022
R036		
+ SDM CLOCK TC		
	(P2J12)	GP200-R036
	(Q2U07)	GQ200-R023

LINE/SIGNAL	PIN	SHEET/LINE
R037		
+ SDM CLOCK TD		
	(P2U13)	GP200-R037
R038		
+ SDM CLOCK TD SHAVED		
	(P2M04)	GP200-R038
	(Q2S05)	GQ200-R024
	Q2P11	GQ200-L018
R039		
+ STOP DDC		
	(P2J13)	GP200-R039
	R2U11	GR200-L033
	X2U02	GX200-L049
R040		
- STOP LATCHED		
	(P2G13)	GP200-R040
	R2B03	GR200-L045
R041		
+ SDM STOPPED		
	(P2B08)	GP200-R041
	R2J04	GR200-L034
R042		
+ CIF STOPPED		
	(P2P05)	GP200-R042
	D2U02	GD200-L046
	E2U02	GE200-L046
R043		
+ INVALID SEQUENCE		
	(P2M03)	GP200-R043
	R2D06	GR200-L052
R044		
+ DDC CLOCK T1		
	(P2G07)	GP200-R044
	N2G07	GN200-L028
	X2U13	GX200-L032
R045		
+ DDC CLOCK T3		
	(P2B10)	GP200-R045
	N2B10	GN200-L030
	V2U04	GV200-L016
	X2S04	GX200-L034
R046		
+ DDC CLOCK T5		
	(P2J04)	GP200-R046
	N2J04	GN200-L032
	X2S05	GX200-L036
R047		
+ DDC CLOCK T7		
	(P2G08)	GP200-R047
	N2G08	GN200-L034
	V2U02	GV200-L017
	X2S02	GX200-L038

LINE/SIGNAL	PIN	SHEET/LINE
R048		
+ MNT CLOCK T1		
	(P2D06)	GP200-R048
	R2B05	GR200-L048
R049		
+ MNT CLOCK T3		
	(P2G03)	GP200-R049
	R2D12	GR200-L048
R050		
+ MNT CLOCK T5		
	(P2J06)	GP200-R050
	R2G09	GR200-L048
R051		
+ MNT CLOCK T7		
	(P2D12)	GP200-R051
	R2J02	GR200-L048
R052		
+ CIF/-SC/TCR CLOCK T5		
	(P2B12)	GP200-R052
	F2M10	GF200-L039
R053		
+ ADT CLK T3D2 OR T7D2		
	(P2G05)	GP200-R053
	J2J10	GJ200-L025
R054		
+ MNT CLOCK T4D2		
	(P2D10)	GP200-R054
	R2D05	GR200-L049
R055		
- CLOCK T1		
	(P2B05)	GP200-R055
R056		
+ ADT CLOCK T1 OR T5		
	(P2U09)	GP200-R056
	J2M07	GJ200-L007
	K2S13	GK200-L020
R057		
+ ADT CLOCK T3 OR T7		
	(P2U11)	GP200-R057
	J2J07	GJ200-L009
	K2U11	GK200-L022
R058		
- CHAN CHECK/TIMER INTERRUPT 1		
	(P2S13)	GP200-R058
	(F2U02)	GF200-R039
	R2S12	GR200-L012
R059		
- WESTPORT SELECT 2		
	(P2U12)	GP200-R059
	U2B13	GU200-L032

```
003 - MAINT CLOCK T1 ----------------Y29
004 - RUN METER ---------------------Z03
005 - CLK STOPPED - STORAGE DIRECTOR-Y11
006 - INTERRUPT REQUEST -------------Z29
007 - ALU IN1 BIT (0-7,P) ===========*
008 - ALU IN2 BIT (0-7,P) ===========*
009 - INTERRUPT ADR BIT (0-2,P) =====*
010 - SCAN IN -----------------------Y30
011 - SDM START DELAYED -------------Y33
012 - CLOCK STOPPED - SDM -----------Y10
013 + SDM CLOCK TC EARLY ------------G02
014 - TIE DOWN F --------------------J07
015 - RESET -------------------------Y09
016 + ROS SELECT --------------------U13
017 - CS ADDRESS CHECK --------------S10
018 + SDM CLOCK TD SHAVED -----------P11
019 + INHIBIT ALU IN PC -------------Z02
```

SDM CARD

OVERVIEW

The storage director microcontroller (SDM) card performs the following:

- Decodes microinstructions from control storage to control subsystem operation.
- Controls the sequence of microinstructions.
- Controls the reading and writing of data into control storage.
- Controls the accessing and reading of data from the functional diskette.
- Performs arithmetic and logical operations.
- Selects and controls the controller and/or drives.
- Starts data transfer.
- Transfers status and command information to and from the channel.
- Contains ROS which executes level-0 ROS code to perform maintenance operations to alter or display an external register, an internal register, the instruction address register in the microcontroller, or a byte of data in control storage.

PRIMARY FUNCTIONS

- The microcontroller contains the internal register group (IRG) register, check register 3, the arithmetic and logic unit, and the associated decoders, controls, check circuits, input registers, and output registers. The data bus into and out of the microcontroller is 18 bits (16 data and 2 parity).
- The microcontroller Data Out bus inputs the local storage registers, and is gates to external registers in the CSC, CSR, ADT, MNT, CMCD, device counter and director-to-device controller cards.
- ROS (read only storage) is a 512 x 18 bit storage array containing ROS bootstrap microcode.
- Local storage registers are 64 x 18 bit arrays registers that control all data that enters the CS data bit bus.
- Control storage select circuits provide the select lines that permit data to be read or written into that area of storage.

PRIMARY COMPONENTS

- ROS
- Microcontroller
- Local storage registers
- IRG register
- Check register 3
- Control storage select circuits

ERROR CHECKING

- SDM card check is set by the one and only one check on the ROS local storage, external storage, static control storage, and dynamic control storage select lines to insure only one line is active. If more than one select line is active or if there is a parity error on the local storage address lines, the SMD card check latch is set.
- Check register 3 records the status of internal microcontroller checking circuits:
  - Control storage data parity
  - Data parity for internal and external registers
  - Internal microcontroller parity
  - Branch decision error
  - Clock decoder error
- The SDM card check latch is set by a local storage address check, or if more than one 3-state driver is set, or a one and only one check.

```
W26 + CLOCK T1 SD2 ------------------ 003
W03 + RUN METER SD2 ----------------- 004
W07 + CLOCK STOPPED SD2 ------------- 005
W09 + BRANCH SUCCESSFUL SD2 --------- 006
Z11 - EXTENDED OP ------------------- 007
*   - ALU OUT BIT (0-7,P) ========== 008
Y03 - INTERRUPT RESPONSE OUT -------- 009
Y02 - SDM ERROR OUT ----------------- 010
*   - CS DATA BIT (0-15,PH,PL) ===== 011
U09 + LD EXT REG CLK A -------------- 012
S09 + LD EXT REG CLK B -------------- 013
U10 + LD EXT REG CLK C -------------- 014
U06 + LD EXT REG CLK D -------------- 015
*   - EXT REG ADDRESS BIT (0-4) ==== 016
P06 - EXT REG ADR PARITY ------------ 017
Z22 + EXT REG SELECT ---------------- 018
*   - DCS DATA BIT (PH,PL) ========== 019
Y32 + SDM CARD CHECK ---------------- 020
U05 + SDM CLOCK TA ------------------ 021
U12 + SDM CLOCK TB ------------------ 022
U07 + SDM CLOCK TC ------------------ 023
S05 + SDM CLOCK TD SHAVED ----------- 024
Y22 - CS SELECT --------------------- 025
Y26 + CS ADDRESS CHECK -------------- 026
S07 - SCS SELECT 1 ------------------ 027
S04 - SCS SELECT 2 ------------------ 028
U11 - SCS SELECT 3 ------------------ 029
D12 - SCS SELECT 4 ------------------ 030
S12 - DCS SELECT -------------------- 031
Y07 - ROS SELECT -------------------- 032
*   - CS ADDRESS BIT (0-15) ======== 033
*   + CS ADDRESS (SD2) BIT (0-15) == 034
*   + CS ADDRESS (SD2) BIT (0-3) === 035
S13 - CS ADDRESS BIT PARITY -------- 036
S08 - CS WRITE ---------------------- 037
```

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- MAINT CLOCK T1		
	Q2Y29	GQ200-L003
	(R2Y29)	GR200-R040
L004		
- RUN METER		
	Q2Z03	GQ200-L004
	(D2S13)	GD200-R042
	(E2S13)	GE200-R042
	(R2Z03)	GR200-R003
	R2S03	GR200-L003
L005		
- CLK STOPPED - STORAGE DIRECTOR		
	Q2Y11	GQ200-L005
	(R2Y11)	GR200-R034
L006		
- INTERRUPT REQUEST		
	Q2Z29	GQ200-L006
	(R2Z29)	GR200-R013
L007		
- ALU IN1 BIT 0		
	Q2M07	GQ200-L007
	(F2J02)	GF200-R017
	(H2D04)	GH220-R027
	(J2S05)	GJ200-R016
	(K2J02)	GK200-R016
L007		
- ALU IN1 BIT 1		
	Q2P07	GQ200-L007
	(F2G02)	GF200-R018
	(H2D05)	GH220-R028
	(J2S12)	GJ200-R016
	(K2G03)	GK200-R016
L007		
- ALU IN1 BIT 2		
	Q2M12	GQ200-L007
	(F2G03)	GF200-R019
	(H2D06)	GH220-R029
	(J2P10)	GJ200-R016
	(K2J05)	GK200-R016
L007		
- ALU IN1 BIT 3		
	Q2M09	GQ200-L007
	(F2G04)	GF200-R020
	(H2D09)	GH220-R030
	(J2S03)	GJ200-R016
	(K2G09)	GK200-R016
L007		
- ALU IN1 BIT 4		
	Q2M13	GQ200-L007
	(F2G05)	GF200-R021
	(H2D10)	GH220-R031
	(J2B10)	GJ200-R016
	(K2J06)	GK200-R016
L007		
- ALU IN1 BIT 5		
	Q2P13	GQ200-L007
	(F2J09)	GF200-R022
	(H2D12)	GH220-R032
	(J2B03)	GJ200-R016
	(K2G08)	GK200-R016
L007		
- ALU IN1 BIT 6		
	Q2S02	GQ200-L007
	(F2J10)	GF200-R023
	(H2D13)	GH220-R033
	(J2D04)	GJ200-R016
	(K2G07)	GK200-R016
L007		
- ALU IN1 BIT 7		
	Q2U02	GQ200-L007
	(F2J11)	GF200-R024
	(H2J02)	GH220-R034
	(J2B04)	GJ200-R016
	(K2J07)	GK200-R016
L007		
- ALU IN1 BIT P		
	Q2S03	GQ200-L007
	(F2J12)	GF200-R025
	(H2J04)	GH220-R035
	(J2S07)	GJ200-R016
	(K2G02)	GK200-R016
L008		
- ALU IN2 BIT 0		
	Q2Z10	GQ200-L008
	(N2S10)	GN200-R012
	(R2S10)	GR200-R016
	(R2Z10)	GR200-R017
	(V2M04)	GV200-R003
	(X2M04)	GX200-R012
L008		
- ALU IN2 BIT 1		
	Q2Z07	GQ200-L008
	(N2S09)	GN200-R013
	(R2U07)	GR200-R016
	(R2Z07)	GR200-R017
	(V2J13)	GV200-R004
	(X2J13)	GX200-R013
L008		
- ALU IN2 BIT 2		
	Q2Z09	GQ200-L008
	(N2U10)	GN200-R014
	(R2U09)	GR200-R016
	(R2Z09)	GR200-R017
	(V2G12)	GV200-R005
	(X2G12)	GX200-R014
L008		
- ALU IN2 BIT 3		
	Q2Z30	GQ200-L008
	(N2U12)	GN200-R015
	(R2U10)	GR200-R016
	(R2Z30)	GR200-R017
	(V2P05)	GV200-R006
	(X2P05)	GX200-R015
L008		
- ALU IN2 BIT 4		
	Q2Z33	GQ200-L008
	(N2U13)	GN200-R016
	(R2S13)	GR200-R016
	(R2Z33)	GR200-R017
	(V2M05)	GV200-R007
	(X2M05)	GX200-R016
L008		
- ALU IN2 BIT 5		
	Q2Z13	GQ200-L008
	(N2S13)	GN200-R017
	(R2U13)	GR200-R016
	(R2Z13)	GR200-R017
	(V2M03)	GV200-R008
	(X2M03)	GX200-R017
L008		
- ALU IN2 BIT 6		
	Q2Z28	GQ200-L008
	(N2S08)	GN200-R018
	(R2S07)	GR200-R016
	(R2Z28)	GR200-R017
	(V2G10)	GV200-R009
	(X2G10)	GX200-R018
L008		
- ALU IN2 BIT 7		
	Q2Z05	GQ200-L008
	(N2U05)	GN200-R019
	(R2U05)	GR200-R016
	(R2Z05)	GR200-R017
	(V2P02)	GV200-R010
	(X2P02)	GX200-R019
L008		
- ALU IN2 BIT P		
	Q2Z06	GQ200-L008
	(N2U02)	GN200-R020
	(R2S08)	GR200-R016
	(R2Z06)	GR200-R017
	(V2P04)	GV200-R011
	(X2P04)	GX200-R020
L009		
- INTERRUPT ADR BIT 0		
	Q2Y28	GQ200-L009
	(R2Y28)	GR200-R014
L009		
- INTERRUPT ADR BIT 1		
	Q2Z24	GQ200-L009
	(R2Z24)	GR200-R014
L009		
- INTERRUPT ADR BIT 2		
	Q2Z26	GQ200-L009
	(R2Z26)	GR200-R014
L009		
- INTERRUPT ADR BIT P		
	Q2Z25	GQ200-L009
	(R2Z25)	GR200-R014
L010		
- SCAN IN		
	Q2Y30	GQ200-L010
	(R2Y30)	GR200-R039
L011		
- SDM START DELAYED		
	Q2Y33	GQ200-L011
	(R2Y33)	GR200-R035
L012		
- CLOCK STOPPED - SDM		
	Q2Y10	GQ200-L012
	(R2Y10)	GR200-R033
L013		
+ SDM CLOCK TC EARLY		
	Q2G02	GQ200-L013
	(P2B09)	GP200-R033
L014		
- TIE DOWN F		
	Q2J07	GQ200-L014
L015		
- RESET		
	Q2Y09	GQ200-L015
	(R2Y09)	GR200-R021
L016		
+ ROS SELECT		
	Q2U13	GQ200-L016
	(V2S03)	GV200-R031
	R2S04	GR200-L023
L017		
- CS ADDRESS CHECK		
	Q2S10	GQ200-L017
	(S2S12)	GS200-R004
	(T2S12)	GT200-R004
	(U2D10)	GU200-R004
	(U2B04)	GU200-R005
L018		
+ SDM CLOCK TD SHAVED		
	Q2P11	GQ200-L018
	(P2M04)	GP200-R038
	(Q2S05)	GQ200-R024
L019		
+ INHIBIT ALU IN PC		
	Q2Z02	GQ200-L019
	(R2Z02)	GR200-R030
R003		
+ CLOCK T1 SD2		
	(Q2W26)	GQ200-R003
1A-B1	T2Y26	ET200-L016
R004		
+ RUN METER SD2		
	(Q2W03)	GQ200-R004
1A-B1	T2Y03	ET200-L030
R005		
+ CLOCK STOPPED SD2		
	(Q2W07)	GQ200-R005
1A-B1	T2Y07	ET200-L029
R006		
+ BRANCH SUCCESSFUL SD2		
	(Q2W09)	GQ200-R006
1A-B1	T2Y09	ET200-L015
R007		
- EXTENDED OP		
	(Q2Z11)	GQ200-R007
	R2Z11	GR200-L006
R008		
- ALU OUT BIT 0		
	(Q2B04)	GQ200-R008
	C2D02	GC200-L022
	F2D02	GF200-L019
	H2P12	GH220-L017
	J2U07	GJ200-L041
	N2B07	GN200-L012
	R2M02	GR200-L024
	V2D13	GV200-L007
	X2D13	GX200-L028
R008		
- ALU OUT BIT 1		
	(Q2D05)	GQ200-R008
	C2D02	GC200-L023
	F2D04	GF200-L020
	H2P13	GH220-L018
	J2U09	GJ200-L041
	N2D05	GN200-L013
	R2G12	GR200-L024
	V2B05	GV200-L008
	X2B05	GX200-L028
R008		
- ALU OUT BIT 2		
	(Q2D06)	GQ200-R008
	F2D05	GF200-L021
	H2U02	GH220-L019
	J2P12	GJ200-L041
	N2D09	GN200-L014
	R2G13	GR200-L024
	V2D10	GV200-L009
	X2D10	GX200-L028
R008		
- ALU OUT BIT 3		
	(Q2B05)	GQ200-R008
	F2D06	GF200-L022
	H2U05	GH220-L020
	J2U02	GJ200-L041
	N2D10	GN200-L015
	R2M04	GR200-L024
	V2J02	GV200-L010
	X2J02	GX200-L028
R008		
- ALU OUT BIT 4		
	(Q2D04)	GQ200-R008
	F2D07	GF200-L023
	H2U06	GH220-L021
	J2B12	GJ200-L041
	N2D06	GN200-L016
	R2M03	GR200-L024
	V2B08	GV200-L011
	X2B08	GX200-L028
R008		
- ALU OUT BIT 5		
	(Q2B03)	GQ200-R008
	F2B07	GF200-L024
	H2U07	GH220-L022
	J2D06	GJ200-L041
	N2B09	GN200-L017
	R2F04	GR200-L024
	V2B03	GV200-L012
	X2B03	GX200-L028
R008		
- ALU OUT BIT 6		
	(Q2D02)	GQ200-R008
	F2B08	GF200-L025
	H2U09	GH220-L023
	N2G02	GN200-L018
	R2F02	GR200-L024
	V2D05	GV200-L013
	X2D05	GX200-L028
R008		
- ALU OUT BIT 7		
	(Q2B02)	GQ200-R008
	F2B09	GF200-L026
	J2B05	GJ200-L041
	N2B13	GN200-L019
	R2P05	GR200-L024
	V2D06	GV200-L014
R008		
- ALU OUT BIT P		
	(Q2U04)	GQ200-R008
	F2B10	GF200-L027
	N2D13	GN200-L020
	R2M05	GR200-L024
	V2B02	GV200-L015
R009		
- INTERRUPT RESPONSE OUT		
	(Q2Y03)	GQ200-R009
	R2Y03	GR200-L042
R010		
- SDM ERROR OUT		
	(Q2Y02)	GQ200-R010
	R2Y02	GR200-L025
R011		
- CS DATA BIT 0		
	(Q2J11)	GQ200-R011
	(S2D09)	GS200-R003
	(T2D09)	GT200-R003
	(U2U13)	GU200-R008

3880	Seq GA030 50 of 73	6315771 Part No.	881142 12DEC83	881215 27APR84			2X MODELS	2 CHANNEL FEATURES	N-R TAILGATE VERSION	1A-B3Q2 CARD LOC	16 May 84 14:56:46

LINE/SIGNAL	PIN	SHEET/LINE
R011		
- CS DATA BIT 1		
	(Q2G10)	GQ200-R011
	(S2J02)	GS200-R003
	(T2J02)	GT200-R003
	(U2S12)	GU200-R009
R011		
- CS DATA BIT 2		
	(Q2J09)	GQ200-R011
	(S2J05)	GS200-R003
	(T2J05)	GT200-R003
	(U2S10)	GU200-R010
R011		
- CS DATA BIT 3		
	(Q2J10)	GQ200-R011
	(S2J10)	GS200-R003
	(T2J10)	GT200-R003
	(U2M09)	GU200-R011
R011		
- CS DATA BIT 4		
	(Q2G12)	GQ200-R011
	(S2P02)	GS200-R003
	(T2P02)	GT200-R003
	(U2M08)	GU200-R012
R011		
- CS DATA BIT 5		
	(Q2J12)	GQ200-R011
	(S2P07)	GS200-R003
	(T2P07)	GT200-R003
	(U2P06)	GU200-R013
R011		
- CS DATA BIT 6		
	(Q2G13)	GQ200-R011
	(S2P12)	GS200-R003
	(T2P12)	GT200-R003
	(U2M05)	GU200-R014
R011		
- CS DATA BIT 7		
	(Q2J13)	GQ200-R011
	(S2U04)	GS200-R003
	(T2U04)	GT200-R003
	(U2P04)	GU200-R015
R011		
- CS DATA BIT 8		
	(Q2G07)	GQ200-R011
	(S2B09)	GS200-R003
	(T2B09)	GT200-R003
	(U2P13)	GU200-R016
R011		
- CS DATA BIT 9		
	(Q2J06)	GQ200-R011
	(S2B13)	GS200-R003
	(T2B13)	GT200-R003
	(U2M12)	GU200-R017

LINE/SIGNAL	PIN	SHEET/LINE
R011		
- CS DATA BIT 10		
	(Q2G05)	GQ200-R011
	(S2J07)	GS200-R003
	(T2J07)	GT200-R003
	(U2M10)	GU200-R018
R011		
- CS DATA BIT 11		
	(Q2J05)	GQ200-R011
	(S2J12)	GS200-R003
	(T2J12)	GT200-R003
	(U2S09)	GU200-R019
R011		
- CS DATA BIT 12		
	(Q2G03)	GQ200-R011
	(S2M02)	GS200-R003
	(T2M02)	GT200-R003
	(U2S08)	GU200-R020
R011		
- CS DATA BIT 13		
	(Q2B12)	GQ200-R011
	(S2M07)	GS200-R003
	(T2M07)	GT200-R003
	(U2U06)	GU200-R021
R011		
- CS DATA BIT 14		
	(Q2D11)	GQ200-R011
	(S2M12)	GS200-R003
	(T2M12)	GT200-R003
	(U2S05)	GU200-R022
R011		
- CS DATA BIT 15		
	(Q2J02)	GQ200-R011
	(S2S05)	GS200-R003
	(T2S05)	GT200-R003
	(U2U04)	GU200-R023
R011		
- CS DATA BIT PH		
	(Q2M10)	GQ200-R011
	(S2U07)	GS200-R003
	(T2U07)	GT200-R003
	(U2S02)	GU200-R024
R011		
- CS DATA BIT PL		
	(Q2P10)	GQ200-R011
	(S2U09)	GS200-R003
	(T2U09)	GT200-R003
	(U2M02)	GU200-R025
R012		
+ LD EXT REG CLK A		
	(Q2U09)	GQ200-R012
	F2U07	GF200-L034
R013		
+ LD EXT REG CLK B		
	(Q2S09)	GQ200-R013
	J2J04	GJ200-L034
	K2U10	GK200-L026

LINE/SIGNAL	PIN	SHEET/LINE
R014		
+ LD EXT REG CLK C		
	(Q2U10)	GQ200-R014
	C2B12	GC200-L007
	F2P04	GF200-L035
	H2M13	GH220-L013
R015		
+ LD EXT REG CLK D		
	(Q2U06)	GQ200-R015
	N2B02	GN200-L010
	R2M08	GR200-L011
	V2M10	GV200-L019
	X2M10	GX200-L027
R016		
- EXT REG ADDRESS BIT 0		
	(Q2P12)	GQ200-R016
	F2P09	GF200-L028
	K2B12	GK200-L003
	N2P12	GN200-L003
	R2M13	GR200-L009
	V2J07	GV200-L024
R016		
- EXT REG ADDRESS BIT 1		
	(Q2M05)	GQ200-R016
	F2P10	GF200-L029
	K2D13	GK200-L003
	N2M05	GN200-L004
	R2P11	GR200-L009
	V2J09	GV200-L025
R016		
- EXT REG ADDRESS BIT 2		
	(Q2P05)	GQ200-R016
	F2P11	GF200-L030
	K2B13	GK200-L003
	N2P05	GN200-L005
	R2M12	GR200-L009
	V2J10	GV200-L026
R016		
- EXT REG ADDRESS BIT 3		
	(Q2M04)	GQ200-R016
	F2P12	GF200-L031
	K2B10	GK200-L003
	N2M04	GN200-L006
	R2P10	GR200-L009
	V2J11	GV200-L027
R016		
- EXT REG ADDRESS BIT 4		
	(Q2P04)	GQ200-R016
	F2P13	GF200-L032
	K2D12	GK200-L003
	N2P04	GN200-L007
	R2P09	GR200-L009
	V2J12	GV200-L028
R017		
- EXT REG ADR PARITY		
	(Q2P06)	GQ200-R017
	K2D10	GK200-L027
	N2P06	GN200-L008
	R2M09	GR200-L010

LINE/SIGNAL	PIN	SHEET/LINE
R018		
+ EXT REG SELECT		
	(Q2Z22)	GQ200-R018
	(R2S02)	GR200-R015
	H2M04	GH220-L031
	K2U13	GK200-L009
	N2B04	GN200-L011
	R2Z22	GR200-L021
R019		
- DCS DATA BIT PH		
	(Q2G04)	GQ200-R019
R019		
- DCS DATA BIT PL		
	(Q2J04)	GQ200-R019
R020		
+ SDM CARD CHECK		
	(Q2Y32)	GQ200-R020
	R2Y32	GR200-L044
R021		
+ SDM CLOCK TA		
	(Q2U05)	GQ200-R021
	(P2P13)	GP200-R034
R022		
+ SDM CLOCK TB		
	(Q2U12)	GQ200-R022
	(P2G10)	GP200-R035
R023		
+ SDM CLOCK TC		
	(Q2U07)	GQ200-R023
	(P2J12)	GP200-R036
R024		
+ SDM CLOCK TD SHAVED		
	(Q2S05)	GQ200-R024
	(P2M04)	GP200-R038
	Q2P11	GQ200-L018
R025		
- CS SELECT		
	(Q2Y22)	GQ200-R025
	R2Y22	GR200-L026
R026		
+ CS ADDRESS CHECK		
	(Q2Y26)	GQ200-R026
	R2Y26	GR200-L055
R027		
- SCS SELECT 1		
	(Q2S07)	GQ200-R027
	S2D06	GS200-L004
R028		
- SCS SELECT 2		
	(Q2S04)	GQ200-R028
	S2U10	GS200-L007

LINE/SIGNAL	PIN	SHEET/LINE
R029		
- SCS SELECT 3		
	(Q2U11)	GQ200-R029
	T2D06	GT200-L005
R030		
- SCS SELECT 4		
	(Q2D12)	GQ200-R030
	T2U10	GT200-L006
R031		
- DCS SELECT		
	(Q2S12)	GQ200-R031
	P2U05	GP200-L018
R032		
- ROS SELECT		
	(Q2Y07)	GQ200-R032
	R2Y07	GR200-L046
R033		
- CS ADDRESS BIT 0		
	(Q2D07)	GQ200-R033
	P2M02	GP200-L003
R033		
- CS ADDRESS BIT 1		
	(Q2B07)	GQ200-R033
	P2J10	GP200-L004
R033		
- CS ADDRESS BIT 2		
	(Q2D09)	GQ200-R033
	P2J02	GP200-L013
	U2P02	GU200-L003
R033		
- CS ADDRESS BIT 3		
	(Q2B08)	GQ200-R033
	P2D13	GP200-L014
	U2M03	GU200-L004
R033		
- CS ADDRESS BIT 4		
	(Q2B09)	GQ200-R033
	S2D04	GS200-L003
	T2D04	GT200-L003
	U2M04	GU200-L005
R033		
- CS ADDRESS BIT 5		
	(Q2B10)	GQ200-R033
	S2B07	GS200-L003
	T2B07	GT200-L003
	U2P05	GU200-L006
R033		
- CS ADDRESS BIT 6		
	(Q2D10)	GQ200-R033
	S2B10	GS200-L003
	T2B10	GT200-L003
	U2P07	GU200-L007

LINE/SIGNAL	PIN	SHEET/LINE
R033		
- CS ADDRESS BIT 7		
	(Q2P09)	GQ200-R033
	S2G03	GS200-L003
	T2G03	GT200-L003
	U2J06	GU200-L008
R033		
- CS ADDRESS BIT 8		
	(Q2M08)	GQ200-R033
	S2G07	GS200-L003
	T2G07	GT200-L003
	U2D13	GU200-L009
R033		
- CS ADDRESS BIT 9		
	(Q2M03)	GQ200-R033
	S2G12	GS200-L003
	T2G12	GT200-L003
	U2G09	GU200-L010
R033		
- CS ADDRESS BIT 10		
	(Q2P02)	GQ200-R033
	S2M13	GS200-L003
	T2M13	GT200-L003
	U2G08	GU200-L011
R033		
- CS ADDRESS BIT 11		
	(Q2M02)	GQ200-R033
	S2S07	GS200-L003
	T2S07	GT200-L003
	U2G13	GU200-L012
R033		
- CS ADDRESS BIT 12		
	(Q2G09)	GQ200-R033
	S2M03	GS200-L003
	T2M03	GT200-L003
	U2G12	GU200-L013
R033		
- CS ADDRESS BIT 13		
	(Q2G08)	GQ200-R033
	S2M08	GS200-L003
	T2M08	GT200-L003
	U2U05	GU200-L014
R033		
- CS ADDRESS BIT 14		
	(Q2B13)	GQ200-R033
	S2D05	GS200-L003
	T2D05	GT200-L003
	U2S04	GU200-L015
R033		
- CS ADDRESS BIT 15		
	(Q2D13)	GQ200-R033
	S2B04	GS200-L003
	T2B04	GT200-L003
	U2S03	GU200-L016

LINE/SIGNAL	PIN	SHEET/LINE
R034		
+ CS ADDRESS (SD2) BIT 0		
	(Q2W04)	GQ200-R034
	(Q2Y25)	GQ200-R035
	R2Y25	GR200-L028
1A-B1	T2Y04	ET200-L014
R034		
+ CS ADDRESS (SD2) BIT 1		
	(Q2W31)	GQ200-R034
	(Q2Y06)	GQ200-R035
	R2Y06	GR200-L028
1A-B1	T2Y31	ET200-L014
R034		
+ CS ADDRESS (SD2) BIT 2		
	(Q2W30)	GQ200-R034
	(Q2Y05)	GQ200-R035
	R2Y05	GR200-L028
1A-B1	T2Y30	ET200-L014
R034		
+ CS ADDRESS (SD2) BIT 3		
	(Q2W05)	GQ200-R034
	(Q2Y24)	GQ200-R035
	R2Y24	GR200-L028
1A-B1	T2Y05	ET200-L014
R034		
+ CS ADDRESS (SD2) BIT 4		
	(Q2W13)	GQ200-R034
1A-B1	T2Y13	ET200-L014
R034		
+ CS ADDRESS (SD2) BIT 5		
	(Q2W22)	GQ200-R034
1A-B1	T2Y22	ET200-L014
R034		
+ CS ADDRESS (SD2) BIT 6		
	(Q2W32)	GQ200-R034
1A-B1	T2Y32	ET200-L014
R034		
+ CS ADDRESS (SD2) BIT 7		
	(Q2W10)	GQ200-R034
1A-B1	T2Y10	ET200-L014
R034		
+ CS ADDRESS (SD2) BIT 8		
	(Q2W25)	GQ200-R034
1A-B1	T2Y25	ET200-L014
R034		
+ CS ADDRESS (SD2) BIT 9		
	(Q2W06)	GQ200-R034
1A-B1	T2Y06	ET200-L014
R034		
+ CS ADDRESS (SD2) BIT 10		
	(Q2W02)	GQ200-R034
1A-B1	T2Y02	ET200-L014
R034		
+ CS ADDRESS (SD2) BIT 11		
	(Q2W29)	GQ200-R034
1A-B1	T2Y29	ET200-L014
R034		
+ CS ADDRESS (SD2) BIT 12		
	(Q2W33)	GQ200-R034
1A-B1	T2Y33	ET200-L014
R034		
+ CS ADDRESS (SD2) BIT 13		
	(Q2W11)	GQ200-R034
1A-B1	T2Y11	ET200-L014
R034		
+ CS ADDRESS (SD2) BIT 14		
	(Q2W28)	GQ200-R034
1A-B1	T2Y28	ET200-L014
R034		
+ CS ADDRESS (SD2) BIT 15		
	(Q2W24)	GQ200-R034
1A-B1	T2Y24	ET200-L014
R035		
+ CS ADDRESS (SD2) BIT 0		
	(Q2Y25)	GQ200-R035
	(Q2W04)	GQ200-R034
	R2Y25	GR200-L028
1A-B1	T2Y04	ET200-L014
R035		
+ CS ADDRESS (SD2) BIT 1		
	(Q2Y06)	GQ200-R035
	(Q2W31)	GQ200-R034
	R2Y06	GR200-L028
1A-B1	T2Y31	ET200-L014
R035		
+ CS ADDRESS (SD2) BIT 2		
	(Q2Y05)	GQ200-R035
	(Q2W30)	GQ200-R034
	R2Y05	GR200-L028
1A-B1	T2Y30	ET200-L014
R035		
+ CS ADDRESS (SD2) BIT 3		
	(Q2Y24)	GQ200-R035
	(Q2W05)	GQ200-R034
	R2Y24	GR200-L028
1A-B1	T2Y05	ET200-L014
R036		
- CS ADDRESS BIT PARITY		
	(Q2S13)	GQ200-R036
	P2B07	GP200-L015
	S2U12	GS200-L006
	T2U12	GT200-L004
R037		
- CS WRITE		
	(Q2S08)	GQ200-R037
	P2G02	GP200-L006
	R2D13	GR200-L022
	S2B02	GS200-L005
	T2B02	GT200-L007
	U2D05	GU200-L019
	U2J13	GU200-L020

```
003 - RUN METER ----------------------S03
004 + DATA RECEIVED (IN) SD2 ------- X23
005 + CONFIRM (IN) SD2 --------------X02
006 - EXTENDED OP --------------------Z11
007 + COMMAND VALID (IN) SD2 --------X29
008 - DCS CYCLE ----------------------G02
009 - EXT REG ADDRESS BIT (0-4) =====*
010 - EXT REG ADR PARITY ------------M09
011 + LD EXT REG CLK D --------------M08
012 - CHAN CHECK/TIMER INTERRUPT 1 --S12
013 - INT REQ LEVEL 2 ---------------U12
014 + DISKETTE DRIVE DATA SD2 -------W13
015 + DISKETTE DRIVE INDEX SD2 ------W33
016 + DISKETTE DRIVE SELECTED SD2 ---X22
017 + DISKETTE DRIVE BUSY SD2 -------X03
018 + DEVICE REG GROUP SELECT -------P12
019 + EXT REG GROUP 0 SELECTED ------P13
020 + EXT REG ACTIVE ----------------J13
021 + EXT REG SELECT ----------------Z22
022 - CS WRITE -----------------------D13
023 + ROS SELECT ----------------------S04
024 - ALU OUT BIT (0-7,P) ===========*
025 - SDM ERROR OUT ------------------Y02
026 - CS SELECT ----------------------Y22
027 - CHECK TWO ----------------------S09
028 + CS ADDRESS (SD2) BIT (0-3) ====*
029 - XREG SELECTED (1B/0F DECODE) - M10
030 - INHIBIT P CORRECTION SD2 ------X07
031 + EXT BUS IN (SD2) BIT (0-7,P) ==*
032 + IML TO CYCLE SHARE ------------B09
033 + STOP DDC ----------------------U11
034 + SDM STOPPED --------------------J04
035 + SD2 SELECTED -------------------X25
036 - ERROR ALERT (IN) SD2 ----------X24
037 + CAM SD2 SELECT/SYS RESET GATED B08
038 + SYSTEM RESET (-SC) ------------U04
039 - IML IN PROGRESS ---------------B04
040 + SELECTIVE RESET LATCHED -------D07
041 + ERROR ALERT RESPONSE SD2 ------X04
042 - INTERRUPT RESPONSE OUT --------Y03
043 + ALU BUS OUT PARITY CHECK ------G04
044 + SDM CARD CHECK -----------------Y32
045 - STOP LATCHED -------------------B03
046 - ROS SELECT ---------------------Y07
047 + UNCORRECTABLE DATA CHECK ------J11
048 + MNT CLOCK (T0-T7) ==============*
049 + MNT CLOCK T4D2 -----------------D05
050 + CLK CARD CHECK -----------------P06
051 + DCSR CARD CHECK ----------------J12
052 + INVALID SEQUENCE --------------D06
053 - MNT TIE DOWN 1 -----------------G10
054 - MNT TIE DOWN 2 -----------------M07
055 + CS ADDRESS CHECK --------------Y26
056 - DCS DATA IN P CHK LATCHED -----S05
057 + POWER ON RESET SD2 ------------D02
```

MNT CARD

OVERVIEW

The MNT (maintenance) card connects the storage director (SD) to the maintenance board and provides a communication path to, and controls for, the diskette drive, alternate storage director, and the (MD) maintenance device adapter. The MNT card also collects, sets priorities, and initiates storage director interrupts. It also performs system, selected, and power on resets to the storage director.

PRIMARY FUNCTIONS

- The external register decoder develops addresses for selecting registers on the MNT card.
- The SD to SD communication path is used to report check, status and FRU information to the system through the alternate storage director.
- The FRU registers 2, 3, and 4 hold storage director check-1 failure data. Check Register 1 and 2 hold storage director failure data.
- The ILR (interrupt level register) is used by the microcontroller and hardware for several functions, some of which are initiating external interrupts, change or mask interrupt levels, and define a previous level. ILR is used by the MD to alternate/display a storage director register.
- IML register is used by the diskette drive to transmit IML data and index to the microcontroller, and by the microcontroller to control the IML operation, and by diskette load control switches to select the proper diskette track from which to load.
- The EBI (External Bus In) and EBO (external bus out) are used by the storage director and the MD to gather failure data and for failure analysis.
- The MSR (maintenance sense registers) is also used by the storage director and MD to gather failure data and for failure analysis.
- The MCR (maintenance control register) is used by the storage director to verify IML operations and gather failure data, and by the MD to establish communications.

PRIMARY COMPONENTS

- External register decode
- FRU registers 2, 3 and 4
- ILR register
- Check registers 1 and 2
- IML register
- EBI and EBO registers
- MSR and MCR registers
- Command decode circuits

ERROR CHECKING

- The multiple decode check ensures that the external register decode selects only one register at a time
- The command execution logic monitors the external Bus In line for proper parity when the Command Valid line is active.

```
Z03 - RUN METER ---------------------- 003
W24 - CONFIRM (OUT) SD2 ------------- 004
W23 - COMMAND VALID (OUT) SD2 ------ 005
W06 + ERROR ALERT RESPONSE (OUT) SD2 006
G05 + GATE MCS REG ------------------ 007
W27 - VALIDATE DATA SD2 ------------- 008
W03 - INVALID COMMAND SD2 ----------- 009
W04 - IML MICROCODE DETECTED ERR SD2 010
W25 + DISKETTE DRIVE HEAD ENGAGE SD2 011
W07 + DISKETTE DRIVE REQUEST SD2 --- 012
Z29 - INTERRUPT REQUEST ------------- 013
*   - INTERRUPT ADR BIT (0-2,P) ==== 014
S02 + EXT REG SELECT ---------------- 015
*   - ALU IN2 BIT (0-7,P) ========== 016
*   - ALU IN2 BIT (0-7,P) ========== 017
X05 + CHECK TWO TO INDICATOR SD2 --- 018
X06 + EXT BUS IN PC SD2 ------------- 019
D11 + IML TO CYCLE SHARE ------------ 020
Y09 - RESET ------------------------- 021
B07 + RESET ------------------------- 022
D04 + RESET 2 UNUSED ---------------- 023
G03 + STOP -------------------------- 024
D10 + START ------------------------- 025
J07 + MAINTENANCE START ------------- 026
B12 + SPECIAL RESET ----------------- 027
J05 - CHECK RESET ------------------- 028
D09 - RESET TO CS ------------------- 029
Z02 + INHIBIT ALU IN PC ------------- 030
J09 + START DXR CLOCK --------------- 031
J10 - SDM SEQUENTIAL RESET ---------- 032
Y10 - CLOCK STOPPED - SDM ----------- 033
Y11 - CLK STOPPED - STORAGE DIRECTOR 034
Y33 - SDM START DELAYED ------------- 035
P07 + GATED CHECK 1 ----------------- 036
W28 - ERROR ALERT (OUT) SD2 -------- 037
U02 + CHECK ONE IND ----------------- 038
Y30 - SCAN IN ----------------------- 039
Y29 - MAINT CLOCK T1 ---------------- 040
*   - EXT BUS OUT (SD2) BIT (0-7,P)  041
B10 + POWER ON RESET POWERED ------- 042
```

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- RUN METER		
	R2S03	GR200-L003
	(D2S13)	GD200-R042
	(E2S13)	GE200-R042
	(R2Z03)	GR200-R003
	Q2Z03	GQ200-L004
L004		
+ DATA RECEIVED (IN) SD2		
	R2X23	GR200-L004
	1A-B1 (T2X23)	ET200-R022
L005		
+ CONFIRM (IN) SD2		
	R2X02	GR200-L005
	1A-B1 (T2X02)	ET200-R026
L006		
- EXTENDED OP		
	R2Z11	GR200-L006
	(Q2Z11)	GQ200-R007
L007		
+ COMMAND VALID (IN) SD2		
	R2X29	GR200-L007
	1A-B1 (T2X29)	ET200-R015
L008		
- DCS CYCLE		
	R2G02	GR200-L008
	(P2D04)	GP200-R008
L009		
- EXT REG ADDRESS BIT 0		
	R2M13	GR200-L009
	(Q2P12)	GQ200-R016
	F2P09	GF200-L028
	K2B12	GK200-L003
	N2P12	GN200-L003
	V2J07	GV200-L024
L009		
- EXT REG ADDRESS BIT 1		
	R2P11	GR200-L009
	(Q2M05)	GQ200-R016
	F2P10	GF200-L029
	K2D13	GK200-L003
	N2M05	GN200-L004
	V2J09	GV200-L025
L009		
- EXT REG ADDRESS BIT 2		
	R2M12	GR200-L009
	(Q2P05)	GQ200-R016
	F2P11	GF200-L030
	K2B13	GK200-L003
	N2P05	GN200-L005
	V2J10	GV200-L026

LINE/SIGNAL	PIN	SHEET/LINE
L009		
- EXT REG ADDRESS BIT 3		
	R2P10	GR200-L009
	(Q2M04)	GQ200-R016
	F2P12	GF200-L031
	K2D10	GK200-L003
	N2M04	GN200-L006
	V2J11	GV200-L027
L009		
- EXT REG ADDRESS BIT 4		
	R2P09	GR200-L009
	(Q2P04)	GQ200-R016
	F2P13	GF200-L032
	K2D12	GK200-L003
	N2P04	GN200-L007
	V2J12	GV200-L028
L010		
- EXT REG ADR PARITY		
	R2M09	GR200-L010
	(Q2P06)	GQ200-R017
	K2D10	GK200-L027
	N2P06	GN200-L008
L011		
+ LD EXT REG CLK D		
	R2M08	GR200-L011
	(Q2U06)	GQ200-R015
	N2B02	GN200-L010
	V2M10	GV200-L019
	X2M10	GX200-L027
L012		
- CHAN CHECK/TIMER INTERRUPT 1		
	R2S12	GR200-L012
	(F2U02)	GF200-R039
	(P2S13)	GP200-R058
L013		
- INT REQ LEVEL 2		
	R2U12	GR200-L013
	(J2P07)	GJ200-R020
	(M2G02)	GM200-R016
L014		
+ DISKETTE DRIVE DATA SD2		
	R2W13	GR200-L014
	1A-B1 (T2W13)	ET200-R020
L015		
+ DISKETTE DRIVE INDEX SD2		
	R2W33	GR200-L015
	1A-B1 (T2W33)	ET200-R021
L016		
+ DISKETTE DRIVE SELECTED SD2		
	R2X22	GR200-L016
	1A-B1 (T2X22)	ET200-R030
L017		
+ DISKETTE DRIVE BUSY SD2		
	R2X03	GR200-L017
	1A-B1 (T2X03)	ET200-R031

LINE/SIGNAL	PIN	SHEET/LINE
L018		
+ DEVICE REG GROUP SELECT		
	R2P12	GR200-L018
	(V2M09)	GV200-R024
L019		
+ EXT REG GROUP 0 SELECTED		
	R2P13	GR200-L019
	(K2D11)	GK200-R019
L020		
+ EXT REG ACTIVE		
	R2J13	GR200-L020
	(F2M05)	GF200-R031
L021		
+ EXT REG SELECT		
	R2Z22	GR200-L021
	(Q2Z22)	GQ200-R018
	(R2S02)	GR200-R015
	H2M04	GH220-L031
	K2U13	GK200-L009
	N2B04	GN200-L011
L022		
- CS WRITE		
	R2D13	GR200-L022
	(Q2S08)	GQ200-R037
	P2G02	GP200-L006
	S2B02	GS200-L005
	T2B02	GT200-L007
	U2D05	GU200-L019
	U2J13	GU200-L020
L023		
+ ROS SELECT		
	R2S04	GR200-L023
	(V2S03)	GV200-R031
	Q2U13	GQ200-L016
L024		
- ALU OUT BIT 0		
	R2M02	GR200-L024
	(Q2B04)	GQ200-R008
	C2B02	GC200-L022
	F2D02	GF200-L019
	H2P12	GH220-L017
	J2U07	GJ200-L041
	N2B07	GN200-L012
	V2D13	GV200-L007
	X2D13	GX200-L028
L024		
- ALU OUT BIT 1		
	R2G12	GR200-L024
	(Q2D05)	GQ200-R008
	C2D02	GC200-L023
	F2D04	GF200-L020
	H2P13	GH220-L018
	J2U09	GJ200-L041
	N2D05	GN200-L013
	V2B05	GV200-L008
	X2B05	GX200-L028

LINE/SIGNAL	PIN	SHEET/LINE
L024		
- ALU OUT BIT 2		
	R2G13	GR200-L024
	(Q2D06)	GQ200-R008
	F2D05	GF200-L021
	H2U02	GH220-L019
	J2P12	GJ200-L041
	N2D09	GN200-L014
	V2D10	GV200-L009
	X2D10	GX200-L028
L024		
- ALU OUT BIT 3		
	R2M04	GR200-L024
	(Q2B05)	GQ200-R008
	F2D06	GF200-L022
	H2U05	GH220-L020
	J2U02	GJ200-L041
	N2D10	GN200-L015
	V2J02	GV200-L010
	X2J02	GX200-L028
L024		
- ALU OUT BIT 4		
	R2M03	GR200-L024
	(Q2D04)	GQ200-R008
	F2D07	GF200-L023
	H2U06	GH220-L021
	J2B12	GJ200-L041
	N2D06	GN200-L016
	V2B08	GV200-L011
	X2B08	GX200-L028
L024		
- ALU OUT BIT 5		
	R2P04	GR200-L024
	(Q2B03)	GQ200-R008
	F2B07	GF200-L024
	H2U07	GH220-L022
	J2D06	GJ200-L041
	N2B09	GN200-L017
	V2B03	GV200-L012
	X2B03	GX200-L028
L024		
- ALU OUT BIT 6		
	R2P02	GR200-L024
	(Q2D02)	GQ200-R008
	F2B03	GF200-L025
	H2U09	GH220-L023
	N2G02	GN200-L018
	V2D05	GV200-L013
	X2D05	GX200-L028
L024		
- ALU OUT BIT 7		
	R2P05	GR200-L024
	(Q2B02)	GQ200-R008
	F2B09	GF200-L026
	J2B05	GJ200-L041
	N2B13	GN200-L019
	V2D06	GV200-L014

LINE/SIGNAL	PIN	SHEET/LINE
L024		
- ALU OUT BIT P		
	R2M05	GR200-L024
	(Q2U04)	GQ200-R008
	F2B10	GF200-L027
	N2D13	GN200-L020
	V2B02	GV200-L015
L025		
- SDM ERROR OUT		
	R2Y02	GR200-L025
	(Q2Y02)	GQ200-R010
L026		
- CS SELECT		
	R2Y22	GR200-L026
	(Q2Y22)	GQ200-R025
L027		
- CHECK TWO		
	R2S09	GR200-L027
	(F2S09)	GF200-R040
	(J2U10)	GJ200-R017
	(N2D04)	GN200-R010
	(X2J09)	GX200-R021
L028		
+ CS ADDRESS (SD2) BIT 0		
	R2Y25	GR200-L028
	(Q2M04)	GQ200-R034
	(Q2Y25)	GQ200-R035
1A-B1	T2Y04	ET200-L014
L028		
+ CS ADDRESS (SD2) BIT 1		
	R2Y06	GR200-L028
	(Q2W31)	GQ200-R034
	(Q2Y06)	GQ200-R035
1A-B1	T2Y31	ET200-L014
L028		
+ CS ADDRESS (SD2) BIT 2		
	R2Y05	GR200-L028
	(Q2N30)	GQ200-R034
	(Q2Y05)	GQ200-R035
1A-B1	T2Y30	ET200-L014
L028		
+ CS ADDRESS (SD2) BIT 3		
	R2Y24	GR200-L028
	(Q2N05)	GQ200-R034
	(Q2Y24)	GQ200-R035
1A-B1	T2Y05	ET200-L014
L029		
- XREG SELECTED (1B/0F DECODE)		
	R2M10	GR200-L029
	(N2D12)	GN200-R003
L030		
- INHIBIT P CORRECTION SD2		
	R2X07	GR200-L030
1A-B1	(T2X07)	ET200-R014

LINE/SIGNAL	PIN	SHEET/LINE
L031		
+ EXT BUS IN (SD2) BIT 0		
	R2X09	GR200-L031
1A-B1	(T2X09)	ET200-R016
L031		
+ EXT BUS IN (SD2) BIT 1		
	R2X28	GR200-L031
1A-B1	(T2X28)	ET200-R016
L031		
+ EXT BUS IN (SD2) BIT 2		
	R2X33	GR200-L031
1A-B1	(T2X33)	ET200-R016
L031		
+ EXT BUS IN (SD2) BIT 3		
	R2X10	GR200-L031
1A-B1	(T2X10)	ET200-R016
L031		
+ EXT BUS IN (SD2) BIT 4		
	R2X11	GR200-L031
1A-B1	(T2X11)	ET200-R016
L031		
+ EXT BUS IN (SD2) BIT 5		
	R2X32	GR200-L031
1A-B1	(T2X32)	ET200-R016
L031		
+ EXT BUS IN (SD2) BIT 6		
	R2X13	GR200-L031
1A-B1	(T2X13)	ET200-R016
L031		
+ EXT BUS IN (SD2) BIT 7		
	R2X30	GR200-L031
1A-B1	(T2X30)	ET200-R016
L031		
+ EXT BUS IN (SD2) BIT P		
	R2X27	GR200-L031
1A-B1	(T2X27)	ET200-R016
L032		
+ IML TO CYCLE SHARE		
	R2B09	GR200-L032
	(R2D11)	GR200-R020
L033		
+ STOP DDC		
	R2U11	GR200-L033
	(P2J13)	GP200-R039
	X2U02	GX200-L049
L034		
+ SDM STOPPED		
	R2J04	GR200-L034
	(P2B08)	GP200-R041
L035		
+ SD2 SELECTED		
	R2X25	GR200-L035
1A-B1	(T2X25)	ET200-R032

LINE/SIGNAL	PIN	SHEET/LINE
L036		
- ERROR ALERT (IN) SD2		
	R2X24	GR200-L036
1A-B1	(T2X24)	ET200-R025
L037		
+ CAM SD2 SELECT/SYS RESET GATED		
	R2B08	GR200-L037
	(M2M13)	GM200-R015
L038		
+ SYSTEM RESET (-SC)		
	R2U04	GR200-L038
	(F2U04)	GF200-R037
L039		
- IML IN PROGRESS		
	R2B04	GR200-L039
	(C2B04)	GC200-R008
L040		
+ SELECTIVE RESET LATCHED		
	R2D07	GR200-L040
	(F2S02)	GF200-R016
	C2J11	GC200-L013
L041		
+ ERROR ALERT RESPONSE SD2		
	R2X04	GR200-L041
1A-B1	(T2X04)	ET200-R024
L042		
- INTERRUPT RESPONSE OUT		
	R2Y03	GR200-L042
	(Q2Y03)	GQ200-R009
L043		
+ ALU BUS OUT PARITY CHECK		
	R2G04	GR200-L043
	(F2B03)	GF200-R044
L044		
+ SDM CARD CHECK		
	R2Y32	GR200-L044
	(Q2Y32)	GQ200-R020
L045		
- STOP LATCHED		
	R2B03	GR200-L045
	(P2G13)	GP200-R040
L046		
- ROS SELECT		
	R2Y07	GR200-L046
	(Q2Y07)	GQ200-R032
L047		
+ UNCORRECTABLE DATA CHECK		
	R2J11	GR200-L047
	(P2D07)	GP200-R011
L048		
+ MNT CLOCK T0		
	R2B13	GR200-L048
	(P2M08)	GP200-R022

LINE/SIGNAL	PIN	SHEET/LINE
L048		
+ MNT CLOCK T1		
	R2B05	GR200-L048
	(P2D06)	GP200-R048
L048		
+ MNT CLOCK T2		
	R2J06	GR200-L048
	(P2P12)	GP200-R023
	X2U11	GX200-L029
L048		
+ MNT CLOCK T3		
	R2D12	GR200-L048
	(P2G03)	GP200-R049
L048		
+ MNT CLOCK T4		
	R2G08	GR200-L048
	(P2S04)	GP200-R024
	X2U12	GX200-L030
L048		
+ MNT CLOCK T5		
	R2G09	GR200-L048
	(P2J06)	GP200-R050
L048		
+ MNT CLOCK T6		
	R2G07	GR200-L048
	(P2P10)	GP200-R025
L048		
+ MNT CLOCK T7		
	R2J02	GR200-L048
	(P2D12)	GP200-R051
L049		
+ MNT CLOCK T4D2		
	R2D05	GR200-L049
	(P2D10)	GP200-R054
L050		
+ CLK CARD CHECK		
	R2P06	GR200-L050
	(P2G09)	GP200-R032
L051		
+ DCSR CARD CHECK		
	R2J12	GR200-L051
	(P2G12)	GP200-R010
L052		
+ INVALID SEQUENCE		
	R2D06	GR200-L052
	(P2M03)	GP200-R043
L053		
- MNT TIE DOWN 1		
	R2G10	GR200-L053
L054		
- MNT TIE DOWN 2		
	R2M07	GR200-L054

LINE/SIGNAL	PIN	SHEET/LINE
L055		
+ CS ADDRESS CHECK		
	R2Y26	GR200-L055
	(Q2Y26)	GQ200-R026
L056		
- DCS DATA IN P CHK LATCHED		
	R2S05	GR200-L056
	(P2D09)	GP200-R003
L057		
+ POWER ON RESET SD2		
	R2D02	GR200-L057
1A-B1	(J2U13)	EJ200-R022
1A-B1	S2D05	ES200-L006
1A-B3	*K6E02*	
1A-B1	*J6C02*	
R003		
- RUN METER		
	(R2Z03)	GR200-R003
	(D2S13)	GD200-R042
	(E2S13)	GE200-R042
	Q2Z03	GQ200-L004
	R2S03	GR200-L003
R004		
- CONFIRM (OUT) SD2		
	(R2W24)	GR200-R004
1A-B1	T2W24	ET200-L005
R005		
- COMMAND VALID (OUT) SD2		
	(R2W23)	GR200-R005
1A-B1	T2W23	ET200-L031
R006		
+ ERROR ALERT RESPONSE (OUT) SD2		
	(R2W06)	GR200-R006
1A-B1	(T2D06)	ET200-R036
1A-B1	S2J04	ES200-L020
1A-B1	T2W06	ET200-L032
R007		
+ GATE MCS REG		
	(R2G05)	GR200-R007
	V2J05	GV200-L031
R008		
- VALIDATE DATA SD2		
	(R2W27)	GR200-R008
1A-B1	T2W27	ET200-L008
R009		
- INVALID COMMAND SD2		
	(R2W03)	GR200-R009
1A-B1	T2W03	ET200-L033
R010		
- IML MICROCODE DETECTED ERR SD2		
	(R2W04)	GR200-R010
1A-B1	T2W04	ET200-L034
R011		
+ DISKETTE DRIVE HEAD ENSAGE SD2		
	(R2W25)	GR200-R011
1A-B1	T2W25	ET200-L009

LINE/SIGNAL	PIN	SHEET/LINE
R012		
+ DISKETTE DRIVE REQUEST SD2		
	(R2W07)	GR200-R012
1A-B1	T2W07	ET200-L035
R013		
- INTERRUPT REQUEST		
	(R2Z29)	GR200-R013
	Q2Z29	GQ200-L006
R014		
- INTERRUPT ADR BIT 0		
	(R2Y28)	GR200-R014
	Q2Y28	GQ200-L009
R014		
- INTERRUPT ADR BIT 1		
	(R2Z24)	GR200-R014
	Q2Z24	GQ200-L009
R014		
- INTERRUPT ADR BIT 2		
	(R2Z26)	GR200-R014
	Q2Z26	GQ200-L009
R014		
- INTERRUPT ADR BIT P		
	(R2Z25)	GR200-R014
	Q2Z25	GQ200-L009
R015		
+ EXT REG SELECT		
	(R2S02)	GR200-R015
	(Q2Z22)	GQ200-R018
	H2M04	GH220-L031
	K2U13	GK200-L009
	N2B04	GN200-L011
	R2Z22	GR200-L021
R016		
- ALU IN2 BIT 0		
	(R2S10)	GR200-R016
	(N2S10)	GN200-R012
	(R2Z10)	GR200-R017
	(V2M04)	GV200-R003
	(X2M04)	GX200-R012
	Q2Z10	GQ200-L008
R016		
- ALU IN2 BIT 1		
	(R2U07)	GR200-R016
	(N2S09)	GN200-R013
	(R2Z07)	GR200-R017
	(V2J13)	GV200-R004
	(X2J13)	GX200-R013
	Q2Z07	GQ200-L008
R016		
- ALU IN2 BIT 2		
	(R2U09)	GR200-R016
	(N2U10)	GN200-R014
	(R2Z09)	GR200-R017
	(V2G12)	GV200-R005
	(X2G12)	GX200-R014
	Q2Z09	GQ200-L008

LINE/SIGNAL	PIN	SHEET/LINE
R016		
- ALU IN2 BIT 3		
	(R2U10)	GR200-R016
	(N2U12)	GN200-R015
	(R2Z30)	GR200-R017
	(V2P05)	GV200-R006
	(X2P05)	GX200-R015
	Q2Z30	GQ200-L008
R016		
- ALU IN2 BIT 4		
	(R2S13)	GR200-R016
	(N2U13)	GN200-R016
	(R2Z33)	GR200-R017
	(V2M05)	GV200-R007
	(X2M05)	GX200-R016
	Q2Z33	GQ200-L008
R016		
- ALU IN2 BIT 5		
	(R2U13)	GR200-R016
	(N2S13)	GN200-R017
	(R2Z13)	GR200-R017
	(V2M03)	GV200-R008
	(X2M03)	GX200-R017
	Q2Z13	GQ200-L008
R016		
- ALU IN2 BIT 6		
	(R2S07)	GR200-R016
	(N2S08)	GN200-R018
	(R2Z28)	GR200-R017
	(V2G10)	GV200-R009
	(X2G10)	GX200-R018
	Q2Z28	GQ200-L008
R016		
- ALU IN2 BIT 7		
	(R2U05)	GR200-R016
	(N2U05)	GN200-R019
	(R2Z05)	GR200-R017
	(V2P02)	GV200-R010
	(X2P02)	GX200-R019
	Q2Z05	GQ200-L008
R016		
- ALU IN2 BIT P		
	(R2S08)	GR200-R016
	(N2U02)	GN200-R020
	(R2Z06)	GR200-R017
	(V2P04)	GV200-R011
	(X2P04)	GX200-R020
	Q2Z06	GQ200-L008
R017		
- ALU IN2 BIT 0		
	(R2Z10)	GR200-R017
	(N2S10)	GN200-R012
	(R2S10)	GR200-R016
	(V2M04)	GV200-R003
	(X2M04)	GX200-R012
	Q2Z10	GQ200-L008

LINE/SIGNAL	PIN	SHEET/LINE
R017		
- ALU IN2 BIT 1		
	(R2Z07)	GR200-R017
	(N2S09)	GN200-R013
	(R2U07)	GR200-R016
	(V2J13)	GV200-R004
	(X2J13)	GX200-R013
	Q2Z07	GQ200-L008
R017		
- ALU IN2 BIT 2		
	(R2Z09)	GR200-R017
	(N2U10)	GN200-R014
	(R2U09)	GR200-R016
	(V2G12)	GV200-R005
	(X2G12)	GX200-R014
	Q2Z09	GQ200-L008
R017		
- ALU IN2 BIT 3		
	(R2Z30)	GR200-R017
	(N2U12)	GN200-R015
	(R2U10)	GR200-R016
	(V2P05)	GV200-R006
	(X2P05)	GX200-R015
	Q2Z30	GQ200-L008
R017		
- ALU IN2 BIT 4		
	(R2Z33)	GR200-R017
	(N2U13)	GN200-R016
	(R2S13)	GR200-R016
	(V2M05)	GV200-R007
	(X2M05)	GX200-R016
	Q2Z33	GQ200-L008
R017		
- ALU IN2 BIT 5		
	(R2Z13)	GR200-R017
	(N2S13)	GN200-R017
	(R2U13)	GR200-R016
	(V2M03)	GV200-R008
	(X2M03)	GX200-R017
	Q2Z13	GQ200-L008
R017		
- ALU IN2 BIT 6		
	(R2Z28)	GR200-R017
	(N2S08)	GN200-R018
	(R2S07)	GR200-R016
	(V2G10)	GV200-R009
	(X2G10)	GX200-R018
	Q2Z28	GQ200-L008
R017		
- ALU IN2 BIT 7		
	(R2Z05)	GR200-R017
	(N2U05)	GN200-R019
	(R2U05)	GR200-R016
	(V2P02)	GV200-R010
	(X2P02)	GX200-R019
	Q2Z05	GQ200-L008

LINE/SIGNAL	PIN	SHEET/LINE
R017		
- ALU IN2 BIT P		
	(R2Z06)	GR200-R017
	(N2U02)	GN200-R020
	(R2S08)	GR200-R016
	(V2P04)	GV200-R011
	(X2P04)	GX200-R020
	Q2Z06	GQ200-L008
R018		
+ CHECK TWO TO INDICATOR SD2		
	(R2X05)	GR200-R018
1A-B1	T2X05	ET200-L038
R019		
+ EXT BUS IN PC SD2		
	(R2X06)	GR200-R019
1A-B1	T2X06	ET200-L036
R020		
+ IML TO CYCLE SHARE		
	(R2D11)	GR200-R020
	R2B09	GR200-L032
R021		
- RESET		
	(R2Y09)	GR200-R021
	Q2Y09	GQ200-L015
R022		
+ RESET		
	(R2B07)	GR200-R022
	D2M05	GD200-L031
	E2M05	GE200-L031
	C2G09	GC200-L016
	F2M02	GF200-L054
	G2J13	GG210-L017
	H2S03	GH220-L060
	M2P11	GM200-L011
	P2J09	GP200-L022
	V2G13	GV200-L006
	X2M02	GX200-L005
R023		
+ RESET 2 UNUSED		
	(R2D04)	GR200-R023
R024		
+ STOP		
	(R2G03)	GR200-R024
	P2P04	GP200-L021
R025		
+ START		
	(R2D10)	GR200-R025
	P2P06	GP200-L020
R026		
+ MAINTENANCE START		
	(R2J07)	GR200-R026
	P2P02	GP200-L019

LINE/SIGNAL	PIN	SHEET/LINE
R027		
+ SPECIAL RESET		
	(R2B12)	GR200-R027
	D2G09	GD200-L032
	E2G09	GE200-L032
	C2G10	GC200-L015
	F2M03	GF200-L055
	P2J05	GP200-L017
	X2P10	GX200-L051
R028		
- CHECK RESET		
	(R2J05)	GR200-R028
	(H2Y10)	GH220-R063
	D2J06	GD200-L034
	E2J06	GE200-L034
	C2J10	GC200-L012
	F2M04	GF200-L056
	G2B13	GG210-L015
	H2U12	GH220-L061
	J2Y10	GJ200-L024
	K2Y10	GK200-L023
	L2D02	GL200-L003
	N2M13	GN200-L024
	V2G08	GV200-L033
	X2S13	GX200-L017
R029		
- RESET TO CS		
	(R2D09)	GR200-R029
R030		
+ INHIBIT ALU IN PC		
	(R2Z02)	GR200-R030
	Q2Z02	GQ200-L019
R031		
+ START DXR CLOCK		
	(R2J09)	GR200-R031
	V2J04	GV200-L032
R032		
- SDM SEQUENTIAL RESET		
	(R2J10)	GR200-R032
R033		
- CLOCK STOPPED - SDM		
	(R2Y10)	GR200-R033
	Q2Y10	GQ200-L012
R034		
- CLK STOPPED - STORAGE DIRECTOR		
	(R2Y11)	GR200-R034
	Q2Y11	GQ200-L005
R035		
- SDM START DELAYED		
	(R2Y33)	GR200-R035
	Q2Y33	GQ200-L011
R036		
+ GATED CHECK 1		
	(R2P07)	GR200-R036
	C2J09	GC200-L014
	F2J06	GF200-L041

LINE/SIGNAL	PIN	SHEET/LINE
R037		
- ERROR ALERT (OUT) SD2		
	(R2N28)	GR200-R037
1A-B1	(T2J10)	ET200-R023
1A-B1	S2G08	ES200-L024
1A-B1	T2W28	ET200-L037
R038		
+ CHECK ONE IND		
	(R2U02)	GR200-R038
	M2J04	GM200-L009
	V2S13	GV200-L035
R039		
- SCAN IN		
	(R2Y30)	GR200-R039
	Q2Y30	GQ200-L010
R040		
- MAINT CLOCK T1		
	(R2Y29)	GR200-R040
	Q2Y29	GQ200-L003
R041		
- EXT BUS OUT (SD2) BIT 0		
	(R2W31)	GR200-R041
1A-B1	T2W31	ET200-L007
R041		
- EXT BUS OUT (SD2) BIT 1		
	(R2W29)	GR200-R041
1A-B1	T2W29	ET200-L007
R041		
- EXT BUS OUT (SD2) BIT 2		
	(R2W12)	GR200-R041
1A-B1	T2W12	ET200-L007
R041		
- EXT BUS OUT (SD2) BIT 3		
	(R2W10)	GR200-R041
1A-B1	T2W10	ET200-L007
R041		
- EXT BUS OUT (SD2) BIT 4		
	(R2W32)	GR200-R041
1A-B1	T2W32	ET200-L007
R041		
- EXT BUS OUT (SD2) BIT 5		
	(R2W09)	GR200-R041
1A-B1	T2W09	ET200-L007
R041		
- EXT BUS OUT (SD2) BIT 6		
	(R2W11)	GR200-R041
1A-B1	T2W11	ET200-L007
R041		
- EXT BUS OUT (SD2) BIT 7		
	(R2W30)	GR200-R041
1A-B1	T2W30	ET200-L007

LINE/SIGNAL	PIN	SHEET/LINE
R041		
- EXT BUS OUT (SD2) BIT P		
	(R2W05)	GR200-R041
1A-B1	T2W05	ET200-L007
R042		
+ POWER ON RESET POWERED		
	(R2B10)	GR200-R042
	C4B04	GC400-L004
	C5B04	GC500-L004
	P2U07	GP200-L023
	U2D04	GU200-L022

003 - CS ADDRESS BIT (4:15) ======== * =
004 - SCS SELECT 1 ------------------ D06
005 - CS WRITE ---------------------- B02
006 - CS ADDRESS BIT PARITY -------- U12
007 - SCS SELECT 2 ------------------ U10

SCS1 CARD

OVERVIEW

The SCS1 (Static Control Storage #1) card contains 8K x 18 bits of control storage. This card provides storage for the microcode routines and the control tables and parameters for 3880 operations.

PRIMARY FUNCTIONS

- Data bit powering circuits amplify and shape incoming data bits.
- Address powering circuits amplify and decode control storage address lines.
- Array consists of either a high density 8K x 18 card.
- Sense latch circuits shape and amplify data read from the storage arrays.

PRIMARY COMPONENTS

- Storage array
- Address and data powering
- Selection control powering
- Sense circuits
- Address parity checker

= * - CS DATA BIT (0:15,PH,PL) ===== 003
S12 - CS ADDRESS CHECK ------------- 004

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- CS ADDRESS BIT 4		
	S2D04	GS200-L003
	(Q2B09)	GQ200-R033
	T2D04	GT200-L003
	U2M04	GU200-L005
L003		
- CS ADDRESS BIT 5		
	S2B07	GS200-L003
	(Q2B10)	GQ200-R033
	T2B07	GT200-L003
	U2P05	GU200-L006
L003		
- CS ADDRESS BIT 6		
	S2B10	GS200-L003
	(Q2D10)	GQ200-R033
	T2B10	GT200-L003
	U2P07	GU200-L007
L003		
- CS ADDRESS BIT 7		
	S2G03	GS200-L003
	(Q2P09)	GQ200-R033
	T2G03	GT200-L003
	U2J06	GU200-L008
L003		
- CS ADDRESS BIT 8		
	S2G07	GS200-L003
	(Q2M08)	GQ200-R033
	T2G07	GT200-L003
	U2D13	GU200-L009
L003		
- CS ADDRESS BIT 9		
	S2G12	GS200-L003
	(Q2M03)	GQ200-R033
	T2G12	GT200-L003
	U2G09	GU200-L010
L003		
- CS ADDRESS BIT 10		
	S2M13	GS200-L003
	(Q2P02)	GQ200-R033
	T2M13	GT200-L003
	U2G08	GU200-L011
L003		
- CS ADDRESS BIT 11		
	S2S07	GS200-L003
	(Q2M02)	GQ200-R033
	T2S07	GT200-L003
	U2G13	GU200-L012
L003		
- CS ADDRESS BIT 12		
	S2M03	GS200-L003
	(Q2G09)	GQ200-R033
	T2M03	GT200-L003
	U2G12	GU200-L013

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- CS ADDRESS BIT 13		
	S2M08	GS200-L003
	(Q2G08)	GQ200-R033
	T2M08	GT200-L003
	U2U05	GU200-L014
L003		
- CS ADDRESS BIT 14		
	S2D05	GS200-L003
	(Q2B13)	GQ200-R033
	T2D05	GT200-L003
	U2S04	GU200-L015
L003		
- CS ADDRESS BIT 15		
	S2B04	GS200-L003
	(Q2D13)	GQ200-R033
	T2B04	GT200-L003
	U2S03	GU200-L016
L004		
- SCS SELECT 1		
	S2D06	GS200-L004
	(Q2S07)	GQ200-R027
L005		
- CS WRITE		
	S2B02	GS200-L005
	(Q2S08)	GQ200-R037
	P2G02	GP200-L006
	R2D13	GR200-L022
	T2B02	GT200-L007
	U2D05	GU200-L019
	U2J13	GU200-L020
L006		
- CS ADDRESS BIT PARITY		
	S2U12	GS200-L006
	(Q2S13)	GQ200-R036
	P2D07	GP200-L015
	T2U12	GT200-L004
L007		
- SCS SELECT 2		
	S2U10	GS200-L007
	(Q2S04)	GQ200-R028
R003		
- CS DATA BIT 0		
	(S2D09)	GS200-R003
	(Q2J11)	GQ200-R011
	(T2D09)	GT200-R003
	(U2U13)	GU200-R008
R003		
- CS DATA BIT 1		
	(S2J02)	GS200-R003
	(Q2G10)	GQ200-R011
	(T2J02)	GT200-R003
	(U2S12)	GU200-R009

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- CS DATA BIT 2		
	(S2J05)	GS200-R003
	(Q2J09)	GQ200-R011
	(T2J05)	GT200-R003
	(U2S10)	GU200-R010
R003		
- CS DATA BIT 3		
	(S2J10)	GS200-R003
	(Q2J10)	GQ200-R011
	(T2J10)	GT200-R003
	(U2M09)	GU200-R011
R003		
- CS DATA BIT 4		
	(S2P02)	GS200-R003
	(Q2G12)	GQ200-R011
	(T2P02)	GT200-R003
	(U2M08)	GU200-R012
R003		
- CS DATA BIT 5		
	(S2P07)	GS200-R003
	(Q2J12)	GQ200-R011
	(T2P07)	GT200-R003
	(U2P06)	GU200-R013
R003		
- CS DATA BIT 6		
	(S2P12)	GS200-R003
	(Q2G13)	GQ200-R011
	(T2P12)	GT200-R003
	(U2M05)	GU200-R014
R003		
- CS DATA BIT 7		
	(S2U04)	GS200-R003
	(Q2J13)	GQ200-R011
	(T2U04)	GT200-R003
	(U2P04)	GU200-R015
R003		
- CS DATA BIT 8		
	(S2B09)	GS200-R003
	(Q2G07)	GQ200-R011
	(T2B09)	GT200-R003
	(U2P13)	GU200-R016
R003		
- CS DATA BIT 9		
	(S2B13)	GS200-R003
	(Q2J06)	GQ200-R011
	(T2B13)	GT200-R003
	(U2M12)	GU200-R017
R003		
- CS DATA BIT 10		
	(S2J07)	GS200-R003
	(Q2G05)	GQ200-R011
	(T2J07)	GT200-R003
	(U2M10)	GU200-R018

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- CS DATA BIT 11		
	(S2J12)	GS200-R003
	(Q2J05)	GQ200-R011
	(T2J12)	GT200-R003
	(U2S09)	GU200-R019
R003		
- CS DATA BIT 12		
	(S2M02)	GS200-R003
	(Q2G03)	GQ200-R011
	(T2M02)	GT200-R003
	(U2S08)	GU200-R020
R003		
- CS DATA BIT 13		
	(S2M07)	GS200-R003
	(Q2B12)	GQ200-R011
	(T2M07)	GT200-R003
	(U2U06)	GU200-R021
R003		
- CS DATA BIT 14		
	(S2M12)	GS200-R003
	(Q2D11)	GQ200-R011
	(T2M12)	GT200-R003
	(U2S05)	GU200-R022
R003		
- CS DATA BIT 15		
	(S2S05)	GS200-R003
	(Q2J02)	GQ200-R011
	(T2S05)	GT200-R003
	(U2U04)	GU200-R023
R003		
- CS DATA BIT PH		
	(S2U07)	GS200-R003
	(Q2M10)	GQ200-R011
	(T2U07)	GT200-R003
	(U2S02)	GU200-R024
R003		
- CS DATA BIT PL		
	(S2U09)	GS200-R003
	(Q2P10)	GQ200-R011
	(T2U09)	GT200-R003
	(U2M02)	GU200-R025
R004		
- CS ADDRESS CHECK		
	(S2S12)	GS200-R004
	(T2S12)	GT200-R004
	(U2D10)	GU200-R004
	(U2B04)	GU200-R005
	Q2S10	GQ200-L017

003 - CS ADDRESS BIT (4:15) ======== * =
004 - CS ADDRESS BIT PARITY -------- U12
005 - SCS SELECT 3 ----------------- D06
006 - SCS SELECT 4 ----------------- U10
007 - CS WRITE --------------------- B02

= * - CS DATA BIT (0:15,PH,PL) ===== 003
S12 - CS ADDRESS CHECK ------------- 004

SCS2 CARD

OVERVIEW

The SCS2 (Static Control Storage #2) card contains 8K x 18 bits of unterminated control storage. This card provides storage for the microcode routines and the control tables and parameters for 3880 operations.

PRIMARY FUNCTIONS

- Data bit powering circuits amplify and shape incoming data bits.
- Address powering circuits amplify and decode control storage address lines.
- Array consists of either a high density 8K x 18 card.
- Sense latch circuits shape and amplify data read from the storage arrays.

PRIMARY COMPONENTS

- Storage array
- Address and data powering
- Selection control powering
- Sense circuits
- Address parity checker

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- CS ADDRESS BIT 4		
	T2D04	GT200-L003
	(Q2B09)	GQ200-R033
	S2D04	GS200-L003
	U2M04	GU200-L005
L003		
- CS ADDRESS BIT 5		
	T2B07	GT200-L003
	(Q2B10)	GQ200-R033
	S2B07	GS200-L003
	U2P05	GU200-L006
L003		
- CS ADDRESS BIT 6		
	T2B10	GT200-L003
	(Q2D10)	GQ200-R033
	S2B10	GS200-L003
	U2P07	GU200-L007
L003		
- CS ADDRESS BIT 7		
	T2G03	GT200-L003
	(Q2P09)	GQ200-R033
	S2G03	GS200-L003
	U2J06	GU200-L008
L003		
- CS ADDRESS BIT 8		
	T2G07	GT200-L003
	(Q2M08)	GQ200-R033
	S2G07	GS200-L003
	U2D13	GU200-L009
L003		
- CS ADDRESS BIT 9		
	T2G12	GT200-L003
	(Q2M03)	GQ200-R033
	S2G12	GS200-L003
	U2G09	GU200-L010
L003		
- CS ADDRESS BIT 10		
	T2M13	GT200-L003
	(Q2P02)	GQ200-R033
	S2M13	GS200-L003
	U2G08	GU200-L011
L003		
- CS ADDRESS BIT 11		
	T2S07	GT200-L003
	(Q2M02)	GQ200-R033
	S2S07	GS200-L003
	U2G13	GU200-L012
L003		
- CS ADDRESS BIT 12		
	T2M03	GT200-L003
	(Q2G09)	GQ200-R033
	S2M03	GS200-L003
	U2G12	GU200-L013

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- CS ADDRESS BIT 13		
	T2M08	GT200-L003
	(Q2G08)	GQ200-R033
	S2M08	GS200-L003
	U2U05	GU200-L014
L003		
- CS ADDRESS BIT 14		
	T2D05	GT200-L003
	(Q2B13)	GQ200-R033
	S2D05	GS200-L003
	U2S04	GU200-L015
L003		
- CS ADDRESS BIT 15		
	T2B04	GT200-L003
	(Q2D13)	GQ200-R033
	S2B04	GS200-L003
	U2S03	GU200-L016
L004		
- CS ADDRESS BIT PARITY		
	T2U12	GT200-L004
	(Q2S13)	GQ200-R036
	P2B07	GP200-L015
	S2U12	GS200-L006
L005		
- SCS SELECT 3		
	T2D06	GT200-L005
	(Q2U11)	GQ200-R029
L006		
- SCS SELECT 4		
	T2U10	GT200-L006
	(Q2D12)	GQ200-R030
L007		
- CS WRITE		
	T2B02	GT200-L007
	(Q2S08)	GQ200-R037
	P2G02	GP200-L006
	R2D13	GR200-L022
	S2B02	GS200-L005
	U2D05	GU200-L019
	U2J13	GU200-L020
R003		
- CS DATA BIT 0		
	(T2D09)	GT200-R003
	(Q2J11)	GQ200-R011
	(S2D09)	GS200-R003
	(U2U13)	GU200-R008
R003		
- CS DATA BIT 1		
	(T2J02)	GT200-R003
	(Q2G10)	GQ200-R011
	(S2J02)	GS200-R003
	(U2S12)	GU200-R009

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- CS DATA BIT 2		
	(T2J05)	GT200-R003
	(Q2J09)	GQ200-R011
	(S2J05)	GS200-R003
	(U2S10)	GU200-R010
R003		
- CS DATA BIT 3		
	(T2J10)	GT200-R003
	(Q2J10)	GQ200-R011
	(S2J10)	GS200-R003
	(U2M09)	GU200-R011
R003		
- CS DATA BIT 4		
	(T2P02)	GT200-R003
	(Q2G12)	GQ200-R011
	(S2P02)	GS200-R003
	(U2M08)	GU200-R012
R003		
- CS DATA BIT 5		
	(T2P07)	GT200-R003
	(Q2J12)	GQ200-R011
	(S2P07)	GS200-R003
	(U2P06)	GU200-R013
R003		
- CS DATA BIT 6		
	(T2P12)	GT200-R003
	(Q2G13)	GQ200-R011
	(S2P12)	GS200-R003
	(U2M05)	GU200-R014
R003		
- CS DATA BIT 7		
	(T2U04)	GT200-R003
	(Q2J13)	GQ200-R011
	(S2U04)	GS200-R003
	(U2P04)	GU200-R015
R003		
- CS DATA BIT 8		
	(T2B09)	GT200-R003
	(Q2G07)	GQ200-R011
	(S2B09)	GS200-R003
	(U2P13)	GU200-R016
R003		
- CS DATA BIT 9		
	(T2B13)	GT200-R003
	(Q2J06)	GQ200-R011
	(S2B13)	GS200-R003
	(U2M12)	GU200-R017
R003		
- CS DATA BIT 10		
	(T2J07)	GT200-R003
	(Q2G05)	GQ200-R011
	(S2J07)	GS200-R003
	(U2M10)	GU200-R018

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- CS DATA BIT 11		
	(T2J12)	GT200-R003
	(Q2J05)	GQ200-R011
	(S2J12)	GS200-R003
	(U2S09)	GU200-R019
R003		
- CS DATA BIT 12		
	(T2M02)	GT200-R003
	(Q2G03)	GQ200-R011
	(S2M02)	GS200-R003
	(U2S08)	GU200-R020
R003		
- CS DATA BIT 13		
	(T2M07)	GT200-R003
	(Q2B12)	GQ200-R011
	(S2M07)	GS200-R003
	(U2U06)	GU200-R021
R003		
- CS DATA BIT 14		
	(T2M12)	GT200-R003
	(Q2D11)	GQ200-R011
	(S2M12)	GS200-R003
	(U2S05)	GU200-R022
R003		
- CS DATA BIT 15		
	(T2S05)	GT200-R003
	(Q2J02)	GQ200-R011
	(S2S05)	GS200-R003
	(U2U04)	GU200-R023
R003		
- CS DATA BIT PH		
	(T2U07)	GT200-R003
	(Q2M10)	GQ200-R011
	(S2U07)	GS200-R003
	(U2S02)	GU200-R024
R003		
- CS DATA BIT PL		
	(T2U09)	GT200-R003
	(Q2P10)	GQ200-R011
	(S2U09)	GS200-R003
	(U2M02)	GU200-R025
R004		
- CS ADDRESS CHECK		
	(T2S12)	GT200-R004
	(S2S12)	GS200-R004
	(U2D10)	GU200-R004
	(U2B04)	GU200-R005
	Q2S10	GQ200-L017

003 - CS ADDRESS BIT 2 ----------P02
004 - CS ADDRESS BIT 3 ----------M03
005 - CS ADDRESS BIT 4 ----------M04
006 - CS ADDRESS BIT 5 ----------P05
007 - CS ADDRESS BIT 6 ----------P07
008 - CS ADDRESS BIT 7 ----------J06
009 - CS ADDRESS BIT 8 ----------D13
010 - CS ADDRESS BIT 9 ----------G09
011 - CS ADDRESS BIT 10 ----------G08
012 - CS ADDRESS BIT 11 ----------G13
013 - CS ADDRESS BIT 12 ----------G12
014 - CS ADDRESS BIT 13 ----------U05
015 - CS ADDRESS BIT 14 ----------S04
016 - CS ADDRESS BIT 15 ----------S03
017 - DCS ADDRESS PARITY ----------M07
018 + KEYBIT ----------M13
019 - CS WRITE ----------D05
020 - CS WRITE ----------J13
021 - REFRESH SELECT ----------B09
022 + POWER ON RESET POWERED --------D04
023 - DCS SELECT 1 ----------J07
024 - DCS SELECT 0 ----------G03
025 - DCSR TIE DOWN 1 ----------G02
026 - DCSR TIE DOWN 2 ----------J02
027 - DCSR TIE DOWN 3 ----------D07
028 + REFRESH TIMER CLOCK ----------J04
029 - DCSR TIE DOWN 4 ----------G10
030 + DCSR TIE UP 1 ----------J05
031 + DCSR TIE UP 1 ----------G04
032 - WESTPORT SELECT 2 ---------- B13
033 + DCSR TIE UP 1 ----------J10
034 + DCSR TIE UP 1 ----------J11
035 + DCSR TIE UP 1 ----------J12
036 + DCSR TIE UP 1 ----------B08

DCSR CARD

OVERVIEW

The dynamic control storage and refresh (DCSR) card contains 48K two-byte words of control storage. The addresses for the DCSR card start at 16K and continue through 64K.

PRIMARY FUNCTIONS

- This 48 x 22 storage array is used for microcode routines, control tables, and parameters for 3880 operation. The array is dynamic and requires periodic refresh cycles to retain data.
- The refresh clock counter is programmed to overflow after 110 refresh timer clocks. Upon overflow, refresh required is activated until a refresh cycle is performed.
- The refresh address counter generates the seven refresh address lines required by the array.
- The address generation logic is internal to the DCSR card and derived by a refresh cycle or read/write cycles.
- The control logic generates row and column address strobe to the array, controls address generation timing, controls strobing of data during read cycles and checks for invalid multiple select signals at DCSR inputs.

PRIMARY COMPONENTS

- 48K x 22 array
- Error detection and correction circuitry
- Control logic
- Address generation logic
- Refresh address counter
- Refresh clock counter

ERROR CHECKING

- Checks the CS Data lines for correct parity.
- 48K x 22 array
- Refresh timer check is activated whenever the parity prediction circuits sense incorrect parity.
- Address parity check is activated when Control Storage Address bits are of incorrect parity.
- Uncorrectable read data check is activated if a read data check cannot be corrected.
- Key bit check is activated if the key bits are not the same during a read as they were during the write operation.

B10 - DCSR UNUSED PIN 15 ---------- 003
D10 - CS ADDRESS CHECK ---------- 004
B04 - CS ADDRESS CHECK ---------- 005
B02 - DCSR UNUSED PIN 0 ---------- 006
D12 - REFRESH ADDRESS CHECK -------- 007
U13 - CS DATA BIT 0 ---------- 008
S12 - CS DATA BIT 1 ---------- 009
S10 - CS DATA BIT 2 ---------- 010
M09 - CS DATA BIT 3 ---------- 011
M08 - CS DATA BIT 4 ---------- 012
P06 - CS DATA BIT 5 ---------- 013
M05 - CS DATA BIT 6 ---------- 014
P04 - CS DATA BIT 7 ---------- 015
P13 - CS DATA BIT 8 ---------- 016
M12 - CS DATA BIT 9 ---------- 017
M10 - CS DATA BIT 10 ---------- 018
S09 - CS DATA BIT 11 ---------- 019
S08 - CS DATA BIT 12 ---------- 020
U06 - CS DATA BIT 13 ---------- 021
S05 - CS DATA BIT 14 ---------- 022
U04 - CS DATA BIT 15 ---------- 023
S02 - CS DATA BIT PH ---------- 024
M02 - CS DATA BIT PL ---------- 025
G05 - DCS DATA IN P CHK ---------- 026
S07 - ANY READ DATA CHECK ---------- 027
D02 - UNCORRECTABLE READ DATA CHK -- 028
P10 - DCSR UNUSED PIN 1 ---------- 029
P11 - DCSR UNUSED PIN 2 ---------- 030
P12 - DCSR UNUSED PIN 3 ---------- 031
P09 - DCSR UNUSED PIN 4 ---------- 032
U02 - DCSR UNUSED PIN 5 ---------- 033
U07 - DCSR UNUSED PIN 6 ---------- 034
U09 - DCSR UNUSED PIN 7 ---------- 035
U10 - DCSR UNUSED PIN 8 ---------- 036
U11 - DCSR UNUSED PIN 9 ---------- 037
U12 - DCSR UNUSED PIN 10 ---------- 038
S13 - DCSR UNUSED PIN 11 ---------- 039
B05 - KEY BIT CHECK ---------- 040
D09 - DCSR UNUSED PIN 12 ---------- 041
G07 - DCSR UNUSED PIN 13 ---------- 042
B07 - SELECTION CHECK ---------- 043
B12 - REFRESH REQUIRED ---------- 044
D11 - DCSR UNUSED PIN 14 ---------- 045
J09 - REFRESH TIMER CHECK ---------- 046
D06 + DCSR UNUSED PIN 16 ---------- 047
B03 + DCSR TIE UP 1 ---------- 048

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- CS ADDRESS BIT 2		
	U2P02	GU200-L003
	(Q2D09)	GQ200-R033
	P2J02	GP200-L013
L004		
- CS ADDRESS BIT 3		
	U2M03	GU200-L004
	(Q2B08)	GQ200-R033
	P2D13	GP200-L014
L005		
- CS ADDRESS BIT 4		
	U2M04	GU200-L005
	(Q2B09)	GQ200-R033
	S2D04	GS200-L003
	T2D04	GT200-L003
L006		
- CS ADDRESS BIT 5		
	U2P05	GU200-L006
	(Q2B10)	GQ200-R033
	S2B07	GS200-L003
	T2B07	GT200-L003
L007		
- CS ADDRESS BIT 6		
	U2P07	GU200-L007
	(Q2D10)	GQ200-R033
	S2B10	GS200-L003
	T2B10	GT200-L003
L008		
- CS ADDRESS BIT 7		
	U2J06	GU200-L008
	(Q2P09)	GQ200-R033
	S2G03	GS200-L003
	T2G03	GT200-L003
L009		
- CS ADDRESS BIT 8		
	U2D13	GU200-L009
	(Q2M08)	GQ200-R033
	S2G07	GS200-L003
	T2G07	GT200-L003
L010		
- CS ADDRESS BIT 9		
	U2G09	GU200-L010
	(Q2M03)	GQ200-R033
	S2G12	GS200-L003
	T2G12	GT200-L003
L011		
- CS ADDRESS BIT 10		
	U2G08	GU200-L011
	(Q2P02)	GQ200-R033
	S2M13	GS200-L003
	T2M13	GT200-L003
L012		
- CS ADDRESS BIT 11		
	U2G13	GU200-L012
	(Q2M02)	GQ200-R033
	S2S07	GS200-L003
	T2S07	GT200-L003
L013		
- CS ADDRESS BIT 12		
	U2G12	GU200-L013
	(Q2G09)	GQ200-R033
	S2M03	GS200-L003
	T2M03	GT200-L003
L014		
- CS ADDRESS BIT 13		
	U2U05	GU200-L014
	(Q2G08)	GQ200-R033
	S2M08	GS200-L003
	T2M08	GT200-L003
L015		
- CS ADDRESS BIT 14		
	U2S04	GU200-L015
	(Q2B13)	GQ200-R033
	S2D05	GS200-L003
	T2D05	GT200-L003
L016		
- CS ADDRESS BIT 15		
	U2S03	GU200-L016
	(Q2D13)	GQ200-R033
	S2B04	GS200-L003
	T2B04	GT200-L003
L017		
- DCS ADDRESS PARITY		
	U2M07	GU200-L017
	(P2J07)	GP200-R013
L018		
+ KEYBIT		
	U2M13	GU200-L018
	(P2M05)	GP200-R009
L019		
- CS WRITE		
	U2D05	GU200-L019
	(Q2S08)	GQ200-R037
	P2G02	GP200-L006
	R2D13	GR200-L022
	S2B02	GS200-L005
	T2B02	GT200-L007
	U2J13	GU200-L020
L020		
- CS WRITE		
	U2J13	GU200-L020
	(Q2S08)	GQ200-R037
	P2G02	GP200-L006
	R2D13	GR200-L022
	S2B02	GS200-L005
	T2B02	GT200-L007
	U2D05	GU200-L019
L021		
- REFRESH SELECT		
	U2B09	GU200-L021
	(P2S05)	GP200-R007
L022		
+ POWER ON RESET POWERED		
	U2D04	GU200-L022
	(R2B10)	GR200-R042
	C4B04	GC400-L004
	C5B04	GC500-L004
	P2U07	GP200-L023
L023		
- DCS SELECT 1		
	U2J07	GU200-L023
	(P2M13)	GP200-R004
L024		
- DCS SELECT 0		
	U2G03	GU200-L024
	(P2G04)	GP200-R005
L025		
- DCSR TIE DOWN 1		
	U2G02	GU200-L025
L026		
- DCSR TIE DOWN 2		
	U2J02	GU200-L026
L027		
- DCSR TIE DOWN 3		
	U2D07	GU200-L027
L028		
+ REFRESH TIMER CLOCK		
	U2J04	GU200-L028
	(P2B13)	GP200-R006
L029		
- DCSR TIE DOWN 4		
	U2G10	GU200-L029
L030		
+ DCSR TIE UP 1		
	U2J05	GU200-L030
	(U2B03)	GU200-R048
	U2G04	GU200-L031
	U2J10	GU200-L033
	U2J11	GU200-L034
	U2J12	GU200-L035
	U2B08	GU200-L036
L031		
+ DCSR TIE UP 1		
	U2G04	GU200-L031
	(U2B03)	GU200-R048
	U2J05	GU200-L030
	U2J10	GU200-L033
	U2J11	GU200-L034
	U2J12	GU200-L035
	U2B08	GU200-L036
L032		
- WESTPORT SELECT 2		
	U2B13	GU200-L032
	(P2U12)	GP200-R059
L033		
+ DCSR TIE UP 1		
	U2J10	GU200-L033
	(U2B03)	GU200-R048
	U2J05	GU200-L030
	U2G04	GU200-L031
	U2J11	GU200-L034
	U2J12	GU200-L035
	U2B08	GU200-L036
L034		
+ DCSR TIE UP 1		
	U2J11	GU200-L034
	(U2B03)	GU200-R048
	U2J05	GU200-L030
	U2G04	GU200-L031
	U2J10	GU200-L033
	U2J12	GU200-L035
	U2B08	GU200-L036
L035		
+ DCSR TIE UP 1		
	U2J12	GU200-L035
	(U2B03)	GU200-R048
	U2J05	GU200-L030
	U2G04	GU200-L031
	U2J10	GU200-L033
	U2J11	GU200-L034
	U2B08	GU200-L036
L036		
+ DCSR TIE UP 1		
	U2B08	GU200-L036
	(U2B03)	GU200-R048
	U2J05	GU200-L030
	U2G04	GU200-L031
	U2J10	GU200-L033
	U2J11	GU200-L034
	U2J12	GU200-L035
R003		
- DCSR UNUSED PIN 15		
	(U2B10)	GU200-R003
R004		
- CS ADDRESS CHECK		
	(U2D10)	GU200-R004
	(S2S12)	GS200-R004
	(T2S12)	GT200-R004
	(U2B04)	GU200-R005
	Q2S10	GQ200-L017
R005		
- CS ADDRESS CHECK		
	(U2B04)	GU200-R005
	(S2S12)	GS200-R004
	(T2S12)	GT200-R004
	(U2D10)	GU200-R004
	Q2S10	GQ200-L017
R006		
- DCSR UNUSED PIN 0		
	(U2B02)	GU200-R006
R007		
- REFRESH ADDRESS CHECK		
	(U2D12)	GU200-R007
	P2S10	GP200-L007
R008		
- CS DATA BIT 0		
	(U2U13)	GU200-R008
	(Q2J11)	GQ200-R011
	(S2D09)	GS200-R003
	(T2D09)	GT200-R003
R009		
- CS DATA BIT 1		
	(U2S12)	GU200-R009
	(Q2G10)	GQ200-R011
	(S2J02)	GS200-R003
	(T2J02)	GT200-R003
R010		
- CS DATA BIT 2		
	(U2S10)	GU200-R010
	(Q2J09)	GQ200-R011
	(S2J05)	GS200-R003
	(T2J05)	GT200-R003
R011		
- CS DATA BIT 3		
	(U2M09)	GU200-R011
	(Q2J10)	GQ200-R011
	(S2J10)	GS200-R003
	(T2J10)	GT200-R003
R012		
- CS DATA BIT 4		
	(U2M08)	GU200-R012
	(Q2G12)	GQ200-R011
	(S2P02)	GS200-R003
	(T2P02)	GT200-R003
R013		
- CS DATA BIT 5		
	(U2P06)	GU200-R013
	(Q2J12)	GQ200-R011
	(S2P07)	GS200-R003
	(T2P07)	GT200-R003
R014		
- CS DATA BIT 6		
	(U2M05)	GU200-R014
	(Q2G13)	GQ200-R011
	(S2P12)	GS200-R003
	(T2P12)	GT200-R003
R015		
- CS DATA BIT 7		
	(U2P04)	GU200-R015
	(Q2J13)	GQ200-R011
	(S2U04)	GS200-R003
	(T2U04)	GT200-R003
R016		
- CS DATA BIT 8		
	(U2P13)	GU200-R016
	(Q2G07)	GQ200-R011
	(S2B09)	GS200-R003
	(T2B09)	GT200-R003
R017		
- CS DATA BIT 9		
	(U2M12)	GU200-R017
	(Q2J06)	GQ200-R011
	(S2B13)	GS200-R003
	(T2B13)	GT200-R003
R018		
- CS DATA BIT 10		
	(U2M10)	GU200-R018
	(Q2G05)	GQ200-R011
	(S2J07)	GS200-R003
	(T2J07)	GT200-R003
R019		
- CS DATA BIT 11		
	(U2S09)	GU200-R019
	(Q2J05)	GQ200-R011
	(S2J12)	GS200-R003
	(T2J12)	GT200-R003
R020		
- CS DATA BIT 12		
	(U2S08)	GU200-R020
	(Q2G03)	GQ200-R011
	(S2M02)	GS200-R003
	(T2M02)	GT200-R003
R021		
- CS DATA BIT 13		
	(U2U06)	GU200-R021
	(Q2B12)	GQ200-R011
	(S2M07)	GS200-R003
	(T2M07)	GT200-R003
R022		
- CS DATA BIT 14		
	(U2S05)	GU200-R022
	(Q2D11)	GQ200-R011
	(S2M12)	GS200-R003
	(T2M12)	GT200-R003
R023		
- CS DATA BIT 15		
	(U2U04)	GU200-R023
	(Q2J02)	GQ200-R011
	(S2S05)	GS200-R003
	(T2S05)	GT200-R003
R024		
- CS DATA BIT PH		
	(U2S02)	GU200-R024
	(Q2M10)	GQ200-R011
	(S2U07)	GS200-R003
	(T2U07)	GT200-R003

DYNAMIC CONTROL STORE - REFRESH XRL GU200

LINE/SIGNAL	PIN	SHEET/LINE
R025		
- CS DATA BIT PL		
	(U2M02)	GU200-R025
	(Q2P10)	GQ200-R011
	(S2U09)	GS200-R003
	(T2U09)	GT200-R003
R026		
- DCS DATA IN P CHK		
	(U2G05)	GU200-R026
	P2D02	GP200-L016
R027		
- ANY READ DATA CHECK		
	(U2S07)	GU200-R027
	P2B03	GP200-L009
R028		
- UNCORRECTABLE READ DATA CHK		
	(U2D02)	GU200-R028
	P2D05	GP200-L010
R029		
- DCSR UNUSED PIN 1		
	(U2P10)	GU200-R029
R030		
- DCSR UNUSED PIN 2		
	(U2P11)	GU200-R030
R031		
- DCSR UNUSED PIN 3		
	(U2P12)	GU200-R031
R032		
- DCSR UNUSED PIN 4		
	(U2P09)	GU200-R032
R033		
- DCSR UNUSED PIN 5		
	(U2U02)	GU200-R033
R034		
- DCSR UNUSED PIN 6		
	(U2U07)	GU200-R034
R035		
- DCSR UNUSED PIN 7		
	(U2U09)	GU200-R035
R036		
- DCSR UNUSED PIN 8		
	(U2U10)	GU200-R036
R037		
- DCSR UNUSED PIN 9		
	(U2U11)	GU200-R037
R038		
- DCSR UNUSED PIN 10		
	(U2U12)	GU200-R038
R039		
- DCSR UNUSED PIN 11		
	(U2S13)	GU200-R039
R040		
- KEY BIT CHECK		
	(U2B05)	GU200-R040
	P2D11	GP200-L008
R041		
- DCSR UNUSED PIN 12		
	(U2D09)	GU200-R041
R042		
- DCSR UNUSED PIN 13		
	(U2G07)	GU200-R042
R043		
- SELECTION CHECK		
	(U2B07)	GU200-R043
	P2M10	GP200-L012
R044		
- REFRESH REQUIRED		
	(U2B12)	GU200-R044
	P2M09	GP200-L005
R045		
- DCSR UNUSED PIN 14		
	(U2D11)	GU200-R045
R046		
- REFRESH TIMER CHECK		
	(U2J09)	GU200-R046
	P2J11	GP200-L011
R047		
+ DCSR UNUSED PIN 16		
	(U2D06)	GU200-R047
R048		
+ DCSR TIE UP 1		
	(U2B03)	GU200-R048
	U2J05	GU200-L030
	U2G04	GU200-L031
	U2J10	GU200-L033
	U2J11	GU200-L034
	U2J12	GU200-L035
	U2B08	GU200-L036

003 - DATA TAKEN (DDC) ----------B10
004 UNUSED DCT PIN C ---------- U05
005 + DECREMENT COUNTER ----------M12
006 + RESET ----------G13
007 - ALU OUT BIT 0 ----------D13
008 - ALU OUT BIT 1 ----------B05
009 - ALU OUT BIT 2 ----------D10
010 - ALU OUT BIT 3 ----------J02
011 - ALU OUT BIT 4 ----------B08
012 - ALU OUT BIT 5 ----------B03
013 - ALU OUT BIT 6 ----------D05
014 - ALU OUT BIT 7 ----------D06
015 - ALU OUT BIT P ----------B02
016 + DDC CLOCK T3 ----------U04
017 + DDC CLOCK T7 ----------U02
018 + DECREMENT PAD COUNTER ---------G02
019 + LD EXT REG CLK D ----------M10
020 + GATE PCR TO ALU IN ----------D11
021 - SELECT PCR ----------B07
022 - PCR DECODE 0D TO DCT ----------U06
023 - DEGATE DEVICE EXT REGISTERS ---M02
024 - EXT REG ADDRESS BIT 0 ---------J07
025 - EXT REG ADDRESS BIT 1 ---------J09
026 - EXT REG ADDRESS BIT 2 ---------J10
027 - EXT REG ADDRESS BIT 3 ---------J11
028 - EXT REG ADDRESS BIT 4 ---------J12
029 + DDC CLOCK T6 ----------U09
030 + DDC CLOCK T2 ----------G07
031 + GATE MCS REG ----------J05
032 + START DXR CLOCK ----------J04
033 - CHECK RESET ----------G08
034 + EXT REG ADR 18 ----------S05
035 + CHECK ONE IND ----------S13

M04 - ALU IN2 BIT 0 ---------- 003
J13 - ALU IN2 BIT 1 ---------- 004
G12 - ALU IN2 BIT 2 ---------- 005
P05 - ALU IN2 BIT 3 ---------- 006
M05 - ALU IN2 BIT 4 ---------- 007
M03 - ALU IN2 BIT 5 ---------- 008
G10 - ALU IN2 BIT 6 ---------- 009
P02 - ALU IN2 BIT 7 ---------- 010
P04 - ALU IN2 BIT P ---------- 011
J06 UNUSED DCT PIN A ---------- 012
P12 + DDC COUNT = ZERO ---------- 013
G03 + DEVICE COUNT < 64 ---------- 014
P13 + DDC COUNT = 0 OR 1 ---------- 015
P11 - RECYCLE/COUNT >7 ---------- 016
G09 + DCT CARD CHECK ---------- 017
M13 - STOP DDC CNT=8 ---------- 018
P06 + GATE DBI REG ---------- 019
P07 + GATE DBO REG ---------- 020
P09 + GATE DTG REG ---------- 021
M07 + GATE DTI REG/PAD COUNTER ----- 022
M08 + GATE DTO REG ---------- 023
M09 + DEVICE REG GROUP SELECT ------ 024
P10 + PAD COUNT=ZERO ---------- 025
U13 - STORAGE DIRECTOR CHECK SD2 --- 026
S09 - STORAGE DIRECTOR WAIT SD2 ---- 027
S10 - STORAGE DIRECTOR PROCESS SD2 - 028
S12 - STORAGE DIRECTOR STATUS SD2 -- 029
S02 + ENABLE TIMER ---------- 030
S03 + ROS SELECT ---------- 031
S04 + ENBL PAD CNT AFTER CHAN EOT -- 032
S07 + ENBL PAD CNT AFTER DEVICE EOT 033
S08 + MCS REG BIT 4 ---------- 034

DCT CARD

OVERVIEW

The DCT (device counter) card is one of two cards that are the control interface for devices attached to the 3880.

PRIMARY FUNCTIONS

- The DCH (device count high) and the DCL (device count low) accept the byte count from the microcontroller via the ALU Out bus. The byte count indicates the number of data bytes to be transferred between device and channel on a read or write operation.
- The pad counter is used to monitor the number of I/O bytes transferred by the automatic data transfer (ADT) hardware.
- The funnel is a multiple-input gate that selects one of two 9-bit buses to be gated to the ALU In bus lines.
- The MCS (maintenance/control/sense) register is a 9-bit register of multiple uses. It is used by:
  - The microcontroller to control the 650 ms timer
  - The IML hardware to start, execution of ROS instruction
  - The automatic data transfer hardware to control padding, dispensing, and checking
  - The ADT buffer to limit the number of bytes stored in the buffer
  - The microcontroller to indicate the current execution mode of the storage director (i.e., wait, process, status pending)
- Physical ID bit switches, set by the CE on install, provide a unique ID for each storage director. This ID is used by EREP to readily identify which path the failing unit is in.

PRIMARY COMPONENTS

- ID bit switches
- DCH and DCL counters
- PAD counter
- MCS register funnel
- DCH-DCL funnel
- PAD parity check funnel

ERROR CHECKING

- DCH and DCL parity checked at T7 time.
- The Pad Count parity check circuit checks the parity of the pad counter.
- Error check-1 drops recycle and raises stop DDC if recycle is not off when secondary counters reach zero in a SMB machine or when the pad counter attempts to roll over in all other machines.
- Error check-2 is used to insure the secondary counter are at zero at the same time DCH and DCL are at zero on a SMB machine.
- Error latch 1 or 2 will cause a DCT card check.

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- DATA TAKEN (DDC)		
	V2B10	GV200-L003
	(X2S08)	GX200-R026
	K2B08	GK200-L006
	N2U06	GN200-L036
L004		
UNUSED DCT PIN C		
	V2U05	GV200-L004
L005		
+ DECREMENT COUNTER		
	V2M12	GV200-L005
	(X2M12)	GX200-R027
L006		
+ RESET		
	V2G13	GV200-L006
	(R2B07)	GR200-R022
	D2M05	GD200-L031
	E2M05	GE200-L031
	C2G09	GC200-L016
	F2M02	GF200-L054
	G2J13	GG210-L017
	H2S03	GH220-L060
	M2P11	GM200-L011
	P2J09	GP200-L022
	X2M02	GX200-L005
L007		
- ALU OUT BIT 0		
	V2D13	GV200-L007
	(Q2B04)	GQ200-R008
	C2B02	GC200-L022
	F2D02	GF200-L019
	H2P12	GH220-L017
	J2U07	GJ200-L041
	N2B07	GN200-L012
	R2M02	GR200-L024
	X2D13	GX200-L028
L008		
- ALU OUT BIT 1		
	V2B05	GV200-L008
	(Q2D05)	GQ200-R008
	C2D02	GC200-L023
	F2D04	GF200-L020
	H2P13	GH220-L018
	J2U09	GJ200-L041
	N2D05	GN200-L013
	R2G12	GR200-L024
	X2B05	GX200-L028
L009		
- ALU OUT BIT 2		
	V2D10	GV200-L009
	(Q2D06)	GQ200-R008
	F2D05	GF200-L021
	H2U02	GH220-L019
	J2P12	GJ200-L041
	N2D09	GN200-L014
	R2G13	GR200-L024
	X2D10	GX200-L028

LINE/SIGNAL	PIN	SHEET/LINE
L010		
- ALU OUT BIT 3		
	V2J02	GV200-L010
	(Q2B05)	GQ200-R008
	F2D06	GF200-L022
	H2U05	GH220-L020
	J2U02	GJ200-L041
	N2D10	GN200-L015
	R2M04	GR200-L024
	X2J02	GX200-L028
L011		
- ALU OUT BIT 4		
	V2B08	GV200-L011
	(Q2D04)	GQ200-R008
	F2D07	GF200-L023
	H2U06	GH220-L021
	J2B12	GJ200-L041
	N2D06	GN200-L016
	R2M03	GR200-L024
	X2B08	GX200-L028
L012		
- ALU OUT BIT 5		
	V2B03	GV200-L012
	(Q2B03)	GQ200-R008
	F2B07	GF200-L024
	H2U07	GH220-L022
	J2D06	GJ200-L041
	N2B09	GN200-L017
	R2P04	GR200-L024
	X2B03	GX200-L028
L013		
- ALU OUT BIT 6		
	V2D05	GV200-L013
	(Q2D02)	GQ200-R008
	F2B08	GF200-L025
	H2U09	GH220-L023
	N2G02	GN200-L018
	R2P02	GR200-L024
	X2D05	GX200-L028
L014		
- ALU OUT BIT 7		
	V2D06	GV200-L014
	(Q2B02)	GQ200-R008
	F2B09	GF200-L026
	J2B05	GJ200-L041
	N2B13	GN200-L019
	R2P05	GR200-L024
L015		
- ALU OUT BIT P		
	V2B02	GV200-L015
	(Q2U04)	GQ200-R008
	F2B10	GF200-L027
	N2D13	GN200-L020
	R2M05	GR200-L024
L016		
+ DDC CLOCK T3		
	V2U04	GV200-L016
	(P2B10)	GP200-R045
	N2B10	GN200-L030
	X2S04	GX200-L034

LINE/SIGNAL	PIN	SHEET/LINE
L017		
+ DDC CLOCK T7		
	V2U02	GV200-L017
	(P2G08)	GP200-R047
	N2G08	GN200-L034
	X2S02	GX200-L038
L018		
+ DECREMENT PAD COUNTER		
	V2G02	GV200-L018
	(K2J09)	GK200-R004
L019		
+ LD EXT REG CLK D		
	V2M10	GV200-L019
	(Q2U06)	GQ200-R015
	N2B02	GN200-L010
	R2M08	GR200-L011
	X2M10	GX200-L027
L020		
+ GATE PCR TO ALU IN		
	V2D11	GV200-L020
	(K2S10)	GK200-R022
L021		
- SELECT PCR		
	V2B07	GV200-L021
	(K2U07)	GK200-R023
L022		
- PCR DECODE 0D TO DCT		
	V2U06	GV200-L022
L023		
- DEGATE DEVICE EXT REGISTERS		
	V2M02	GV200-L023
L024		
- EXT REG ADDRESS BIT 0		
	V2J07	GV200-L024
	(Q2P12)	GQ200-R016
	F2P09	GF200-L028
	K2B12	GK200-L003
	N2P12	GN200-L003
	R2M13	GR200-L009
L025		
- EXT REG ADDRESS BIT 1		
	V2J09	GV200-L025
	(Q2M05)	GQ200-R016
	F2P10	GF200-L029
	K2D13	GK200-L003
	N2M05	GN200-L004
	R2P11	GR200-L009
L026		
- EXT REG ADDRESS BIT 2		
	V2J10	GV200-L026
	(Q2P05)	GQ200-R016
	F2P11	GF200-L030
	K2B13	GK200-L003
	N2P05	GN200-L005
	R2M12	GR200-L009

LINE/SIGNAL	PIN	SHEET/LINE
L027		
- EXT REG ADDRESS BIT 3		
	V2J11	GV200-L027
	(Q2M04)	GQ200-R016
	F2P12	GF200-L031
	K2B10	GK200-L003
	N2M04	GN200-L006
	R2P10	GR200-L009
L028		
- EXT REG ADDRESS BIT 4		
	V2J12	GV200-L028
	(Q2P04)	GQ200-R016
	F2P13	GF200-L032
	K2D12	GK200-L003
	N2P04	GN200-L007
	R2P09	GR200-L009
L029		
+ DDC CLOCK T6		
	V2U09	GV200-L029
	(P2U10)	GP200-R021
	N2U09	GN200-L033
	X2U09	GX200-L037
L030		
+ DDC CLOCK T2		
	V2G07	GV200-L030
	(P2S07)	GP200-R019
	N2S07	GN200-L029
	X2G07	GX200-L033
L031		
+ GATE MCS REG		
	V2J05	GV200-L031
	(R2G05)	GR200-R007
L032		
+ START DXR CLOCK		
	V2J04	GV200-L032
	(R2J09)	GR200-R031
L033		
- CHECK RESET		
	V2G08	GV200-L033
	(H2Y10)	GH220-R063
	(R2J05)	GR200-R028
	D2J06	GD200-L034
	E2J06	GE200-L034
	C2J10	GC200-L012
	F2M04	GF200-L056
	G2B13	GG210-L015
	H2U12	GH220-L061
	J2Y10	GJ200-L024
	K2Y10	GK200-L023
	L2D02	GL200-L003
	N2M13	GN200-L024
	X2S13	GX200-L017
L034		
+ EXT REG ADR 18		
	V2S05	GV200-L034
	(F2M08)	GF200-R033
	H2S04	GH220-L015

LINE/SIGNAL	PIN	SHEET/LINE
L035		
+ CHECK ONE IND		
	V2S13	GV200-L035
	(R2U02)	GR200-R038
	M2J04	GM200-L009
R003		
- ALU IN2 BIT 0		
	(V2M04)	GV200-R003
	(N2S10)	GN200-R012
	(R2S10)	GR200-R016
	(R2Z10)	GR200-R017
	(X2M04)	GX200-R012
	Q2Z10	GQ200-L008
R004		
- ALU IN2 BIT 1		
	(V2J13)	GV200-R004
	(N2S09)	GN200-R013
	(R2U07)	GR200-R016
	(R2Z07)	GR200-R017
	(X2J13)	GX200-R013
	Q2Z07	GQ200-L008
R005		
- ALU IN2 BIT 2		
	(V2G12)	GV200-R005
	(N2U10)	GN200-R014
	(R2U09)	GR200-R016
	(R2Z09)	GR200-R017
	(X2G12)	GX200-R014
	Q2Z09	GQ200-L008
R006		
- ALU IN2 BIT 3		
	(V2P05)	GV200-R006
	(N2U12)	GN200-R015
	(R2U10)	GR200-R016
	(R2Z30)	GR200-R017
	(X2P05)	GX200-R015
	Q2Z30	GQ200-L008
R007		
- ALU IN2 BIT 4		
	(V2M05)	GV200-R007
	(N2U13)	GN200-R016
	(R2S13)	GR200-R016
	(R2Z33)	GR200-R017
	(X2M05)	GX200-R016
	Q2Z33	GQ200-L008
R008		
- ALU IN2 BIT 5		
	(V2M03)	GV200-R008
	(N2S13)	GN200-R017
	(R2U13)	GR200-R016
	(R2Z13)	GR200-R017
	(X2M03)	GX200-R017
	Q2Z13	GQ200-L008

LINE/SIGNAL	PIN	SHEET/LINE
R009		
- ALU IN2 BIT 6		
	(V2G10)	GV200-R009
	(N2S08)	GN200-R018
	(R2S07)	GR200-R016
	(R2Z28)	GR200-R017
	(X2G10)	GX200-R018
	Q2Z28	GQ200-L008
R010		
- ALU IN2 BIT 7		
	(V2P02)	GV200-R010
	(N2U05)	GN200-R019
	(R2U05)	GR200-R016
	(R2Z05)	GR200-R017
	(X2P02)	GX200-R019
	Q2Z05	GQ200-L008
R011		
- ALU IN2 BIT P		
	(V2P04)	GV200-R011
	(N2U02)	GN200-R020
	(R2S08)	GR200-R016
	(R2Z06)	GR200-R017
	(X2P04)	GX200-R020
	Q2Z06	GQ200-L008
R012		
UNUSED DCT PIN A		
	(V2J06)	GV200-R012
R013		
+ DDC COUNT = ZERO		
	(V2P12)	GV200-R013
	X2J10	GX200-L042
R014		
+ DEVICE COUNT < 64		
	(V2G03)	GV200-R014
	K2M05	GK200-L032
	M2B13	GM200-L005
R015		
+ DDC COUNT = 0 OR 1		
	(V2P13)	GV200-R015
	X2P13	GX200-L041
R016		
- RECYCLE/COUNT >7		
	(V2P11)	GV200-R016
	X2P11	GX200-L043
R017		
+ DCT CARD CHECK		
	(V2G09)	GV200-R017
	J2U11	GJ200-L049
R018		
- STOP DDC CNT=8		
	(V2M13)	GV200-R018
	X2M13	GX200-L003

LINE/SIGNAL	PIN	SHEET/LINE
R019		
+ GATE DBI REG		
	(V2P06)	GV200-R019
	X2P06	GX200-L004
	X2P06	GX200-L046
R020		
+ GATE DBO REG		
	(V2P07)	GV200-R020
	X2P07	GX200-L048
R021		
+ GATE DTG REG		
	(V2P09)	GV200-R021
	J2P06	GJ200-L071
	X2P09	GX200-L044
R022		
+ GATE DTI REG/PAD COUNTER		
	(V2M07)	GV200-R022
	K2G05	GK200-L031
	X2M07	GX200-L015
	X2M07	GX200-L045
R023		
+ GATE DTO REG		
	(V2M08)	GV200-R023
	X2M08	GX200-L047
R024		
+ DEVICE REG GROUP SELECT		
	(V2M09)	GV200-R024
	R2P12	GR200-L018
R025		
+ PAD COUNT=ZERO		
	(V2P10)	GV200-R025
	K2P06	GK200-L011
R026		
- STORAGE DIRECTOR CHECK SD2		
	(V2U13)	GV200-R026
1A-B3	*V6A02*	
->MDM	*YA171*	
R027		
- STORAGE DIRECTOR WAIT SD2		
	(V2S09)	GV200-R027
1A-B3	*U6C04*	
->MDM	*YA171*	
R028		
- STORAGE DIRECTOR PROCESS SD2		
	(V2S10)	GV200-R028
1A-B3	*U6E04*	
->MDM	*YA171*	
R029		
- STORAGE DIRECTOR STATUS SD2		
	(V2S12)	GV200-R029
1A-B3	*V6A04*	
->MDM	*YA171*	
R030		
+ ENABLE TIMER		
	(V2S02)	GV200-R030
	P2S12	GP200-L024

LINE/SIGNAL	PIN	SHEET/LINE
R031		
+ ROS SELECT		
	(V2S03)	GV200-R031
	Q2U13	GQ200-L016
	R2S04	GR200-L023
R032		
+ ENBL PAD CNT AFTER CHAN EOT		
	(V2S04)	GV200-R032
	K2J04	GK200-L018
R033		
+ ENBL PAD CNT AFTER DEVICE EOT		
	(V2S07)	GV200-R033
	J2U12	GJ200-L072
R034		
+ MCS REG BIT 4		
	(V2S08)	GV200-R034
	H2U04	GH220-L006

```
003 - STOP DDC CNT=8 ---------- M13
004 + GATE DBI REG ------------------P06
005 + RESET -------------------------M02
006 + DDC BUS IN BIT 0 --------------X24
007 + DDC BUS IN BIT 1 --------------X25
008 + DDC BUS IN BIT 2 --------------X26
009 + DDC BUS IN BIT 3 --------------X28
010 + DDC BUS IN BIT 4 --------------X29
011 + DDC BUS IN BIT 5 --------------X30
012 + DDC BUS IN BIT 6 --------------X31
013 + DDC BUS IN BIT 7 --------------X32
014 + DDC BUS IN BIT P --------------X23
015 + GATE DTI REG/PAD COUNTER ------M07
016 + DDC CLOCK T0 ------------------D04
017 - CHECK RESET --------------------S13
018 + SELECT ACTIVE ------------------Z23
019 + TAG VALID ---------------------Z24
020 + CHECK END ---------------------Z26
021 + CE ALERT ----------------------Z32
022 + NORMAL END --------------------Z25
023 + SELECTED ALERT ----------------Z30
024 + INDEX -------------------------Z29
025 + ERROR ALERT (IN) --------------Z28
026 + SYNC IN ----------------------X33
027 + LD EXT REG CLK D ------------- M10
028 - ALU OUT BIT (0-6) ============ * =
029 + MNT CLOCK T2 ----------------- U11
030 + MNT CLOCK T4 ----------------- U12
031 + DDC CLOCK T0 ----------------- D04
032 + DDC CLOCK T1 ----------------- U13
033 + DDC CLOCK T2 ----------------- G07
034 + DDC CLOCK T3 ----------------- S04
035 + DDC CLOCK T4 ----------------- U07
036 + DDC CLOCK T5 ----------------- S05
037 + DDC CLOCK T6 ----------------- U09
038 + DDC CLOCK T7 ----------------- S02
039 - CDN SD2 ND/DR GATED DEVICE --- U05
040 - DATA READY LATCHED ------------ S03
041 + DDC COUNT = 0 OR 1 ------------ P13
042 + DDC COUNT = ZERO -------------- J10
043 - RECYCLE/COUNT >7 -------------- P11
044 + GATE DTG REG ------------------ P09
045 + GATE DTI REG/PAD COUNTER ----- M07
046 + GATE DBI REG ------------------ P06
047 + GATE DTO REG ------------------ M08
048 + GATE DBO REG ------------------ P07
049 + STOP DDC ---------------------- U02
050 - DEV DXR BUS BIT (0-7,P) ====== * =
051 + SPECIAL RESET ----------------- P10
052 - CDN SD2 ALU OUT BIT 7 (CH/DEV) D06
053 - CDN SD2 ALU OUT BIT P (CH/DEV) B02
```

DDCU CARD

OVERVIEW

The DDCU (director-to-device controller) card is one of two cards, comprising the Control Interface for devices attached to a 3880.

PRIMARY FUNCTIONS

- The DBI (device bus in) register contains three types of information from the device: Command Response Data, Normal Data read under control of the automatic data transfer hardware, and device status data. (i.e., Ready or Busy), output from this register is available to two sets of bus lines, DXR In and ALU In 2.
- The DTI (Device Tag In) register contains tag information from the Device Tag In lines.
- The DBO (Device Bus Out) register contains data for the device. Three types of information leave this register on the DDC Bus Out lines, they are Control, Address and Data.
- The DTO (device tag out) register contains tag information to the device.
- Data transmission control logic provides controls for the following operations: Automatic Data Transfer, Normal End of Data Transfer, Check End of Data Transfer, and Error Recognition.
- The DTG (device tag gate) contains output tag lines and ADT control lines.

PRIMARY COMPONENTS

- DBI register
- DTI register
- DTG register
- DTO register
- DBO register
- Data transmission control logic

ERROR CHECKING

DBO register is parity checked and sets a DDC card check.

UNI-DIRECTIONAL DEV. CONTROLLER CRD GX200

```
J07 - DEV DXR BUS BIT 0 ------------ 003
J04 - DEV DXR BUS BIT 1 ------------ 004
G02 - DEV DXR BUS BIT 2 ------------ 005
G05 - DEV DXR BUS BIT 3 ------------ 006
G09 - DEV DXR BUS BIT 4 ------------ 007
G08 - DEV DXR BUS BIT 5 ------------ 008
G04 - DEV DXR BUS BIT 6 ------------ 009
G03 - DEV DXR BUS BIT 7 ------------ 010
J05 - DEV DXR BUS BIT P ------------ 011
M04 - ALU IN2 BIT 0 ---------------- 012
J13 - ALU IN2 BIT 1 ---------------- 013
G12 - ALU IN2 BIT 2 ---------------- 014
P05 - ALU IN2 BIT 3 ---------------- 015
M05 - ALU IN2 BIT 4 ---------------- 016
M03 - ALU IN2 BIT 5 ---------------- 017
G10 - ALU IN2 BIT 6 ---------------- 018
P02 - ALU IN2 BIT 7 ---------------- 019
P04 - ALU IN2 BIT P ---------------- 020
J09 - CHECK TWO -------------------- 021
J06 + FIRST SYNC IN 1 -------------- 022
J11 + FIRST SYNC IN 2 -------------- 023
Y31 + SELECT HOLD ------------------ 024
U10 - TAKE DATA (DDC) -------------- 025
S08 - DATA TAKEN (DDC) ------------- 026
M12 + DECREMENT COUNTER ------------ 027
S07 + DDC END OF TRANSFER ---------- 028
S10 + DATA OVERRUN ----------------- 029
S12 + SYNC IN CHECK ---------------- 030
U06 + DDC BUS IN PC ---------------- 031
S09 - CLOCK CHECK TWO -------------- 032
Y30 + TAG GATE --------------------- 033
W33 + SYNC OUT --------------------- 034
Y33 + RECYCLE ---------------------- 035
Y32 + RESPONSE --------------------- 036
= * + DDC BUS OUT BIT (0-7,P) ====== 037
Y23 + TAG BUS OUT BIT 0 ------------ 038
Y25 + TAG BUS OUT BIT 4 ------------ 039
Y24 + TAG BUS OUT BIT 5 ------------ 040
Y28 + TAG BUS OUT BIT 6 ------------ 041
Y26 + TAG BUS OUT BIT 7 ------------ 042
Y29 + TAG BUS OUT BIT P ------------ 043
J12 - END OP LATCHED T4 ------------ 044
U04 + DDC CARD CHECK --------------- 045
```

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- STOP DDC CNT=8		
	X2M13	GX200-L003
	(V2M13)	GV200-R018
L004		
+ GATE DBI REG		
	X2P06	GX200-L004
	(V2P06)	GV200-R019
	X2P06	GX200-L046
L005		
+ RESET		
	X2M02	GX200-L005
	(R2B07)	GR200-R022
	D2M05	GD200-L031
	E2M05	GE200-L031
	C2G09	GC200-L016
	F2M02	GF200-L054
	G2J13	GG210-L017
	H2S03	GH220-L060
	M2P11	GM200-L011
	P2J09	GP200-L022
	V2G13	GV200-L006
L006		
+ DDC BUS IN BIT 0		
	X2X24	GX200-L006
1T-A2 *AJ04 *		
L007		
+ DDC BUS IN BIT 1		
	X2X25	GX200-L007
1T-A2 *AG05 *		
L008		
+ DDC BUS IN BIT 2		
	X2X26	GX200-L008
1T-A2 *AJ06 *		
L009		
+ DDC BUS IN BIT 3		
	X2X28	GX200-L009
1T-A2 *AG08 *		
L010		
+ DDC BUS IN BIT 4		
	X2X29	GX200-L010
1T-A2 *AJ09 *		
L011		
+ DDC BUS IN BIT 5		
	X2X30	GX200-L011
1T-A2 *AG10 *		
L012		
+ DDC BUS IN BIT 6		
	X2X31	GX200-L012
1T-A2 *AJ11 *		
L013		
+ DDC BUS IN BIT 7		
	X2X32	GX200-L013
1T-A2 *AG12 *		

LINE/SIGNAL	PIN	SHEET/LINE
L014		
+ DDC BUS IN BIT P		
	X2X23	GX200-L014
1T-A2 *AG03 *		
L015		
+ GATE DTI REG/PAD COUNTER		
	X2M07	GX200-L015
	(V2M07)	GV200-R022
	K2G05	GK200-L031
	X2M07	GX200-L045
L016		
+ DDC CLOCK T0		
	X2D04	GX200-L016
	(P2S09)	GP200-R018
	N2U07	GN200-L027
	X2D04	GX200-L031
L017		
- CHECK RESET		
	X2S13	GX200-L017
	(H2Y10)	GH220-R063
	(R2J05)	GR200-R028
	D2J06	GD200-L034
	E2J06	GE200-L034
	C2J10	GC200-L012
	F2M04	GF200-L056
	G2B13	GG210-L015
	H2U12	GH220-L061
	J2Y10	GJ200-L024
	K2Y10	GK200-L023
	L2D02	GL200-L003
	N2M13	GN200-L024
	V2G08	GV200-L033
L018		
+ SELECT ACTIVE		
	X2Z23	GX200-L018
1T-A2 *BG03 *		
L019		
+ TAG VALID		
	X2Z24	GX200-L019
1T-A2 *BJ04 *		
L020		
+ CHECK END		
	X2Z26	GX200-L020
1T-A2 *BJ06 *		
L021		
+ CE ALERT		
	X2Z32	GX200-L021
1T-A2 *BG12 *		
L022		
+ NORMAL END		
	X2Z25	GX200-L022
1T-A2 *BG05 *		
L023		
+ SELECTED ALERT		
	X2Z30	GX200-L023
1T-A2 *BG10 *		

LINE/SIGNAL	PIN	SHEET/LINE
L024		
+ INDEX		
	X2Z29	GX200-L024
1T-A2 *BJ09 *		
L025		
+ ERROR ALERT (IN)		
	X2Z28	GX200-L025
1T-A2 *BG08 *		
L026		
+ SYNC IN		
	X2X33	GX200-L026
1T-A2 *AJ13 *		
L027		
+ LD EXT REG CLK D		
	X2M10	GX200-L027
	(Q2U06)	GQ200-R015
	N2B02	GN200-L010
	R2M08	GR200-L011
	V2M10	GV200-L019
L028		
- ALU OUT BIT 0		
	X2D13	GX200-L028
	(Q2B04)	GQ200-R008
	C2B02	GC200-L022
	F2D02	GF200-L019
	H2P12	GH220-L017
	J2U07	GJ200-L041
	N2B07	GN200-L012
	R2M02	GR200-L024
	V2D13	GV200-L007
L028		
- ALU OUT BIT 1		
	X2B05	GX200-L028
	(Q2D05)	GQ200-R008
	C2D02	GC200-L023
	F2D04	GF200-L020
	H2P13	GH220-L018
	J2U09	GJ200-L041
	N2D05	GN200-L013
	R2G12	GR200-L024
	V2B05	GV200-L008
L028		
- ALU OUT BIT 2		
	X2D10	GX200-L028
	(Q2D06)	GQ200-R008
	F2D05	GF200-L021
	H2U02	GH220-L019
	J2P12	GJ200-L041
	N2D09	GN200-L014
	R2G13	GR200-L024
	V2D10	GV200-L009

LINE/SIGNAL	PIN	SHEET/LINE
L028		
- ALU OUT BIT 3		
	X2J02	GX200-L028
	(Q2B05)	GQ200-R008
	F2D06	GF200-L022
	H2U05	GH220-L020
	J2U02	GJ200-L041
	N2D10	GN200-L015
	R2M04	GR200-L024
	V2J02	GV200-L010
L028		
- ALU OUT BIT 4		
	X2B08	GX200-L028
	(Q2D04)	GQ200-R008
	F2D07	GF200-L023
	H2U06	GH220-L021
	J2B12	GJ200-L041
	N2D06	GN200-L016
	R2M03	GR200-L024
	V2B08	GV200-L011
L028		
- ALU OUT BIT 5		
	X2B03	GX200-L028
	(Q2B03)	GQ200-R008
	F2B07	GF200-L024
	H2U07	GH220-L022
	J2D06	GJ200-L041
	N2B09	GN200-L017
	R2P04	GR200-L024
	V2B03	GV200-L012
L028		
- ALU OUT BIT 6		
	X2D05	GX200-L028
	(Q2D02)	GQ200-R008
	F2B08	GF200-L025
	H2U09	GH220-L023
	N2G02	GN200-L018
	R2P02	GR200-L024
	V2D05	GV200-L013
L029		
+ MNT CLOCK T2		
	X2U11	GX200-L029
	(P2P12)	GP200-R023
	R2J06	GR200-L048
L030		
+ MNT CLOCK T4		
	X2U12	GX200-L030
	(P2S04)	GP200-R024
	R2G08	GR200-L048
L031		
+ DDC CLOCK T0		
	X2D04	GX200-L031
	(P2S09)	GP200-R018
	N2U07	GN200-L027
	X2D04	GX200-L016
L032		
+ DDC CLOCK T1		
	X2U13	GX200-L032
	(P2G07)	GP200-R044
	N2G07	GN200-L028

LINE/SIGNAL	PIN	SHEET/LINE
L033		
+ DDC CLOCK T2		
	X2G07	GX200-L033
	(P2S07)	GP200-R019
	N2S07	GN200-L029
	V2G07	GV200-L030
L034		
+ DDC CLOCK T3		
	X2S04	GX200-L034
	(P2B10)	GP200-R045
	N2B10	GN200-L030
	V2U04	GV200-L016
L035		
+ DDC CLOCK T4		
	X2U07	GX200-L035
	(P2M12)	GP200-R020
	N2M12	GN200-L031
L036		
+ DDC CLOCK T5		
	X2S05	GX200-L036
	(P2J04)	GP200-R046
	N2J04	GN200-L032
L037		
+ DDC CLOCK T6		
	X2U09	GX200-L037
	(P2U10)	GP200-R021
	N2U09	GN200-L033
	V2U09	GV200-L029
L038		
+ DDC CLOCK T7		
	X2S02	GX200-L038
	(P2G08)	GP200-R047
	N2G08	GN200-L034
	V2U02	GV200-L017
L039		
- CDN SD2 ND/DR GATED DEVICE		
	X2U05	GX200-L039
	(N2S05)	GN200-R044
	H2B03	GH220-L009
L040		
- DATA READY LATCHED		
	X2S03	GX200-L040
	(H2B05)	GH220-R006
L041		
+ DDC COUNT = 0 OR 1		
	X2P13	GX200-L041
	(V2P13)	GV200-R015
L042		
+ DDC COUNT = ZERO		
	X2J10	GX200-L042
	(V2P12)	GV200-R013
L043		
- RECYCLE/COUNT >7		
	X2P11	GX200-L043
	(V2P11)	GV200-R016

LINE/SIGNAL	PIN	SHEET/LINE
L044		
+ GATE DTG REG		
	X2P09	GX200-L044
	(V2P09)	GV200-R021
	J2P06	GJ200-L071
L045		
+ GATE DTI REG/PAD COUNTER		
	X2M07	GX200-L045
	(V2M07)	GV200-R022
	K2G05	GK200-L031
	X2M07	GX200-L015
L046		
+ GATE DBI REG		
	X2P06	GX200-L046
	(V2P06)	GV200-R019
	X2P06	GX200-L004
L047		
+ GATE DTO REG		
	X2M08	GX200-L047
	(V2M08)	GV200-R023
L048		
+ GATE DBO REG		
	X2P07	GX200-L048
	(V2P07)	GV200-R020
L049		
+ STOP DDC		
	X2U02	GX200-L049
	(P2J13)	GP200-R039
	R2U11	GR200-L033
L050		
- DEV DXR BUS BIT 0		
	X2B12	GX200-L050
	(K2G13)	GK200-R006
	(N2G09)	GN200-R030
	(X2J07)	GX200-R003
L050		
- DEV DXR BUS BIT 1		
	X2D07	GX200-L050
	(K2F05)	GK200-R006
	(N2G11)	GN200-R031
	(X2J04)	GX200-R004
L050		
- DEV DXR BUS BIT 2		
	X2D11	GX200-L050
	(K2F02)	GK200-R006
	(N2G10)	GN200-R032
	(X2G02)	GX200-R005
L050		
- DEV DXR BUS BIT 3		
	X2B13	GX200-L050
	(K2J12)	GK200-R006
	(N2J09)	GN200-R033
	(X2G05)	GX200-R006

LINE/SIGNAL	PIN	SHEET/LINE
L050		
- DEV DXR BUS BIT 4		
	X2B10	GX200-L050
	(K2J13)	GK200-R006
	(N2J13)	GN200-R034
	(X2G09)	GX200-R007
L050		
- DEV DXR BUS BIT 5		
	X2B07	GX200-L050
	(K2J10)	GK200-R006
	(N2P09)	GN200-R035
	(X2G08)	GX200-R008
L050		
- DEV DXR BUS BIT 6		
	X2D09	GX200-L050
	(K2M04)	GK200-R006
	(N2G13)	GN200-R036
	(X2G04)	GX200-R009
L050		
- DEV DXR BUS BIT 7		
	X2D02	GX200-L050
	(K2M03)	GK200-R006
	(N2M08)	GN200-R037
	(X2G03)	GX200-R010
L050		
- DEV DXR BUS BIT P		
	X2B04	GX200-L050
	(K2P04)	GK200-R006
	(N2M09)	GN200-R038
	(X2J05)	GX200-R011
L051		
+ SPECIAL RESET		
	X2P10	GX200-L051
	(R2B12)	GR200-R027
	D2G09	GD200-L032
	E2G09	GE200-L032
	C2G10	GC200-L015
	F2M03	GF200-L055
	P2J05	GP200-L017
L052		
- CDN SD2 ALU OUT BIT 7 (CH/DEV)		
	X2D06	GX200-L052
	(N2B11)	GN200-R008
	H2U10	GH220-L024
L053		
- CDN SD2 ALU OUT BIT P (CH/DEV)		
	X2B02	GX200-L053
	(N2D11)	GN200-R009
	H2U11	GH220-L025
R003		
- DEV DXR BUS BIT 0		
	(X2J07)	GX200-R003
	(K2G13)	GK200-R006
	(N2G09)	GN200-R030
	X2B12	GX200-L050

LINE/SIGNAL	PIN	SHEET/LINE
R004		
- DEV DXR BUS BIT 1		
	(X2J04)	GX200-R004
	(K2P05)	GK200-R006
	(N2G11)	GN200-R031
	X2D07	GX200-L050
R005		
- DEV DXR BUS BIT 2		
	(X2G02)	GX200-R005
	(K2P02)	GK200-R006
	(N2G10)	GN200-R032
	X2D11	GX200-L050
R006		
- DEV DXR BUS BIT 3		
	(X2G05)	GX200-R006
	(K2J12)	GK200-R006
	(N2J09)	GN200-R033
	X2B13	GX200-L050
R007		
- DEV DXR BUS BIT 4		
	(X2G09)	GX200-R007
	(K2J13)	GK200-R006
	(N2J13)	GN200-R034
	X2B10	GX200-L050
R008		
- DEV DXR BUS BIT 5		
	(X2G08)	GX200-R008
	(K2J10)	GK200-R006
	(N2P09)	GN200-R035
	X2B07	GX200-L050
R009		
- DEV DXR BUS BIT 6		
	(X2G04)	GX200-R009
	(K2M04)	GK200-R006
	(N2G13)	GN200-R036
	X2D09	GX200-L050
R010		
- DEV DXR BUS BIT 7		
	(X2G03)	GX200-R010
	(K2M03)	GK200-R006
	(N2M08)	GN200-R037
	X2D02	GX200-L050
R011		
- DEV DXR BUS BIT P		
	(X2J05)	GX200-R011
	(K2P04)	GK200-R006
	(N2M09)	GN200-R038
	X2B04	GX200-L050
R012		
- ALU IN2 BIT 0		
	(X2M04)	GX200-R012
	(N2S10)	GN200-R012
	(R2S10)	GR200-R016
	(R2Z10)	GR200-R017
	(V2M04)	GV200-R003
	Q2Z10	GQ200-L008

LINE/SIGNAL	PIN	SHEET/LINE
R013		
- ALU IN2 BIT 1		
	(X2J13)	GX200-R013
	(N2S09)	GN200-R013
	(R2U07)	GR200-R016
	(R2Z07)	GR200-R017
	(V2J13)	GV200-R004
	Q2Z07	GQ200-L008
R014		
- ALU IN2 BIT 2		
	(X2G12)	GX200-R014
	(N2U10)	GN200-R014
	(R2U09)	GR200-R016
	(R2Z09)	GR200-R017
	(V2G12)	GV200-R005
	Q2Z09	GQ200-L008
R015		
- ALU IN2 BIT 3		
	(X2P05)	GX200-R015
	(N2U12)	GN200-R015
	(R2U10)	GR200-R016
	(R2Z30)	GR200-R017
	(V2P05)	GV200-R006
	Q2Z30	GQ200-L008
R016		
- ALU IN2 BIT 4		
	(X2M05)	GX200-R016
	(N2U13)	GN200-R016
	(R2S13)	GR200-R016
	(R2Z33)	GR200-R017
	(V2M05)	GV200-R007
	Q2Z33	GQ200-L008
R017		
- ALU IN2 BIT 5		
	(X2M03)	GX200-R017
	(N2S13)	GN200-R017
	(R2U13)	GR200-R016
	(R2Z13)	GR200-R017
	(V2M03)	GV200-R008
	Q2Z13	GQ200-L008
R018		
- ALU IN2 BIT 6		
	(X2G10)	GX200-R018
	(N2S08)	GN200-R018
	(R2S07)	GR200-R016
	(R2Z28)	GR200-R017
	(V2G10)	GV200-R009
	Q2Z28	GQ200-L008
R019		
- ALU IN2 BIT 7		
	(X2P02)	GX200-R019
	(N2U05)	GN200-R019
	(R2U05)	GR200-R016
	(R2Z05)	GR200-R017
	(V2P02)	GV200-R010
	Q2Z05	GQ200-L008

LINE/SIGNAL	PIN	SHEET/LINE
R020		
- ALU IN2 BIT P		
	(X2P04)	GX200-R020
	(N2U02)	GN200-R020
	(R2S08)	GR200-R016
	(R2Z06)	GR200-R017
	(V2P04)	GV200-R011
	Q2Z06	GQ200-L008
R021		
- CHECK TWO		
	(X2J09)	GX200-R021
	(F2S09)	GF200-R040
	(J2U10)	GJ200-R017
	(N2D04)	GN200-R010
	R2S09	GR200-L027
R022		
+ FIRST SYNC IN 1		
	(X2J06)	GX200-R022
	J2P13	GJ200-L055
R023		
+ FIRST SYNC IN 2		
	(X2J11)	GX200-R023
	J2M09	GJ200-L057
R024		
+ SELECT HOLD		
	(X2Y31)	GX200-R024
1T-A2	*BD11	*
R025		
- TAKE DATA (DDC)		
	(X2U10)	GX200-R025
	H2D07	GH220-L007
	K2D09	GK200-L005
	N2S12	GN200-L035
R026		
- DATA TAKEN (DDC)		
	(X2S08)	GX200-R026
	K2B08	GK200-L006
	N2U06	GN200-L036
	V2B10	GV200-L003
R027		
+ DECREMENT COUNTER		
	(X2M12)	GX200-R027
	V2M12	GV200-L005
R028		
+ DDC END OF TRANSFER		
	(X2S07)	GX200-R028
	J2P09	GJ200-L040
R029		
+ DATA OVERRUN		
	(X2S10)	GX200-R029
	J2S09	GJ200-L043
R030		
+ SYNC IN CHECK		
	(X2S12)	GX200-R030
	J2B02	GJ200-L050

LINE/SIGNAL	PIN	SHEET/LINE
R031		
+ DDC BUS IN PC		
	(X2U06)	GX200-R031
	J2M12	GJ200-L048
R032		
- CLOCK CHECK TWO		
	(X2S09)	GX200-R032
	(D2D02)	GD200-R014
	(E2D02)	GE200-R014
	(F2B02)	GF200-R041
	(G2S05)	GG210-R023
	K2S12	GK200-L012
R033		
+ TAG GATE		
	(X2Y30)	GX200-R033
1T-A2	*BB10	*
R034		
+ SYNC OUT		
	(X2W33)	GX200-R034
1T-A2	*AD13	*
R035		
+ RECYCLE		
	(X2Y33)	GX200-R035
1T-A2	*BD13	*
R036		
+ RESPONSE		
	(X2Y32)	GX200-R036
1T-A2	*BB12	*
R037		
+ DDC BUS OUT BIT 0		
	(X2W24)	GX200-R037
1T-A2	*AD04	*
R037		
+ DDC BUS OUT BIT 1		
	(X2W25)	GX200-R037
1T-A2	*AB05	*
R037		
+ DDC BUS OUT BIT 2		
	(X2W26)	GX200-R037
1T-A2	*AD06	*
R037		
+ DDC BUS OUT BIT 3		
	(X2W28)	GX200-R037
1T-A2	*AB08	*
R037		
+ DDC BUS OUT BIT 4		
	(X2W29)	GX200-R037
1T-A2	*AD09	*
R037		
+ DDC BUS OUT BIT 5		
	(X2W30)	GX200-R037
1T-A2	*AB10	*

LINE/SIGNAL	PIN	SHEET/LINE
R037		
+ DDC BUS OUT BIT 6		
	(X2W31)	GX200-R037
1T-A2	*AD11	*
R037		
+ DDC BUS OUT BIT 7		
	(X2W32)	GX200-R037
1T-A2	*AB12	*
R037		
+ DDC BUS OUT BIT P		
	(X2W23)	GX200-R037
1T-A2	*AB03	*
R038		
+ TAG BUS OUT BIT 0		
	(X2Y23)	GX200-R038
1T-A2	*BB03	*
R039		
+ TAG BUS OUT BIT 4		
	(X2Y25)	GX200-R039
1T-A2	*BB05	*
R040		
+ TAG BUS OUT BIT 5		
	(X2Y24)	GX200-R040
1T-A2	*BD04	*
R041		
+ TAG BUS OUT BIT 6		
	(X2Y28)	GX200-R041
1T-A2	*BB08	*
R042		
+ TAG BUS OUT BIT 7		
	(X2Y26)	GX200-R042
1T-A2	*BD06	*
R043		
+ TAG BUS OUT BIT P		
	(X2Y29)	GX200-R043
1T-A2	*BD09	*
R044		
- END OP LATCHED T4		
	(X2J12)	GX200-R044
	J2M08	GJ200-L064
R045		
+ DDC CARD CHECK		
	(X2U04)	GX200-R045
	J2D10	GJ200-L045

```
003 + LD EXT REG CLK D ----------M10
004 - ALU OUT BIT 0 ----------D13
005 - ALU OUT BIT 1 ----------B05
006 - ALU OUT BIT 2 ----------D10
007 - ALU OUT BIT 3 ----------J02
008 - ALU OUT BIT 4 ----------B03
009 - ALU OUT BIT 5 ----------B03
010 - ALU OUT BIT 6 ----------D05
011 - CDN SD2 ALU OUT BIT 7 (CH/DEV) D06
012 - CDN SD2 ALU OUT BIT P (CH/DEV) B02
013 + RESET ----------M02
014 - CHECK RESET ----------S13
015 + MNT CLOCK T2 ----------U11
016 + MNT CLOCK T4 ----------U12
017 + DDC CLOCK T0 ----------D04
018 + DDC CLOCK T1 ----------U13
019 + DDC CLOCK T2 ----------G07
020 + DDC CLOCK T3 ----------S04
021 + DDC CLOCK T4 ----------U07
022 + DDC CLOCK T5 ----------S05
023 + DDC CLOCK T6 ----------U09
024 + DDC CLOCK T7 ----------S02
025 - CDN SD2 ND/DR GATED DEVICE --- U05
026 - DATA READY LATCHED ----------S03
027 + DDC COUNT = 0 OR 1 ----------P13
028 + DDC COUNT = ZERO ----------J10
029 - STOP DDC CNT=8 ----------M13
030 + GATE DTG REG ----------P09
031 + GATE DTI REG/PAD COUNTER ------M07
032 + GATE DBI REG ----------P06
033 + GATE DTO REG ----------M08
034 + GATE DBO REG ----------P07
035 + STOP DDC ----------U02
036 - DEV DXR BUS BIT 0 ----------B12
037 - DEV DXR BUS BIT 1 ----------D07
038 - DEV DXR BUS BIT 2 ----------D11
039 - DEV DXR BUS BIT 3 ----------B13
040 - DEV DXR BUS BIT 4 ----------B10
041 - DEV DXR BUS BIT 5 ----------B07
042 - DEV DXR BUS BIT 6 ----------D09
043 - DEV DXR BUS BIT 7 ----------D02
044 - DEV DXR BUS BIT P ----------B04
045 + SPECIAL RESET ----------P10
046 + GATE DBI REG ---------- P06
047 + RESET ---------- M02
048 + GATE DTI REG/PAD COUNTER ----- M07
049 + DDC CLOCK T0 ---------- D04
050 - RECYCLE/COUNT >7 ---------- P11
```

DDCV CARD

OVERVIEW

The DDCV (director-to-device controller) card is one of two cards comprising the Control Interface for devices attached to a 3880. This card will be used to communicate with 3380 device types through the Bi-Directional Interface.

PRIMARY FUNCTIONS

- The DBIL (device bus in low) register contains three types of information from the device: Command Response Data, the low order byte of Normal Data read under the control of Automatic Data Transfer hardware, and device status data (i.e., Ready or Busy) output from this register available on two sets of bus lines: DXR In and ALU In 2.
- The DBIH (device bus in high) register contains only the high order byte of normal data read under the control of automatic data transfer hardware. Output of this register is available on the DXR In bus.
- The DTI (device tag in) register contains tag information from the device tag in lines.
- The DBOH (device bus out high) contains three types of information to the device: Control, Address, and Data High Order Byte).
- DBOL (device bus out low) contains only the data (low order byte) to the device.
- The DTO (device tag out) register contains tag information to the device.
- The DTG (device tag gate) register contains control bits used to exercise the DDC for Data Transfer.
- Data transmission control logic provides control of the following operations: End of Data Transfer, Automatic Data Transfer, Gating of the Device Bus Out Drivers, and Error Recognition.

PRIMARY COMPONENTS

- DBIH and DBIL registers
- DTI register
- DBOL and DBOH registers
- DTO register
- DTG register
- Data transmission control logic

ERROR CHECKING

- Both DBOH and DBOL are parity checked. Out of parity condition sets DDC card check.

```
U10 - TAKE DATA (DDC) ---------- 003
S08 - DATA TAKEN (DDC) ---------- 004
M12 + DECREMENT COUNTER ---------- 005
S07 + DDC END OF TRANSFER ---------- 006
S10 + DATA OVERRUN ---------- 007
S12 + SYNC IN CHECK ---------- 008
U06 + DDC BUS IN PC ---------- 009
S09 - CLOCK CHECK TWO ---------- 010
= * + DDC BUS 1 BIT (0-7,P) ======== 011
= * - DDC BUS 1 BIT (0-7,P) ======== 012
Y28 + DDC BUS 0 BIT 0 ---------- 013
Y29 + DDC BUS 0 BIT 1 ---------- 014
Y30 + DDC BUS 0 BIT 2 ---------- 015
Y31 + DDC BUS 0 BIT 3 ---------- 016
Y32 + DDC BUS 0 BIT 4 ---------- 017
Y33 + DDC BUS 0 BIT 5 ---------- 018
Z22 + DDC BUS 0 BIT 6 ---------- 019
Z23 + DDC BUS 0 BIT 7 ---------- 020
Z24 + DDC BUS 0 BIT P ---------- 021
Y08 - DDC BUS 0 BIT 0 ---------- 022
Y09 - DDC BUS 0 BIT 1 ---------- 023
Y10 - DDC BUS 0 BIT 2 ---------- 024
Y11 - DDC BUS 0 BIT 3 ---------- 025
Y12 - DDC BUS 0 BIT 4 ---------- 026
Y13 - DDC BUS 0 BIT 5 ---------- 027
Z02 - DDC BUS 0 BIT 6 ---------- 028
Z03 - DDC BUS 0 BIT 7 ---------- 029
Z04 - DDC BUS 0 BIT P ---------- 030
Y22 + TAG OUT BIT 0 ---------- 031
Y02 - TAG OUT BIT 0 ---------- 032
Y23 + TAG OUT BIT 1 ---------- 033
Y03 - TAG OUT BIT 1 ---------- 034
Y24 + TAG OUT BIT 2 ---------- 035
Y04 - TAG OUT BIT 2 ---------- 036
U04 + DDC CARD CHECK ---------- 037
J07 - DEV DXR BUS BIT 0 ---------- 038
J04 - DEV DXR BUS BIT 1 ---------- 039
G02 - DEV DXR BUS BIT 2 ---------- 040
G05 - DEV DXR BUS BIT 3 ---------- 041
G09 - DEV DXR BUS BIT 4 ---------- 042
G08 - DEV DXR BUS BIT 5 ---------- 043
G04 - DEV DXR BUS BIT 6 ---------- 044
G03 - DEV DXR BUS BIT 7 ---------- 045
J05 - DEV DXR BUS BIT P ---------- 046
M04 - ALU IN2 BIT 0 ---------- 047
J13 - ALU IN2 BIT 1 ---------- 048
G12 - ALU IN2 BIT 2 ---------- 049
P05 - ALU IN2 BIT 3 ---------- 050
M05 - ALU IN2 BIT 4 ---------- 051
M03 - ALU IN2 BIT 5 ---------- 052
G10 - ALU IN2 BIT 6 ---------- 053
P02 - ALU IN2 BIT 7 ---------- 054
P04 - ALU IN2 BIT P ---------- 055
J09 - CHECK TWO ---------- 056
J06 + FIRST SYNC IN 1 ---------- 057
J11 + FIRST SYNC IN 2 ---------- 058
J12 - END OP LATCHED T4 ---------- 059
Y25 + TAG IN BIT 0 ---------- 060
Y05 - TAG IN BIT 0 ---------- 061
Y26 + TAG IN BIT 1 ---------- 062
Y06 - TAG IN BIT 1 ---------- 063
Y27 + CONNECTION CHECK ALERT ------- 064
Y07 - CONNECTION CHECK ALERT ------- 065
```

LINE/SIGNAL	PIN	SHEET/LINE
L003		
+ LD EXT REG CLK D		
	X2M10	GX210-L003
	(Q2U06)	GQ200-R015
	N2B02	GN200-L010
	R2M08	GR200-L011
	V2M10	GV200-L019
L004		
- ALU OUT BIT 0		
	X2D13	GX210-L004
	(Q2B04)	GQ200-R008
	C2B02	GC200-L022
	F2D02	GF200-L019
	H2P12	GH220-L017
	J2U07	GJ200-L041
	N2B07	GN200-L012
	R2M02	GR200-L024
	V2D13	GV200-L007
L005		
- ALU OUT BIT 1		
	X2B05	GX210-L005
	(Q2D05)	GQ200-R008
	C2D02	GC200-L023
	F2D04	GF200-L020
	H2P13	GH220-L018
	J2U09	GJ200-L041
	N2D05	GN200-L013
	R2G12	GR200-L024
	V2B05	GV200-L008
L006		
- ALU OUT BIT 2		
	X2D10	GX210-L006
	(Q2D06)	GQ200-R008
	E2B05	GE210-L021
	F2D05	GF200-L021
	H2U02	GH220-L019
	J2P12	GJ200-L041
	N2D09	GN200-L014
	R2G13	GR200-L024
	V2D10	GV200-L009
L007		
- ALU OUT BIT 3		
	X2J02	GX210-L007
	(Q2B05)	GQ200-R008
	E2B07	GE210-L022
	F2D06	GF200-L022
	H2U05	GH220-L020
	J2U02	GJ200-L041
	N2D10	GN200-L015
	R2M04	GR200-L024
	V2J02	GV200-L010
L008		
- ALU OUT BIT 4		
	X2B08	GX210-L008
	(Q2D04)	GQ200-R008
	F2D07	GF200-L023
	H2U06	GH220-L021
	J2B12	GJ200-L041
	N2D06	GN200-L016
	R2M03	GR200-L024
	V2B08	GV200-L011

LINE/SIGNAL	PIN	SHEET/LINE
L009		
- ALU OUT BIT 5		
	X2B03	GX210-L009
	(Q2B03)	GQ200-R008
	F2B07	GF200-L024
	H2U07	GH220-L022
	J2D06	GJ200-L041
	N2B09	GN200-L017
	R2P04	GR200-L024
	V2B03	GV200-L012
L010		
- ALU OUT BIT 6		
	X2D05	GX210-L010
	(Q2D02)	GQ200-R008
	F2B08	GF200-L025
	H2U09	GH220-L023
	N2G02	GN200-L018
	R2P02	GR200-L024
	V2D05	GV200-L013
L011		
- CDN SD2 ALU OUT BIT 7 (CH/DEV)		
	X2D06	GX210-L011
	(N2B11)	GN200-R008
	H2U10	GH220-L024
L012		
- CDN SD2 ALU OUT BIT P (CH/DEV)		
	X2B02	GX210-L012
	(N2D11)	GN200-R009
	H2U11	GH220-L025
L013		
+ RESET		
	X2M02	GX210-L013
	(R2B07)	GR200-R022
	C2G09	GC200-L016
	D2M05	GD210-L038
	E2M05	GE210-L027
	F2M02	GF200-L054
	G2J13	GG210-L017
	H2S03	GH220-L060
	M2P11	GM200-L011
	P2J09	GP200-L022
	V2G13	GV200-L006
	X2M02	GX210-L047
L014		
- CHECK RESET		
	X2S13	GX210-L014
	(H2Y10)	GH220-R063
	(R2J05)	GR200-R028
	C2J10	GC200-L012
	E2J06	GE210-L012
	F2M04	GF200-L056
	G2B13	GG210-L015
	H2U12	GH220-L061
	J2Y10	GJ200-L024
	K2Y10	GK200-L023
	L2D02	GL200-L003
	N2M13	GN200-L024
	V2G08	GV200-L033

LINE/SIGNAL	PIN	SHEET/LINE
L015		
+ MNT CLOCK T2		
	X2U11	GX210-L015
	(P2P12)	GP200-R023
	R2J06	GR200-L048
L016		
+ MNT CLOCK T4		
	X2U12	GX210-L016
	(P2S04)	GP200-R024
	R2G08	GR200-L048
L017		
+ DDC CLOCK T0		
	X2D04	GX210-L017
	(P2S09)	GP200-R018
	N2U07	GN200-L027
	X2D04	GX210-L049
L018		
+ DDC CLOCK T1		
	X2U13	GX210-L018
	(P2G07)	GP200-R044
	N2G07	GN200-L028
L019		
+ DDC CLOCK T2		
	X2G07	GX210-L019
	(P2S07)	GP200-R019
	N2S07	GN200-L029
	V2G07	GV200-L030
L020		
+ DDC CLOCK T3		
	X2S04	GX210-L020
	(P2B10)	GP200-R045
	N2B10	GN200-L030
	V2U04	GV200-L016
L021		
+ DDC CLOCK T4		
	X2U07	GX210-L021
	(P2M12)	GP200-R020
	N2M12	GN200-L031
L022		
+ DDC CLOCK T5		
	X2S05	GX210-L022
	(P2J04)	GP200-R046
	N2J04	GN200-L032
L023		
+ DDC CLOCK T6		
	X2U09	GX210-L023
	(P2U10)	GP200-R021
	N2U09	GN200-L033
	V2U09	GV200-L029
L024		
+ DDC CLOCK T7		
	X2S02	GX210-L024
	(P2G08)	GP200-R047
	N2G08	GN200-L034
	V2U02	GV200-L017

LINE/SIGNAL	PIN	SHEET/LINE
L025		
- CDN SD2 ND/DR GATED DEVICE		
	X2U05	GX210-L025
	(N2S05)	GN200-R044
	H2B03	GH220-L009
L026		
- DATA READY LATCHED		
	X2S03	GX210-L026
	(H2B05)	GH220-R006
L027		
+ DDC COUNT = 0 OR 1		
	X2P13	GX210-L027
	(V2P13)	GV200-R015
L028		
+ DDC COUNT = ZERO		
	X2J10	GX210-L028
	(V2P12)	GV200-R013
L029		
- STOP DDC CNT=8		
	X2M13	GX210-L029
	(V2M13)	GV200-R018
L030		
+ GATE DTG REG		
	X2P09	GX210-L030
	(V2P09)	GV200-R021
	J2P06	GJ200-L071
L031		
+ GATE DTI REG/PAD COUNTER		
	X2M07	GX210-L031
	(V2M07)	GV200-R022
	K2G05	GK200-L031
	X2M07	GX210-L048
L032		
+ GATE DBI REG		
	X2F06	GX210-L032
	(V2P06)	GV200-R019
	X2F06	GX210-L046
L033		
+ GATE DTO REG		
	X2M08	GX210-L033
	(V2M08)	GV200-R023
L034		
+ GATE DBO REG		
	X2P07	GX210-L034
	(V2P07)	GV200-R020
L035		
+ STOP DDC		
	X2U02	GX210-L035
	(P2J13)	GP200-R039
	R2U11	GR200-L033
L036		
- DEV DXR BUS BIT 0		
	X2B12	GX210-L036
	(K2G13)	GK200-R006
	(N2G09)	GN200-R030
	(X2J07)	GX210-R038

LINE/SIGNAL	PIN	SHEET/LINE
L037		
- DEV DXR BUS BIT 1		
	X2D07	GX210-L037
	(K2P05)	GK200-R006
	(N2G11)	GN200-R031
	(X2J04)	GX210-R039
L038		
- DEV DXR BUS BIT 2		
	X2D11	GX210-L038
	(K2P02)	GK200-R006
	(N2G10)	GN200-R032
	(X2G02)	GX210-R040
L039		
- DEV DXR BUS BIT 3		
	X2B13	GX210-L039
	(K2J12)	GK200-R006
	(N2J09)	GN200-R033
	(X2G05)	GX210-R041
L040		
- DEV DXR BUS BIT 4		
	X2B10	GX210-L040
	(K2J13)	GK200-R006
	(N2J13)	GN200-R034
	(X2G09)	GX210-R042
L041		
- DEV DXR BUS BIT 5		
	X2B07	GX210-L041
	(K2J10)	GK200-R006
	(N2P09)	GN200-R035
	(X2G08)	GX210-R043
L042		
- DEV DXR BUS BIT 6		
	X2D09	GX210-L042
	(K2M04)	GK200-R006
	(N2G13)	GN200-R036
	(X2G04)	GX210-R044
L043		
- DEV DXR BUS BIT 7		
	X2D02	GX210-L043
	(K2M03)	GK200-R006
	(N2M08)	GN200-R037
	(X2G03)	GX210-R045
L044		
- DEV DXR BUS BIT P		
	X2B04	GX210-L044
	(K2P04)	GK200-R006
	(N2M09)	GN200-R038
	(X2J05)	GX210-R046
L045		
+ SPECIAL RESET		
	X2P10	GX210-L045
	(R2B12)	GR200-R027
	C2G10	GC200-L015
	E2G09	GE210-L015
	F2M03	GF200-L055
	P2J05	GP200-L017

LINE/SIGNAL	PIN	SHEET/LINE
L046		
+ GATE DBI REG		
	X2P06	GX210-L046
	(V2P06)	GV200-R019
	X2P06	GX210-L032
L047		
+ RESET		
	X2M02	GX210-L047
	(R2B07)	GR200-R022
	C2G09	GC200-L016
	D2M05	GD210-L038
	E2M05	GE210-L027
	F2M02	GF200-L054
	G2J13	GG210-L017
	H2S03	GH220-L060
	M2P11	GM200-L011
	P2J09	GP200-L022
	V2G13	GV200-L006
	X2M02	GX210-L013
L048		
+ GATE DTI REG/PAD COUNTER		
	X2M07	GX210-L048
	(V2M07)	GV200-R022
	K2G05	GK200-L031
	X2M07	GX210-L031
L049		
+ DDC CLOCK T0		
	X2D04	GX210-L049
	(P2S09)	GP200-R018
	N2U07	GN200-L027
	X2D04	GX210-L017
L050		
- RECYCLE/COUNT >7		
	X2P11	GX210-L050
	(V2P11)	GV200-R016
R003		
- TAKE DATA (DDC)		
	(X2U10)	GX210-R003
	H2D07	GH220-L007
	K2D09	GK200-L005
	N2S12	GN200-L035
R004		
- DATA TAKEN (DDC)		
	(X2S08)	GX210-R004
	K2B08	GK200-L006
	N2U06	GN200-L036
	V2B10	GV200-L003
R005		
+ DECREMENT COUNTER		
	(X2M12)	GX210-R005
	V2M12	GV200-L005
R006		
+ DDC END OF TRANSFER		
	(X2S07)	GX210-R006
	J2P09	GJ200-L040

LINE/SIGNAL	PIN	SHEET/LINE
R007		
+ DATA OVERRUN		
	(X2S10)	GX210-R007
	J2S09	GJ200-L043
R008		
+ SYNC IN CHECK		
	(X2S12)	GX210-R008
	J2B02	GJ200-L050
R009		
+ DDC BUS IN PC		
	(X2U06)	GX210-R009
	J2M12	GJ200-L048
R010		
- CLOCK CHECK TWO		
	(X2S09)	GX210-R010
	(F2B02)	GF200-R041
	(G2S05)	GG210-R023
	K2S12	GK200-L012
R011		
+ DDC BUS 1 BIT 0		
	(X2Z25)	GX210-R011
1T-A2 *BG05 *		
R011		
+ DDC BUS 1 BIT 1		
	(X2Z26)	GX210-R011
1T-A2 *BJ06 *		
R011		
+ DDC BUS 1 BIT 2		
	(X2Z27)	GX210-R011
1T-A2 *BG06 *		
R011		
+ DDC BUS 1 BIT 3		
	(X2Z28)	GX210-R011
1T-A2 *BG08 *		
R011		
+ DDC BUS 1 BIT 4		
	(X2Z29)	GX210-R011
1T-A2 *BJ09 *		
R011		
+ DDC BUS 1 BIT 5		
	(X2Z30)	GX210-R011
1T-A2 *BG10 *		
R011		
+ DDC BUS 1 BIT 6		
	(X2Z31)	GX210-R011
1T-A2 *BJ11 *		
R011		
+ DDC BUS 1 BIT 7		
	(X2Z32)	GX210-R011
1T-A2 *BG12 *		
R011		
+ DDC BUS 1 BIT P		
	(X2Z33)	GX210-R011
1T-A2 *BJ13 *		

LINE/SIGNAL	PIN	SHEET/LINE
R012		
- DDC BUS 1 BIT 0		
	(X2Z05)	GX210-R012
1T-A2 *BG04 *		
R012		
- DDC BUS 1 BIT 1		
	(X2Z06)	GX210-R012
1T-A2 *BJ07 *		
R012		
- DDC BUS 1 BIT 2		
	(X2Z07)	GX210-R012
1T-A2 *BG11 *		
R012		
- DDC BUS 1 BIT 3		
	(X2Z08)	GX210-R012
1T-A2 *BG07 *		
R012		
- DDC BUS 1 BIT 4		
	(X2Z09)	GX210-R012
1T-A2 *BJ08 *		
R012		
- DDC BUS 1 BIT 5		
	(X2Z10)	GX210-R012
1T-A2 *BG09 *		
R012		
- DDC BUS 1 BIT 6		
	(X2Z11)	GX210-R012
1T-A2 *BJ10 *		
R012		
- DDC BUS 1 BIT 7		
	(X2Z12)	GX210-R012
1T-A2 *BG13 *		
R012		
- DDC BUS 1 BIT P		
	(X2Z13)	GX210-R012
1T-A2 *BJ12 *		
R013		
+ DDC BUS 0 BIT 0		
	(X2Y28)	GX210-R013
1T-A2 *BB08 *		
R014		
+ DDC BUS 0 BIT 1		
	(X2Y29)	GX210-R014
1T-A2 *BD09 *		
R015		
+ DDC BUS 0 BIT 2		
	(X2Y30)	GX210-R015
1T-A2 *BB10 *		
R016		
+ DDC BUS 0 BIT 3		
	(X2Y31)	GX210-R016
1T-A2 *BD11 *		

LINE/SIGNAL	PIN	SHEET/LINE
R017		
+ DDC BUS 0 BIT 4		
	(X2Y32)	GX210-R017
1T-A2 *BB12 *		
R018		
+ DDC BUS 0 BIT 5		
	(X2Y33)	GX210-R018
1T-A2 *BD13 *		
R019		
+ DDC BUS 0 BIT 6		
	(X2Z22)	GX210-R019
1T-A2 *BJ02 *		
R020		
+ DDC BUS 0 BIT 7		
	(X2Z23)	GX210-R020
1T-A2 *BG03 *		
R021		
+ DDC BUS 0 BIT P		
	(X2Z24)	GX210-R021
1T-A2 *BJ04 *		
R022		
- DDC BUS 0 BIT 0		
	(X2Y08)	GX210-R022
1T-A2 *BB07 *		
R023		
- DDC BUS 0 BIT 1		
	(X2Y09)	GX210-R023
1T-A2 *BD08 *		
R024		
- DDC BUS 0 BIT 2		
	(X2Y10)	GX210-R024
1T-A2 *BB09 *		
R025		
- DDC BUS 0 BIT 3		
	(X2Y11)	GX210-R025
1T-A2 *BD10 *		
R026		
- DDC BUS 0 BIT 4		
	(X2Y12)	GX210-R026
1T-A2 *BB13 *		
R027		
- DDC BUS 0 BIT 5		
	(X2Y13)	GX210-R027
1T-A2 *BD12 *		
R028		
- DDC BUS 0 BIT 6		
	(X2Z02)	GX210-R028
1T-A2 *BJ03 *		
R029		
- DDC BUS 0 BIT 7		
	(X2Z03)	GX210-R029
1T-A2 *BG02 *		

LINE/SIGNAL	PIN	SHEET/LINE
R030		
- DDC BUS 0 BIT P		
	(X2Z04)	GX210-R030
1T-A2 *BJ05 *		
R031		
+ TAG OUT BIT 0		
	(X2Y22)	GX210-R031
1T-A2 *BD02 *		
R032		
- TAG OUT BIT 0		
	(X2Y02)	GX210-R032
1T-A2 *BD03 *		
R033		
+ TAG OUT BIT 1		
	(X2Y23)	GX210-R033
1T-A2 *BB03 *		
R034		
- TAG OUT BIT 1		
	(X2Y03)	GX210-R034
1T-A2 *BB02 *		
R035		
+ TAG OUT BIT 2		
	(X2Y24)	GX210-R035
1T-A2 *BD04 *		
R036		
- TAG OUT BIT 2		
	(X2Y04)	GX210-R036
1T-A2 *BD05 *		
R037		
+ DDC CARD CHECK		
	(X2U04)	GX210-R037
	J2D10	GJ200-L045
R038		
- DEV DXR BUS BIT 0		
	(X2J07)	GX210-R038
	(K2G13)	GK200-R006
	(N2G09)	GN200-R030
	X2B12	GX210-L036
R039		
- DEV DXR BUS BIT 1		
	(X2J04)	GX210-R039
	(K2P05)	GK200-R006
	(N2G11)	GN200-R031
	X2D07	GX210-L037
R040		
- DEV DXR BUS BIT 2		
	(X2G02)	GX210-R040
	(K2P02)	GK200-R006
	(N2G10)	GN200-R032
	X2D11	GX210-L038

LINE/SIGNAL	PIN	SHEET/LINE
R041		
- DEV DXR BUS BIT 3		
	(X2G05)	GX210-R041
	(K2J12)	GK200-R006
	(N2J09)	GN200-R033
	X2B13	GX210-L039
R042		
- DEV DXR BUS BIT 4		
	(X2G09)	GX210-R042
	(K2J13)	GK200-R006
	(N2J13)	GN200-R034
	X2B10	GX210-L040
R043		
- DEV DXR BUS BIT 5		
	(X2G08)	GX210-R043
	(K2J10)	GK200-R006
	(N2P09)	GN200-R035
	X2B07	GX210-L041
R044		
- DEV DXR BUS BIT 6		
	(X2G04)	GX210-R044
	(K2M04)	GK200-R006
	(N2G13)	GN200-R036
	X2D09	GX210-L042
R045		
- DEV DXR BUS BIT 7		
	(X2G03)	GX210-R045
	(K2M03)	GK200-R006
	(N2M08)	GN200-R037
	X2D02	GX210-L043
R046		
- DEV DXR BUS BIT P		
	(X2J05)	GX210-R046
	(K2P04)	GK200-R006
	(N2M09)	GN200-R038
	X2B04	GX210-L044
R047		
- ALU IN2 BIT 0		
	(X2M04)	GX210-R047
	(N2S10)	GN200-R012
	(R2S10)	GR200-R016
	(R2Z10)	GR200-R017
	(V2M04)	GV200-R003
	Q2Z10	GQ200-L008
R048		
- ALU IN2 BIT 1		
	(X2J13)	GX210-R048
	(N2S09)	GN200-R013
	(R2U07)	GR200-R016
	(R2Z07)	GR200-R017
	(V2J13)	GV200-R004
	Q2Z07	GQ200-L008

LINE/SIGNAL	PIN	SHEET/LINE
R049		
- ALU IN2 BIT 2		
	(X2G12)	GX210-R049
	(N2U10)	GN200-R014
	(R2U09)	GR200-R016
	(R2Z09)	GR200-R017
	(V2G12)	GV200-R005
	Q2Z09	GQ200-L008
R050		
- ALU IN2 BIT 3		
	(X2P05)	GX210-R050
	(N2U12)	GN200-R015
	(R2U10)	GR200-R016
	(R2Z30)	GR200-R017
	(V2P05)	GV200-R006
	Q2Z30	GQ200-L008
R051		
- ALU IN2 BIT 4		
	(X2M05)	GX210-R051
	(N2U13)	GN200-R016
	(R2S13)	GR200-R016
	(R2Z33)	GR200-R017
	(V2M05)	GV200-R007
	Q2Z33	GQ200-L008
R052		
- ALU IN2 BIT 5		
	(X2M03)	GX210-R052
	(N2S13)	GN200-R017
	(R2U13)	GR200-R016
	(R2Z13)	GR200-R017
	(V2M03)	GV200-R008
	Q2Z13	GQ200-L008
R053		
- ALU IN2 BIT 6		
	(X2G10)	GX210-R053
	(N2S08)	GN200-R018
	(R2S07)	GR200-R016
	(R2Z28)	GR200-R017
	(V2G10)	GV200-R009
	Q2Z28	GQ200-L008
R054		
- ALU IN2 BIT 7		
	(X2P02)	GX210-R054
	(N2U05)	GN200-R019
	(R2U05)	GR200-R016
	(R2Z05)	GR200-R017
	(V2P02)	GV200-R010
	Q2Z05	GQ200-L008
R055		
- ALU IN2 BIT P		
	(X2P04)	GX210-R055
	(N2U02)	GN200-R020
	(R2S08)	GR200-R016
	(R2Z06)	GR200-R017
	(V2P04)	GV200-R011
	Q2Z06	GQ200-L008

BI-DIRECTIONAL DEV. CONTROLLER XRL GX210

LINE/SIGNAL	PIN	SHEET/LINE
R056		
- CHECK TWO		
	(X2J09)	GX210-R056
	(F2S09)	GF200-R040
	(J2U10)	GJ200-R017
	(N2D04)	GN200-R010
	R2S09	GR200-L027
R057		
+ FIRST SYNC IN 1		
	(X2J06)	GX210-R057
	J2P13	GJ200-L055
R058		
+ FIRST SYNC IN 2		
	(X2J11)	GX210-R058
	J2M09	GJ200-L057
R059		
- END OP LATCHED T4		
	(X2J12)	GX210-R059
	J2M08	GJ200-L064
R060		
+ TAG IN BIT 0		
	(X2Y25)	GX210-R060
1T-A2	*BB05 *	
R061		
- TAG IN BIT 0		
	(X2Y05)	GX210-R061
1T-A2	*BB04 *	
R062		
+ TAG IN BIT 1		
	(X2Y26)	GX210-R062
1T-A2	*BD06 *	
R063		
- TAG IN BIT 1		
	(X2Y06)	GX210-R063
1T-A2	*BD07 *	
R064		
+ CONNECTION CHECK ALERT		
	(X2Y27)	GX210-R064
1T-A2	*BB06 *	
R065		
- CONNECTION CHECK ALERT		
	(X2Y07)	GX210-R065
1T-A2	*BB11 *	

SEQNO	PGE OF	FICHE CD	FRM	PAGEID	TYP	CARD NAME	MODEL	FEATURE	VERSION	CARD LOC
HA030	1	1	A01	AA000	BLI	N/A	N/A	N/A	N/A	N/A
HA030	3	1	A05	HC200	CRD	TCR	2X	2 CHANNEL	N-R TAILGATE	1A-B4C2
HA030	4	1	A07	HC200	XRL	TCR	2X	2 CHANNEL	N-R TAILGATE	1A-B4C2
HA030	5	1	A09	HC400	CRD	SBP	2X	2 CHANNEL	N-R TAILGATE	1A-B4C4
HA030	6	1	A11	HC400	XRL	SBP	2X	2 CHANNEL	N-R TAILGATE	1A-B4C4
HA030	7	1	A13	HC500	CRD	SBP	2X	2 CHANNEL	N-R TAILGATE	1A-B4C5
HA030	8	1	A15	HC500	XRL	SBP	2X	2 CHANNEL	N-R TAILGATE	1A-B4C5
HA030	9	1	A17	HD200	CRD	CIF	2X	2 CHANNEL	N-R TAILGATE	1A-B4D2
HA030	10	1	B01	HD200	XRL	CIF	2X	2 CHANNEL	N-R TAILGATE	1A-B4D2
HA030	12	1	B05	HE200	CRD	CIF	2X	2 CHANNEL	N-R TAILGATE	1A-B4E2
HA030	13	1	B07	HE200	XRL	CIF	2X	2 CHANNEL	N-R TAILGATE	1A-B4E2
HA030	15	1	B11	HF200	CRD	CSC	2X	2 CHANNEL	N-R TAILGATE	1A-B4F2
HA030	16	1	B13	HF200	XRL	CSC	2X	2 CHANNEL	N-R TAILGATE	1A-B4F2
HA030	18	1	B17	HG210	CRD	CDX	2X	2 CHANNEL	N-R TAILGATE	1A-B4G2
HA030	19	1	C01	HG210	XRL	CDX	2X	2 CHANNEL	N-R TAILGATE	1A-B4G2
HA030	21	1	C05	HH220	CRD	CSR	2X	2 CHANNEL	N-R TAILGATE	1A-B4H2
HA030	22	1	C07	HH220	XRL	CSR	2X	2 CHANNEL	N-R TAILGATE	1A-B4H2
HA030	25	1	C13	HJ200	CRD	DXA	2X	2 CHANNEL	N-R TAILGATE	1A-B4J2
HA030	26	1	C15	HJ200	XRL	DXA	2X	2 CHANNEL	N-R TAILGATE	1A-B4J2
HA030	29	1	D03	HK200	CRD	DXD	2X	2 CHANNEL	N-R TAILGATE	1A-B4K2
HA030	30	1	D05	HK200	XRL	DXD	2X	2 CHANNEL	N-R TAILGATE	1A-B4K2
HA030	33	1	D11	HL200	CRD	CMAA	2X	2 CHANNEL	N-R TAILGATE	1A-B4L2
HA030	34	1	D13	HL200	XRL	CMAA	2X	2 CHANNEL	N-R TAILGATE	1A-B4L2
HA030	36	1	D17	HM200	CRD	CMCA	2X	2 CHANNEL	N-R TAILGATE	1A-B4M2
HA030	37	1	E01	HM200	XRL	CMCA	2X	2 CHANNEL	N-R TAILGATE	1A-B4M2
HA030	40	1	E07	HN200	CRD	CMCD	2X	2 CHANNEL	N-R TAILGATE	1A-B4N2
HA030	41	1	E09	HN200	XRL	CMCD	2X	2 CHANNEL	N-R TAILGATE	1A-B4N2
HA030	44	2	A01	AA000	BLI	N/A	N/A	N/A	N/A	N/A
HA030	46	2	A05	HP200	CRD	CLK	2X	2 CHANNEL	N-R TAILGATE	1A-B4P2
HA030	47	2	A07	HP200	XRL	CLK	2X	2 CHANNEL	N-R TAILGATE	1A-B4P2
HA030	49	2	A11	HQ200	CRD	SDM	2X	2 CHANNEL	N-R TAILGATE	1A-B4Q2
HA030	50	2	A13	HQ200	XRL	SDM	2X	2 CHANNEL	N-R TAILGATE	1A-B4Q2
HA030	53	2	B01	HR200	CRD	MNT	2X	2 CHANNEL	N-R TAILGATE	1A-B4R2
HA030	54	2	B03	HR200	XRL	MNT	2X	2 CHANNEL	N-R TAILGATE	1A-B4R2
HA030	57	2	B09	HS200	CRD	SCS1	2X	2 CHANNEL	N-R TAILGATE	1A-B4S2
HA030	58	2	B11	HS200	XRL	SCS1	2X	2 CHANNEL	N-R TAILGATE	1A-B4S2
HA030	59	2	B13	HT200	CRD	SCS2	2X	2 CHANNEL	N-R TAILGATE	1A-B4T2
HA030	60	2	B15	HT200	XRL	SCS2	2X	2 CHANNEL	N-R TAILGATE	1A-B4T2
HA030	61	2	B17	HU200	CRD	DCSR	2X	2 CHANNEL	N-R TAILGATE	1A-B4U2
HA030	62	2	C01	HU200	XRL	DCSR	2X	2 CHANNEL	N-R TAILGATE	1A-B4U2
HA030	64	2	C05	HV200	CRD	DCT	2X	2 CHANNEL	N-R TAILGATE	1A-B4V2
HA030	65	2	C07	HV200	XRL	DCT	2X	2 CHANNEL	N-R TAILGATE	1A-B4V2
HA030	67	2	C11	HX200	CRD	DDCU	2X	2 CHANNEL	N-R TAILGATE	1A-B4X2
HA030	68	2	C13	HX200	XRL	DDCU	2X	2 CHANNEL	N-R TAILGATE	1A-B4X2

GLOSSARY OF ABBREVIATIONS USED

ABBR.	EXPLANATION
ASDM	AUXILIARY STORAGE DIRECTOR MICROCONTROLLER
BLI	BOARD LOGIC INDEX
CD	CARD (MICROFICHE)
CRD	CARD REFERENCE DIAGRAM
EW	ELECTRONIC WRAP
FRM	FRAME (MICROFICHE)
HDSCS	HIGH DENSITY STATIC CONTROL STORAGE
IR	INDIRECT REGISTER
MDM	VOLUME R30
PA	PORT ADAPTER (CMCD CARD)
SAR	STORAGE ADDRESS REGISTER
SB1	STORAGE BOARD 1
SD1	STORAGE DIRECTOR 1
SDM	STORAGE DIRECTOR MICROCONTROLLER
XRL	CROSS REFERENCE LIST
2X1	TWO CHANNEL SWITCH
4X1	TWO CHANNEL ADDITIONAL OR FOUR CHANNEL

NOTES USED ON CROSS REFERENCE PAGES

THE LEGEND ON THE CROSS REFERENCE PAGES
SHOW ( ) AS THE SOURCE(S) OF THE SIGNAL
AND * * AS THE CABLE SOCKET PINS

IN ADDITION THE FOLLOWING SPECIAL DESIGNATIONS
WILL ALSO SHOW ON THESE PAGES

ANANN FOLLOWED BY
+2-CH *ANANN* INDICATES PRENIRING FOR TWO CHANNEL ADDITIONAL

->MDM *AANNN* REFERENCES MDM PAGE

->MNT *DEV * INDICATES A LINE TO THE MAINTENANCE DEVICE

NOTE: THE LINE NAME IN THE MDM MANUAL FOR A GIVEN NET WILL IN GENERAL NOT MATCH THE LINE NAME IN THE LRM EXACTLY.

NOTE: MANY OF THE LINE NAMES ARE OF THE FORM
'+ PPS BBB LINE NAME'
WHERE 'PP' IS THE LAST TWO CHARACTERS OF THE PNAME OF THE SOURCE. 'S' IS THE BOARD POSITION ON THE SOURCE AND 'BBB' IS A BOARD WITH WHICH THE LINE IS ASSOCIATED.

SEQNO	PGE OF	FICHE CD	FRM	PAGEID	TYP	CARD NAME	MODEL	FEATURE	VERSION	CARD LOC
HA030	70	2	C17	HX210	CRD	DDCV	2X	2 CHANNEL	N-R TAILGATE	1A-B4X2
HA030	71	2	D01	HX210	XRL	DDCV	2X	2 CHANNEL	N-R TAILGATE	1A-B4X2

GLOSSARY OF ABBREVIATIONS USED

ABBR.	EXPLANATION
ASDM	AUXILIARY STORAGE DIRECTOR MICROCONTROLLER
BLI	BOARD LOGIC INDEX
CD	CARD (MICROFICHE)
CRD	CARD REFERENCE DIAGRAM
EW	ELECTRONIC WRAP
FRM	FRAME (MICROFICHE)
HDSCS	HIGH DENSITY STATIC CONTROL STORAGE
IR	INDIRECT REGISTER
MDM	VOLUME R30
PA	PORT ADAPTER (CMCD CARD)
SAR	STORAGE ADDRESS REGISTER
SB1	STORAGE BOARD 1
SD1	STORAGE DIRECTOR 1
SDM	STORAGE DIRECTOR MICROCONTROLLER
XRL	CROSS REFERENCE LIST
2X1	TWO CHANNEL SWITCH
4X1	TWO CHANNEL ADDITIONAL OR FOUR CHANNEL

NOTES USED ON CROSS REFERENCE PAGES

THE LEGEND ON THE CROSS REFERENCE PAGES
SHOW ( ) AS THE SOURCE(S) OF THE SIGNAL
AND   * * AS THE CABLE SOCKET PINS

IN ADDITION THE FOLLOWING SPECIAL DESIGNATIONS
WILL ALSO SHOW ON THESE PAGES

```
        *ANANN*          FOLLOWED BY
   +2-CH *ANANN* INDICATES PREWIRING FOR TWO CHANNEL ADDITIONAL

   ->MDM *AANNN* REFERENCES MDM PAGE

   ->MNT *DEV  * INDICATES A LINE TO THE MAINTENANCE DEVICE
```

NOTE: THE LINE NAME IN THE MDM MANUAL FOR A GIVEN NET WILL IN GENERAL NOT MATCH THE LINE NAME IN THE LRM EXACTLY.

NOTE: MANY OF THE LINE NAMES ARE OF THE FORM
'+ PPS BBB LINE NAME'
WHERE 'PP' IS THE LAST TWO CHARACTERS OF THE PNAME OF THE SOURCE. 'S' IS THE BOARD POSITION ON THE SOURCE AND 'BBB' IS A BOARD WITH WHICH THE LINE IS ASSOCIATED.

```
003 + REG 17 CTRL BIT 4 -------------G03
004 + REG 17 CTRL BIT 2 -------------G04
005 + REG 17 CTRL BIT 1 -------------J05
006 + REG 17 CTRL BIT P -------------J06
007 + LD EXT REG CLK C --------------B12
008 + EXT REG ADR 17 ----------------J02
009 + CIF/-SC/TCR CLOCK T2 ----------J04
010 + CIF/-SC/TCR CLOCK T4 ----------G05
011 + ALU OUT BITS 0:1 PARITY -------G02
012 - CHECK RESET --------------------J10
013 + SELECTIVE RESET LATCHED -------J11
014 + GATED CHECK 1 ------------------J09
015 + SPECIAL RESET ------------------G10
016 + RESET --------------------------G09
017 + CIF A SUPPRESS OUT ------------B05
018 + CIF B SUPPRESS OUT ------------B07
019 + CIF/-SC/TCR CLOCK T6 ----------J07
020 + CIF A RAW SYSTEM RESET --------D09
021 + CIF B RAW SYSTEM RESET --------D10
022 - ALU OUT BIT 0 ------------------B02
023 - ALU OUT BIT 1 ------------------D02
024 + CIF A NOTICE OF HDWR BUSY -----D06
025 + CIF B NOTICE OF HDWR BUSY -----D07
026 + CIF A SELECTED ----------------G07
027 + CIF B SELECTED ----------------G08
```

TCR CARD

OVERVIEW

The TCR card (two-channel condition register) contains four condition registers, a portion of the request in logic, logic gating and suppress out, and check circuits.

PRIMARY FUNCTIONS

- The allow disable register (CR1) contains a bit for each channel interface, when on, it does not allow the interface to be disabled with the current channel operation is complete.
- The unsupressible request in register (CR2) is used in the generation of the Request In signal.
- The control unit end register (CR3) is set when storage control ending status is presented.
- The suppressible request in register (CR6) generates and sends the Request in signal to the CSC card.
- Sends Request In and Suppress Out signals to the CIF card.

PRIMARY COMPONENTS

- Four registers described above.
- Long line drivers
- Inverters
- Register 17 decode and check

ERROR CHECKING

The majority of the TCR card logic is duplicated and compared. Any miscompare or a parity check from the decode or R17 check logic causes a TCR card check.

TWO CHANNEL REGISTER CRD HC200

```
D12 - TCR CARD CHECK ---------------- 003
B09 - REG 17 (SD1) BIT 0 ------------ 004
B10 - REG 17 (SD1) BIT 1 ------------ 005
J12 + REQUEST IN CIF A (R17-SD1) --- 006
J13 + REQUEST IN CIF B (R17-SD1) --- 007
B04 - IML IN PROGRESS --------------- 008
D13 - SUPPRESS OUT ------------------ 009
G12 + ALLOW DISABLE CIF A (R17-SD1)  010
G13 + ALLOW DISABLE CIF B (R17-SD1)  011
```


TWO CHANNEL REGISTER CRD HC200

TWO CHANNEL REGISTER XRL HC200

LINE/SIGNAL	PIN	SHEET/LINE
L003		
+ REG 17 CTRL BIT 4		
	C2G03	HC200-L003
	(F2G07)	HF200-R027
L004		
+ REG 17 CTRL BIT 2		
	C2G04	HC200-L004
	(F2G08)	HF200-R028
L005		
+ REG 17 CTRL BIT 1		
	C2J05	HC200-L005
	(F2G09)	HF200-R029
L006		
+ REG 17 CTRL BIT P		
	C2J06	HC200-L006
	(F2G10)	HF200-R030
L007		
+ LD EXT REG CLK C		
	C2B12	HC200-L007
	(Q2U10)	HQ200-R014
	F2P04	HF200-L035
	H2M13	HH220-L013
L008		
+ EXT REG ADR 17		
	C2J02	HC200-L008
	(F2M07)	HF200-R032
L009		
+ CIF/-SC/TCR CLOCK T2		
	C2J04	HC200-L009
	(P2P11)	HP200-R015
	D2P02	HD200-L043
	E2P02	HE200-L043
	F2S04	HF200-L037
L010		
+ CIF/-SC/TCR CLOCK T4		
	C2G05	HC200-L010
	(P2P09)	HP200-R016
	D2M03	HD200-L044
	E2M03	HE200-L044
	F2P06	HF200-L038
L011		
+ ALU OUT BITS 0:1 PARITY		
	C2G02	HC200-L011
	(F2D10)	HF200-R042

LINE/SIGNAL	PIN	SHEET/LINE
L012		
- CHECK RESET		
	C2J10	HC200-L012
	(H2Y10)	HH220-R063
	(R2J05)	HR200-R028
	D2J06	HD200-L034
	E2J06	HE200-L034
	F2M04	HF200-L056
	G2B13	HG210-L015
	H2U12	HH220-L061
	J2Y10	HJ200-L024
	K2Y10	HK200-L023
	L2D02	HL200-L003
	N2M13	HN200-L024
	V2G08	HV200-L033
	X2S13	HX200-L015
L013		
+ SELECTIVE RESET LATCHED		
	C2J11	HC200-L013
	(F2S02)	HF200-R016
	R2D07	HR200-L040
L014		
+ GATED CHECK 1		
	C2J09	HC200-L014
	(R2P07)	HR200-R036
	F2J06	HF200-L041
L015		
+ SPECIAL RESET		
	C2G10	HC200-L015
	(R2B12)	HR200-R027
	D2G09	HD200-L032
	E2G09	HE200-L032
	F2M03	HF200-L055
	P2J05	HP200-L017
	X2P10	HX200-L051
L016		
+ RESET		
	C2G09	HC200-L016
	(R2B07)	HR200-R022
	D2M05	HD200-L031
	E2M05	HE200-L031
	F2M02	HF200-L054
	G2J13	HG210-L017
	H2S03	HH220-L060
	M2P11	HM200-L011
	P2J09	HP200-L022
	V2G13	HV200-L006
	X2M02	HX200-L027
L017		
+ CIF A SUPPRESS OUT		
	C2B05	HC200-L017
	(D2D06)	HD200-R010
1A-B4	*B2D10*	
+2-CH	*B2D10*	

LINE/SIGNAL	PIN	SHEET/LINE
L018		
+ CIF B SUPPRESS OUT		
	C2B07	HC200-L018
	(E2D06)	HE200-R010
1A-B4	*B2B13*	
+2-CH	*B2B13*	
L019		
+ CIF/-SC/TCR CLOCK T6		
	C2J07	HC200-L019
	(P2P07)	HP200-R017
	D2P04	HD200-L045
	E2P04	HE200-L045
	F2U06	HF200-L040
L020		
+ CIF A RAW SYSTEM RESET		
	C2D09	HC200-L020
	(D2B03)	HD200-R011
1A-B4	*B2D02*	
+2-CH	*B2D02*	
L021		
+ CIF B RAW SYSTEM RESET		
	C2D10	HC200-L021
	(E2B03)	HE200-R011
1A-B4	*B2B05*	
+2-CH	*B2B05*	
L022		
- ALU OUT BIT 0		
	C2B02	HC200-L022
	(Q2B04)	HQ200-R008
	F2D02	HF200-L019
	H2P12	HH220-L017
	J2U07	HJ200-L041
	N2B07	HN200-L012
	R2M02	HR200-L024
	V2D13	HV200-L007
	X2D13	HX200-L026
L023		
- ALU OUT BIT 1		
	C2D02	HC200-L023
	(Q2D05)	HQ200-R008
	F2D04	HF200-L020
	H2P13	HH220-L018
	J2U09	HJ200-L041
	N2D05	HN200-L013
	R2G12	HR200-L024
	V2B05	HV200-L008
	X2B05	HX200-L026
L024		
+ CIF A NOTICE OF HDWR BUSY		
	C2D06	HC200-L024
	(D2D04)	HD200-R009
1A-B4	*B2D06*	
+2-CH	*B2D06*	
L025		
+ CIF B NOTICE OF HDWR BUSY		
	C2D07	HC200-L025
	(E2D04)	HE200-R009
1A-B4	*B2B09*	
+2-CH	*B2B09*	

LINE/SIGNAL	PIN	SHEET/LINE
L026		
+ CIF A SELECTED		
	C2G07	HC200-L026
	(F2J07)	HF200-R009
	D2P06	HD200-L033
	E2U09	HE200-L006
L027		
+ CIF B SELECTED		
	C2G08	HC200-L027
	(F2G12)	HF200-R010
	D2U09	HD200-L006
	E2P06	HE200-L033
R003		
- TCR CARD CHECK		
	(C2D12)	HC200-R003
	F2P02	HF200-L048
R004		
- REG 17 (SD1) BIT 0		
	(C2B09)	HC200-R004
	F2J04	HF200-L050
R005		
- REG 17 (SD1) BIT 1		
	(C2B10)	HC200-R005
	F2J05	HF200-L051
R006		
+ REQUEST IN CIF A (R17-SD1)		
	(C2J12)	HC200-R006
	D2U04	HD200-L039
1A-B4	*A5D06*	
+2-CH	*A5D06*	
R007		
+ REQUEST IN CIF B (R17-SD1)		
	(C2J13)	HC200-R007
	E2U04	HE200-L039
1A-B4	*A5B09*	
+2-CH	*A5B09*	
R008		
- IML IN PROGRESS		
	(C2B04)	HC200-R008
	R2B04	HR200-L039
R009		
- SUPPRESS OUT		
	(C2D13)	HC200-R009
	F2D13	HF200-L011
R010		
+ ALLOW DISABLE CIF A (R17-SD1)		
	(C2G12)	HC200-R010
	D2S03	HD200-L010
1A-B4	*A5D02*	
+2-CH	*A5D02*	
R011		
+ ALLOW DISABLE CIF B (R17-SD1)		
	(C2G13)	HC200-R011
	E2S03	HE200-L010
1A-B4	*A5B05*	
+2-CH	*A5B05*	

003 + SELECT SIGNAL FROM CHAN B ---- B12
004 + POWER ON RESET POWERED --------B04

SBP CARD WITH ELECTRONIC WRAP

OVERVIEW

The SBP (select out bypass) card contains the necessary relays and discrete components required to supply the following functions:

- Electrical bypass for the Select Out or Select In signals when the storage control is powered off.
- Selection priority for the storage control. The storage control can be connected to either the Select Out or Select In portion of the select loop.

PRIMARY FUNCTIONS

- The Power On Reset and the CIF Diagnostic Wrap Mode lines are ORed together to control the automatic relay pick sequence for relays K1 and S1. The Power On Reset line originates in the maintenance card. When Power On Reset is active, the line indicates that the power is off.
- The drop, pick, and allow select delays supply a 10 ms delay between relay pick and drop signals to allow for relay contact bounce.
- During a power-off sequence or during the diagnostic wrap mode, the select signal relay logically disconnects the storage control from the channel interface.

  The select signal relay closes the Select Out bypass circuit, opens the connection from the Select Out signal to the select out receiver, and grounds the interface drivers.
- Relays S1, S2, and K1-K2 pick CKT

  The Relay Pick circuits are controlled by the Power On Reset or the CIF Diagnostic Wrap Mode lines. When the power is off or the Diagnostic Wrap mode is active, the relay K1 contacts close and relay S1 contacts open. When relay K1 contacts close, the Select Out or Select In signal is bypassed. When the power is on and the Diagnostic Wrap mode is inactive, relay S1 contacts are closed and relay K1 contacts are open.

PRIMARY COMPONENTS

- Relays
- Delay logic
- Inverters

ERROR CHECKING

- None

NOTE

Board is factory pre-wired "TO TRAP SELECT OUT CONNECT".

B05 + CHAN B SELECT SIGNAL --------- 003
B10 + CHAN B SELECT SIGNAL PROPAGATE 004
B08 - SBP ENABLE GATE TO CIF B ----- 005
D13 + SBP ENABLE GATE TO CIF B ----- 006
B02 - DRIVER 1 TEST POINT B -------- 007
B07 - CIF B DIAG WRAP MODE TO SBP -- 008
B09 - DRIVER 2 TEST POINT B -------- 009
D02 - SS 1 TEST POINT B ------------ 010
D05 - SS 2 TEST POINT B ------------ 011
D06 - SS 3 TEST POINT B ------------ 012
D07 + SS 3 TEST POINT B ------------ 013
B13 - ENABLE TEST POINT B ---------- 014
D10 - SBP ALLOW SELECT TO CIF B ---- 015

LINE/SIGNAL	PIN	SHEET/LINE
L003		
+ SELECT SIGNAL FROM CHAN B		
	C4B12	HC400-L003
1A-B4 *B4D09*		
1A-B4 *E1C11*		
1A-B4 *E1B13*		
1A-B3 *E1C11*		
1A-B3 *E1B13*		
1T-A1 *HB09 *		
1T-A1 *KD09 *		
L004		
+ POWER ON RESET POWERED		
	C4B04	HC400-L004
	(R2B10)	HR200-R042
	C5B04	HC500-L004
	P2U07	HP200-L023
	U2D04	HU200-L022
R003		
+ CHAN B SELECT SIGNAL		
	(C4B05)	HC400-R003
	E2P09	HE200-L012
R004		
+ CHAN B SELECT SIGNAL PROPAGATE		
	(C4B10)	HC400-R004
	(E2M08)	HE200-R027
1A-B4 *B4D10*		
1A-B4 *E1D11*		
1A-B4 *E1C13*		
1A-B3 *E1D11*		
1A-B3 *E1C13*		
1T-A1 *HB09 *		
R005		
- SBP ENABLE GATE TO CIF B		
	(C4B08)	HC400-R005
R006		
+ SBP ENABLE GATE TO CIF B		
	(C4D13)	HC400-R006
	E2M07	HE200-L026
R007		
- DRIVER 1 TEST POINT B		
	(C4B02)	HC400-R007
R008		
- CIF B DIAG WRAP MODE TO SBP		
	(C4B07)	HC400-R008
	(E2S02)	HE200-R038
R009		
- DRIVER 2 TEST POINT B		
	(C4B09)	HC400-R009
R010		
- SS 1 TEST POINT B		
	(C4D02)	HC400-R010

LINE/SIGNAL	PIN	SHEET/LINE
R011		
- SS 2 TEST POINT B		
	(C4D05)	HC400-R011
R012		
- SS 3 TEST POINT B		
	(C4D06)	HC400-R012
R013		
+ SS 3 TEST POINT B		
	(C4D07)	HC400-R013
R014		
- ENABLE TEST POINT B		
	(C4B13)	HC400-R014
R015		
- SBP ALLOW SELECT TO CIF B		
	(C4D10)	HC400-R015
	E2S05	HE200-L011

003 + SELECT SIGNAL FROM CHAN A ---- B12
004 + POWER ON RESET POWERED --------B04

B05 + CHAN A SELECT SIGNAL --------- 003
B10 + CHAN A SELECT SIGNAL PROPAGATE 004
B08 - SBP ENABLE GATE TO CIF A ----- 005
D13 + SBP ENABLE GATE TO CIF A ----- 006
B02 - DRIVER 1 TEST POINT A -------- 007
B07 - CIF A DIAG WRAP MODE TO SBP -- 008
B09 - DRIVER 2 TEST POINT A -------- 009
D02 - SS 1 TEST POINT A ------------ 010
D05 - SS 2 TEST POINT A ------------ 011
D06 - SS 3 TEST POINT A ------------ 012
D07 + SS 3 TEST POINT A ------------ 013
B13 - ENABLE TEST POINT A ---------- 014
D10 - SBP ALLOW SELECT TO CIF A ---- 015

SBP CARD WITH ELECTRONIC WRAP

OVERVIEW

The SBP (select out bypass) card contains the necessary relays and discrete components required to supply the following functions:

- Electrical bypass for the Select Out or Select In signals when the storage control is powered off.
- Selection priority for the storage control. The storage control can be connected to either the Select Out or Select In portion of the select loop.

PRIMARY FUNCTIONS

- The Power On Reset and the CIF Diagnostic Wrap Mode lines are ORed together to control the automatic relay pick sequence for relays K1 and S1. The Power On Reset line originates in the maintenance card. When Power On Reset is active, the line indicates that the power is off.
- The drop, pick, and allow select delays supply a 10 ms delay between relay pick and drop signals to allow for relay contact bounce.
- During a power-off sequence or during the diagnostic wrap mode, the select signal relay logically disconnects the storage control from the channel interface.

  The select signal relay closes the Select Out bypass circuit, opens the connection from the Select Out signal to the select out receiver, and grounds the interface drivers.

- Relays S1, S2, and K1-K2 pick CKT

  The Relay Pick circuits are controlled by the Power On Reset or the CIF Diagnostic Wrap Mode lines. When the power is off or the Diagnostic Wrap mode is active, the relay K1 contacts close and relay S1 contacts open. When relay K1 contacts close, the Select Out or Select In signal is bypassed. When the power is on and the Diagnostic Wrap mode is inactive, relay S1 contacts are closed and relay K1 contacts are open.

PRIMARY COMPONENTS

- Relays
- Delay logic
- Inverters

ERROR CHECKING

- None

NOTE

Board is factory pre-wired "TO TRAP SELECT OUT CONNECT".

SELECT OUT BYPASS A XRL HC500

LINE/SIGNAL	PIN	SHEET/LINE
L003		
+ SELECT SIGNAL FROM CHAN A		
	C5B12	HC500-L003
1A-B4 *A4D09*		
1A-B4 *D1C11*		
1A-B4 *D1B13*		
1A-B3 *D1C11*		
1A-B3 *D1B13*		
1T-A1 *DB09 *		
1T-A1 *FD09 *		
L004		
+ POWER ON RESET POWERED		
	C5B04	HC500-L004
	(R2B10)	HR200-R042
	C4B04	HC400-L004
	P2U07	HP200-L023
	U2D04	HU200-L022
R003		
+ CHAN A SELECT SIGNAL		
	(C5B05)	HC500-R003
	D2P09	HD200-L012
R004		
+ CHAN A SELECT SIGNAL PROPAGATE		
	(C5B10)	HC500-R004
	(D2M08)	HD200-R027
1A-B4 *A4D10*		
1A-B4 *D1D11*		
1A-B4 *D1C13*		
1A-B3 *D1D11*		
1A-B3 *D1C13*		
1T-A1 *FD09 *		
R005		
- SBP ENABLE GATE TO CIF A		
	(C5B08)	HC500-R005
R006		
+ SBP ENABLE GATE TO CIF A		
	(C5D13)	HC500-R006
	D2M07	HD200-L026
R007		
- DRIVER 1 TEST POINT A		
	(C5B02)	HC500-R007
R008		
- CIF A DIAG WRAP MODE TO SBP		
	(C5B07)	HC500-R008
	(D2S02)	HD200-R038
R009		
- DRIVER 2 TEST POINT A		
	(C5B09)	HC500-R009
R010		
- SS 1 TEST POINT A		
	(C5D02)	HC500-R010

LINE/SIGNAL	PIN	SHEET/LINE
R011		
- SS 2 TEST POINT A		
	(C5D05)	HC500-R011
R012		
- SS 3 TEST POINT A		
	(C5D06)	HC500-R012
R013		
+ SS 3 TEST POINT A		
	(C5D07)	HC500-R013
R014		
- ENABLE TEST POINT A		
	(C5B13)	HC500-R014
R015		
- SBP ALLOW SELECT TO CIF A		
	(C5D10)	HC500-R015
	D2S05	HD200-L011

```
003 + SYSTEM RESET LATCH (-SC) ------X10
004 + CHAN DISCONNECT IN (-SC) ------X26
005 + FORCE PROPAGATE SEL OUT (-SC) -X07
006 + CIF B SELECTED ----------------U09
007 + FORCE DISABLE (-SC) -----------X06
008 - DISABLE CIF A (OP-PNL) SD1 ----U06
009 - ENABLE CIF A (OP-PNL) SD1 -----S07
010 + ALLOW DISABLE CIF A (R17-SD1) -S03
011 - SBP ALLOW SELECT TO CIF A -----S05
012 + CHAN A SELECT SIGNAL ----------P09
013 + CHAN A HOLD OUT ---------------S12
014 + CHAN A ADDRESS OUT ------------M10
015 + CHAN A OPERATIONAL OUT --------U13
016 + CHAN A SUPPRESS OUT -----------M12
017 + CHAN A BUS OUT BIT (0-7,P) ====*
018 + CHAN A METERING OUT -----------U05
019 + CHAN A DATA OUT ---------------S10
020 + CHAN A SERVICE OUT ------------P13
021 + CHAN A COMMAND OUT ------------P11
022 + READ OR FORCE SWITCHES (-SC) --X11
023 + SET BUS IN DESKEW REG (CDX) ---Y28
024 + CHAN ADDRESS IN (-SC) ---------X24
025 + CHAN STATUS IN (-SC) ----------X25
026 + SBP ENABLE GATE TO CIF A ------M07
027 + ALLOW RUN CHANNEL (CDX) -------Y29
028 + WRITE OR SEARCH (CDX) ---------Y26
029 + READ AND NOT EOT --------------Y22
030 - GATE LRC TO BUS OUT (CSR) -----M09
031 + RESET ------------------------M05
032 + SPECIAL RESET -----------------G09
033 + CIF A SELECTED ----------------P06
034 - CHECK RESET -------------------J06
035 + CHAN DATA IN (CDX) ------------Y25
036 + CHAN SERVICE IN (CDX) ---------Y24
037 + CHAN BUS IN (CSR) BIT (0-7,P) =*
038 + CHAN OPERATIONAL IN (-SC) -----W33
039 + REQUEST IN CIF A (R17-SD1) ----U04
040 + STORAGE DIRECTOR BUSY (-SC) ---X05
041 + LONG SELECT (-SC) -------------X09
042 + CIF/-SC/TCR CLOCK T0 ----------J10
043 + CIF/-SC/TCR CLOCK T2 ----------P02
044 + CIF/-SC/TCR CLOCK T4 ----------M03
045 + CIF/-SC/TCR CLOCK T6 ----------P04
046 + CIF STOPPED ------------------ U02
```

CIF CARD (WITH EW)

OVERVIEW

The CIF card is the physical interface between the storage director and the Channel. There is one CIF card for each channel interface of the SD.

PRIMARY FUNCTIONS

- Monitors the channel interface for channel initiated selection (select-out, address out, and address on bus out match address set in CIF Address switches).
- Monitors the SD for Control unit initiated selections (Microcontroller/SDM Request-In sequence).
- Enables/disables interface. The interface is disabled by the following conditions.
  - Switch 8 of the address switches being on
  - OP panel switch being off and 'allow disable' line activity (no pending interrupts)
  - During IML, power on reset, or diagnostics
  - Forced disable-set by a second check-1 error during check-1 error recovery
- Connects the channel bus out and channel bus in to the channel data transfer (CDX) card
- Connects the channel tags out and channel tags in buses to the channel sequence control (CSC) card
- Transfers data between the channel and the CDX card
- Transfers status and control information between the channel and the channel sequence control (CSC) card
- Informs the storage director microcontroller (SDM) card of a system reset, a halt I/O, or selective reset
- Generates the short busy sequence when the microcontroller/SDM is busy during channel initiated selection
- Generates diagnostic tag and bus conditions for electronic channel wrap

PRIMARY COMPONENTS

- Channel drivers and receivers (NPL)
- Storage director address switches
- Address comparator
- Bus out deskew register
- Longitudinal redundancy check register
- Diagnostic tag and bus registers

ERROR CHECKING

- Bus out parity-(sense byte 18, bit 5, Format 2) Checked during command out time and automatic data transfer. Address out parity will not cause a bus out error, but will dis-allow an address compare.
- Bus in parity-(sense byte 11, bit 0, channel check-1) Checked during address-in, status-in, and automatic data transfer.
- CIF card check-(sense byte 11, bit 1, channel check-1) Bit 1 indicates the CIF card detected one of the following check conditions:
  - CIF clock check
  - CIF propagate select out failure
  - System reset logic failure
  - Pending system reset logic failure
  - Channel bus in (to the channel) parity check
  - Channel bus in (from the CDX card) parity check
  - Read or Force Switches line from CSC card is active during data transfer
  - CIF selected line is active with CU selected to other CIF line active

```
W25 - HALT I/O (TO -SC) ------------ 003
W26 - CHAN BUS OUT PC (TO -SC) ----- 004
X33 - ADDRESS OUT - TRAPPED (TO -SC) 005
X13 - SELECT OUT TRAPPED (TO -SC) -- 006
U10 - CIF A DISABLED (IND) SD1 ----- 007
G03 + CIF A REQUESTS SERVICE ------- 008
D04 + CIF A NOTICE OF HDWR BUSY ---- 009
D06 + CIF A SUPPRESS OUT ----------- 010
B03 + CIF A RAW SYSTEM RESET ------- 011
W22 - SYSTEM RESET (TO -SC) -------- 012
W24 - SELECTIVE RESET (TO -SC) ----- 013
D02 - CLOCK CHECK TWO -------------- 014
W03 - CHAN BUS OUT (TO CDX) BIT 0 -- 015
W05 - CHAN BUS OUT (TO CDX) BIT 1 -- 016
W06 - CHAN BUS OUT (TO CDX) BIT 2 -- 017
W07 - CHAN BUS OUT (TO CDX) BIT 3 -- 018
W09 - CHAN BUS OUT (TO CDX) BIT 4 -- 019
W10 - CHAN BUS OUT (TO CDX) BIT 5 -- 020
W11 - CHAN BUS OUT (TO CDX) BIT 6 -- 021
W13 - CHAN BUS OUT (TO CDX) BIT 7 -- 022
W02 - CHAN BUS OUT (TO CDX) BIT P -- 023
Y33 - DATA OUT (TO CDX/-SC) -------- 024
Y32 - SERVICE OUT (TO CDX/-SC) ----- 025
Y30 - COMMAND OUT (TO CDX/-SC) ----- 026
M08 + CHAN A SELECT SIGNAL PROPAGATE 027
U11 + CHAN A DISCONNECT IN --------- 028
P05 + CHAN A STATUS IN ------------- 029
M04 + CHAN A ADDRESS IN ------------ 030
S08 + CHAN A DATA IN --------------- 031
P07 + CHAN A SERVICE IN ------------ 032
*   + CHAN A BUS IN BIT (0-7,P) ==== 033
U07 + CHAN A REQUEST IN ------------ 034
M02 + CHAN A OPERATIONAL IN -------- 035
S04 + CHAN A METERING IN ----------- 036
J13 + CHAN A MARK IN --------------- 037
S02 - CIF A DIAG WRAP MODE TO SBP -- 038
W32 - ADDRESS OUT (TO CDX/-SC) ----- 039
X22 - CIF CARD CHECK (TO -SC) ------ 040
W28 - CHAN BUS IN PC (TO -SC) ------ 041
S13 - RUN METER -------------------- 042
```

LINE/SIGNAL	PIN	SHEET/LINE
L003		
+ SYSTEM RESET LATCH (-SC)		
	D2X10	HD200-L003
	(F2X10)	HF200-R036
	E2X10	HE200-L003
L004		
+ CHAN DISCONNECT IN (-SC)		
	D2X26	HD200-L004
	(F2X26)	HF200-R005
	E2X26	HE200-L004
L005		
+ FORCE PROPAGATE SEL OUT (-SC)		
	D2X07	HD200-L005
	(F2X07)	HF200-R007
	E2X07	HE200-L005
L006		
+ CIF B SELECTED		
	D2U09	HD200-L006
	(F2G12)	HF200-R010
	E2P06	HE200-L033
	C2G08	HC200-L027
L007		
+ FORCE DISABLE (-SC)		
	D2X06	HD200-L007
	(F2X06)	HF200-R014
	E2X06	HE200-L007
L008		
- DISABLE CIF A (OP-PNL) SD1		
	D2U06	HD200-L008
1A-B4 *A1A11*		
->MDM *YA171*		
L009		
- ENABLE CIF A (OP-PNL) SD1		
	D2S07	HD200-L009
1A-B4 *A1A13*		
->MDM *YA171*		
L010		
+ ALLOW DISABLE CIF A (R17-SD1)		
	D2S03	HD200-L010
	(C2G12)	HC200-R010
1A-B4 *A5D02*		
+2-CH *A5D02*		
L011		
- SBP ALLOW SELECT TO CIF A		
	D2S05	HD200-L011
	(C5D10)	HC500-R015
L012		
+ CHAN A SELECT SIGNAL		
	D2P09	HD200-L012
	(C5B05)	HC500-R003
L013		
+ CHAN A HOLD OUT		
	D2S12	HD200-L013
1A-B4 *A5B12*		
1T-A1 *DJ12 *		
1T-A1 *FG12 *		
L014		
+ CHAN A ADDRESS OUT		
	D2M10	HD200-L014
1A-B4 *A4B10*		
1T-A1 *DD10 *		
1T-A1 *FB10 *		
L015		
+ CHAN A OPERATIONAL OUT		
	D2U13	HD200-L015
1A-B4 *A5D13*		
1T-A1 *DG13 *		
1T-A1 *FJ13 *		
L016		
+ CHAN A SUPPRESS OUT		
	D2M12	HD200-L016
1A-B4 *A4B12*		
1T-A1 *DD12 *		
1T-A1 *FB12 *		
L017		
+ CHAN A BUS OUT BIT 0		
	D2D05	HD200-L017
1A-B4 *A2D05*		
1T-A1 *CD04 *		
1T-A1 *ED04 *		
L017		
+ CHAN A BUS OUT BIT 1		
	D2B04	HD200-L017
1A-B4 *A2B04*		
1T-A1 *CD05 *		
1T-A1 *EB05 *		
L017		
+ CHAN A BUS OUT BIT 2		
	D2D07	HD200-L017
1A-B4 *A2D07*		
1T-A1 *CB06 *		
1T-A1 *ED06 *		
L017		
+ CHAN A BUS OUT BIT 3		
	D2B08	HD200-L017
1A-B4 *A2B08*		
1T-A1 *CD08 *		
1T-A1 *EB08 *		
L017		
+ CHAN A BUS OUT BIT 4		
	D2D09	HD200-L017
1A-B4 *A2D09*		
1T-A1 *CB09 *		
1T-A1 *ED09 *		
L017		
+ CHAN A BUS OUT BIT 5		
	D2B10	HD200-L017
1A-B4 *A2B10*		
1T-A1 *CD10 *		
1T-A1 *EB10 *		
L017		
+ CHAN A BUS OUT BIT 6		
	D2D11	HD200-L017
1A-B4 *A2D11*		
1T-A1 *CB11 *		
1T-A1 *ED11 *		
L017		
+ CHAN A BUS OUT BIT 7		
	D2B12	HD200-L017
1A-B4 *A2B12*		
1T-A1 *CD12 *		
1T-A1 *EB12 *		
L017		
+ CHAN A BUS OUT BIT P		
	D2B02	HD200-L017
1A-B4 *A2B02*		
1T-A1 *CD03 *		
1T-A1 *EB03 *		
L018		
+ CHAN A METERING OUT		
	D2U05	HD200-L018
1A-B4 *A5D05*		
1T-A1 *DG04 *		
1T-A1 *FJ04 *		
L019		
+ CHAN A DATA OUT		
	D2S10	HD200-L019
1A-B4 *A5B10*		
1T-A1 *DJ10 *		
1T-A1 *FG10 *		
L020		
+ CHAN A SERVICE OUT		
	D2P13	HD200-L020
1A-B4 *A4D13*		
1T-A1 *DB13 *		
1T-A1 *FD13 *		
L021		
+ CHAN A COMMAND OUT		
	D2P11	HD200-L021
1A-B4 *A4D11*		
1T-A1 *DB11 *		
1T-A1 *FD11 *		
L022		
+ READ OR FORCE SWITCHES (-SC)		
	D2X11	HD200-L022
	(F2X11)	HF200-R003
	E2X11	HE200-L022
L023		
+ SET BUS IN DESKEW REG (CDX)		
	D2Y28	HD200-L023
	(G2Y28)	HG210-R043
	E2Y28	HE200-L023
L024		
+ CHAN ADDRESS IN (-SC)		
	D2X24	HD200-L024
	(F2X24)	HF200-R026
	E2X24	HE200-L024
L025		
+ CHAN STATUS IN (-SC)		
	D2X25	HD200-L025
	(F2X25)	HF200-R013
	E2X25	HE200-L025
L026		
+ SBP ENABLE GATE TO CIF A		
	D2M07	HD200-L026
	(C5D13)	HC500-R006
L027		
+ ALLOW RUN CHANNEL (CDX)		
	D2Y29	HD200-L027
	(G2Y29)	HG210-R037
	E2Y29	HE200-L027
L028		
+ WRITE OR SEARCH (CDX)		
	D2Y26	HD200-L028
	(G2Y26)	HG210-R049
	E2Y26	HE200-L028
L029		
+ READ AND NOT EOT		
	D2Y22	HD200-L029
	(G2Z30)	HG210-R032
	(H2Z30)	HH220-R048
	E2Y22	HE200-L029
	G2Y22	HG210-L038
L030		
- GATE LRC TO BUS OUT (CSR)		
	D2M09	HD200-L030
	(H2M05)	HH220-R058
	E2M09	HE200-L030
	G2B02	HG210-L034
L031		
+ RESET		
	D2M05	HD200-L031
	(R2B07)	HR200-R022
	E2M05	HE200-L031
	C2G09	HC200-L016
	F2M02	HF200-L054
	G2J13	HG210-L017
	H2S03	HH220-L060
	M2P11	HM200-L011
	P2J09	HP200-L022
	V2G13	HV200-L006
	X2M02	HX200-L027
L032		
+ SPECIAL RESET		
	D2G09	HD200-L032
	(R2B12)	HR200-R027
	E2G09	HE200-L032
	C2G10	HC200-L015
	F2M03	HF200-L055
	P2J05	HP200-L017
	X2P10	HX200-L051
L033		
+ CIF A SELECTED		
	D2P06	HD200-L033
	(F2J07)	HF200-R009
	E2U09	HE200-L006
	C2G07	HC200-L026
L034		
- CHECK RESET		
	D2J06	HD200-L034
	(H2Y10)	HH220-R063
	(R2J05)	HR200-R028
	E2J06	HE200-L034
	C2J10	HC200-L012
	F2M04	HF200-L056
	G2B13	HG210-L015
	H2U12	HH220-L061
	J2Y10	HJ200-L024
	K2Y10	HK200-L023
	L2D02	HL200-L003
	N2M13	HN200-L024
	V2G08	HV200-L033
	X2S13	HX200-L015
L035		
+ CHAN DATA IN (CDX)		
	D2Y25	HD200-L035
	(G2Y25)	HG210-R033
	E2Y25	HE200-L035
	F2Y25	HF200-L015
L036		
+ CHAN SERVICE IN (CDX)		
	D2Y24	HD200-L036
	(G2Y24)	HG210-R034
	E2Y24	HE200-L036
	F2Y24	HF200-L014
L037		
+ CHAN BUS IN (CSR) BIT 0		
	D2Y03	HD200-L037
	(G2Z03)	HG210-R003
	(H2Z03)	HH220-R008
	E2Y03	HE200-L037
	G2Y03	HG210-L003
L037		
+ CHAN BUS IN (CSR) BIT 1		
	D2Y05	HD200-L037
	(G2Z05)	HG210-R004
	(H2Z05)	HH220-R009
	E2Y05	HE200-L037
	G2Y05	HG210-L004
L037		
+ CHAN BUS IN (CSR) BIT 2		
	D2Y06	HD200-L037
	(G2Z06)	HG210-R005
	(H2Z06)	HH220-R010
	E2Y06	HE200-L037
	G2Y06	HG210-L005
L037		
+ CHAN BUS IN (CSR) BIT 3		
	D2Y07	HD200-L037
	(G2Z07)	HG210-R006
	(H2Z07)	HH220-R011
	E2Y07	HE200-L037
	G2Y07	HG210-L006
L037		
+ CHAN BUS IN (CSR) BIT 4		
	D2Y09	HD200-L037
	(G2Z09)	HG210-R007
	(H2Z09)	HH220-R012
	E2Y09	HE200-L037
	G2Y09	HG210-L007
L037		
+ CHAN BUS IN (CSR) BIT 5		
	D2Y10	HD200-L037
	(G2Z10)	HG210-R008
	(H2Z10)	HH220-R013
	E2Y10	HE200-L037
	G2Y10	HG210-L008
L037		
+ CHAN BUS IN (CSR) BIT 6		
	D2Y11	HD200-L037
	(G2Z11)	HG210-R009
	(H2Z11)	HH220-R014
	E2Y11	HE200-L037
	G2Y11	HG210-L009
L037		
+ CHAN BUS IN (CSR) BIT 7		
	D2Y13	HD200-L037
	(G2Z13)	HG210-R010
	(H2Z13)	HH220-R015
	E2Y13	HE200-L037
	G2Y13	HG210-L010
L037		
+ CHAN BUS IN (CSR) BIT P		
	D2Y02	HD200-L037
	(G2Z02)	HG210-R011
	(H2Z02)	HH220-R016
	E2Y02	HE200-L037
	G2Y02	HG210-L011
L038		
+ CHAN OPERATIONAL IN (-SC)		
	D2W33	HD200-L038
	(F2W33)	HF200-R006
	E2W33	HE200-L038
L039		
+ REQUEST IN CIF A (R17-SD1)		
	D2U04	HD200-L039
	(C2J12)	HC200-R006
1A-B4 *A5D06*		
+2-CH *A5D06*		
L040		
+ STORAGE DIRECTOR BUSY (-SC)		
	D2X05	HD200-L040
	(F2X05)	HF200-R046
	E2X05	HE200-L040

LINE/SIGNAL	PIN	SHEET/LINE
L041		
+ LONG SELECT (-SC)		
	D2X09	HD200-L041
	(F2X09)	HF200-R045
	E2X09	HE200-L041
L042		
+ CIF/-SC/TCR CLOCK T0		
	D2J10	HD200-L042
	(P2S03)	HP200-R014
	E2J10	HE200-L042
	F2P05	HF200-L036
L043		
+ CIF/-SC/TCR CLOCK T2		
	D2P02	HD200-L043
	(P2P11)	HP200-R015
	E2P02	HE200-L043
	C2J04	HC200-L009
	F2S04	HF200-L037
L044		
+ CIF/-SC/TCR CLOCK T4		
	D2M03	HD200-L044
	(P2P09)	HP200-R016
	E2M03	HE200-L044
	C2G05	HC200-L010
	F2P06	HF200-L038
L045		
+ CIF/-SC/TCR CLOCK T6		
	D2P04	HD200-L045
	(P2P07)	HP200-R017
	E2P04	HE200-L045
	C2J07	HC200-L019
	F2U06	HF200-L040
L046		
+ CIF STOPPED		
	D2U02	HD200-L046
	(P2P05)	HP200-R042
	E2U02	HE200-L046
R003		
- HALT I/O (TO -SC)		
	(D2W25)	HD200-R003
	(E2W25)	HE200-R003
	F2W25	HF200-L016
R004		
- CHAN BUS OUT PC (TO -SC)		
	(D2W26)	HD200-R004
	(E2W26)	HE200-R004
	F2W26	HF200-L047
R005		
- ADDRESS OUT - TRAPPED (TO -SC)		
	(D2X33)	HD200-R005
	(E2X33)	HE200-R005
	F2X33	HF200-L008
R006		
- SELECT OUT TRAPPED (TO -SC)		
	(D2X13)	HD200-R006
	(E2X13)	HE200-R006
	F2X13	HF200-L010
R007		
- CIF A DISABLED (IND) SD1		
	(D2U10)	HD200-R007
1A-B4	*A1E11*	
->MDM	*YA171*	
R008		
+ CIF A REQUESTS SERVICE		
	(D2G03)	HD200-R008
	F2D11	HF200-L004
1A-B4	*B3D02*	
+2-CH	*B3D02*	
R009		
+ CIF A NOTICE OF HDWR BUSY		
	(D2D04)	HD200-R009
	C2D06	HC200-L024
1A-B4	*B2D06*	
+2-CH	*B2D06*	
R010		
+ CIF A SUPPRESS OUT		
	(D2D06)	HD200-R010
	C2B05	HC200-L017
1A-B4	*B2D10*	
+2-CH	*B2D10*	
R011		
+ CIF A RAW SYSTEM RESET		
	(D2B03)	HD200-R011
	C2D09	HC200-L020
1A-B4	*B2D02*	
+2-CH	*B2D02*	
R012		
- SYSTEM RESET (TO -SC)		
	(D2W22)	HD200-R012
	(E2W22)	HE200-R012
	F2W22	HF200-L018
R013		
- SELECTIVE RESET (TO -SC)		
	(D2W24)	HD200-R013
	(E2W24)	HE200-R013
	F2W24	HF200-L017
R014		
- CLOCK CHECK TWO		
	(D2D02)	HD200-R014
	(E2D02)	HE200-R014
	(F2B02)	HF200-R041
	(G2S05)	HG210-R023
	(X2S09)	HX200-R032
	K2S12	HK200-L012
R015		
- CHAN BUS OUT (TO CDX) BIT 0		
	(D2W03)	HD200-R015
	(E2W03)	HE200-R015
	G2W03	HG210-L018
R016		
- CHAN BUS OUT (TO CDX) BIT 1		
	(D2W05)	HD200-R016
	(E2W05)	HE200-R016
	G2W05	HG210-L019
R017		
- CHAN BUS OUT (TO CDX) BIT 2		
	(D2W06)	HD200-R017
	(E2W06)	HE200-R017
	G2W06	HG210-L020
R018		
- CHAN BUS OUT (TO CDX) BIT 3		
	(D2W07)	HD200-R018
	(E2W07)	HE200-R018
	G2W07	HG210-L021
R019		
- CHAN BUS OUT (TO CDX) BIT 4		
	(D2W09)	HD200-R019
	(E2W09)	HE200-R019
	G2W09	HG210-L022
R020		
- CHAN BUS OUT (TO CDX) BIT 5		
	(D2W10)	HD200-R020
	(E2W10)	HE200-R020
	G2W10	HG210-L023
R021		
- CHAN BUS OUT (TO CDX) BIT 6		
	(D2W11)	HD200-R021
	(E2W11)	HE200-R021
	G2W11	HG210-L024
R022		
- CHAN BUS OUT (TO CDX) BIT 7		
	(D2W13)	HD200-R022
	(E2W13)	HE200-R022
	G2W13	HG210-L025
R023		
- CHAN BUS OUT (TO CDX) BIT P		
	(D2W02)	HD200-R023
	(E2W02)	HE200-R023
	G2W02	HG210-L026
R024		
- DATA OUT (TO CDX/-SC)		
	(D2Y33)	HD200-R024
	(E2Y33)	HE200-R024
	F2Y33	HF200-L013
	G2Y33	HG210-L013
R025		
- SERVICE OUT (TO CDX/-SC)		
	(D2Y32)	HD200-R025
	(E2Y32)	HE200-R025
	F2Y32	HF200-L012
	G2Y32	HG210-L012
R026		
- COMMAND OUT (TO CDX/-SC)		
	(D2Y30)	HD200-R026
	(E2Y30)	HE200-R026
	F2Y30	HF200-L009
	G2Y30	HG210-L014
R027		
+ CHAN A SELECT SIGNAL PROPAGATE		
	(D2M08)	HD200-R027
	(C5B10)	HC500-R004
1A-B4	*A4D10*	
1A-B4	*D1D11*	
1A-B4	*D1C13*	
1A-B3	*D1D11*	
1A-B3	*D1C13*	
1T-A1	*FD09 *	
R028		
+ CHAN A DISCONNECT IN		
	(D2U11)	HD200-R028
1A-B4	*A5D11*	
1T-A1	*DG11 *	
1T-A1	*FJ11 *	
R029		
+ CHAN A STATUS IN		
	(D2P05)	HD200-R029
1A-B4	*A4D05*	
1T-A1	*DB04 *	
1T-A1	*FD04 *	
R030		
+ CHAN A ADDRESS IN		
	(D2M04)	HD200-R030
1A-B4	*A4B04*	
1T-A1	*DD05 *	
1T-A1	*FB05 *	
R031		
+ CHAN A DATA IN		
	(D2S08)	HD200-R031
1A-B4	*A5B08*	
1T-A1	*DJ08 *	
1T-A1	*FG08 *	
R032		
+ CHAN A SERVICE IN		
	(D2P07)	HD200-R032
1A-B4	*A4D07*	
1T-A1	*DB06 *	
1T-A1	*FD06 *	
R033		
+ CHAN A BUS IN BIT 0		
	(D2J05)	HD200-R033
1A-B4	*A3D05*	
1T-A1	*CG04 *	
1T-A1	*EJ04 *	
R033		
+ CHAN A BUS IN BIT 1		
	(D2G04)	HD200-R033
1A-B4	*A3B04*	
1T-A1	*CJ05 *	
1T-A1	*EG05 *	
R033		
+ CHAN A BUS IN BIT 2		
	(D2J07)	HD200-R033
1A-B4	*A3D07*	
1T-A1	*CG06 *	
1T-A1	*EJ06 *	
R033		
+ CHAN A BUS IN BIT 3		
	(D2G08)	HD200-R033
1A-B4	*A3B08*	
1T-A1	*CJ08 *	
1T-A1	*EG08 *	
R033		
+ CHAN A BUS IN BIT 4		
	(D2J09)	HD200-R033
1A-B4	*A3D09*	
1T-A1	*CG09 *	
1T-A1	*EJ09 *	
R033		
+ CHAN A BUS IN BIT 5		
	(D2G10)	HD200-R033
1A-B4	*A3B10*	
1T-A1	*CJ10 *	
1T-A1	*EG10 *	
R033		
+ CHAN A BUS IN BIT 6		
	(D2J11)	HD200-R033
1A-B4	*A3D11*	
1T-A1	*CG11 *	
1T-A1	*EJ11 *	
R033		
+ CHAN A BUS IN BIT 7		
	(D2G12)	HD200-R033
1A-B4	*A3B12*	
1T-A1	*CG12 *	
1T-A1	*EJ12 *	
R033		
+ CHAN A BUS IN BIT P		
	(D2G02)	HD200-R033
1A-B4	*A3B02*	
1T-A1	*CJ03 *	
1T-A1	*EG03 *	
R034		
+ CHAN A REQUEST IN		
	(D2U07)	HD200-R034
1A-B4	*A5D07*	
1T-A1	*DG06 *	
1T-A1	*FJ06 *	
R035		
+ CHAN A OPERATIONAL IN		
	(D2M02)	HD200-R035
1A-B4	*A4B02*	
1T-A1	*DD03 *	
1T-A1	*FB03 *	
R036		
+ CHAN A METERING IN		
	(D2S04)	HD200-R036
1A-B4	*A5B04*	
1T-A1	*DJ05 *	
1T-A1	*FG05 *	
R037		
+ CHAN A MARK IN		
	(D2J13)	HD200-R037
1A-B4	*A3D13*	
1T-A1	*CG13 *	
1T-A1	*EJ13 *	
R038		
- CIF A DIAG WRAP MODE TO SBP		
	(D2S02)	HD200-R038
	(C5B07)	HC500-R008
R039		
- ADDRESS OUT (TO CDX/-SC)		
	(D2W32)	HD200-R039
	(E2W32)	HE200-R039
	F2W32	HF200-L003
	G2W32	HG210-L037
R040		
- CIF CARD CHECK (TO -SC)		
	(D2X22)	HD200-R040
	(E2X22)	HE200-R040
	F2X22	HF200-L042
R041		
- CHAN BUS IN PC (TO -SC)		
	(D2W28)	HD200-R041
	(E2W28)	HE200-R041
	F2W28	HF200-L046
R042		
- RUN METER		
	(D2S13)	HD200-R042
	(E2S13)	HE200-R042
	(R2Z03)	HR200-R003
	Q2Z03	HQ200-L004
	R2S03	HR200-L003

```
003 + SYSTEM RESET LATCH (-SC) ------X10
004 + CHAN DISCONNECT IN (-SC) ------X26
005 + FORCE PROPAGATE SEL OUT (-SC) -X07
006 + CIF A SELECTED ----------------U09
007 + FORCE DISABLE (-SC) -----------X06
008 - DISABLE CIF B (OP-PNL) SD1 ----U06
009 - ENABLE CIF B (OP-PNL) SD1 -----S07
010 + ALLOW DISABLE CIF B (R17-SD1) -S03
011 - SBP ALLOW SELECT TO CIF B -----S05
012 + CHAN B SELECT SIGNAL ----------P09
013 + CHAN B HOLD OUT ---------------S12
014 + CHAN B ADDRESS OUT ------------M10
015 + CHAN B OPERATIONAL OUT --------U13
016 + CHAN B SUPPRESS OUT -----------M12
017 + CHAN B BUS OUT BIT (0-7,P) ====*
018 + CHAN B METERING OUT ----------U05
019 + CHAN B DATA OUT ---------------S10
020 + CHAN B SERVICE OUT ------------P13
021 + CHAN B COMMAND OUT ------------P11
022 + READ OR FORCE SWITCHES (-SC) --X11
023 + SET BUS IN DESKEW REG (CDX) ---Y28
024 + CHAN ADDRESS IN (-SC) ---------X24
025 + CHAN STATUS IN (-SC) ----------X25
026 + SBP ENABLE GATE TO CIF B ------M07
027 + ALLOW RUN CHANNEL (CDX) -------Y29
028 + WRITE OR SEARCH (CDX) ---------Y26
029 + READ AND NOT EOT --------------Y22
030 - GATE LRC TO BUS OUT (CSR) -----M09
031 + RESET -------------------------M05
032 + SPECIAL RESET -----------------G09
033 + CIF B SELECTED ----------------P06
034 - CHECK RESET -------------------J06
035 + CHAN DATA IN (CDX) ------------Y25
036 + CHAN SERVICE IN (CDX) ---------Y24
037 + CHAN BUS IN (CSR) BIT (0-7,P) =*
038 + CHAN OPERATIONAL IN (-SC) -----W33
039 + REQUEST IN CIF B (R17-SD1) ----U04
040 + STORAGE DIRECTOR BUSY (-SC) ---X05
041 + LONG SELECT (-SC) -------------X09
042 + CIF/-SC/TCR CLOCK T0 ----------J10
043 + CIF/-SC/TCR CLOCK T2 ----------P02
044 + CIF/-SC/TCR CLOCK T4 ----------M03
045 + CIF/-SC/TCR CLOCK T6 ----------P04
046 + CIF STOPPED ------------------ U02
```

CIF CARD (WITH EW)

OVERVIEW

The CIF card is the physical interface between the storage director and the Channel. There is one CIF card for each channel interface of the SD.

PRIMARY FUNCTIONS

- Monitors the channel interface for channel initiated selection (select-out, address out, and address on bus out match address set in CIF Address switches).
- Monitors the SD for Control unit initiated selections (Microcontroller/SDM Request-In sequence).
- Enables/disables interface. The interface is disabled by the following conditions.
  - Switch 8 of the address switches being on
  - OP panel switch being off and 'allow disable' line activity (no pending interrupts)
  - During IML, power on reset, or diagnostics
  - Forced disable-set by a second check-1 error during check-1 error recovery
- Connects the channel bus out and channel bus in to the channel data transfer (CDX) card
- Connects the channel tags out and channel tags in buses to the channel sequence control (CSC) card
- Transfers data between the channel and the CDX card
- Transfers status and control information between the channel and the channel sequence control (CSC) card
- Informs the storage director microcontroller (SDM) card of a system reset, a halt I/O, or selective reset
- Generates the short busy sequence when the microcontroller/SDM is busy during channel initiated selection
- Generates diagnostic tag and bus conditions for electronic channel wrap

PRIMARY COMPONENTS

- Channel drivers and receivers (NPL)
- Storage director address switches
- Address comparator
- Bus out deskew register
- Longitudinal redundancy check register
- Diagnostic tag and bus registers

ERROR CHECKING

- Bus out parity-(sense byte 18, bit 5, Format 2) Checked during command out time and automatic data transfer. Address out parity will not cause a bus out error, but will dis-allow an address compare.
- Bus in parity-(sense byte 11, bit 0, channel check-1) Checked during address-in, status-in, and automatic data transfer.
- CIF card check-(sense byte 11, bit 1, channel check-1) Bit 1 indicates the CIF card detected one of the following check conditions:
  - CIF clock check
  - CIF propagate select out failure
  - System reset logic failure
  - Pending system reset logic failure
  - Channel bus in (to the channel) parity check
  - Channel bus in (from the CDX card) parity check
  - Read or Force Switches line from CSC card is active during data transfer
  - CIF selected line is active with CU selected to other CIF line active

```
W25 - HALT I/O (TO -SC) ------------ 003
W26 - CHAN BUS OUT PC (TO -SC) ----- 004
X33 - ADDRESS OUT - TRAPPED (TO -SC) 005
X13 - SELECT OUT TRAPPED (TO -SC) -- 006
U10 - CIF B DISABLED (IND) SD1 ----- 007
G03 + CIF B REQUESTS SERVICE ------- 008
D04 + CIF B NOTICE OF HDWR BUSY ---- 009
D06 + CIF B SUPPRESS OUT ----------- 010
B03 + CIF B RAW SYSTEM RESET ------- 011
W22 - SYSTEM RESET (TO -SC) -------- 012
W24 - SELECTIVE RESET (TO -SC) ----- 013
D02 - CLOCK CHECK TWO -------------- 014
W03 - CHAN BUS OUT (TO CDX) BIT 0 -- 015
W05 - CHAN BUS OUT (TO CDX) BIT 1 -- 016
W06 - CHAN BUS OUT (TO CDX) BIT 2 -- 017
W07 - CHAN BUS OUT (TO CDX) BIT 3 -- 018
W09 - CHAN BUS OUT (TO CDX) BIT 4 -- 019
W10 - CHAN BUS OUT (TO CDX) BIT 5 -- 020
W11 - CHAN BUS OUT (TO CDX) BIT 6 -- 021
W13 - CHAN BUS OUT (TO CDX) BIT 7 -- 022
W02 - CHAN BUS OUT (TO CDX) BIT P -- 023
Y33 - DATA OUT (TO CDX/-SC) -------- 024
Y32 - SERVICE OUT (TO CDX/-SC) ----- 025
Y30 - COMMAND OUT (TO CDX/-SC) ----- 026
M08 + CHAN B SELECT SIGNAL PROPAGATE 027
U11 + CHAN B DISCONNECT IN --------- 028
P05 + CHAN B STATUS IN ------------- 029
M04 + CHAN B ADDRESS IN ------------ 030
S08 + CHAN B DATA IN --------------- 031
P07 + CHAN B SERVICE IN ------------ 032
*   + CHAN B BUS IN BIT (0-7,P) ==== 033
U07 + CHAN B REQUEST IN ------------ 034
M02 + CHAN B OPERATIONAL IN -------- 035
S04 + CHAN B METERING IN ----------- 036
J13 + CHAN B MARK IN --------------- 037
S02 - CIF B DIAG WRAP MODE TO SBP -- 038
W32 - ADDRESS OUT (TO CDX/-SC) ----- 039
X22 - CIF CARD CHECK (TO -SC) ------ 040
W28 - CHAN BUS IN PC (TO -SC) ------ 041
S13 - RUN METER -------------------- 042
```

LINE/SIGNAL	PIN	SHEET/LINE
L003		
+ SYSTEM RESET LATCH (-SC)		
	E2X10	HE200-L003
	(F2X10)	HF200-R036
	D2X10	HD200-L003
L004		
+ CHAN DISCONNECT IN (-SC)		
	E2X26	HE200-L004
	(F2X26)	HF200-R005
	D2X26	HD200-L004
L005		
+ FORCE PROPAGATE SEL OUT (-SC)		
	E2X07	HE200-L005
	(F2X07)	HF200-R007
	D2X07	HD200-L005
L006		
+ CIF A SELECTED		
	E2U09	HE200-L006
	(F2J07)	HF200-R009
	D2P06	HD200-L033
	C2G07	HC200-L026
L007		
+ FORCE DISABLE (-SC)		
	E2X06	HE200-L007
	(F2X06)	HF200-R014
	D2X06	HD200-L007
L008		
- DISABLE CIF B (OP-PNL) SD1		
	E2U06	HE200-L008
1A-B4 *A1D11*		
->MDM *YA171*		
L009		
- ENABLE CIF B (OP-PNL) SD1		
	E2S07	HE200-L009
1A-B4 *A1D13*		
->MDM *YA171*		
L010		
+ ALLOW DISABLE CIF B (R17-SD1)		
	E2S03	HE200-L010
	(C2G13)	HC200-R011
1A-B4 *A5B05*		
+2-CH *A5B05*		
L011		
- SBP ALLOW SELECT TO CIF B		
	E2S05	HE200-L011
	(C4D10)	HC400-R015
L012		
+ CHAN B SELECT SIGNAL		
	E2P09	HE200-L012
	(C4B05)	HC400-R003
L013		
+ CHAN B HOLD OUT		
	E2S12	HE200-L013
1A-B4 *B5B12*		
1T-A1 *HJ12 *		
1T-A1 *KG12 *		

LINE/SIGNAL	PIN	SHEET/LINE
L014		
+ CHAN B ADDRESS OUT		
	E2M10	HE200-L014
1A-B4 *B4B10*		
1T-A1 *HD10 *		
1T-A1 *KB10 *		
L015		
+ CHAN B OPERATIONAL OUT		
	E2U13	HE200-L015
1A-B4 *B5D13*		
1T-A1 *HG13 *		
1T-A1 *KJ13 *		
L016		
+ CHAN B SUPPRESS OUT		
	E2M12	HE200-L016
1A-B4 *B4B12*		
1T-A1 *HD12 *		
1T-A1 *KB12 *		
L017		
+ CHAN B BUS OUT BIT 0		
	E2D05	HE200-L017
1A-B4 *B2D05*		
1T-A1 *GD04 *		
1T-A1 *JD04 *		
L017		
+ CHAN B BUS OUT BIT 1		
	E2B04	HE200-L017
1A-B4 *B2B04*		
1T-A1 *GD05 *		
1T-A1 *JB05 *		
L017		
+ CHAN B BUS OUT BIT 2		
	E2D07	HE200-L017
1A-B4 *B2D07*		
1T-A1 *GB06 *		
1T-A1 *JD06 *		
L017		
+ CHAN B BUS OUT BIT 3		
	E2B08	HE200-L017
1A-B4 *B2B08*		
1T-A1 *GD08 *		
1T-A1 *JB08 *		
L017		
+ CHAN B BUS OUT BIT 4		
	E2D09	HE200-L017
1A-B4 *B2D09*		
1T-A1 *GB09 *		
1T-A1 *JD09 *		
L017		
+ CHAN B BUS OUT BIT 5		
	E2B10	HE200-L017
1A-B4 *B2B10*		
1T-A1 *GD10 *		
1T-A1 *JB10 *		

LINE/SIGNAL	PIN	SHEET/LINE
L017		
+ CHAN B BUS OUT BIT 6		
	E2D11	HE200-L017
1A-B4 *B2D11*		
1T-A1 *GB11 *		
1T-A1 *JD11 *		
L017		
+ CHAN B BUS OUT BIT 7		
	E2B12	HE200-L017
1A-B4 *B2B12*		
1T-A1 *GD12 *		
1T-A1 *JB12 *		
L017		
+ CHAN B BUS OUT BIT P		
	E2B02	HE200-L017
1A-B4 *B2B02*		
1T-A1 *GD03 *		
1T-A1 *JB03 *		
L018		
+ CHAN B METERING OUT		
	E2U05	HE200-L018
1A-B4 *B5D05*		
1T-A1 *HG04 *		
1T-A1 *KJ04 *		
L019		
+ CHAN B DATA OUT		
	E2S10	HE200-L019
1A-B4 *B5B10*		
1T-A1 *HJ10 *		
1T-A1 *KG10 *		
L020		
+ CHAN B SERVICE OUT		
	E2P13	HE200-L020
1A-B4 *B4D13*		
1T-A1 *HB13 *		
1T-A1 *KD13 *		
L021		
+ CHAN B COMMAND OUT		
	E2P11	HE200-L021
1A-B4 *B4D11*		
1T-A1 *HB11 *		
1T-A1 *KD11 *		
L022		
+ READ OR FORCE SWITCHES (-SC)		
	E2X11	HE200-L022
	(F2X11)	HF200-R003
	D2X11	HD200-L022
L023		
+ SET BUS IN DESKEW REG (CDX)		
	E2Y28	HE200-L023
	(G2Y28)	HG210-R043
	D2Y28	HD200-L023
L024		
+ CHAN ADDRESS IN (-SC)		
	E2X24	HE200-L024
	(F2X24)	HF200-R026
	D2X24	HD200-L024

LINE/SIGNAL	PIN	SHEET/LINE
L025		
+ CHAN STATUS IN (-SC)		
	E2X25	HE200-L025
	(F2X25)	HF200-R013
	D2X25	HD200-L025
L026		
+ SBP ENABLE GATE TO CIF B		
	E2M07	HE200-L026
	(C4D13)	HC400-R006
L027		
+ ALLOW RUN CHANNEL (CDX)		
	E2Y29	HE200-L027
	(G2Y29)	HG210-R037
	D2Y29	HD200-L027
L028		
+ WRITE OR SEARCH (CDX)		
	E2Y26	HE200-L028
	(G2Y26)	HG210-R049
	D2Y26	HD200-L028
L029		
+ READ AND NOT EOT		
	E2Y22	HE200-L029
	(G2Z30)	HG210-R032
	(H2Z30)	HH220-R048
	D2Y22	HD200-L029
	G2Y22	HG210-L038
L030		
- GATE LRC TO BUS OUT (CSR)		
	E2M09	HE200-L030
	(H2M05)	HH220-R058
	D2M09	HD200-L030
	G2B02	HG210-L034
L031		
+ RESET		
	E2M05	HE200-L031
	(R2B07)	HR200-R022
	D2M05	HD200-L031
	C2G09	HC200-L016
	F2M02	HF200-L054
	G2J13	HG210-L017
	H2S03	HH220-L060
	M2P11	HM200-L011
	P2J09	HP200-L022
	V2G13	HV200-L006
	X2M02	HX200-L027
L032		
+ SPECIAL RESET		
	E2G09	HE200-L032
	(R2B12)	HR200-R027
	D2G09	HD200-L032
	C2G10	HC200-L015
	F2M03	HF200-L055
	P2J05	HP200-L017
	X2P10	HX200-L051

LINE/SIGNAL	PIN	SHEET/LINE
L033		
+ CIF B SELECTED		
	E2P06	HE200-L033
	(F2G12)	HF200-R010
	D2U09	HD200-L006
	C2G08	HC200-L027
L034		
- CHECK RESET		
	E2J06	HE200-L034
	(H2Y10)	HH220-R063
	(R2J05)	HR200-R028
	D2J06	HD200-L034
	C2J10	HC200-L012
	F2M04	HF200-L056
	G2B13	HG210-L015
	H2U12	HH220-L061
	J2Y10	HJ200-L024
	K2Y10	HK200-L023
	L2D02	HL200-L003
	N2M13	HN200-L024
	V2G08	HV200-L033
	X2S13	HX200-L015
L035		
+ CHAN DATA IN (CDX)		
	E2Y25	HE200-L035
	(G2Y25)	HG210-R033
	D2Y25	HD200-L035
	F2Y25	HF200-L015
L036		
+ CHAN SERVICE IN (CDX)		
	E2Y24	HE200-L036
	(G2Y24)	HG210-R034
	D2Y24	HD200-L036
	F2Y24	HF200-L014
L037		
+ CHAN BUS IN (CSR) BIT 0		
	E2Y03	HE200-L037
	(G2Z03)	HG210-R003
	(H2Z03)	HH220-R008
	D2Y03	HD200-L037
	G2Y03	HG210-L003
L037		
+ CHAN BUS IN (CSR) BIT 1		
	E2Y05	HE200-L037
	(G2Z05)	HG210-R004
	(H2Z05)	HH220-R009
	D2Y05	HD200-L037
	G2Y05	HG210-L004
L037		
+ CHAN BUS IN (CSR) BIT 2		
	E2Y06	HE200-L037
	(G2Z06)	HG210-R005
	(H2Z06)	HH220-R010
	D2Y06	HD200-L037
	G2Y06	HG210-L005

LINE/SIGNAL	PIN	SHEET/LINE
L037		
+ CHAN BUS IN (CSR) BIT 3		
	E2Y07	HE200-L037
	(G2Z07)	HG210-R006
	(H2Z07)	HH220-R011
	D2Y07	HD200-L037
	G2Y07	HG210-L006
L037		
+ CHAN BUS IN (CSR) BIT 4		
	E2Y09	HE200-L037
	(G2Z09)	HG210-R007
	(H2Z09)	HH220-R012
	D2Y09	HD200-L037
	G2Y09	HG210-L007
L037		
+ CHAN BUS IN (CSR) BIT 5		
	E2Y10	HE200-L037
	(G2Z10)	HG210-R008
	(H2Z10)	HH220-R013
	D2Y10	HD200-L037
	G2Y10	HG210-L008
L037		
+ CHAN BUS IN (CSR) BIT 6		
	E2Y11	HE200-L037
	(G2Z11)	HG210-R009
	(H2Z11)	HH220-R014
	D2Y11	HD200-L037
	G2Y11	HG210-L009
L037		
+ CHAN BUS IN (CSR) BIT 7		
	E2Y13	HE200-L037
	(G2Z13)	HG210-R010
	(H2Z13)	HH220-R015
	D2Y13	HD200-L037
	G2Y13	HG210-L010
L037		
+ CHAN BUS IN (CSR) BIT P		
	E2Y02	HE200-L037
	(G2Z02)	HG210-R011
	(H2Z02)	HH220-R016
	D2Y02	HD200-L037
	G2Y02	HG210-L011
L038		
+ CHAN OPERATIONAL IN (-SC)		
	E2N33	HE200-L038
	(F2N33)	HF200-R006
	D2N33	HD200-L038
L039		
+ REQUEST IN CIF B (R17-SD1)		
	E2U04	HE200-L039
	(C2J13)	HC200-R007
1A-B4 *A5B09*		
+2-CH *A5B09*		
L040		
+ STORAGE DIRECTOR BUSY (-SC)		
	E2X05	HE200-L040
	(F2X05)	HF200-R046
	D2X05	HD200-L040

LINE/SIGNAL	PIN	SHEET/LINE
L041		
+ LONG SELECT (-SC)		
	E2X09	HE200-L041
	(F2X09)	HF200-R045
	D2X09	HD200-L041
L042		
+ CIF/-SC/TCR CLOCK T0		
	E2J10	HE200-L042
	(P2S03)	HP200-R014
	D2J10	HD200-L042
	F2P05	HF200-L036
L043		
+ CIF/-SC/TCR CLOCK T2		
	E2P02	HE200-L043
	(P2P11)	HP200-R015
	D2P02	HD200-L043
	C2J04	HC200-L009
	F2S04	HF200-L037
L044		
+ CIF/-SC/TCR CLOCK T4		
	E2M03	HE200-L044
	(P2P09)	HP200-R016
	D2M03	HD200-L044
	C2G05	HC200-L010
	F2P06	HF200-L038
L045		
+ CIF/-SC/TCR CLOCK T6		
	E2P04	HE200-L045
	(P2P07)	HP200-R017
	D2P04	HD200-L045
	C2J07	HC200-L019
	F2U06	HF200-L040
L046		
+ CIF STOPPED		
	E2U02	HE200-L046
	(P2P05)	HP200-R042
	D2U02	HD200-L046
R003		
- HALT I/O (TO -SC)		
	(E2W25)	HE200-R003
	(D2W25)	HD200-R003
	F2W25	HF200-L016
R004		
- CHAN BUS OUT PC (TO -SC)		
	(E2W26)	HE200-R004
	(D2W26)	HD200-R004
	F2W26	HF200-L047
R005		
- ADDRESS OUT - TRAPPED (TO -SC)		
	(E2X33)	HE200-R005
	(D2X33)	HD200-R005
	F2X33	HF200-L008
R006		
- SELECT OUT TRAPPED (TO -SC)		
	(E2X13)	HE200-R006
	(D2X13)	HD200-R006
	F2X13	HF200-L010
R007		
- CIF B DISABLED (IND) SD1		
	(E2U10)	HE200-R007
1A-B4	*B1A11*	
->MDM	*YA171*	
R008		
+ CIF B REQUESTS SERVICE		
	(E2G03)	HE200-R008
	F2D12	HF200-L005
1A-B4	*B3D06*	
+2-CH	*B3D06*	
R009		
+ CIF B NOTICE OF HDWR BUSY		
	(E2D04)	HE200-R009
	C2D07	HC200-L025
1A-B4	*B2B09*	
+2-CH	*B2B09*	
R010		
+ CIF B SUPPRESS OUT		
	(E2D06)	HE200-R010
	C2B07	HC200-L018
1A-B4	*B2B13*	
+2-CH	*B2B13*	
R011		
+ CIF B RAW SYSTEM RESET		
	(E2B03)	HE200-R011
	C2D10	HC200-L021
1A-B4	*B2B05*	
+2-CH	*B2B05*	
R012		
- SYSTEM RESET (TO -SC)		
	(E2W22)	HE200-R012
	(D2W22)	HD200-R012
	F2W22	HF200-L018
R013		
- SELECTIVE RESET (TO -SC)		
	(E2W24)	HE200-R013
	(D2W24)	HD200-R013
	F2W24	HF200-L017
R014		
- CLOCK CHECK TWO		
	(E2D02)	HE200-R014
	(D2D02)	HD200-R014
	(F2B02)	HF200-R041
	(G2S05)	HG210-R023
	(X2S09)	HX200-R032
	K2S12	HK200-L012
R015		
- CHAN BUS OUT (TO CDX) BIT 0		
	(E2W03)	HE200-R015
	(D2W03)	HD200-R015
	G2W03	HG210-L018
R016		
- CHAN BUS OUT (TO CDX) BIT 1		
	(E2W05)	HE200-R016
	(D2W05)	HD200-R016
	G2W05	HG210-L019
R017		
- CHAN BUS OUT (TO CDX) BIT 2		
	(E2W06)	HE200-R017
	(D2W06)	HD200-R017
	G2W06	HG210-L020
R018		
- CHAN BUS OUT (TO CDX) BIT 3		
	(E2W07)	HE200-R018
	(D2W07)	HD200-R018
	G2W07	HG210-L021
R019		
- CHAN BUS OUT (TO CDX) BIT 4		
	(E2W09)	HE200-R019
	(D2W09)	HD200-R019
	G2W09	HG210-L022
R020		
- CHAN BUS OUT (TO CDX) BIT 5		
	(E2W10)	HE200-R020
	(D2W10)	HD200-R020
	G2W10	HG210-L023
R021		
- CHAN BUS OUT (TO CDX) BIT 6		
	(E2W11)	HE200-R021
	(D2W11)	HD200-R021
	G2W11	HG210-L024
R022		
- CHAN BUS OUT (TO CDX) BIT 7		
	(E2W13)	HE200-R022
	(D2W13)	HD200-R022
	G2W13	HG210-L025
R023		
- CHAN BUS OUT (TO CDX) BIT P		
	(E2W02)	HE200-R023
	(D2W02)	HD200-R023
	G2W02	HG210-L026
R024		
- DATA OUT (TO CDX/-SC)		
	(E2Y33)	HE200-R024
	(D2Y33)	HD200-R024
	F2Y33	HF200-L013
	G2Y33	HG210-L013
R025		
- SERVICE OUT (TO CDX/-SC)		
	(E2Y32)	HE200-R025
	(D2Y32)	HD200-R025
	F2Y32	HF200-L012
	G2Y32	HG210-L012
R026		
- COMMAND OUT (TO CDX/-SC)		
	(E2Y30)	HE200-R026
	(D2Y30)	HD200-R026
	F2Y30	HF200-L009
	G2Y30	HG210-L014
R027		
+ CHAN B SELECT SIGNAL PROPAGATE		
	(E2M08)	HE200-R027
	(C4B10)	HC400-R004
1A-B4	*B4D10*	
1A-B4	*E1D11*	
1A-B4	*E1C13*	
1A-B3	*E1D11*	
1A-B3	*E1C13*	
1T-A1	*HB09 *	
R028		
+ CHAN B DISCONNECT IN		
	(E2U11)	HE200-R028
1A-B4	*B5D11*	
1T-A1	*HG11 *	
1T-A1	*KJ11 *	
R029		
+ CHAN B STATUS IN		
	(E2P05)	HE200-R029
1A-B4	*B4D05*	
1T-A1	*HB04 *	
1T-A1	*KD04 *	
R030		
+ CHAN B ADDRESS IN		
	(E2M04)	HE200-R030
1A-B4	*B4B04*	
1T-A1	*HD05 *	
1T-A1	*KB05 *	
R031		
+ CHAN B DATA IN		
	(E2S08)	HE200-R031
1A-B4	*B5B08*	
1T-A1	*HJ08 *	
1T-A1	*KG08 *	
R032		
+ CHAN B SERVICE IN		
	(E2P07)	HE200-R032
1A-B4	*B4D07*	
1T-A1	*HB06 *	
1T-A1	*KD06 *	
R033		
+ CHAN B BUS IN BIT 0		
	(E2J05)	HE200-R033
1A-B4	*B3D05*	
1T-A1	*GG04 *	
1T-A1	*JJ04 *	
R033		
+ CHAN B BUS IN BIT 1		
	(E2G04)	HE200-R033
1A-B4	*B3B04*	
1T-A1	*GJ05 *	
1T-A1	*JG05 *	
R033		
+ CHAN B BUS IN BIT 2		
	(E2J07)	HE200-R033
1A-B4	*B3D07*	
1T-A1	*GG06 *	
1T-A1	*JJ06 *	
R033		
+ CHAN B BUS IN BIT 3		
	(E2G08)	HE200-R033
1A-B4	*B3B08*	
1T-A1	*GJ08 *	
1T-A1	*JG08 *	
R033		
+ CHAN B BUS IN BIT 4		
	(E2J09)	HE200-R033
1A-B4	*B3D09*	
1T-A1	*GG09 *	
1T-A1	*JJ09 *	
R033		
+ CHAN B BUS IN BIT 5		
	(E2G10)	HE200-R033
1A-B4	*B3B10*	
1T-A1	*GJ10 *	
1T-A1	*JG10 *	
R033		
+ CHAN B BUS IN BIT 6		
	(E2J11)	HE200-R033
1A-B4	*B3D11*	
1T-A1	*GG11 *	
1T-A1	*JJ11 *	
R033		
+ CHAN B BUS IN BIT 7		
	(E2G12)	HE200-R033
1A-B4	*B3B12*	
1T-A1	*GJ12 *	
1T-A1	*JG12 *	
R033		
+ CHAN B BUS IN BIT P		
	(E2G02)	HE200-R033
1A-B4	*B3B02*	
1T-A1	*GJ03 *	
1T-A1	*JG03 *	
R034		
+ CHAN B REQUEST IN		
	(E2U07)	HE200-R034
1A-B4	*B5D07*	
1T-A1	*HG06 *	
1T-A1	*KJ06 *	
R035		
+ CHAN B OPERATIONAL IN		
	(E2M02)	HE200-R035
1A-B4	*B4B02*	
1T-A1	*HD03 *	
1T-A1	*KB03 *	
R036		
+ CHAN B METERING IN		
	(E2S04)	HE200-R036
1A-B4	*B5B04*	
1T-A1	*KG05 *	
1T-A1	*HJ05 *	
R037		
+ CHAN B MARK IN		
	(E2J13)	HE200-R037
1A-B4	*B3D13*	
1T-A1	*GG13 *	
1T-A1	*JJ13 *	
R038		
- CIF B DIAG WRAP MODE TO SBP		
	(E2S02)	HE200-R038
	(C4B07)	HC400-R008
R039		
- ADDRESS OUT (TO CDX/-SC)		
	(E2W32)	HE200-R039
	(D2W32)	HD200-R039
	F2W32	HF200-L003
	G2W32	HG210-L037
R040		
- CIF CARD CHECK (TO -SC)		
	(E2X22)	HE200-R040
	(D2X22)	HD200-R040
	F2X22	HF200-L042
R041		
- CHAN BUS IN PC (TO -SC)		
	(E2W28)	HE200-R041
	(D2W28)	HD200-R041
	F2W28	HF200-L046
R042		
- RUN METER		
	(E2S13)	HE200-R042
	(D2S13)	HD200-R042
	(R2Z03)	HR200-R003
	Q2Z03	HQ200-L004
	R2S03	HR200-L003

003 - ADDRESS OUT (TO CDX/-SC) ------W32
004 + CIF A REQUESTS SERVICE --------D11
005 + CIF B REQUESTS SERVICE --------D12
006 + CIF C REQUESTS SERVICE --------B12
007 + CIF D REQUESTS SERVICE --------B13
008 - ADDRESS OUT - TRAPPED (TO -SC)-X33
009 - COMMAND OUT (TO CDX/-SC) ------Y30
010 - SELECT OUT TRAPPED (TO -SC) ---X13
011 - SUPPRESS OUT ------------------D13
012 - SERVICE OUT (TO CDX/-SC) ------Y32
013 - DATA OUT (TO CDX/-SC) ---------Y33
014 + CHAN SERVICE IN (CDX) ---------Y24
015 + CHAN DATA IN (CDX) ------------Y25
016 - HALT I/O (TO -SC) -------------W25
017 - SELECTIVE RESET (TO -SC) ------W24
018 - SYSTEM RESET (TO -SC) ---------W22
019 - ALU OUT BIT 0 ----------------D02
020 - ALU OUT BIT 1 ----------------D04
021 - ALU OUT BIT 2 ----------------D05
022 - ALU OUT BIT 3 ----------------D06
023 - ALU OUT BIT 4 ----------------D07
024 - ALU OUT BIT 5 ----------------B07
025 - ALU OUT BIT 6 ----------------B08
026 - ALU OUT BIT 7 ----------------B09
027 - ALU OUT BIT P ----------------B10
028 - EXT REG ADDRESS BIT 0 ---------P09
029 - EXT REG ADDRESS BIT 1 ---------P10
030 - EXT REG ADDRESS BIT 2 ---------P11
031 - EXT REG ADDRESS BIT 3 ---------P12
032 - EXT REG ADDRESS BIT 4 ---------P13
033 - DEGATE CHAN EXT REGS (UNUSED) -S07
034 + LD EXT REG CLK A --------------U07
035 + LD EXT REG CLK C --------------P04
036 + CIF/-SC/TCR CLOCK T0 ----------P05
037 + CIF/-SC/TCR CLOCK T2 ----------S04
038 + CIF/-SC/TCR CLOCK T4 ----------P06
039 + CIF/-SC/TCR CLOCK T5 ----------M10
040 + CIF/-SC/TCR CLOCK T6 ----------U06
041 + GATED CHECK 1 -----------------J06
042 - CIF CARD CHECK (TO -SC) -------X22
043 - CSR CARD CHECK 1 --------------U10
044 - CDX CARD CHECK ----------------U12
045 - CHAN CLOCK CHECK A-D (TO -SC) -U13
046 - CHAN BUS IN PC (TO -SC) -------W28
047 - CHAN BUS OUT PC (TO -SC) ------W26
048 - TCR CARD CHECK ----------------P02
049 - TACR CARD CHECK ---------------X32
050 - REG 17 (SD1) BIT 0 ------------J04
051 - REG 17 (SD1) BIT 1 ------------J05
052 - REG 17 (SD1) BIT 2 ------------X02
053 - REG 17 (SD1) BIT 3 ------------X03
054 + RESET -------------------------M02
055 + SPECIAL RESET -----------------M03
056 - CHECK RESET -------------------M04

CSC CARD

OVERVIEW

The CSC (channel sequence control) card provides the storage director with channel status and control information. It also monitors data transfer for errors.

PRIMARY FUNCTIONS

- Provides interface selection logic and connection control logic.
- Out tag lines, Halt I/O, Selective Reset and System Reset are latched and then sent to channel status registers.
- Decodes and gates external registers 16 through 23.
- Register 17 contains type-1 check logic and presents this information on ALU Bus In lines.
- The ALU and parity generator generates and checks parity for the ALU Bus Out lines.
- Disconnect In logic performs a disconnect - in sequence when the storage director detects a check condition and then waits for a selective reset.
- Chaining logic to perform entire chaining sequence.

PRIMARY COMPONENTS

- Card contains the following registers: CS1, CS2, CS3, CC1, CC2, and Register 17.

ERROR CHECKING

- Clocks are checked for out of sequence or failure to turn on conditions.
- In tag check logic uses Channel Service In and Data In lines to check for concurrence with Address In or Status In lines.
- Register 17 logic generates a type-1 check to the channel check latch when one of the following lines are active: CIF Card Check, CSR Card Check, CDX Card Check, Clock Check A-D, Clock Check E-H, or Bus In Parity Check. Bus Out parity Check, TCR Card Check, FCR/ECR Card Check FACR Card Check will also generate a type-1 check.

X11 + READ OR FORCE SWITCHES (-SC) - 003
J13 - SEL OUT TRAPPED INTERRUPT 2 -- 004
X26 + CHAN DISCONNECT IN (-SC) ----- 005
W33 + CHAN OPERATIONAL IN (-SC) ---- 006
X07 + FORCE PROPAGATE SEL OUT (-SC) 007
S03 + HIGH SPEED CHAN ACTIVE ------- 008
J07 + CIF A SELECTED --------------- 009
G12 + CIF B SELECTED --------------- 010
X29 + CIF C SELECTED --------------- 011
X30 + CIF D SELECTED --------------- 012
X25 + CHAN STATUS IN (-SC) --------- 013
X06 + FORCE DISABLE (-SC) ---------- 014
S05 + SELECTIVE OR SYSTEM RESET ---- 015
S02 + SELECTIVE RESET LATCHED ------ 016
J02 - ALU IN1 BIT 0 ---------------- 017
G02 - ALU IN1 BIT 1 ---------------- 018
G03 - ALU IN1 BIT 2 ---------------- 019
G04 - ALU IN1 BIT 3 ---------------- 020
G05 - ALU IN1 BIT 4 ---------------- 021
J09 - ALU IN1 BIT 5 ---------------- 022
J10 - ALU IN1 BIT 6 ---------------- 023
J11 - ALU IN1 BIT 7 ---------------- 024
J12 - ALU IN1 BIT P ---------------- 025
X24 + CHAN ADDRESS IN (-SC) -------- 026
G07 + REG 17 CTRL BIT 4 ------------ 027
G08 + REG 17 CTRL BIT 2 ------------ 028
G09 + REG 17 CTRL BIT 1 ------------ 029
G10 + REG 17 CTRL BIT P ------------ 030
M05 + EXT REG ACTIVE --------------- 031
M07 + EXT REG ADR 17 --------------- 032
M08 + EXT REG ADR 18 --------------- 033
M09 + EXT REG ADR 19 --------------- 034
D09 - SET CHAN BUS OUT REGISTER ---- 035
X10 + SYSTEM RESET LATCH (-SC) ----- 036
U04 + SYSTEM RESET (-SC) ----------- 037
S13 + HALT I/O LATCH --------------- 038
U02 - CHAN CHECK/TIMER INTERRUPT 1 - 039
S09 - CHECK TWO -------------------- 040
B02 - CLOCK CHECK TWO -------------- 041
D10 + ALU OUT BITS 0:1 PARITY ------ 042
X28 + ALU OUT BITS 2:3 PARITY ------ 043
B03 + ALU BUS OUT PARITY CHECK ----- 044
X09 + LONG SELECT (-SC) ------------ 045
X05 + STORAGE DIRECTOR BUSY (-SC) -- 046
G13 - GATE CHAN BUS OUT TO BUS IN -- 047
U09 + DISABLE RUN CHANNEL ---------- 048

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- ADDRESS OUT (TO CDX/-SC)		
	F2W32	HF200-L003
	(D2W32)	HD200-R039
	(E2W32)	HE200-R039
	G2W32	HG210-L037
L004		
+ CIF A REQUESTS SERVICE		
	F2D11	HF200-L004
	(D2G03)	HD200-R008
1A-B4	*B3D02*	
+2-CH	*B3D02*	
L005		
+ CIF B REQUESTS SERVICE		
	F2D12	HF200-L005
	(E2G03)	HE200-R008
1A-B4	*B3D06*	
+2-CH	*B3D06*	
L006		
+ CIF C REQUESTS SERVICE		
	F2B12	HF200-L006
1A-B4	*B3B05*	
+2-CH	*B3B05*	
L007		
+ CIF D REQUESTS SERVICE		
	F2B13	HF200-L007
1A-B4	*B3B09*	
+2-CH	*B3B09*	
L008		
- ADDRESS OUT - TRAPPED (TO -SC)		
	F2X33	HF200-L008
	(D2X33)	HD200-R005
	(E2X33)	HE200-R005
L009		
- COMMAND OUT (TO CDX/-SC)		
	F2Y30	HF200-L009
	(D2Y30)	HD200-R026
	(E2Y30)	HE200-R026
	G2Y30	HG210-L014
L010		
- SELECT OUT TRAPPED (TO -SC)		
	F2X13	HF200-L010
	(D2X13)	HD200-R006
	(E2X13)	HE200-R006
L011		
- SUPPRESS OUT		
	F2D13	HF200-L011
	(C2D13)	HC200-R009
L012		
- SERVICE OUT (TO CDX/-SC)		
	F2Y32	HF200-L012
	(D2Y32)	HD200-R025
	(E2Y32)	HE200-R025
	G2Y32	HG210-L012

LINE/SIGNAL	PIN	SHEET/LINE
L013		
- DATA OUT (TO CDX/-SC)		
	F2Y33	HF200-L013
	(D2Y33)	HD200-R024
	(E2Y33)	HE200-R024
	G2Y33	HG210-L013
L014		
+ CHAN SERVICE IN (CDX)		
	F2Y24	HF200-L014
	(G2Y24)	HG210-R034
	D2Y24	HD200-L036
	E2Y24	HE200-L036
L015		
+ CHAN DATA IN (CDX)		
	F2Y25	HF200-L015
	(G2Y25)	HG210-R033
	D2Y25	HD200-L035
	E2Y25	HE200-L035
L016		
- HALT I/O (TO -SC)		
	F2W25	HF200-L016
	(D2W25)	HD200-R003
	(E2W25)	HE200-R003
L017		
- SELECTIVE RESET (TO -SC)		
	F2W24	HF200-L017
	(D2W24)	HD200-R013
	(E2W24)	HE200-R013
L018		
- SYSTEM RESET (TO -SC)		
	F2W22	HF200-L018
	(D2W22)	HD200-R012
	(E2W22)	HE200-R012
L019		
- ALU OUT BIT 0		
	F2D02	HF200-L019
	(Q2B04)	HQ200-R008
	C2B02	HC200-L022
	H2P12	HH220-L017
	J2U07	HJ200-L041
	N2B07	HN200-L012
	R2M02	HR200-L024
	V2D13	HV200-L007
	X2D13	HX200-L026
L020		
- ALU OUT BIT 1		
	F2D04	HF200-L020
	(Q2D05)	HQ200-R008
	C2D02	HC200-L023
	H2P13	HH220-L018
	J2U09	HJ200-L041
	N2D05	HN200-L013
	R2G12	HR200-L024
	V2B05	HV200-L008
	X2B05	HX200-L026

LINE/SIGNAL	PIN	SHEET/LINE
L021		
- ALU OUT BIT 2		
	F2D05	HF200-L021
	(Q2D06)	HQ200-R008
	H2U02	HH220-L019
	J2P12	HJ200-L041
	N2D09	HN200-L014
	R2G13	HR200-L024
	V2D10	HV200-L009
	X2D10	HX200-L026
L022		
- ALU OUT BIT 3		
	F2D06	HF200-L022
	(Q2B05)	HQ200-R008
	H2U05	HH220-L020
	J2U02	HJ200-L041
	N2D10	HN200-L015
	R2M04	HR200-L024
	V2J02	HV200-L010
	X2J02	HX200-L026
L023		
- ALU OUT BIT 4		
	F2D07	HF200-L023
	(Q2D04)	HQ200-R008
	H2U06	HH220-L021
	J2B12	HJ200-L041
	N2D06	HN200-L016
	R2M03	HR200-L024
	V2B08	HV200-L011
	X2B08	HX200-L026
L024		
- ALU OUT BIT 5		
	F2B07	HF200-L024
	(Q2B03)	HQ200-R008
	H2U07	HH220-L022
	J2D06	HJ200-L041
	N2B09	HN200-L017
	R2P04	HR200-L024
	V2B03	HV200-L012
	X2B03	HX200-L026
L025		
- ALU OUT BIT 6		
	F2B08	HF200-L025
	(Q2D02)	HQ200-R008
	H2U09	HH220-L023
	N2G02	HN200-L018
	R2P02	HR200-L024
	V2D05	HV200-L013
	X2D05	HX200-L026
L026		
- ALU OUT BIT 7		
	F2B09	HF200-L026
	(Q2B02)	HQ200-R008
	J2B05	HJ200-L041
	N2B13	HN200-L019
	R2P05	HR200-L024
	V2D06	HV200-L014

LINE/SIGNAL	PIN	SHEET/LINE
L027		
- ALU OUT BIT P		
	F2B10	HF200-L027
	(Q2U04)	HQ200-R008
	N2D13	HN200-L020
	R2M05	HR200-L024
	V2B02	HV200-L015
L028		
- EXT REG ADDRESS BIT 0		
	F2P09	HF200-L028
	(Q2P12)	HQ200-R016
	K2B12	HK200-L003
	N2P12	HN200-L003
	R2M13	HR200-L009
	V2J07	HV200-L024
L029		
- EXT REG ADDRESS BIT 1		
	F2P10	HF200-L029
	(Q2M05)	HQ200-R016
	K2D13	HK200-L003
	N2M05	HN200-L004
	R2P11	HR200-L009
	V2J09	HV200-L025
L030		
- EXT REG ADDRESS BIT 2		
	F2P11	HF200-L030
	(Q2P05)	HQ200-R016
	K2B13	HK200-L003
	N2P05	HN200-L005
	R2M12	HR200-L009
	V2J10	HV200-L026
L031		
- EXT REG ADDRESS BIT 3		
	F2P12	HF200-L031
	(Q2M04)	HQ200-R016
	K2B10	HK200-L003
	N2M04	HN200-L006
	R2P10	HR200-L009
	V2J11	HV200-L027
L032		
- EXT REG ADDRESS BIT 4		
	F2P13	HF200-L032
	(Q2P04)	HQ200-R016
	K2D12	HK200-L003
	N2P04	HN200-L007
	R2P09	HR200-L009
	V2J12	HV200-L028
L033		
- DEGATE CHAN EXT REGS (UNUSED)		
	F2S07	HF200-L033
	K2B04	HK200-L028
L034		
+ LD EXT REG CLK A		
	F2U07	HF200-L034
	(Q2U09)	HQ200-R012

LINE/SIGNAL	PIN	SHEET/LINE
L035		
+ LD EXT REG CLK C		
	F2P04	HF200-L035
	(Q2U10)	HQ200-R014
	C2B12	HC200-L007
	H2M13	HH220-L013
L036		
+ CIF/-SC/TCR CLOCK T0		
	F2P05	HF200-L036
	(P2S03)	HP200-R014
	D2J10	HD200-L042
	E2J10	HE200-L042
L037		
+ CIF/-SC/TCR CLOCK T2		
	F2S04	HF200-L037
	(P2P11)	HP200-R015
	D2P02	HD200-L043
	E2P02	HE200-L043
	C2J04	HC200-L009
L038		
+ CIF/-SC/TCR CLOCK T4		
	F2P06	HF200-L038
	(P2P09)	HP200-R016
	D2M03	HD200-L044
	E2M03	HE200-L044
	C2G05	HC200-L010
L039		
+ CIF/-SC/TCR CLOCK T5		
	F2M10	HF200-L039
	(P2B12)	HP200-R052
L040		
+ CIF/-SC/TCR CLOCK T6		
	F2U06	HF200-L040
	(P2P07)	HP200-R017
	D2P04	HD200-L045
	E2P04	HE200-L045
	C2J07	HC200-L019
L041		
+ GATED CHECK 1		
	F2J06	HF200-L041
	(R2P07)	HR200-R036
	C2J09	HC200-L014
L042		
- CIF CARD CHECK (TO -SC)		
	F2X22	HF200-L042
	(D2X22)	HD200-R040
	(E2X22)	HE200-R040
L043		
- CSR CARD CHECK 1		
	F2U10	HF200-L043
	(H2P10)	HH220-R036
L044		
- CDX CARD CHECK		
	F2U12	HF200-L044
	(G2U05)	HG210-R025

LINE/SIGNAL	PIN	SHEET/LINE
L045		
- CHAN CLOCK CHECK A-D (TO -SC)		
	F2U13	HF200-L045
L046		
- CHAN BUS IN PC (TO -SC)		
	F2W28	HF200-L046
	(D2W28)	HD200-R041
	(E2W28)	HE200-R041
L047		
- CHAN BUS OUT PC (TO -SC)		
	F2W26	HF200-L047
	(D2W26)	HD200-R004
	(E2W26)	HE200-R004
L048		
- TCR CARD CHECK		
	F2P02	HF200-L048
	(C2D12)	HC200-R003
L049		
- TACR CARD CHECK		
	F2X32	HF200-L049
L050		
- REG 17 (SD1) BIT 0		
	F2J04	HF200-L050
	(C2B09)	HC200-R004
L051		
- REG 17 (SD1) BIT 1		
	F2J05	HF200-L051
	(C2B10)	HC200-R005
L052		
- REG 17 (SD1) BIT 2		
	F2X02	HF200-L052
L053		
- REG 17 (SD1) BIT 3		
	F2X03	HF200-L053
L054		
+ RESET		
	F2M02	HF200-L054
	(R2B07)	HR200-R022
	D2M05	HD200-L031
	E2M05	HE200-L031
	C2G09	HC200-L016
	G2J13	HG210-L017
	H2S03	HH220-L060
	M2P11	HM200-L011
	P2J09	HP200-L022
	V2G13	HV200-L006
	X2M02	HX200-L027
L055		
+ SPECIAL RESET		
	F2M03	HF200-L055
	(R2B12)	HR200-R027
	D2G09	HD200-L032
	E2G09	HE200-L032
	C2G10	HC200-L015
	P2J05	HP200-L017
	X2P10	HX200-L051

LINE/SIGNAL	PIN	SHEET/LINE
L056		
- CHECK RESET		
	F2M04	HF200-L056
	(H2Y10)	HH220-R063
	(R2J05)	HR200-R028
	D2J06	HD200-L034
	E2J06	HE200-L034
	C2J10	HC200-L012
	G2B13	HG210-L015
	H2U12	HH220-L061
	J2Y10	HJ200-L024
	K2Y10	HK200-L023
	L2D02	HL200-L003
	N2M13	HN200-L024
	V2G08	HV200-L033
	X2S13	HX200-L015
R003		
+ READ OR FORCE SWITCHES (-SC)		
	(F2X11)	HF200-R003
	D2X11	HD200-L022
	E2X11	HE200-L022
R004		
- SEL OUT TRAPPED INTERRUPT 2		
	(F2J13)	HF200-R004
	J2M10	HJ200-L066
R005		
+ CHAN DISCONNECT IN (-SC)		
	(F2X26)	HF200-R005
	D2X26	HD200-L004
	E2X26	HE200-L004
R006		
+ CHAN OPERATIONAL IN (-SC)		
	(F2W33)	HF200-R006
	D2W33	HD200-L038
	E2W33	HE200-L038
R007		
+ FORCE PROPAGATE SEL OUT (-SC)		
	(F2X07)	HF200-R007
	D2X07	HD200-L005
	E2X07	HE200-L005
R008		
+ HIGH SPEED CHAN ACTIVE		
	(F2S03)	HF200-R008
	G2G10	HG210-L040
	H2S08	HH220-L004
	J2D02	HJ200-L056
R009		
+ CIF A SELECTED		
	(F2J07)	HF200-R009
	D2P06	HD200-L033
	E2U09	HE200-L006
	C2G07	HC200-L026
R010		
+ CIF B SELECTED		
	(F2G12)	HF200-R010
	D2U09	HD200-L006
	E2P06	HE200-L033
	C2G08	HC200-L027

LINE/SIGNAL	PIN	SHEET/LINE
R011		
+ CIF C SELECTED		
	(F2X29)	HF200-R011
R012		
+ CIF D SELECTED		
	(F2X30)	HF200-R012
R013		
+ CHAN STATUS IN (-SC)		
	(F2X25)	HF200-R013
	D2X25	HD200-L025
	E2X25	HE200-L025
R014		
+ FORCE DISABLE (-SC)		
	(F2X06)	HF200-R014
	D2X06	HD200-L007
	E2X06	HE200-L007
R015		
+ SELECTIVE OR SYSTEM RESET		
	(F2S05)	HF200-R015
	M2G03	HM200-L004
R016		
+ SELECTIVE RESET LATCHED		
	(F2S02)	HF200-R016
	C2J11	HC200-L013
	R2D07	HR200-L040
R017		
- ALU IN1 BIT 0		
	(F2J02)	HF200-R017
	(H2D04)	HH220-R027
	(J2S05)	HJ200-R016
	(K2J02)	HK200-R016
	Q2M07	HQ200-L007
R018		
- ALU IN1 BIT 1		
	(F2G02)	HF200-R018
	(H2D05)	HH220-R028
	(J2S12)	HJ200-R016
	(K2G03)	HK200-R016
	Q2P07	HQ200-L007
R019		
- ALU IN1 BIT 2		
	(F2G03)	HF200-R019
	(H2D06)	HH220-R029
	(J2P10)	HJ200-R016
	(K2J05)	HK200-R016
	Q2M12	HQ200-L007
R020		
- ALU IN1 BIT 3		
	(F2G04)	HF200-R020
	(H2D09)	HH220-R030
	(J2S03)	HJ200-R016
	(K2G09)	HK200-R016
	Q2M09	HQ200-L007

LINE/SIGNAL	PIN	SHEET/LINE
R021		
- ALU IN1 BIT 4		
	(F2G05)	HF200-R021
	(H2D10)	HH220-R031
	(J2B10)	HJ200-R016
	(K2J06)	HK200-R016
	Q2M13	HQ200-L007
R022		
- ALU IN1 BIT 5		
	(F2J09)	HF200-R022
	(H2D12)	HH220-R032
	(J2B03)	HJ200-R016
	(K2G08)	HK200-R016
	Q2P13	HQ200-L007
R023		
- ALU IN1 BIT 6		
	(F2J10)	HF200-R023
	(H2D13)	HH220-R033
	(J2D04)	HJ200-R016
	(K2G07)	HK200-R016
	Q2S02	HQ200-L007
R024		
- ALU IN1 BIT 7		
	(F2J11)	HF200-R024
	(H2J02)	HH220-R034
	(J2B04)	HJ200-R016
	(K2J07)	HK200-R016
	Q2U02	HQ200-L007
R025		
- ALU IN1 BIT P		
	(F2J12)	HF200-R025
	(H2J04)	HH220-R035
	(J2S07)	HJ200-R016
	(K2G02)	HK200-R016
	Q2S03	HQ200-L007
R026		
+ CHAN ADDRESS IN (-SC)		
	(F2X24)	HF200-R026
	D2X24	HD200-L024
	E2X24	HE200-L024
R027		
+ REG 17 CTRL BIT 4		
	(F2G07)	HF200-R027
	C2G03	HC200-L003
R028		
+ REG 17 CTRL BIT 2		
	(F2G08)	HF200-R028
	C2G04	HC200-L004
R029		
+ REG 17 CTRL BIT 1		
	(F2G09)	HF200-R029
	C2J05	HC200-L005
R030		
+ REG 17 CTRL BIT P		
	(F2G10)	HF200-R030
	C2J06	HC200-L006

LINE/SIGNAL	PIN	SHEET/LINE
R031		
+ EXT REG ACTIVE		
	(F2M05)	HF200-R031
	R2J13	HR200-L020
R032		
+ EXT REG ADR 17		
	(F2M07)	HF200-R032
	C2J02	HC200-L008
R033		
+ EXT REG ADR 18		
	(F2M08)	HF200-R033
	H2S04	HH220-L015
	V2S05	HV200-L034
R034		
+ EXT REG ADR 19		
	(F2M09)	HF200-R034
	H2S05	HH220-L011
	J2U06	HJ200-L039
R035		
- SET CHAN BUS OUT REGISTER		
	(F2D09)	HF200-R035
	G2B12	HG210-L033
R036		
+ SYSTEM RESET LATCH (-SC)		
	(F2X10)	HF200-R036
	D2X10	HD200-L003
	E2X10	HE200-L003
R037		
+ SYSTEM RESET (-SC)		
	(F2U04)	HF200-R037
	R2U04	HR200-L038
R038		
+ HALT I/O LATCH		
	(F2S13)	HF200-R038
	G2S13	HG210-L035
	H2S13	HH220-L057
R039		
- CHAN CHECK/TIMER INTERRUPT 1		
	(F2U02)	HF200-R039
	(P2S13)	HP200-R058
	R2S12	HR200-L012
R040		
- CHECK TWO		
	(F2S09)	HF200-R040
	(J2U10)	HJ200-R017
	(N2D04)	HN200-R010
	(X2J09)	HX200-R021
	R2S09	HR200-L027
R041		
- CLOCK CHECK TWO		
	(F2B02)	HF200-R041
	(D2D02)	HD200-R014
	(E2D02)	HE200-R014
	(G2S05)	HG210-R023
	(X2S09)	HX200-R032
	K2S12	HK200-L012

LINE/SIGNAL	PIN	SHEET/LINE
R042		
+ ALU OUT BITS 0:1 PARITY		
	(F2D10)	HF200-R042
	C2G02	HC200-L011
R043		
+ ALU OUT BITS 2:3 PARITY		
	(F2X28)	HF200-R043
R044		
+ ALU BUS OUT PARITY CHECK		
	(F2B03)	HF200-R044
	R2G04	HR200-L043
R045		
+ LONG SELECT (-SC)		
	(F2X09)	HF200-R045
	D2X09	HD200-L041
	E2X09	HE200-L041
R046		
+ STORAGE DIRECTOR BUSY (-SC)		
	(F2X05)	HF200-R046
	D2X05	HD200-L040
	E2X05	HE200-L040
R047		
- GATE CHAN BUS OUT TO BUS IN		
	(F2G13)	HF200-R047
	H2J06	HH220-L012
R048		
+ DISABLE RUN CHANNEL		
	(F2U09)	HF200-R048
	G2U02	HG210-L016

```
003 + CHAN BUS IN (CSR) BIT 0 -------Y03
004 + CHAN BUS IN (CSR) BIT 1 -------Y05
005 + CHAN BUS IN (CSR) BIT 2 -------Y06
006 + CHAN BUS IN (CSR) BIT 3 -------Y07
007 + CHAN BUS IN (CSR) BIT 4 -------Y09
008 + CHAN BUS IN (CSR) BIT 5 -------Y10
009 + CHAN BUS IN (CSR) BIT 6 -------Y11
010 + CHAN BUS IN (CSR) BIT 7 -------Y13
011 + CHAN BUS IN (CSR) BIT P -------Y02
012 - SERVICE OUT (TO CDX/-SC) ------Y32
013 - DATA OUT (TO CDX/-SC) ---------Y33
014 - COMMAND OUT (TO CDX/-SC) ------Y30
015 - CHECK RESET --------------------B13
016 + DISABLE RUN CHANNEL -----------U02
017 + RESET ------------------------J13
018 - CHAN BUS OUT (TO CDX) BIT 0 ---W03
019 - CHAN BUS OUT (TO CDX) BIT 1 ---W05
020 - CHAN BUS OUT (TO CDX) BIT 2 ---W06
021 - CHAN BUS OUT (TO CDX) BIT 3 ---W07
022 - CHAN BUS OUT (TO CDX) BIT 4 ---W09
023 - CHAN BUS OUT (TO CDX) BIT 5 ---W10
024 - CHAN BUS OUT (TO CDX) BIT 6 ---W11
025 - CHAN BUS OUT (TO CDX) BIT 7 ---W13
026 - CHAN BUS OUT (TO CDX) BIT P ---W02
027 + CDX/CSR CLOCK T0 --------------G02
028 + CDX/CSR CLOCK T2 --------------G03
029 + CDX/CSR CLOCK T4 --------------G04
030 + CDX/CSR CLOCK T6 --------------G05
031 - NEED DATA GATED ---------------J02
032 - CDN SD1 ND/DR GATED CHANNEL -- J04
033 - SET CHAN BUS OUT REGISTER -----B12
034 - GATE LRC TO BUS OUT (CSR) -----B02
035 + HALT I/O LATCH ----------------S13
036 + LOAD ZERO TO CBO RETURN -------M13
037 - ADDRESS OUT (TO CDX/-SC) ------W32
038 + READ AND NOT EOT --------------Y22
039 - CHAN BYTE COUNT ZERO ----------S02
040 + HIGH SPEED CHAN ACTIVE --------G10
041 + GATE FINAL SET BI DESKEW IN ---P04
042 + WRT OR SEARCH AND NOT EOT -----Z29
043 + NEED 3 BYTES GATED ------------J10
044 + 3 BYTES READY -----------------J11
045 + CXC REG (CSR) BIT 0 -----------X03
046 + CXC REG (CSR) BIT 1 -----------X05
047 + CXC REG (CSR) BIT 2 -----------X06
048 + CXC REG (CSR) BIT 3 -----------X07
049 + CXC REG (CSR) BIT 4 -----------X09
050 + CXC REG (CSR) BIT 5 -----------X10
051 + CXC REG (CSR) BIT 6 -----------X11
052 + CXC REG (CSR) BIT 7 -----------X13
053 + CXC REG (CSR) BIT P -----------X02
054 + OFFSET INTERLOCK MODE GATED -- U09
055 - HALT CHANNEL REQUESTS (TO CDX) B04
```

CDX CARD

OVERVIEW

The CDX (channel data transfer) card transfers data between the channel and the device interface. Major functions are data transfer communication with the channel and communication with the data transfer logic. The CDX card also contains logic to start the read, write, and search operations.

PRIMARY FUNCTIONS

- Latches CBO (channel bus out) data into buffer registers A, B, C or D (write operation).
- CBO is loaded from registers A, B, C, or D (read operation).
- Sends reset lines to most logic blocks when any reset or IML command is active.
- Speed control register to perform data transfers within the channel at the data rate of the attached device.
- Mode decode logic for mode setting (i.e., read write, search equal, search high, or search high or equal).
- In tag control alternates Data In/Service In.
- Stop control logic generates the End Of Transfer line.

PRIMARY COMPONENTS

- Buffer Registers A, B, C, D
- CBO register
- Fill/empty buffer pointers and status registers

ERROR CHECKING

The following checks will generate a CDX card check:

- CBO load compare check
- Clock check
- CXC parity check
- Pending count parity check
- Timer/SPC parity check
- Increment pending over limit check

```
Z03 + CHAN BUS IN (CSR) BIT 0 ------ 003
Z05 + CHAN BUS IN (CSR) BIT 1 ------ 004
Z06 + CHAN BUS IN (CSR) BIT 2 ------ 005
Z07 + CHAN BUS IN (CSR) BIT 3 ------ 006
Z09 + CHAN BUS IN (CSR) BIT 4 ------ 007
Z10 + CHAN BUS IN (CSR) BIT 5 ------ 008
Z11 + CHAN BUS IN (CSR) BIT 6 ------ 009
Z13 + CHAN BUS IN (CSR) BIT 7 ------ 010
Z02 + CHAN BUS IN (CSR) BIT P ------ 011
U10 + SERVICE OUT TAG DELAYED 100NS  012
S09 + CHAN OVERRUN ----------------- 013
X24 + CBO REG (CDX) BIT 0 ---------- 014
X25 + CBO REG (CDX) BIT 1 ---------- 015
X26 + CBO REG (CDX) BIT 2 ---------- 016
X28 + CBO REG (CDX) BIT 3 ---------- 017
X29 + CBO REG (CDX) BIT 4 ---------- 018
X30 + CBO REG (CDX) BIT 5 ---------- 019
X32 + CBO REG (CDX) BIT 6 ---------- 020
X33 + CBO REG (CDX) BIT 7 ---------- 021
X22 + CBO REG (CDX) BIT P ---------- 022
S05 - CLOCK CHECK TWO --------------- 023
Z25 + CLK T0 OR T4 POWERED (CDX) --- 024
U05 - CDX CARD CHECK ---------------- 025
S07 + TRUNCATION LATCH -------------- 026
U11 + TRUNCATION LATCH (UNUSED) ---- 027
S03 - TAKE DATA (CDX) --------------- 028
S04 - DATA TAKEN (CDX) -------------- 029
S10 + TAKE DATA OR DATA TAKEN ------ 030
J05 + CHECK CBO PARITY TIME -------- 031
Z30 + READ AND NOT EOT -------------- 032
Y25 + CHAN DATA IN (CDX) ------------ 033
Y24 + CHAN SERVICE IN (CDX) -------- 034
B07 - LOAD ZERO TO CBO -------------- 035
Z28 - HALT I/O CHECK ---------------- 036
Y29 + ALLOW RUN CHANNEL (CDX) ------ 037
J06 + CHECK CBI PARITY -------------- 038
P05 + GATE FINAL SET BI DESKEW OUT - 039
G07 + CDX END OF TRANSFER ----------- 040
J07 - CDX INPUT EOT ----------------- 041
M02 + DECREMENT BYTE COUNTER ------- 042
Y28 + SET BUS IN DESKEW REG (CDX) -- 043
G09 + CHECK BYTE COUNT PARITY ------ 044
P02 + GO OR FINISH DECODE ----------- 045
B09 - LOAD CBI ---------------------- 046
Z24 + SEARCH (CDX) ------------------ 047
Z26 + WRITE (CDX) ------------------- 048
Y26 + WRITE OR SEARCH (CDX) -------- 049
P13 - WAIT OR NOT START ------------- 050
```

LINE/SIGNAL	PIN	SHEET/LINE
L003		
+ CHAN BUS IN (CSR) BIT 0		
	G2Y03	HG210-L003
	(G2Z03)	HG210-R003
	(H2Z03)	HH220-R008
	D2Y03	HD200-L037
	E2Y03	HE200-L037
L004		
+ CHAN BUS IN (CSR) BIT 1		
	G2Y05	HG210-L004
	(G2Z05)	HG210-R004
	(H2Z05)	HH220-R009
	D2Y05	HD200-L037
	E2Y05	HE200-L037
L005		
+ CHAN BUS IN (CSR) BIT 2		
	G2Y06	HG210-L005
	(G2Z06)	HG210-R005
	(H2Z06)	HH220-R010
	D2Y06	HD200-L037
	E2Y06	HE200-L037
L006		
+ CHAN BUS IN (CSR) BIT 3		
	G2Y07	HG210-L006
	(G2Z07)	HG210-R006
	(H2Z07)	HH220-R011
	D2Y07	HD200-L037
	E2Y07	HE200-L037
L007		
+ CHAN BUS IN (CSR) BIT 4		
	G2Y09	HG210-L007
	(G2Z09)	HG210-R007
	(H2Z09)	HH220-R012
	D2Y09	HD200-L037
	E2Y09	HE200-L037
L008		
+ CHAN BUS IN (CSR) BIT 5		
	G2Y10	HG210-L008
	(G2Z10)	HG210-R008
	(H2Z10)	HH220-R013
	D2Y10	HD200-L037
	E2Y10	HE200-L037
L009		
+ CHAN BUS IN (CSR) BIT 6		
	G2Y11	HG210-L009
	(G2Z11)	HG210-R009
	(H2Z11)	HH220-R014
	D2Y11	HD200-L037
	E2Y11	HE200-L037
L010		
+ CHAN BUS IN (CSR) BIT 7		
	G2Y13	HG210-L010
	(G2Z13)	HG210-R010
	(H2Z13)	HH220-R015
	D2Y13	HD200-L037
	E2Y13	HE200-L037

LINE/SIGNAL	PIN	SHEET/LINE
L011		
+ CHAN BUS IN (CSR) BIT P		
	G2Y02	HG210-L011
	(G2Z02)	HG210-R011
	(H2Z02)	HH220-R016
	D2Y02	HD200-L037
	E2Y02	HE200-L037
L012		
- SERVICE OUT (TO CDX/-SC)		
	G2Y32	HG210-L012
	(D2Y32)	HD200-R025
	(E2Y32)	HE200-R025
	F2Y32	HF200-L012
L013		
- DATA OUT (TO CDX/-SC)		
	G2Y33	HG210-L013
	(D2Y33)	HD200-R024
	(E2Y33)	HE200-R024
	F2Y33	HF200-L013
L014		
- COMMAND OUT (TO CDX/-SC)		
	G2Y30	HG210-L014
	(D2Y30)	HD200-R026
	(E2Y30)	HE200-R026
	F2Y30	HF200-L009
L015		
- CHECK RESET		
	G2B13	HG210-L015
	(H2Y10)	HH220-R063
	(R2J05)	HR200-R028
	D2J06	HD200-L034
	E2J06	HE200-L034
	C2J10	HC200-L012
	F2M04	HF200-L056
	H2U12	HH220-L061
	J2Y10	HJ200-L024
	K2Y10	HK200-L023
	L2D02	HL200-L003
	N2M13	HN200-L024
	V2G08	HV200-L033
	X2S13	HX200-L015
L016		
+ DISABLE RUN CHANNEL		
	G2U02	HG210-L016
	(F2U09)	HF200-R048
L017		
+ RESET		
	G2J13	HG210-L017
	(R2B07)	HR200-R022
	D2M05	HD200-L031
	E2M05	HE200-L031
	C2G09	HC200-L016
	F2M02	HF200-L054
	H2S03	HH220-L060
	M2P11	HM200-L011
	P2J09	HP200-L022
	V2G13	HV200-L006
	X2M02	HX200-L027

LINE/SIGNAL	PIN	SHEET/LINE
L018		
- CHAN BUS OUT (TO CDX) BIT 0		
	G2W03	HG210-L018
	(D2W03)	HD200-R015
	(E2W03)	HE200-R015
L019		
- CHAN BUS OUT (TO CDX) BIT 1		
	G2W05	HG210-L019
	(D2W05)	HD200-R016
	(E2W05)	HE200-R016
L020		
- CHAN BUS OUT (TO CDX) BIT 2		
	G2W06	HG210-L020
	(D2W06)	HD200-R017
	(E2W06)	HE200-R017
L021		
- CHAN BUS OUT (TO CDX) BIT 3		
	G2W07	HG210-L021
	(D2W07)	HD200-R018
	(E2W07)	HE200-R018
L022		
- CHAN BUS OUT (TO CDX) BIT 4		
	G2W09	HG210-L022
	(D2W09)	HD200-R019
	(E2W09)	HE200-R019
L023		
- CHAN BUS OUT (TO CDX) BIT 5		
	G2W10	HG210-L023
	(D2W10)	HD200-R020
	(E2W10)	HE200-R020
L024		
- CHAN BUS OUT (TO CDX) BIT 6		
	G2W11	HG210-L024
	(D2W11)	HD200-R021
	(E2W11)	HE200-R021
L025		
- CHAN BUS OUT (TO CDX) BIT 7		
	G2W13	HG210-L025
	(D2W13)	HD200-R022
	(E2W13)	HE200-R022
L026		
- CHAN BUS OUT (TO CDX) BIT P		
	G2W02	HG210-L026
	(D2W02)	HD200-R023
	(E2W02)	HE200-R023
L027		
+ CDX/CSR CLOCK T0		
	G2G02	HG210-L027
	(P2S02)	HP200-R026
	H2M09	HH220-L062
L028		
+ CDX/CSR CLOCK T2		
	G2G03	HG210-L028
	(P2M07)	HP200-R027
	H2M08	HH220-L063

LINE/SIGNAL	PIN	SHEET/LINE
L029		
+ CDX/CSR CLOCK T4		
	G2G04	HG210-L029
	(P2U04)	HP200-R028
	H2M10	HH220-L064
L030		
+ CDX/CSR CLOCK T6		
	G2G05	HG210-L030
	(P2U02)	HP200-R029
	H2M12	HH220-L065
L031		
- NEED DATA GATED		
	G2J02	HG210-L031
	(H2P11)	HH220-R003
L032		
- CDN SD1 ND/DR GATED CHANNEL		
	G2J04	HG210-L032
	(N2G04)	HN200-R040
	H2B10	HH220-L005
L033		
- SET CHAN BUS OUT REGISTER		
	G2B12	HG210-L033
	(F2D09)	HF200-R035
L034		
- GATE LRC TO BUS OUT (CSR)		
	G2B02	HG210-L034
	(H2M05)	HH220-R058
	D2M09	HD200-L030
	E2M09	HE200-L030
L035		
+ HALT I/O LATCH		
	G2S13	HG210-L035
	(F2S13)	HF200-R038
	H2S13	HH220-L057
L036		
+ LOAD ZERO TO CBO RETURN		
	G2M13	HG210-L036
	(H2M03)	HH220-R064
L037		
- ADDRESS OUT (TO CDX/-SC)		
	G2W32	HG210-L037
	(D2W32)	HD200-R039
	(E2W32)	HE200-R039
	F2W32	HF200-L003
L038		
+ READ AND NOT EOT		
	G2Y22	HG210-L038
	(G2Z30)	HG210-R032
	(H2Z30)	HH220-R048
	D2Y22	HD200-L029
	E2Y22	HE200-L029
L039		
- CHAN BYTE COUNT ZERO		
	G2S02	HG210-L039
	(H2U13)	HH220-R017

LINE/SIGNAL	PIN	SHEET/LINE
L040		
+ HIGH SPEED CHAN ACTIVE		
	G2G10	HG210-L040
	(F2S03)	HF200-R008
	H2S08	HH220-L004
	J2D02	HJ200-L056
L041		
+ GATE FINAL SET BI DESKEW IN		
	G2P04	HG210-L041
	(H2J10)	HH220-R059
L042		
+ WRT OR SEARCH AND NOT EOT		
	G2Z29	HG210-L042
	(H2Z29)	HH220-R047
L043		
+ NEED 3 BYTES GATED		
	G2J10	HG210-L043
	(H2B13)	HH220-R004
L044		
+ 3 BYTES READY		
	G2J11	HG210-L044
	(H2B07)	HH220-R005
L045		
+ CXC REG (CSR) BIT 0		
	G2X03	HG210-L045
	(H2X03)	HH220-R037
L046		
+ CXC REG (CSR) BIT 1		
	G2X05	HG210-L046
	(H2X05)	HH220-R038
L047		
+ CXC REG (CSR) BIT 2		
	G2X06	HG210-L047
	(H2X06)	HH220-R039
L048		
+ CXC REG (CSR) BIT 3		
	G2X07	HG210-L048
	(H2X07)	HH220-R040
L049		
+ CXC REG (CSR) BIT 4		
	G2X09	HG210-L049
	(H2X09)	HH220-R041
L050		
+ CXC REG (CSR) BIT 5		
	G2X10	HG210-L050
	(H2X10)	HH220-R042
L051		
+ CXC REG (CSR) BIT 6		
	G2X11	HG210-L051
	(H2X11)	HH220-R043
L052		
+ CXC REG (CSR) BIT 7		
	G2X13	HG210-L052
	(H2X13)	HH220-R044

LINE/SIGNAL	PIN	SHEET/LINE
L053		
+ CXC REG (CSR) BIT P		
	G2X02	HG210-L053
	(H2X02)	HH220-R045
L054		
+ OFFSET INTERLOCK MODE GATED		
	G2U09	HG210-L054
	(N2S04)	HN200-R064
L055		
- HALT CHANNEL REQUESTS (TO CDX)		
	G2B04	HG210-L055
	(N2P11)	HN200-R041
R003		
+ CHAN BUS IN (CSR) BIT 0		
	(G2Z03)	HG210-R003
	(H2Z03)	HH220-R008
	D2Y03	HD200-L037
	E2Y03	HE200-L037
	G2Y03	HG210-L003
R004		
+ CHAN BUS IN (CSR) BIT 1		
	(G2Z05)	HG210-R004
	(H2Z05)	HH220-R009
	D2Y05	HD200-L037
	E2Y05	HE200-L037
	G2Y05	HG210-L004
R005		
+ CHAN BUS IN (CSR) BIT 2		
	(G2Z06)	HG210-R005
	(H2Z06)	HH220-R010
	D2Y06	HD200-L037
	E2Y06	HE200-L037
	G2Y06	HG210-L005
R006		
+ CHAN BUS IN (CSR) BIT 3		
	(G2Z07)	HG210-R006
	(H2Z07)	HH220-R011
	D2Y07	HD200-L037
	E2Y07	HE200-L037
	G2Y07	HG210-L006
R007		
+ CHAN BUS IN (CSR) BIT 4		
	(G2Z09)	HG210-R007
	(H2Z09)	HH220-R012
	D2Y09	HD200-L037
	E2Y09	HE200-L037
	G2Y09	HG210-L007
R008		
+ CHAN BUS IN (CSR) BIT 5		
	(G2Z10)	HG210-R008
	(H2Z10)	HH220-R013
	D2Y10	HD200-L037
	E2Y10	HE200-L037
	G2Y10	HG210-L008

LINE/SIGNAL	PIN	SHEET/LINE
R009		
+ CHAN BUS IN (CSR) BIT 6		
	(G2Z11)	HG210-R009
	(H2Z11)	HH220-R014
	D2Y11	HD200-L037
	E2Y11	HE200-L037
	G2Y11	HG210-L009
R010		
+ CHAN BUS IN (CSR) BIT 7		
	(G2Z13)	HG210-R010
	(H2Z13)	HH220-R015
	D2Y13	HD200-L037
	E2Y13	HE200-L037
	G2Y13	HG210-L010
R011		
+ CHAN BUS IN (CSR) BIT P		
	(G2Z02)	HG210-R011
	(H2Z02)	HH220-R016
	D2Y02	HD200-L037
	E2Y02	HE200-L037
	G2Y02	HG210-L011
R012		
+ SERVICE OUT TAG DELAYED 100NS		
	(G2U10)	HG210-R012
	H2J05	HH220-L030
R013		
+ CHAN OVERRUN		
	(G2S09)	HG210-R013
	J2S10	HJ200-L044
R014		
+ CBO REG (CDX) BIT 0		
	(G2X24)	HG210-R014
	H2X24	HH220-L045
R015		
+ CBO REG (CDX) BIT 1		
	(G2X25)	HG210-R015
	H2X25	HH220-L046
R016		
+ CBO REG (CDX) BIT 2		
	(G2X26)	HG210-R016
	H2X26	HH220-L047
R017		
+ CBO REG (CDX) BIT 3		
	(G2X28)	HG210-R017
	H2X28	HH220-L048
R018		
+ CBO REG (CDX) BIT 4		
	(G2X29)	HG210-R018
	H2X29	HH220-L049
R019		
+ CBO REG (CDX) BIT 5		
	(G2X30)	HG210-R019
	H2X30	HH220-L050

LINE/SIGNAL	PIN	SHEET/LINE
R020		
+ CBO REG (CDX) BIT 6		
	(G2X32)	HG210-R020
	H2X32	HH220-L051
R021		
+ CBO REG (CDX) BIT 7		
	(G2X33)	HG210-R021
	H2X33	HH220-L052
R022		
+ CBO REG (CDX) BIT P		
	(G2X22)	HG210-R022
	H2X22	HH220-L053
R023		
- CLOCK CHECK TWO		
	(G2S05)	HG210-R023
	(D2D02)	HD200-R014
	(E2D02)	HE200-R014
	(F2B02)	HF200-R041
	(X2S09)	HX200-R032
	K2S12	HK200-L012
R024		
+ CLK TO OR T4 POWERED (CDX)		
	(G2Z25)	HG210-R024
	H2Z25	HH220-L054
R025		
- CDX CARD CHECK		
	(G2U05)	HG210-R025
	F2U12	HF200-L044
R026		
+ TRUNCATION LATCH		
	(G2S07)	HG210-R026
	H2D02	HH220-L059
	J2B07	HJ200-L047
R027		
+ TRUNCATION LATCH (UNUSED)		
	(G2U11)	HG210-R027
R028		
- TAKE DATA (CDX)		
	(G2S03)	HG210-R028
	H2S10	HH220-L003
R029		
- DATA TAKEN (CDX)		
	(G2S04)	HG210-R029
R030		
+ TAKE DATA OR DATA TAKEN		
	(G2S10)	HG210-R030
	H2G07	HH220-L042
	J2U05	HJ200-L003
	K2U09	HK200-L030
	N2S11	HN200-L025
R031		
+ CHECK CBO PARITY TIME		
	(G2J05)	HG210-R031
	H2J13	HH220-L032

LINE/SIGNAL	PIN	SHEET/LINE
R032		
+ READ AND NOT EOT		
	(G2Z30)	HG210-R032
	(H2Z30)	HH220-R048
	D2Y22	HD200-L029
	E2Y22	HE200-L029
	G2Y22	HG210-L038
R033		
+ CHAN DATA IN (CDX)		
	(G2Y25)	HG210-R033
	D2Y25	HD200-L035
	E2Y25	HE200-L035
	F2Y25	HF200-L015
R034		
+ CHAN SERVICE IN (CDX)		
	(G2Y24)	HG210-R034
	D2Y24	HD200-L036
	E2Y24	HE200-L036
	F2Y24	HF200-L014
R035		
- LOAD ZERO TO CBO		
	(G2B07)	HG210-R035
	H2G03	HH220-L044
R036		
- HALT I/O CHECK		
	(G2Z28)	HG210-R036
	H2Z28	HH220-L066
R037		
+ ALLOW RUN CHANNEL (CDX)		
	(G2Y29)	HG210-R037
	D2Y29	HD200-L027
	E2Y29	HE200-L027
R038		
+ CHECK CBI PARITY		
	(G2J06)	HG210-R038
	H2D11	HH220-L028
R039		
+ GATE FINAL SET BI DESKEW OUT		
	(G2P05)	HG210-R039
R040		
+ CDX END OF TRANSFER		
	(G2G07)	HG210-R040
	H2S02	HH220-L055
R041		
- CDX INPUT EOT		
	(G2J07)	HG210-R041
R042		
+ DECREMENT BYTE COUNTER		
	(G2M02)	HG210-R042
	H2S07	HH220-L014
R043		
+ SET BUS IN DESKEW REG (CDX)		
	(G2Y28)	HG210-R043
	D2Y28	HD200-L023
	E2Y28	HE200-L023

LINE/SIGNAL	PIN	SHEET/LINE
R044		
+ CHECK BYTE COUNT PARITY		
	(G2G09)	HG210-R044
	H2M07	HH220-L010
R045		
+ GO OR FINISH DECODE		
	(G2P02)	HG210-R045
	H2S12	HH220-L058
R046		
- LOAD CBI		
	(G2B09)	HG210-R046
	H2P06	HH220-L027
R047		
+ SEARCH (CDX)		
	(G2Z24)	HG210-R047
	H2Z24	HH220-L043
R048		
+ WRITE (CDX)		
	(G2Z26)	HG210-R048
	H2Z26	HH220-L016
R049		
+ WRITE OR SEARCH (CDX)		
	(G2Y26)	HG210-R049
	D2Y26	HD200-L028
	E2Y26	HE200-L028
R050		
- WAIT OR NOT START		
	(G2P13)	HG210-R050
	H2S09	HH220-L056

003 - TAKE DATA (CDX) ----------S10
004 + HIGH SPEED CHAN ACTIVE --------S08
005 - CDN SD1 ND/DR GATED CHANNEL -- B10
006 + MCS REG BIT 4 ----------U04
007 - TAKE DATA (DDC) ----------D07
008 + DATA TAKEN (ADT) ----------Y26
009 - CDN SD1 ND/DR GATED DEVICE --- B03
010 + CHECK BYTE COUNT PARITY -------M07
011 + EXT REG ADR 19 ----------S05
012 - GATE CHAN BUS OUT TO BUS IN ---J06
013 + LD EXT REG CLK C ----------M13
014 + DECREMENT BYTE COUNTER --------S07
015 + EXT REG ADR 18 ----------S04
016 + WRITE (CDX) ----------Z26
017 - ALU OUT BIT 0 ----------P12
018 - ALU OUT BIT 1 ----------P13
019 - ALU OUT BIT 2 ----------U02
020 - ALU OUT BIT 3 ----------U05
021 - ALU OUT BIT 4 ----------U06
022 - ALU OUT BIT 5 ----------U07
023 - ALU OUT BIT 6 ----------U09
024 - CDN SD1 ALU OUT BIT 7 (CH/DEV) U10
025 - CDN SD1 ALU OUT BIT P (CH/DEV) U11
026 + EXT ADR DECODE 7 ----------Y25
027 - LOAD CBI ----------P06
028 + CHECK CBI PARITY ----------D11
029 + EXT ADR DECODE 6 ----------Y06
030 + SERVICE OUT TAG DELAYED 100NS -J05
031 + EXT REG SELECT ----------M04
032 + CHECK CBO PARITY TIME ---------J13
033 - CHAN DXR BUS BIT 0 ----------Y28
034 - CHAN DXR BUS BIT 1 ----------Y30
035 - CHAN DXR BUS BIT 2 ----------Y32
036 - CHAN DXR BUS BIT 3 ----------Y33
037 - CHAN DXR BUS BIT 4 ----------Y07
038 - CHAN DXR BUS BIT 5 ----------Y09
039 - CHAN DXR BUS BIT 6 ----------Y11
040 - CHAN DXR BUS BIT 7 ----------Y13
041 - CHAN DXR BUS BIT P ----------P09
042 + TAKE DATA OR DATA TAKEN -------G07
043 + SEARCH (CDX) ----------Z24
044 - LOAD ZERO TO CBO ----------G03
045 + CBO REG (CDX) BIT 0 ----------X24
046 + CBO REG (CDX) BIT 1 ----------X25
047 + CBO REG (CDX) BIT 2 ----------X26
048 + CBO REG (CDX) BIT 3 ----------X28
049 + CBO REG (CDX) BIT 4 ----------X29
050 + CBO REG (CDX) BIT 5 ----------X30
051 + CBO REG (CDX) BIT 6 ----------X32
052 + CBO REG (CDX) BIT 7 ----------X33
053 + CBO REG (CDX) BIT P ----------X22
054 + CLK T0 OR T4 POWERED (CDX) ----Z25
055 + CDX END OF TRANSFER ----------S02
056 - WAIT OR NOT START ----------S09
057 + HALT I/O LATCH ----------S13
058 + GO OR FINISH DECODE ----------S12
059 + TRUNCATION LATCH ----------D02
060 + RESET ----------S03
061 - CHECK RESET ----------U12
062 + CDX/CSR CLOCK T0 ----------M09
063 + CDX/CSR CLOCK T2 ----------M08
064 + CDX/CSR CLOCK T4 ----------M10
065 + CDX/CSR CLOCK T6 ----------M12
066 - HALT I/O CHECK ----------Z28

CSR CARD

OVERVIEW

The CSR (Channel Search) card contains registers and logic used in controlling data transfer. It also monitors data transfer for errors.

PRIMARY FUNCTIONS

- The CCL (channel count low) and CCH (channel count high) are loaded with the number of bytes to be transferred to and/or from the channel.
- The CXC (channel transfer control) is used to control the CDX (channel data transfer) hardware.
- The CBI logic generates the CBI register bit lines to the compare logic.
- Buffer limiting control logic to limit the logical storage capacity of ADT (automatic data transfer) hardware to 3 bytes of data.
- ALU in selector gates which bus lines (CBI or CBO) are gates into ALU.
- End of transfer controls.

PRIMARY COMPONENTS

- Registers CXC, CBI, LRC
- Counters CCL, CCH

ERROR CHECKING

- The CSR card check-2 logic monitors the CSR card for incorrect parity in CCL and CCH registers or in an unsuccessful compare.
- The CSR card check-1 logic monitors the CBI, CBO, and CXC register for incorrect parity.
- Channel data check logic generates the channel data check line when an incorrect LRC (longitudinal redundancy check) occurs or a Halt I/O check line is active.

P11 - NEED DATA GATED ---------- 003
B13 + NEED 3 BYTES GATED ---------- 004
B07 + 3 BYTES READY ---------- 005
B05 - DATA READY LATCHED ---------- 006
Y05 + CSR CARD CHECK 2 ---------- 007
Z03 + CHAN BUS IN (CSR) BIT 0 ------ 008
Z05 + CHAN BUS IN (CSR) BIT 1 ------ 009
Z06 + CHAN BUS IN (CSR) BIT 2 ------ 010
Z07 + CHAN BUS IN (CSR) BIT 3 ------ 011
Z09 + CHAN BUS IN (CSR) BIT 4 ------ 012
Z10 + CHAN BUS IN (CSR) BIT 5 ------ 013
Z11 + CHAN BUS IN (CSR) BIT 6 ------ 014
Z13 + CHAN BUS IN (CSR) BIT 7 ------ 015
Z02 + CHAN BUS IN (CSR) BIT P ------ 016
U13 - CHAN BYTE COUNT ZERO --------- 017
G02 - CHAN DXR BUS BIT 0 ---------- 018
G04 - CHAN DXR BUS BIT 1 ---------- 019
G05 - CHAN DXR BUS BIT 2 ---------- 020
G08 - CHAN DXR BUS BIT 3 ---------- 021
G09 - CHAN DXR BUS BIT 4 ---------- 022
G10 - CHAN DXR BUS BIT 5 ---------- 023
G12 - CHAN DXR BUS BIT 6 ---------- 024
G13 - CHAN DXR BUS BIT 7 ---------- 025
M02 - CHAN DXR BUS BIT P ---------- 026
D04 - ALU IN1 BIT 0 ---------- 027
D05 - ALU IN1 BIT 1 ---------- 028
D06 - ALU IN1 BIT 2 ---------- 029
D09 - ALU IN1 BIT 3 ---------- 030
D10 - ALU IN1 BIT 4 ---------- 031
D12 - ALU IN1 BIT 5 ---------- 032
D13 - ALU IN1 BIT 6 ---------- 033
J02 - ALU IN1 BIT 7 ---------- 034
J04 - ALU IN1 BIT P ---------- 035
P10 - CSR CARD CHECK 1 ---------- 036
X03 + CXC REG (CSR) BIT 0 ---------- 037
X05 + CXC REG (CSR) BIT 1 ---------- 038
X06 + CXC REG (CSR) BIT 2 ---------- 039
X07 + CXC REG (CSR) BIT 3 ---------- 040
X09 + CXC REG (CSR) BIT 4 ---------- 041
X10 + CXC REG (CSR) BIT 5 ---------- 042
X11 + CXC REG (CSR) BIT 6 ---------- 043
X13 + CXC REG (CSR) BIT 7 ---------- 044
X02 + CXC REG (CSR) BIT P ---------- 045
B12 + WRITE (RUN) ---------- 046
Z29 + WRT OR SEARCH AND NOT EOT ---- 047
Z30 + READ AND NOT EOT ---------- 048
J07 - CHAN DXR BUS BIT 0 ---------- 049
J09 - CHAN DXR BUS BIT 1 ---------- 050
J11 - CHAN DXR BUS BIT 2 ---------- 051
J12 - CHAN DXR BUS BIT 3 ---------- 052
P02 - CHAN DXR BUS BIT 4 ---------- 053
P04 - CHAN DXR BUS BIT 5 ---------- 054
P05 - CHAN DXR BUS BIT 6 ---------- 055
P07 - CHAN DXR BUS BIT 7 ---------- 056
Y02 + CHAN COMPARE SUCCESSFUL ------ 057
M05 - GATE LRC TO BUS OUT (CSR) ---- 058
J10 + GATE FINAL SET BI DESKEW IN -- 059
Y24 + CDX END OF TRANSFER (CSR) ---- 060
Y03 + ODD PTY - TRNC EOT CMPR SUCC - 061
Y29 + MACHINE RESET REPOWERED ------ 062
Y10 - CHECK RESET ---------- 063
M03 + LOAD ZERO TO CBO RETURN ------ 064
Y22 + CHAN DATA CHECK ---------- 065

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- TAKE DATA (CDX)		
	H2S10	HH220-L003
	(G2S03)	HG210-R028
L004		
+ HIGH SPEED CHAN ACTIVE		
	H2S08	HH220-L004
	(F2S03)	HF200-R008
	G2G10	HG210-L040
	J2D02	HJ200-L056
L005		
- CDN SD1 ND/DR GATED CHANNEL		
	H2B10	HH220-L005
	(N2G04)	HN200-R040
	G2J04	HG210-L032
L006		
+ MCS REG BIT 4		
	H2U04	HH220-L006
	(V2S08)	HV200-R034
L007		
- TAKE DATA (DDC)		
	H2D07	HH220-L007
	(X2U10)	HX200-R025
	K2D09	HK200-L005
	N2S12	HN200-L035
L008		
+ DATA TAKEN (ADT)		
	H2Y26	HH220-L008
	(K2Y26)	HK200-R003
L009		
- CDN SD1 ND/DR GATED DEVICE		
	H2B03	HH220-L009
	(N2S05)	HN200-R044
	X2U05	HX200-L039
L010		
+ CHECK BYTE COUNT PARITY		
	H2M07	HH220-L010
	(G2G09)	HG210-R044
L011		
+ EXT REG ADR 19		
	H2S05	HH220-L011
	(F2M09)	HF200-R034
	J2U06	HJ200-L039
L012		
- GATE CHAN BUS OUT TO BUS IN		
	H2J06	HH220-L012
	(F2G13)	HF200-R047
L013		
+ LD EXT REG CLK C		
	H2M13	HH220-L013
	(Q2U10)	HQ200-R014
	C2B12	HC200-L007
	F2P04	HF200-L035

LINE/SIGNAL	PIN	SHEET/LINE
L014		
+ DECREMENT BYTE COUNTER		
	H2S07	HH220-L014
	(G2M02)	HG210-R042
L015		
+ EXT REG ADR 18		
	H2S04	HH220-L015
	(F2M08)	HF200-R033
	V2S05	HV200-L034
L016		
+ WRITE (CDX)		
	H2Z26	HH220-L016
	(G2Z26)	HG210-R048
L017		
- ALU OUT BIT 0		
	H2P12	HH220-L017
	(Q2B04)	HQ200-R008
	C2B02	HC200-L022
	F2D02	HF200-L019
	J2U07	HJ200-L041
	N2B07	HN200-L012
	R2M02	HR200-L024
	V2D13	HV200-L007
	X2D13	HX200-L026
L018		
- ALU OUT BIT 1		
	H2P13	HH220-L018
	(Q2D05)	HQ200-R008
	C2D02	HC200-L023
	F2D04	HF200-L020
	J2U09	HJ200-L041
	N2D05	HN200-L013
	R2G12	HR200-L024
	V2B05	HV200-L008
	X2B05	HX200-L026
L019		
- ALU OUT BIT 2		
	H2U02	HH220-L019
	(Q2D06)	HQ200-R008
	F2D05	HF200-L021
	J2P12	HJ200-L041
	N2D09	HN200-L014
	R2G13	HR200-L024
	V2D10	HV200-L009
	X2D10	HX200-L026
L020		
- ALU OUT BIT 3		
	H2U05	HH220-L020
	(Q2B05)	HQ200-R008
	F2D06	HF200-L022
	J2U02	HJ200-L041
	N2D10	HN200-L015
	R2M04	HR200-L024
	V2J02	HV200-L010
	X2J02	HX200-L026

LINE/SIGNAL	PIN	SHEET/LINE
L021		
- ALU OUT BIT 4		
	H2U06	HH220-L021
	(Q2D04)	HQ200-R008
	F2D07	HF200-L023
	J2B12	HJ200-L041
	N2D06	HN200-L016
	R2M03	HR200-L024
	V2B08	HV200-L011
	X2B08	HX200-L026
L022		
- ALU OUT BIT 5		
	H2U07	HH220-L022
	(Q2B03)	HQ200-R008
	F2B07	HF200-L024
	J2D06	HJ200-L041
	N2B09	HN200-L017
	R2P04	HR200-L024
	V2B03	HV200-L012
	X2B03	HX200-L026
L023		
- ALU OUT BIT 6		
	H2U09	HH220-L023
	(Q2D02)	HQ200-R008
	F2B03	HF200-L025
	N2G02	HN200-L018
	R2P02	HR200-L024
	V2D05	HV200-L013
	X2D05	HX200-L026
L024		
- CDN SD1 ALU OUT BIT 7 (CH/DEV)		
	H2U10	HH220-L024
	(N2D11)	HN200-R008
	X2D06	HX200-L053
L025		
- CDN SD1 ALU OUT BIT P (CH/DEV)		
	H2U11	HH220-L025
	(N2D11)	HN200-R009
	X2B02	HX200-L054
L026		
+ EXT ADR DECODE 7		
	H2Y25	HH220-L026
	(K2Y25)	HK200-R044
L027		
- LOAD CBI		
	H2P06	HH220-L027
	(G2B09)	HG210-R046
L028		
+ CHECK CBI PARITY		
	H2D11	HH220-L028
	(G2J06)	HG210-R038
L029		
+ EXT ADR DECODE 6		
	H2Y06	HH220-L029
	(K2Y06)	HK200-R043

LINE/SIGNAL	PIN	SHEET/LINE
L030		
+ SERVICE OUT TAG DELAYED 100NS		
	H2J05	HH220-L030
	(G2U10)	HG210-R012
L031		
+ EXT REG SELECT		
	H2M04	HH220-L031
	(Q2Z22)	HQ200-R018
	(R2S02)	HR200-R015
	K2U13	HK200-L009
	N2B04	HN200-L011
	R2Z22	HR200-L021
L032		
+ CHECK CBO PARITY TIME		
	H2J13	HH220-L032
	(G2J05)	HG210-R031
L033		
- CHAN DXR BUS BIT 0		
	H2Y28	HH220-L033
	(H2G02)	HH220-R018
	(H2J07)	HH220-R049
	(K2Y28)	HK200-R008
	(N2G12)	HN200-R021
L034		
- CHAN DXR BUS BIT 1		
	H2Y30	HH220-L034
	(H2G04)	HH220-R019
	(H2J09)	HH220-R050
	(K2Y30)	HK200-R008
	(N2J10)	HN200-R022
L035		
- CHAN DXR BUS BIT 2		
	H2Y32	HH220-L035
	(H2G05)	HH220-R020
	(H2J11)	HH220-R051
	(K2Y32)	HK200-R008
	(N2J12)	HN200-R023
L036		
- CHAN DXR BUS BIT 3		
	H2Y33	HH220-L036
	(H2G08)	HH220-R021
	(H2J12)	HH220-R052
	(K2Y33)	HK200-R008
	(N2J06)	HN200-R024
L037		
- CHAN DXR BUS BIT 4		
	H2Y07	HH220-L037
	(H2G09)	HH220-R022
	(H2P02)	HH220-R053
	(K2Y07)	HK200-R008
	(N2G03)	HN200-R025
L038		
- CHAN DXR BUS BIT 5		
	H2Y09	HH220-L038
	(H2G10)	HH220-R023
	(H2P04)	HH220-R054
	(K2Y09)	HK200-R008
	(N2J07)	HN200-R026

LINE/SIGNAL	PIN	SHEET/LINE
L039		
- CHAN DXR BUS BIT 6		
	H2Y11	HH220-L039
	(H2G12)	HH220-R024
	(H2P05)	HH220-R055
	(K2Y11)	HK200-R008
	(N2J05)	HN200-R027
L040		
- CHAN DXR BUS BIT 7		
	H2Y13	HH220-L040
	(H2G13)	HH220-R025
	(H2P07)	HH220-R056
	(K2Y13)	HK200-R008
	(N2M11)	HN200-R028
L041		
- CHAN DXR BUS BIT P		
	H2P09	HH220-L041
	(H2M02)	HH220-R026
	(K2G10)	HK200-R008
	(N2G05)	HN200-R029
L042		
+ TAKE DATA OR DATA TAKEN		
	H2G07	HH220-L042
	(G2S10)	HG210-R030
	J2U05	HJ200-L003
	K2U09	HK200-L030
	N2S11	HN200-L025
L043		
+ SEARCH (CDX)		
	H2Z24	HH220-L043
	(G2Z24)	HG210-R047
L044		
- LOAD ZERO TO CBO		
	H2G03	HH220-L044
	(G2B07)	HG210-R035
L045		
+ CBO REG (CDX) BIT 0		
	H2X24	HH220-L045
	(G2X24)	HG210-R014
L046		
+ CBO REG (CDX) BIT 1		
	H2X25	HH220-L046
	(G2X25)	HG210-R015
L047		
+ CBO REG (CDX) BIT 2		
	H2X26	HH220-L047
	(G2X26)	HG210-R016
L048		
+ CBO REG (CDX) BIT 3		
	H2X28	HH220-L048
	(G2X28)	HG210-R017
L049		
+ CBO REG (CDX) BIT 4		
	H2X29	HH220-L049
	(G2X29)	HG210-R018

LINE/SIGNAL	PIN	SHEET/LINE
L050		
+ CBO REG (CDX) BIT 5		
	H2X30	HH220-L050
	(G2X30)	HG210-R019
L051		
+ CBO REG (CDX) BIT 6		
	H2X32	HH220-L051
	(G2X32)	HG210-R020
L052		
+ CBO REG (CDX) BIT 7		
	H2X33	HH220-L052
	(G2X33)	HG210-R021
L053		
+ CBO REG (CDX) BIT P		
	H2X22	HH220-L053
	(G2X22)	HG210-R022
L054		
+ CLK TO OR T4 POWERED (CDX)		
	H2Z25	HH220-L054
	(G2Z25)	HG210-R024
L055		
+ CDX END OF TRANSFER		
	H2S02	HH220-L055
	(G2G07)	HG210-R040
L056		
- WAIT OR NOT START		
	H2S09	HH220-L056
	(G2P13)	HG210-R050
L057		
+ HALT I/O LATCH		
	H2S13	HH220-L057
	(F2S13)	HF200-R038
	G2S13	HG210-L035
L058		
+ GO OR FINISH DECODE		
	H2S12	HH220-L058
	(G2P02)	HG210-R045
L059		
+ TRUNCATION LATCH		
	H2D02	HH220-L059
	(G2S07)	HG210-R026
	J2B07	HJ200-L047
L060		
+ RESET		
	H2S03	HH220-L060
	(R2B07)	HR200-R022
	D2M05	HD200-L031
	E2M05	HE200-L031
	C2G09	HC200-L016
	F2M02	HF200-L054
	G2J13	HG210-L017
	M2P11	HM200-L011
	P2J09	HP200-L022
	V2G13	HV200-L006
	X2M02	HX200-L027

LINE/SIGNAL	PIN	SHEET/LINE
L061		
- CHECK RESET		
	H2U12	HH220-L061
	(H2Y10)	HH220-R063
	(R2J05)	HR200-R028
	D2J06	HD200-L034
	E2J06	HE200-L034
	C2J10	HC200-L012
	F2M04	HF200-L056
	G2B13	HG210-L015
	J2Y10	HJ200-L024
	K2Y10	HK200-L023
	L2D02	HL200-L003
	N2M13	HN200-L024
	V2G08	HV200-L033
	X2S13	HX200-L015
L062		
+ CDX/CSR CLOCK T0		
	H2M09	HH220-L062
	(P2S02)	HP200-R026
	G2G02	HG210-L027
L063		
+ CDX/CSR CLOCK T2		
	H2M08	HH220-L063
	(P2M07)	HP200-R027
	G2G03	HG210-L028
L064		
+ CDX/CSR CLOCK T4		
	H2M10	HH220-L064
	(P2U04)	HP200-R028
	G2G04	HG210-L029
L065		
+ CDX/CSR CLOCK T6		
	H2M12	HH220-L065
	(P2U02)	HP200-R029
	G2G05	HG210-L030
L066		
- HALT I/O CHECK		
	H2Z28	HH220-L066
	(G2Z28)	HG210-R036
R003		
- NEED DATA GATED		
	(H2P11)	HH220-R003
	G2J02	HG210-L031
R004		
+ NEED 3 BYTES GATED		
	(H2B13)	HH220-R004
	G2J10	HG210-L043
R005		
+ 3 BYTES READY		
	(H2B07)	HH220-R005
	G2J11	HG210-L044
R006		
- DATA READY LATCHED		
	(H2B05)	HH220-R006
	X2S03	HX200-L040

LINE/SIGNAL	PIN	SHEET/LINE
R007		
+ CSR CARD CHECK 2		
	(H2Y05)	HH220-R007
	J2Y05	HJ200-L060
R008		
+ CHAN BUS IN (CSR) BIT 0		
	(H2Z03)	HH220-R008
	(G2Z03)	HG210-R003
	D2Y03	HD200-L037
	E2Y03	HE200-L037
	G2Y03	HG210-L003
R009		
+ CHAN BUS IN (CSR) BIT 1		
	(H2Z05)	HH220-R009
	(G2Z05)	HG210-R004
	D2Y05	HD200-L037
	E2Y05	HE200-L037
	G2Y05	HG210-L004
R010		
+ CHAN BUS IN (CSR) BIT 2		
	(H2Z06)	HH220-R010
	(G2Z06)	HG210-R005
	D2Y06	HD200-L037
	E2Y06	HE200-L037
	G2Y06	HG210-L005
R011		
+ CHAN BUS IN (CSR) BIT 3		
	(H2Z07)	HH220-R011
	(G2Z07)	HG210-R006
	D2Y07	HD200-L037
	E2Y07	HE200-L037
	G2Y07	HG210-L006
R012		
+ CHAN BUS IN (CSR) BIT 4		
	(H2Z09)	HH220-R012
	(G2Z09)	HG210-R007
	D2Y09	HD200-L037
	E2Y09	HE200-L037
	G2Y09	HG210-L007
R013		
+ CHAN BUS IN (CSR) BIT 5		
	(H2Z10)	HH220-R013
	(G2Z10)	HG210-R008
	D2Y10	HD200-L037
	E2Y10	HE200-L037
	G2Y10	HG210-L008
R014		
+ CHAN BUS IN (CSR) BIT 6		
	(H2Z11)	HH220-R014
	(G2Z11)	HG210-R009
	D2Y11	HD200-L037
	E2Y11	HE200-L037
	G2Y11	HG210-L009

LINE/SIGNAL	PIN	SHEET/LINE
R015		
+ CHAN BUS IN (CSR) BIT 7		
	(H2Z13)	HH220-R015
	(G2Z13)	HG210-R010
	D2Y13	HD200-L037
	E2Y13	HE200-L037
	G2Y13	HG210-L010
R016		
+ CHAN BUS IN (CSR) BIT P		
	(H2Z02)	HH220-R016
	(G2Z02)	HG210-R011
	D2Y02	HD200-L037
	E2Y02	HE200-L037
	G2Y02	HG210-L011
R017		
- CHAN BYTE COUNT ZERO		
	(H2U13)	HH220-R017
	G2S02	HG210-L039
R018		
- CHAN DXR BUS BIT 0		
	(H2G02)	HH220-R018
	(H2J07)	HH220-R049
	(K2Y28)	HK200-R008
	(N2G12)	HN200-R021
	H2Y28	HH220-L033
R019		
- CHAN DXR BUS BIT 1		
	(H2G04)	HH220-R019
	(H2J09)	HH220-R050
	(K2Y30)	HK200-R008
	(N2J10)	HN200-R022
	H2Y30	HH220-L034
R020		
- CHAN DXR BUS BIT 2		
	(H2G05)	HH220-R020
	(H2J11)	HH220-R051
	(K2Y32)	HK200-R008
	(N2J12)	HN200-R023
	H2Y32	HH220-L035
R021		
- CHAN DXR BUS BIT 3		
	(H2G08)	HH220-R021
	(H2J12)	HH220-R052
	(K2Y33)	HK200-R008
	(N2J06)	HN200-R024
	H2Y33	HH220-L036
R022		
- CHAN DXR BUS BIT 4		
	(H2G09)	HH220-R022
	(H2P02)	HH220-R053
	(K2Y07)	HK200-R008
	(N2G03)	HN200-R025
	H2Y07	HH220-L037

LINE/SIGNAL	PIN	SHEET/LINE
R023		
- CHAN DXR BUS BIT 5		
	(H2G10)	HH220-R023
	(H2P04)	HH220-R054
	(K2Y09)	HK200-R008
	(N2J07)	HN200-R026
	H2Y09	HH220-L038
R024		
- CHAN DXR BUS BIT 6		
	(H2G12)	HH220-R024
	(H2P05)	HH220-R055
	(K2Y11)	HK200-R008
	(N2J05)	HN200-R027
	H2Y11	HH220-L039
R025		
- CHAN DXR BUS BIT 7		
	(H2G13)	HH220-R025
	(H2P07)	HH220-R056
	(K2Y13)	HK200-R008
	(N2M11)	HN200-R028
	H2Y13	HH220-L040
R026		
- CHAN DXR BUS BIT P		
	(H2M02)	HH220-R026
	(K2G10)	HK200-R008
	(N2G05)	HN200-R029
	H2P09	HH220-L041
R027		
- ALU IN1 BIT 0		
	(H2D04)	HH220-R027
	(F2J02)	HF200-R017
	(J2S05)	HJ200-R016
	(K2J02)	HK200-R016
	Q2M07	HQ200-L007
R028		
- ALU IN1 BIT 1		
	(H2D05)	HH220-R028
	(F2G02)	HF200-R018
	(J2S12)	HJ200-R016
	(K2G03)	HK200-R016
	Q2P07	HQ200-L007
R029		
- ALU IN1 BIT 2		
	(H2D06)	HH220-R029
	(F2G03)	HF200-R019
	(J2P10)	HJ200-R016
	(K2J05)	HK200-R016
	Q2M12	HQ200-L007
R030		
- ALU IN1 BIT 3		
	(H2D09)	HH220-R030
	(F2G04)	HF200-R020
	(J2S03)	HJ200-R016
	(K2G09)	HK200-R016
	Q2M09	HQ200-L007

LINE/SIGNAL	PIN	SHEET/LINE
R031		
- ALU IN1 BIT 4		
	(H2D10)	HH220-R031
	(F2G05)	HF200-R021
	(J2B10)	HJ200-R016
	(K2J06)	HK200-R016
	Q2M13	HQ200-L007
R032		
- ALU IN1 BIT 5		
	(H2D12)	HH220-R032
	(F2J09)	HF200-R022
	(J2B03)	HJ200-R016
	(K2G08)	HK200-R016
	Q2P13	HQ200-L007
R033		
- ALU IN1 BIT 6		
	(H2D13)	HH220-R033
	(F2J10)	HF200-R023
	(J2D04)	HJ200-R016
	(K2G07)	HK200-R016
	Q2S02	HQ200-L007
R034		
- ALU IN1 BIT 7		
	(H2J02)	HH220-R034
	(F2J11)	HF200-R024
	(J2B04)	HJ200-R016
	(K2J07)	HK200-R016
	Q2U02	HQ200-L007
R035		
- ALU IN1 BIT P		
	(H2J04)	HH220-R035
	(F2J12)	HF200-R025
	(J2S07)	HJ200-R016
	(K2G02)	HK200-R016
	Q2S03	HQ200-L007
R036		
- CSR CARD CHECK 1		
	(H2P10)	HH220-R036
	F2U10	HF200-L043
R037		
+ CXC REG (CSR) BIT 0		
	(H2X03)	HH220-R037
	G2X03	HG210-L045
R038		
+ CXC REG (CSR) BIT 1		
	(H2X05)	HH220-R038
	G2X05	HG210-L046
R039		
+ CXC REG (CSR) BIT 2		
	(H2X06)	HH220-R039
	G2X06	HG210-L047
R040		
+ CXC REG (CSR) BIT 3		
	(H2X07)	HH220-R040
	G2X07	HG210-L048

LINE/SIGNAL	PIN	SHEET/LINE
R041		
+ CXC REG (CSR) BIT 4		
	(H2X09)	HH220-R041
	G2X09	HG210-L049
R042		
+ CXC REG (CSR) BIT 5		
	(H2X10)	HH220-R042
	G2X10	HG210-L050
R043		
+ CXC REG (CSR) BIT 6		
	(H2X11)	HH220-R043
	G2X11	HG210-L051
R044		
+ CXC REG (CSR) BIT 7		
	(H2X13)	HH220-R044
	G2X13	HG210-L052
R045		
+ CXC REG (CSR) BIT P		
	(H2X02)	HH220-R045
	G2X02	HG210-L053
R046		
+ WRITE (RUN)		
	(H2B12)	HH220-R046
	J2D07	HJ200-L065
R047		
+ WRT OR SEARCH AND NOT EOT		
	(H2Z29)	HH220-R047
	G2Z29	HG210-L042
R048		
+ READ AND NOT EOT		
	(H2Z30)	HH220-R048
	(G2Z30)	HG210-R032
	D2Y22	HD200-L029
	E2Y22	HE200-L029
	G2Y22	HG210-L038
R049		
- CHAN DXR BUS BIT 0		
	(H2J07)	HH220-R049
	(H2G02)	HH220-R018
	(K2Y28)	HK200-R008
	(N2G12)	HN200-R021
	H2Y28	HH220-L033
R050		
- CHAN DXR BUS BIT 1		
	(H2J09)	HH220-R050
	(H2G04)	HH220-R019
	(K2Y30)	HK200-R008
	(N2J10)	HN200-R022
	H2Y30	HH220-L034
R051		
- CHAN DXR BUS BIT 2		
	(H2J11)	HH220-R051
	(H2G05)	HH220-R020
	(K2Y32)	HK200-R008
	(N2J12)	HN200-R023
	H2Y32	HH220-L035

LINE/SIGNAL	PIN	SHEET/LINE
R052		
- CHAN DXR BUS BIT 3		
	(H2J12)	HH220-R052
	(H2G08)	HH220-R021
	(K2Y33)	HK200-R008
	(N2J06)	HN200-R024
	H2Y33	HH220-L036
R053		
- CHAN DXR BUS BIT 4		
	(H2P02)	HH220-R053
	(H2G09)	HH220-R022
	(K2Y07)	HK200-R008
	(N2G03)	HN200-R025
	H2Y07	HH220-L037
R054		
- CHAN DXR BUS BIT 5		
	(H2P04)	HH220-R054
	(H2G10)	HH220-R023
	(K2Y09)	HK200-R008
	(N2J07)	HN200-R026
	H2Y09	HH220-L038
R055		
- CHAN DXR BUS BIT 6		
	(H2P05)	HH220-R055
	(H2G12)	HH220-R024
	(K2Y11)	HK200-R008
	(N2J05)	HN200-R027
	H2Y11	HH220-L039
R056		
- CHAN DXR BUS BIT 7		
	(H2P07)	HH220-R056
	(H2G13)	HH220-R025
	(K2Y13)	HK200-R008
	(N2M11)	HN200-R028
	H2Y13	HH220-L040
R057		
+ CHAN COMPARE SUCCESSFUL		
	(H2Y02)	HH220-R057
	J2Y02	HJ200-L052
R058		
- GATE LRC TO BUS OUT (CSR)		
	(H2M05)	HH220-R058
	D2M09	HD200-L030
	E2M09	HE200-L030
	G2B02	HG210-L034
R059		
+ GATE FINAL SET BI DESKEW IN		
	(H2J10)	HH220-R059
	G2P04	HG210-L041
R060		
+ CDX END OF TRANSFER (CSR)		
	(H2Y24)	HH220-R060
	J2Y24	HJ200-L046
R061		
+ ODD PTY - TRNC EOT CMPR SUCC		
	(H2Y03)	HH220-R061
	J2Y03	HJ200-L051

LINE/SIGNAL	PIN	SHEET/LINE
R062		
+ MACHINE RESET REPONERED		
	(H2Y29)	HH220-R062
	J2Y29	HJ200-L022
	K2Y29	HK200-L024
R063		
- CHECK RESET		
	(H2Y10)	HH220-R063
	(R2J05)	HR200-R028
	D2J06	HD200-L034
	E2J06	HE200-L034
	C2J10	HC200-L012
	F2M04	HF200-L056
	G2B13	HG210-L015
	H2U12	HH220-L061
	J2Y10	HJ200-L024
	K2Y10	HK200-L023
	L2D02	HL200-L003
	N2M13	HN200-L024
	V2G08	HV200-L033
	X2S13	HX200-L015
R064		
+ LOAD ZERO TO CBO RETURN		
	(H2M03)	HH220-R064
	G2M13	HG210-L036
R065		
+ CHAN DATA CHECK		
	(H2Y22)	HH220-R065
	J2Y22	HJ200-L063

```
003 + TAKE DATA OR DATA TAKEN -------U05
004 - RUN CHANNEL L1 ----------------W11
005 - CLOCK (T0,T4,T6) ============= * =
006 + ADT CLOCK T0 OR T4 ------------J06
007 + ADT CLOCK T1 OR T5 ------------M07
008 + ADT CLOCK T2 OR T6 ------------G05
009 + ADT CLOCK T3 OR T7 ------------J07
010 + GATE BAP TO CAR ---------------Z25
011 + GATE BAP TO CAR (P) -----------Z06
012 + GATE CBP TO CAR ---------------Z30
013 + GATE CBP TO CAR (P) -----------Z10
014 + GATE DBP TO CAR ---------------Z28
015 - LOAD CAR TO BAP ---------------W26
016 - LOAD CAR TO BAP (P) -----------Z24
017 - LOAD CAR TO CBP ---------------Z03
018 - LOAD CAR TO CBP (P) -----------Z13
019 - LOAD CAR TO DBP ---------------W06
020 - LOAD CAR TO DBP (P) -----------W05
021 - 16K INSTALLED -----------------G09
022 + MACHINE RESET REPOWERED ------ Y29
023 - 32K INSTALLED -----------------J09
024 - CHECK RESET -------------------Y10
025 + ADT CLK T3D2 OR T7D2 ----------J10
026 - INCREMENT ---------------------Z07
027 - INCREMENT (P) -----------------Z09
028 + BAP TOGGLE (P) ----------------Z26
029 + BAP TOGGLE ---------------------Z05
030 + CBP TOGGLE ---------------------X03
031 + DBP TOGGLE ---------------------X07
032 + BC1 FULL -----------------------Z02
033 + BC2 EMPTY ----------------------Z33
034 + LD EXT REG CLK B ---------------J04
035 + CBP XREG DECODE ----------------W13
036 + DBP XREG DECODE ----------------W33
037 + XREG DECODE 02 -----------------W32
038 + XREG DECODE 03 -----------------W07
039 + EXT REG ADR 19 -----------------U06
040 + DDC END OF TRANSFER -----------P09
041 - ALU OUT BIT (0-5,7) ========== * =
042 + ARRAY WRITE ----------------------Z29
043 + DATA OVERRUN -------------------S09
044 + CHAN OVERRUN -------------------S10
045 + DDC CARD CHECK -----------------D10
046 + CDX END OF TRANSFER (CSR) -----Y24
047 + TRUNCATION LATCH ---------------B07
048 + DDC BUS IN PC ------------------M12
049 + DCT CARD CHECK -----------------U11
050 + SYNC IN CHECK ------------------B02
051 + ODD PTY - TRNC EOT CMPR SUCC --Y03
052 + CHAN COMPARE SUCCESSFUL -------Y02
053 + ARRAY OUT PARITY CHECK --------X10
054 + DXD CARD CHECK -----------------X28
055 + FIRST SYNC IN 1 ---------------P13
056 + HIGH SPEED CHAN ACTIVE --------D02
057 + FIRST SYNC IN 2 ---------------M09
058 + CLOCK CHECK LATCHED -----------X30
059 + ANY READ DATA CHECK LATCHED ---S02
060 + CSR CARD CHECK 2 --------------Y05
061 + CHANNEL/BUFFER CHECK ----------X33
062 + DEVICE/BUFFER CHECK -----------X32
063 + CHAN DATA CHECK ---------------Y22
064 - END OP LATCHED T4 -------------M08
065 + WRITE (RUN) -------------------D07
066 - SEL OUT TRAPPED INTERRUPT 2 ---M10
067 - CDN SD1 ALU OUT BIT 6 (ADT) -- D05
068 - CDN SD1 ALU OUT BIT P (ADT) -- S08
069 + CHK BIT 7 --------------------- B08
070 - TIE DOWN 4 ------------------- D11
071 + GATE DTG REG ------------------ P06
072 + ENBL PAD CNT AFTER DEVICE EOT  U12
```

DXA CARD

OVERVIEW

The Data Transfer Address (DXA) card generates addresses for storing into and fetching out of the data buffer and/or the ASDM control store.

PRIMARY FUNCTIONS

The DXA card in conjunction with the DXD card controls the automatic data transfer functions of the storage director. The DXA card's primary function is addressing the buffer/ASDM control store during data transfers to and from the channel, the device, and/or subsystem storage. The DXA card is also responsible for most of the error checking and error information collection of data transfer error conditions.

PRIMARY COMPONENTS

The DXA card consists primarily of registers.

- DXC - Data transfer control
- BAP - Buffer address pointer
- CBP - Channel buffer pointer
- DBP - Device buffer pointer
- XCS - Transfer complete status
- XES - Transfer error status
- CHK - Check-2 error conditions
- TFR - Toggle/FRU register

ERROR CHECKING

The following Check-2 errors are detected and/or collected by the DXA card.

- Data overrun
- Channel overrun
- Channel data check
- DDC bus-in parity
- Channel buffer parity
- Device buffer parity
- Array out parity
- Clock check
- DXA card check
- DXD card check
- DCT card check
- DDC card check
- CSR card check
- Sync-in check

```
X25 + BLOCK FIRST 3 BYTES ---------- 003
*   - CHIP SELECT (0-3) ============ 004
*   - ARRAY ADDRESS BIT (2-13) ===== 005
D12 - CARD SELECT 0 ---------------- 006
B13 - CARD SELECT 1 ---------------- 007
P04 - LOAD DOR --------------------- 008
P05 - WRITE ENABLE ----------------- 009
*   + ARRAY OUT GATE (0-3) ========= 010
X29 + DOR INPUT LOW ---------------- 011
X09 + DOR INPUT HIGH --------------- 012
X02 + CAR PARITY ------------------- 013
W28 + DBP=CBP P1 ------------------- 014
Z22 + DBP=CBP P2 ------------------- 015
*   - ALU IN1 BIT (0-7,P) ========== 016
U10 - CHECK TWO -------------------- 017
*   + ALU OUT BIT (0-7,P) ========== 018
*   + DXC BIT (5-7) ================ 019
P07 - INT REQ LEVEL 2 -------------- 020
U04 + OFFSET INTERLOCK MODE -------- 021
```

LINE/SIGNAL	PIN	SHEET/LINE
L003		
+ TAKE DATA OR DATA TAKEN		
	J2U05	HJ200-L003
	(G2S10)	HG210-R030
	H2G07	HH220-L042
	K2U09	HK200-L030
	N2S11	HN200-L025
L004		
- RUN CHANNEL L1		
	J2W11	HJ200-L004
	(K2W11)	HK200-R045
L005		
- CLOCK T0		
	J2X13	HJ200-L005
	(K2X13)	HK200-R005
L005		
- CLOCK T4		
	J2X11	HJ200-L005
	(K2X11)	HK200-R005
L005		
- CLOCK T6		
	J2X26	HJ200-L005
	(K2X26)	HK200-R005
L006		
+ ADT CLOCK T0 OR T4		
	J2J06	HJ200-L006
	(P2S08)	HP200-R030
	K2S08	HK200-L019
L007		
+ ADT CLOCK T1 OR T5		
	J2M07	HJ200-L007
	(P2U09)	HP200-R056
	K2S13	HK200-L020
L008		
+ ADT CLOCK T2 OR T6		
	J2G05	HJ200-L008
	(P2U06)	HP200-R031
	K2M02	HK200-L021
L009		
+ ADT CLOCK T3 OR T7		
	J2J07	HJ200-L009
	(P2U11)	HP200-R057
	K2U11	HK200-L022
L010		
+ GATE BAP TO CAR		
	J2Z25	HJ200-L010
	(K2Z25)	HK200-R024
L011		
+ GATE BAP TO CAR (P)		
	J2Z06	HJ200-L011
	(K2Z06)	HK200-R025
L012		
+ GATE CBP TO CAR		
	J2Z30	HJ200-L012
	(K2Z30)	HK200-R026
L013		
+ GATE CBP TO CAR (P)		
	J2Z10	HJ200-L013
	(K2Z10)	HK200-R027
L014		
+ GATE DBP TO CAR		
	J2Z28	HJ200-L014
	(K2Z28)	HK200-R028
L015		
- LOAD CAR TO BAP		
	J2W26	HJ200-L015
	(K2W26)	HK200-R031
L016		
- LOAD CAR TO BAP (P)		
	J2Z24	HJ200-L016
	(K2Z24)	HK200-R032
L017		
- LOAD CAR TO CBP		
	J2Z03	HJ200-L017
	(K2Z03)	HK200-R033
L018		
- LOAD CAR TO CBP (P)		
	J2Z13	HJ200-L018
	(K2Z13)	HK200-R034
L019		
- LOAD CAR TO DBP		
	J2W06	HJ200-L019
	(K2W06)	HK200-R035
L020		
- LOAD CAR TO DBP (P)		
	J2W05	HJ200-L020
	(K2W05)	HK200-R036
L021		
- 16K INSTALLED		
	J2G09	HJ200-L021
L022		
+ MACHINE RESET REPOWERED		
	J2Y29	HJ200-L022
	(H2Y29)	HH220-R062
	K2Y29	HK200-L024
L023		
- 32K INSTALLED		
	J2J09	HJ200-L023
L024		
- CHECK RESET		
	J2Y10	HJ200-L024
	(H2Y10)	HH220-R063
	(R2J05)	HR200-R028
	D2J06	HD200-L034
	E2J06	HE200-L034
	C2J10	HC200-L012
	F2M04	HF200-L056
	G2B13	HG210-L015
	H2U12	HH220-L061
	K2Y10	HK200-L023
	L2D02	HL200-L003
	N2M13	HN200-L024
	V2G08	HV200-L033
	X2S13	HX200-L015
L025		
+ ADT CLK T3D2 OR T7D2		
	J2J10	HJ200-L025
	(P2G05)	HP200-R053
L026		
- INCREMENT		
	J2Z07	HJ200-L026
	(K2Z07)	HK200-R029
L027		
- INCREMENT (P)		
	J2Z09	HJ200-L027
	(K2Z09)	HK200-R030
L028		
+ BAP TOGGLE (P)		
	J2Z26	HJ200-L028
	(K2Z26)	HK200-R012
L029		
+ BAP TOGGLE		
	J2Z05	HJ200-L029
	(K2Z05)	HK200-R011
L030		
+ CBP TOGGLE		
	J2X03	HJ200-L030
	(K2X03)	HK200-R013
L031		
+ DBP TOGGLE		
	J2X07	HJ200-L031
	(K2X07)	HK200-R017
L032		
+ BC1 FULL		
	J2Z02	HJ200-L032
	(K2Z02)	HK200-R015
L033		
+ BC2 EMPTY		
	J2Z33	HJ200-L033
	(K2Z33)	HK200-R014
L034		
+ LD EXT REG CLK B		
	J2J04	HJ200-L034
	(Q2S09)	HQ200-R013
	K2U10	HK200-L026
L035		
+ CBP XREG DECODE		
	J2W13	HJ200-L035
	(K2W13)	HK200-R039
L036		
+ DBP XREG DECODE		
	J2W33	HJ200-L036
	(K2W33)	HK200-R040
L037		
+ XREG DECODE 02		
	J2W32	HJ200-L037
	(K2W32)	HK200-R041
L038		
+ XREG DECODE 03		
	J2W07	HJ200-L038
	(K2W07)	HK200-R042
L039		
+ EXT REG ADR 19		
	J2U06	HJ200-L039
	(F2M09)	HF200-R034
	H2S05	HH220-L011
L040		
+ DDC END OF TRANSFER		
	J2P09	HJ200-L040
	(X2S07)	HX200-R028
L041		
- ALU OUT BIT 0		
	J2U07	HJ200-L041
	(Q2B04)	HQ200-R008
	C2B02	HC200-L022
	F2D02	HF200-L019
	H2P12	HH220-L017
	N2B07	HN200-L012
	R2M02	HR200-L024
	V2D13	HV200-L007
	X2D13	HX200-L026
L041		
- ALU OUT BIT 1		
	J2U09	HJ200-L041
	(Q2D05)	HQ200-R008
	C2D02	HC200-L023
	F2D04	HF200-L020
	H2P13	HH220-L018
	N2D05	HN200-L013
	R2G12	HR200-L024
	V2B05	HV200-L008
	X2B05	HX200-L026
L041		
- ALU OUT BIT 2		
	J2P12	HJ200-L041
	(Q2D06)	HQ200-R008
	F2D05	HF200-L021
	H2U02	HH220-L019
	N2D09	HN200-L014
	R2G13	HR200-L024
	V2D10	HV200-L009
	X2D10	HX200-L026
L041		
- ALU OUT BIT 3		
	J2U02	HJ200-L041
	(Q2B05)	HQ200-R008
	F2D06	HF200-L022
	H2U05	HH220-L020
	N2D10	HN200-L015
	R2M04	HR200-L024
	V2J02	HV200-L010
	X2J02	HX200-L026
L041		
- ALU OUT BIT 4		
	J2B12	HJ200-L041
	(Q2D04)	HQ200-R008
	F2D07	HF200-L023
	H2U06	HH220-L021
	N2D06	HN200-L016
	R2M03	HR200-L024
	V2B08	HV200-L011
	X2B08	HX200-L026
L041		
- ALU OUT BIT 5		
	J2D06	HJ200-L041
	(Q2B03)	HQ200-R008
	F2B07	HF200-L024
	H2U07	HH220-L022
	N2B09	HN200-L017
	R2P04	HR200-L024
	V2B03	HV200-L012
	X2B03	HX200-L026
L041		
- ALU OUT BIT 7		
	J2B05	HJ200-L041
	(Q2B02)	HQ200-R008
	F2B09	HF200-L026
	N2B13	HN200-L019
	R2P05	HR200-L024
	V2D06	HV200-L014
L042		
+ ARRAY WRITE		
	J2Z29	HJ200-L042
	(K2Z29)	HK200-R046
L043		
+ DATA OVERRUN		
	J2S09	HJ200-L043
	(X2S10)	HX200-R029
L044		
+ CHAN OVERRUN		
	J2S10	HJ200-L044
	(G2S09)	HG210-R013
L045		
+ DDC CARD CHECK		
	J2D10	HJ200-L045
	(X2U04)	HX200-R045
L046		
+ CDX END OF TRANSFER (CSR)		
	J2Y24	HJ200-L046
	(H2Y24)	HH220-R060
L047		
+ TRUNCATION LATCH		
	J2B07	HJ200-L047
	(G2S07)	HG210-R026
	H2D02	HH220-L059
L048		
+ DDC BUS IN PC		
	J2M12	HJ200-L048
	(X2U06)	HX200-R031
L049		
+ DCT CARD CHECK		
	J2U11	HJ200-L049
	(V2G09)	HV200-R017
L050		
+ SYNC IN CHECK		
	J2B02	HJ200-L050
	(X2S12)	HX200-R030
L051		
+ ODD PTY - TRNC EOT CMPR SUCC		
	J2Y03	HJ200-L051
	(H2Y03)	HH220-R061
L052		
+ CHAN COMPARE SUCCESSFUL		
	J2Y02	HJ200-L052
	(H2Y02)	HH220-R057
L053		
+ ARRAY OUT PARITY CHECK		
	J2X10	HJ200-L053
	(K2X10)	HK200-R007
L054		
+ DXD CARD CHECK		
	J2X28	HJ200-L054
	(K2X28)	HK200-R021
L055		
+ FIRST SYNC IN 1		
	J2P13	HJ200-L055
	(X2J06)	HX200-R022
L056		
+ HIGH SPEED CHAN ACTIVE		
	J2D02	HJ200-L056
	(F2S03)	HF200-R008
	G2G10	HG210-L040
	H2S08	HH220-L004
L057		
+ FIRST SYNC IN 2		
	J2M09	HJ200-L057
	(X2J11)	HX200-R023
L058		
+ CLOCK CHECK LATCHED		
	J2X30	HJ200-L058
	(K2X30)	HK200-R020

LINE/SIGNAL	PIN	SHEET/LINE
L059		
+ ANY READ DATA CHECK LATCHED		
	J2S02	HJ200-L059
	(P2B02)	HP200-R012
L060		
+ CSR CARD CHECK 2		
	J2Y05	HJ200-L060
	(H2Y05)	HH220-R007
L061		
+ CHANNEL/BUFFER CHECK		
	J2X33	HJ200-L061
	(K2X33)	HK200-R009
L062		
+ DEVICE/BUFFER CHECK		
	J2X32	HJ200-L062
	(K2X32)	HK200-R010
L063		
+ CHAN DATA CHECK		
	J2Y22	HJ200-L063
	(H2Y22)	HH220-R065
L064		
- END OP LATCHED T4		
	J2M08	HJ200-L064
	(X2J12)	HX200-R044
L065		
+ WRITE (RUN)		
	J2D07	HJ200-L065
	(H2B12)	HH220-R046
L066		
- SEL OUT TRAPPED INTERRUPT 2		
	J2M10	HJ200-L066
	(F2J13)	HF200-R004
L067		
- CDN SD1 ALU OUT BIT 6 (ADT)		
	J2D05	HJ200-L067
	(N2B08)	HN200-R006
L068		
- CDN SD1 ALU OUT BIT P (ADT)		
	J2S08	HJ200-L068
	(N2J02)	HN200-R007
L069		
+ CHK BIT 7		
	J2B08	HJ200-L069
	(L2D05)	HL200-R003
L070		
- TIE DOWN 4		
	J2D11	HJ200-L070
L071		
+ GATE DTG REG		
	J2P06	HJ200-L071
	(V2P09)	HV200-R021
	X2P09	HX200-L044

LINE/SIGNAL	PIN	SHEET/LINE
L072		
+ ENBL PAD CNT AFTER DEVICE EOT		
	J2U12	HJ200-L072
	(V2S07)	HV200-R033
R003		
+ BLOCK FIRST 3 BYTES		
	(J2X25)	HJ200-R003
	K2X25	HK200-L004
R004		
- CHIP SELECT 0		
	(J2J11)	HJ200-R004
	L2U07	HL200-L005
	L2Z05	HL200-L039
	M2Z05	HM200-L033
R004		
- CHIP SELECT 1		
	(J2D13)	HJ200-R004
	L2M11	HL200-L006
	L2Z25	HL200-L040
	M2Z25	HM200-L034
R004		
- CHIP SELECT 2		
	(J2G03)	HJ200-R004
	L2P10	HL200-L007
	L2Z24	HL200-L041
	M2Z24	HM200-L035
R004		
- CHIP SELECT 3		
	(J2G08)	HJ200-R004
	L2P06	HL200-L008
	L2Z03	HL200-L042
	M2Z03	HM200-L036
R005		
- ARRAY ADDRESS BIT 2		
	(J2G12)	HJ200-R005
	L2M12	HL200-L010
	L2Z06	HL200-L044
	M2Z06	HM200-L037
R005		
- ARRAY ADDRESS BIT 3		
	(J2J12)	HJ200-R005
	L2P13	HL200-L011
	L2Z02	HL200-L045
	M2Z02	HM200-L038
R005		
- ARRAY ADDRESS BIT 4		
	(J2M05)	HJ200-R005
	L2U05	HL200-L012
	L2Z30	HL200-L046
	M2Z30	HM200-L039
R005		
- ARRAY ADDRESS BIT 5		
	(J2G10)	HJ200-R005
	L2S02	HL200-L013
	L2Z13	HL200-L047
	M2Z13	HM200-L040

LINE/SIGNAL	PIN	SHEET/LINE
R005		
- ARRAY ADDRESS BIT 6		
	(J2B09)	HJ200-R005
	L2S03	HL200-L014
	L2Z33	HL200-L048
	M2Z33	HM200-L041
R005		
- ARRAY ADDRESS BIT 7		
	(J2D09)	HJ200-R005
	L2U04	HL200-L015
	L2Z10	HL200-L049
	M2Z10	HM200-L042
R005		
- ARRAY ADDRESS BIT 8		
	(J2M04)	HJ200-R005
	L2M08	HL200-L016
	L2Z32	HL200-L050
	M2Z32	HM200-L043
R005		
- ARRAY ADDRESS BIT 9		
	(J2J13)	HJ200-R005
	L2M09	HL200-L017
	L2Z29	HL200-L051
	M2Z29	HM200-L044
R005		
- ARRAY ADDRESS BIT 10		
	(J2M02)	HJ200-R005
	L2M13	HL200-L018
	L2Z26	HL200-L052
	M2Z26	HM200-L045
R005		
- ARRAY ADDRESS BIT 11		
	(J2P02)	HJ200-R005
	L2P11	HL200-L019
	L2Z09	HL200-L053
	M2Z09	HM200-L046
R005		
- ARRAY ADDRESS BIT 12		
	(J2G13)	HJ200-R005
	L2S04	HL200-L020
	L2Z07	HL200-L054
	M2Z07	HM200-L047
R005		
- ARRAY ADDRESS BIT 13		
	(J2M03)	HJ200-R005
	L2S08	HL200-L021
	L2Z28	HL200-L055
	M2Z28	HM200-L048
R006		
- CARD SELECT 0		
	(J2D12)	HJ200-R006
	L2S05	HL200-L009
	L2Z22	HL200-L043
	M2Z22	HM200-L049
R007		
- CARD SELECT 1		
	(J2B13)	HJ200-R007

LINE/SIGNAL	PIN	SHEET/LINE
R008		
- LOAD DOR		
	(J2P04)	HJ200-R008
	K2P11	HK200-L015
R009		
- WRITE ENABLE		
	(J2P05)	HJ200-R009
	K2U12	HK200-L037
	L2U06	HL200-L022
	M2J10	HM200-L016
R010		
+ ARRAY OUT GATE 0		
	(J2G07)	HJ200-R010
R010		
+ ARRAY OUT GATE 1		
	(J2G02)	HJ200-R010
R010		
+ ARRAY OUT GATE 2		
	(J2J02)	HJ200-R010
R010		
+ ARRAY OUT GATE 3		
	(J2G04)	HJ200-R010
R011		
+ DOR INPUT LOW		
	(J2X29)	HJ200-R011
	K2X29	HK200-L016
R012		
+ DOR INPUT HIGH		
	(J2X09)	HJ200-R012
	K2X09	HK200-L017
R013		
+ CAR PARITY		
	(J2X02)	HJ200-R013
	K2X02	HK200-L013
	L2X02	HL200-L056
R014		
+ DBP=CBP P1		
	(J2W28)	HJ200-R014
	K2W28	HK200-L034
R015		
+ DBP=CBP P2		
	(J2Z22)	HJ200-R015
	K2Z22	HK200-L035
R016		
- ALU IN1 BIT 0		
	(J2S05)	HJ200-R016
	(F2J02)	HF200-R017
	(H2D04)	HH220-R027
	(K2J02)	HK200-R016
	Q2M07	HQ200-L007

LINE/SIGNAL	PIN	SHEET/LINE
R016		
- ALU IN1 BIT 1		
	(J2S12)	HJ200-R016
	(F2G02)	HF200-R018
	(H2D05)	HH220-R028
	(K2G03)	HK200-R016
	Q2P07	HQ200-L007
R016		
- ALU IN1 BIT 2		
	(J2P10)	HJ200-R016
	(F2G03)	HF200-R019
	(H2D06)	HH220-R029
	(K2J05)	HK200-R016
	Q2M12	HQ200-L007
R016		
- ALU IN1 BIT 3		
	(J2S03)	HJ200-R016
	(F2G04)	HF200-R020
	(H2D09)	HH220-R030
	(K2G09)	HK200-R016
	Q2M09	HQ200-L007
R016		
- ALU IN1 BIT 4		
	(J2B10)	HJ200-R016
	(F2G05)	HF200-R021
	(H2D10)	HH220-R031
	(K2J06)	HK200-R016
	Q2M13	HQ200-L007
R016		
- ALU IN1 BIT 5		
	(J2B03)	HJ200-R016
	(F2J09)	HF200-R022
	(H2D12)	HH220-R032
	(K2G08)	HK200-R016
	Q2P13	HQ200-L007
R016		
- ALU IN1 BIT 6		
	(J2D04)	HJ200-R016
	(F2J10)	HF200-R023
	(H2D13)	HH220-R033
	(K2G07)	HK200-R016
	Q2S02	HQ200-L007
R016		
- ALU IN1 BIT 7		
	(J2B04)	HJ200-R016
	(F2J11)	HF200-R024
	(H2J02)	HH220-R034
	(K2J07)	HK200-R016
	Q2U02	HQ200-L007
R016		
- ALU IN1 BIT P		
	(J2S07)	HJ200-R016
	(F2J12)	HF200-R025
	(H2J04)	HH220-R035
	(K2G02)	HK200-R016
	Q2S03	HQ200-L007

LINE/SIGNAL	PIN	SHEET/LINE
R017		
- CHECK TWO		
	(J2U10)	HJ200-R017
	(F2S09)	HF200-R040
	(N2D04)	HN200-R010
	(X2J09)	HX200-R021
	R2S09	HR200-L027
R018		
+ ALU OUT BIT 0		
	(J2W29)	HJ200-R018
	K2W29	HK200-L025
R018		
+ ALU OUT BIT 1		
	(J2W24)	HJ200-R018
	K2W24	HK200-L025
R018		
+ ALU OUT BIT 2		
	(J2W25)	HJ200-R018
	K2W25	HK200-L025
R018		
+ ALU OUT BIT 3		
	(J2W09)	HJ200-R018
	K2W09	HK200-L025
R018		
+ ALU OUT BIT 4		
	(J2W10)	HJ200-R018
	K2W10	HK200-L025
R018		
+ ALU OUT BIT 5		
	(J2W30)	HJ200-R018
	K2W30	HK200-L025
R018		
+ ALU OUT BIT 6		
	(J2W03)	HJ200-R018
	K2W03	HK200-L025
R018		
+ ALU OUT BIT 7		
	(J2W02)	HJ200-R018
	K2W02	HK200-L025
R018		
+ ALU OUT BIT P		
	(J2W22)	HJ200-R018
	K2W22	HK200-L025
R019		
+ DXC BIT 5		
	(J2Z11)	HJ200-R019
	K2Z11	HK200-L029
R019		
+ DXC BIT 6		
	(J2X22)	HJ200-R019
	K2X22	HK200-L014
R019		
+ DXC BIT 7		
	(J2X24)	HJ200-R019
	K2X24	HK200-L036

DATA TRANSFER ADDRESS XRL HJ200

LINE/SIGNAL	PIN	SHEET/LINE
R020		
- INT REQ LEVEL 2		
	(J2P07)	HJ200-R020
	(M2G02)	HM200-R016
	R2U12	HR200-L013
R021		
+ OFFSET INTERLOCK MODE		
	(J2U04)	HJ200-R021
	N2S03	HN200-L052

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003 - EXT REG ADDRESS BIT (0-4) =====*
004 + BLOCK FIRST 3 BYTES -----------X25
005 - TAKE DATA (DDC) ---------------D09
006 - DATA TAKEN (DDC) --------------B08
007 - CAM SD1 ARRAY OUT (0-7,P) ==== * =
008 - TAKE DATA/DATA TKN DEV (AUX) - B09
009 + EXT REG SELECT ----------------U13
010 - TAKE DATA/DATA TKN CHAN (AUX)  S09
011 + PAD COUNT=ZERO ----------------P06
012 - CLOCK CHECK TWO ---------------S12
013 + CAR PARITY --------------------X02
014 + DXC BIT 6 ---------------------X22
015 - LOAD DOR ----------------------P11
016 + DOR INPUT LOW -----------------X29
017 + DOR INPUT HIGH ----------------X09
018 + ENBL PAD CNT AFTER CHAN EOT ---J04
019 + ADT CLOCK T0 OR T4 ------------S08
020 + ADT CLOCK T1 OR T5 ------------S13
021 + ADT CLOCK T2 OR T6 ------------M02
022 + ADT CLOCK T3 OR T7 ------------U11
023 - CHECK RESET -------------------Y10
024 + MACHINE RESET REPONERED ------ Y29
025 + ALU OUT BIT (0-7,P) ========== * =
026 + LD EXT REG CLK B --------------U10
027 - EXT REG ADR PARITY ------------D10
028 - DEGATE CHAN EXT REGS (UNUSED) -B04
029 + DXC BIT 5 ---------------------Z11
030 + TAKE DATA OR DATA TAKEN -------U09
031 + GATE DTI REG/PAD COUNTER ------G05
032 + DEVICE COUNT < 64 -------------M05
033 - AUX COUNT < 64 (UNUSED) -------S07
034 + DBP=CBP P1 --------------------W28
035 + DBP=CBP P2 --------------------Z22
036 + DXC BIT 7 ---------------------X24
037 - WRITE ENABLE ------------------U12
```

DXD CARD

OVERVIEW

The Data Transfer Data (DXD) card is the controls and data path into and out of the data buffer and the ASDM control store.

PRIMARY FUNCTIONS

The DXD card supplies a data path to and from the data buffer or ASDM control store and the channel interface and/or subsystem storage. It also supplies a data path to and from the data buffer or ASDM control store and the device interface and/or subsystem storage. It also controls the pad/drop functions associated with 3375 and 3380 record formats.

PRIMARY COMPONENTS

Registers

- Data In Register
- Data Out Register
- Buffer ALU Register 1 & 2
- Device Buffer CRC
- Channel Buffer CRC

Latches

- Run device
- Run channel
- Buffer empty/full controls

ERROR CHECKING

The following Check-2 errors are detected on the DXD card.

- DXD card check
- Clock check
- Channel/Buffer check
- Device/Buffer check
- Array Out Parity check


```
Y26 + DATA TAKEN (ADT) ------------- 003
J09 + DECREMENT PAD COUNTER -------- 004
= * - CLOCK (T0,T4,T6) ============= 005
*   - DEV DXR BUS BIT (0-7,P) ====== 006
X10 + ARRAY OUT PARITY CHECK ------- 007
*   - CHAN DXR BUS BIT (0-7,P) ===== 008
X33 + CHANNEL/BUFFER CHECK --------- 009
X32 + DEVICE/BUFFER CHECK ---------- 010
Z05 + BAP TOGGLE ------------------- 011
Z26 + BAP TOGGLE (P) --------------- 012
X03 + CBP TOGGLE ------------------- 013
Z33 + BC2 EMPTY -------------------- 014
Z02 + BC1 FULL --------------------- 015
*   - ALU IN1 BIT (0-7,P) ========== 016
X07 + DBP TOGGLE ------------------- 017
*   - ARRAY IN BIT (0-7,P) ========== 018
D11 + EXT REG GROUP 0 SELECTED ----- 019
X30 + CLOCK CHECK LATCHED ---------- 020
X28 + DXD CARD CHECK --------------- 021
S10 + GATE PCR TO ALU IN ----------- 022
U07 - SELECT PCR ------------------- 023
Z25 + GATE BAP TO CAR -------------- 024
Z06 + GATE BAP TO CAR (P) ---------- 025
Z30 + GATE CBP TO CAR -------------- 026
Z10 + GATE CBP TO CAR (P) ---------- 027
Z28 + GATE DBP TO CAR -------------- 028
Z07 - INCREMENT -------------------- 029
Z09 - INCREMENT (P) ---------------- 030
W26 - LOAD CAR TO BAP -------------- 031
Z24 - LOAD CAR TO BAP (P) ---------- 032
Z03 - LOAD CAR TO CBP -------------- 033
Z13 - LOAD CAR TO CBP (P) ---------- 034
W06 - LOAD CAR TO DBP -------------- 035
W05 - LOAD CAR TO DBP (P) ---------- 036
J11 - NEED DATA/DATA READY CDX ----- 037
D06 - NEED DATA/DATA READY DDC ----- 038
W13 + CBP XREG DECODE -------------- 039
W33 + DBP XREG DECODE -------------- 040
W32 + XREG DECODE 02 --------------- 041
W07 + XREG DECODE 03 --------------- 042
Y06 + EXT ADR DECODE 6 ------------- 043
Y25 + EXT ADR DECODE 7 ------------- 044
W11 - RUN CHANNEL L1 --------------- 045
Z29 + ARRAY WRITE ------------------ 046
U06 + 3 BYTES NEEDED/READY --------- 047
```

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- EXT REG ADDRESS BIT 0		
	K2B12	HK200-L003
	(Q2P12)	HQ200-R016
	F2P09	HF200-L028
	N2P12	HN200-L003
	R2M13	HR200-L009
	V2J07	HV200-L024
L003		
- EXT REG ADDRESS BIT 1		
	K2D13	HK200-L003
	(Q2M05)	HQ200-R016
	F2P10	HF200-L029
	N2M05	HN200-L004
	R2P11	HR200-L009
	V2J09	HV200-L025
L003		
- EXT REG ADDRESS BIT 2		
	K2B13	HK200-L003
	(Q2P05)	HQ200-R016
	F2P11	HF200-L030
	N2P05	HN200-L005
	R2M12	HR200-L009
	V2J10	HV200-L026
L003		
- EXT REG ADDRESS BIT 3		
	K2B10	HK200-L003
	(Q2M04)	HQ200-R016
	F2P12	HF200-L031
	N2M04	HN200-L006
	R2P10	HR200-L009
	V2J11	HV200-L027
L003		
- EXT REG ADDRESS BIT 4		
	K2D12	HK200-L003
	(Q2P04)	HQ200-R016
	F2P13	HF200-L032
	N2P04	HN200-L007
	R2P09	HR200-L009
	V2J12	HV200-L028
L004		
+ BLOCK FIRST 3 BYTES		
	K2X25	HK200-L004
	(J2X25)	HJ200-R003
L005		
- TAKE DATA (DDC)		
	K2D09	HK200-L005
	(X2U10)	HX200-R025
	H2D07	HH220-L007
	N2S12	HN200-L035
L006		
- DATA TAKEN (DDC)		
	K2B08	HK200-L006
	(X2S08)	HX200-R026
	N2U06	HN200-L036
	V2B10	HV200-L003

LINE/SIGNAL	PIN	SHEET/LINE
L007		
- CAM SD1 ARRAY OUT 0		
	K2P09	HK200-L007
	(L2S11)	HL200-R005
	(M2S04)	HM200-R003
L007		
- CAM SD1 ARRAY OUT 1		
	K2U05	HK200-L007
	(L2S13)	HL200-R005
	(M2U05)	HM200-R003
L007		
- CAM SD1 ARRAY OUT 2		
	K2M12	HK200-L007
	(L2U10)	HL200-R005
	(M2U04)	HM200-R003
L007		
- CAM SD1 ARRAY OUT 3		
	K2S05	HK200-L007
	(L2U12)	HL200-R005
	(M2S05)	HM200-R003
L007		
- CAM SD1 ARRAY OUT 4		
	K2S03	HK200-L007
	(L2U13)	HL200-R005
	(M2M09)	HM200-R003
L007		
- CAM SD1 ARRAY OUT 5		
	K2U02	HK200-L007
	(L2S09)	HL200-R005
	(M2P10)	HM200-R003
L007		
- CAM SD1 ARRAY OUT 6		
	K2M09	HK200-L007
	(L2P12)	HL200-R005
	(M2M10)	HM200-R003
L007		
- CAM SD1 ARRAY OUT 7		
	K2M08	HK200-L007
	(L2M07)	HL200-R005
	(M2P09)	HM200-R003
L007		
- CAM SD1 ARRAY OUT P		
	K2U04	HK200-L007
	(L2P07)	HL200-R005
	(M2U13)	HM200-R003
L008		
- TAKE DATA/DATA TKN DEV (AUX)		
	K2B09	HK200-L008
	(N2P07)	HN200-R043
L009		
+ EXT REG SELECT		
	K2U13	HK200-L009
	(Q2Z22)	HQ200-R018
	(R2S02)	HR200-R015
	H2M04	HH220-L031
	N2B04	HN200-L011
	R2Z22	HR200-L021

LINE/SIGNAL	PIN	SHEET/LINE
L010		
- TAKE DATA/DATA TKN CHAN (AUX)		
	K2S09	HK200-L010
	(N2P10)	HN200-R039
L011		
+ PAD COUNT=ZERO		
	K2P06	HK200-L011
	(V2P10)	HV200-R025
L012		
- CLOCK CHECK TWO		
	K2S12	HK200-L012
	(D2D02)	HD200-R014
	(E2D02)	HE200-R014
	(F2B02)	HF200-R041
	(G2S05)	HG210-R023
	(X2S09)	HX200-R032
L013		
+ CAR PARITY		
	K2X02	HK200-L013
	(J2X02)	HJ200-R013
	L2X02	HL200-L056
L014		
+ DXC BIT 6		
	K2X22	HK200-L014
	(J2X22)	HJ200-R019
L015		
- LOAD DOR		
	K2P11	HK200-L015
	(J2P04)	HJ200-R008
L016		
+ DOR INPUT LOW		
	K2X29	HK200-L016
	(J2X29)	HJ200-R011
L017		
+ DOR INPUT HIGH		
	K2X09	HK200-L017
	(J2X09)	HJ200-R012
L018		
+ ENBL PAD CNT AFTER CHAN EOT		
	K2J04	HK200-L018
	(V2S04)	HV200-R032
L019		
+ ADT CLOCK T0 OR T4		
	K2S08	HK200-L019
	(P2S08)	HP200-R030
	J2J06	HJ200-L006
L020		
+ ADT CLOCK T1 OR T5		
	K2S13	HK200-L020
	(P2U09)	HP200-R056
	J2M07	HJ200-L007
L021		
+ ADT CLOCK T2 OR T6		
	K2M02	HK200-L021
	(P2U06)	HP200-R031
	J2G05	HJ200-L008

LINE/SIGNAL	PIN	SHEET/LINE
L022		
+ ADT CLOCK T3 OR T7		
	K2U11	HK200-L022
	(P2U11)	HP200-R057
	J2J07	HJ200-L009
L023		
- CHECK RESET		
	K2Y10	HK200-L023
	(H2Y10)	HH220-R063
	(R2J05)	HR200-R028
	D2J06	HD200-L034
	E2J06	HE200-L034
	C2J10	HC200-L012
	F2M04	HF200-L056
	G2B13	HG210-L015
	H2U12	HH220-L061
	J2Y10	HJ200-L024
	L2D02	HL200-L003
	N2M13	HN200-L024
	V2G08	HV200-L033
	X2S13	HX200-L015
L024		
+ MACHINE RESET REPOWERED		
	K2Y29	HK200-L024
	(H2Y29)	HH220-R062
	J2Y29	HJ200-L022
L025		
+ ALU OUT BIT 0		
	K2W29	HK200-L025
	(J2W29)	HJ200-R018
L025		
+ ALU OUT BIT 1		
	K2W24	HK200-L025
	(J2W24)	HJ200-R018
L025		
+ ALU OUT BIT 2		
	K2W25	HK200-L025
	(J2W25)	HJ200-R018
L025		
+ ALU OUT BIT 3		
	K2W09	HK200-L025
	(J2W09)	HJ200-R018
L025		
+ ALU OUT BIT 4		
	K2W10	HK200-L025
	(J2W10)	HJ200-R018
L025		
+ ALU OUT BIT 5		
	K2W30	HK200-L025
	(J2W30)	HJ200-R018
L025		
+ ALU OUT BIT 6		
	K2W03	HK200-L025
	(J2W03)	HJ200-R018

LINE/SIGNAL	PIN	SHEET/LINE
L025		
+ ALU OUT BIT 7		
	K2W02	HK200-L025
	(J2W02)	HJ200-R018
L025		
+ ALU OUT BIT P		
	K2W22	HK200-L025
	(J2W22)	HJ200-R018
L026		
+ LD EXT REG CLK B		
	K2U10	HK200-L026
	(Q2S09)	HQ200-R013
	J2J04	HJ200-L034
L027		
- EXT REG ADR PARITY		
	K2D10	HK200-L027
	(Q2P06)	HQ200-R017
	N2P06	HN200-L008
	R2M09	HR200-L010
L028		
- DEGATE CHAN EXT REGS (UNUSED)		
	K2B04	HK200-L028
	F2S07	HF200-L033
L029		
+ DXC BIT 5		
	K2Z11	HK200-L029
	(J2Z11)	HJ200-R019
L030		
+ TAKE DATA OR DATA TAKEN		
	K2U09	HK200-L030
	(G2S10)	HG210-R030
	H2G07	HH220-L042
	J2U05	HJ200-L003
	N2S11	HN200-L025
L031		
+ GATE DTI REG/PAD COUNTER		
	K2G05	HK200-L031
	(V2M07)	HV200-R022
	X2M07	HX200-L013
	X2M07	HX200-L045
L032		
+ DEVICE COUNT < 64		
	K2M05	HK200-L032
	(V2G03)	HV200-R014
	M2B13	HM200-L005
L033		
- AUX COUNT < 64 (UNUSED)		
	K2S07	HK200-L033
L034		
+ DBP=CBP P1		
	K2W28	HK200-L034
	(J2W28)	HJ200-R014
L035		
+ DBP=CBP P2		
	K2Z22	HK200-L035
	(J2Z22)	HJ200-R015

LINE/SIGNAL	PIN	SHEET/LINE
L036		
+ DXC BIT 7		
	K2X24	HK200-L036
	(J2X24)	HJ200-R019
L037		
- WRITE ENABLE		
	K2U12	HK200-L037
	(J2P05)	HJ200-R009
	L2U06	HL200-L022
	M2J10	HM200-L016
R003		
+ DATA TAKEN (ADT)		
	(K2Y26)	HK200-R003
	H2Y26	HH220-L003
R004		
+ DECREMENT PAD COUNTER		
	(K2J09)	HK200-R004
	V2G02	HV200-L018
R005		
- CLOCK T0		
	(K2X13)	HK200-R005
	J2X13	HJ200-L005
R005		
- CLOCK T4		
	(K2X11)	HK200-R005
	J2X11	HJ200-L005
R005		
- CLOCK T6		
	(K2X26)	HK200-R005
	J2X26	HJ200-L005
R006		
- DEV DXR BUS BIT 0		
	(K2G13)	HK200-R006
	(N2G09)	HN200-R030
	(X2J07)	HX200-R003
	X2B12	HX200-L050
R006		
- DEV DXR BUS BIT 1		
	(K2P05)	HK200-R006
	(N2G11)	HN200-R031
	(X2J04)	HX200-R004
	X2D07	HX200-L050
R006		
- DEV DXR BUS BIT 2		
	(K2F02)	HK200-R006
	(N2G10)	HN200-R032
	(X2G02)	HX200-R005
	X2D11	HX200-L050
R006		
- DEV DXR BUS BIT 3		
	(K2J12)	HK200-R006
	(N2J09)	HN200-R033
	(X2G05)	HX200-R006
	X2B13	HX200-L050

LINE/SIGNAL	PIN	SHEET/LINE
R006		
- DEV DXR BUS BIT 4		
	(K2J13)	HK200-R006
	(N2J13)	HN200-R034
	(X2G09)	HX200-R007
	X2B10	HX200-L050
R006		
- DEV DXR BUS BIT 5		
	(K2J10)	HK200-R006
	(N2P09)	HN200-R035
	(X2G08)	HX200-R008
	X2B07	HX200-L050
R006		
- DEV DXR BUS BIT 6		
	(K2M04)	HK200-R006
	(N2G13)	HN200-R036
	(X2G04)	HX200-R009
	X2D09	HX200-L050
R006		
- DEV DXR BUS BIT 7		
	(K2M03)	HK200-R006
	(N2M08)	HN200-R037
	(X2G03)	HX200-R010
	X2D02	HX200-L050
R006		
- DEV DXR BUS BIT P		
	(K2P04)	HK200-R006
	(N2M09)	HN200-R038
	(X2J05)	HX200-R011
	X2B04	HX200-L050
R007		
+ ARRAY OUT PARITY CHECK		
	(K2X10)	HK200-R007
	J2X10	HJ200-L053
R008		
- CHAN DXR BUS BIT 0		
	(K2Y28)	HK200-R008
	(H2G02)	HH220-R018
	(H2J07)	HH220-R049
	(N2G12)	HN200-R021
	H2Y28	HH220-L033
R008		
- CHAN DXR BUS BIT 1		
	(K2Y30)	HK200-R008
	(H2G04)	HH220-R019
	(H2J09)	HH220-R050
	(N2J10)	HN200-R022
	H2Y30	HH220-L034
R008		
- CHAN DXR BUS BIT 2		
	(K2Y32)	HK200-R008
	(H2G05)	HH220-R020
	(H2J11)	HH220-R051
	(N2J12)	HN200-R023
	H2Y32	HH220-L035
R008		
- CHAN DXR BUS BIT 3		
	(K2Y33)	HK200-R008
	(H2G08)	HH220-R021
	(H2J12)	HH220-R052
	(N2J06)	HN200-R024
	H2Y33	HH220-L036
R008		
- CHAN DXR BUS BIT 4		
	(K2Y07)	HK200-R008
	(H2G09)	HH220-R022
	(H2P02)	HH220-R053
	(N2G03)	HN200-R025
	H2Y07	HH220-L037
R008		
- CHAN DXR BUS BIT 5		
	(K2Y09)	HK200-R008
	(H2G10)	HH220-R023
	(H2P04)	HH220-R054
	(N2J07)	HN200-R026
	H2Y09	HH220-L038
R008		
- CHAN DXR BUS BIT 6		
	(K2Y11)	HK200-R008
	(H2G12)	HH220-R024
	(H2P05)	HH220-R055
	(N2J05)	HN200-R027
	H2Y11	HH220-L039
R008		
- CHAN DXR BUS BIT 7		
	(K2Y13)	HK200-R008
	(H2G13)	HH220-R025
	(H2P07)	HH220-R056
	(N2M11)	HN200-R028
	H2Y13	HH220-L040
R008		
- CHAN DXR BUS BIT P		
	(K2G10)	HK200-R008
	(H2M02)	HH220-R026
	(N2G05)	HN200-R029
	H2P09	HH220-L041
R009		
+ CHANNEL/BUFFER CHECK		
	(K2X33)	HK200-R009
	J2X33	HJ200-L061
R010		
+ DEVICE/BUFFER CHECK		
	(K2X32)	HK200-R010
	J2X32	HJ200-L062
R011		
+ BAP TOGGLE		
	(K2Z05)	HK200-R011
	J2Z05	HJ200-L029
R012		
+ BAP TOGGLE (P)		
	(K2Z26)	HK200-R012
	J2Z26	HJ200-L028
R013		
+ CBP TOGGLE		
	(K2X03)	HK200-R013
	J2X03	HJ200-L030
R014		
+ BC2 EMPTY		
	(K2Z33)	HK200-R014
	J2Z33	HJ200-L033
R015		
+ BC1 FULL		
	(K2Z02)	HK200-R015
	J2Z02	HJ200-L032
R016		
- ALU IN1 BIT 0		
	(K2J02)	HK200-R016
	(F2J02)	HF200-R017
	(H2D04)	HH220-R027
	(J2S05)	HJ200-R016
	Q2M07	HQ200-L007
R016		
- ALU IN1 BIT 1		
	(K2G03)	HK200-R016
	(F2G02)	HF200-R018
	(H2D05)	HH220-R028
	(J2S12)	HJ200-R016
	Q2P07	HQ200-L007
R016		
- ALU IN1 BIT 2		
	(K2J05)	HK200-R016
	(F2G03)	HF200-R019
	(H2D06)	HH220-R029
	(J2P10)	HJ200-R016
	Q2M12	HQ200-L007
R016		
- ALU IN1 BIT 3		
	(K2G09)	HK200-R016
	(F2G04)	HF200-R020
	(H2D09)	HH220-R030
	(J2S03)	HJ200-R016
	Q2M09	HQ200-L007
R016		
- ALU IN1 BIT 4		
	(K2J06)	HK200-R016
	(F2G05)	HF200-R021
	(H2D10)	HH220-R031
	(J2B10)	HJ200-R016
	Q2M13	HQ200-L007
R016		
- ALU IN1 BIT 5		
	(K2G08)	HK200-R016
	(F2J09)	HF200-R022
	(H2D12)	HH220-R032
	(J2B03)	HJ200-R016
	Q2P13	HQ200-L007
R016		
- ALU IN1 BIT 6		
	(K2G07)	HK200-R016
	(F2J10)	HF200-R023
	(H2D13)	HH220-R033
	(J2D04)	HJ200-R016
	Q2S02	HQ200-L007
R016		
- ALU IN1 BIT 7		
	(K2J07)	HK200-R016
	(F2J11)	HF200-R024
	(H2J02)	HH220-R034
	(J2B04)	HJ200-R016
	Q2U02	HQ200-L007
R016		
- ALU IN1 BIT P		
	(K2G02)	HK200-R016
	(F2J12)	HF200-R025
	(H2J04)	HH220-R035
	(J2S07)	HJ200-R016
	Q2S03	HQ200-L007
R017		
+ DBP TOGGLE		
	(K2X07)	HK200-R017
	J2X07	HJ200-L031
R018		
- ARRAY IN BIT 0		
	(K2D05)	HK200-R018
	L2M10	HL200-L023
	M2D02	HM200-L018
R018		
- ARRAY IN BIT 1		
	(K2D04)	HK200-R018
	L2P05	HL200-L024
	M2D07	HM200-L019
R018		
- ARRAY IN BIT 2		
	(K2B02)	HK200-R018
	L2P09	HL200-L025
	M2B07	HM200-L020
R018		
- ARRAY IN BIT 3		
	(K2B05)	HK200-R018
	L2U09	HL200-L026
	M2B02	HM200-L021
R018		
- ARRAY IN BIT 4		
	(K2B07)	HK200-R018
	L2S07	HL200-L027
	M2D05	HM200-L022
R018		
- ARRAY IN BIT 5		
	(K2B03)	HK200-R018
	L2U02	HL200-L028
	M2D09	HM200-L023
R018		
- ARRAY IN BIT 6		
	(K2D07)	HK200-R018
	L2S06	HL200-L029
	M2B06	HM200-L024
R018		
- ARRAY IN BIT 7		
	(K2D02)	HK200-R018
	L2S12	HL200-L030
	M2B05	HM200-L025
R018		
- ARRAY IN BIT P		
	(K2G04)	HK200-R018
	L2S10	HL200-L031
	M2D04	HM200-L017
R019		
+ EXT REG GROUP 0 SELECTED		
	(K2D11)	HK200-R019
	R2P13	HR200-L019
R020		
+ CLOCK CHECK LATCHED		
	(K2X30)	HK200-R020
	J2X30	HJ200-L058
R021		
+ DXD CARD CHECK		
	(K2X28)	HK200-R021
	J2X28	HJ200-L054
R022		
+ GATE PCR TO ALU IN		
	(K2S10)	HK200-R022
	V2D11	HV200-L020
R023		
- SELECT PCR		
	(K2U07)	HK200-R023
	V2B07	HV200-L021
R024		
+ GATE BAP TO CAR		
	(K2Z25)	HK200-R024
	J2Z25	HJ200-L010
R025		
+ GATE BAP TO CAR (P)		
	(K2Z06)	HK200-R025
	J2Z06	HJ200-L011
R026		
+ GATE CBP TO CAR		
	(K2Z30)	HK200-R026
	J2Z30	HJ200-L012
R027		
+ GATE CBP TO CAR (P)		
	(K2Z10)	HK200-R027
	J2Z10	HJ200-L013
R028		
+ GATE DBP TO CAR		
	(K2Z28)	HK200-R028
	J2Z28	HJ200-L014
R029		
- INCREMENT		
	(K2Z07)	HK200-R029
	J2Z07	HJ200-L026
R030		
- INCREMENT (P)		
	(K2Z09)	HK200-R030
	J2Z09	HJ200-L027
R031		
- LOAD CAR TO BAP		
	(K2W26)	HK200-R031
	J2W26	HJ200-L015
R032		
- LOAD CAR TO BAP (P)		
	(K2Z24)	HK200-R032
	J2Z24	HJ200-L016
R033		
- LOAD CAR TO CBP		
	(K2Z03)	HK200-R033
	J2Z03	HJ200-L017
R034		
- LOAD CAR TO CBP (P)		
	(K2Z13)	HK200-R034
	J2Z13	HJ200-L018
R035		
- LOAD CAR TO DBP		
	(K2W06)	HK200-R035
	J2W06	HJ200-L019
R036		
- LOAD CAR TO DBP (P)		
	(K2W05)	HK200-R036
	J2W05	HJ200-L020
R037		
- NEED DATA/DATA READY CDX		
	(K2J11)	HK200-R037
	N2J11	HN200-L026
R038		
- NEED DATA/DATA READY DDC		
	(K2D06)	HK200-R038
	N2D07	HN200-L037
R039		
+ CBP XREG DECODE		
	(K2W13)	HK200-R039
	J2W13	HJ200-L035
R040		
+ DBP XREG DECODE		
	(K2W33)	HK200-R040
	J2W33	HJ200-L036

DATA TRANSFER DATA XRL HK200

LINE/SIGNAL	PIN	SHEET/LINE
R041		
+ XREG DECODE 02		
	(K2W32)	HK200-R041
	J2W32	HJ200-L037
R042		
+ XREG DECODE 03		
	(K2W07)	HK200-R042
	J2W07	HJ200-L038
R043		
+ EXT ADR DECODE 6		
	(K2Y06)	HK200-R043
	H2Y06	HH220-L029
R044		
+ EXT ADR DECODE 7		
	(K2Y25)	HK200-R044
	H2Y25	HH220-L026
R045		
- RUN CHANNEL L1		
	(K2W11)	HK200-R045
	J2W11	HJ200-L004
R046		
+ ARRAY WRITE		
	(K2Z29)	HK200-R046
	J2Z29	HJ200-L042
R047		
+ 3 BYTES NEEDED/READY		
	(K2U06)	HK200-R047

```
003 - CHECK RESET ------------------ D02
004 - CDN SD1 T CLOCK REDRIVEN (0:7) * =
005 - CHIP SELECT 0 ----------------- U07
006 - CHIP SELECT 1 ----------------- M11
007 - CHIP SELECT 2 ----------------- P10
008 - CHIP SELECT 3 ----------------- P06
009 - CARD SELECT 0 ----------------- S05
010 - ARRAY ADDRESS BIT 2 ---------- M12
011 - ARRAY ADDRESS BIT 3 ---------- P13
012 - ARRAY ADDRESS BIT 4 ---------- U05
013 - ARRAY ADDRESS BIT 5 ---------- S02
014 - ARRAY ADDRESS BIT 6 ---------- S03
015 - ARRAY ADDRESS BIT 7 ---------- U04
016 - ARRAY ADDRESS BIT 8 ---------- M08
017 - ARRAY ADDRESS BIT 9 ---------- M09
018 - ARRAY ADDRESS BIT 10 --------- M13
019 - ARRAY ADDRESS BIT 11 --------- P11
020 - ARRAY ADDRESS BIT 12 --------- S04
021 - ARRAY ADDRESS BIT 13 --------- S08
022 - WRITE ENABLE ------------------U06
023 - ARRAY IN BIT 0 ---------------- M10
024 - ARRAY IN BIT 1 ---------------- P05
025 - ARRAY IN BIT 2 ---------------- P09
026 - ARRAY IN BIT 3 ---------------- U09
027 - ARRAY IN BIT 4 ---------------- S07
028 - ARRAY IN BIT 5 ---------------- U02
029 - ARRAY IN BIT 6 ---------------- S06
030 - ARRAY IN BIT 7 ---------------- S12
031 - ARRAY IN BIT P ---------------- S10
032 + CDN SD1 REG ADDRESS (P,0:7) == * =
033 + CDN SD1 REGISTER READ GATE --- Y06
034 + CDN SD1 REGISTER WRITE GATE -- Y26
035 + CDN SD1 REGISTER R/W CLOCK --- Y07
036 + CDN SD1 NATIVE CHECK --------- Y10
  -  + CAM SD1 SD/CNTL MACHINE RESET  Y03
038 - CAM SD1 DIAGNOSTIC FORCE (3:7) * =
039 - CHIP SELECT 0 ----------------- Z05
040 - CHIP SELECT 1 ----------------- Z25
041 - CHIP SELECT 2 ----------------- Z24
042 - CHIP SELECT 3 ----------------- Z03
043 - CARD SELECT 0 ----------------- Z22
044 - ARRAY ADDRESS BIT 2 ---------- Z06
045 - ARRAY ADDRESS BIT 3 ---------- Z02
046 - ARRAY ADDRESS BIT 4 ---------- Z30
047 - ARRAY ADDRESS BIT 5 ---------- Z13
048 - ARRAY ADDRESS BIT 6 ---------- Z33
049 - ARRAY ADDRESS BIT 7 ---------- Z10
050 - ARRAY ADDRESS BIT 8 ---------- Z32
051 - ARRAY ADDRESS BIT 9 ---------- Z29
052 - ARRAY ADDRESS BIT 10 --------- Z26
053 - ARRAY ADDRESS BIT 11 --------- Z09
054 - ARRAY ADDRESS BIT 12 --------- Z07
055 - ARRAY ADDRESS BIT 13 --------- Z28
056 + CAR PARITY -------------------- X02
```

CMAA CARD

OVERVIEW

The CMAA Card shares with the 3880 microprocessor the DASD gap processing workload.

PRIMARY FUNCTIONS

The CMAA Card provides ...

- An auxiliary microprocessor to share the gap processing with the main 3880 microprocessor processor,
- The ability to store data from the device into ASDM control store while transferring data from the device to cache or to the channel.
- A means of reporting sense and status information to the SDM (via the CMCD card),
- A means of reporting hardware detected checks (as CHK REG Bit 7) when running in non-caching mode.

PRIMARY COMPONENTS

- ASDM
- Control Storage (CS)
- Local Storage Registers (LSR)
- CACTL: ASDM Control Register
- ACTL: ASDM Control Register Shadow
- CARD1: ASDM Read Register 1
- ARD1: ASDM Read Register 1 Shadow
- CARD2: ASDM Read Register 2
- ARD2: ASDM Read Register 2 Shadow
- AWR1: ASDM Write Register 1
- CAWR1: ASDM Write Register 1 Shadow
- AWR2: ASDM Write Register 2
- CAWR2: ASDM Write Register 2 Shadow
- CAAJCK: ADT/ASDM Check Register
- External Register Address Decode
- ADT Buffer Chip Select Decode.
- Timing & Controls.

ERROR CHECKING

- Register read/write controls (CMAAJCK bit 0), R/W clock with both read gate and write gate or with neither gate.
- Register Address Bus parity check (CMAAJCK bit 0), incorrect parity during R/W clock.
- Register Data Bus parity check (CMAAJCK bit 0) incorrect parity on the register data bus during a read or write of an indirect register on this card.
- ASDM Local Store Register Address parity check (CMAAJCK bit 1)
- ASDM External Register Address parity check (CMAAJCK bit 1)
- ASDM Internal Check (CMAAJCK bit 2)
- Check of incorrect parity on the busses going into the ASDM from Control Store (CS), Local Storage Registers (LSR), or the CRGA Module (CMAAJCK bit 2)
- Parity check on the 'Array In' bus as it goes into ASDM's CS. (CMAAJCK bit 3)
- Duplicate decode check on the Internal Register Address bus. (CMAAJCK bit 4)
- ASDM CS Address parity check on either a read or write operation (CMAAJCK bit 6)
- CAR Address parity check on write ops to ASDM's CS (CMAAJCK bit 7)
  - Multiple Decode Checks
  - Invert CAR parity

```
D05 + CHK BIT 7 -------------------- 003
B11 + CMAA IR CHECK ---------------- 004
= * - CAM SD1 ARRAY OUT (P,0:7) ==== 005
= * - DATA EVEN BUS OUT (P,0:7) ==== 006
= * - DATA ODD BUS OUT (P,0:7) ===== 007
U11 - SET REGISTER GATE ------------ 008
D11 - REGISTER LOAD COMMAND -------- 009
D10 - EXTERNAL REGISTER SELECT ----- 010
B08 - EXTERNAL REGISTER ADDRESS P -- 011
G03 - INTERRUPT RESPONSE ----------- 012
= * + CDN SD1 REG R/W DATA (P,0:7) = 013
Y13 - CAM SD1 REG READ CLOCK DELAYED 014
Y05 - CDN SD1 REGISTER ADR DECODED - 015
D07 - EXTERNAL REGISTER ADDRESS 0 -- 016
J02 - EXTERNAL REGISTER ADDRESS 1 -- 017
D06 - EXTERNAL REGISTER ADDRESS 2 -- 018
B13 - EXTERNAL REGISTER ADDRESS 3 -- 019
D13 - EXTERNAL REGISTER ADDRESS 4 -- 020
```

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- CHECK RESET		
	L2D02	HL200-L003
	(H2Y10)	HN220-R063
	(R2J05)	HR200-R028
	D2J06	HD200-L034
	E2J06	HE200-L034
	C2J10	HC200-L012
	F2M04	HF200-L056
	G2B13	HG210-L015
	H2U12	HH220-L061
	J2Y10	HJ200-L024
	K2Y10	HK200-L023
	N2M13	HN200-L024
	V2G08	HV200-L033
	X2S13	HX200-L015
L004		
- CDN SD1 T CLOCK REDRIVEN 0		
	L2Y33	HL200-L004
	(N2Y33)	HN200-R060
	M2Y33	HM200-L050
L004		
- CDN SD1 T CLOCK REDRIVEN 1		
	L2B05	HL200-L004
	(N2M07)	HN200-R060
L004		
- CDN SD1 T CLOCK REDRIVEN 2		
	L2Y02	HL200-L004
	(N2Y02)	HN200-R060
	M2Y02	HM200-L051
L004		
- CDN SD1 T CLOCK REDRIVEN 3		
	L2B04	HL200-L004
	(N2P02)	HN200-R060
	M2M12	HM200-L052
L004		
- CDN SD1 T CLOCK REDRIVEN 4		
	L2Y32	HL200-L004
	(N2Y32)	HN200-R060
	M2Y32	HM200-L053
L004		
- CDN SD1 T CLOCK REDRIVEN 5		
	L2D09	HL200-L004
	(N2M02)	HN200-R060
L004		
- CDN SD1 T CLOCK REDRIVEN 6		
	L2Y22	HL200-L004
	(N2Y22)	HN200-R060
	M2Y22	HM200-L054
L004		
- CDN SD1 T CLOCK REDRIVEN 7		
	L2D04	HL200-L004
	(N2M03)	HN200-R060
	M2U02	HM200-L055

LINE/SIGNAL	PIN	SHEET/LINE
L005		
- CHIP SELECT 0		
	L2U07	HL200-L005
	(J2J11)	HJ200-R004
	L2Z05	HL200-L039
	M2Z05	HM200-L033
L006		
- CHIP SELECT 1		
	L2M11	HL200-L006
	(J2D13)	HJ200-R004
	L2Z25	HL200-L040
	M2Z25	HM200-L034
L007		
- CHIP SELECT 2		
	L2P10	HL200-L007
	(J2G03)	HJ200-R004
	L2Z24	HL200-L041
	M2Z24	HM200-L035
L008		
- CHIP SELECT 3		
	L2P06	HL200-L008
	(J2G08)	HJ200-R004
	L2Z03	HL200-L042
	M2Z03	HM200-L036
L009		
- CARD SELECT 0		
	L2S05	HL200-L009
	(J2D12)	HJ200-R006
	L2Z22	HL200-L043
	M2Z22	HM200-L049
L010		
- ARRAY ADDRESS BIT 2		
	L2M12	HL200-L010
	(J2G12)	HJ200-R005
	L2Z06	HL200-L044
	M2Z06	HM200-L037
L011		
- ARRAY ADDRESS BIT 3		
	L2P13	HL200-L011
	(J2J12)	HJ200-R005
	L2Z02	HL200-L045
	M2Z02	HM200-L038
L012		
- ARRAY ADDRESS BIT 4		
	L2U05	HL200-L012
	(J2M05)	HJ200-R005
	L2Z30	HL200-L046
	M2Z30	HM200-L039
L013		
- ARRAY ADDRESS BIT 5		
	L2S02	HL200-L013
	(J2G10)	HJ200-R005
	L2Z13	HL200-L047
	M2Z13	HM200-L040

LINE/SIGNAL	PIN	SHEET/LINE
L014		
- ARRAY ADDRESS BIT 6		
	L2S03	HL200-L014
	(J2B09)	HJ200-R005
	L2Z33	HL200-L048
	M2Z33	HM200-L041
L015		
- ARRAY ADDRESS BIT 7		
	L2U04	HL200-L015
	(J2D09)	HJ200-R005
	L2Z10	HL200-L049
	M2Z10	HM200-L042
L016		
- ARRAY ADDRESS BIT 8		
	L2M08	HL200-L016
	(J2M04)	HJ200-R005
	L2Z32	HL200-L050
	M2Z32	HM200-L043
L017		
- ARRAY ADDRESS BIT 9		
	L2M09	HL200-L017
	(J2J13)	HJ200-R005
	L2Z29	HL200-L051
	M2Z29	HM200-L044
L018		
- ARRAY ADDRESS BIT 10		
	L2M13	HL200-L018
	(J2M02)	HJ200-R005
	L2Z26	HL200-L052
	M2Z26	HM200-L045
L019		
- ARRAY ADDRESS BIT 11		
	L2P11	HL200-L019
	(J2P02)	HJ200-R005
	L2Z09	HL200-L053
	M2Z09	HM200-L046
L020		
- ARRAY ADDRESS BIT 12		
	L2S04	HL200-L020
	(J2G13)	HJ200-R005
	L2Z07	HL200-L054
	M2Z07	HM200-L047
L021		
- ARRAY ADDRESS BIT 13		
	L2S08	HL200-L021
	(J2M03)	HJ200-R005
	L2Z28	HL200-L055
	M2Z28	HM200-L048
L022		
- WRITE ENABLE		
	L2U06	HL200-L022
	(J2P05)	HJ200-R009
	K2U12	HK200-L037
	M2J10	HM200-L016

LINE/SIGNAL	PIN	SHEET/LINE
L023		
- ARRAY IN BIT 0		
	L2M10	HL200-L023
	(K2D05)	HK200-R018
	M2D02	HM200-L018
L024		
- ARRAY IN BIT 1		
	L2P05	HL200-L024
	(K2D04)	HK200-R018
	M2D07	HM200-L019
L025		
- ARRAY IN BIT 2		
	L2P09	HL200-L025
	(K2B02)	HK200-R018
	M2B07	HM200-L020
L026		
- ARRAY IN BIT 3		
	L2U09	HL200-L026
	(K2B05)	HK200-R018
	M2B02	HM200-L021
L027		
- ARRAY IN BIT 4		
	L2S07	HL200-L027
	(K2B07)	HK200-R018
	M2D05	HM200-L022
L028		
- ARRAY IN BIT 5		
	L2U02	HL200-L028
	(K2B03)	HK200-R018
	M2D09	HM200-L023
L029		
- ARRAY IN BIT 6		
	L2S06	HL200-L029
	(K2D07)	HK200-R018
	M2B06	HM200-L024
L030		
- ARRAY IN BIT 7		
	L2S12	HL200-L030
	(K2D02)	HK200-R018
	M2B05	HM200-L025
L031		
- ARRAY IN BIT P		
	L2S10	HL200-L031
	(K2G04)	HK200-R018
	M2D04	HM200-L017
L032		
+ CDN SD1 REG ADDRESS P		
	L2W02	HL200-L032
	(N2W02)	HN200-R005
	M2W02	HM200-L032
L032		
+ CDN SD1 REG ADDRESS 0		
	L2W24	HL200-L032
	(N2W24)	HN200-R005
	M2W24	HM200-L032

LINE/SIGNAL	PIN	SHEET/LINE
L032		
+ CDN SD1 REG ADDRESS 1		
	L2W29	HL200-L032
	(N2W29)	HN200-R005
	M2W29	HM200-L032
L032		
+ CDN SD1 REG ADDRESS 2		
	L2W30	HL200-L032
	(N2W30)	HN200-R005
	M2W30	HM200-L032
L032		
+ CDN SD1 REG ADDRESS 3		
	L2W10	HL200-L032
	(N2W10)	HN200-R005
	M2W10	HM200-L032
L032		
+ CDN SD1 REG ADDRESS 4		
	L2W11	HL200-L032
	(N2W11)	HN200-R005
	M2W11	HM200-L032
L032		
+ CDN SD1 REG ADDRESS 5		
	L2W09	HL200-L032
	(N2W09)	HN200-R005
	M2W09	HM200-L032
L032		
+ CDN SD1 REG ADDRESS 6		
	L2W05	HL200-L032
	(N2W05)	HN200-R005
	M2W05	HM200-L032
L032		
+ CDN SD1 REG ADDRESS 7		
	L2W33	HL200-L032
	(N2W33)	HN200-R005
	M2W33	HM200-L032
L033		
+ CDN SD1 REGISTER READ GATE		
	L2Y06	HL200-L033
	(N2Y06)	HN200-R045
	M2Y06	HM200-L030
L034		
+ CDN SD1 REGISTER WRITE GATE		
	L2Y26	HL200-L034
	(N2Y26)	HN200-R046
	M2Y26	HM200-L029
L035		
+ CDN SD1 REGISTER R/W CLOCK		
	L2Y07	HL200-L035
	(N2Y07)	HN200-R047
	M2Y07	HM200-L028
L036		
+ CDN SD1 NATIVE CHECK		
	L2Y10	HL200-L036
	(N2Y10)	HN200-R054

LINE/SIGNAL	PIN	SHEET/LINE
L037		
+ CAM SD1 SD/CNTL MACHINE RESET		
	L2Y03	HL200-L037
	(M2Y03)	HM200-R034
	N2Y03	HN200-L041
L038		
- CAM SD1 DIAGNOSTIC FORCE 3		
	L2Y29	HL200-L038
	(M2Y29)	HM200-R036
	N2Y29	HN200-L042
L038		
- CAM SD1 DIAGNOSTIC FORCE 4		
	L2Y30	HL200-L038
	(M2Y30)	HM200-R036
	N2Y30	HN200-L042
L038		
- CAM SD1 DIAGNOSTIC FORCE 5		
	L2Y24	HL200-L038
	(M2Y24)	HM200-R036
	N2Y24	HN200-L042
L038		
- CAM SD1 DIAGNOSTIC FORCE 6		
	L2Y09	HL200-L038
	(M2Y09)	HM200-R036
	N2Y09	HN200-L042
L038		
- CAM SD1 DIAGNOSTIC FORCE 7		
	L2Y25	HL200-L038
	(M2Y25)	HM200-R036
	N2Y25	HN200-L042
L039		
- CHIP SELECT 0		
	L2Z05	HL200-L039
	(J2J11)	HJ200-R004
	L2U07	HL200-L005
	M2Z05	HM200-L033
L040		
- CHIP SELECT 1		
	L2Z25	HL200-L040
	(J2D13)	HJ200-R004
	L2M11	HL200-L006
	M2Z25	HM200-L034
L041		
- CHIP SELECT 2		
	L2Z24	HL200-L041
	(J2G03)	HJ200-R004
	L2P10	HL200-L007
	M2Z24	HM200-L035
L042		
- CHIP SELECT 3		
	L2Z03	HL200-L042
	(J2G08)	HJ200-R004
	L2P06	HL200-L008
	M2Z03	HM200-L036

LINE/SIGNAL	PIN	SHEET/LINE
L043		
- CARD SELECT 0		
	L2Z22	HL200-L043
	(J2D12)	HJ200-R006
	L2S05	HL200-L009
	M2Z22	HM200-L049
L044		
- ARRAY ADDRESS BIT 2		
	L2Z06	HL200-L044
	(J2G12)	HJ200-R005
	L2M12	HL200-L010
	M2Z06	HM200-L037
L045		
- ARRAY ADDRESS BIT 3		
	L2Z02	HL200-L045
	(J2J12)	HJ200-R005
	L2P13	HL200-L011
	M2Z02	HM200-L038
L046		
- ARRAY ADDRESS BIT 4		
	L2Z30	HL200-L046
	(J2M05)	HJ200-R005
	L2U05	HL200-L012
	M2Z30	HM200-L039
L047		
- ARRAY ADDRESS BIT 5		
	L2Z13	HL200-L047
	(J2G10)	HJ200-R005
	L2S02	HL200-L013
	M2Z13	HM200-L040
L048		
- ARRAY ADDRESS BIT 6		
	L2Z33	HL200-L048
	(J2B09)	HJ200-R005
	L2S03	HL200-L014
	M2Z33	HM200-L041
L049		
- ARRAY ADDRESS BIT 7		
	L2Z10	HL200-L049
	(J2D09)	HJ200-R005
	L2U04	HL200-L015
	M2Z10	HM200-L042
L050		
- ARRAY ADDRESS BIT 8		
	L2Z32	HL200-L050
	(J2M04)	HJ200-R005
	L2M08	HL200-L016
	M2Z32	HM200-L043
L051		
- ARRAY ADDRESS BIT 9		
	L2Z29	HL200-L051
	(J2J13)	HJ200-R005
	L2M09	HL200-L017
	M2Z29	HM200-L044

LINE/SIGNAL	PIN	SHEET/LINE
L052		
- ARRAY ADDRESS BIT 10		
	L2Z26	HL200-L052
	(J2M02)	HJ200-R005
	L2M13	HL200-L018
	M2Z26	HM200-L045
L053		
- ARRAY ADDRESS BIT 11		
	L2Z09	HL200-L053
	(J2F02)	HJ200-R005
	L2P11	HL200-L019
	M2Z09	HM200-L046
L054		
- ARRAY ADDRESS BIT 12		
	L2Z07	HL200-L054
	(J2G13)	HJ200-R005
	L2S04	HL200-L020
	M2Z07	HM200-L047
L055		
- ARRAY ADDRESS BIT 13		
	L2Z28	HL200-L055
	(J2M03)	HJ200-R005
	L2S08	HL200-L021
	M2Z28	HM200-L048
L056		
+ CAR PARITY		
	L2X02	HL200-L056
	(J2X02)	HJ200-R013
	K2X02	HK200-L013
R003		
+ CHK BIT 7		
	(L2D05)	HL200-R003
	J2B08	HJ200-L069
R004		
+ CMAA IR CHECK		
	(L2B11)	HL200-R004
	N2B03	HN200-L022
R005		
- CAM SD1 ARRAY OUT P		
	(L2P07)	HL200-R005
	(M2U13)	HM200-R003
	K2U04	HK200-L007
R005		
- CAM SD1 ARRAY OUT 0		
	(L2S11)	HL200-R005
	(M2S04)	HM200-R003
	K2P09	HK200-L007
R005		
- CAM SD1 ARRAY OUT 1		
	(L2S13)	HL200-R005
	(M2U05)	HM200-R003
	K2U05	HK200-L007
R005		
- CAM SD1 ARRAY OUT 2		
	(L2U10)	HL200-R005
	(M2U04)	HM200-R003
	K2M12	HK200-L007

LINE/SIGNAL	PIN	SHEET/LINE
R005		
- CAM SD1 ARRAY OUT 3		
	(L2U12)	HL200-R005
	(M2S05)	HM200-R003
	K2S05	HK200-L007
R005		
- CAM SD1 ARRAY OUT 4		
	(L2U13)	HL200-R005
	(M2M09)	HM200-R003
	K2S03	HK200-L007
R005		
- CAM SD1 ARRAY OUT 5		
	(L2S09)	HL200-R005
	(M2P10)	HM200-R003
	K2U02	HK200-L007
R005		
- CAM SD1 ARRAY OUT 6		
	(L2P12)	HL200-R005
	(M2M10)	HM200-R003
	K2M09	HK200-L007
R005		
- CAM SD1 ARRAY OUT 7		
	(L2M07)	HL200-R005
	(M2P09)	HM200-R003
	K2M08	HK200-L007
R006		
- DATA EVEN BUS OUT P		
	(L2J09)	HL200-R006
R006		
- DATA EVEN BUS OUT 0		
	(L2B12)	HL200-R006
R006		
- DATA EVEN BUS OUT 1		
	(L2G02)	HL200-R006
R006		
- DATA EVEN BUS OUT 2		
	(L2D12)	HL200-R006
R006		
- DATA EVEN BUS OUT 3		
	(L2J06)	HL200-R006
R006		
- DATA EVEN BUS OUT 4		
	(L2G07)	HL200-R006
R006		
- DATA EVEN BUS OUT 5		
	(L2B09)	HL200-R006
R006		
- DATA EVEN BUS OUT 6		
	(L2G04)	HL200-R006
R006		
- DATA EVEN BUS OUT 7		
	(L2J07)	HL200-R006

LINE/SIGNAL	PIN	SHEET/LINE
R007		
- DATA ODD BUS OUT P		
	(L2J04)	HL200-R007
R007		
- DATA ODD BUS OUT 0		
	(L2B02)	HL200-R007
R007		
- DATA ODD BUS OUT 1		
	(L2B10)	HL200-R007
R007		
- DATA ODD BUS OUT 2		
	(L2B06)	HL200-R007
R007		
- DATA ODD BUS OUT 3		
	(L2B03)	HL200-R007
R007		
- DATA ODD BUS OUT 4		
	(L2B07)	HL200-R007
R007		
- DATA ODD BUS OUT 5		
	(L2G05)	HL200-R007
R007		
- DATA ODD BUS OUT 6		
	(L2G08)	HL200-R007
R007		
- DATA ODD BUS OUT 7		
	(L2J05)	HL200-R007
R008		
- SET REGISTER GATE		
	(L2U11)	HL200-R008
R009		
- REGISTER LOAD COMMAND		
	(L2D11)	HL200-R009
R010		
- EXTERNAL REGISTER SELECT		
	(L2D10)	HL200-R010
R011		
- EXTERNAL REGISTER ADDRESS P		
	(L2B08)	HL200-R011
R012		
- INTERRUPT RESPONSE		
	(L2G03)	HL200-R012
R013		
+ CDN SD1 REG R/W DATA P		
	(L2W25)	HL200-R013
	(M2W25)	HM200-R042
	(N2W25)	HN200-R011
	(N2W25)	HN200-R053

LINE/SIGNAL	PIN	SHEET/LINE
R013		
+ CDN SD1 REG R/W DATA 0		
	(L2W07)	HL200-R013
	(M2W07)	HM200-R042
	(N2W07)	HN200-R011
	(N2W07)	HN200-R053
R013		
+ CDN SD1 REG R/W DATA 1		
	(L2W03)	HL200-R013
	(M2W03)	HM200-R042
	(N2W03)	HN200-R011
	(N2W03)	HN200-R053
R013		
+ CDN SD1 REG R/W DATA 2		
	(L2W06)	HL200-R013
	(M2W06)	HM200-R042
	(N2W06)	HN200-R011
	(N2W06)	HN200-R053
R013		
+ CDN SD1 REG R/W DATA 3		
	(L2W32)	HL200-R013
	(M2W32)	HM200-R042
	(N2W32)	HN200-R011
	(N2W32)	HN200-R053
R013		
+ CDN SD1 REG R/W DATA 4		
	(L2W13)	HL200-R013
	(M2W13)	HM200-R042
	(N2W13)	HN200-R011
	(N2W13)	HN200-R053
R013		
+ CDN SD1 REG R/W DATA 5		
	(L2W22)	HL200-R013
	(M2W22)	HM200-R042
	(N2W22)	HN200-R011
	(N2W22)	HN200-R053
R013		
+ CDN SD1 REG R/W DATA 6		
	(L2W28)	HL200-R013
	(M2W28)	HM200-R042
	(N2W28)	HN200-R011
	(N2W28)	HN200-R053
R013		
+ CDN SD1 REG R/W DATA 7		
	(L2W26)	HL200-R013
	(M2W26)	HM200-R042
	(N2W26)	HN200-R011
	(N2W26)	HN200-R053
R014		
- CAM SD1 REG READ CLOCK DELAYED		
	(L2Y13)	HL200-R014
	(M2Y13)	HM200-R035
	(N2Y13)	HN200-R055
R015		
- CDN SD1 REGISTER ADR DECODED		
	(L2Y05)	HL200-R015
	(N2Y05)	HN200-R048
	M2Y05	HM200-L031

LINE/SIGNAL	PIN	SHEET/LINE
R016		
- EXTERNAL REGISTER ADDRESS 0		
	(L2D07)	HL200-R016
R017		
- EXTERNAL REGISTER ADDRESS 1		
	(L2J02)	HL200-R017
R018		
- EXTERNAL REGISTER ADDRESS 2		
	(L2D06)	HL200-R018
R019		
- EXTERNAL REGISTER ADDRESS 3		
	(L2B13)	HL200-R019
R020		
- EXTERNAL REGISTER ADDRESS 4		
	(L2D13)	HL200-R020

003 + CAM SD2 COMMUNICATION CHECK -- J11
004 + SELECTIVE OR SYSTEM RESET ---- G03
005 + DEVICE COUNT < 64 ------------ B13
006 - SD2 SS +5V POWER OFF --------- P05
007 - PCC SD1 PARITY ERROR --------- U07
008 - PCC SD1 READ PARITY ERROR ---- S08
009 + CHECK ONE IND ----------------- J04
010 - SD1 INDICATOR ---------------- U10
011 + RESET ------------------------ P11
012 - CDN SD# SECOND COMM R/W CLOCK M02
013 - CAM SD# COMM R/W CLOCK ------- D06
014 - CAM SD# COMM WRITE GATE ------ M11
015 - CAM SD# COMM READ GATE ------- P13
016 - WRITE ENABLE ----------------- J10
017 - ARRAY IN BIT P --------------- D04
018 - ARRAY IN BIT 0 --------------- D02
019 - ARRAY IN BIT 1 --------------- D07
020 - ARRAY IN BIT 2 --------------- B07
021 - ARRAY IN BIT 3 --------------- B02
022 - ARRAY IN BIT 4 --------------- D05
023 - ARRAY IN BIT 5 --------------- D09
024 - ARRAY IN BIT 6 --------------- B06
025 - ARRAY IN BIT 7 --------------- B05
026 - PCC SD1 REG READ CLOCK DELAYED X06
027 + SD1 CABLE CHECK -------------- X08
028 + CDN SD1 REGISTER R/W CLOCK --- Y07
029 + CDN SD1 REGISTER WRITE GATE -- Y26
030 + CDN SD1 REGISTER READ GATE --- Y06
031 - CDN SD1 REGISTER ADR DECODED - Y05
032 + CDN SD1 REG ADDRESS (P,0:7) == * =
033 - CHIP SELECT 0 ---------------- Z05
034 - CHIP SELECT 1 ---------------- Z25
035 - CHIP SELECT 2 ---------------- Z24
036 - CHIP SELECT 3 ---------------- Z03
037 - ARRAY ADDRESS BIT 2 ---------- Z06
038 - ARRAY ADDRESS BIT 3 ---------- Z02
039 - ARRAY ADDRESS BIT 4 ---------- Z30
040 - ARRAY ADDRESS BIT 5 ---------- Z13
041 - ARRAY ADDRESS BIT 6 ---------- Z33
042 - ARRAY ADDRESS BIT 7 ---------- Z10
043 - ARRAY ADDRESS BIT 8 ---------- Z32
044 - ARRAY ADDRESS BIT 9 ---------- Z29
045 - ARRAY ADDRESS BIT 10 --------- Z26
046 - ARRAY ADDRESS BIT 11 --------- Z09
047 - ARRAY ADDRESS BIT 12 --------- Z07
048 - ARRAY ADDRESS BIT 13 --------- Z28
049 - CARD SELECT 0 ---------------- Z22
050 - CDN SD1 T CLOCK REDRIVEN 0 --- Y33
051 - CDN SD1 T CLOCK REDRIVEN 2 --- Y02
052 - CDN SD1 T CLOCK REDRIVEN 3 --- M12
053 - CDN SD1 T CLOCK REDRIVEN 4 --- Y32
054 - CDN SD1 T CLOCK REDRIVEN 6 --- Y22
055 - CDN SD1 T CLOCK REDRIVEN 7 --- U02
056 - SS POWER RESET --------------- G04
057 + SG1 SS POWER OFF ------------- G05
058 + SG2 SS POWER OFF ------------- G08

CMCA CARD

OVERVIEW

The CMCA (communication adapter) card is the indirect register interface between the storage director and the control board and between the two storage directors. The card also provides the data buffer for the DXA/DXD cards.

PRIMARY FUNCTIONS

- Indirect register interface to the control board.
- Communication between the two storage directors.
- Reset generation for the CMAA, CMCD, and CMCA cards.
- 1024 byte data buffer. This is the array that the DXA and DXD cards use to buffer data during data transfers.

PRIMARY COMPONENTS

- Indirect register bus drivers and receivers (three-state). The CMCA drives the indirect register address and control lines from the storage director to control board. It also controls the indirect register data bus going and coming from the control board to the SD.
- Communication bus drivers and receivers (three-state). There are two cables linking SD1 to SD2 for the purpose of communication between storage directors. Most of the communication logic is on SD2, however both SDs will use the cables for the communication data bus and associated controls. Since these lines may be sourced on either SD1 or SD2 their signal names are labled CAM SD#. Other communication control lines are named for their source.
- 256 byte communication buffer (functional on SD2 and shared by both storage directors).
- Auto-incrementing address register for the communication buffer.
- Communication control tie-breaking. Both SDs may request control of the communication buffer and address register, however only one request at a time will be granted.
- Message waiting notification to the other storage director. Each storage director may set bit 0 in CSTAT3 of the other SD to notify it that a message is waiting. This bit is sent back to the first SD to set bit 1 in CSTAT3 to indicate that the message had been sent. The message waiting indications for both SDs are latched on SD2. If SD2 is powered off the indications will be lost.
- Diagnostic register.
- 57 millisecond timer which sets an overflow bit.
- Timed "Selective or System Reset" inhibit.
- 1024 byte data buffer.
- Parity inversion on the output of the data buffer to preserve hashed parity when reading the buffer with and address of '4000'x to '43FF'x.
- "Controlled Machine Reset" generation for the CMCA, CMAA, and CMCD cards.
- "Level Two Interrupt" generation.

ERROR CHECKING

- CA IR Check (bit 0 CCOMACK) This bit will become active if
  - a missing read gate or write gate
  - both read gate and write gate active
  - incorrect parity on the indirect address bus (good parity is positive active even)
  - incorrect parity on the data bus during a read or write of an indirect register on this card.
- CA Duplicate IR Addr Decode Check (bit 4 CCOMACK) This bit and bit 0 are reported to the CMCD card as the CMCA IR CHECK.
- Port Control IR Parity Check (bit 5 CCOMACK) This bit latches a check from the CMPC card.
- Port Control IR Read Parity Check (bit 6 CCOMACK) This bit latches a check from the CMPC card. It along with bit 5 are reported to the CMCD as PORT CONTROL IR SUM CHECK.
- SD Indicator Check (bit 7 CCOMACK) This bit is set if the bits 1 and 2 in CSTAT4 are the same.

Bits 0,1,4,and 7 ORed and sent to CMCD to set common check. The communication check is reported as bit 4 of CSTAT4. It is set by

- a data parity error when reading or writing the communication address register or buffer.
- an address parity error from the address register when reading or writing the communication buffer.
- communication read gate and write gate both active or inactive during communication R/W clock.
- both storage directors having thier request honored at the same time.

= * - CAM SD1 ARRAY OUT (P,0:7) ==== 003
P12 + CAM SD1 RANGE DECODE CHECK --- 004
P07 - CAM SD2 COMM READ CLOCK DELAY 005
M08 + CAM SD2 COMMUNICATION CHECK -- 006
U11 + CAM SD1 COMM CABLE CHECK ----- 007
P06 + CAM SD2 COMM CABLE 2 --------- 008
S11 + CAM SD1 COMM CABLE 1 --------- 009
M04 - CAM SD2 REQUEST HONORED ------ 010
S09 - CAM SD2 MSG WAITING FOR SD1 -- 011
M05 - CAM SD1 MSG WAITING FOR SD2 -- 012
P04 - CAM SD1 RST MSG WAIT FOR SD1 - 013
U06 - CAM SD1 RST MSG WAIT FOR SD2 - 014
M13 + CAM SD1 SELECT/SYS RESET GATED 015
G02 - INT REQ LEVEL 2 -------------- 016
M07 - CAM SD1 COMM REQUEST --------- 017
G11 - CAM SD1 FORCE SD2 REQUEST OFF 018
G13 - CAM SD1 FORCE SD2 REQUEST ON - 019
S07 - SD1 SS +5V POWER OFF RP ------ 020
G10 + CAM SD1 REQUEST HONORED ACTIVE 021
J13 - CAM SD1 REQUEST HONORED (CD) - 022
S06 - CAM SD1 MSG WAIT FOR SD1 ECHO 023
U09 - CAM SD2 MSG WAIT FOR SD2 ECHO 024
G07 - CAM SD# COMM R/W CLOCK ------- 025
J06 - CAM SD# COMM WRITE GATE ------ 026
J07 - CAM SD# COMM READ GATE ------- 027
P02 - CAM SD# SELECT ADDRESS REG --- 028
G12 - CAM SD# SELECT COMM BUFFER --- 029
G09 - CAM SD1 REG ADR DECODED ON SD 030
J02 + FORT CONTROL IR SUM CHECK ---- 031
= * - CAM SD# COMM R/W DATA (P,0:7) 032
= * - CAM SD1 REG R/W DATA (P,0:7) = 033
Y03 + CAM SD1 SD/CNTL MACHINE RESET -
Y13 - CAM SD1 REG READ CLOCK DELAYED 035
= * - CAM SD1 DIAGNOSTIC FORCE (3:7) 036
Y28 + CAM SD1 CMCA CARD CHECK ------ 037
D10 - CAM SD1 REGISTER R/W CLOCK --- 038
D11 - CAM SD1 REGISTER WRITE GATE -- 039
B08 - CAM SD1 REGISTER READ GATE --- 040
= * - CAM SD1 REG ADDRESS (P,0:7) == 041
= * + CDN SD1 REG R/W DATA (P,0:7) = 042
J05 + CMCA IR CHECK ---------------- 043

LINE/SIGNAL	PIN	SHEET/LINE
L003		
+ CAM SD2 COMMUNICATION CHECK		
	M2J11	HM200-L003
1A-B3	(M2M08)	GM200-R006
	(M2M08)	HM200-R006
1A-B3	M2J11	GM200-L003
1A-B4	*H1D13*	
1A-B3	*H1D13*	
L004		
+ SELECTIVE OR SYSTEM RESET		
	M2G03	HM200-L004
	(F2S05)	HF200-R015
L005		
+ DEVICE COUNT < 64		
	M2B13	HM200-L005
	(V2G03)	HV200-R014
	K2M05	HK200-L032
L006		
- SD2 SS +5V POWER OFF		
	M2P05	HM200-L006
1A-B1	(J2D11)	EJ200-R009
1A-B3	M2P05	GM200-L006
1A-B4	*L1B13*	
1A-B4	*N6B02*	
1A-B3	*L1B13*	
1A-B3	*N6B02*	
1B-A1	*V3D06*	
1B-A1	*B5D07*	
1A-B1	*V5D06*	
L007		
- PCC SD1 PARITY ERROR		
	M2U07	HM200-L007
1B-A1	(C2P12)	JC200-R015
1A-B4	*M6E02*	
1B-A1	*A5D05*	
L008		
- PCC SD1 READ PARITY ERROR		
	M2S08	HM200-L008
1B-A1	(C2P10)	JC200-R016
1A-B4	*M6D02*	
1B-A1	*A5D04*	
L009		
+ CHECK ONE IND		
	M2J04	HM200-L009
	(R2U02)	HR200-R038
	V2S13	HV200-L035
L010		
- SD1 INDICATOR		
	M2U10	HM200-L010
1A-B4	*N6A02*	
1B-A1	*A5D06*	

LINE/SIGNAL	PIN	SHEET/LINE
L011		
+ RESET		
	M2P11	HM200-L011
	(R2B07)	HR200-R022
	C2G09	HC200-L016
	F2M02	HF200-L054
	G2J13	HG210-L017
	H2S03	HH220-L060
	P2J09	HP200-L022
	V2G13	HV200-L006
	X2M02	HX200-L027
L012		
- CDN SD# SECOND COMM R/W CLOCK		
	M2M02	HM200-L012
1A-B3	(N2B12)	GN200-R004
	(N2B12)	HN200-R004
1A-B3	M2M02	GM200-L012
1A-B4	*K1A11*	
1A-B3	*K1A11*	
L013		
- CAM SD# COMM R/W CLOCK		
	M2D06	HM200-L013
1A-B3	(M2G07)	GM200-R025
	(M2G07)	HM200-R025
1A-B3	M2D06	GM200-L013
1A-B4	*J1E11*	
1A-B3	*J1E11*	
L014		
- CAM SD# COMM WRITE GATE		
	M2M11	HM200-L014
1A-B3	(M2J06)	GM200-R026
	(M2J06)	HM200-R026
1A-B3	M2M11	GM200-L014
1A-B4	*K1B11*	
1A-B3	*K1B11*	
L015		
- CAM SD# COMM READ GATE		
	M2P13	HM200-L015
1A-B3	(M2J07)	GM200-R027
	(M2J07)	HM200-R027
1A-B3	M2P13	GM200-L015
1A-B4	*J1D11*	
1A-B3	*J1D11*	
L016		
- WRITE ENABLE		
	M2J10	HM200-L016
	(J2P05)	HJ200-R009
	K2U12	HK200-L037
	L2U06	HL200-L022
L017		
- ARRAY IN BIT P		
	M2D04	HM200-L017
	(K2G04)	HK200-R018
	L2S10	HL200-L031
L018		
- ARRAY IN BIT 0		
	M2D02	HM200-L018
	(K2D05)	HK200-R018
	L2M10	HL200-L023

LINE/SIGNAL	PIN	SHEET/LINE
L019		
- ARRAY IN BIT 1		
	M2D07	HM200-L019
	(K2D04)	HK200-R018
	L2P05	HL200-L024
L020		
- ARRAY IN BIT 2		
	M2B07	HM200-L020
	(K2B02)	HK200-R018
	L2P09	HL200-L025
L021		
- ARRAY IN BIT 3		
	M2B02	HM200-L021
	(K2B05)	HK200-R018
	L2U09	HL200-L026
L022		
- ARRAY IN BIT 4		
	M2D05	HM200-L022
	(K2B07)	HK200-R018
	L2S07	HL200-L027
L023		
- ARRAY IN BIT 5		
	M2D09	HM200-L023
	(K2B03)	HK200-R018
	L2U02	HL200-L028
L024		
- ARRAY IN BIT 6		
	M2B06	HM200-L024
	(K2D07)	HK200-R018
	L2S06	HL200-L029
L025		
- ARRAY IN BIT 7		
	M2B05	HM200-L025
	(K2D02)	HK200-R018
	L2S12	HL200-L030
L026		
- PCC SD1 REG READ CLOCK DELAYED		
	M2X06	HM200-L026
1B-A1	(C2N11)	JC200-R014
1B-A1	*A2B06*	
L027		
+ SD1 CABLE CHECK		
	M2X08	HM200-L027
	N2Z08	HN200-L048
	N2X08	HN200-L049
1A-B4	*N6C04*	
1B-A1	*A5B08*	
1B-A1	*A4B08*	
1B-A1	*A3B08*	
1B-A1	*A2B08*	
L028		
+ CDN SD1 REGISTER R/W CLOCK		
	M2Y07	HM200-L028
	(N2Y07)	HN200-R047
	L2Y07	HL200-L035

LINE/SIGNAL	PIN	SHEET/LINE
L029		
+ CDN SD1 REGISTER WRITE GATE		
	M2Y26	HM200-L029
	(N2Y26)	HN200-R046
	L2Y26	HL200-L034
L030		
+ CDN SD1 REGISTER READ GATE		
	M2Y06	HM200-L030
	(N2Y06)	HN200-R045
	L2Y06	HL200-L033
L031		
- CDN SD1 REGISTER ADR DECODED		
	M2Y05	HM200-L031
	(L2Y05)	HL200-R015
	(N2Y05)	HN200-R048
L032		
+ CDN SD1 REG ADDRESS P		
	M2N02	HM200-L032
	(N2N02)	HN200-R005
	L2N02	HL200-L032
L032		
+ CDN SD1 REG ADDRESS 0		
	M2W24	HM200-L032
	(N2N24)	HN200-R005
	L2W24	HL200-L032
L032		
+ CDN SD1 REG ADDRESS 1		
	M2N29	HM200-L032
	(N2N29)	HN200-R005
	L2W29	HL200-L032
L032		
+ CDN SD1 REG ADDRESS 2		
	M2N30	HM200-L032
	(N2W30)	HN200-R005
	L2W30	HL200-L032
L032		
+ CDN SD1 REG ADDRESS 3		
	M2N10	HM200-L032
	(N2W10)	HN200-R005
	L2W10	HL200-L032
L032		
+ CDN SD1 REG ADDRESS 4		
	M2N11	HM200-L032
	(N2N11)	HN200-R005
	L2W11	HL200-L032
L032		
+ CDN SD1 REG ADDRESS 5		
	M2N09	HM200-L032
	(N2N09)	HN200-R005
	L2W09	HL200-L032
L032		
+ CDN SD1 REG ADDRESS 6		
	M2N05	HM200-L032
	(N2N05)	HN200-R005
	L2W05	HL200-L032

LINE/SIGNAL	PIN	SHEET/LINE
L032		
+ CDN SD1 REG ADDRESS 7		
	M2W33	HM200-L032
	(N2W33)	HN200-R005
	L2W33	HL200-L032
L033		
- CHIP SELECT 0		
	M2Z05	HM200-L033
	(J2J11)	HJ200-R004
	L2U07	HL200-L005
	L2Z05	HL200-L039
L034		
- CHIP SELECT 1		
	M2Z25	HM200-L034
	(J2D13)	HJ200-R004
	L2M11	HL200-L006
	L2Z25	HL200-L040
L035		
- CHIP SELECT 2		
	M2Z24	HM200-L035
	(J2G03)	HJ200-R004
	L2P10	HL200-L007
	L2Z24	HL200-L041
L036		
- CHIP SELECT 3		
	M2Z03	HM200-L036
	(J2G08)	HJ200-R004
	L2P06	HL200-L008
	L2Z03	HL200-L042
L037		
- ARRAY ADDRESS BIT 2		
	M2Z06	HM200-L037
	(J2G12)	HJ200-R005
	L2M12	HL200-L010
	L2Z06	HL200-L044
L038		
- ARRAY ADDRESS BIT 3		
	M2Z02	HM200-L038
	(J2J12)	HJ200-R005
	L2P13	HL200-L011
	L2Z02	HL200-L045
L039		
- ARRAY ADDRESS BIT 4		
	M2Z30	HM200-L039
	(J2M05)	HJ200-R005
	L2U05	HL200-L012
	L2Z30	HL200-L046
L040		
- ARRAY ADDRESS BIT 5		
	M2Z13	HM200-L040
	(J2G10)	HJ200-R005
	L2S02	HL200-L013
	L2Z13	HL200-L047

LINE/SIGNAL	PIN	SHEET/LINE
L041		
- ARRAY ADDRESS BIT 6		
	M2Z33	HM200-L041
	(J2B09)	HJ200-R005
	L2S03	HL200-L014
	L2Z33	HL200-L048
L042		
- ARRAY ADDRESS BIT 7		
	M2Z10	HM200-L042
	(J2D09)	HJ200-R005
	L2U04	HL200-L015
	L2Z10	HL200-L049
L043		
- ARRAY ADDRESS BIT 8		
	M2Z32	HM200-L043
	(J2M04)	HJ200-R005
	L2M08	HL200-L016
	L2Z32	HL200-L050
L044		
- ARRAY ADDRESS BIT 9		
	M2Z29	HM200-L044
	(J2J13)	HJ200-R005
	L2M09	HL200-L017
	L2Z29	HL200-L051
L045		
- ARRAY ADDRESS BIT 10		
	M2Z26	HM200-L045
	(J2M02)	HJ200-R005
	L2M13	HL200-L018
	L2Z26	HL200-L052
L046		
- ARRAY ADDRESS BIT 11		
	M2Z09	HM200-L046
	(J2P02)	HJ200-R005
	L2P11	HL200-L019
	L2Z09	HL200-L053
L047		
- ARRAY ADDRESS BIT 12		
	M2Z07	HM200-L047
	(J2G13)	HJ200-R005
	L2S04	HL200-L020
	L2Z07	HL200-L054
L048		
- ARRAY ADDRESS BIT 13		
	M2Z28	HM200-L048
	(J2M03)	HJ200-R005
	L2S08	HL200-L021
	L2Z28	HL200-L055
L049		
- CARD SELECT 0		
	M2Z22	HM200-L049
	(J2D12)	HJ200-R006
	L2S05	HL200-L009
	L2Z22	HL200-L043

LINE/SIGNAL	PIN	SHEET/LINE
L050		
- CDN SD1 T CLOCK REDRIVEN 0		
	M2Y33	HM200-L050
	(N2Y33)	HN200-R060
	L2Y33	HL200-L004
L051		
- CDN SD1 T CLOCK REDRIVEN 2		
	M2Y02	HM200-L051
	(N2Y02)	HN200-R060
	L2Y02	HL200-L004
L052		
- CDN SD1 T CLOCK REDRIVEN 3		
	M2M12	HM200-L052
	(N2P02)	HN200-R060
	L2B04	HL200-L004
L053		
- CDN SD1 T CLOCK REDRIVEN 4		
	M2Y32	HM200-L053
	(N2Y32)	HN200-R060
	L2Y32	HL200-L004
L054		
- CDN SD1 T CLOCK REDRIVEN 6		
	M2Y22	HM200-L054
	(N2Y22)	HN200-R060
	L2Y22	HL200-L004
L055		
- CDN SD1 T CLOCK REDRIVEN 7		
	M2U02	HM200-L055
	(N2M03)	HN200-R060
	L2D04	HL200-L004
L056		
- SS POWER RESET		
	M2G04	HM200-L056
1A-B1	(J2U04)	EJ200-R021
1A-B3	M2G04	GM200-L056
1B-A1	P2B04	JP200-L053
1A-B4	*M6E04*	
1A-B4	*M6E04*	
1B-A1	*V3D07*	
1B-A1	*A5B05*	
1A-B1	*B5B05*	
1A-B1	*V5D07*	
L057		
+ SG1 SS POWER OFF		
	M2G05	HM200-L057
1A-B1	(J2S04)	EJ200-R045
1A-B3	M2G05	GM200-L057
1A-B4	*M6B04*	
1A-B4	*M6B04*	
1B-A1	*V3D11*	
1B-A1	*A5B02*	
1B-A1	*B5B02*	
1A-B1	*V5D11*	

LINE/SIGNAL	PIN	SHEET/LINE
L058		
+ SG2 SS POWER OFF		
	M2G08	HM200-L058
1A-B1	(J2S09)	EJ200-R046
1A-B3	M2G08	GM200-L058
1A-B4	*M6C04*	
1A-B4	*M6C04*	
1B-A1	*V3D12*	
1B-A1	*A5B03*	
1B-A1	*B5B03*	
1A-B1	*V5D12*	
R003		
- CAM SD1 ARRAY OUT P		
	(M2U13)	HM200-R003
	(L2P07)	HL200-R005
	K2U04	HK200-L007
R003		
- CAM SD1 ARRAY OUT 0		
	(M2S04)	HM200-R003
	(L2S11)	HL200-R005
	K2P09	HK200-L007
R003		
- CAM SD1 ARRAY OUT 1		
	(M2U05)	HM200-R003
	(L2S13)	HL200-R005
	K2U05	HK200-L007
R003		
- CAM SD1 ARRAY OUT 2		
	(M2U04)	HM200-R003
	(L2U10)	HL200-R005
	K2M12	HK200-L007
R003		
- CAM SD1 ARRAY OUT 3		
	(M2S05)	HM200-R003
	(L2U12)	HL200-R005
	K2S05	HK200-L007
R003		
- CAM SD1 ARRAY OUT 4		
	(M2M09)	HM200-R003
	(L2U13)	HL200-R005
	K2S03	HK200-L007
R003		
- CAM SD1 ARRAY OUT 5		
	(M2P10)	HM200-R003
	(L2S09)	HL200-R005
	K2U02	HK200-L007
R003		
- CAM SD1 ARRAY OUT 6		
	(M2M10)	HM200-R003
	(L2P12)	HL200-R005
	K2M09	HK200-L007
R003		
- CAM SD1 ARRAY OUT 7		
	(M2P09)	HM200-R003
	(L2M07)	HL200-R005
	K2M08	HK200-L007

LINE/SIGNAL	PIN	SHEET/LINE
R004		
+ CAM SD1 RANGE DECODE CHECK		
	(M2P12)	HM200-R004
	N2P13	HN200-L021
R005		
- CAM SD2 COMM READ CLOCK DELAY		
	(M2P07)	HM200-R005
1A-B3	(M2P07)	GM200-R005
1A-B4	*J1C11*	
1A-B3	*J1C11*	
R006		
+ CAM SD2 COMMUNICATION CHECK		
	(M2N08)	HM200-R006
1A-B3	(M2N08)	GM200-R006
1A-B3	M2J11	GM200-L003
	M2J11	HM200-L003
1A-B4	*H1D13*	
1A-B3	*H1D13*	
R007		
+ CAM SD1 COMM CABLE CHECK		
	(M2U11)	HM200-R007
1A-B3	(M2U11)	GM200-R007
1A-B4	*G1C13*	
1A-B3	*G1C13*	
R008		
+ CAM SD2 COMM CABLE 2		
	(M2P06)	HM200-R008
1A-B3	(M2P06)	GM200-R008
1A-B4	*K1D13*	
1A-B3	*K1D13*	
R009		
+ CAM SD1 COMM CABLE 1		
	(M2S11)	HM200-R009
1A-B3	(M2S11)	GM200-R009
1A-B4	*G1E13*	
1A-B3	*G1E13*	
R010		
- CAM SD2 REQUEST HONORED		
	(M2M04)	HM200-R010
1A-B3	(M2M04)	GM200-R010
1A-B4	*L1A13*	
1A-B3	*L1A13*	
R011		
- CAM SD2 MSG WAITING FOR SD1		
	(M2S09)	HM200-R011
1A-B3	(M2S09)	GM200-R011
1A-B4	*L1D11*	
1A-B3	*L1D13*	
R012		
- CAM SD1 MSG WAITING FOR SD2		
	(M2M05)	HM200-R012
1A-B3	(M2M05)	GM200-R012
1A-B4	*K1E11*	
1A-B3	*K1E11*	

LINE/SIGNAL	PIN	SHEET/LINE
R013		
- CAM SD1 RST MSG WAIT FOR SD1		
	(M2P04)	HM200-R013
1A-B3	(M2P04)	GM200-R013
1A-B4	*G1B13*	
1A-B3	*H1E13*	
R014		
- CAM SD1 RST MSG WAIT FOR SD2		
	(M2U06)	HM200-R014
1A-B3	(M2U06)	GM200-R014
1A-B4	*L1B11*	
1A-B3	*L1B11*	
R015		
+ CAM SD1 SELECT/SYS RESET GATED		
	(M2M13)	HM200-R015
	R2B08	HR200-L037
R016		
- INT REQ LEVEL 2		
	(M2G02)	HM200-R016
	(J2P07)	HJ200-R020
	R2U12	HR200-L013
R017		
- CAM SD1 COMM REQUEST		
	(M2M07)	HM200-R017
1A-B3	(M2M07)	GM200-R017
1A-B4	*K1C11*	
1A-B3	*K1C11*	
R018		
- CAM SD1 FORCE SD2 REQUEST OFF		
	(M2G11)	HM200-R018
1A-B3	(M2G11)	GM200-R018
1A-B4	*F1D13*	
1A-B3	*H1A13*	
R019		
- CAM SD1 FORCE SD2 REQUEST ON		
	(M2G13)	HM200-R019
1A-B3	(M2G13)	GM200-R019
1A-B4	*H1E11*	
1A-B3	*H1E11*	
R020		
- SD1 SS +5V POWER OFF RP		
	(M2S07)	HM200-R020
1B-A1	F2J06	JF200-L017
1B-A1	P2B08	JP200-L055
1A-B4	*M6C02*	
1A-B3	*M6C02*	
1B-A1	*A5D03*	
R021		
+ CAM SD1 REQUEST HONORED ACTIVE		
	(M2G10)	HM200-R021
1A-B3	(M2G10)	GM200-R021
1A-B4	*L1C11*	
1A-B3	*L1C11*	
R022		
- CAM SD1 REQUEST HONORED (CD)		
	(M2J13)	HM200-R022
	N2M10	HN200-L009

LINE/SIGNAL	PIN	SHEET/LINE
R023		
- CAM SD1 MSG WAIT FOR SD1 ECHO		
	(M2S06)	HM200-R023
1A-B3	(M2S06)	GM200-R023
1A-B4	*L1A11*	
1A-B3	*L1A11*	
R024		
- CAM SD2 MSG WAIT FOR SD2 ECHO		
	(M2U09)	HM200-R024
1A-B3	(M2U09)	GM200-R024
1A-B4	*L1C13*	
1A-B3	*L1C13*	
R025		
- CAM SD# COMM R/W CLOCK		
	(M2G07)	HM200-R025
1A-B3	(M2G07)	GM200-R025
1A-B3	M2D06	GM200-L013
	M2D06	HM200-L013
1A-B4	*J1E11*	
1A-B3	*J1E11*	
R026		
- CAM SD# COMM WRITE GATE		
	(M2J06)	HM200-R026
1A-B3	(M2J06)	GM200-R026
1A-B3	M2M11	GM200-L014
	M2M11	HM200-L014
1A-B4	*K1B11*	
1A-B3	*K1B11*	
R027		
- CAM SD# COMM READ GATE		
	(M2J07)	HM200-R027
1A-B3	(M2J07)	GM200-R027
1A-B3	M2P13	GM200-L015
	M2P13	HM200-L015
1A-B4	*J1D11*	
1A-B3	*J1D11*	
R028		
- CAM SD# SELECT ADDRESS REG		
	(M2P02)	HM200-R028
1A-B3	(M2P02)	GM200-R028
1A-B4	*K1B13*	
1A-B3	*K1E13*	
R029		
- CAM SD# SELECT COMM BUFFER		
	(M2G12)	HM200-R029
1A-B3	(M2G12)	GM200-R029
1A-B4	*K1C13*	
1A-B3	*K1C13*	
R030		
- CAM SD1 REG ADR DECODED ON SD		
	(M2G09)	HM200-R030
1B-A1	R2P09	JR200-L030
1A-B4	*M6B02*	
1B-A1	*A5D02*	
R031		
+ PORT CONTROL IR SUM CHECK		
	(M2J02)	HM200-R031
	N2B05	HN200-L023

LINE/SIGNAL	PIN	SHEET/LINE
R032		
- CAM SD# COMM R/W DATA P		
	(M2M03)	HM200-R032
1A-B3	(M2M03)	GM200-R032
1A-B4	*F1D11*	
1A-B3	*F1D11*	
R032		
- CAM SD# COMM R/W DATA 0		
	(M2B03)	HM200-R032
1A-B3	(M2B03)	GM200-R032
1A-B4	*F1E11*	
1A-B3	*F1E11*	
R032		
- CAM SD# COMM R/W DATA 1		
	(M2B04)	HM200-R032
1A-B3	(M2B04)	GM200-R032
1A-B4	*H1B13*	
1A-B3	*H1B13*	
R032		
- CAM SD# COMM R/W DATA 2		
	(M2D12)	HM200-R032
1A-B3	(M2D12)	GM200-R032
1A-B4	*G1B11*	
1A-B3	*G1B11*	
R032		
- CAM SD# COMM R/W DATA 3		
	(M2D13)	HM200-R032
1A-B3	(M2D13)	GM200-R032
1A-B4	*G1C11*	
1A-B3	*G1C11*	
R032		
- CAM SD# COMM R/W DATA 4		
	(M2J12)	HM200-R032
1A-B3	(M2J12)	GM200-R032
1A-B4	*G1D11*	
1A-B3	*G1D11*	
R032		
- CAM SD# COMM R/W DATA 5		
	(M2S02)	HM200-R032
1A-B3	(M2S02)	GM200-R032
1A-B4	*H1A11*	
1A-B3	*H1A11*	
R032		
- CAM SD# COMM R/W DATA 6		
	(M2S03)	HM200-R032
1A-B3	(M2S03)	GM200-R032
1A-B4	*H1B11*	
1A-B3	*H1B11*	
R032		
- CAM SD# COMM R/W DATA 7		
	(M2J09)	HM200-R032
1A-B3	(M2J09)	GM200-R032
1A-B4	*H1C11*	
1A-B3	*H1C11*	

LINE/SIGNAL	PIN	SHEET/LINE
R033		
- CAM SD1 REG R/W DATA P		
	(M2X02)	HM200-R033
1B-A1	(C2U05)	JC200-R003
1B-A1	*A2B02*	
R033		
- CAM SD1 REG R/W DATA 0		
	(M2X29)	HM200-R033
1B-A1	(C2M04)	JC200-R003
1B-A1	*A2D09*	
R033		
- CAM SD1 REG R/W DATA 1		
	(M2X12)	HM200-R033
1B-A1	(C2U07)	JC200-R003
1B-A1	*A2B12*	
R033		
- CAM SD1 REG R/W DATA 2		
	(M2X32)	HM200-R033
1B-A1	(C2S06)	JC200-R003
1B-A1	*A2D12*	
R033		
- CAM SD1 REG R/W DATA 3		
	(M2X11)	HM200-R033
1B-A1	(C2S07)	JC200-R003
1B-A1	*A2B11*	
R033		
- CAM SD1 REG R/W DATA 4		
	(M2X31)	HM200-R033
1B-A1	(C2S05)	JC200-R003
1B-A1	*A2D11*	
R033		
- CAM SD1 REG R/W DATA 5		
	(M2X10)	HM200-R033
1B-A1	(C2U06)	JC200-R003
1B-A1	*A2B10*	
R033		
- CAM SD1 REG R/W DATA 6		
	(M2X30)	HM200-R033
1B-A1	(C2S03)	JC200-R003
1B-A1	*A2D10*	
R033		
- CAM SD1 REG R/W DATA 7		
	(M2X07)	HM200-R033
1B-A1	(C2U04)	JC200-R003
1B-A1	*A2B07*	
R034		
+ CAM SD1 SD/CNTL MACHINE RESET		
	(M2Y03)	HM200-R034
	L2Y03	HL200-L037
	N2Y03	HN200-L041
R035		
- CAM SD1 REG READ CLOCK DELAYED		
	(M2Y13)	HM200-R035
	(L2Y13)	HL200-R014
	(N2Y13)	HN200-R055

LINE/SIGNAL	PIN	SHEET/LINE
R036		
- CAM SD1 DIAGNOSTIC FORCE 3		
	(M2Y29)	HM200-R036
	L2Y29	HL200-L038
	N2Y29	HN200-L042
R036		
- CAM SD1 DIAGNOSTIC FORCE 4		
	(M2Y30)	HM200-R036
	L2Y30	HL200-L038
	N2Y30	HN200-L042
R036		
- CAM SD1 DIAGNOSTIC FORCE 5		
	(M2Y24)	HM200-R036
	L2Y24	HL200-L038
	N2Y24	HN200-L042
R036		
- CAM SD1 DIAGNOSTIC FORCE 6		
	(M2Y09)	HM200-R036
	L2Y09	HL200-L038
	N2Y09	HN200-L042
R036		
- CAM SD1 DIAGNOSTIC FORCE 7		
	(M2Y25)	HM200-R036
	L2Y25	HL200-L038
	N2Y25	HN200-L042
R037		
+ CAM SD1 CMCA CARD CHECK		
	(M2Y28)	HM200-R037
	N2Y28	HN200-L038
R038		
- CAM SD1 REGISTER R/W CLOCK		
	(M2D10)	HM200-R038
1B-A1	C2J11	JC200-L004
1A-B4	*N6D02*	
1B-A1	*A5D09*	
R039		
- CAM SD1 REGISTER WRITE GATE		
	(M2D11)	HM200-R039
1B-A1	C2J07	JC200-L006
1A-B4	*N6E02*	
1B-A1	*A5D10*	
R040		
- CAM SD1 REGISTER READ GATE		
	(M2B08)	HM200-R040
1B-A1	C2G08	JC200-L005
1A-B4	*P6A02*	
1B-A1	*A5D11*	
R041		
- CAM SD1 REG ADDRESS P		
	(M2X33)	HM200-R041
1B-A1	C2B07	JC200-L003
1B-A1	*A2D13*	
R041		
- CAM SD1 REG ADDRESS 0		
	(M2X27)	HM200-R041
1B-A1	C2D04	JC200-L003
1B-A1	*A2D07*	

LINE/SIGNAL	PIN	SHEET/LINE
R041		
- CAM SD1 REG ADDRESS 1		
	(M2X25)	HM200-R041
1B-A1	C2B03	JC200-L003
1B-A1	*A2D05*	
R041		
- CAM SD1 REG ADDRESS 2		
	(M2X26)	HM200-R041
1B-A1	C2B04	JC200-L003
1B-A1	*A2D06*	
R041		
- CAM SD1 REG ADDRESS 3		
	(M2X05)	HM200-R041
1B-A1	C2B09	JC200-L003
1B-A1	*A2B05*	
R041		
- CAM SD1 REG ADDRESS 4		
	(M2X24)	HM200-R041
1B-A1	C2B08	JC200-L003
1B-A1	*A2D04*	
R041		
- CAM SD1 REG ADDRESS 5		
	(M2X03)	HM200-R041
1B-A1	C2D09	JC200-L003
1B-A1	*A2B03*	
R041		
- CAM SD1 REG ADDRESS 6		
	(M2X22)	HM200-R041
1B-A1	C2D11	JC200-L003
1B-A1	*A2D02*	
R041		
- CAM SD1 REG ADDRESS 7		
	(M2X23)	HM200-R041
1B-A1	C2D13	JC200-L003
1B-A1	*A2D03*	
R042		
+ CDN SD1 REG R/W DATA P		
	(M2W25)	HM200-R042
	(L2W25)	HL200-R013
	(N2W25)	HN200-R011
	(N2W25)	HN200-R053
R042		
+ CDN SD1 REG R/W DATA 0		
	(M2W07)	HM200-R042
	(L2W07)	HL200-R013
	(N2W07)	HN200-R011
	(N2W07)	HN200-R053
R042		
+ CDN SD1 REG R/W DATA 1		
	(M2W03)	HM200-R042
	(L2W03)	HL200-R013
	(N2W03)	HN200-R011
	(N2W03)	HN200-R053

LINE/SIGNAL	PIN	SHEET/LINE
R042		
+ CDN SD1 REG R/W DATA 2		
	(M2W06)	HM200-R042
	(L2W06)	HL200-R013
	(N2W06)	HN200-R011
	(N2W06)	HN200-R053
R042		
+ CDN SD1 REG R/W DATA 3		
	(M2W32)	HM200-R042
	(L2W32)	HL200-R013
	(N2W32)	HN200-R011
	(N2W32)	HN200-R053
R042		
+ CDN SD1 REG R/W DATA 4		
	(M2W13)	HM200-R042
	(L2W13)	HL200-R013
	(N2W13)	HN200-R011
	(N2W13)	HN200-R053
R042		
+ CDN SD1 REG R/W DATA 5		
	(M2W22)	HM200-R042
	(L2W22)	HL200-R013
	(N2W22)	HN200-R011
	(N2W22)	HN200-R053
R042		
+ CDN SD1 REG R/W DATA 6		
	(M2W28)	HM200-R042
	(L2W28)	HL200-R013
	(N2W28)	HN200-R011
	(N2W28)	HN200-R053
R042		
+ CDN SD1 REG R/W DATA 7		
	(M2W26)	HM200-R042
	(L2W26)	HL200-R013
	(N2W26)	HN200-R011
	(N2W26)	HN200-R053
R043		
+ CMCA IR CHECK		
	(M2J05)	HM200-R043
	N2B06	HN200-L050

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003 - EXT REG ADDRESS BIT 0 -------- P12
004 - EXT REG ADDRESS BIT 1 -------- M05
005 - EXT REG ADDRESS BIT 2 -------- P05
006 - EXT REG ADDRESS BIT 3 -------- M04
007 - EXT REG ADDRESS BIT 4 -------- P04
008 - EXT REG ADR PARITY ----------- P06
009 - CAM SD1 REQUEST HONORED (CD) - M10
010 + LD EXT REG CLK D ------------- B02
011 + EXT REG SELECT --------------- B04
012 - ALU OUT BIT 0 ---------------- B07
013 - ALU OUT BIT 1 ---------------- D05
014 - ALU OUT BIT 2 ---------------- D09
015 - ALU OUT BIT 3 ---------------- D10
016 - ALU OUT BIT 4 ---------------- D06
017 - ALU OUT BIT 5 ---------------- B09
018 - ALU OUT BIT 6 ---------------- G02
019 - ALU OUT BIT 7 ---------------- B13
020 - ALU OUT BIT P ---------------- D13
021 + CAM SD1 RANGE DECODE CHECK --- P13
022 + CMAA IR CHECK ---------------- B03
023 + PORT CONTROL IR SUM CHECK ---- B05
024 - CHECK RESET ------------------ M13
025 + TAKE DATA OR DATA TAKEN ------ S11
026 - NEED DATA/DATA READY CDX ----- J11
027 + DDC CLOCK T0 ----------------- U07
028 + DDC CLOCK T1 ----------------- G07
029 + DDC CLOCK T2 ----------------- S07
030 + DDC CLOCK T3 ----------------- B10
031 + DDC CLOCK T4 ----------------- M12
032 + DDC CLOCK T5 ----------------- J04
033 + DDC CLOCK T6 ----------------- U09
034 + DDC CLOCK T7 ----------------- G08
035 - TAKE DATA (DDC) -------------- S12
036 - DATA TAKEN (DDC) ------------- U06
037 - NEED DATA/DATA READY DDC ----- D07
038 + CAM SD1 CMCA CARD CHECK ------ Y28
039 + SAR SD1 CNTL BD IR CHECK ----- X24
040 + SAR SD1 SUMMARY CHECK DR ----- X26
041 + CAM SD1 SD/CNTL MACHINE RESET  Y03
042 - CAM SD1 DIAGNOSTIC FORCE (3:7) * =
043 - PBD SD1 DATA RDY/TKN UPPER --- X22
044 - PBD SD1 LAST DATA BYTE TKN UP  X23
045 - PBD SD1 HALT CHANNEL --------- Z05
046 - PBE SD1 DATA RDY/TKN LOWER --- X33
047 - PBE SD1 LAST DATA BYTE TKN LO  X27
048 + SD1 CABLE CHECK -------------- Z08
049 + SD1 CABLE CHECK -------------- X08
050 + CMCA IR CHECK ---------------- B06
051 - C2Q EXPANDED STORAGE INSTALLED Z02
052 + OFFSET INTERLOCK MODE -------- S03
053 - COMMON STATUS REG 5 INPUTS 5 - D02
054 - COMMON STATUS REG 5 INPUTS 6 - Z03
```

CMCD CARD

OVERVIEW

The CMCD card is the interface between the storage director and Subsystem Storage. All data and control/status information uses this interface. Each storage director contains one CMCD card which supports both an upper (channel) and lower (device) data path to/from subsystem storage.

PRIMARY FUNCTIONS

- It serves as the interface between the 3880 storage director microprocessor (SDM) and all the control and status registers.
- It generates the controls to allow 'auto' data transfers:
  - 'Bypass': data transfers between the channel or device and subsystem storage.
  - 'Forked': data stores to subsystem storage when writing or reading DASD.
- It generates the controls to allow 'manual' data transfers.
- It allows for CRC checking both the upper and lower data paths.
- It allows for storage director to storage director communication.

PRIMARY COMPONENTS

- Channel and device DXR bus transceivers.
- Upper and lower data bus (to/from port buffer) transceivers.
- Two buffer registers and controls for both the upper and lower data paths.
- CRC generator/checker for each of the upper and lower data paths.
- SDM external registers '1B'x and '0F'x.
- Special register 'CSPRDIC' for collecting status information.
- It contains the following control registers:
  - UOPCTL (upper op control reg)
  - UCTL (upper control reg)
  - LOPCTL (lower op control reg)
  - LCTL (lower control reg)
- It contains the following check registers:
  - UPACK (upper check register)
  - LPACK (lower check register)
  - CPACK1 (common PA check register 1)
  - CPACK2 (common PA check register 2)
- It provides the following special operations:
  - CSPHLD (special op hold '1B'x shadow)
  - CSPRES (special op restore '1B'x)
  - CSPRDC (special op read communication)
  - CSPWRC (special op write communication)

ERROR CHECKING

The CMCD card provides for extensive on card error detection. Error information can be subdivided into three classes: Upper, Lower, and Common errors.

- Upper/Lower Check Register UPACK/LPACK
  - Channel/Device DXR/PA Parity Check
  - Upper/Lower SRC Check
  - Channel/Device DXR/PA Over/Underrun Check
  - PA/PB Overrun Check
  - PA/PB Data In/Out Parity Check
- Common check registers CPACK1/CPACK2
  - Port Adapter IR Check
  - SDM Alu Out Parity Check
  - Ext Reg Selection Check
  - IR Data Out Parity Check
  - Read Clock Delay Check
  - ALU Out Control Check
  - Ext Reg Read Parity Check
  - Clock Check
  - CD Duplicate IR Addr Decode Check
  - Range Select Check


```
D12 - XREG SELECTED (1B/0F DECODE) - 003
B12 - CDN SD# SECOND COMM R/W CLOCK  004
= * + CDN SD1 REG ADDRESS (P,0:7) == 005
B08 - CDN SD1 ALU OUT BIT 6 (ADT) -- 006
J02 - CDN SD1 ALU OUT BIT P (ADT) -- 007
B11 - CDN SD1 ALU OUT BIT 7 (CH/DEV) 008
D11 - CDN SD1 ALU OUT BIT P (CH/DEV) 009
D04 - CHECK TWO -------------------- 010
= * + CDN SD1 REG R/W DATA (P,0:7) = 011
S10 - ALU IN2 BIT 0 ---------------- 012
S09 - ALU IN2 BIT 1 ---------------- 013
U10 - ALU IN2 BIT 2 ---------------- 014
U12 - ALU IN2 BIT 3 ---------------- 015
U13 - ALU IN2 BIT 4 ---------------- 016
S13 - ALU IN2 BIT 5 ---------------- 017
S08 - ALU IN2 BIT 6 ---------------- 018
U05 - ALU IN2 BIT 7 ---------------- 019
U02 - ALU IN2 BIT P ---------------- 020
G12 - CHAN DXR BUS BIT 0 ----------- 021
J10 - CHAN DXR BUS BIT 1 ----------- 022
J12 - CHAN DXR BUS BIT 2 ----------- 023
J06 - CHAN DXR BUS BIT 3 ----------- 024
G03 - CHAN DXR BUS BIT 4 ----------- 025
J07 - CHAN DXR BUS BIT 5 ----------- 026
J05 - CHAN DXR BUS BIT 6 ----------- 027
M11 - CHAN DXR BUS BIT 7 ----------- 028
G05 - CHAN DXR BUS BIT P ----------- 029
G09 - DEV DXR BUS BIT 0 ------------ 030
G11 - DEV DXR BUS BIT 1 ------------ 031
G10 - DEV DXR BUS BIT 2 ------------ 032
J09 - DEV DXR BUS BIT 3 ------------ 033
J13 - DEV DXR BUS BIT 4 ------------ 034
P09 - DEV DXR BUS BIT 5 ------------ 035
G13 - DEV DXR BUS BIT 6 ------------ 036
M08 - DEV DXR BUS BIT 7 ------------ 037
M09 - DEV DXR BUS BIT P ------------ 038
P10 - TAKE DATA/DATA TKN CHAN (AUX)  039
G04 - CDN SD1 ND/DR GATED CHANNEL -- 040
P11 - HALT CHANNEL REQUESTS (TO CDX) 041
= * - CDN SD1 R/W DATA LOWER (0-7,P) 042
P07 - TAKE DATA/DATA TKN DEV (AUX) - 043
S05 - CDN SD1 ND/DR GATED DEVICE --- 044
Y06 + CDN SD1 REGISTER READ GATE --- 045
Y26 + CDN SD1 REGISTER WRITE GATE -- 046
Y07 + CDN SD1 REGISTER R/W CLOCK --- 047
Y05 - CDN SD1 REGISTER ADR DECODED - 048
X25 + CDN SD1 CHECK COMMON --------- 050
S02 + CDN SD1 CHECK UPPER ---------- 051
Z32 + CDN SD1 CHECK LOWER ---------- 052
= * + CDN SD1 REG R/W DATA (P,0:7) = 053
Y10 + CDN SD1 NATIVE CHECK --------- 054
Y13 - CAM SD1 REG READ CLOCK DELAYED 055
= * - CDN SD1 R/W DATA UPPER (0-7,P) 056
X12 - CDN SD1 DATA RDY/TKN UPPER --- 057
X05 - CDN SD1 R/W CLOCK UPPER ------ 058
X11 - CDN SD1 DATA XFER COMPLETE UPR 059
= * - CDN SD1 T CLOCK REDRIVEN (0:7) 060
Z23 - CDN SD1 DATA RDY/TKN LOWER --- 061
Z22 - CDN SD1 R/W CLOCK LOWER ------ 062
Z06 - CDN SD1 DATA XFER COMPLETE LWR 063
S04 + OFFSET INTERLOCK MODE GATED -- 064
```

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- EXT REG ADDRESS BIT 0		
	N2P12	HN200-L003
	(Q2P12)	HQ200-R016
	F2P09	HF200-L028
	K2B12	HK200-L003
	R2M13	HR200-L009
	V2J07	HV200-L024
L004		
- EXT REG ADDRESS BIT 1		
	N2M05	HN200-L004
	(Q2M05)	HQ200-R016
	F2P10	HF200-L029
	K2D13	HK200-L003
	R2P11	HR200-L009
	V2J09	HV200-L025
L005		
- EXT REG ADDRESS BIT 2		
	N2P05	HN200-L005
	(Q2P05)	HQ200-R016
	F2P11	HF200-L030
	K2B13	HK200-L003
	R2M12	HR200-L009
	V2J10	HV200-L026
L006		
- EXT REG ADDRESS BIT 3		
	N2M04	HN200-L006
	(Q2M04)	HQ200-R016
	F2P12	HF200-L031
	K2B10	HK200-L003
	R2P10	HR200-L009
	V2J11	HV200-L027
L007		
- EXT REG ADDRESS BIT 4		
	N2P04	HN200-L007
	(Q2P04)	HQ200-R016
	F2P13	HF200-L032
	K2D12	HK200-L003
	R2P09	HR200-L009
	V2J12	HV200-L028
L008		
- EXT REG ADR PARITY		
	N2P06	HN200-L008
	(Q2P06)	HQ200-R017
	K2D10	HK200-L027
	R2M09	HR200-L010
L009		
- CAM SD1 REQUEST HONORED (CD)		
	N2M10	HN200-L009
	(M2J13)	HM200-R022
L010		
+ LD EXT REG CLK D		
	N2B02	HN200-L010
	(Q2U06)	HQ200-R015
	R2M08	HR200-L011
	V2M10	HV200-L019
	X2M10	HX200-L025

LINE/SIGNAL	PIN	SHEET/LINE
L011		
+ EXT REG SELECT		
	N2B04	HN200-L011
	(Q2Z22)	HQ200-R018
	(R2S02)	HR200-R015
	H2M04	HH220-L031
	K2U13	HK200-L009
	R2Z22	HR200-L021
L012		
- ALU OUT BIT 0		
	N2B07	HN200-L012
	(Q2B04)	HQ200-R008
	C2B02	HC200-L022
	F2D02	HF200-L019
	H2P12	HH220-L017
	J2U07	HJ200-L041
	R2M02	HR200-L024
	V2D13	HV200-L007
	X2D13	HX200-L026
L013		
- ALU OUT BIT 1		
	N2D05	HN200-L013
	(Q2D05)	HQ200-R008
	C2D02	HC200-L023
	F2D04	HF200-L020
	H2P13	HH220-L018
	J2U09	HJ200-L041
	R2G12	HR200-L024
	V2B05	HV200-L008
	X2B05	HX200-L026
L014		
- ALU OUT BIT 2		
	N2D09	HN200-L014
	(Q2D06)	HQ200-R008
	F2D05	HF200-L021
	H2U02	HH220-L019
	J2P12	HJ200-L041
	R2G13	HR200-L024
	V2D10	HV200-L009
	X2D10	HX200-L026
L015		
- ALU OUT BIT 3		
	N2D10	HN200-L015
	(Q2B05)	HQ200-R008
	F2D06	HF200-L022
	H2U05	HH220-L020
	J2U02	HJ200-L041
	R2M04	HR200-L024
	V2J02	HV200-L010
	X2J02	HX200-L026
L016		
- ALU OUT BIT 4		
	N2D06	HN200-L016
	(Q2D04)	HQ200-R008
	F2D07	HF200-L023
	H2U06	HH220-L021
	J2B12	HJ200-L041
	R2M03	HR200-L024
	V2B08	HV200-L011
	X2B08	HX200-L026

LINE/SIGNAL	PIN	SHEET/LINE
L017		
- ALU OUT BIT 5		
	N2B09	HN200-L017
	(Q2B03)	HQ200-R008
	F2B07	HF200-L024
	H2U07	HH220-L022
	J2D06	HJ200-L041
	R2P04	HR200-L024
	V2B03	HV200-L012
	X2B03	HX200-L026
L018		
- ALU OUT BIT 6		
	N2G02	HN200-L018
	(Q2D02)	HQ200-R008
	F2B08	HF200-L025
	H2U09	HH220-L023
	R2P02	HR200-L024
	V2D05	HV200-L013
	X2D05	HX200-L026
L019		
- ALU OUT BIT 7		
	N2B13	HN200-L019
	(Q2B02)	HQ200-R008
	F2B09	HF200-L026
	J2B05	HJ200-L041
	R2P05	HR200-L024
	V2D06	HV200-L014
L020		
- ALU OUT BIT P		
	N2D13	HN200-L020
	(Q2U04)	HQ200-R008
	F2B10	HF200-L027
	R2M05	HR200-L024
	V2B02	HV200-L015
L021		
+ CAM SD1 RANGE DECODE CHECK		
	N2P13	HN200-L021
	(M2P12)	HM200-R004
L022		
+ CMAA IR CHECK		
	N2B03	HN200-L022
	(L2B11)	HL200-R004
L023		
+ FORT CONTROL IR SUM CHECK		
	N2B05	HN200-L023
	(M2J02)	HM200-R031
L024		
- CHECK RESET		
	N2M13	HN200-L024
	(H2Y10)	HH220-R063
	(R2J05)	HR200-R028
	C2J10	HC200-L012
	F2M04	HF200-L056
	G2B13	HG210-L015
	H2U12	HH220-L061
	J2Y10	HJ200-L024
	K2Y10	HK200-L023
	L2D02	HL200-L003
	V2G08	HV200-L033
	X2S13	HX200-L015

LINE/SIGNAL	PIN	SHEET/LINE
L025		
+ TAKE DATA OR DATA TAKEN		
	N2S11	HN200-L025
	(G2S10)	HG210-R030
	H2G07	HH220-L042
	J2U05	HJ200-L003
	K2U09	HK200-L030
L026		
- NEED DATA/DATA READY CDX		
	N2J11	HN200-L026
	(K2J11)	HK200-R037
L027		
+ DDC CLOCK T0		
	N2U07	HN200-L027
	(P2S09)	HP200-R018
	X2D04	HX200-L014
	X2D04	HX200-L031
L028		
+ DDC CLOCK T1		
	N2G07	HN200-L028
	(P2G07)	HP200-R044
	X2U13	HX200-L032
L029		
+ DDC CLOCK T2		
	N2S07	HN200-L029
	(P2S07)	HP200-R019
	V2G07	HV200-L030
	X2G07	HX200-L033
L030		
+ DDC CLOCK T3		
	N2B10	HN200-L030
	(P2B10)	HP200-R045
	V2U04	HV200-L016
	X2S04	HX200-L034
L031		
+ DDC CLOCK T4		
	N2M12	HN200-L031
	(P2M12)	HP200-R020
	X2U07	HX200-L035
L032		
+ DDC CLOCK T5		
	N2J04	HN200-L032
	(P2J04)	HP200-R046
	X2S05	HX200-L036
L033		
+ DDC CLOCK T6		
	N2U09	HN200-L033
	(P2U10)	HP200-R021
	V2U09	HV200-L029
	X2U09	HX200-L037
L034		
+ DDC CLOCK T7		
	N2G08	HN200-L034
	(P2G08)	HP200-R047
	V2U02	HV200-L017
	X2S02	HX200-L038

LINE/SIGNAL	PIN	SHEET/LINE
L035		
- TAKE DATA (DDC)		
	N2S12	HN200-L035
	(X2U10)	HX200-R025
	H2D07	HH220-L007
	K2D09	HK200-L005
L036		
- DATA TAKEN (DDC)		
	N2U06	HN200-L036
	(X2S08)	HX200-R026
	K2B08	HK200-L006
	V2B10	HV200-L003
L037		
- NEED DATA/DATA READY DDC		
	N2D07	HN200-L037
	(K2D06)	HK200-R038
L038		
+ CAM SD1 CMCA CARD CHECK		
	N2Y28	HN200-L038
	(M2Y28)	HM200-R037
L039		
+ SAR SD1 CNTL BD IR CHECK		
	N2X24	HN200-L039
	1B-A1 (R2G10)	JR200-R021
	1B-A1 *A3D04*	
L040		
+ SAR SD1 SUMMARY CHECK DR		
	N2X26	HN200-L040
	1B-A1 (R2P11)	JR200-R019
	1B-A1 *A3D06*	
L041		
+ CAM SD1 SD/CNTL MACHINE RESET		
	N2Y03	HN200-L041
	(M2Y03)	HM200-R034
	L2Y03	HL200-L037
L042		
- CAM SD1 DIAGNOSTIC FORCE 3		
	N2Y29	HN200-L042
	(M2Y29)	HM200-R036
	L2Y29	HL200-L038
L042		
- CAM SD1 DIAGNOSTIC FORCE 4		
	N2Y30	HN200-L042
	(M2Y30)	HM200-R036
	L2Y30	HL200-L038
L042		
- CAM SD1 DIAGNOSTIC FORCE 5		
	N2Y24	HN200-L042
	(M2Y24)	HM200-R036
	L2Y24	HL200-L038
L042		
- CAM SD1 DIAGNOSTIC FORCE 6		
	N2Y09	HN200-L042
	(M2Y09)	HM200-R036
	L2Y09	HL200-L038

LINE/SIGNAL	PIN	SHEET/LINE
L042		
- CAM SD1 DIAGNOSTIC FORCE 7		
	N2Y25	HN200-L042
	(M2Y25)	HM200-R036
	L2Y25	HL200-L038
L043		
- PBD SD1 DATA RDY/TKN UPPER		
	N2X22	HN200-L043
	1B-A1 (D2J09)	JD200-R005
	1B-A1 *A3D02*	
L044		
- PBD SD1 LAST DATA BYTE TKN UP		
	N2X23	HN200-L044
	1B-A1 (D2J10)	JD200-R006
	1B-A1 *A3D03*	
L045		
- PBD SD1 HALT CHANNEL		
	N2Z05	HN200-L045
	1B-A1 (D2S04)	JD200-R016
	1B-A1 *A4B05*	
L046		
- PBE SD1 DATA RDY/TKN LOWER		
	N2X33	HN200-L046
	1B-A1 (E2J09)	JE200-R005
	1B-A1 *A3D13*	
L047		
- PBE SD1 LAST DATA BYTE TKN LO		
	N2X27	HN200-L047
	1B-A1 (E2J10)	JE200-R006
	1B-A1 *A3D07*	
L048		
+ SD1 CABLE CHECK		
	N2Z08	HN200-L048
	M2X08	HM200-L027
	N2X08	HN200-L049
	1A-B4 *N6C04*	
	1B-A1 *A5B08*	
	1B-A1 *A4B08*	
	1B-A1 *A3B08*	
	1B-A1 *A2B08*	
L049		
+ SD1 CABLE CHECK		
	N2X08	HN200-L049
	M2X08	HM200-L027
	N2Z08	HN200-L048
	1A-B4 *N6C04*	
	1B-A1 *A5B08*	
	1B-A1 *A4B08*	
	1B-A1 *A3B08*	
	1B-A1 *A2B08*	
L050		
+ CMCA IR CHECK		
	N2B06	HN200-L050
	(M2J05)	HM200-R043

LINE/SIGNAL	PIN	SHEET/LINE
L051		
- C2Q EXPANDED STORAGE INSTALLED		
	N2Z02	HN200-L051
1A-B3	N2Z02	GN200-L051
1B-A1 *Q2S13*		
1B-A1 *A4B02*		
1B-A1 *B4B02*		
L052		
+ OFFSET INTERLOCK MODE		
	N2S03	HN200-L052
	(J2U04)	HJ200-R021
L053		
- COMMON STATUS REG 5 INPUTS 5		
	N2D02	HN200-L053
L054		
- COMMON STATUS REG 5 INPUTS 6		
	N2Z03	HN200-L054
R003		
- XREG SELECTED (1B/0F DECODE)		
	(N2D12)	HN200-R003
	R2M10	HR200-L029
R004		
- CDN SD# SECOND COMM R/W CLOCK		
	(N2B12)	HN200-R004
1A-B3	(N2B12)	GN200-R004
1A-B3	M2M02	GM200-L012
	M2M02	HM200-L012
1A-B4 *K1A11*		
1A-B3 *K1A11*		
R005		
+ CDN SD1 REG ADDRESS P		
	(N2W02)	HN200-R005
	L2W02	HL200-L032
	M2W02	HM200-L032
R005		
+ CDN SD1 REG ADDRESS 0		
	(N2W24)	HN200-R005
	L2W24	HL200-L032
	M2W24	HM200-L032
R005		
+ CDN SD1 REG ADDRESS 1		
	(N2W29)	HN200-R005
	L2W29	HL200-L032
	M2W29	HM200-L032
R005		
+ CDN SD1 REG ADDRESS 2		
	(N2W30)	HN200-R005
	L2W30	HL200-L032
	M2W30	HM200-L032
R005		
+ CDN SD1 REG ADDRESS 3		
	(N2W10)	HN200-R005
	L2W10	HL200-L032
	M2W10	HM200-L032

LINE/SIGNAL	PIN	SHEET/LINE
R005		
+ CDN SD1 REG ADDRESS 4		
	(N2W11)	HN200-R005
	L2W11	HL200-L032
	M2W11	HM200-L032
R005		
+ CDN SD1 REG ADDRESS 5		
	(N2W09)	HN200-R005
	L2W09	HL200-L032
	M2W09	HM200-L032
R005		
+ CDN SD1 REG ADDRESS 6		
	(N2W05)	HN200-R005
	L2W05	HL200-L032
	M2W05	HM200-L032
R005		
+ CDN SD1 REG ADDRESS 7		
	(N2W33)	HN200-R005
	L2W33	HL200-L032
	M2W33	HM200-L032
R006		
- CDN SD1 ALU OUT BIT 6 (ADT)		
	(N2B08)	HN200-R006
	J2D05	HJ200-L067
R007		
- CDN SD1 ALU OUT BIT P (ADT)		
	(N2J02)	HN200-R007
	J2S08	HJ200-L068
R008		
- CDN SD1 ALU OUT BIT 7 (CH/DEV)		
	(N2B11)	HN200-R008
	H2U10	HH220-L024
	X2D06	HX200-L053
R009		
- CDN SD1 ALU OUT BIT P (CH/DEV)		
	(N2D11)	HN200-R009
	H2U11	HH220-L025
	X2B02	HX200-L054
R010		
- CHECK TWO		
	(N2D04)	HN200-R010
	(F2S09)	HF200-R040
	(J2U10)	HJ200-R017
	(X2J09)	HX200-R021
	R2S09	HR200-L027
R011		
+ CDN SD1 REG R/W DATA P		
	(N2W25)	HN200-R011
	(L2W25)	HL200-R013
	(M2W25)	HM200-R042
	(N2W25)	HN200-R053
R011		
+ CDN SD1 REG R/W DATA 0		
	(N2W07)	HN200-R011
	(L2W07)	HL200-R013
	(M2W07)	HM200-R042
	(N2W07)	HN200-R053

LINE/SIGNAL	PIN	SHEET/LINE
R011		
+ CDN SD1 REG R/W DATA 1		
	(N2W03)	HN200-R011
	(L2W03)	HL200-R013
	(M2W03)	HM200-R042
	(N2W03)	HN200-R053
R011		
+ CDN SD1 REG R/W DATA 2		
	(N2W06)	HN200-R011
	(L2W06)	HL200-R013
	(M2W06)	HM200-R042
	(N2W06)	HN200-R053
R011		
+ CDN SD1 REG R/W DATA 3		
	(N2W32)	HN200-R011
	(L2W32)	HL200-R013
	(M2W32)	HM200-R042
	(N2W32)	HN200-R053
R011		
+ CDN SD1 REG R/W DATA 4		
	(N2W13)	HN200-R011
	(L2W13)	HL200-R013
	(M2W13)	HM200-R042
	(N2W13)	HN200-R053
R011		
+ CDN SD1 REG R/W DATA 5		
	(N2W22)	HN200-R011
	(L2W22)	HL200-R013
	(M2W22)	HM200-R042
	(N2W22)	HN200-R053
R011		
+ CDN SD1 REG R/W DATA 6		
	(N2W28)	HN200-R011
	(L2W28)	HL200-R013
	(M2W28)	HM200-R042
	(N2W28)	HN200-R053
R011		
+ CDN SD1 REG R/W DATA 7		
	(N2W26)	HN200-R011
	(L2W26)	HL200-R013
	(M2W26)	HM200-R042
	(N2W26)	HN200-R053
R012		
- ALU IN2 BIT 0		
	(N2S10)	HN200-R012
	(R2S10)	HR200-R016
	(R2Z10)	HR200-R017
	(V2M04)	HV200-R003
	(X2M04)	HX200-R012
	Q2Z10	HQ200-L008
R013		
- ALU IN2 BIT 1		
	(N2S09)	HN200-R013
	(R2U07)	HR200-R016
	(R2Z07)	HR200-R017
	(V2J13)	HV200-R004
	(X2J13)	HX200-R013
	Q2Z07	HQ200-L008

LINE/SIGNAL	PIN	SHEET/LINE
R014		
- ALU IN2 BIT 2		
	(N2U10)	HN200-R014
	(R2U09)	HR200-R016
	(R2Z09)	HR200-R017
	(V2G12)	HV200-R005
	(X2G12)	HX200-R014
	Q2Z09	HQ200-L008
R015		
- ALU IN2 BIT 3		
	(N2U12)	HN200-R015
	(R2U10)	HR200-R016
	(R2Z30)	HR200-R017
	(V2P05)	HV200-R006
	(X2P05)	HX200-R015
	Q2Z30	HQ200-L008
R016		
- ALU IN2 BIT 4		
	(N2U13)	HN200-R016
	(R2S13)	HR200-R016
	(R2Z33)	HR200-R017
	(V2M05)	HV200-R007
	(X2M05)	HX200-R016
	Q2Z33	HQ200-L008
R017		
- ALU IN2 BIT 5		
	(N2S13)	HN200-R017
	(R2U13)	HR200-R016
	(R2Z13)	HR200-R017
	(V2M03)	HV200-R003
	(X2M03)	HX200-R017
	Q2Z13	HQ200-L008
R018		
- ALU IN2 BIT 6		
	(N2S08)	HN200-R018
	(R2S07)	HR200-R016
	(R2Z28)	HR200-R017
	(V2G10)	HV200-R009
	(X2G10)	HX200-R018
	Q2Z28	HQ200-L008
R019		
- ALU IN2 BIT 7		
	(N2U05)	HN200-R019
	(R2U05)	HR200-R016
	(R2Z05)	HR200-R017
	(V2P02)	HV200-R010
	(X2P02)	HX200-R019
	Q2Z05	HQ200-L008
R020		
- ALU IN2 BIT P		
	(N2U02)	HN200-R020
	(R2S08)	HR200-R016
	(R2Z06)	HR200-R017
	(V2P04)	HV200-R011
	(X2P04)	HX200-R020
	Q2Z06	HQ200-L008

LINE/SIGNAL	PIN	SHEET/LINE
R021		
- CHAN DXR BUS BIT 0		
	(N2G12)	HN200-R021
	(H2G02)	HH220-R018
	(H2J07)	HH220-R049
	(K2Y28)	HK200-R008
	H2Y28	HH220-L033
R022		
- CHAN DXR BUS BIT 1		
	(N2J10)	HN200-R022
	(H2G04)	HH220-R019
	(H2J09)	HH220-R050
	(K2Y30)	HK200-R008
	H2Y30	HH220-L034
R023		
- CHAN DXR BUS BIT 2		
	(N2J12)	HN200-R023
	(H2G05)	HH220-R020
	(H2J11)	HH220-R051
	(K2Y32)	HK200-R008
	H2Y32	HH220-L035
R024		
- CHAN DXR BUS BIT 3		
	(N2J06)	HN200-R024
	(H2G08)	HH220-R021
	(H2J12)	HH220-R052
	(K2Y33)	HK200-R008
	H2Y33	HH220-L036
R025		
- CHAN DXR BUS BIT 4		
	(N2G03)	HN200-R025
	(H2G09)	HH220-R022
	(H2P02)	HH220-R053
	(K2Y07)	HK200-R008
	H2Y07	HH220-L037
R026		
- CHAN DXR BUS BIT 5		
	(N2J07)	HN200-R026
	(H2G10)	HH220-R023
	(H2P04)	HH220-R054
	(K2Y09)	HK200-R008
	H2Y09	HH220-L038
R027		
- CHAN DXR BUS BIT 6		
	(N2J05)	HN200-R027
	(H2G12)	HH220-R024
	(H2P05)	HH220-R055
	(K2Y11)	HK200-R008
	H2Y11	HH220-L039
R028		
- CHAN DXR BUS BIT 7		
	(N2M11)	HN200-R028
	(H2G13)	HH220-R025
	(H2P07)	HH220-R056
	(K2Y13)	HK200-R008
	H2Y13	HH220-L040

LINE/SIGNAL	PIN	SHEET/LINE
R029		
- CHAN DXR BUS BIT P		
	(N2G05)	HN200-R029
	(H2M02)	HH220-R026
	(K2G10)	HK200-R008
	H2P09	HH220-L041
R030		
- DEV DXR BUS BIT 0		
	(N2G09)	HN200-R030
	(K2G13)	HK200-R005
	(X2J07)	HX200-R003
	X2B12	HX200-L050
R031		
- DEV DXR BUS BIT 1		
	(N2G11)	HN200-R031
	(K2P05)	HK200-R006
	(X2J04)	HX200-R004
	X2D07	HX200-L050
R032		
- DEV DXR BUS BIT 2		
	(N2G10)	HN200-R032
	(K2P02)	HK200-R006
	(X2G02)	HX200-R005
	X2D11	HX200-L050
R033		
- DEV DXR BUS BIT 3		
	(N2J09)	HN200-R033
	(K2J12)	HK200-R006
	(X2G05)	HX200-R006
	X2B13	HX200-L050
R034		
- DEV DXR BUS BIT 4		
	(N2J13)	HN200-R034
	(K2J13)	HK200-R006
	(X2G09)	HX200-R007
	X2B10	HX200-L050
R035		
- DEV DXR BUS BIT 5		
	(N2P09)	HN200-R035
	(K2J10)	HK200-R006
	(X2G08)	HX200-R008
	X2B07	HX200-L050
R036		
- DEV DXR BUS BIT 6		
	(N2G13)	HN200-R036
	(K2M04)	HK200-R006
	(X2G04)	HX200-R009
	X2D09	HX200-L050
R037		
- DEV DXR BUS BIT 7		
	(N2M08)	HN200-R037
	(K2M03)	HK200-R006
	(X2G03)	HX200-R010
	X2D02	HX200-L050

LINE/SIGNAL	PIN	SHEET/LINE
R038		
- DEV DXR BUS BIT P		
	(N2M09)	HN200-R038
	(K2P04)	HK200-R006
	(X2J05)	HX200-R011
	X2B04	HX200-L050
R039		
- TAKE DATA/DATA TKN CHAN (AUX)		
	(N2P10)	HN200-R039
	K2S09	HK200-L010
R040		
- CDN SD1 ND/DR GATED CHANNEL		
	(N2G04)	HN200-R040
	G2J04	HG210-L032
	H2B10	HH220-L005
R041		
- HALT CHANNEL REQUESTS (TO CDX)		
	(N2P11)	HN200-R041
	G2B04	HG210-L055
R042		
- CDN SD1 R/W DATA LOWER 0		
	(N2Z30)	HN200-R042
1B-A1	(E2M03)	JE200-R004
1B-A1	*A4D10*	
R042		
- CDN SD1 R/W DATA LOWER 1		
	(N2Z29)	HN200-R042
1B-A1	(E2M05)	JE200-R004
1B-A1	*A4D09*	
R042		
- CDN SD1 R/W DATA LOWER 2		
	(N2Z27)	HN200-R042
1B-A1	(E2P07)	JE200-R004
1B-A1	*A4D07*	
R042		
- CDN SD1 R/W DATA LOWER 3		
	(N2Z26)	HN200-R042
1B-A1	(E2P04)	JE200-R004
1B-A1	*A4D06*	
R042		
- CDN SD1 R/W DATA LOWER 4		
	(N2Z11)	HN200-R042
1B-A1	(E2M08)	JE200-R004
1B-A1	*A4B11*	
R042		
- CDN SD1 R/W DATA LOWER 5		
	(N2Z12)	HN200-R042
1B-A1	(E2P10)	JE200-R004
1B-A1	*A4B12*	
R042		
- CDN SD1 R/W DATA LOWER 6		
	(N2Z25)	HN200-R042
1B-A1	(E2J11)	JE200-R004
1B-A1	*A4D05*	

LINE/SIGNAL	PIN	SHEET/LINE
R042		
- CDN SD1 R/W DATA LOWER 7		
	(N2Z24)	HN200-R042
1B-A1	(E2J12)	JE200-R004
1B-A1	*A4D04*	
R042		
- CDN SD1 R/W DATA LOWER P		
	(N2Z31)	HN200-R042
1B-A1	(E2M07)	JE200-R004
1B-A1	*A4D11*	
R043		
- TAKE DATA/DATA TKN DEV (AUX)		
	(N2P07)	HN200-R043
	K2B09	HK200-L008
R044		
- CDN SD1 ND/DR GATED DEVICE		
	(N2S05)	HN200-R044
	H2B03	HH220-L009
	X2U05	HX200-L039
R045		
+ CDN SD1 REGISTER READ GATE		
	(N2Y06)	HN200-R045
	L2Y06	HL200-L033
	M2Y06	HM200-L030
R046		
+ CDN SD1 REGISTER WRITE GATE		
	(N2Y26)	HN200-R046
	L2Y26	HL200-L034
	M2Y26	HM200-L029
R047		
+ CDN SD1 REGISTER R/W CLOCK		
	(N2Y07)	HN200-R047
	L2Y07	HL200-L035
	M2Y07	HM200-L028
R048		
- CDN SD1 REGISTER ADR DECODED		
	(N2Y05)	HN200-R048
	(L2Y05)	HL200-R015
	M2Y05	HM200-L031
R050		
+ CDN SD1 CHECK COMMON		
	(N2X25)	HN200-R050
1B-A1	R2M08	JR200-L029
1B-A1	*A3D05*	
R051		
+ CDN SD1 CHECK UPPER		
	(N2S02)	HN200-R051
1B-A1	R2S02	JR200-L027
1A-B4	*P6B02*	
1B-A1	*A5D12*	
R052		
+ CDN SD1 CHECK LOWER		
	(N2Z32)	HN200-R052
1B-A1	R2M13	JR200-L028
1B-A1	*A4D12*	

LINE/SIGNAL	PIN	SHEET/LINE
R053		
+ CDN SD1 REG R/W DATA P		
	(N2W25)	HN200-R053
	(L2W25)	HL200-R013
	(M2W25)	HM200-R042
	(N2W25)	HN200-R011
R053		
+ CDN SD1 REG R/W DATA 0		
	(N2W07)	HN200-R053
	(L2W07)	HL200-R013
	(M2W07)	HM200-R042
	(N2W07)	HN200-R011
R053		
+ CDN SD1 REG R/W DATA 1		
	(N2W03)	HN200-R053
	(L2W03)	HL200-R013
	(M2W03)	HM200-R042
	(N2W03)	HN200-R011
R053		
+ CDN SD1 REG R/W DATA 2		
	(N2W06)	HN200-R053
	(L2W06)	HL200-R013
	(M2W06)	HM200-R042
	(N2W06)	HN200-R011
R053		
+ CDN SD1 REG R/W DATA 3		
	(N2W32)	HN200-R053
	(L2W32)	HL200-R013
	(M2W32)	HM200-R042
	(N2W32)	HN200-R011
R053		
+ CDN SD1 REG R/W DATA 4		
	(N2W13)	HN200-R053
	(L2W13)	HL200-R013
	(M2W13)	HM200-R042
	(N2W13)	HN200-R011
R053		
+ CDN SD1 REG R/W DATA 5		
	(N2W22)	HN200-R053
	(L2W22)	HL200-R013
	(M2W22)	HM200-R042
	(N2W22)	HN200-R011
R053		
+ CDN SD1 REG R/W DATA 6		
	(N2W28)	HN200-R053
	(L2W28)	HL200-R013
	(M2W28)	HM200-R042
	(N2W28)	HN200-R011
R053		
+ CDN SD1 REG R/W DATA 7		
	(N2W26)	HN200-R053
	(L2W26)	HL200-R013
	(M2W26)	HM200-R042
	(N2W26)	HN200-R011

LINE/SIGNAL	PIN	SHEET/LINE
R054		
+ CDN SD1 NATIVE CHECK		
	(N2Y10)	HN200-R054
	L2Y10	HL200-L036
R055		
- CAM SD1 REG READ CLOCK DELAYED		
	(N2Y13)	HN200-R055
	(L2Y13)	HL200-R014
	(M2Y13)	HM200-R035
R056		
- CDN SD1 R/W DATA UPPER 0		
	(N2X29)	HN200-R056
1B-A1	(D2M03)	JD200-R004
1B-A1	*A3D09*	
R056		
- CDN SD1 R/W DATA UPPER 1		
	(N2X03)	HN200-R056
1B-A1	(D2M05)	JD200-R004
1B-A1	*A3B03*	
R056		
- CDN SD1 R/W DATA UPPER 2		
	(N2X02)	HN200-R056
1B-A1	(D2P07)	JD200-R004
1B-A1	*A3B02*	
R056		
- CDN SD1 R/W DATA UPPER 3		
	(N2X07)	HN200-R056
1B-A1	(D2P04)	JD200-R004
1B-A1	*A3B07*	
R056		
- CDN SD1 R/W DATA UPPER 4		
	(N2X06)	HN200-R056
1B-A1	(D2M08)	JD200-R004
1B-A1	*A3B06*	
R056		
- CDN SD1 R/W DATA UPPER 5		
	(N2X31)	HN200-R056
1B-A1	(D2P10)	JD200-R004
1B-A1	*A3D11*	
R056		
- CDN SD1 R/W DATA UPPER 6		
	(N2X10)	HN200-R056
1B-A1	(D2J11)	JD200-R004
1B-A1	*A3B10*	
R056		
- CDN SD1 R/W DATA UPPER 7		
	(N2X32)	HN200-R056
1B-A1	(D2J12)	JD200-R004
1B-A1	*A3D12*	
R056		
- CDN SD1 R/W DATA UPPER P		
	(N2X30)	HN200-R056
1B-A1	(D2M07)	JD200-R004
1B-A1	*A3D10*	

LINE/SIGNAL	PIN	SHEET/LINE
R057		
- CDN SD1 DATA RDY/TKN UPPER		
	(N2X12)	HN200-R057
1B-A1	D2G12	JD200-L003
1B-A1	*A3B12*	
R058		
- CDN SD1 R/W CLOCK UPPER		
	(N2X05)	HN200-R058
1B-A1	D2M02	JD200-L004
1B-A1	*A3B05*	
R059		
- CDN SD1 DATA XFER COMPLETE UPR		
	(N2X11)	HN200-R059
1B-A1	R2U04	JR200-L031
1B-A1	*A3B11*	
R060		
- CDN SD1 T CLOCK REDRIVEN 0		
	(N2Y33)	HN200-R060
	L2Y33	HL200-L004
	M2Y33	HM200-L050
R060		
- CDN SD1 T CLOCK REDRIVEN 1		
	(N2M07)	HN200-R060
	L2B05	HL200-L004
R060		
- CDN SD1 T CLOCK REDRIVEN 2		
	(N2Y02)	HN200-R060
	L2Y02	HL200-L004
	M2Y02	HM200-L051
R060		
- CDN SD1 T CLOCK REDRIVEN 3		
	(N2P02)	HN200-R060
	L2B04	HL200-L004
	M2M12	HM200-L052
R060		
- CDN SD1 T CLOCK REDRIVEN 4		
	(N2Y32)	HN200-R060
	L2Y32	HL200-L004
	M2Y32	HM200-L053
R060		
- CDN SD1 T CLOCK REDRIVEN 5		
	(N2M02)	HN200-R060
	L2D09	HL200-L004
R060		
- CDN SD1 T CLOCK REDRIVEN 6		
	(N2Y22)	HN200-R060
	L2Y22	HL200-L004
	M2Y22	HM200-L054
R060		
- CDN SD1 T CLOCK REDRIVEN 7		
	(N2M03)	HN200-R060
	L2D04	HL200-L004
	M2U02	HM200-L055

LINE/SIGNAL	PIN	SHEET/LINE
R061		
- CDN SD1 DATA RDY/TKN LOWER		
	(N2Z23)	HN200-R061
1B-A1	E2G12	JE200-L003
1B-A1	*A4D03*	
R062		
- CDN SD1 R/W CLOCK LOWER		
	(N2Z22)	HN200-R062
1B-A1	E2M02	JE200-L004
1B-A1	*A4D02*	
R063		
- CDN SD1 DATA XFER COMPLETE LWR		
	(N2Z06)	HN200-R063
1B-A1	R2M12	JR200-L032
1B-A1	*A4B06*	
R064		
+ OFFSET INTERLOCK MODE GATED		
	(N2S04)	HN200-R064
	G2U09	HG210-L054

SEQNO	PGE OF	FICHE CD	FICHE FRM	PAGEID	TYP	CARD NAME	MODEL	FEATURE	VERSION	CARD LOC
HA030	1	1	A01	AA000	BLI	N/A	N/A	N/A	N/A	N/A
HA030	3	1	A05	HC200	CRD	TCR	2X	2 CHANNEL	N-R TAILGATE	1A-B4C2
HA030	4	1	A07	HC200	XRL	TCR	2X	2 CHANNEL	N-R TAILGATE	1A-B4C2
HA030	5	1	A09	HC400	CRD	SBP	2X	2 CHANNEL	N-R TAILGATE	1A-B4C4
HA030	6	1	A11	HC400	XRL	SBP	2X	2 CHANNEL	N-R TAILGATE	1A-B4C4
HA030	7	1	A13	HC500	CRD	SBP	2X	2 CHANNEL	N-R TAILGATE	1A-B4C5
HA030	8	1	A15	HC500	XRL	SBP	2X	2 CHANNEL	N-R TAILGATE	1A-B4C5
HA030	9	1	A17	HD200	CRD	CIF	2X	2 CHANNEL	N-R TAILGATE	1A-B4D2
HA030	10	1	B01	HD200	XRL	CIF	2X	2 CHANNEL	N-R TAILGATE	1A-B4D2
HA030	12	1	B05	HE200	CRD	CIF	2X	2 CHANNEL	N-R TAILGATE	1A-B4E2
HA030	13	1	B07	HE200	XRL	CIF	2X	2 CHANNEL	N-R TAILGATE	1A-B4E2
HA030	15	1	B11	HF200	CRD	CSC	2X	2 CHANNEL	N-R TAILGATE	1A-B4F2
HA030	16	1	B13	HF200	XRL	CSC	2X	2 CHANNEL	N-R TAILGATE	1A-B4F2
HA030	18	1	B17	HG210	CRD	CDX	2X	2 CHANNEL	N-R TAILGATE	1A-B4G2
HA030	19	1	C01	HG210	XRL	CDX	2X	2 CHANNEL	N-R TAILGATE	1A-B4G2
HA030	21	1	C05	HH220	CRD	CSR	2X	2 CHANNEL	N-R TAILGATE	1A-B4H2
HA030	22	1	C07	HH220	XRL	CSR	2X	2 CHANNEL	N-R TAILGATE	1A-B4H2
HA030	25	1	C13	HJ200	CRD	DXA	2X	2 CHANNEL	N-R TAILGATE	1A-B4J2
HA030	26	1	C15	HJ200	XRL	DXA	2X	2 CHANNEL	N-R TAILGATE	1A-B4J2
HA030	29	1	D03	HK200	CRD	DXD	2X	2 CHANNEL	N-R TAILGATE	1A-B4K2
HA030	30	1	D05	HK200	XRL	DXD	2X	2 CHANNEL	N-R TAILGATE	1A-B4K2
HA030	33	1	D11	HL200	CRD	CMAA	2X	2 CHANNEL	N-R TAILGATE	1A-B4L2
HA030	34	1	D13	HL200	XRL	CMAA	2X	2 CHANNEL	N-R TAILGATE	1A-B4L2
HA030	36	1	D17	HM200	CRD	CMCA	2X	2 CHANNEL	N-R TAILGATE	1A-B4M2
HA030	37	1	E01	HM200	XRL	CMCA	2X	2 CHANNEL	N-R TAILGATE	1A-B4M2
HA030	40	1	E07	HN200	CRD	CMCD	2X	2 CHANNEL	N-R TAILGATE	1A-B4N2
HA030	41	1	E09	HN200	XRL	CMCD	2X	2 CHANNEL	N-R TAILGATE	1A-B4N2
HA030	44	2	A01	AA000	BLI	N/A	N/A	N/A	N/A	N/A
HA030	46	2	A05	HP200	CRD	CLK	2X	2 CHANNEL	N-R TAILGATE	1A-B4P2
HA030	47	2	A07	HP200	XRL	CLK	2X	2 CHANNEL	N-R TAILGATE	1A-B4P2
HA030	49	2	A11	HQ200	CRD	SDM	2X	2 CHANNEL	N-R TAILGATE	1A-B4Q2
HA030	50	2	A13	HQ200	XRL	SDM	2X	2 CHANNEL	N-R TAILGATE	1A-B4Q2
HA030	53	2	B01	HR200	CRD	MNT	2X	2 CHANNEL	N-R TAILGATE	1A-B4R2
HA030	54	2	B03	HR200	XRL	MNT	2X	2 CHANNEL	N-R TAILGATE	1A-B4R2
HA030	57	2	B09	HS200	CRD	SCS1	2X	2 CHANNEL	N-R TAILGATE	1A-B4S2
HA030	58	2	B11	HS200	XRL	SCS1	2X	2 CHANNEL	N-R TAILGATE	1A-B4S2
HA030	59	2	B13	HT200	CRD	SCS2	2X	2 CHANNEL	N-R TAILGATE	1A-B4T2
HA030	60	2	B15	HT200	XRL	SCS2	2X	2 CHANNEL	N-R TAILGATE	1A-B4T2
HA030	61	2	B17	HU200	CRD	DCSR	2X	2 CHANNEL	N-R TAILGATE	1A-B4U2
HA030	62	2	C01	HU200	XRL	DCSR	2X	2 CHANNEL	N-R TAILGATE	1A-B4U2
HA030	64	2	C05	HV200	CRD	DCT	2X	2 CHANNEL	N-R TAILGATE	1A-B4V2
HA030	65	2	C07	HV200	XRL	DCT	2X	2 CHANNEL	N-R TAILGATE	1A-B4V2
HA030	67	2	C11	HX200	CRD	DDCU	2X	2 CHANNEL	N-R TAILGATE	1A-B4X2
HA030	68	2	C13	HX200	XRL	DDCU	2X	2 CHANNEL	N-R TAILGATE	1A-B4X2

GLOSSARY OF ABBREVIATIONS USED

ABBR.	EXPLANATION
ASDM	AUXILIARY STORAGE DIRECTOR MICROCONTROLLER
BLI	BOARD LOGIC INDEX
CD	CARD (MICROFICHE)
CRD	CARD REFERENCE DIAGRAM
EW	ELECTRONIC WRAP
FRM	FRAME (MICROFICHE)
HDSCS	HIGH DENSITY STATIC CONTROL STORAGE
IR	INDIRECT REGISTER
MDM	VOLUME R30
PA	PORT ADAPTER (CMCD CARD)
SAR	STORAGE ADDRESS REGISTER
SB1	STORAGE BOARD 1
SD1	STORAGE DIRECTOR 1
SDM	STORAGE DIRECTOR MICROCONTROLLER
XRL	CROSS REFERENCE LIST
2X1	TWO CHANNEL SWITCH
4X1	TWO CHANNEL ADDITIONAL OR FOUR CHANNEL

NOTES USED ON CROSS REFERENCE PAGES

THE LEGEND ON THE CROSS REFERENCE PAGES
SHOW ( ) AS THE SOURCE(S) OF THE SIGNAL
AND * * AS THE CABLE SOCKET PINS

IN ADDITION THE FOLLOWING SPECIAL DESIGNATIONS
WILL ALSO SHOW ON THESE PAGES

ANANN FOLLOWED BY
+2-CH *ANANN* INDICATES PREWIRING FOR TWO CHANNEL ADDITIONAL

->MDM *AANNN* REFERENCES MDM PAGE

->MNT *DEV * INDICATES A LINE TO THE MAINTENANCE DEVICE

NOTE: THE LINE NAME IN THE MDM MANUAL FOR A GIVEN NET WILL IN GENERAL NOT MATCH THE LINE NAME IN THE LRM EXACTLY.

NOTE: MANY OF THE LINE NAMES ARE OF THE FORM
'+ PPS BBB LINE NAME'
WHERE 'PP' IS THE LAST TWO CHARACTERS OF THE PNAME OF THE SOURCE. 'S' IS THE BOARD POSITION ON THE SOURCE AND 'BBB' IS A BOARD WITH WHICH THE LINE IS ASSOCIATED.

SEQNO	PGE OF	FICHE CD	FRM	PAGEID	TYP	CARD NAME	MODEL	FEATURE	VERSION	CARD LOC
HA030	70	2	C17	HX210	CRD	DDCV	2X	2 CHANNEL	N-R TAILGATE	1A-B4X2
HA030	71	2	D01	HX210	XRL	DDCV	2X	2 CHANNEL	N-R TAILGATE	1A-B4X2

GLOSSARY OF ABBREVIATIONS USED

ABBR.	EXPLANATION
ASDM	AUXILIARY STORAGE DIRECTOR MICROCONTROLLER
BLI	BOARD LOGIC INDEX
CD	CARD (MICROFICHE)
CRD	CARD REFERENCE DIAGRAM
EW	ELECTRONIC WRAP
FRM	FRAME (MICROFICHE)
HDSCS	HIGH DENSITY STATIC CONTROL STORAGE
IR	INDIRECT REGISTER
MDM	VOLUME R30
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```
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```
003 - CS ADDRESS BIT 0 --------------M02
004 - CS ADDRESS BIT 1 --------------J10
005 - REFRESH REQUIRED --------------M09
006 - CS WRITE ----------------------G02
007 - REFRESH ADDRESS CHECK ---------S10
008 - KEY BIT CHECK -----------------D11
009 - ANY READ DATA CHECK -----------B03
010 - UNCORRECTABLE READ DATA CHK ---D05
011 - REFRESH TIMER CHECK -----------J11
012 - SELECTION CHECK ---------------M10
013 - CS ADDRESS BIT 2 --------------J02
014 - CS ADDRESS BIT 3 --------------D13
015 - CS ADDRESS BIT PARITY ---------B07
016 - DCS DATA IN P CHK -------------D02
017 + SPECIAL RESET -----------------J05
018 - DCS SELECT --------------------U05
019 + MAINTENANCE START -------------P02
020 + START -------------------------P06
021 + STOP --------------------------P04
022 + RESET -------------------------J09
023 + POWER ON RESET POWERED --------U07
024 + ENABLE TIMER -------------------S12
```

CLK CARD

OVERVIEW

The CLK (clock) card provides timing signals to the functional areas of the storage director. The clocks are controlled by the maintenance card to allow selective starting and stopping of different groups of clocks. A self-starting 36.36 megahertz oscillator is the timing source for the storage director, and runs continuously with power on. In addition, the clock card controls the DSCR storage card. This involves controlling card selects, and refresh select to the DCSR card, as well as controlling starting and stopping of the SDM clocks.

PRIMARY FUNCTIONS

- Start and stop control provided by three sources:
  - Power on reset
  - Maintenance commands
  - Dynamic storage cycles
- Maintenance commands:
  - Start - starts all clocks
  - Maintenance Start - starts SDM (storage director microcontroller) clock
  - Stop - stops all clocks except CIF, DRC, ADT and MNT
  - SDM Sequential Reset - resets the SDM clock
- Dynamic storage control circuits send a Hold SDM signal to the clock controls when the SDM card initiates a dynamic storage cycle.
- SDM clock generates the clock signals for the storage director microcontroller and the control signals for the even and odd clocks.
- Even clock provides clock signals for the CIF CSC, DRC, MNT, CDX, CSR, ADT and DCC cards.
- Odd clock provides clocking signals to the CIF, CSC, MNT, CDX, CSR, ADT, and DCC cards.

PRIMARY COMPONENTS

- 36.36 megahertz oscillator
- Storage director microcontroller clock
- Odd clock
- Even clock
- Dynamic control store control chip

ERROR CHECKING

- Generates a clock card check when a DCS cycle is initiated by the SDM.
- DCS storage check logic re-powers check signals from the DCSR card as follows:
  - Refresh address check, refresh timer check and key bit check are combined into DCSR card check
  - Selection check is ORed into clock card check
  - Uncorrectable read data check is re-powered
  - Any read data check is sampled and latched at the end of every DCS storage cycle.
- DCS address check checks for odd parity on CS address bits 2 through 15 and CS write.
- DCS data check latch indicates bad data is stored in DCS storage. It can only be reset with a special reset.


```
D09 - DCS DATA IN P CHK LATCHED ---- 003
M13 - DCS SELECT 1 ----------------- 004
G04 - DCS SELECT 0 ----------------- 005
B13 + REFRESH TIMER CLOCK ---------- 006
S05 - REFRESH SELECT --------------- 007
D04 - DCS CYCLE -------------------- 008
M05 + KEYBIT ----------------------- 009
G12 + DCSR CARD CHECK -------------- 010
D07 + UNCORRECTABLE DATA CHECK ----- 011
B02 + ANY READ DATA CHECK LATCHED -- 012
J07 - DCS ADDRESS PARITY ----------- 013
S03 + CIF/-SC/TCR CLOCK T0 --------- 014
P11 + CIF/-SC/TCR CLOCK T2 --------- 015
P09 + CIF/-SC/TCR CLOCK T4 --------- 016
P07 + CIF/-SC/TCR CLOCK T6 --------- 017
S09 + DDC CLOCK T0 ----------------- 018
S07 + DDC CLOCK T2 ----------------- 019
M12 + DDC CLOCK T4 ----------------- 020
U10 + DDC CLOCK T6 ----------------- 021
M08 + MNT CLOCK T0 ----------------- 022
P12 + MNT CLOCK T2 ----------------- 023
S04 + MNT CLOCK T4 ----------------- 024
P10 + MNT CLOCK T6 ----------------- 025
S02 + CDX/CSR CLOCK T0 ------------- 026
M07 + CDX/CSR CLOCK T2 ------------- 027
U04 + CDX/CSR CLOCK T4 ------------- 028
U02 + CDX/CSR CLOCK T6 ------------- 029
S08 + ADT CLOCK T0 OR T4 ----------- 030
U06 + ADT CLOCK T2 OR T6 ----------- 031
G09 + CLK CARD CHECK --------------- 032
B09 + SDM CLOCK TC EARLY ----------- 033
P13 + SDM CLOCK TA ----------------- 034
G10 + SDM CLOCK TB ----------------- 035
J12 + SDM CLOCK TC ----------------- 036
U13 + SDM CLOCK TD ----------------- 037
M04 + SDM CLOCK TD SHAVED ---------- 038
J13 + STOP DDC --------------------- 039
G13 - STOP LATCHED ----------------- 040
B08 + SDM STOPPED ------------------ 041
P05 + CIF STOPPED ------------------ 042
M03 + INVALID SEQUENCE ------------- 043
G07 + DDC CLOCK T1 ----------------- 044
B10 + DDC CLOCK T3 ----------------- 045
J04 + DDC CLOCK T5 ----------------- 046
G08 + DDC CLOCK T7 ----------------- 047
D06 + MNT CLOCK T1 ----------------- 048
G03 + MNT CLOCK T3 ----------------- 049
J06 + MNT CLOCK T5 ----------------- 050
D12 + MNT CLOCK T7 ----------------- 051
B12 + CIF/-SC/TCR CLOCK T5 --------- 052
G05 + ADT CLK T3D2 OR T7D2 --------- 053
D10 + MNT CLOCK T4D2 --------------- 054
B05 - CLOCK T1 --------------------- 055
U09 + ADT CLOCK T1 OR T5 ----------- 056
U11 + ADT CLOCK T3 OR T7 ----------- 057
S13 - CHAN CHECK/TIMER INTERRUPT 1 - 058
U12 - WESTPORT SELECT 2 ------------ 059
```

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- CS ADDRESS BIT 0		
	P2M02	HP200-L003
	(Q2D07)	HQ200-R033
L004		
- CS ADDRESS BIT 1		
	P2J10	HP200-L004
	(Q2B07)	HQ200-R033
L005		
- REFRESH REQUIRED		
	P2M09	HP200-L005
	(U2B12)	HU200-R044
L006		
- CS WRITE		
	P2G02	HP200-L006
	(Q2S08)	HQ200-R037
	R2D13	HR200-L022
	S2B02	HS200-L016
	T2B02	HT200-L016
	U2D05	HU200-L019
	U2J13	HU200-L020
L007		
- REFRESH ADDRESS CHECK		
	P2S10	HP200-L007
	(U2D12)	HU200-R007
L008		
- KEY BIT CHECK		
	P2D11	HP200-L008
	(U2B05)	HU200-R040
L009		
- ANY READ DATA CHECK		
	P2B03	HP200-L009
	(U2S07)	HU200-R027
L010		
- UNCORRECTABLE READ DATA CHK		
	P2D05	HP200-L010
	(U2D02)	HU200-R028
L011		
- REFRESH TIMER CHECK		
	P2J11	HP200-L011
	(U2J09)	HU200-R046
L012		
- SELECTION CHECK		
	P2M10	HP200-L012
	(U2B07)	HU200-R043
L013		
- CS ADDRESS BIT 2		
	P2J02	HP200-L013
	(Q2D09)	HQ200-R033
	U2P02	HU200-L003
L014		
- CS ADDRESS BIT 3		
	P2D13	HP200-L014
	(Q2B08)	HQ200-R033
	U2M03	HU200-L004
L015		
- CS ADDRESS BIT PARITY		
	P2B07	HP200-L015
	(Q2S13)	HQ200-R036
	S2U12	HS200-L017
	T2U12	HT200-L017
L016		
- DCS DATA IN P CHK		
	P2D02	HP200-L016
	(U2G05)	HU200-R026
L017		
+ SPECIAL RESET		
	P2J05	HP200-L017
	(R2B12)	HR200-R027
	D2G09	HD200-L032
	E2G09	HE200-L032
	C2G10	HC200-L015
	F2M03	HF200-L055
	X2P10	HX200-L051
L018		
- DCS SELECT		
	P2U05	HP200-L018
	(Q2S12)	HQ200-R031
L019		
+ MAINTENANCE START		
	P2P02	HP200-L019
	(R2J07)	HR200-R026
L020		
+ START		
	P2P06	HP200-L020
	(R2D10)	HR200-R025
L021		
+ STOP		
	P2P04	HP200-L021
	(R2G03)	HR200-R024
L022		
+ RESET		
	P2J09	HP200-L022
	(R2B07)	HR200-R022
	D2M05	HD200-L031
	E2M05	HE200-L031
	C2G09	HC200-L016
	F2M02	HF200-L054
	G2J13	HG210-L017
	H2S03	HH220-L060
	M2P11	HM200-L011
	V2G13	HV200-L006
	X2M02	HX200-L027
L023		
+ POWER ON RESET POWERED		
	P2U07	HP200-L023
	(R2B10)	HR200-R042
	C4B04	HC400-L004
	C5B04	HC500-L004
	U2D04	HU200-L022
L024		
+ ENABLE TIMER		
	P2S12	HP200-L024
	(V2S02)	HV200-R030
R003		
- DCS DATA IN P CHK LATCHED		
	(P2D09)	HP200-R003
	R2S05	HR200-L056
R004		
- DCS SELECT 1		
	(P2M13)	HP200-R004
	U2J07	HU200-L023
R005		
- DCS SELECT 0		
	(P2G04)	HP200-R005
	U2G03	HU200-L024
R006		
+ REFRESH TIMER CLOCK		
	(P2B13)	HP200-R006
	U2J04	HU200-L028
R007		
- REFRESH SELECT		
	(P2S05)	HP200-R007
	U2B09	HU200-L021
R008		
- DCS CYCLE		
	(P2D04)	HP200-R008
	R2G02	HR200-L008
R009		
+ KEYBIT		
	(P2M05)	HP200-R009
	U2M13	HU200-L018
R010		
+ DCSR CARD CHECK		
	(P2G12)	HP200-R010
	R2J12	HR200-L051
R011		
+ UNCORRECTABLE DATA CHECK		
	(P2D07)	HP200-R011
	R2J11	HR200-L047
R012		
+ ANY READ DATA CHECK LATCHED		
	(P2B02)	HP200-R012
	J2S02	HJ200-L059
R013		
- DCS ADDRESS PARITY		
	(P2J07)	HP200-R013
	U2M07	HU200-L017
R014		
+ CIF/-SC/TCR CLOCK T0		
	(P2S03)	HP200-R014
	D2J10	HD200-L042
	E2J10	HE200-L042
	F2P05	HF200-L036
R015		
+ CIF/-SC/TCR CLOCK T2		
	(P2P11)	HP200-R015
	D2P02	HD200-L043
	E2P02	HE200-L043
	C2J04	HC200-L009
	F2S04	HF200-L037
R016		
+ CIF/-SC/TCR CLOCK T4		
	(P2P09)	HP200-R016
	D2M03	HD200-L044
	E2M03	HE200-L044
	C2G05	HC200-L010
	F2P06	HF200-L038
R017		
+ CIF/-SC/TCR CLOCK T6		
	(P2P07)	HP200-R017
	D2P04	HD200-L045
	E2P04	HE200-L045
	C2J07	HC200-L019
	F2U06	HF200-L040
R018		
+ DDC CLOCK T0		
	(P2S09)	HP200-R018
	N2U07	HN200-L027
	X2D04	HX200-L014
	X2D04	HX200-L031
R019		
+ DDC CLOCK T2		
	(P2S07)	HP200-R019
	N2S07	HN200-L029
	V2G07	HV200-L030
	X2G07	HX200-L033
R020		
+ DDC CLOCK T4		
	(P2M12)	HP200-R020
	N2M12	HN200-L031
	X2U07	HX200-L035
R021		
+ DDC CLOCK T6		
	(P2U10)	HP200-R021
	N2U09	HN200-L033
	V2U09	HV200-L029
	X2U09	HX200-L037
R022		
+ MNT CLOCK T0		
	(P2M08)	HP200-R022
	R2B13	HR200-L048
R023		
+ MNT CLOCK T2		
	(P2P12)	HP200-R023
	R2J06	HR200-L048
	X2U11	HX200-L029
R024		
+ MNT CLOCK T4		
	(P2S04)	HP200-R024
	R2G08	HR200-L048
	X2U12	HX200-L030
R025		
+ MNT CLOCK T6		
	(P2P10)	HP200-R025
	R2G07	HR200-L048
R026		
+ CDX/CSR CLOCK T0		
	(P2S02)	HP200-R026
	G2G02	HG210-L027
	H2M09	HH220-L062
R027		
+ CDX/CSR CLOCK T2		
	(P2M07)	HP200-R027
	G2G03	HG210-L028
	H2M08	HH220-L063
R028		
+ CDX/CSR CLOCK T4		
	(P2U04)	HP200-R028
	G2G04	HG210-L029
	H2M10	HH220-L064
R029		
+ CDX/CSR CLOCK T6		
	(P2U02)	HP200-R029
	G2G05	HG210-L030
	H2M12	HH220-L065
R030		
+ ADT CLOCK T0 OR T4		
	(P2S08)	HP200-R030
	J2J06	HJ200-L006
	K2S08	HK200-L019
R031		
+ ADT CLOCK T2 OR T6		
	(P2U06)	HP200-R031
	J2G05	HJ200-L008
	K2M02	HK200-L021
R032		
+ CLK CARD CHECK		
	(P2G09)	HP200-R032
	R2P06	HR200-L050
R033		
+ SDM CLOCK TC EARLY		
	(P2B09)	HP200-R033
	Q2G02	HQ200-L013
R034		
+ SDM CLOCK TA		
	(P2P13)	HP200-R034
	(Q2U05)	HQ200-R021
R035		
+ SDM CLOCK TB		
	(P2G10)	HP200-R035
	(Q2U12)	HQ200-R022
R036		
+ SDM CLOCK TC		
	(P2J12)	HP200-R036
	(Q2U07)	HQ200-R023
R037		
+ SDM CLOCK TD		
	(P2U13)	HP200-R037
R038		
+ SDM CLOCK TD SHAVED		
	(P2M04)	HP200-R038
	(Q2S05)	HQ200-R024
	Q2P11	HQ200-L018
R039		
+ STOP DDC		
	(P2J13)	HP200-R039
	R2U11	HR200-L033
	X2U02	HX200-L049
R040		
- STOP LATCHED		
	(P2G13)	HP200-R040
	R2B03	HR200-L045
R041		
+ SDM STOPPED		
	(P2B08)	HP200-R041
	R2J04	HR200-L034
R042		
+ CIF STOPPED		
	(P2P05)	HP200-R042
	D2U02	HD200-L046
	E2U02	HE200-L046
R043		
+ INVALID SEQUENCE		
	(P2M03)	HP200-R043
	R2D06	HR200-L052
R044		
+ DDC CLOCK T1		
	(P2G07)	HP200-R044
	N2G07	HN200-L028
	X2U13	HX200-L032
R045		
+ DDC CLOCK T3		
	(P2B10)	HP200-R045
	N2B10	HN200-L030
	V2U04	HV200-L016
	X2S04	HX200-L034
R046		
+ DDC CLOCK T5		
	(P2J04)	HP200-R046
	N2J04	HN200-L032
	X2S05	HX200-L036
R047		
+ DDC CLOCK T7		
	(P2G08)	HP200-R047
	N2G08	HN200-L034
	V2U02	HV200-L017
	X2S02	HX200-L038

LINE/SIGNAL	PIN	SHEET/LINE
R048		
+ MNT CLOCK T1		
	(P2D06)	HP200-R048
	R2B05	HR200-L048
R049		
+ MNT CLOCK T3		
	(P2G03)	HP200-R049
	R2D12	HR200-L048
R050		
+ MNT CLOCK T5		
	(P2J06)	HP200-R050
	R2G09	HR200-L048
R051		
+ MNT CLOCK T7		
	(P2D12)	HP200-R051
	R2J02	HR200-L048
R052		
+ CIF/-SC/TCR CLOCK T5		
	(P2B12)	HP200-R052
	F2M10	HF200-L039
R053		
+ ADT CLK T3D2 OR T7D2		
	(P2G05)	HP200-R053
	J2J10	HJ200-L025
R054		
+ MNT CLOCK T4D2		
	(P2D10)	HP200-R054
	R2D05	HR200-L049
R055		
- CLOCK T1		
	(P2B05)	HP200-R055
R056		
+ ADT CLOCK T1 OR T5		
	(P2U09)	HP200-R056
	J2M07	HJ200-L007
	K2S13	HK200-L020
R057		
+ ADT CLOCK T3 OR T7		
	(P2U11)	HP200-R057
	J2J07	HJ200-L009
	K2U11	HK200-L022
R058		
- CHAN CHECK/TIMER INTERRUPT 1		
	(P2S13)	HP200-R058
	(F2U02)	HF200-R039
	R2S12	HR200-L012
R059		
- WESTPORT SELECT 2		
	(P2U12)	HP200-R059
	U2B13	HU200-L032

STORAGE DIRECTOR MICROCONTROLLER CRD HQ200

```
003 - MAINT CLOCK T1 ----------------Y29
004 - RUN METER ---------------------Z03
005 - CLK STOPPED - STORAGE DIRECTOR-Y11
006 - INTERRUPT REQUEST -------------Z29
007 - ALU IN1 BIT (0-7,P) ===========*
008 - ALU IN2 BIT (0-7,P) ===========*
009 - INTERRUPT ADR BIT (0-2,P) =====*
010 - SCAN IN ------------------------Y30
011 - SDM START DELAYED -------------Y33
012 - CLOCK STOPPED - SDM -----------Y10
013 + SDM CLOCK TC EARLY ------------G02
014 - TIE DOWN F ---------------------J07
015 - RESET --------------------------Y09
016 + ROS SELECT --------------------U13
017 - CS ADDRESS CHECK --------------S10
018 + SDM CLOCK TD SHAVED -----------P11
019 + INHIBIT ALU IN PC -------------Z02
```

SDM CARD

OVERVIEW

The storage director microcontroller (SDM) card performs the following:

- Decodes microinstructions from control storage to control subsystem operation.
- Controls the sequence of microinstructions.
- Controls the reading and writing of data into control storage.
- Controls the accessing and reading of data from the functional diskette.
- Performs arithmetic and logical operations.
- Selects and controls the controller and/or drives.
- Starts data transfer.
- Transfers status and command information to and from the channel.
- Contains ROS which executes level-0 ROS code to perform maintenance operations to alter or display an external register, an internal register, the instruction address register in the microcontroller, or a byte of data in control storage.

PRIMARY FUNCTIONS

- The microcontroller contains the internal register group (IRG) register, check register 3, the arithmetic and logic unit, and the associated decoders, controls, check circuits, input registers, and output registers. The data bus into and out of the microcontroller is 18 bits (16 data and 2 parity).
- The microcontroller Data Out bus inputs the local storage registers, and is gates to external registers in the CSC, CSR, ADT, MNT, CMCD, device counter and director-to-device controller cards.
- ROS (read only storage) is a 512 x 18 bit storage array containing ROS bootstrap microcode.
- Local storage registers are 64 x 18 bit arrays registers that control all data that enters the CS data bit bus.
- Control storage select circuits provide the select lines that permit data to be read or written into that area of storage.

PRIMARY COMPONENTS

- ROS
- Microcontroller
- Local storage registers
- IRG register
- Check register 3
- Control storage select circuits

ERROR CHECKING

- SDM card check is set by the one and only one check on the ROS local storage, external storage, static control storage, and dynamic control storage select lines to insure only one line is active. If more than one select line is active or if there is a parity error on the local storage address lines, the SMD card check latch is set.
- Check register 3 records the status of internal microcontroller checking circuits:
  - Control storage data parity
  - Data parity for internal and external registers
  - Internal microcontroller parity
  - Branch decision error
  - Clock decoder error
- The SDM card check latch is set by a local storage address check, or if more than one 3-state driver is set, or a one and only one check.

```
W26 + CLOCK T1 SD1 ------------------ 003
W03 + RUN METER SD1 ----------------- 004
W07 + CLOCK STOPPED SD1 ------------- 005
W09 + BRANCH SUCCESSFUL SD1 --------- 006
Z11 - EXTENDED OP ------------------- 007
*   - ALU OUT BIT (0-7,P) ========== 008
Y03 - INTERRUPT RESPONSE OUT -------- 009
Y02 - SDM ERROR OUT ----------------- 010
*   - CS DATA BIT (0-15,PH,PL) ===== 011
U09 + LD EXT REG CLK A -------------- 012
S09 + LD EXT REG CLK B -------------- 013
U10 + LD EXT REG CLK C -------------- 014
U06 + LD EXT REG CLK D -------------- 015
*   - EXT REG ADDRESS BIT (0-4) ==== 016
P06 - EXT REG ADR PARITY ------------ 017
Z22 + EXT REG SELECT ---------------- 018
*   - DCS DATA BIT (PH,PL) ========= 019
Y32 + SDM CARD CHECK ---------------- 020
U05 + SDM CLOCK TA ------------------ 021
U12 + SDM CLOCK TB ------------------ 022
U07 + SDM CLOCK TC ------------------ 023
S05 + SDM CLOCK TD SHAVED ----------- 024
Y22 - CS SELECT --------------------- 025
Y26 + CS ADDRESS CHECK -------------- 026
S07 - SCS SELECT 1 ------------------ 027
S04 - SCS SELECT 2 ------------------ 028
U11 - SCS SELECT 3 ------------------ 029
D12 - SCS SELECT 4 ------------------ 030
S12 - DCS SELECT -------------------- 031
Y07 - ROS SELECT -------------------- 032
*   - CS ADDRESS BIT (0-15) ======== 033
*   + CS ADDRESS (SD1) BIT (0-15) == 034
*   + CS ADDRESS (SD1) BIT (0-3) === 035
S13 - CS ADDRESS BIT PARITY -------- 036
S08 - CS WRITE ---------------------- 037
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LINE/SIGNAL	PIN	SHEET/LINE
L003		
- MAINT CLOCK T1		
	Q2Y29	HQ200-L003
	(R2Y29)	HR200-R040
L004		
- RUN METER		
	Q2Z03	HQ200-L004
	(D2S13)	HD200-R042
	(E2S13)	HE200-R042
	(R2Z03)	HR200-R003
	R2S03	HR200-L003
L005		
- CLK STOPPED - STORAGE DIRECTOR		
	Q2Y11	HQ200-L005
	(R2Y11)	HR200-R034
L006		
- INTERRUPT REQUEST		
	Q2Z29	HQ200-L006
	(R2Z29)	HR200-R013
L007		
- ALU IN1 BIT 0		
	Q2M07	HQ200-L007
	(F2J02)	HF200-R017
	(H2D04)	HH220-R027
	(J2S05)	HJ200-R016
	(K2J02)	HK200-R016
L007		
- ALU IN1 BIT 1		
	Q2P07	HQ200-L007
	(F2G02)	HF200-R018
	(H2D05)	HH220-R028
	(J2S12)	HJ200-R016
	(K2G03)	HK200-R016
L007		
- ALU IN1 BIT 2		
	Q2M12	HQ200-L007
	(F2G03)	HF200-R019
	(H2D06)	HH220-R029
	(J2P10)	HJ200-R016
	(K2J05)	HK200-R016
L007		
- ALU IN1 BIT 3		
	Q2M09	HQ200-L007
	(F2G04)	HF200-R020
	(H2D09)	HH220-R030
	(J2S03)	HJ200-R016
	(K2G09)	HK200-R016
L007		
- ALU IN1 BIT 4		
	Q2M13	HQ200-L007
	(F2G05)	HF200-R021
	(H2D10)	HH220-R031
	(J2B10)	HJ200-R016
	(K2J06)	HK200-R016
L007		
- ALU IN1 BIT 5		
	Q2P13	HQ200-L007
	(F2J09)	HF200-R022
	(H2D12)	HH220-R032
	(J2B03)	HJ200-R016
	(K2G08)	HK200-R016
L007		
- ALU IN1 BIT 6		
	Q2S02	HQ200-L007
	(F2J10)	HF200-R023
	(H2D13)	HH220-R033
	(J2D04)	HJ200-R016
	(K2G07)	HK200-R016
L007		
- ALU IN1 BIT 7		
	Q2U02	HQ200-L007
	(F2J11)	HF200-R024
	(H2J02)	HH220-R034
	(J2B04)	HJ200-R016
	(K2J07)	HK200-R016
L007		
- ALU IN1 BIT P		
	Q2S03	HQ200-L007
	(F2J12)	HF200-R025
	(H2J04)	HH220-R035
	(J2S07)	HJ200-R016
	(K2G02)	HK200-R016
L008		
- ALU IN2 BIT 0		
	Q2Z10	HQ200-L008
	(N2S10)	HN200-R012
	(R2S10)	HR200-R016
	(R2Z10)	HR200-R017
	(V2M04)	HV200-R003
	(X2M04)	HX200-R012
L008		
- ALU IN2 BIT 1		
	Q2Z07	HQ200-L008
	(N2S09)	HN200-R013
	(R2U07)	HR200-R016
	(R2Z07)	HR200-R017
	(V2J13)	HV200-R004
	(X2J13)	HX200-R013
L008		
- ALU IN2 BIT 2		
	Q2Z09	HQ200-L008
	(N2U10)	HN200-R014
	(R2U09)	HR200-R016
	(R2Z09)	HR200-R017
	(V2G12)	HV200-R005
	(X2G12)	HX200-R014
L008		
- ALU IN2 BIT 3		
	Q2Z30	HQ200-L008
	(N2U12)	HN200-R015
	(R2U10)	HR200-R016
	(R2Z30)	HR200-R017
	(V2P05)	HV200-R006
	(X2P05)	HX200-R015
L008		
- ALU IN2 BIT 4		
	Q2Z33	HQ200-L008
	(N2U13)	HN200-R016
	(R2S13)	HR200-R016
	(R2Z33)	HR200-R017
	(V2M05)	HV200-R007
	(X2M05)	HX200-R016
L008		
- ALU IN2 BIT 5		
	Q2Z13	HQ200-L008
	(N2S13)	HN200-R017
	(R2U13)	HR200-R016
	(R2Z13)	HR200-R017
	(V2M03)	HV200-R008
	(X2M03)	HX200-R017
L008		
- ALU IN2 BIT 6		
	Q2Z28	HQ200-L008
	(N2S08)	HN200-R018
	(R2S07)	HR200-R016
	(R2Z28)	HR200-R017
	(V2G10)	HV200-R009
	(X2G10)	HX200-R018
L008		
- ALU IN2 BIT 7		
	Q2Z05	HQ200-L008
	(N2U05)	HN200-R019
	(R2U05)	HR200-R016
	(R2Z05)	HR200-R017
	(V2P02)	HV200-R010
	(X2P02)	HX200-R019
L008		
- ALU IN2 BIT P		
	Q2Z06	HQ200-L008
	(N2U02)	HN200-R020
	(R2S08)	HR200-R016
	(R2Z06)	HR200-R017
	(V2P04)	HV200-R011
	(X2P04)	HX200-R020
L009		
- INTERRUPT ADR BIT 0		
	Q2Y28	HQ200-L009
	(R2Y28)	HR200-R014
L009		
- INTERRUPT ADR BIT 1		
	Q2Z24	HQ200-L009
	(R2Z24)	HR200-R014
L009		
- INTERRUPT ADR BIT 2		
	Q2Z26	HQ200-L009
	(R2Z26)	HR200-R014
L009		
- INTERRUPT ADR BIT P		
	Q2Z25	HQ200-L009
	(R2Z25)	HR200-R014
L010		
- SCAN IN		
	Q2Y30	HQ200-L010
	(R2Y30)	HR200-R039
L011		
- SDM START DELAYED		
	Q2Y33	HQ200-L011
	(R2Y33)	HR200-R035
L012		
- CLOCK STOPPED - SDM		
	Q2Y10	HQ200-L012
	(R2Y10)	HR200-R033
L013		
+ SDM CLOCK TC EARLY		
	Q2G02	HQ200-L013
	(P2B09)	HP200-R033
L014		
- TIE DOWN F		
	Q2J07	HQ200-L014
L015		
- RESET		
	Q2Y09	HQ200-L015
	(R2Y09)	HR200-R021
L016		
+ ROS SELECT		
	Q2U13	HQ200-L016
	(V2S03)	HV200-R031
	R2S04	HR200-L023
L017		
- CS ADDRESS CHECK		
	Q2S10	HQ200-L017
	(S2S12)	HS200-R021
	(T2S12)	HT200-R021
	(U2D10)	HU200-R004
	(U2B04)	HU200-R005
L018		
+ SDM CLOCK TD SHAVED		
	Q2P11	HQ200-L018
	(P2M04)	HP200-R038
	(Q2S05)	HQ200-R024
L019		
+ INHIBIT ALU IN PC		
	Q2Z02	HQ200-L019
	(R2Z02)	HR200-R030
R003		
+ CLOCK T1 SD1		
	(Q2W26)	HQ200-R003
1A-B1	S2Y26	ES200-L016
R004		
+ RUN METER SD1		
	(Q2W03)	HQ200-R004
1A-B1	S2Y03	ES200-L030
R005		
+ CLOCK STOPPED SD1		
	(Q2W07)	HQ200-R005
1A-B1	S2Y07	ES200-L029
R006		
+ BRANCH SUCCESSFUL SD1		
	(Q2W09)	HQ200-R006
1A-B1	S2Y09	ES200-L015
R007		
- EXTENDED OP		
	(Q2Z11)	HQ200-R007
	R2Z11	HR200-L006
R008		
- ALU OUT BIT 0		
	(Q2B04)	HQ200-R008
	C2B02	HC200-L022
	F2D02	HF200-L019
	H2P12	HH220-L017
	J2U07	HJ200-L041
	N2B07	HN200-L012
	R2M02	HR200-L024
	V2D13	HV200-L007
	X2D13	HX200-L026
R008		
- ALU OUT BIT 1		
	(Q2D05)	HQ200-R008
	C2D02	HC200-L023
	F2D04	HF200-L020
	H2P13	HH220-L018
	J2U09	HJ200-L041
	N2D05	HN200-L013
	R2G12	HR200-L024
	V2B05	HV200-L008
	X2B05	HX200-L026
R008		
- ALU OUT BIT 2		
	(Q2D06)	HQ200-R008
	F2D05	HF200-L021
	H2U02	HH220-L019
	J2P12	HJ200-L041
	N2D09	HN200-L014
	R2G13	HR200-L024
	V2D10	HV200-L009
	X2D10	HX200-L026
R008		
- ALU OUT BIT 3		
	(Q2B05)	HQ200-R008
	F2D06	HF200-L022
	H2U05	HH220-L020
	J2U02	HJ200-L041
	N2D10	HN200-L015
	R2M04	HR200-L024
	V2J02	HV200-L010
	X2J02	HX200-L026
R008		
- ALU OUT BIT 4		
	(Q2D04)	HQ200-R008
	F2D07	HF200-L023
	H2U06	HH220-L021
	J2B12	HJ200-L041
	N2D06	HN200-L016
	R2M03	HR200-L024
	V2B08	HV200-L011
	X2B08	HX200-L026
R008		
- ALU OUT BIT 5		
	(Q2B03)	HQ200-R008
	F2B07	HF200-L024
	H2U07	HH220-L022
	J2D06	HJ200-L041
	N2B09	HN200-L017
	R2P04	HR200-L024
	V2B03	HV200-L012
	X2B03	HX200-L026
R008		
- ALU OUT BIT 6		
	(Q2D02)	HQ200-R008
	F2B08	HF200-L025
	H2U09	HH220-L023
	N2G02	HN200-L018
	R2P02	HR200-L024
	V2D05	HV200-L013
	X2D05	HX200-L026
R008		
- ALU OUT BIT 7		
	(Q2B02)	HQ200-R008
	F2B09	HF200-L026
	J2B05	HJ200-L041
	N2B13	HN200-L019
	R2P05	HR200-L024
	V2D06	HV200-L014
R008		
- ALU OUT BIT P		
	(Q2U04)	HQ200-R008
	F2B10	HF200-L027
	N2D13	HN200-L020
	R2M05	HR200-L024
	V2B02	HV200-L015
R009		
- INTERRUPT RESPONSE OUT		
	(Q2Y03)	HQ200-R009
	R2Y03	HR200-L042
R010		
- SDM ERROR OUT		
	(Q2Y02)	HQ200-R010
	R2Y02	HR200-L025
R011		
- CS DATA BIT 0		
	(Q2J11)	HQ200-R011
	(S2D09)	HS200-R003
	(T2D09)	HT200-R003
	(U2U13)	HU200-R008

LINE/SIGNAL	PIN	SHEET/LINE
R011		
- CS DATA BIT 1		
	(Q2G10)	HQ200-R011
	(S2J02)	HS200-R004
	(T2J02)	HT200-R004
	(U2S12)	HU200-R009
R011		
- CS DATA BIT 2		
	(Q2J09)	HQ200-R011
	(S2J05)	HS200-R005
	(T2J05)	HT200-R005
	(U2S10)	HU200-R010
R011		
- CS DATA BIT 3		
	(Q2J10)	HQ200-R011
	(S2J10)	HS200-R006
	(T2J10)	HT200-R006
	(U2M09)	HU200-R011
R011		
- CS DATA BIT 4		
	(Q2G12)	HQ200-R011
	(S2P02)	HS200-R007
	(T2P02)	HT200-R007
	(U2M08)	HU200-R012
R011		
- CS DATA BIT 5		
	(Q2J12)	HQ200-R011
	(S2P07)	HS200-R008
	(T2P07)	HT200-R008
	(U2P06)	HU200-R013
R011		
- CS DATA BIT 6		
	(Q2G13)	HQ200-R011
	(S2P12)	HS200-R009
	(T2P12)	HT200-R009
	(U2M05)	HU200-R014
R011		
- CS DATA BIT 7		
	(Q2J13)	HQ200-R011
	(S2U04)	HS200-R010
	(T2U04)	HT200-R010
	(U2P04)	HU200-R015
R011		
- CS DATA BIT 8		
	(Q2G07)	HQ200-R011
	(S2B09)	HS200-R011
	(T2B09)	HT200-R011
	(U2P13)	HU200-R016
R011		
- CS DATA BIT 9		
	(Q2J06)	HQ200-R011
	(S2B13)	HS200-R012
	(T2B13)	HT200-R012
	(U2M12)	HU200-R017
R011		
- CS DATA BIT 10		
	(Q2G05)	HQ200-R011
	(S2J07)	HS200-R013
	(T2J07)	HT200-R013
	(U2M10)	HU200-R018
R011		
- CS DATA BIT 11		
	(Q2J05)	HQ200-R011
	(S2J12)	HS200-R014
	(T2J12)	HT200-R014
	(U2S09)	HU200-R019
R011		
- CS DATA BIT 12		
	(Q2G03)	HQ200-R011
	(S2M02)	HS200-R015
	(T2M02)	HT200-R015
	(U2S08)	HU200-R020
R011		
- CS DATA BIT 13		
	(Q2B12)	HQ200-R011
	(S2M07)	HS200-R016
	(T2M07)	HT200-R016
	(U2U06)	HU200-R021
R011		
- CS DATA BIT 14		
	(Q2D11)	HQ200-R011
	(S2M12)	HS200-R017
	(T2M12)	HT200-R017
	(U2S05)	HU200-R022
R011		
- CS DATA BIT 15		
	(Q2J02)	HQ200-R011
	(S2S05)	HS200-R018
	(T2S05)	HT200-R018
	(U2U04)	HU200-R023
R011		
- CS DATA BIT PH		
	(Q2M10)	HQ200-R011
	(S2U07)	HS200-R019
	(T2U07)	HT200-R019
	(U2S02)	HU200-R024
R011		
- CS DATA BIT PL		
	(Q2P10)	HQ200-R011
	(S2U09)	HS200-R020
	(T2U09)	HT200-R020
	(U2M02)	HU200-R025
R012		
+ LD EXT REG CLK A		
	(Q2U09)	HQ200-R012
	F2U07	HF200-L034
R013		
+ LD EXT REG CLK B		
	(Q2S09)	HQ200-R013
	J2J04	HJ200-L034
	K2U10	HK200-L026
R014		
+ LD EXT REG CLK C		
	(Q2U10)	HQ200-R014
	C2B12	HC200-L007
	F2P04	HF200-L035
	H2M13	HH220-L013
R015		
+ LD EXT REG CLK D		
	(Q2U06)	HQ200-R015
	N2B02	HN200-L010
	R2M08	HR200-L011
	V2M10	HV200-L019
	X2M10	HX200-L025
R016		
- EXT REG ADDRESS BIT 0		
	(Q2P12)	HQ200-R016
	F2P09	HF200-L028
	K2B12	HK200-L003
	N2P12	HN200-L003
	R2M13	HR200-L009
	V2J07	HV200-L024
R016		
- EXT REG ADDRESS BIT 1		
	(Q2M05)	HQ200-R016
	F2P10	HF200-L029
	K2D13	HK200-L003
	N2M05	HN200-L004
	R2P11	HR200-L009
	V2J09	HV200-L025
R016		
- EXT REG ADDRESS BIT 2		
	(Q2P05)	HQ200-R016
	F2P11	HF200-L030
	K2B13	HK200-L003
	N2P05	HN200-L005
	R2M12	HR200-L009
	V2J10	HV200-L026
R016		
- EXT REG ADDRESS BIT 3		
	(Q2M04)	HQ200-R016
	F2P12	HF200-L031
	K2B10	HK200-L003
	N2M04	HN200-L006
	R2P10	HR200-L009
	V2J11	HV200-L027
R016		
- EXT REG ADDRESS BIT 4		
	(Q2P04)	HQ200-R016
	F2P13	HF200-L032
	K2D12	HK200-L003
	N2P04	HN200-L007
	R2P09	HR200-L009
	V2J12	HV200-L028
R017		
- EXT REG ADR PARITY		
	(Q2P06)	HQ200-R017
	K2D10	HK200-L027
	N2P06	HN200-L008
	R2M09	HR200-L010
R018		
+ EXT REG SELECT		
	(Q2Z22)	HQ200-R018
	(R2S02)	HR200-R015
	H2M04	HH220-L031
	K2U13	HK200-L009
	N2B04	HN200-L011
	R2Z22	HR200-L021
R019		
- DCS DATA BIT PH		
	(Q2G04)	HQ200-R019
R019		
- DCS DATA BIT PL		
	(Q2J04)	HQ200-R019
R020		
+ SDM CARD CHECK		
	(Q2Y32)	HQ200-R020
	R2Y32	HR200-L044
R021		
+ SDM CLOCK TA		
	(Q2U05)	HQ200-R021
	(P2P13)	HP200-R034
R022		
+ SDM CLOCK TB		
	(Q2U12)	HQ200-R022
	(P2G10)	HP200-R035
R023		
+ SDM CLOCK TC		
	(Q2U07)	HQ200-R023
	(P2J12)	HP200-R036
R024		
+ SDM CLOCK TD SHAVED		
	(Q2S05)	HQ200-R024
	(P2M04)	HP200-R038
	Q2P11	HQ200-L018
R025		
- CS SELECT		
	(Q2Y22)	HQ200-R025
	R2Y22	HR200-L026
R026		
+ CS ADDRESS CHECK		
	(Q2Y26)	HQ200-R026
	R2Y26	HR200-L055
R027		
- SCS SELECT 1		
	(Q2S07)	HQ200-R027
	S2D06	HS200-L015
R028		
- SCS SELECT 2		
	(Q2S04)	HQ200-R028
	S2U10	HS200-L018
R029		
- SCS SELECT 3		
	(Q2U11)	HQ200-R029
	T2D06	HT200-L015
R030		
- SCS SELECT 4		
	(Q2D12)	HQ200-R030
	T2U10	HT200-L018
R031		
- DCS SELECT		
	(Q2S12)	HQ200-R031
	P2U05	HP200-L018
R032		
- ROS SELECT		
	(Q2Y07)	HQ200-R032
	R2Y07	HR200-L046
R033		
- CS ADDRESS BIT 0		
	(Q2D07)	HQ200-R033
	P2M02	HP200-L003
R033		
- CS ADDRESS BIT 1		
	(Q2B07)	HQ200-R033
	P2J10	HP200-L004
R033		
- CS ADDRESS BIT 2		
	(Q2D09)	HQ200-R033
	P2J02	HP200-L013
	U2P02	HU200-L003
R033		
- CS ADDRESS BIT 3		
	(Q2B08)	HQ200-R033
	P2D13	HP200-L014
	U2M03	HU200-L004
R033		
- CS ADDRESS BIT 4		
	(Q2B09)	HQ200-R033
	S2D04	HS200-L003
	T2D04	HT200-L003
	U2M04	HU200-L005
R033		
- CS ADDRESS BIT 5		
	(Q2B10)	HQ200-R033
	S2B07	HS200-L004
	T2B07	HT200-L004
	U2P05	HU200-L006
R033		
- CS ADDRESS BIT 6		
	(Q2D10)	HQ200-R033
	S2B10	HS200-L005
	T2B10	HT200-L005
	U2P07	HU200-L007
R033		
- CS ADDRESS BIT 7		
	(Q2P09)	HQ200-R033
	S2G03	HS200-L006
	T2G03	HT200-L006
	U2J06	HU200-L008
R033		
- CS ADDRESS BIT 8		
	(Q2M08)	HQ200-R033
	S2G07	HS200-L007
	T2G07	HT200-L007
	U2D13	HU200-L009
R033		
- CS ADDRESS BIT 9		
	(Q2M03)	HQ200-R033
	S2G12	HS200-L008
	T2G12	HT200-L008
	U2G09	HU200-L010
R033		
- CS ADDRESS BIT 10		
	(Q2P02)	HQ200-R033
	S2M13	HS200-L009
	T2M13	HT200-L009
	U2G08	HU200-L011
R033		
- CS ADDRESS BIT 11		
	(Q2M02)	HQ200-R033
	S2S07	HS200-L010
	T2S07	HT200-L010
	U2G13	HU200-L012
R033		
- CS ADDRESS BIT 12		
	(Q2S09)	HQ200-R033
	S2M03	HS200-L011
	T2M03	HT200-L011
	U2G12	HU200-L013
R033		
- CS ADDRESS BIT 13		
	(Q2G08)	HQ200-R033
	S2M08	HS200-L012
	T2M08	HT200-L012
	U2U05	HU200-L014
R033		
- CS ADDRESS BIT 14		
	(Q2B13)	HQ200-R033
	S2D05	HS200-L013
	T2D05	HT200-L013
	U2S04	HU200-L015
R033		
- CS ADDRESS BIT 15		
	(Q2D13)	HQ200-R033
	S2B04	HS200-L014
	T2B04	HT200-L014
	U2S03	HU200-L016

LINE/SIGNAL	PIN	SHEET/LINE
R034		
+ CS ADDRESS (SD1) BIT 0		
	(Q2W04)	HQ200-R034
	(Q2Y25)	HQ200-R035
	R2Y25	HR200-L028
1A-B1	S2Y04	ES200-L014
R034		
+ CS ADDRESS (SD1) BIT 1		
	(Q2W31)	HQ200-R034
	(Q2Y06)	HQ200-R035
	R2Y06	HR200-L028
1A-B1	S2Y31	ES200-L014
R034		
+ CS ADDRESS (SD1) BIT 2		
	(Q2W30)	HQ200-R034
	(Q2Y05)	HQ200-R035
	R2Y05	HR200-L028
1A-B1	S2Y30	ES200-L014
R034		
+ CS ADDRESS (SD1) BIT 3		
	(Q2W05)	HQ200-R034
	(Q2Y24)	HQ200-R035
	R2Y24	HR200-L028
1A-B1	S2Y05	ES200-L014
R034		
+ CS ADDRESS (SD1) BIT 4		
	(Q2W13)	HQ200-R034
1A-B1	S2Y13	ES200-L014
R034		
+ CS ADDRESS (SD1) BIT 5		
	(Q2W22)	HQ200-R034
1A-B1	S2Y22	ES200-L014
R034		
+ CS ADDRESS (SD1) BIT 6		
	(Q2W32)	HQ200-R034
1A-B1	S2Y32	ES200-L014
R034		
+ CS ADDRESS (SD1) BIT 7		
	(Q2W10)	HQ200-R034
1A-B1	S2Y10	ES200-L014
R034		
+ CS ADDRESS (SD1) BIT 8		
	(Q2W25)	HQ200-R034
1A-B1	S2Y25	ES200-L014
R034		
+ CS ADDRESS (SD1) BIT 9		
	(Q2W06)	HQ200-R034
1A-B1	S2Y06	ES200-L014
R034		
+ CS ADDRESS (SD1) BIT 10		
	(Q2W02)	HQ200-R034
1A-B1	S2Y02	ES200-L014
R034		
+ CS ADDRESS (SD1) BIT 11		
	(Q2W29)	HQ200-R034
1A-B1	S2Y29	ES200-L014
R034		
+ CS ADDRESS (SD1) BIT 12		
	(Q2W33)	HQ200-R034
1A-B1	S2Y33	ES200-L014
R034		
+ CS ADDRESS (SD1) BIT 13		
	(Q2W11)	HQ200-R034
1A-B1	S2Y11	ES200-L014
R034		
+ CS ADDRESS (SD1) BIT 14		
	(Q2W28)	HQ200-R034
1A-B1	S2Y28	ES200-L014
R034		
+ CS ADDRESS (SD1) BIT 15		
	(Q2W24)	HQ200-R034
1A-B1	S2Y24	ES200-L014
R035		
+ CS ADDRESS (SD1) BIT 0		
	(Q2Y25)	HQ200-R035
	(Q2W04)	HQ200-R034
	R2Y25	HR200-L028
1A-B1	S2Y04	ES200-L014
R035		
+ CS ADDRESS (SD1) BIT 1		
	(Q2Y06)	HQ200-R035
	(Q2W31)	HQ200-R034
	R2Y06	HR200-L028
1A-B1	S2Y31	ES200-L014
R035		
+ CS ADDRESS (SD1) BIT 2		
	(Q2Y05)	HQ200-R035
	(Q2W30)	HQ200-R034
	R2Y05	HR200-L028
1A-B1	S2Y30	ES200-L014
R035		
+ CS ADDRESS (SD1) BIT 3		
	(Q2Y24)	HQ200-R035
	(Q2W05)	HQ200-R034
	R2Y24	HR200-L028
1A-B1	S2Y05	ES200-L014
R036		
- CS ADDRESS BIT PARITY		
	(Q2S13)	HQ200-R036
	P2B07	HP200-L015
	S2U12	HS200-L017
	T2U12	HT200-L017
R037		
- CS WRITE		
	(Q2S08)	HQ200-R037
	P2G02	HP200-L006
	R2D13	HR200-L022
	S2B02	HS200-L016
	T2B02	HT200-L016
	U2D05	HU200-L019
	U2J13	HU200-L020

003 - RUN METER ----------S03
004 + DATA RECEIVED (IN) SD1 --------X23
005 + CONFIRM (IN) SD1 ----------X02
006 - EXTENDED OP ----------Z11
007 + COMMAND VALID (IN) SD1 --------X29
008 - DCS CYCLE ----------G02
009 - EXT REG ADDRESS BIT (0-4) =====*
010 - EXT REG ADR PARITY ----------M09
011 + LD EXT REG CLK D ----------M08
012 - CHAN CHECK/TIMER INTERRUPT 1 --S12
013 - INT REQ LEVEL 2 ----------U12
014 + DISKETTE DRIVE DATA SD1 -------W13
015 + DISKETTE DRIVE INDEX SD1 ------W33
016 + DISKETTE DRIVE SELECTED SD1 ---X22
017 + DISKETTE DRIVE BUSY SD1 -------X03
018 + DEVICE REG GROUP SELECT -------P12
019 + EXT REG GROUP 0 SELECTED ------P13
020 + EXT REG ACTIVE ----------J13
021 + EXT REG SELECT ----------Z22
022 - CS WRITE ----------D13
023 + ROS SELECT ----------S04
024 - ALU OUT BIT (0-7,P) ==========*
025 - SDM ERROR OUT ----------Y02
026 - CS SELECT ----------Y22
027 - CHECK TWO ----------S09
028 + CS ADDRESS (SD1) BIT (0-3) ====*
029 - XREG SELECTED (1B/0F DECODE) - M10
030 - INHIBIT P CORRECTION SD1 ------X07
031 + EXT BUS IN (SD1) BIT (0-7,P) ==*
032 + IML TO CYCLE SHARE ----------B09
033 + STOP DDC ----------U11
034 + SDM STOPPED ----------J04
035 + SD1 SELECTED ----------X25
036 - ERROR ALERT (IN) SD1 ----------X24
037 + CAM SD1 SELECT/SYS RESET GATED B08
038 + SYSTEM RESET (-SC) ----------U04
039 - IML IN PROGRESS ----------B04
040 + SELECTIVE RESET LATCHED -------D07
041 + ERROR ALERT RESPONSE SD1 ------X04
042 - INTERRUPT RESPONSE OUT --------Y03
043 + ALU BUS OUT PARITY CHECK ------G04
044 + SDM CARD CHECK ----------Y32
045 - STOP LATCHED ----------B03
046 - ROS SELECT ----------Y07
047 + UNCORRECTABLE DATA CHECK ------J11
048 + MNT CLOCK (T0-T7) ==========*
049 + MNT CLOCK T4D2 ----------D05
050 + CLK CARD CHECK ----------P06
051 + DCSR CARD CHECK ----------J12
052 + INVALID SEQUENCE ----------D06
053 - MNT TIE DOWN 1 ----------G10
054 - MNT TIE DOWN 2 ----------M07
055 + CS ADDRESS CHECK ----------Y26
056 - DCS DATA IN P CHK LATCHED -----S05
057 + POWER ON RESET SD1 ----------D02

MNT CARD

OVERVIEW

The MNT (maintenance) card connects the storage director (SD) to the maintenance board and provides a communication path to, and controls for, the diskette drive, alternate storage director, and the (MD) maintenance device adapter. The MNT card also collects, sets priorities, and initiates storage director interrupts. It also performs system, selected, and power on resets to the storage director.

PRIMARY FUNCTIONS

- The external register decoder develops addresses for selecting registers on the MNT card.
- The SD to SD communication path is used to report check, status and FRU information to the system through the alternate storage director.
- The FRU registers 2, 3, and 4 hold storage director check-1 failure data. Check Register 1 and 2 hold storage director failure data.
- The ILR (interrupt level register) is used by the microcontroller and hardware for several functions, some of which are initiating external interrupts, change or mask interrupt levels, and define a previous level. ILR is used by the MD to alternate/display a storage director register.
- IML register is used by the diskette drive to transmit IML data and index to the microcontroller, and by the microcontroller to control the IML operation, and by diskette load control switches to select the proper diskette track from which to load.
- The EBI (External Bus In) and EBO (external bus out) are used by the storage director and the MD to gather failure data and for failure analysis.
- The MSR (maintenance sense registers) is also used by the storage director and MD to gather failure data and for failure analysis.
- The MCR (maintenance control register) is used by the storage director to verify IML operations and gather failure data, and by the MD to establish communications.

PRIMARY COMPONENTS

- External register decode
- FRU registers 2, 3 and 4
- ILR register
- Check registers 1 and 2
- IML register
- EBI and EBO registers
- MSR and MCR registers
- Command decode circuits

ERROR CHECKING

- The multiple decode check ensures that the external register decode selects only one register at a time
- The command execution logic monitors the external Bus In line for proper parity when the Command Valid line is active.

Z03 - RUN METER ---------- 003
W24 - CONFIRM (OUT) SD1 ---------- 004
W23 - COMMAND VALID (OUT) SD1 ------ 005
W06 + ERROR ALERT RESPONSE (OUT) SD1 006
G05 + GATE MCS REG ---------- 007
W27 - VALIDATE DATA SD1 ---------- 008
W03 - INVALID COMMAND SD1 ---------- 009
W04 - IML MICROCODE DETECTED ERR SD1 010
W25 + DISKETTE DRIVE HEAD ENGAGE SD1 011
W07 + DISKETTE DRIVE REQUEST SD1 --- 012
Z29 - INTERRUPT REQUEST ---------- 013
* - INTERRUPT ADR BIT (0-2,P) ==== 014
S02 + EXT REG SELECT ---------- 015
* - ALU IN2 BIT (0-7,P) ========== 016
* - ALU IN2 BIT (0-7,P) ========== 017
X05 + CHECK TWO TO INDICATOR SD1 --- 018
X06 + EXT BUS IN PC SD1 ---------- 019
D11 + IML TO CYCLE SHARE ---------- 020
Y09 - RESET ---------- 021
B07 + RESET ---------- 022
D04 + RESET 2 UNUSED ---------- 023
G03 + STOP ---------- 024
D10 + START ---------- 025
J07 + MAINTENANCE START ---------- 026
B12 + SPECIAL RESET ---------- 027
J05 - CHECK RESET ---------- 028
D09 - RESET TO CS ---------- 029
Z02 + INHIBIT ALU IN PC ---------- 030
J09 + START DXR CLOCK ---------- 031
J10 - SDM SEQUENTIAL RESET ---------- 032
Y10 - CLOCK STOPPED - SDM ---------- 033
Y11 - CLK STOPPED - STORAGE DIRECTOR 034
Y33 - SDM START DELAYED ---------- 035
P07 + GATED CHECK 1 ---------- 036
W28 - ERROR ALERT (OUT) SD1 -------- 037
U02 + CHECK ONE IND ---------- 038
Y30 - SCAN IN ---------- 039
Y29 - MAINT CLOCK T1 ---------- 040
* - EXT BUS OUT (SD1) BIT (0-7,P) 041
B10 + POWER ON RESET POWERED ------- 042

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- RUN METER		
	R2S03	HR200-L003
	(D2S13)	HD200-R042
	(E2S13)	HE200-R042
	(P2Z03)	HR200-R003
	Q2Z03	HQ200-L004
L004		
+ DATA RECEIVED (IN) SD1		
	R2X23	HR200-L004
1A-B1	(S2X23)	ES200-R022
L005		
+ CONFIRM (IN) SD1		
	R2X02	HR200-L005
1A-B1	(S2X02)	ES200-R026
L006		
- EXTENDED OP		
	R2Z11	HR200-L006
	(Q2Z11)	HQ200-R007
L007		
+ COMMAND VALID (IN) SD1		
	R2X29	HR200-L007
1A-B1	(S2X29)	ES200-R015
L008		
- DCS CYCLE		
	R2G02	HR200-L008
	(P2D04)	HP200-R008
L009		
- EXT REG ADDRESS BIT 0		
	R2M13	HR200-L009
	(Q2P12)	HQ200-R016
	F2P09	HF200-L028
	K2B12	HK200-L003
	N2P12	HN200-L003
	V2J07	HV200-L024
L009		
- EXT REG ADDRESS BIT 1		
	R2P11	HR200-L009
	(Q2M05)	HQ200-R016
	F2P10	HF200-L029
	K2D13	HK200-L003
	N2M05	HN200-L004
	V2J09	HV200-L025
L009		
- EXT REG ADDRESS BIT 2		
	R2M12	HR200-L009
	(Q2P05)	HQ200-R016
	F2P11	HF200-L030
	K2B13	HK200-L003
	N2P05	HN200-L005
	V2J10	HV200-L026

LINE/SIGNAL	PIN	SHEET/LINE
L009		
- EXT REG ADDRESS BIT 3		
	R2P10	HR200-L009
	(Q2M04)	HQ200-R016
	F2P12	HF200-L031
	K2B10	HK200-L003
	N2M04	HN200-L006
	V2J11	HV200-L027
L009		
- EXT REG ADDRESS BIT 4		
	R2P09	HR200-L009
	(Q2P04)	HQ200-R016
	F2P13	HF200-L032
	K2D12	HK200-L003
	N2P04	HN200-L007
	V2J12	HV200-L028
L010		
- EXT REG ADR PARITY		
	R2M09	HR200-L010
	(Q2P06)	HQ200-R017
	K2D10	HK200-L027
	N2P06	HN200-L008
L011		
+ LD EXT REG CLK D		
	R2M08	HR200-L011
	(Q2U06)	HQ200-R015
	N2B02	HN200-L010
	V2M10	HV200-L019
	X2M10	HX200-L025
L012		
- CHAN CHECK/TIMER INTERRUPT 1		
	R2S12	HR200-L012
	(F2U02)	HF200-R039
	(P2S13)	HP200-R058
L013		
- INT REQ LEVEL 2		
	R2U12	HR200-L013
	(J2P07)	HJ200-R020
	(M2G02)	HM200-R016
L014		
+ DISKETTE DRIVE DATA SD1		
	R2W13	HR200-L014
1A-B1	(S2W13)	ES200-R020
L015		
+ DISKETTE DRIVE INDEX SD1		
	R2W33	HR200-L015
1A-B1	(S2W33)	ES200-R021
L016		
+ DISKETTE DRIVE SELECTED SD1		
	R2X22	HR200-L016
1A-B1	(S2X22)	ES200-R030
L017		
+ DISKETTE DRIVE BUSY SD1		
	R2X03	HR200-L017
1A-B1	(S2X03)	ES200-R031

LINE/SIGNAL	PIN	SHEET/LINE
L018		
+ DEVICE REG GROUP SELECT		
	R2P12	HR200-L018
	(V2M09)	HV200-R024
L019		
+ EXT REG GROUP 0 SELECTED		
	R2P13	HR200-L019
	(K2D11)	HK200-R019
L020		
+ EXT REG ACTIVE		
	R2J13	HR200-L020
	(F2M05)	HF200-R031
L021		
+ EXT REG SELECT		
	R2Z22	HR200-L021
	(Q2Z22)	HQ200-R018
	(R2S02)	HR200-R015
	H2M04	HH220-L031
	K2U13	HK200-L009
	N2B04	HN200-L011
L022		
- CS WRITE		
	R2D13	HR200-L022
	(Q2S08)	HQ200-R037
	P2G02	HP200-L006
	S2B02	HS200-L016
	T2B02	HT200-L016
	U2D05	HU200-L019
	U2J13	HU200-L020
L023		
+ ROS SELECT		
	R2S04	HR200-L023
	(V2S03)	HV200-R031
	Q2U13	HQ200-L016
L024		
- ALU OUT BIT 0		
	R2M02	HR200-L024
	(Q2B04)	HQ200-R008
	C2B02	HC200-L022
	F2D02	HF200-L019
	H2P12	HH220-L017
	J2U07	HJ200-L041
	N2B07	HN200-L012
	V2D13	HV200-L007
	X2D13	HX200-L026
L024		
- ALU OUT BIT 1		
	R2G12	HR200-L024
	(Q2D05)	HQ200-R008
	C2D02	HC200-L023
	F2D04	HF200-L020
	H2P13	HH220-L018
	J2U09	HJ200-L041
	N2D05	HN200-L013
	V2B05	HV200-L008
	X2B05	HX200-L026

LINE/SIGNAL	PIN	SHEET/LINE
L024		
- ALU OUT BIT 2		
	R2G13	HR200-L024
	(Q2D06)	HQ200-R008
	F2D05	HF200-L021
	H2U02	HH220-L019
	J2P12	HJ200-L041
	N2D09	HN200-L014
	V2D10	HV200-L009
	X2D10	HX200-L026
L024		
- ALU OUT BIT 3		
	R2M04	HR200-L024
	(Q2B05)	HQ200-R008
	F2D06	HF200-L022
	H2U05	HH220-L020
	J2U02	HJ200-L041
	N2D10	HN200-L015
	V2J02	HV200-L010
	X2J02	HX200-L026
L024		
- ALU OUT BIT 4		
	R2M03	HR200-L024
	(Q2D04)	HQ200-R008
	F2D07	HF200-L023
	H2U06	HH220-L021
	J2B12	HJ200-L041
	N2D06	HN200-L016
	V2B08	HV200-L011
	X2B08	HX200-L026
L024		
- ALU OUT BIT 5		
	R2P04	HR200-L024
	(Q2B03)	HQ200-R008
	F2B07	HF200-L024
	H2U07	HH220-L022
	J2D06	HJ200-L041
	N2B09	HN200-L017
	V2B03	HV200-L012
	X2B03	HX200-L026
L024		
- ALU OUT BIT 6		
	R2P02	HR200-L024
	(Q2D02)	HQ200-R008
	F2B08	HF200-L025
	H2U09	HH220-L023
	N2G02	HN200-L018
	V2D05	HV200-L013
	X2D05	HX200-L026
L024		
- ALU OUT BIT 7		
	R2P05	HR200-L024
	(Q2B02)	HQ200-R008
	F2B09	HF200-L026
	J2B05	HJ200-L041
	N2B13	HN200-L019
	V2D06	HV200-L014

LINE/SIGNAL	PIN	SHEET/LINE
L024		
- ALU OUT BIT P		
	R2M05	HR200-L024
	(Q2U04)	HQ200-R008
	F2B10	HF200-L027
	N2D13	HN200-L020
	V2B02	HV200-L015
L025		
- SDM ERROR OUT		
	R2Y02	HR200-L025
	(Q2Y02)	HQ200-R010
L026		
- CS SELECT		
	R2Y22	HR200-L026
	(Q2Y22)	HQ200-R025
L027		
- CHECK TWO		
	R2S09	HR200-L027
	(F2S09)	HF200-R040
	(J2U10)	HJ200-R017
	(N2D04)	HN200-R010
	(X2J09)	HX200-R021
L028		
+ CS ADDRESS (SD1) BIT 0		
	R2Y25	HR200-L028
	(Q2W04)	HQ200-R034
	(Q2Y25)	HQ200-R035
1A-B1	S2Y04	ES200-L014
L028		
+ CS ADDRESS (SD1) BIT 1		
	R2Y06	HR200-L028
	(Q2W31)	HQ200-R034
	(Q2Y06)	HQ200-R035
1A-B1	S2Y31	ES200-L014
L028		
+ CS ADDRESS (SD1) BIT 2		
	R2Y05	HR200-L028
	(Q2W30)	HQ200-R034
	(Q2Y05)	HQ200-R035
1A-B1	S2Y30	ES200-L014
L028		
+ CS ADDRESS (SD1) BIT 3		
	R2Y24	HR200-L028
	(Q2W05)	HQ200-R034
	(Q2Y24)	HQ200-R035
1A-B1	S2Y05	ES200-L014
L029		
- XREG SELECTED (1B/0F DECODE)		
	R2M10	HR200-L029
	(N2D12)	HN200-R003
L030		
- INHIBIT P CORRECTION SD1		
	R2X07	HR200-L030
1A-B1	(S2X07)	ES200-R014

LINE/SIGNAL	PIN	SHEET/LINE
L031		
+ EXT BUS IN (SD1) BIT 0		
	R2X09	HR200-L031
1A-B1	(S2X09)	ES200-R016
L031		
+ EXT BUS IN (SD1) BIT 1		
	R2X28	HR200-L031
1A-B1	(S2X28)	ES200-R016
L031		
+ EXT BUS IN (SD1) BIT 2		
	R2X33	HR200-L031
1A-B1	(S2X33)	ES200-R016
L031		
+ EXT BUS IN (SD1) BIT 3		
	R2X10	HR200-L031
1A-B1	(S2X10)	ES200-R016
L031		
+ EXT BUS IN (SD1) BIT 4		
	R2X11	HR200-L031
1A-B1	(S2X11)	ES200-R016
L031		
+ EXT BUS IN (SD1) BIT 5		
	R2X32	HR200-L031
1A-B1	(S2X32)	ES200-R016
L031		
+ EXT BUS IN (SD1) BIT 6		
	R2X13	HR200-L031
1A-B1	(S2X13)	ES200-R016
L031		
+ EXT BUS IN (SD1) BIT 7		
	R2X30	HR200-L031
1A-B1	(S2X30)	ES200-R016
L031		
+ EXT BUS IN (SD1) BIT P		
	R2X27	HR200-L031
1A-B1	(S2X27)	ES200-R016
L032		
+ IML TO CYCLE SHARE		
	R2B09	HR200-L032
	(R2D11)	HR200-R020
L033		
+ STOP DDC		
	R2U11	HR200-L033
	(P2J13)	HP200-R039
	X2U02	HX200-L049
L034		
+ SDM STOPPED		
	R2J04	HR200-L034
	(P2B08)	HP200-R041
L035		
+ SD1 SELECTED		
	R2X25	HR200-L035
1A-B1	(S2X25)	ES200-R032

LINE/SIGNAL	PIN	SHEET/LINE
L036		
- ERROR ALERT (IN) SD1		
	R2X24	HR200-L036
1A-B1	(S2X24)	ES200-R025
L037		
+ CAM SD1 SELECT/SYS RESET GATED		
	R2B08	HR200-L037
	(M2M13)	HM200-R015
L038		
+ SYSTEM RESET (-SC)		
	R2U04	HR200-L038
	(F2U04)	HF200-R037
L039		
- IML IN PROGRESS		
	R2B04	HR200-L039
	(C2B04)	HC200-R008
L040		
+ SELECTIVE RESET LATCHED		
	R2D07	HR200-L040
	(F2S02)	HF200-R016
	C2J11	HC200-L013
L041		
+ ERROR ALERT RESPONSE SD1		
	R2X04	HR200-L041
1A-B1	(S2X04)	ES200-R024
L042		
- INTERRUPT RESPONSE OUT		
	R2Y03	HR200-L042
	(Q2Y03)	HQ200-R009
L043		
+ ALU BUS OUT PARITY CHECK		
	R2G04	HR200-L043
	(F2B03)	HF200-R044
L044		
+ SDM CARD CHECK		
	R2Y32	HR200-L044
	(Q2Y32)	HQ200-R020
L045		
- STOP LATCHED		
	R2B03	HR200-L045
	(P2G13)	HP200-R040
L046		
- ROS SELECT		
	R2Y07	HR200-L046
	(Q2Y07)	HQ200-R032
L047		
+ UNCORRECTABLE DATA CHECK		
	R2J11	HR200-L047
	(P2D07)	HP200-R011
L048		
+ MNT CLOCK T0		
	R2B13	HR200-L048
	(P2M08)	HP200-R022
L048		
+ MNT CLOCK T1		
	R2B05	HR200-L048
	(P2D06)	HP200-R048
L048		
+ MNT CLOCK T2		
	R2J06	HR200-L048
	(P2P12)	HP200-R023
	X2U11	HX200-L029
L048		
+ MNT CLOCK T3		
	R2D12	HR200-L048
	(P2G03)	HP200-R049
L048		
+ MNT CLOCK T4		
	R2G08	HR200-L048
	(P2S04)	HP200-R024
	X2U12	HX200-L030
L048		
+ MNT CLOCK T5		
	R2G09	HR200-L048
	(P2J06)	HP200-R050
L048		
+ MNT CLOCK T6		
	R2G07	HR200-L048
	(P2P10)	HP200-R025
L048		
+ MNT CLOCK T7		
	R2J02	HR200-L048
	(P2D12)	HP200-R051
L049		
+ MNT CLOCK T4D2		
	R2D05	HR200-L049
	(P2D10)	HP200-R054
L050		
+ CLK CARD CHECK		
	R2P06	HR200-L050
	(P2G09)	HP200-R032
L051		
+ DCSR CARD CHECK		
	R2J12	HR200-L051
	(P2G12)	HP200-R010
L052		
+ INVALID SEQUENCE		
	R2D06	HR200-L052
	(P2M03)	HP200-R043
L053		
- MNT TIE DOWN 1		
	R2G10	HR200-L053
L054		
- MNT TIE DOWN 2		
	R2M07	HR200-L054
L055		
+ CS ADDRESS CHECK		
	R2Y26	HR200-L055
	(Q2Y26)	HQ200-R026
L056		
- DCS DATA IN P CHK LATCHED		
	R2S05	HR200-L056
	(P2D09)	HP200-R003
L057		
+ POWER ON RESET SD1		
	R2D02	HR200-L057
1A-B1	(J2B05)	EJ200-R004
1A-B1	T2D05	ET200-L006
1A-B4	*K6E02*	
1A-B1	*F6B02*	
R003		
- RUN METER		
	(R2Z03)	HR200-R003
	(D2S13)	HD200-R042
	(E2S13)	HE200-R042
	Q2Z03	HQ200-L004
	R2S03	HR200-L003
R004		
- CONFIRM (OUT) SD1		
	(R2W24)	HR200-R004
1A-B1	S2W24	ES200-L005
R005		
- COMMAND VALID (OUT) SD1		
	(R2W23)	HR200-R005
1A-B1	S2W23	ES200-L031
R006		
+ ERROR ALERT RESPONSE (OUT) SD1		
	(R2W06)	HR200-R006
1A-B1	(S2D06)	ES200-R036
1A-B1	S2W06	ES200-L032
1A-B1	T2J04	ET200-L020
R007		
+ GATE MCS REG		
	(R2G05)	HR200-R007
	V2J05	HV200-L031
R008		
- VALIDATE DATA SD1		
	(R2W27)	HR200-R008
1A-B1	S2W27	ES200-L008
R009		
- INVALID COMMAND SD1		
	(R2W03)	HR200-R009
1A-B1	S2W03	ES200-L033
R010		
- IML MICROCODE DETECTED ERR SD1		
	(R2W04)	HR200-R010
1A-B1	S2W04	ES200-L034
R011		
+ DISKETTE DRIVE HEAD ENGAGE SD1		
	(R2W25)	HR200-R011
1A-B1	S2W25	ES200-L009
R012		
+ DISKETTE DRIVE REQUEST SD1		
	(R2W07)	HR200-R012
1A-B1	S2W07	ES200-L035
R013		
- INTERRUPT REQUEST		
	(R2Z29)	HR200-R013
	Q2Z29	HQ200-L006
R014		
- INTERRUPT ADR BIT 0		
	(R2Y28)	HR200-R014
	Q2Y28	HQ200-L009
R014		
- INTERRUPT ADR BIT 1		
	(R2Z24)	HR200-R014
	Q2Z24	HQ200-L009
R014		
- INTERRUPT ADR BIT 2		
	(R2Z26)	HR200-R014
	Q2Z26	HQ200-L009
R014		
- INTERRUPT ADR BIT P		
	(R2Z25)	HR200-R014
	Q2Z25	HQ200-L009
R015		
+ EXT REG SELECT		
	(R2S02)	HR200-R015
	(Q2Z22)	HQ200-R018
	H2M04	HH220-L031
	K2U13	HK200-L009
	N2B04	HN200-L011
	R2Z22	HR200-L021
R016		
- ALU IN2 BIT 0		
	(R2S10)	HR200-R016
	(N2S10)	HN200-R012
	(R2Z10)	HR200-R017
	(V2M04)	HV200-R003
	(X2M04)	HX200-R012
	Q2Z10	HQ200-L008
R016		
- ALU IN2 BIT 1		
	(R2U07)	HR200-R016
	(N2S09)	HN200-R013
	(R2Z07)	HR200-R017
	(V2J13)	HV200-R004
	(X2J13)	HX200-R013
	Q2Z07	HQ200-L008
R016		
- ALU IN2 BIT 2		
	(R2U09)	HR200-R016
	(N2U10)	HN200-R014
	(R2Z09)	HR200-R017
	(V2G12)	HV200-R005
	(X2G12)	HX200-R014
	Q2Z09	HQ200-L008
R016		
- ALU IN2 BIT 3		
	(R2U10)	HR200-R016
	(N2U12)	HN200-R015
	(R2Z30)	HR200-R017
	(V2P05)	HV200-R006
	(X2P05)	HX200-R015
	Q2Z30	HQ200-L008
R016		
- ALU IN2 BIT 4		
	(R2S13)	HR200-R016
	(N2U13)	HN200-R016
	(R2Z33)	HR200-R017
	(V2M05)	HV200-R007
	(X2M05)	HX200-R016
	Q2Z33	HQ200-L008
R016		
- ALU IN2 BIT 5		
	(R2U13)	HR200-R016
	(N2S13)	HN200-R017
	(R2Z13)	HR200-R017
	(V2M03)	HV200-R008
	(X2M03)	HX200-R017
	Q2Z13	HQ200-L008
R016		
- ALU IN2 BIT 6		
	(R2S07)	HR200-R016
	(N2S08)	HN200-R018
	(R2Z28)	HR200-R017
	(V2G10)	HV200-R009
	(X2G10)	HX200-R018
	Q2Z28	HQ200-L008
R016		
- ALU IN2 BIT 7		
	(R2U05)	HR200-R016
	(N2U05)	HN200-R019
	(R2Z05)	HR200-R017
	(V2P02)	HV200-R010
	(X2P02)	HX200-R019
	Q2Z05	HQ200-L008
R016		
- ALU IN2 BIT P		
	(R2S08)	HR200-R016
	(N2U02)	HN200-R020
	(R2Z06)	HR200-R017
	(V2P04)	HV200-R011
	(X2P04)	HX200-R020
	Q2Z06	HQ200-L008
R017		
- ALU IN2 BIT 0		
	(R2Z10)	HR200-R017
	(N2S10)	HN200-R012
	(R2S10)	HR200-R016
	(V2M04)	HV200-R003
	(X2M04)	HX200-R012
	Q2Z10	HQ200-L008
R017		
- ALU IN2 BIT 1		
	(R2Z07)	HR200-R017
	(N2S09)	HN200-R013
	(R2U07)	HR200-R016
	(V2J13)	HV200-R004
	(X2J13)	HX200-R013
	Q2Z07	HQ200-L008
R017		
- ALU IN2 BIT 2		
	(R2Z09)	HR200-R017
	(N2U10)	HN200-R014
	(R2U09)	HR200-R016
	(V2G12)	HV200-R005
	(X2G12)	HX200-R014
	Q2Z09	HQ200-L008
R017		
- ALU IN2 BIT 3		
	(R2Z30)	HR200-R017
	(N2U12)	HN200-R015
	(R2U10)	HR200-R016
	(V2P05)	HV200-R006
	(X2P05)	HX200-R015
	Q2Z30	HQ200-L008
R017		
- ALU IN2 BIT 4		
	(R2Z33)	HR200-R017
	(N2U13)	HN200-R016
	(R2S13)	HR200-R016
	(V2M05)	HV200-R007
	(X2M05)	HX200-R016
	Q2Z33	HQ200-L008
R017		
- ALU IN2 BIT 5		
	(R2Z13)	HR200-R017
	(N2S13)	HN200-R017
	(R2U13)	HR200-R016
	(V2M03)	HV200-R008
	(X2M03)	HX200-R017
	Q2Z13	HQ200-L008
R017		
- ALU IN2 BIT 6		
	(R2Z28)	HR200-R017
	(N2S08)	HN200-R018
	(R2S07)	HR200-R016
	(V2G10)	HV200-R009
	(X2G10)	HX200-R018
	Q2Z28	HQ200-L008
R017		
- ALU IN2 BIT 7		
	(R2Z05)	HR200-R017
	(N2U05)	HN200-R019
	(R2U05)	HR200-R016
	(V2P02)	HV200-R010
	(X2P02)	HX200-R019
	Q2Z05	HQ200-L008

LINE/SIGNAL	PIN	SHEET/LINE
R017		
- ALU IN2 BIT P		
	(R2Z06)	HR200-R017
	(N2U02)	HN200-R020
	(R2S08)	HR200-R016
	(V2P04)	HV200-R011
	(X2P04)	HX200-R020
	Q2Z06	HQ200-L008
R018		
+ CHECK TWO TO INDICATOR SD1		
	(R2X05)	HR200-R018
1A-B1	S2X05	ES200-L038
R019		
+ EXT BUS IN PC SD1		
	(R2X06)	HR200-R019
1A-B1	S2X06	ES200-L036
R020		
+ IML TO CYCLE SHARE		
	(R2D11)	HR200-R020
	R2B09	HR200-L032
R021		
- RESET		
	(R2Y09)	HR200-R021
	Q2Y09	HQ200-L015
R022		
+ RESET		
	(R2B07)	HR200-R022
	D2M05	HD200-L031
	E2M05	HE200-L031
	C2G09	HC200-L016
	F2M02	HF200-L054
	G2J13	HG210-L017
	H2S03	HH220-L060
	M2P11	HM200-L011
	P2J09	HP200-L022
	V2G13	HV200-L006
	X2M02	HX200-L027
R023		
+ RESET 2 UNUSED		
	(R2D04)	HR200-R023
R024		
+ STOP		
	(R2G03)	HR200-R024
	P2P04	HP200-L021
R025		
+ START		
	(R2D10)	HR200-R025
	P2P06	HP200-L020
R026		
+ MAINTENANCE START		
	(R2J07)	HR200-R026
	P2P02	HP200-L019

LINE/SIGNAL	PIN	SHEET/LINE
R027		
+ SPECIAL RESET		
	(R2B12)	HR200-R027
	D2G09	HD200-L032
	E2G09	HE200-L032
	C2G10	HC200-L015
	F2M03	HF200-L055
	P2J05	HP200-L017
	X2P10	HX200-L051
R028		
- CHECK RESET		
	(R2J05)	HR200-R028
	(H2Y10)	HH220-R063
	D2J06	HD200-L034
	E2J06	HE200-L034
	C2J10	HC200-L012
	F2M04	HF200-L056
	G2B13	HG210-L015
	H2U12	HH220-L061
	J2Y10	HJ200-L024
	K2Y10	HK200-L023
	L2D02	HL200-L003
	N2M13	HN200-L024
	V2G08	HV200-L033
	X2S13	HX200-L015
R029		
- RESET TO CS		
	(R2D09)	HR200-R029
R030		
+ INHIBIT ALU IN PC		
	(R2Z02)	HR200-R030
	Q2Z02	HQ200-L019
R031		
+ START DXR CLOCK		
	(R2J09)	HR200-R031
	V2J04	HV200-L032
R032		
- SDM SEQUENTIAL RESET		
	(R2J10)	HR200-R032
R033		
- CLOCK STOPPED - SDM		
	(R2Y10)	HR200-R033
	Q2Y10	HQ200-L012
R034		
- CLK STOPPED - STORAGE DIRECTOR		
	(R2Y11)	HR200-R034
	Q2Y11	HQ200-L005
R035		
- SDM START DELAYED		
	(R2Y33)	HR200-R035
	Q2Y33	HQ200-L011
R036		
+ GATED CHECK 1		
	(R2P07)	HR200-R036
	C2J09	HC200-L014
	F2J06	HF200-L041

LINE/SIGNAL	PIN	SHEET/LINE
R037		
- ERROR ALERT (OUT) SD1		
	(R2W28)	HR200-R037
1A-B1	(S2J10)	ES200-R023
1A-B1	S2W28	ES200-L037
1A-B1	T2G08	ET200-L024
R038		
+ CHECK ONE IND		
	(R2U02)	HR200-R038
	M2J04	HM200-L009
	V2S13	HV200-L035
R039		
- SCAN IN		
	(R2Y30)	HR200-R039
	Q2Y30	HQ200-L010
R040		
- MAINT CLOCK T1		
	(R2Y29)	HR200-R040
	Q2Y29	HQ200-L003
R041		
- EXT BUS OUT (SD1) BIT 0		
	(R2W31)	HR200-R041
1A-B1	S2W31	ES200-L007
R041		
- EXT BUS OUT (SD1) BIT 1		
	(R2W29)	HR200-R041
1A-B1	S2W29	ES200-L007
R041		
- EXT BUS OUT (SD1) BIT 2		
	(R2W12)	HR200-R041
1A-B1	S2W12	ES200-L007
R041		
- EXT BUS OUT (SD1) BIT 3		
	(R2W10)	HR200-R041
1A-B1	S2W10	ES200-L007
R041		
- EXT BUS OUT (SD1) BIT 4		
	(R2W32)	HR200-R041
1A-B1	S2W32	ES200-L007
R041		
- EXT BUS OUT (SD1) BIT 5		
	(R2W09)	HR200-R041
1A-B1	S2W09	ES200-L007
R041		
- EXT BUS OUT (SD1) BIT 6		
	(R2W11)	HR200-R041
1A-B1	S2W11	ES200-L007
R041		
- EXT BUS OUT (SD1) BIT 7		
	(R2W30)	HR200-R041
1A-B1	S2W30	ES200-L007

LINE/SIGNAL	PIN	SHEET/LINE
R041		
- EXT BUS OUT (SD1) BIT P		
	(R2W05)	HR200-R041
1A-B1	S2W05	ES200-L007
R042		
+ POWER ON RESET POWERED		
	(R2B10)	HR200-R042
	C4B04	HC400-L004
	C5B04	HC500-L004
	P2U07	HP200-L023
	U2D04	HU200-L022

003 - CS ADDRESS BIT 4 ----------D04
004 - CS ADDRESS BIT 5 ----------B07
005 - CS ADDRESS BIT 6 ----------B10
006 - CS ADDRESS BIT 7 ----------G03
007 - CS ADDRESS BIT 8 ----------G07
008 - CS ADDRESS BIT 9 ----------G12
009 - CS ADDRESS BIT 10 ----------M13
010 - CS ADDRESS BIT 11 ----------S07
011 - CS ADDRESS BIT 12 ----------M03
012 - CS ADDRESS BIT 13 ----------M08
013 - CS ADDRESS BIT 14 ----------D05
014 - CS ADDRESS BIT 15 ----------B04
015 - SCS SELECT 1 ----------D06
016 - CS WRITE ----------B02
017 - CS ADDRESS BIT PARITY -------- U12
018 - SCS SELECT 2 ----------U10

SCS1 CARD

OVERVIEW

The SCS1 (Static Control Storage #1) card contains 8K x 18 bits of control storage. This card provides storage for the microcode routines and the control tables and parameters for 3880 operations.

PRIMARY FUNCTIONS

- Data bit powering circuits amplify and shape incoming data bits.
- Address powering circuits amplify and decode control storage address lines.
- Array consists of either a high density 8K x 18 card.
- Sense latch circuits shape and amplify data read from the storage arrays.

PRIMARY COMPONENTS

- Storage array
- Address and data powering
- Selection control powering
- Sense circuits
- Address parity checker

D09 - CS DATA BIT 0 ---------- 003
J02 - CS DATA BIT 1 ---------- 004
J05 - CS DATA BIT 2 ---------- 005
J10 - CS DATA BIT 3 ---------- 006
P02 - CS DATA BIT 4 ---------- 007
P07 - CS DATA BIT 5 ---------- 008
P12 - CS DATA BIT 6 ---------- 009
U04 - CS DATA BIT 7 ---------- 010
B09 - CS DATA BIT 8 ---------- 011
B13 - CS DATA BIT 9 ---------- 012
J07 - CS DATA BIT 10 ---------- 013
J12 - CS DATA BIT 11 ---------- 014
M02 - CS DATA BIT 12 ---------- 015
M07 - CS DATA BIT 13 ---------- 016
M12 - CS DATA BIT 14 ---------- 017
S05 - CS DATA BIT 15 ---------- 018
U07 - CS DATA BIT PH ---------- 019
U09 - CS DATA BIT PL ---------- 020
S12 - CS ADDRESS CHECK ---------- 021

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- CS ADDRESS BIT 4		
	S2D04	HS200-L003
	(Q2B09)	HQ200-R033
	T2D04	HT200-L003
	U2M04	HU200-L005
L004		
- CS ADDRESS BIT 5		
	S2B07	HS200-L004
	(Q2B10)	HQ200-R033
	T2B07	HT200-L004
	U2P05	HU200-L006
L005		
- CS ADDRESS BIT 6		
	S2B10	HS200-L005
	(Q2D10)	HQ200-R033
	T2B10	HT200-L005
	U2P07	HU200-L007
L006		
- CS ADDRESS BIT 7		
	S2G03	HS200-L006
	(Q2P09)	HQ200-R033
	T2G03	HT200-L006
	U2J06	HU200-L008
L007		
- CS ADDRESS BIT 8		
	S2G07	HS200-L007
	(Q2M08)	HQ200-R033
	T2G07	HT200-L007
	U2D13	HU200-L009
L008		
- CS ADDRESS BIT 9		
	S2G12	HS200-L008
	(Q2M03)	HQ200-R033
	T2G12	HT200-L008
	U2G09	HU200-L010
L009		
- CS ADDRESS BIT 10		
	S2M13	HS200-L009
	(Q2P02)	HQ200-R033
	T2M13	HT200-L009
	U2G08	HU200-L011
L010		
- CS ADDRESS BIT 11		
	S2S07	HS200-L010
	(Q2M02)	HQ200-R033
	T2S07	HT200-L010
	U2G13	HU200-L012
L011		
- CS ADDRESS BIT 12		
	S2M03	HS200-L011
	(Q2G09)	HQ200-R033
	T2M03	HT200-L011
	U2G12	HU200-L013
L012		
- CS ADDRESS BIT 13		
	S2M08	HS200-L012
	(Q2G08)	HQ200-R033
	T2M08	HT200-L012
	U2U05	HU200-L014
L013		
- CS ADDRESS BIT 14		
	S2D05	HS200-L013
	(Q2B13)	HQ200-R033
	T2D05	HT200-L013
	U2S04	HU200-L015
L014		
- CS ADDRESS BIT 15		
	S2B04	HS200-L014
	(Q2D13)	HQ200-R033
	T2B04	HT200-L014
	U2S03	HU200-L016
L015		
- SCS SELECT 1		
	S2D06	HS200-L015
	(Q2S07)	HQ200-R027
L016		
- CS WRITE		
	S2B02	HS200-L016
	(Q2S08)	HQ200-R037
	P2G02	HP200-L006
	R2D13	HR200-L022
	T2B02	HT200-L016
	U2D05	HU200-L019
	U2J13	HU200-L020
L017		
- CS ADDRESS BIT PARITY		
	S2U12	HS200-L017
	(Q2S13)	HQ200-R036
	P2B07	HP200-L015
	T2U12	HT200-L017
L018		
- SCS SELECT 2		
	S2U10	HS200-L018
	(Q2S04)	HQ200-R028
R003		
- CS DATA BIT 0		
	(S2D09)	HS200-R003
	(Q2J11)	HQ200-R011
	(T2D09)	HT200-R003
	(U2U13)	HU200-R008
R004		
- CS DATA BIT 1		
	(S2J02)	HS200-R004
	(Q2G10)	HQ200-R011
	(T2J02)	HT200-R004
	(U2S12)	HU200-R009
R005		
- CS DATA BIT 2		
	(S2J05)	HS200-R005
	(Q2J09)	HQ200-R011
	(T2J05)	HT200-R005
	(U2S10)	HU200-R010
R006		
- CS DATA BIT 3		
	(S2J10)	HS200-R006
	(Q2J10)	HQ200-R011
	(T2J10)	HT200-R006
	(U2M09)	HU200-R011
R007		
- CS DATA BIT 4		
	(S2P02)	HS200-R007
	(Q2G12)	HQ200-R011
	(T2P02)	HT200-R007
	(U2M08)	HU200-R012
R008		
- CS DATA BIT 5		
	(S2P07)	HS200-R008
	(Q2J12)	HQ200-R011
	(T2P07)	HT200-R008
	(U2F06)	HU200-R013
R009		
- CS DATA BIT 6		
	(S2P12)	HS200-R009
	(Q2G13)	HQ200-R011
	(T2P12)	HT200-R009
	(U2M05)	HU200-R014
R010		
- CS DATA BIT 7		
	(S2U04)	HS200-R010
	(Q2J13)	HQ200-R011
	(T2U04)	HT200-R010
	(U2P04)	HU200-R015
R011		
- CS DATA BIT 8		
	(S2B09)	HS200-R011
	(Q2G07)	HQ200-R011
	(T2B09)	HT200-R011
	(U2P13)	HU200-R016
R012		
- CS DATA BIT 9		
	(S2B13)	HS200-R012
	(Q2J06)	HQ200-R011
	(T2B13)	HT200-R012
	(U2M12)	HU200-R017
R013		
- CS DATA BIT 10		
	(S2J07)	HS200-R013
	(Q2G05)	HQ200-R011
	(T2J07)	HT200-R013
	(U2M10)	HU200-R018
R014		
- CS DATA BIT 11		
	(S2J12)	HS200-R014
	(Q2J05)	HQ200-R011
	(T2J12)	HT200-R014
	(U2S09)	HU200-R019
R015		
- CS DATA BIT 12		
	(S2M02)	HS200-R015
	(Q2G03)	HQ200-R011
	(T2M02)	HT200-R015
	(U2S08)	HU200-R020
R016		
- CS DATA BIT 13		
	(S2M07)	HS200-R016
	(Q2B12)	HQ200-R011
	(T2M07)	HT200-R016
	(U2U06)	HU200-R021
R017		
- CS DATA BIT 14		
	(S2M12)	HS200-R017
	(Q2D11)	HQ200-R011
	(T2M12)	HT200-R017
	(U2S05)	HU200-R022
R018		
- CS DATA BIT 15		
	(S2S05)	HS200-R018
	(Q2J02)	HQ200-R011
	(T2S05)	HT200-R018
	(U2U04)	HU200-R023
R019		
- CS DATA BIT PH		
	(S2U07)	HS200-R019
	(Q2M10)	HQ200-R011
	(T2U07)	HT200-R019
	(U2S02)	HU200-R024
R020		
- CS DATA BIT PL		
	(S2U09)	HS200-R020
	(Q2P10)	HQ200-R011
	(T2U09)	HT200-R020
	(U2M02)	HU200-R025
R021		
- CS ADDRESS CHECK		
	(S2S12)	HS200-R021
	(T2S12)	HT200-R021
	(U2D10)	HU200-R004
	(U2B04)	HU200-R005
	Q2S10	HQ200-L017

003 - CS ADDRESS BIT 4 ---------- D04
004 - CS ADDRESS BIT 5 ---------- B07
005 - CS ADDRESS BIT 6 ---------- B10
006 - CS ADDRESS BIT 7 ---------- G03
007 - CS ADDRESS BIT 8 ---------- G07
008 - CS ADDRESS BIT 9 ---------- G12
009 - CS ADDRESS BIT 10 ---------- M13
010 - CS ADDRESS BIT 11 ---------- S07
011 - CS ADDRESS BIT 12 ---------- M03
012 - CS ADDRESS BIT 13 ---------- M08
013 - CS ADDRESS BIT 14 ---------- D05
014 - CS ADDRESS BIT 15 ---------- B04
015 - SCS SELECT 3 ---------- D06
016 - CS WRITE ---------- B02
017 - CS ADDRESS BIT PARITY -------- U12
018 - SCS SELECT 4 ---------- U10

SCS2 CARD

OVERVIEW

The SCS2 (Static Control Storage #2) card contains 8K x 18 bits of unterminated control storage. This card provides storage for the microcode routines and the control tables and parameters for 3880 operations.

PRIMARY FUNCTIONS

- Data bit powering circuits amplify and shape incoming data bits.
- Address powering circuits amplify and decode control storage address lines.
- Array consists of either a high density 8K x 18 card.
- Sense latch circuits shape and amplify data read from the storage arrays.

PRIMARY COMPONENTS

- Storage array
- Address and data powering
- Selection control powering
- Sense circuits
- Address parity checker

D09 - CS DATA BIT 0 ---------- 003
J02 - CS DATA BIT 1 ---------- 004
J05 - CS DATA BIT 2 ---------- 005
J10 - CS DATA BIT 3 ---------- 006
P02 - CS DATA BIT 4 ---------- 007
P07 - CS DATA BIT 5 ---------- 008
P12 - CS DATA BIT 6 ---------- 009
U04 - CS DATA BIT 7 ---------- 010
B09 - CS DATA BIT 8 ---------- 011
B13 - CS DATA BIT 9 ---------- 012
J07 - CS DATA BIT 10 ---------- 013
J12 - CS DATA BIT 11 ---------- 014
M02 - CS DATA BIT 12 ---------- 015
M07 - CS DATA BIT 13 ---------- 016
M12 - CS DATA BIT 14 ---------- 017
S05 - CS DATA BIT 15 ---------- 018
U07 - CS DATA BIT PH ---------- 019
U09 - CS DATA BIT PL ---------- 020
S12 - CS ADDRESS CHECK ---------- 021

STATIC CONTROL STORE XRL HT200

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- CS ADDRESS BIT 4		
	T2D04	HT200-L003
	(Q2B09)	HQ200-R033
	S2D04	HS200-L003
	U2M04	HU200-L005
L004		
- CS ADDRESS BIT 5		
	T2B07	HT200-L004
	(Q2B10)	HQ200-R033
	S2B07	HS200-L004
	U2P05	HU200-L006
L005		
- CS ADDRESS BIT 6		
	T2B10	HT200-L005
	(Q2D10)	HQ200-R033
	S2B10	HS200-L005
	U2P07	HU200-L007
L006		
- CS ADDRESS BIT 7		
	T2G03	HT200-L006
	(Q2P09)	HQ200-R033
	S2G03	HS200-L006
	U2J06	HU200-L008
L007		
- CS ADDRESS BIT 8		
	T2G07	HT200-L007
	(Q2M08)	HQ200-R033
	S2G07	HS200-L007
	U2D13	HU200-L009
L008		
- CS ADDRESS BIT 9		
	T2G12	HT200-L008
	(Q2M03)	HQ200-R033
	S2G12	HS200-L008
	U2G09	HU200-L010
L009		
- CS ADDRESS BIT 10		
	T2M13	HT200-L009
	(Q2P02)	HQ200-R033
	S2M13	HS200-L009
	U2G08	HU200-L011
L010		
- CS ADDRESS BIT 11		
	T2S07	HT200-L010
	(Q2M02)	HQ200-R033
	S2S07	HS200-L010
	U2G13	HU200-L012
L011		
- CS ADDRESS BIT 12		
	T2M03	HT200-L011
	(Q2G09)	HQ200-R033
	S2M03	HS200-L011
	U2G12	HU200-L013
L012		
- CS ADDRESS BIT 13		
	T2M08	HT200-L012
	(Q2G08)	HQ200-R033
	S2M08	HS200-L012
	U2U05	HU200-L014
L013		
- CS ADDRESS BIT 14		
	T2D05	HT200-L013
	(Q2B13)	HQ200-R033
	S2D05	HS200-L013
	U2S04	HU200-L015
L014		
- CS ADDRESS BIT 15		
	T2B04	HT200-L014
	(Q2D13)	HQ200-R033
	S2B04	HS200-L014
	U2S03	HU200-L016
L015		
- SCS SELECT 3		
	T2D06	HT200-L015
	(Q2U11)	HQ200-R029
L016		
- CS WRITE		
	T2B02	HT200-L016
	(Q2S08)	HQ200-R037
	P2G02	HP200-L006
	R2D13	HR200-L022
	S2B02	HS200-L016
	U2D05	HU200-L019
	U2J13	HU200-L020
L017		
- CS ADDRESS BIT PARITY		
	T2U12	HT200-L017
	(Q2S13)	HQ200-R036
	P2B07	HP200-L015
	S2U12	HS200-L017
L018		
- SCS SELECT 4		
	T2U10	HT200-L018
	(Q2D12)	HQ200-R030
R003		
- CS DATA BIT 0		
	(T2D09)	HT200-R003
	(Q2J11)	HQ200-R011
	(S2D09)	HS200-R003
	(U2U13)	HU200-R008
R004		
- CS DATA BIT 1		
	(T2J02)	HT200-R004
	(Q2G10)	HQ200-R011
	(S2J02)	HS200-R004
	(U2S12)	HU200-R009
R005		
- CS DATA BIT 2		
	(T2J05)	HT200-R005
	(Q2J09)	HQ200-R011
	(S2J05)	HS200-R005
	(U2S10)	HU200-R010
R006		
- CS DATA BIT 3		
	(T2J10)	HT200-R006
	(Q2J10)	HQ200-R011
	(S2J10)	HS200-R006
	(U2M09)	HU200-R011
R007		
- CS DATA BIT 4		
	(T2P02)	HT200-R007
	(Q2G12)	HQ200-R011
	(S2P02)	HS200-R007
	(U2M08)	HU200-R012
R008		
- CS DATA BIT 5		
	(T2P07)	HT200-R008
	(Q2J12)	HQ200-R011
	(S2P07)	HS200-R008
	(U2P06)	HU200-R013
R009		
- CS DATA BIT 6		
	(T2P12)	HT200-R009
	(Q2G13)	HQ200-R011
	(S2P12)	HS200-R009
	(U2M05)	HU200-R014
R010		
- CS DATA BIT 7		
	(T2U04)	HT200-R010
	(Q2J13)	HQ200-R011
	(S2U04)	HS200-R010
	(U2P04)	HU200-R015
R011		
- CS DATA BIT 8		
	(T2B09)	HT200-R011
	(Q2G07)	HQ200-R011
	(S2B09)	HS200-R011
	(U2P13)	HU200-R016
R012		
- CS DATA BIT 9		
	(T2B13)	HT200-R012
	(Q2J06)	HQ200-R011
	(S2B13)	HS200-R012
	(U2M12)	HU200-R017
R013		
- CS DATA BIT 10		
	(T2J07)	HT200-R013
	(Q2G05)	HQ200-R011
	(S2J07)	HS200-R013
	(U2M10)	HU200-R018
R014		
- CS DATA BIT 11		
	(T2J12)	HT200-R014
	(Q2J05)	HQ200-R011
	(S2J12)	HS200-R014
	(U2S09)	HU200-R019
R015		
- CS DATA BIT 12		
	(T2M02)	HT200-R015
	(Q2G03)	HQ200-R011
	(S2M02)	HS200-R015
	(U2S08)	HU200-R020
R016		
- CS DATA BIT 13		
	(T2M07)	HT200-R016
	(Q2B12)	HQ200-R011
	(S2M07)	HS200-R016
	(U2U06)	HU200-R021
R017		
- CS DATA BIT 14		
	(T2M12)	HT200-R017
	(Q2D11)	HQ200-R011
	(S2M12)	HS200-R017
	(U2S05)	HU200-R022
R018		
- CS DATA BIT 15		
	(T2S05)	HT200-R018
	(Q2J02)	HQ200-R011
	(S2S05)	HS200-R018
	(U2U04)	HU200-R023
R019		
- CS DATA BIT PH		
	(T2U07)	HT200-R019
	(Q2M10)	HQ200-R011
	(S2U07)	HS200-R019
	(U2S02)	HU200-R024
R020		
- CS DATA BIT PL		
	(T2U09)	HT200-R020
	(Q2P10)	HQ200-R011
	(S2U09)	HS200-R020
	(U2M02)	HU200-R025
R021		
- CS ADDRESS CHECK		
	(T2S12)	HT200-R021
	(S2S12)	HS200-R021
	(U2D10)	HU200-R004
	(U2B04)	HU200-R005
	Q2S10	HQ200-L017

003 - CS ADDRESS BIT 2 ----------P02
004 - CS ADDRESS BIT 3 ----------M03
005 - CS ADDRESS BIT 4 ----------M04
006 - CS ADDRESS BIT 5 ----------P05
007 - CS ADDRESS BIT 6 ----------P07
008 - CS ADDRESS BIT 7 ----------J06
009 - CS ADDRESS BIT 8 ----------D13
010 - CS ADDRESS BIT 9 ----------G09
011 - CS ADDRESS BIT 10 ----------G08
012 - CS ADDRESS BIT 11 ----------G13
013 - CS ADDRESS BIT 12 ----------G12
014 - CS ADDRESS BIT 13 ----------U05
015 - CS ADDRESS BIT 14 ----------S04
016 - CS ADDRESS BIT 15 ----------S03
017 - DCS ADDRESS PARITY ----------M07
018 + KEYBIT ----------M13
019 - CS WRITE ----------D05
020 - CS WRITE ----------J13
021 - REFRESH SELECT ----------B09
022 + POWER ON RESET POWERED --------D04
023 - DCS SELECT 1 ----------J07
024 - DCS SELECT 0 ----------G03
025 - DCSR TIE DOWN 1 ----------G02
026 - DCSR TIE DOWN 2 ----------J02
027 - DCSR TIE DOWN 3 ----------D07
028 + REFRESH TIMER CLOCK ----------J04
029 - DCSR TIE DOWN 4 ----------G10
030 + DCSR TIE UP 1 ----------J05
031 + DCSR TIE UP 1 ----------G04
032 - WESTPORT SELECT 2 ---------- B13
033 + DCSR TIE UP 1 ----------J10
034 + DCSR TIE UP 1 ----------J11
035 + DCSR TIE UP 1 ----------J12
036 + DCSR TIE UP 1 ----------B08

DCSR CARD

OVERVIEW

The dynamic control storage and refresh (DCSR) card contains 48K two-byte words of control storage. The addresses for the DCSR card start at 16K and continue through 64K.

PRIMARY FUNCTIONS

- This 48 x 22 storage array is used for microcode routines, control tables, and parameters for 3880 operation. The array is dynamic and requires periodic refresh cycles to retain data.
- The refresh clock counter is programmed to overflow after 110 refresh timer clocks. Upon overflow, refresh required is activated until a refresh cycle is performed.
- The refresh address counter generates the seven refresh address lines required by the array.
- The address generation logic is internal to the DCSR card and derived by a refresh cycle or read/write cycles.
- The control logic generates row and column address strobe to the array, controls address generation timing, controls strobing of data during read cycles and checks for invalid multiple select signals at DCSR inputs.

PRIMARY COMPONENTS

- 48K x 22 array
- Error detection and correction circuitry
- Control logic
- Address generation logic
- Refresh address counter
- Refresh clock counter

ERROR CHECKING

- Checks the CS Data lines for correct parity.
- 48K x 22 array
- Refresh timer check is activated whenever the parity prediction circuits sense incorrect parity.
- Address parity check is activated when Control Storage Address bits are of incorrect parity.
- Uncorrectable read data check is activated if a read data check cannot be corrected.
- Key bit check is activated if the key bits are not the same during a read as they were during the write operation.

DYNAMIC CONTROL STORE - REFRESH CRD HU200

B10 - DCSR UNUSED PIN 15 ---------- 003
D10 - CS ADDRESS CHECK ---------- 004
B04 - CS ADDRESS CHECK ---------- 005
B02 - DCSR UNUSED PIN 0 ---------- 006
D12 - REFRESH ADDRESS CHECK -------- 007
U13 - CS DATA BIT 0 ---------- 008
S12 - CS DATA BIT 1 ---------- 009
S10 - CS DATA BIT 2 ---------- 010
M09 - CS DATA BIT 3 ---------- 011
M08 - CS DATA BIT 4 ---------- 012
P06 - CS DATA BIT 5 ---------- 013
M05 - CS DATA BIT 6 ---------- 014
P04 - CS DATA BIT 7 ---------- 015
P13 - CS DATA BIT 8 ---------- 016
M12 - CS DATA BIT 9 ---------- 017
M10 - CS DATA BIT 10 ---------- 018
S09 - CS DATA BIT 11 ---------- 019
S08 - CS DATA BIT 12 ---------- 020
U06 - CS DATA BIT 13 ---------- 021
S05 - CS DATA BIT 14 ---------- 022
U04 - CS DATA BIT 15 ---------- 023
S02 - CS DATA BIT PH ---------- 024
M02 - CS DATA BIT PL ---------- 025
G05 - DCS DATA IN P CHK ---------- 026
S07 - ANY READ DATA CHECK ---------- 027
D02 - UNCORRECTABLE READ DATA CHK -- 028
P10 - DCSR UNUSED PIN 1 ---------- 029
P11 - DCSR UNUSED PIN 2 ---------- 030
P12 - DCSR UNUSED PIN 3 ---------- 031
P09 - DCSR UNUSED PIN 4 ---------- 032
U02 - DCSR UNUSED PIN 5 ---------- 033
U07 - DCSR UNUSED PIN 6 ---------- 034
U09 - DCSR UNUSED PIN 7 ---------- 035
U10 - DCSR UNUSED PIN 8 ---------- 036
U11 - DCSR UNUSED PIN 9 ---------- 037
U12 - DCSR UNUSED PIN 10 ---------- 038
S13 - DCSR UNUSED PIN 11 ---------- 039
B05 - KEY BIT CHECK ---------- 040
D09 - DCSR UNUSED PIN 12 ---------- 041
G07 - DCSR UNUSED PIN 13 ---------- 042
B07 - SELECTION CHECK ---------- 043
B12 - REFRESH REQUIRED ---------- 044
D11 - DCSR UNUSED PIN 14 ---------- 045
J09 - REFRESH TIMER CHECK ---------- 046
D06 + DCSR UNUSED PIN 16 ---------- 047
B03 + DCSR TIE UP 1 ---------- 048

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- CS ADDRESS BIT 2		
	U2P02	HU200-L003
	(Q2D09)	HQ200-R033
	P2J02	HP200-L013
L004		
- CS ADDRESS BIT 3		
	U2M03	HU200-L004
	(Q2B08)	HQ200-R033
	P2D13	HP200-L014
L005		
- CS ADDRESS BIT 4		
	U2M04	HU200-L005
	(Q2B09)	HQ200-R033
	S2D04	HS200-L003
	T2D04	HT200-L003
L006		
- CS ADDRESS BIT 5		
	U2P05	HU200-L006
	(Q2B10)	HQ200-R033
	S2B07	HS200-L004
	T2B07	HT200-L004
L007		
- CS ADDRESS BIT 6		
	U2P07	HU200-L007
	(Q2D10)	HQ200-R033
	S2B10	HS200-L005
	T2B10	HT200-L005
L008		
- CS ADDRESS BIT 7		
	U2J06	HU200-L008
	(Q2P09)	HQ200-R033
	S2G03	HS200-L006
	T2G03	HT200-L006
L009		
- CS ADDRESS BIT 8		
	U2D13	HU200-L009
	(Q2M08)	HQ200-R033
	S2G07	HS200-L007
	T2G07	HT200-L007
L010		
- CS ADDRESS BIT 9		
	U2G09	HU200-L010
	(Q2M03)	HQ200-R033
	S2G12	HS200-L008
	T2G12	HT200-L008
L011		
- CS ADDRESS BIT 10		
	U2G08	HU200-L011
	(Q2P02)	HQ200-R033
	S2M13	HS200-L009
	T2M13	HT200-L009
L012		
- CS ADDRESS BIT 11		
	U2G13	HU200-L012
	(Q2M02)	HQ200-R033
	S2S07	HS200-L010
	T2S07	HT200-L010

LINE/SIGNAL	PIN	SHEET/LINE
L013		
- CS ADDRESS BIT 12		
	U2G12	HU200-L013
	(Q2G09)	HQ200-R033
	S2M03	HS200-L011
	T2M03	HT200-L011
L014		
- CS ADDRESS BIT 13		
	U2U05	HU200-L014
	(Q2G08)	HQ200-R033
	S2M08	HS200-L012
	T2M08	HT200-L012
L015		
- CS ADDRESS BIT 14		
	U2S04	HU200-L015
	(Q2B13)	HQ200-R033
	S2D05	HS200-L013
	T2D05	HT200-L013
L016		
- CS ADDRESS BIT 15		
	U2S03	HU200-L016
	(Q2D13)	HQ200-R033
	S2B04	HS200-L014
	T2B04	HT200-L014
L017		
- DCS ADDRESS PARITY		
	U2M07	HU200-L017
	(P2J07)	HP200-R013
L018		
+ KEYBIT		
	U2M13	HU200-L018
	(P2M05)	HP200-R009
L019		
- CS WRITE		
	U2D05	HU200-L019
	(Q2S08)	HQ200-R037
	P2G02	HP200-L006
	R2D13	HR200-L022
	S2B02	HS200-L016
	T2B02	HT200-L016
	U2J13	HU200-L020
L020		
- CS WRITE		
	U2J13	HU200-L020
	(Q2S08)	HQ200-R037
	P2G02	HP200-L006
	R2D13	HR200-L022
	S2B02	HS200-L016
	T2B02	HT200-L016
	U2D05	HU200-L019
L021		
- REFRESH SELECT		
	U2B09	HU200-L021
	(P2S05)	HP200-R007

LINE/SIGNAL	PIN	SHEET/LINE
L022		
+ POWER ON RESET POWERED		
	U2D04	HU200-L022
	(R2B10)	HR200-R042
	C4B04	HC400-L004
	C5B04	HC500-L004
	P2U07	HP200-L023
L023		
- DCS SELECT 1		
	U2J07	HU200-L023
	(P2M13)	HP200-R004
L024		
- DCS SELECT 0		
	U2G03	HU200-L024
	(P2G04)	HP200-R005
L025		
- DCSR TIE DOWN 1		
	U2G02	HU200-L025
L026		
- DCSR TIE DOWN 2		
	U2J02	HU200-L026
L027		
- DCSR TIE DOWN 3		
	U2D07	HU200-L027
L028		
+ REFRESH TIMER CLOCK		
	U2J04	HU200-L028
	(P2B13)	HP200-R006
L029		
- DCSR TIE DOWN 4		
	U2G10	HU200-L029
L030		
+ DCSR TIE UP 1		
	U2J05	HU200-L030
	(U2B03)	HU200-R048
	U2G04	HU200-L031
	U2J10	HU200-L033
	U2J11	HU200-L034
	U2J12	HU200-L035
	U2B08	HU200-L036
L031		
+ DCSR TIE UP 1		
	U2G04	HU200-L031
	(U2B03)	HU200-R048
	U2J05	HU200-L030
	U2J10	HU200-L033
	U2J11	HU200-L034
	U2J12	HU200-L035
	U2B08	HU200-L036
L032		
- WESTPORT SELECT 2		
	U2B13	HU200-L032
	(P2U12)	HP200-R059

LINE/SIGNAL	PIN	SHEET/LINE
L033		
+ DCSR TIE UP 1		
	U2J10	HU200-L033
	(U2B03)	HU200-R048
	U2J05	HU200-L030
	U2G04	HU200-L031
	U2J11	HU200-L034
	U2J12	HU200-L035
	U2B08	HU200-L036
L034		
+ DCSR TIE UP 1		
	U2J11	HU200-L034
	(U2B03)	HU200-R048
	U2J05	HU200-L030
	U2G04	HU200-L031
	U2J10	HU200-L033
	U2J12	HU200-L035
	U2B08	HU200-L036
L035		
+ DCSR TIE UP 1		
	U2J12	HU200-L035
	(U2B03)	HU200-R048
	U2J05	HU200-L030
	U2G04	HU200-L031
	U2J10	HU200-L033
	U2J11	HU200-L034
	U2B08	HU200-L036
L036		
+ DCSR TIE UP 1		
	U2B08	HU200-L036
	(U2B03)	HU200-R048
	U2J05	HU200-L030
	U2G04	HU200-L031
	U2J10	HU200-L033
	U2J11	HU200-L034
	U2J12	HU200-L035
R003		
- DCSR UNUSED PIN 15		
	(U2B10)	HU200-R003
R004		
- CS ADDRESS CHECK		
	(U2D10)	HU200-R004
	(S2S12)	HS200-R021
	(T2S12)	HT200-R021
	(U2B04)	HU200-R005
	Q2S10	HQ200-L017
R005		
- CS ADDRESS CHECK		
	(U2B04)	HU200-R005
	(S2S12)	HS200-R021
	(T2S12)	HT200-R021
	(U2D10)	HU200-R004
	Q2S10	HQ200-L017
R006		
- DCSR UNUSED PIN 0		
	(U2B02)	HU200-R006

LINE/SIGNAL	PIN	SHEET/LINE
R007		
- REFRESH ADDRESS CHECK		
	(U2D12)	HU200-R007
	P2S10	HP200-L007
R008		
- CS DATA BIT 0		
	(U2U13)	HU200-R008
	(Q2J11)	HQ200-R011
	(S2D09)	HS200-R003
	(T2D09)	HT200-R003
R009		
- CS DATA BIT 1		
	(U2S12)	HU200-R009
	(Q2G10)	HQ200-R011
	(S2J02)	HS200-R004
	(T2J02)	HT200-R004
R010		
- CS DATA BIT 2		
	(U2S10)	HU200-R010
	(Q2J09)	HQ200-R011
	(S2J05)	HS200-R005
	(T2J05)	HT200-R005
R011		
- CS DATA BIT 3		
	(U2M09)	HU200-R011
	(Q2J10)	HQ200-R011
	(S2J10)	HS200-R006
	(T2J10)	HT200-R006
R012		
- CS DATA BIT 4		
	(U2M08)	HU200-R012
	(Q2G12)	HQ200-R011
	(S2P02)	HS200-R007
	(T2P02)	HT200-R007
R013		
- CS DATA BIT 5		
	(U2P06)	HU200-R013
	(Q2J12)	HQ200-R011
	(S2P07)	HS200-R008
	(T2P07)	HT200-R008
R014		
- CS DATA BIT 6		
	(U2M05)	HU200-R014
	(Q2G13)	HQ200-R011
	(S2P12)	HS200-R009
	(T2P12)	HT200-R009
R015		
- CS DATA BIT 7		
	(U2P04)	HU200-R015
	(Q2J13)	HQ200-R011
	(S2U04)	HS200-R010
	(T2U04)	HT200-R010

LINE/SIGNAL	PIN	SHEET/LINE
R016		
- CS DATA BIT 8		
	(U2P13)	HU200-R016
	(Q2G07)	HQ200-R011
	(S2B09)	HS200-R011
	(T2B09)	HT200-R011
R017		
- CS DATA BIT 9		
	(U2M12)	HU200-R017
	(Q2J06)	HQ200-R011
	(S2B13)	HS200-R012
	(T2B13)	HT200-R012
R018		
- CS DATA BIT 10		
	(U2M10)	HU200-R018
	(Q2G05)	HQ200-R011
	(S2J07)	HS200-R013
	(T2J07)	HT200-R013
R019		
- CS DATA BIT 11		
	(U2S09)	HU200-R019
	(Q2J05)	HQ200-R011
	(S2J12)	HS200-R014
	(T2J12)	HT200-R014
R020		
- CS DATA BIT 12		
	(U2S08)	HU200-R020
	(Q2G03)	HQ200-R011
	(S2M02)	HS200-R015
	(T2M02)	HT200-R015
R021		
- CS DATA BIT 13		
	(U2U06)	HU200-R021
	(Q2B12)	HQ200-R011
	(S2M07)	HS200-R016
	(T2M07)	HT200-R016
R022		
- CS DATA BIT 14		
	(U2S05)	HU200-R022
	(Q2D11)	HQ200-R011
	(S2M12)	HS200-R017
	(T2M12)	HT200-R017
R023		
- CS DATA BIT 15		
	(U2U04)	HU200-R023
	(Q2J02)	HQ200-R011
	(S2S05)	HS200-R018
	(T2S05)	HT200-R018
R024		
- CS DATA BIT PH		
	(U2S02)	HU200-R024
	(Q2M10)	HQ200-R011
	(S2U07)	HS200-R019
	(T2U07)	HT200-R019

DYNAMIC CONTROL STORE - REFRESH XRL HU200

LINE/SIGNAL	PIN	SHEET/LINE
R025		
- CS DATA BIT PL		
	(U2M02)	HU200-R025
	(Q2P10)	HQ200-R011
	(S2U09)	HS200-R020
	(T2U09)	HT200-R020
R026		
- DCS DATA IN P CHK		
	(U2G05)	HU200-R026
	P2D02	HP200-L016
R027		
- ANY READ DATA CHECK		
	(U2S07)	HU200-R027
	P2B03	HP200-L009
R028		
- UNCORRECTABLE READ DATA CHK		
	(U2D02)	HU200-R028
	P2D05	HP200-L010
R029		
- DCSR UNUSED PIN 1		
	(U2P10)	HU200-R029
R030		
- DCSR UNUSED PIN 2		
	(U2P11)	HU200-R030
R031		
- DCSR UNUSED PIN 3		
	(U2P12)	HU200-R031
R032		
- DCSR UNUSED PIN 4		
	(U2P09)	HU200-R032
R033		
- DCSR UNUSED PIN 5		
	(U2U02)	HU200-R033
R034		
- DCSR UNUSED PIN 6		
	(U2U07)	HU200-R034
R035		
- DCSR UNUSED PIN 7		
	(U2U09)	HU200-R035
R036		
- DCSR UNUSED PIN 8		
	(U2U10)	HU200-R036
R037		
- DCSR UNUSED PIN 9		
	(U2U11)	HU200-R037
R038		
- DCSR UNUSED PIN 10		
	(U2U12)	HU200-R038
R039		
- DCSR UNUSED PIN 11		
	(U2S13)	HU200-R039
R040		
- KEY BIT CHECK		
	(U2B05)	HU200-R040
	P2D11	HP200-L008
R041		
- DCSR UNUSED PIN 12		
	(U2D09)	HU200-R041
R042		
- DCSR UNUSED PIN 13		
	(U2G07)	HU200-R042
R043		
- SELECTION CHECK		
	(U2B07)	HU200-R043
	P2M10	HP200-L012
R044		
- REFRESH REQUIRED		
	(U2B12)	HU200-R044
	P2M09	HP200-L005
R045		
- DCSR UNUSED PIN 14		
	(U2D11)	HU200-R045
R046		
- REFRESH TIMER CHECK		
	(U2J09)	HU200-R046
	P2J11	HP200-L011
R047		
+ DCSR UNUSED PIN 16		
	(U2D06)	HU200-R047
R048		
+ DCSR TIE UP 1		
	(U2B03)	HU200-R048
	U2J05	HU200-L030
	U2G04	HU200-L031
	U2J10	HU200-L033
	U2J11	HU200-L034
	U2J12	HU200-L035
	U2B08	HU200-L036

DYNAMIC CONTROL STORE - REFRESH XRL HU200

```
003 - DATA TAKEN (DDC) --------------B10
004 UNUSED DCT PIN C ---------------- U05
005 + DECREMENT COUNTER -------------M12
006 + RESET --------------------------G13
007 - ALU OUT BIT 0 -----------------D13
008 - ALU OUT BIT 1 -----------------B05
009 - ALU OUT BIT 2 -----------------D10
010 - ALU OUT BIT 3 -----------------J02
011 - ALU OUT BIT 4 -----------------B08
012 - ALU OUT BIT 5 -----------------B03
013 - ALU OUT BIT 6 -----------------D05
014 - ALU OUT BIT 7 -----------------D06
015 - ALU OUT BIT P -----------------B02
016 + DDC CLOCK T3 ------------------U04
017 + DDC CLOCK T7 ------------------U02
018 + DECREMENT PAD COUNTER ---------G02
019 + LD EXT REG CLK D --------------M10
020 + GATE PCR TO ALU IN ------------D11
021 - SELECT PCR --------------------B07
022 - PCR DECODE 0D TO DCT ----------U06
023 - DEGATE DEVICE EXT REGISTERS ---M02
024 - EXT REG ADDRESS BIT 0 ---------J07
025 - EXT REG ADDRESS BIT 1 ---------J09
026 - EXT REG ADDRESS BIT 2 ---------J10
027 - EXT REG ADDRESS BIT 3 ---------J11
028 - EXT REG ADDRESS BIT 4 ---------J12
029 + DDC CLOCK T6 ------------------U09
030 + DDC CLOCK T2 ------------------G07
031 + GATE MCS REG ------------------J05
032 + START DXR CLOCK ---------------J04
033 - CHECK RESET --------------------G08
034 + EXT REG ADR 18 ----------------S05
035 + CHECK ONE IND -----------------S13
```

DCT CARD

OVERVIEW

The DCT (device counter) card is one of two cards that are the control interface for devices attached to the 3880.

PRIMARY FUNCTIONS

- The DCH (device count high) and the DCL (device count low) accept the byte count from the microcontroller via the ALU Out bus. The byte count indicates the number of data bytes to be transferred between device and channel on a read or write operation.
- The pad counter is used to monitor the number of I/O bytes transferred by the automatic data transfer (ADT) hardware.
- The funnel is a multiple-input gate that selects one of two 9-bit buses to be gated to the ALU In bus lines.
- The MCS (maintenance/control/sense) register is a 9-bit register of multiple uses. It is used by:
  - The microcontroller to control the 650 ms timer
  - The IML hardware to start, execution of ROS instruction
  - The automatic data transfer hardware to control padding, dispensing, and checking
  - The ADT buffer to limit the number of bytes stored in the buffer
  - The microcontroller to indicate the current execution mode of the storage director (i.e., wait, process, status pending)
- Physical ID bit switches, set by the CE on install, provide a unique ID for each storage director. This ID is used by EREP to readily identify which path the failing unit is in.

PRIMARY COMPONENTS

- ID bit switches
- DCH and DCL counters
- PAD counter
- MCS register funnel
- DCH-DCL funnel
- PAD parity check funnel

ERROR CHECKING

- DCH and DCL parity checked at T7 time.
- The Pad Count parity check circuit checks the parity of the pad counter.
- Error check-1 drops recycle and raises stop DDC if recycle is not off when secondary counters reach zero in a SMB machine or when the pad counter attempts to roll over in all other machines.
- Error check-2 is used to insure the secondary counter are at zero at the same time DCH and DCL are at zero on a SMB machine.
- Error latch 1 or 2 will cause a DCT card check.

```
M04 - ALU IN2 BIT 0 ----------------- 003
J13 - ALU IN2 BIT 1 ----------------- 004
G12 - ALU IN2 BIT 2 ----------------- 005
P05 - ALU IN2 BIT 3 ----------------- 006
M05 - ALU IN2 BIT 4 ----------------- 007
M03 - ALU IN2 BIT 5 ----------------- 008
G10 - ALU IN2 BIT 6 ----------------- 009
P02 - ALU IN2 BIT 7 ----------------- 010
P04 - ALU IN2 BIT P ----------------- 011
J06 UNUSED DCT PIN A ---------------- 012
P12 + DDC COUNT = ZERO -------------- 013
G03 + DEVICE COUNT < 64 ------------- 014
P13 + DDC COUNT = 0 OR 1 ------------ 015
P11 - RECYCLE/COUNT >7 -------------- 016
G09 + DCT CARD CHECK ---------------- 017
M13 - STOP DDC CNT=8 ---------------- 018
P06 + GATE DBI REG ------------------ 019
P07 + GATE DBO REG ------------------ 020
P09 + GATE DTG REG ------------------ 021
M07 + GATE DTI REG/PAD COUNTER ------ 022
M08 + GATE DTO REG ------------------ 023
M09 + DEVICE REG GROUP SELECT ------- 024
P10 + PAD COUNT=ZERO ---------------- 025
U13 - STORAGE DIRECTOR CHECK SD1 ---- 026
S09 - STORAGE DIRECTOR WAIT SD1 ----- 027
S10 - STORAGE DIRECTOR PROCESS SD1 -- 028
S12 - STORAGE DIRECTOR STATUS SD1 --- 029
S02 + ENABLE TIMER ------------------ 030
S03 + ROS SELECT -------------------- 031
S04 + ENBL PAD CNT AFTER CHAN EOT --- 032
S07 + ENBL PAD CNT AFTER DEVICE EOT - 033
S08 + MCS REG BIT 4 ----------------- 034
```

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- DATA TAKEN (DDC)		
	V2B10	HV200-L003
	(X2S08)	HX200-R026
	K2B08	HK200-L006
	N2U06	HN200-L036
L004		
UNUSED DCT PIN C		
	V2U05	HV200-L004
L005		
+ DECREMENT COUNTER		
	V2M12	HV200-L005
	(X2M12)	HX200-R027
L006		
+ RESET		
	V2G13	HV200-L006
	(R2B07)	HR200-R022
	D2M05	HD200-L031
	E2M05	HE200-L031
	C2G09	HC200-L016
	F2M02	HF200-L054
	G2J13	HG210-L017
	H2S03	HH220-L060
	M2P11	HM200-L011
	P2J09	HP200-L022
	X2M02	HX200-L027
L007		
- ALU OUT BIT 0		
	V2D13	HV200-L007
	(Q2B04)	HQ200-R008
	C2B02	HC200-L022
	F2D02	HF200-L019
	H2P12	HH220-L017
	J2U07	HJ200-L041
	N2B07	HN200-L012
	R2M02	HR200-L024
	X2D13	HX200-L026
L008		
- ALU OUT BIT 1		
	V2B05	HV200-L008
	(Q2D05)	HQ200-R008
	C2D02	HC200-L023
	F2D04	HF200-L020
	H2P13	HH220-L018
	J2U09	HJ200-L041
	N2D05	HN200-L013
	R2G12	HR200-L024
	X2B05	HX200-L026
L009		
- ALU OUT BIT 2		
	V2D10	HV200-L009
	(Q2D06)	HQ200-R008
	F2D05	HF200-L021
	H2U02	HH220-L019
	J2P12	HJ200-L041
	N2D09	HN200-L014
	R2G13	HR200-L024
	X2D10	HX200-L026

LINE/SIGNAL	PIN	SHEET/LINE
L010		
- ALU OUT BIT 3		
	V2J02	HV200-L010
	(Q2B05)	HQ200-R008
	F2D06	HF200-L022
	H2U05	HH220-L020
	J2U02	HJ200-L041
	N2D10	HN200-L015
	R2M04	HR200-L024
	X2J02	HX200-L026
L011		
- ALU OUT BIT 4		
	V2B08	HV200-L011
	(Q2D04)	HQ200-R008
	F2D07	HF200-L023
	H2U06	HH220-L021
	J2B12	HJ200-L041
	N2D06	HN200-L016
	R2M03	HR200-L024
	X2B08	HX200-L026
L012		
- ALU OUT BIT 5		
	V2B03	HV200-L012
	(Q2B03)	HQ200-R008
	F2B07	HF200-L024
	H2U07	HH220-L022
	J2D06	HJ200-L041
	N2B09	HN200-L017
	R2P04	HR200-L024
	X2B03	HX200-L026
L013		
- ALU OUT BIT 6		
	V2D05	HV200-L013
	(Q2D02)	HQ200-R008
	F2B08	HF200-L025
	H2U09	HH220-L023
	N2G02	HN200-L018
	R2P02	HR200-L024
	X2D05	HX200-L026
L014		
- ALU OUT BIT 7		
	V2D06	HV200-L014
	(Q2B02)	HQ200-R008
	F2B09	HF200-L026
	J2B05	HJ200-L041
	N2B13	HN200-L019
	R2P05	HR200-L024
L015		
- ALU OUT BIT P		
	V2B02	HV200-L015
	(Q2U04)	HQ200-R008
	F2B10	HF200-L027
	N2D13	HN200-L020
	R2M05	HR200-L024
L016		
+ DDC CLOCK T3		
	V2U04	HV200-L016
	(P2B10)	HP200-R045
	N2B10	HN200-L030
	X2S04	HX200-L034

LINE/SIGNAL	PIN	SHEET/LINE
L017		
+ DDC CLOCK T7		
	V2U02	HV200-L017
	(P2G08)	HP200-R047
	N2G08	HN200-L034
	X2S02	HX200-L038
L018		
+ LECREMENT PAD COUNTER		
	V2G02	HV200-L018
	(K2J09)	HK200-R004
L019		
+ LD EXT REG CLK D		
	V2M10	HV200-L019
	(Q2U06)	HQ200-R015
	N2B02	HN200-L010
	R2M08	HR200-L011
	X2M10	HX200-L025
L020		
+ GATE PCR TO ALU IN		
	V2D11	HV200-L020
	(K2S10)	HK200-R022
L021		
- SELECT PCR		
	V2B07	HV200-L021
	(K2U07)	HK200-R023
L022		
- PCR DECODE 0D TO DCT		
	V2U06	HV200-L022
L023		
- DEGATE DEVICE EXT REGISTERS		
	V2M02	HV200-L023
L024		
- EXT REG ADDRESS BIT 0		
	V2J07	HV200-L024
	(Q2P12)	HQ200-R016
	F2P09	HF200-L028
	K2B12	HK200-L003
	N2P12	HN200-L003
	R2M13	HR200-L009
L025		
- EXT REG ADDRESS BIT 1		
	V2J09	HV200-L025
	(Q2M05)	HQ200-R016
	F2P10	HF200-L029
	K2D13	HK200-L003
	N2M05	HN200-L004
	R2P11	HR200-L009
L026		
- EXT REG ADDRESS BIT 2		
	V2J10	HV200-L026
	(Q2P05)	HQ200-R016
	F2P11	HF200-L030
	K2B13	HK200-L003
	N2P05	HN200-L005
	R2M12	HR200-L009

LINE/SIGNAL	PIN	SHEET/LINE
L027		
- EXT REG ADDRESS BIT 3		
	V2J11	HV200-L027
	(Q2M04)	HQ200-R016
	F2P12	HF200-L031
	K2B10	HK200-L003
	N2M04	HN200-L006
	R2P10	HR200-L009
L028		
- EXT REG ADDRESS BIT 4		
	V2J12	HV200-L028
	(Q2P04)	HQ200-R016
	F2P13	HF200-L032
	K2D12	HK200-L003
	N2P04	HN200-L007
	R2P09	HR200-L009
L029		
+ DDC CLOCK T6		
	V2U09	HV200-L029
	(P2U10)	HP200-R021
	N2U09	HN200-L033
	X2U09	HX200-L037
L030		
+ DDC CLOCK T2		
	V2G07	HV200-L030
	(P2S07)	HP200-R019
	N2S07	HN200-L029
	X2G07	HX200-L033
L031		
+ GATE MCS REG		
	V2J05	HV200-L031
	(R2G05)	HR200-R007
L032		
+ START DXR CLOCK		
	V2J04	HV200-L032
	(R2J09)	HR200-R031
L033		
- CHECK RESET		
	V2G08	HV200-L033
	(H2Y10)	HH220-R063
	(R2J05)	HR200-R028
	D2J06	HD200-L034
	E2J06	HE200-L034
	C2J10	HC200-L012
	F2M04	HF200-L056
	G2B13	HG210-L015
	H2U12	HH220-L061
	J2Y10	HJ200-L024
	K2Y10	HK200-L023
	L2D02	HL200-L003
	N2M13	HN200-L024
	X2S13	HX200-L015
L034		
+ EXT REG ADR 18		
	V2S05	HV200-L034
	(F2M08)	HF200-R033
	H2S04	HH220-L015

LINE/SIGNAL	PIN	SHEET/LINE
L035		
+ CHECK ONE IND		
	V2S13	HV200-L035
	(R2U02)	HR200-R038
	M2J04	HM200-L009
R003		
- ALU IN2 BIT 0		
	(V2M04)	HV200-R003
	(N2S10)	HN200-R012
	(R2S10)	HR200-R016
	(R2Z10)	HR200-R017
	(X2M04)	HX200-R012
	Q2Z10	HQ200-L008
R004		
- ALU IN2 BIT 1		
	(V2J13)	HV200-R004
	(N2S09)	HN200-R013
	(R2U07)	HR200-R016
	(R2Z07)	HR200-R017
	(X2J13)	HX200-R013
	Q2Z07	HQ200-L008
R005		
- ALU IN2 BIT 2		
	(V2G12)	HV200-R005
	(N2U10)	HN200-R014
	(R2U09)	HR200-R016
	(R2Z09)	HR200-R017
	(X2G12)	HX200-R014
	Q2Z09	HQ200-L008
R006		
- ALU IN2 BIT 3		
	(V2P05)	HV200-R006
	(N2U12)	HN200-R015
	(R2U10)	HR200-R016
	(R2Z30)	HR200-R017
	(X2P05)	HX200-R015
	Q2Z30	HQ200-L008
R007		
- ALU IN2 BIT 4		
	(V2M05)	HV200-R007
	(N2U13)	HN200-R016
	(R2S13)	HR200-R016
	(R2Z33)	HR200-R017
	(X2M05)	HX200-R016
	Q2Z33	HQ200-L008
R008		
- ALU IN2 BIT 5		
	(V2M03)	HV200-R008
	(N2S13)	HN200-R017
	(R2U13)	HR200-R016
	(R2Z13)	HR200-R017
	(X2M03)	HX200-R017
	Q2Z13	HQ200-L008

LINE/SIGNAL	PIN	SHEET/LINE
R009		
- ALU IN2 BIT 6		
	(V2G10)	HV200-R009
	(N2S08)	HN200-R018
	(R2S07)	HR200-R016
	(R2Z28)	HR200-R017
	(X2G10)	HX200-R018
	Q2Z28	HQ200-L008
R010		
- ALU IN2 BIT 7		
	(V2P02)	HV200-R010
	(N2U05)	HN200-R019
	(R2U05)	HR200-R016
	(R2Z05)	HR200-R017
	(X2P02)	HX200-R019
	Q2Z05	HQ200-L008
R011		
- ALU IN2 BIT P		
	(V2P04)	HV200-R011
	(N2U02)	HN200-R020
	(R2S08)	HR200-R016
	(R2Z06)	HR200-R017
	(X2P04)	HX200-R020
	Q2Z06	HQ200-L008
R012		
UNUSED DCT PIN A		
	(V2J06)	HV200-R012
R013		
+ DDC COUNT = ZERO		
	(V2P12)	HV200-R013
	X2J10	HX200-L042
R014		
+ DEVICE COUNT < 64		
	(V2G03)	HV200-R014
	K2M05	HK200-L032
	M2B13	HM200-L005
R015		
+ DDC COUNT = 0 OR 1		
	(V2P13)	HV200-R015
	X2P13	HX200-L041
R016		
- RECYCLE/COUNT >7		
	(V2P11)	HV200-R016
	X2P11	HX200-L043
R017		
+ DCT CARD CHECK		
	(V2G09)	HV200-R017
	J2U11	HJ200-L049
R018		
- STOP DDC CNT=8		
	(V2M13)	HV200-R018
	X2M13	HX200-L052

LINE/SIGNAL	PIN	SHEET/LINE
R019		
+ GATE DBI REG		
	(V2P06)	HV200-R019
	X2P06	HX200-L003
	X2P06	HX200-L046
R020		
+ GATE DBO REG		
	(V2P07)	HV200-R020
	X2P07	HX200-L048
R021		
+ GATE DTG REG		
	(V2P09)	HV200-R021
	J2P06	HJ200-L071
	X2P09	HX200-L044
R022		
+ GATE DTI REG/PAD COUNTER		
	(V2M07)	HV200-R022
	K2G05	HK200-L031
	X2M07	HX200-L013
	X2M07	HX200-L045
R023		
+ GATE DTO REG		
	(V2M08)	HV200-R023
	X2M08	HX200-L047
R024		
+ DEVICE REG GROUP SELECT		
	(V2M09)	HV200-R024
	R2P12	HR200-L018
R025		
+ PAD COUNT=ZERO		
	(V2P10)	HV200-R025
	K2P06	HK200-L011
R026		
- STORAGE DIRECTOR CHECK SD1		
	(V2U13)	HV200-R026
1A-B4	*V6A02*	
->MDM	*YA171*	
R027		
- STORAGE DIRECTOR WAIT SD1		
	(V2S09)	HV200-R027
1A-B4	*U6C04*	
->MDM	*YA171*	
R028		
- STORAGE DIRECTOR PROCESS SD1		
	(V2S10)	HV200-R028
1A-B4	*U6E04*	
->MDM	*YA171*	
R029		
- STORAGE DIRECTOR STATUS SD1		
	(V2S12)	HV200-R029
1A-B4	*V6A04*	
->MDM	*YA171*	
R030		
+ ENABLE TIMER		
	(V2S02)	HV200-R030
	P2S12	HP200-L024

LINE/SIGNAL	PIN	SHEET/LINE
R031		
+ ROS SELECT		
	(V2S03)	HV200-R031
	Q2U13	HQ200-L016
	R2S04	HR200-L023
R032		
+ ENBL PAD CNT AFTER CHAN EOT		
	(V2S04)	HV200-R032
	K2J04	HK200-L018
R033		
+ ENBL PAD CNT AFTER DEVICE EOT		
	(V2S07)	HV200-R033
	J2U12	HJ200-L072
R034		
+ MCS REG BIT 4		
	(V2S08)	HV200-R034
	H2U04	HH220-L006

```
003 + GATE DBI REG ------------------P06
004 + DDC BUS IN BIT 0 --------------X24
005 + DDC BUS IN BIT 1 --------------X25
006 + DDC BUS IN BIT 2 --------------X26
007 + DDC BUS IN BIT 3 --------------X28
008 + DDC BUS IN BIT 4 --------------X29
009 + DDC BUS IN BIT 5 --------------X30
010 + DDC BUS IN BIT 6 --------------X31
011 + DDC BUS IN BIT 7 --------------X32
012 + DDC BUS IN BIT P --------------X23
013 + GATE DTI REG/PAD COUNTER ------M07
014 + DDC CLOCK T0 ------------------D04
015 - CHECK RESET --------------------S13
016 + SELECT ACTIVE ------------------Z23
017 + TAG VALID ----------------------Z24
018 + CHECK END ----------------------Z26
019 + CE ALERT -----------------------Z32
020 + NORMAL END ---------------------Z25
021 + SELECTED ALERT -----------------Z30
022 + INDEX -------------------------Z29
023 + ERROR ALERT (IN) --------------Z28
024 + SYNC IN ------------------------X33
025 + LD EXT REG CLK D ------------- M10
026 - ALU OUT BIT (0-6) ============ * =
027 + RESET ------------------------- M02
029 + MNT CLOCK T2 ------------------ U11
030 + MNT CLOCK T4 ------------------ U12
031 + DDC CLOCK T0 ------------------ D04
032 + DDC CLOCK T1 ------------------ U13
033 + DDC CLOCK T2 ------------------ G07
034 + DDC CLOCK T3 ------------------ S04
035 + DDC CLOCK T4 ------------------ U07
036 + DDC CLOCK T5 ------------------ S05
037 + DDC CLOCK T6 ------------------ U09
038 + DDC CLOCK T7 ------------------ S02
039 - CDN SD1 ND/DR GATED DEVICE --- U05
040 - DATA READY LATCHED ------------ S03
041 + DDC COUNT = 0 OR 1 ------------ P13
042 + DDC COUNT = ZERO -------------- J10
043 - RECYCLE/COUNT >7 -------------- P11
044 + GATE DTG REG ------------------ P09
045 + GATE DTI REG/PAD COUNTER ----- M07
046 + GATE DBI REG ------------------ P06
047 + GATE DTO REG ------------------ M08
048 + GATE DBO REG ------------------ P07
049 + STOP DDC ---------------------- U02
050 - DEV DXR BUS BIT (0-7,P) ====== * =
051 + SPECIAL RESET ----------------- P10
052 - STOP DDC CNT=8 ---------------- M13
053 - CDN SD1 ALU OUT BIT 7 (CH/DEV) D06
054 - CDN SD1 ALU OUT BIT P (CH/DEV) B02
```

DDCU CARD

OVERVIEW

The DDCU (director-to-device controller) card is one of two cards, comprising the Control Interface for devices attached to a 3880.

PRIMARY FUNCTIONS

- The DBI (device bus in) register contains three types of information from the device: Command Response Data, Normal Data read under control of the automatic data transfer hardware, and device status data. (i.e., Ready or Busy), output from this register is available to two sets of bus lines, DXR In and ALU In 2.
- The DTI (Device Tag In) register contains tag information from the Device Tag In lines.
- The DBO (Device Bus Out) register contains data for the device. Three types of information leave this register on the DDC Bus Out lines, they are Control, Address and Data.
- The DTO (device tag out) register contains tag information to the device.
- Data transmission control logic provides controls for the following operations: Automatic Data Transfer, Normal End of Data Transfer, Check End of Data Transfer, and Error Recognition.
- The DTG (device tag gate) contains output tag lines and ADT control lines.

PRIMARY COMPONENTS

- DBI register
- DTI register
- DTG register
- DTO register
- DBO register
- Data transmission control logic

ERROR CHECKING

DBO register is parity checked and sets a DDC card check.

```
J07 - DEV DXR BUS BIT 0 ------------ 003
J04 - DEV DXR BUS BIT 1 ------------ 004
G02 - DEV DXR BUS BIT 2 ------------ 005
G05 - DEV DXR BUS BIT 3 ------------ 006
G09 - DEV DXR BUS BIT 4 ------------ 007
G08 - DEV DXR BUS BIT 5 ------------ 008
G04 - DEV DXR BUS BIT 6 ------------ 009
G03 - DEV DXR BUS BIT 7 ------------ 010
J05 - DEV DXR BUS BIT P ------------ 011
M04 - ALU IN2 BIT 0 ---------------- 012
J13 - ALU IN2 BIT 1 ---------------- 013
G12 - ALU IN2 BIT 2 ---------------- 014
P05 - ALU IN2 BIT 3 ---------------- 015
M05 - ALU IN2 BIT 4 ---------------- 016
M03 - ALU IN2 BIT 5 ---------------- 017
G10 - ALU IN2 BIT 6 ---------------- 018
P02 - ALU IN2 BIT 7 ---------------- 019
P04 - ALU IN2 BIT P ---------------- 020
J09 - CHECK TWO -------------------- 021
J06 + FIRST SYNC IN 1 -------------- 022
J11 + FIRST SYNC IN 2 -------------- 023
Y31 + SELECT HOLD ------------------ 024
U10 - TAKE DATA (DDC) -------------- 025
S08 - DATA TAKEN (DDC) ------------- 026
M12 + DECREMENT COUNTER ------------ 027
S07 + DDC END OF TRANSFER ---------- 028
S10 + DATA OVERRUN ----------------- 029
S12 + SYNC IN CHECK ---------------- 030
U06 + DDC BUS IN FC ---------------- 031
S09 - CLOCK CHECK TWO -------------- 032
Y30 + TAG GATE --------------------- 033
W33 + SYNC OUT --------------------- 034
Y33 + RECYCLE ---------------------- 035
Y32 + RESPONSE --------------------- 036
= * + DDC BUS OUT BIT (0-7,P) ====== 037
Y23 + TAG BUS OUT BIT 0 ------------ 038
Y25 + TAG BUS OUT BIT 4 ------------ 039
Y24 + TAG BUS OUT BIT 5 ------------ 040
Y28 + TAG BUS OUT BIT 6 ------------ 041
Y26 + TAG BUS OUT BIT 7 ------------ 042
Y29 + TAG BUS OUT BIT P ------------ 043
J12 - END OP LATCHED T4 ------------ 044
U04 + DDC CARD CHECK --------------- 045
```

LINE/SIGNAL	PIN	SHEET/LINE
L003		
+ GATE DBI REG		
	X2P06	HX200-L003
	(V2P06)	HV200-R019
	X2P06	HX200-L046
L004		
+ DDC BUS IN BIT 0		
	X2X24	HX200-L004
1T-A1 *AJ04 *		
L005		
+ DDC BUS IN BIT 1		
	X2X25	HX200-L005
1T-A1 *AG05 *		
L006		
+ DDC BUS IN BIT 2		
	X2X26	HX200-L006
1T-A1 *AJ06 *		
L007		
+ DDC BUS IN BIT 3		
	X2X28	HX200-L007
1T-A1 *AG08 *		
L008		
+ DDC BUS IN BIT 4		
	X2X29	HX200-L008
1T-A1 *AJ09 *		
L009		
+ DDC BUS IN BIT 5		
	X2X30	HX200-L009
1T-A1 *AG10 *		
L010		
+ DDC BUS IN BIT 6		
	X2X31	HX200-L010
1T-A1 *AJ11 *		
L011		
+ DDC BUS IN BIT 7		
	X2X32	HX200-L011
1T-A1 *AG12 *		
L012		
+ DDC BUS IN BIT P		
	X2X23	HX200-L012
1T-A1 *AG03 *		
L013		
+ GATE DTI REG/PAD COUNTER		
	X2M07	HX200-L013
	(V2M07)	HV200-R022
	K2G05	HK200-L031
	X2M07	HX200-L045
L014		
+ DDC CLOCK T0		
	X2D04	HX200-L014
	(P2S09)	HP200-R018
	N2U07	HN200-L027
	X2D04	HX200-L031
L015		
- CHECK RESET		
	X2S13	HX200-L015
	(H2Y10)	HH220-R063
	(R2J05)	HR200-R028
	D2J06	HD200-L034
	E2J06	HE200-L034
	C2J10	HC200-L012
	F2M04	HF200-L056
	G2B13	HG210-L015
	H2U12	HH220-L061
	J2Y10	HJ200-L024
	K2Y10	HK200-L023
	L2D02	HL200-L003
	N2M13	HN200-L024
	V2G08	HV200-L033
L016		
+ SELECT ACTIVE		
	X2Z23	HX200-L016
1T-A1 *BG03 *		
L017		
+ TAG VALID		
	X2Z24	HX200-L017
1T-A1 *BJ04 *		
L018		
+ CHECK END		
	X2Z26	HX200-L018
1T-A1 *BJ06 *		
L019		
+ CE ALERT		
	X2Z32	HX200-L019
1T-A1 *BG12 *		
L020		
+ NORMAL END		
	X2Z25	HX200-L020
1T-A1 *BG05 *		
L021		
+ SELECTED ALERT		
	X2Z30	HX200-L021
1T-A1 *BG10 *		
L022		
+ INDEX		
	X2Z29	HX200-L022
1T-A1 *BJ09 *		
L023		
+ ERROR ALERT (IN)		
	X2Z28	HX200-L023
1T-A1 *BG08 *		
L024		
+ SYNC IN		
	X2X33	HX200-L024
1T-A1 *AJ13 *		
L025		
+ LD EXT REG CLK D		
	X2M10	HX200-L025
	(Q2U06)	HQ200-R015
	N2B02	HN200-L010
	R2M08	HR200-L011
	V2M10	HV200-L019
L026		
- ALU OUT BIT 0		
	X2D13	HX200-L026
	(Q2B04)	HQ200-R008
	C2B02	HC200-L022
	F2D02	HF200-L019
	H2P12	HH220-L017
	J2U07	HJ200-L041
	N2B07	HN200-L012
	R2M02	HR200-L024
	V2D13	HV200-L007
L026		
- ALU OUT BIT 1		
	X2B05	HX200-L026
	(Q2D05)	HQ200-R008
	C2D02	HC200-L023
	F2D04	HF200-L020
	H2P13	HH220-L018
	J2U09	HJ200-L041
	N2D05	HN200-L013
	R2G12	HR200-L024
	V2B05	HV200-L008
L026		
- ALU OUT BIT 2		
	X2D10	HX200-L026
	(Q2D06)	HQ200-R008
	F2D05	HF200-L021
	H2U02	HH220-L019
	J2P12	HJ200-L041
	N2D09	HN200-L014
	R2G13	HR200-L024
	V2D10	HV200-L009
L026		
- ALU OUT BIT 3		
	X2J02	HX200-L026
	(Q2B05)	HQ200-R008
	F2D06	HF200-L022
	H2U05	HH220-L020
	J2U02	HJ200-L041
	N2D10	HN200-L015
	R2M04	HR200-L024
	V2J02	HV200-L010
L026		
- ALU OUT BIT 4		
	X2B08	HX200-L026
	(Q2D04)	HQ200-R008
	F2D07	HF200-L023
	H2U06	HH220-L021
	J2B12	HJ200-L041
	N2D06	HN200-L016
	R2M03	HR200-L024
	V2B08	HV200-L011
L026		
- ALU OUT BIT 5		
	X2B03	HX200-L026
	(Q2B03)	HQ200-R008
	F2B07	HF200-L024
	H2U07	HH220-L022
	J2D06	HJ200-L041
	N2B09	HN200-L017
	R2F04	HR200-L024
	V2B03	HV200-L012
L026		
- ALU OUT BIT 6		
	X2D05	HX200-L026
	(Q2D02)	HQ200-R008
	F2B08	HF200-L025
	H2U09	HH220-L023
	N2G02	HN200-L018
	R2F02	HR200-L024
	V2D05	HV200-L013
L027		
+ RESET		
	X2M02	HX200-L027
	(R2B07)	HR200-R022
	D2M05	HD200-L031
	E2M05	HE200-L031
	C2G09	HC200-L016
	F2M02	HF200-L054
	G2J13	HG210-L017
	H2S03	HH220-L060
	M2P11	HM200-L011
	P2J09	HP200-L022
	V2G13	HV200-L006
L029		
+ MNT CLOCK T2		
	X2U11	HX200-L029
	(P2P12)	HP200-R023
	R2J06	HR200-L048
L030		
+ MNT CLOCK T4		
	X2U12	HX200-L030
	(P2S04)	HP200-R024
	R2G08	HR200-L048
L031		
+ DDC CLOCK T0		
	X2D04	HX200-L031
	(P2S09)	HP200-R018
	N2U07	HN200-L027
	X2D04	HX200-L014
L032		
+ DDC CLOCK T1		
	X2U13	HX200-L032
	(P2G07)	HP200-R044
	N2G07	HN200-L028
L033		
+ DDC CLOCK T2		
	X2G07	HX200-L033
	(P2S07)	HP200-R019
	N2S07	HN200-L029
	V2G07	HV200-L030
L034		
+ DDC CLOCK T3		
	X2S04	HX200-L034
	(P2B10)	HP200-R045
	N2B10	HN200-L030
	V2U04	HV200-L016
L035		
+ DDC CLOCK T4		
	X2U07	HX200-L035
	(P2M12)	HP200-R020
	N2M12	HN200-L031
L036		
+ DDC CLOCK T5		
	X2S05	HX200-L036
	(P2J04)	HP200-R046
	N2J04	HN200-L032
L037		
+ DDC CLOCK T6		
	X2U09	HX200-L037
	(P2U10)	HP200-R021
	N2U09	HN200-L033
	V2U09	HV200-L029
L038		
+ DDC CLOCK T7		
	X2S02	HX200-L038
	(P2G08)	HP200-R047
	N2G08	HN200-L034
	V2U02	HV200-L017
L039		
- CDN SD1 ND/DR GATED DEVICE		
	X2U05	HX200-L039
	(N2S05)	HN200-R044
	H2B03	HH220-L009
L040		
- DATA READY LATCHED		
	X2S03	HX200-L040
	(H2B05)	HH220-R006
L041		
+ DDC COUNT = 0 OR 1		
	X2P13	HX200-L041
	(V2P13)	HV200-R015
L042		
+ DDC COUNT = ZERO		
	X2J10	HX200-L042
	(V2P12)	HV200-R013
L043		
- RECYCLE/COUNT >7		
	X2P11	HX200-L043
	(V2P11)	HV200-R016
L044		
+ GATE DTG REG		
	X2P09	HX200-L044
	(V2P09)	HV200-R021
	J2P06	HJ200-L071
L045		
+ GATE DTI REG/PAD COUNTER		
	X2M07	HX200-L045
	(V2M07)	HV200-R022
	K2G05	HK200-L031
	X2M07	HX200-L013
L046		
+ GATE DBI REG		
	X2P06	HX200-L046
	(V2P06)	HV200-R019
	X2P06	HX200-L003
L047		
+ GATE DTO REG		
	X2M08	HX200-L047
	(V2M08)	HV200-R023
L048		
+ GATE DBO REG		
	X2P07	HX200-L048
	(V2P07)	HV200-R020
L049		
+ STOP DDC		
	X2U02	HX200-L049
	(P2J13)	HP200-R039
	R2U11	HR200-L033
L050		
- DEV DXR BUS BIT 0		
	X2B12	HX200-L050
	(K2G13)	HK200-R006
	(N2G09)	HN200-R030
	(X2J07)	HX200-R003
L050		
- DEV DXR BUS BIT 1		
	X2B07	HX200-L050
	(K2F05)	HK200-R006
	(N2G11)	HN200-R031
	(X2J04)	HX200-R004
L050		
- DEV DXR BUS BIT 2		
	X2D11	HX200-L050
	(K2F02)	HK200-R006
	(N2G10)	HN200-R032
	(X2G02)	HX200-R005
L050		
- DEV DXR BUS BIT 3		
	X2B13	HX200-L050
	(K2J12)	HK200-R006
	(N2J09)	HN200-R033
	(X2G05)	HX200-R006
L050		
- DEV DXR BUS BIT 4		
	X2B10	HX200-L050
	(K2J13)	HK200-R006
	(N2J13)	HN200-R034
	(X2G09)	HX200-R007

LINE/SIGNAL	PIN	SHEET/LINE
L050		
- DEV DXR BUS BIT 5		
	X2B07	HX200-L050
	(K2J10)	HK200-R006
	(N2P09)	HN200-R035
	(X2G08)	HX200-R008
L050		
- DEV DXR BUS BIT 6		
	X2D09	HX200-L050
	(K2M04)	HK200-R006
	(N2G13)	HN200-R036
	(X2G04)	HX200-R009
L050		
- DEV DXR BUS BIT 7		
	X2D02	HX200-L050
	(K2M03)	HK200-R006
	(N2M08)	HN200-R037
	(X2G03)	HX200-R010
L050		
- DEV DXR BUS BIT P		
	X2B04	HX200-L050
	(K2P04)	HK200-R006
	(N2M09)	HN200-R038
	(X2J05)	HX200-R011
L051		
+ SPECIAL RESET		
	X2P10	HX200-L051
	(R2B12)	HR200-R027
	D2G09	HD200-L032
	E2G09	HE200-L032
	C2G10	HC200-L015
	F2M03	HF200-L055
	P2J05	HP200-L017
L052		
- STOP DDC CNT=8		
	X2M13	HX200-L052
	(V2M13)	HV200-R018
L053		
- CDN SD1 ALU OUT BIT 7 (CH/DEV)		
	X2D06	HX200-L053
	(N2B11)	HN200-R008
	H2U10	HH220-L024
L054		
- CDN SD1 ALU OUT BIT P (CH/DEV)		
	X2B02	HX200-L054
	(N2D11)	HN200-R009
	H2U11	HH220-L025
R003		
- DEV DXR BUS BIT 0		
	(X2J07)	HX200-R003
	(K2G13)	HK200-R006
	(N2G09)	HN200-R030
	X2B12	HX200-L050

LINE/SIGNAL	PIN	SHEET/LINE
R004		
- DEV DXR BUS BIT 1		
	(X2J04)	HX200-R004
	(K2P05)	HK200-R006
	(N2G11)	HN200-R031
	X2D07	HX200-L050
R005		
- DEV DXR BUS BIT 2		
	(X2G02)	HX200-R005
	(K2P02)	HK200-R006
	(N2G10)	HN200-R032
	X2D11	HX200-L050
R006		
- DEV DXR BUS BIT 3		
	(X2G05)	HX200-R006
	(K2J12)	HK200-R006
	(N2J09)	HN200-R033
	X2B13	HX200-L050
R007		
- DEV DXR BUS BIT 4		
	(X2G09)	HX200-R007
	(K2J13)	HK200-R006
	(N2J13)	HN200-R034
	X2B10	HX200-L050
R008		
- DEV DXR BUS BIT 5		
	(X2G08)	HX200-R008
	(K2J10)	HK200-R006
	(N2P09)	HN200-R035
	X2B07	HX200-L050
R009		
- DEV DXR BUS BIT 6		
	(X2G04)	HX200-R009
	(K2M04)	HK200-R006
	(N2G13)	HN200-R036
	X2D09	HX200-L050
R010		
- DEV DXR BUS BIT 7		
	(X2G03)	HX200-R010
	(K2M03)	HK200-R006
	(N2M08)	HN200-R037
	X2D02	HX200-L050
R011		
- DEV DXR BUS BIT P		
	(X2J05)	HX200-R011
	(K2P04)	HK200-R006
	(N2M09)	HN200-R038
	X2B04	HX200-L050
R012		
- ALU IN2 BIT 0		
	(X2M04)	HX200-R012
	(N2S10)	HN200-R012
	(R2S10)	HR200-R016
	(R2Z10)	HR200-R017
	(V2M04)	HV200-R003
	Q2Z10	HQ200-L008

LINE/SIGNAL	PIN	SHEET/LINE
R013		
- ALU IN2 BIT 1		
	(X2J13)	HX200-R013
	(N2S09)	HN200-R013
	(R2U07)	HR200-R016
	(R2Z07)	HR200-R017
	(V2J13)	HV200-R004
	Q2Z07	HQ200-L008
R014		
- ALU IN2 BIT 2		
	(X2G12)	HX200-R014
	(N2U10)	HN200-R014
	(R2U09)	HR200-R016
	(R2Z09)	HR200-R017
	(V2G12)	HV200-R005
	Q2Z09	HQ200-L008
R015		
- ALU IN2 BIT 3		
	(X2P05)	HX200-R015
	(N2U12)	HN200-R015
	(R2U10)	HR200-R016
	(R2Z30)	HR200-R017
	(V2P05)	HV200-R006
	Q2Z30	HQ200-L008
R016		
- ALU IN2 BIT 4		
	(X2M05)	HX200-R016
	(N2U13)	HN200-R016
	(R2S13)	HR200-R016
	(R2Z33)	HR200-R017
	(V2M05)	HV200-R007
	Q2Z33	HQ200-L008
R017		
- ALU IN2 BIT 5		
	(X2M03)	HX200-R017
	(N2S13)	HN200-R017
	(R2U13)	HR200-R016
	(R2Z13)	HR200-R017
	(V2M03)	HV200-R008
	Q2Z13	HQ200-L008
R018		
- ALU IN2 BIT 6		
	(X2G10)	HX200-R018
	(N2S08)	HN200-R018
	(R2S07)	HR200-R016
	(R2Z28)	HR200-R017
	(V2G10)	HV200-R009
	Q2Z28	HQ200-L008
R019		
- ALU IN2 BIT 7		
	(X2P02)	HX200-R019
	(N2U05)	HN200-R019
	(R2U05)	HR200-R016
	(R2Z05)	HR200-R017
	(V2P02)	HV200-R010
	Q2Z05	HQ200-L008

LINE/SIGNAL	PIN	SHEET/LINE
R020		
- ALU IN2 BIT P		
	(X2P04)	HX200-R020
	(N2U02)	HN200-R020
	(R2S08)	HR200-R016
	(R2Z06)	HR200-R017
	(V2P04)	HV200-R011
	Q2Z06	HQ200-L008
R021		
- CHECK TWO		
	(X2J09)	HX200-R021
	(F2S09)	HF200-R040
	(J2U10)	HJ200-R017
	(N2D04)	HN200-R010
	R2S09	HR200-L027
R022		
+ FIRST SYNC IN 1		
	(X2J06)	HX200-R022
	J2P13	HJ200-L055
R023		
+ FIRST SYNC IN 2		
	(X2J11)	HX200-R023
	J2M09	HJ200-L057
R024		
+ SELECT HOLD		
	(X2Y31)	HX200-R024
1T-A1	*BD11 *	
R025		
- TAKE DATA (DDC)		
	(X2U10)	HX200-R025
	H2D07	HH220-L007
	K2D09	HK200-L005
	N2S12	HN200-L035
R026		
- DATA TAKEN (DDC)		
	(X2S08)	HX200-R026
	K2B08	HK200-L006
	N2U06	HN200-L036
	V2B10	HV200-L003
R027		
+ DECREMENT COUNTER		
	(X2M12)	HX200-R027
	V2M12	HV200-L005
R028		
+ DDC END OF TRANSFER		
	(X2S07)	HX200-R028
	J2P09	HJ200-L040
R029		
+ DATA OVERRUN		
	(X2S10)	HX200-R029
	J2S09	HJ200-L043
R030		
+ SYNC IN CHECK		
	(X2S12)	HX200-R030
	J2B02	HJ200-L050

LINE/SIGNAL	PIN	SHEET/LINE
R031		
+ DDC BUS IN PC		
	(X2U06)	HX200-R031
	J2M12	HJ200-L048
R032		
- CLOCK CHECK TWO		
	(X2S09)	HX200-R032
	(D2D02)	HD200-R014
	(E2D02)	HE200-R014
	(F2B02)	HF200-R041
	(G2S05)	HG210-R023
	K2S12	HK200-L012
R033		
+ TAG GATE		
	(X2Y30)	HX200-R033
1T-A1	*BB10 *	
R034		
+ SYNC OUT		
	(X2W33)	HX200-R034
1T-A1	*AD13 *	
R035		
+ RECYCLE		
	(X2Y33)	HX200-R035
1T-A1	*BD13 *	
R036		
+ RESPONSE		
	(X2Y32)	HX200-R036
1T-A1	*BB12 *	
R037		
+ DDC BUS OUT BIT 0		
	(X2W24)	HX200-R037
1T-A1	*AD04 *	
R037		
+ DDC BUS OUT BIT 1		
	(X2W25)	HX200-R037
1T-A1	*AB05 *	
R037		
+ DDC BUS OUT BIT 2		
	(X2W26)	HX200-R037
1T-A1	*AD06 *	
R037		
+ DDC BUS OUT BIT 3		
	(X2W28)	HX200-R037
1T-A1	*AB08 *	
R037		
+ DDC BUS OUT BIT 4		
	(X2W29)	HX200-R037
1T-A1	*AD09 *	
R037		
+ DDC BUS OUT BIT 5		
	(X2W30)	HX200-R037
1T-A1	*AB10 *	

LINE/SIGNAL	PIN	SHEET/LINE
R037		
+ DDC BUS OUT BIT 6		
	(X2W31)	HX200-R037
1T-A1	*AD11 *	
R037		
+ DDC BUS OUT BIT 7		
	(X2W32)	HX200-R037
1T-A1	*AB12 *	
R037		
+ DDC BUS OUT BIT P		
	(X2W23)	HX200-R037
1T-A1	*AB03 *	
R038		
+ TAG BUS OUT BIT 0		
	(X2Y23)	HX200-R038
1T-A1	*BB03 *	
R039		
+ TAG BUS OUT BIT 4		
	(X2Y25)	HX200-R039
1T-A1	*BB05 *	
R040		
+ TAG BUS OUT BIT 5		
	(X2Y24)	HX200-R040
1T-A1	*BD04 *	
R041		
+ TAG BUS OUT BIT 6		
	(X2Y28)	HX200-R041
1T-A1	*BB08 *	
R042		
+ TAG BUS OUT BIT 7		
	(X2Y26)	HX200-R042
1T-A1	*BD06 *	
R043		
+ TAG BUS OUT BIT P		
	(X2Y29)	HX200-R043
1T-A1	*BD09 *	
R044		
- END OP LATCHED T4		
	(X2J12)	HX200-R044
	J2M08	HJ200-L064
R045		
+ DDC CARD CHECK		
	(X2U04)	HX200-R045
	J2D10	HJ200-L045

```
003 + LD EXT REG CLK D ----------M10
004 - ALU OUT BIT 0 ----------D13
005 - ALU OUT BIT 1 ----------B05
006 - ALU OUT BIT 2 ----------D10
007 - ALU OUT BIT 3 ----------J02
008 - ALU OUT BIT 4 ----------B08
009 - ALU OUT BIT 5 ----------B03
010 - ALU OUT BIT 6 ----------D05
011 - CDN SD1 ALU OUT BIT 7 (CH/DEV) D06
012 - CDN SD1 ALU OUT BIT P (CH/DEV) B02
013 + RESET ----------M02
014 - CHECK RESET ----------S13
015 + MNT CLOCK T2 ----------U11
016 + MNT CLOCK T4 ----------U12
017 + DDC CLOCK T0 ----------D04
018 + DDC CLOCK T1 ----------U13
019 + DDC CLOCK T2 ----------G07
020 + DDC CLOCK T3 ----------S04
021 + DDC CLOCK T4 ----------U07
022 + DDC CLOCK T5 ----------S05
023 + DDC CLOCK T6 ----------U09
024 + DDC CLOCK T7 ----------S02
025 - CDN SD1 ND/DR GATED DEVICE --- U05
026 - DATA READY LATCHED ----------S03
027 + DDC COUNT = 0 OR 1 ----------P13
028 + DDC COUNT = ZERO ----------J10
029 - STOP DDC CNT=8 ----------M13
030 + GATE DTG REG ----------P09
031 + GATE DTI REG/PAD COUNTER ------M07
032 + GATE DBI REG ----------F06
033 + GATE DTO REG ----------M08
034 + GATE DBO REG ----------P07
035 + STOP DDC ----------U02
036 - DEV DXR BUS BIT 0 ----------B12
037 - DEV DXR BUS BIT 1 ----------D07
038 - DEV DXR BUS BIT 2 ----------D11
039 - DEV DXR BUS BIT 3 ----------B13
040 - DEV DXR BUS BIT 4 ----------B10
041 - DEV DXR BUS BIT 5 ----------B07
042 - DEV DXR BUS BIT 6 ----------D09
043 - DEV DXR BUS BIT 7 ----------D02
044 - DEV DXR BUS BIT P ----------B04
045 + SPECIAL RESET ----------P10
046 + GATE DBI REG ---------- P06
047 + RESET ---------- M02
048 + GATE DTI REG/PAD COUNTER ----- M07
049 + DDC CLOCK T0 ---------- D04
050 - RECYCLE/COUNT >7 ---------- P11
```

DDCV CARD

OVERVIEW

The DDCV (director-to-device controller) card is one of two cards comprising the Control Interface for devices attached to a 3880. This card will be used to communicate with 3380 device types through the Bi-Directional Interface.

PRIMARY FUNCTIONS

- The DBIL (device bus in low) register contains three types of information from the device: Command Response Data, the low order byte of Normal Data read under the control of Automatic Data Transfer hardware, and device status data (i.e., Ready or Busy) output from this register available on two sets of bus lines: DXR In and ALU In 2.
- The DBIH (device bus in high) register contains only the high order byte of normal data read under the control of automatic data transfer hardware. Output of this register is available on the DXR In bus.
- The DTI (device tag in) register contains tag information from the device tag in lines.
- The DBOH (device bus out high) contains three types of information to the device: Control, Address, and Data High Order Byte).
- DBOL (device bus out low) contains only the data (low order byte) to the device.
- The DTO (device tag out) register contains tag information to the device.
- The DTG (device tag gate) register contains control bits used to exercise the DDC for Data Transfer.
- Data transmission control logic provides control of the following operations: End of Data Transfer, Automatic Data Transfer, Gating of the Device Bus Out Drivers, and Error Recognition.

PRIMARY COMPONENTS

- DBIH and DBIL registers
- DTI register
- DBOL and DBOH registers
- DTO register
- DTG register
- Data transmission control logic

ERROR CHECKING

- Both DBOH and DBOL are parity checked. Out of parity condition sets DDC card check.

```
U10 - TAKE DATA (DDC) ---------- 003
S08 - DATA TAKEN (DDC) ---------- 004
M12 + DECREMENT COUNTER ---------- 005
S07 + DDC END OF TRANSFER ---------- 006
S10 + DATA OVERRUN ---------- 007
S12 + SYNC IN CHECK ---------- 008
U06 + DDC BUS IN PC ---------- 009
S09 - CLOCK CHECK TWO ---------- 010
= * + DDC BUS 1 BIT (0-7,P) ======== 011
= * - DDC BUS 1 BIT (0-7,P) ======== 012
Y28 + DDC BUS 0 BIT 0 ---------- 013
Y29 + DDC BUS 0 BIT 1 ---------- 014
Y30 + DDC BUS 0 BIT 2 ---------- 015
Y31 + DDC BUS 0 BIT 3 ---------- 016
Y32 + DDC BUS 0 BIT 4 ---------- 017
Y33 + DDC BUS 0 BIT 5 ---------- 018
Z22 + DDC BUS 0 BIT 6 ---------- 019
Z23 + DDC BUS 0 BIT 7 ---------- 020
Z24 + DDC BUS 0 BIT P ---------- 021
Y08 - DDC BUS 0 BIT 0 ---------- 022
Y09 - DDC BUS 0 BIT 1 ---------- 023
Y10 - DDC BUS 0 BIT 2 ---------- 024
Y11 - DDC BUS 0 BIT 3 ---------- 025
Y12 - DDC BUS 0 BIT 4 ---------- 026
Y13 - DDC BUS 0 BIT 5 ---------- 027
Z02 - DDC BUS 0 BIT 6 ---------- 028
Z03 - DDC BUS 0 BIT 7 ---------- 029
Z04 - DDC BUS 0 BIT P ---------- 030
Y22 + TAG OUT BIT 0 ---------- 031
Y02 - TAG OUT BIT 0 ---------- 032
Y23 + TAG OUT BIT 1 ---------- 033
Y03 - TAG OUT BIT 1 ---------- 034
Y24 + TAG OUT BIT 2 ---------- 035
Y04 - TAG OUT BIT 2 ---------- 036
U04 + DDC CARD CHECK ---------- 037
J07 - DEV DXR BUS BIT 0 ---------- 038
J04 - DEV DXR BUS BIT 1 ---------- 039
G02 - DEV DXR BUS BIT 2 ---------- 040
G05 - DEV DXR BUS BIT 3 ---------- 041
G09 - DEV DXR BUS BIT 4 ---------- 042
G08 - DEV DXR BUS BIT 5 ---------- 043
G04 - DEV DXR BUS BIT 6 ---------- 044
G03 - DEV DXR BUS BIT 7 ---------- 045
J05 - DEV DXR BUS BIT P ---------- 046
M04 - ALU IN2 BIT 0 ---------- 047
J13 - ALU IN2 BIT 1 ---------- 048
G12 - ALU IN2 BIT 2 ---------- 049
P05 - ALU IN2 BIT 3 ---------- 050
M05 - ALU IN2 BIT 4 ---------- 051
M03 - ALU IN2 BIT 5 ---------- 052
G10 - ALU IN2 BIT 6 ---------- 053
P02 - ALU IN2 BIT 7 ---------- 054
P04 - ALU IN2 BIT P ---------- 055
J09 - CHECK TWO ---------- 056
J06 + FIRST SYNC IN 1 ---------- 057
J11 + FIRST SYNC IN 2 ---------- 058
J12 - END OP LATCHED T4 ---------- 059
Y25 + TAG IN BIT 0 ---------- 060
Y05 - TAG IN BIT 0 ---------- 061
Y26 + TAG IN BIT 1 ---------- 062
Y06 - TAG IN BIT 1 ---------- 063
Y27 + CONNECTION CHECK ALERT ------- 064
Y07 - CONNECTION CHECK ALERT ------- 065
```

LINE/SIGNAL	PIN	SHEET/LINE
L003		
+ LD EXT REG CLK D		
	X2M10	HX210-L003
	(Q2U06)	HQ200-R015
	N2B02	HN200-L010
	R2M08	HR200-L011
	V2M10	HV200-L019
L004		
- ALU OUT BIT 0		
	X2D13	HX210-L004
	(Q2B04)	HQ200-R008
	C2B02	HC200-L022
	F2D02	HF200-L019
	H2P12	HH220-L017
	J2U07	HJ200-L041
	N2B07	HN200-L012
	R2M02	HR200-L024
	V2D13	HV200-L007
L005		
- ALU OUT BIT 1		
	X2B05	HX210-L005
	(Q2D05)	HQ200-R008
	C2D02	HC200-L023
	F2D04	HF200-L020
	H2P13	HH220-L018
	J2U09	HJ200-L041
	N2D05	HN200-L013
	R2G12	HR200-L024
	V2B05	HV200-L008
L006		
- ALU OUT BIT 2		
	X2D10	HX210-L006
	(Q2D06)	HQ200-R008
	E2B05	HE210-L021
	F2D05	HF200-L021
	H2U02	HH220-L019
	J2P12	HJ200-L041
	N2D09	HN200-L014
	R2G13	HR200-L024
	V2D10	HV200-L009
L007		
- ALU OUT BIT 3		
	X2J02	HX210-L007
	(Q2B05)	HQ200-R008
	E2B07	HE210-L022
	F2D06	HF200-L022
	H2U05	HH220-L020
	J2U02	HJ200-L041
	N2D10	HN200-L015
	R2M04	HR200-L024
	V2J02	HV200-L010
L008		
- ALU OUT BIT 4		
	X2B08	HX210-L008
	(Q2D04)	HQ200-R008
	F2D07	HF200-L023
	H2U06	HH220-L021
	J2B12	HJ200-L041
	N2D06	HN200-L016
	R2M03	HR200-L024
	V2B08	HV200-L011

LINE/SIGNAL	PIN	SHEET/LINE
L009		
- ALU OUT BIT 5		
	X2B03	HX210-L009
	(Q2B03)	HQ200-R008
	F2B07	HF200-L024
	H2U07	HH220-L022
	J2D06	HJ200-L041
	N2B09	HN200-L017
	R2P04	HR200-L024
	V2B03	HV200-L012
L010		
- ALU OUT BIT 6		
	X2D05	HX210-L010
	(Q2D02)	HQ200-R008
	F2B08	HF200-L025
	H2U09	HH220-L023
	N2G02	HN200-L018
	R2P02	HR200-L024
	V2D05	HV200-L013
L011		
- CDN SD1 ALU OUT BIT 7 (CH/DEV)		
	X2D06	HX210-L011
	(N2B11)	HN200-R008
	H2U10	HH220-L024
L012		
- CDN SD1 ALU OUT BIT P (CH/DEV)		
	X2B02	HX210-L012
	(N2D11)	HN200-R009
	H2U11	HH220-L025
L013		
+ RESET		
	X2M02	HX210-L013
	(R2B07)	HR200-R022
	C2G09	HC200-L016
	D2M05	HD210-L038
	E2M05	HE210-L027
	F2M02	HF200-L054
	G2J13	HG210-L017
	H2S03	HH220-L060
	M2P11	HM200-L011
	P2J09	HP200-L022
	V2G13	HV200-L006
	X2M02	HX210-L047
L014		
- CHECK RESET		
	X2S13	HX210-L014
	(H2Y10)	HH220-R063
	(R2J05)	HR200-R028
	C2J10	HC200-L012
	E2J06	HE210-L012
	F2M04	HF200-L056
	G2B13	HG210-L015
	H2U12	HH220-L061
	J2Y10	HJ200-L024
	K2Y10	HK200-L023
	L2D02	HL200-L003
	N2M13	HN200-L024
	V2G08	HV200-L033

LINE/SIGNAL	PIN	SHEET/LINE
L015		
+ MNT CLOCK T2		
	X2U11	HX210-L015
	(P2P12)	HP200-R023
	R2J06	HR200-L048
L016		
+ MNT CLOCK T4		
	X2U12	HX210-L016
	(P2S04)	HP200-R024
	R2G08	HR200-L048
L017		
+ DDC CLOCK T0		
	X2D04	HX210-L017
	(P2S09)	HP200-R018
	N2U07	HN200-L027
	X2D04	HX210-L049
L018		
+ DDC CLOCK T1		
	X2U13	HX210-L018
	(P2G07)	HP200-R044
	N2G07	HN200-L028
L019		
+ DDC CLOCK T2		
	X2G07	HX210-L019
	(P2S07)	HP200-R019
	N2S07	HN200-L029
	V2G07	HV200-L030
L020		
+ DDC CLOCK T3		
	X2S04	HX210-L020
	(P2B10)	HP200-R045
	N2B10	HN200-L030
	V2U04	HV200-L016
L021		
+ DDC CLOCK T4		
	X2U07	HX210-L021
	(P2M12)	HP200-R020
	N2M12	HN200-L031
L022		
+ DDC CLOCK T5		
	X2S05	HX210-L022
	(P2J04)	HP200-R046
	N2J04	HN200-L032
L023		
+ DDC CLOCK T6		
	X2U09	HX210-L023
	(P2U10)	HP200-R021
	N2U09	HN200-L033
	V2U09	HV200-L029
L024		
+ DDC CLOCK T7		
	X2S02	HX210-L024
	(P2G08)	HP200-R047
	N2G08	HN200-L034
	V2U02	HV200-L017

LINE/SIGNAL	PIN	SHEET/LINE
L025		
- CDN SD1 ND/DR GATED DEVICE		
	X2U05	HX210-L025
	(N2S05)	HN200-R044
	H2B03	HH220-L009
L026		
- DATA READY LATCHED		
	X2S03	HX210-L026
	(H2B05)	HH220-R006
L027		
+ DDC COUNT = 0 OR 1		
	X2P13	HX210-L027
	(V2P13)	HV200-R015
L028		
+ DDC COUNT = ZERO		
	X2J10	HX210-L028
	(V2P12)	HV200-R013
L029		
- STOP DDC CNT=8		
	X2M13	HX210-L029
	(V2M13)	HV200-R018
L030		
+ GATE DTG REG		
	X2P09	HX210-L030
	(V2P09)	HV200-R021
	J2P06	HJ200-L071
L031		
+ GATE DTI REG/PAD COUNTER		
	X2M07	HX210-L031
	(V2M07)	HV200-R022
	K2G05	HK200-L031
	X2M07	HX210-L048
L032		
+ GATE DBI REG		
	X2P06	HX210-L032
	(V2P06)	HV200-R019
	X2P06	HX210-L046
L033		
+ GATE DTO REG		
	X2M08	HX210-L033
	(V2M08)	HV200-R023
L034		
+ GATE DBO REG		
	X2P07	HX210-L034
	(V2P07)	HV200-R020
L035		
+ STOP DDC		
	X2U02	HX210-L035
	(P2J13)	HP200-R039
	R2U11	HR200-L033
L036		
- DEV DXR BUS BIT 0		
	X2B12	HX210-L036
	(K2G13)	HK200-R006
	(N2G09)	HN200-R030
	(X2J07)	HX210-R038

LINE/SIGNAL	PIN	SHEET/LINE
L037		
- DEV DXR BUS BIT 1		
	X2D07	HX210-L037
	(K2P05)	HK200-R006
	(N2G11)	HN200-R031
	(X2J04)	HX210-R039
L038		
- DEV DXR BUS BIT 2		
	X2D11	HX210-L038
	(K2P02)	HK200-R006
	(N2G10)	HN200-R032
	(X2G02)	HX210-R040
L039		
- DEV DXR BUS BIT 3		
	X2B13	HX210-L039
	(K2J12)	HK200-R006
	(N2J09)	HN200-R033
	(X2G05)	HX210-R041
L040		
- DEV DXR BUS BIT 4		
	X2B10	HX210-L040
	(K2J13)	HK200-R006
	(N2J13)	HN200-R034
	(X2G09)	HX210-R042
L041		
- DEV DXR BUS BIT 5		
	X2B07	HX210-L041
	(K2J10)	HK200-R006
	(N2P09)	HN200-R035
	(X2G08)	HX210-R043
L042		
- DEV DXR BUS BIT 6		
	X2D09	HX210-L042
	(K2M04)	HK200-R006
	(N2G13)	HN200-R036
	(X2G04)	HX210-R044
L043		
- DEV DXR BUS BIT 7		
	X2D02	HX210-L043
	(K2M03)	HK200-R006
	(N2M08)	HN200-R037
	(X2G03)	HX210-R045
L044		
- DEV DXR BUS BIT P		
	X2B04	HX210-L044
	(K2P04)	HK200-R006
	(N2M09)	HN200-R038
	(X2J05)	HX210-R046
L045		
+ SPECIAL RESET		
	X2P10	HX210-L045
	(R2B12)	HR200-R027
	C2G10	HC200-L015
	E2G09	HE210-L015
	F2M03	HF200-L055
	P2J05	HP200-L017

LINE/SIGNAL	PIN	SHEET/LINE
L046		
+ GATE DBI REG		
	X2P06	HX210-L046
	(V2P06)	HV200-R019
	X2P06	HX210-L032
L047		
+ RESET		
	X2M02	HX210-L047
	(R2B07)	HR200-R022
	C2G09	HC200-L016
	D2M05	HD210-L038
	E2M05	HE210-L027
	F2M02	HF200-L054
	G2J13	HG210-L017
	H2S03	HH220-L060
	M2P11	HM200-L011
	P2J09	HP200-L022
	V2G13	HV200-L006
	X2M02	HX210-L013
L048		
+ GATE DTI REG/PAD COUNTER		
	X2M07	HX210-L048
	(V2M07)	HV200-R022
	K2G05	HK200-L031
	N2M07	HN200-L031
L049		
+ DDC CLOCK T0		
	X2D04	HX210-L049
	(P2S09)	HP200-R018
	N2U07	HN200-L027
	X2D04	HX210-L017
L050		
- RECYCLE/COUNT >7		
	X2P11	HX210-L050
	(V2P11)	HV200-R016
R003		
- TAKE DATA (DDC)		
	(X2U10)	HX210-R003
	H2D07	HH220-L007
	K2D09	HK200-L005
	N2S12	HN200-L035
R004		
- DATA TAKEN (DDC)		
	(X2S08)	HX210-R004
	K2B08	HK200-L006
	N2U06	HN200-L036
	V2B10	HV200-L003
R005		
+ DECREMENT COUNTER		
	(X2M12)	HX210-R005
	V2M12	HV200-L005
R006		
+ DDC END OF TRANSFER		
	(X2S07)	HX210-R006
	J2P09	HJ200-L040

LINE/SIGNAL	PIN	SHEET/LINE
R007		
+ DATA OVERRUN		
	(X2S10)	HX210-R007
	J2S09	HJ200-L043
R008		
+ SYNC IN CHECK		
	(X2S12)	HX210-R008
	J2B02	HJ200-L050
R009		
+ DDC BUS IN PC		
	(X2U06)	HX210-R009
	J2M12	HJ200-L048
R010		
- CLOCK CHECK TWO		
	(X2S09)	HX210-R010
	(F2B02)	HF200-R041
	(G2S05)	HG210-R023
	K2S12	HK200-L012
R011		
+ DDC BUS 1 BIT 0		
	(X2Z25)	HX210-R011
1T-A1	*BG05 *	
R011		
+ DDC BUS 1 BIT 1		
	(X2Z26)	HX210-R011
1T-A1	*BJ06 *	
R011		
+ DDC BUS 1 BIT 2		
	(X2Z27)	HX210-R011
1T-A1	*BG06 *	
R011		
+ DDC BUS 1 BIT 3		
	(X2Z28)	HX210-R011
1T-A1	*BG08 *	
R011		
+ DDC BUS 1 BIT 4		
	(X2Z29)	HX210-R011
1T-A1	*BJ09 *	
R011		
+ DDC BUS 1 BIT 5		
	(X2Z30)	HX210-R011
1T-A1	*BG10 *	
R011		
+ DDC BUS 1 BIT 6		
	(X2Z31)	HX210-R011
1T-A1	*BJ11 *	
R011		
+ DDC BUS 1 BIT 7		
	(X2Z32)	HX210-R011
1T-A1	*BG12 *	
R011		
+ DDC BUS 1 BIT P		
	(X2Z33)	HX210-R011
1T-A1	*BJ13 *	
R012		
- DDC BUS 1 BIT 0		
	(X2Z05)	HX210-R012
1T-A1	*BG04 *	
R012		
- DDC BUS 1 BIT 1		
	(X2Z06)	HX210-R012
1T-A1	*BJ07 *	
R012		
- DDC BUS 1 BIT 2		
	(X2Z07)	HX210-R012
1T-A1	*BG11 *	
R012		
- DDC BUS 1 BIT 3		
	(X2Z08)	HX210-R012
1T-A1	*BG07 *	
R012		
- DDC BUS 1 BIT 4		
	(X2Z09)	HX210-R012
1T-A1	*BJ08 *	
R012		
- DDG BUS 1 BIT 5		
	(X2Z10)	HX210-R012
1T-A1	*BG09 *	
R012		
- DDC BUS 1 BIT 6		
	(X2Z11)	HX210-R012
1T-A1	*BJ10 *	
R012		
- DDC BUS 1 BIT 7		
	(X2Z12)	HX210-R012
1T-A1	*BG13 *	
R012		
- DDC BUS 1 BIT P		
	(X2Z13)	HX210-R012
1T-A1	*BJ12 *	
R013		
+ DDC BUS 0 BIT 0		
	(X2Y28)	HX210-R013
1T-A1	*BB08 *	
R014		
+ DDC BUS 0 BIT 1		
	(X2Y29)	HX210-R014
1T-A1	*BD09 *	
R015		
+ DDC BUS 0 BIT 2		
	(X2Y30)	HX210-R015
1T-A1	*BB10 *	
R016		
+ DDC BUS 0 BIT 3		
	(X2Y31)	HX210-R016
1T-A1	*BD11 *	
R017		
+ DDC BUS 0 BIT 4		
	(X2Y32)	HX210-R017
1T-A1	*BB12 *	
R018		
+ DDC BUS 0 BIT 5		
	(X2Y33)	HX210-R018
1T-A1	*BD13 *	
R019		
+ DDC BUS 0 BIT 6		
	(X2Z22)	HX210-R019
1T-A1	*BJ02 *	
R020		
+ DDC BUS 0 BIT 7		
	(X2Z23)	HX210-R020
1T-A1	*BG03 *	
R021		
+ DDC BUS 0 BIT P		
	(X2Z24)	HX210-R021
1T-A1	*BJ04 *	
R022		
- DDG BUS 0 BIT 0		
	(X2Y08)	HX210-R022
1T-A1	*BB07 *	
R023		
- DDC BUS 0 BIT 1		
	(X2Y09)	HX210-R023
1T-A1	*DD08 *	
R024		
- DDC BUS 0 BIT 2		
	(X2Y10)	HX210-R024
1T-A1	*BB09 *	
R025		
- DDC BUS 0 BIT 3		
	(X2Y11)	HX210-R025
1T-A1	*BD10 *	
R026		
- DDC BUS 0 BIT 4		
	(X2Y12)	HX210-R026
1T-A1	*BB13 *	
R027		
- DDC BUS 0 BIT 5		
	(X2Y13)	HX210-R027
1T-A1	*BD12 *	
R028		
- DDC BUS 0 BIT 6		
	(X2Z02)	HX210-R028
1T-A1	*BJ03 *	
R029		
- DDC BUS 0 BIT 7		
	(X2Z03)	HX210-R029
1T-A1	*BG02 *	
R030		
- DDC BUS 0 BIT P		
	(X2Z04)	HX210-R030
1T-A1	*BJ05 *	
R031		
+ TAG OUT BIT 0		
	(X2Y22)	HX210-R031
1T-A1	*BD02 *	
R032		
- TAG OUT BIT 0		
	(X2Y02)	HX210-R032
1T-A1	*BD03 *	
R033		
+ TAG OUT BIT 1		
	(X2Y23)	HX210-R033
1T-A1	*BB03 *	
R034		
- TAG OUT BIT 1		
	(X2Y03)	HX210-R034
1T-A1	*BB02 *	
R035		
+ TAG OUT BIT 2		
	(X2Y24)	HX210-R035
1T-A1	*BD04 *	
R036		
- TAG OUT BIT 2		
	(X2Y04)	HX210-R036
1T-A1	*BD05 *	
R037		
+ DDC CARD CHECK		
	(X2U04)	HX210-R037
	J2D10	HJ200-L045
R038		
- DEV DXR BUS BIT 0		
	(X2J07)	HX210-R038
	(K2G13)	HK200-R006
	(N2G09)	HN200-R030
	X2B12	HX210-L036
R039		
- DEV DXR BUS BIT 1		
	(X2J04)	HX210-R039
	(K2F05)	HK200-R006
	(N2G11)	HN200-R031
	X2D07	HX210-L037
R040		
- DEV DXR BUS BIT 2		
	(X2G02)	HX210-R040
	(K2P02)	HK200-R006
	(N2G10)	HN200-R032
	X2D11	HX210-L038
R041		
- DEV DXR BUS BIT 3		
	(X2G05)	HX210-R041
	(K2J12)	HK200-R006
	(N2J09)	HN200-R033
	X2B13	HX210-L039
R042		
- DEV DXR BUS BIT 4		
	(X2G09)	HX210-R042
	(K2J13)	HK200-R006
	(N2J13)	HN200-R034
	X2B10	HX210-L040
R043		
- DEV DXR BUS BIT 5		
	(X2G08)	HX210-R043
	(K2J10)	HK200-R006
	(N2F09)	HN200-R035
	X2B07	HX210-L041
R044		
- DEV DXR BUS BIT 6		
	(X2G04)	HX210-R044
	(K2M04)	HK200-R006
	(N2G13)	HN200-R036
	X2D09	HX210-L042
R045		
- DEV DXR BUS BIT 7		
	(X2G03)	HX210-R045
	(K2M03)	HK200-R006
	(N2M08)	HN200-R037
	X2D02	HX210-L043
R046		
- DEV DXR BUS BIT P		
	(X2J05)	HX210-R046
	(K2P04)	HK200-R006
	(N2M09)	HN200-R038
	X2B04	HX210-L044
R047		
- ALU IN2 BIT 0		
	(X2M04)	HX210-R047
	(N2S10)	HN200-R012
	(R2S10)	HR200-R016
	(R2Z10)	HR200-R017
	(V2M04)	HV200-R003
	Q2Z10	HQ200-L008
R048		
- ALU IN2 BIT 1		
	(X2J13)	HX210-R048
	(N2S09)	HN200-R013
	(R2U07)	HR200-R016
	(R2Z07)	HR200-R017
	(V2J13)	HV200-R004
	Q2Z07	HQ200-L008
R049		
- ALU IN2 BIT 2		
	(X2G12)	HX210-R049
	(N2U10)	HN200-R014
	(R2U09)	HR200-R016
	(R2Z09)	HR200-R017
	(V2G12)	HV200-R005
	Q2Z09	HQ200-L008
R050		
- ALU IN2 BIT 3		
	(X2P05)	HX210-R050
	(N2U12)	HN200-R015
	(R2U10)	HR200-R016
	(R2Z30)	HR200-R017
	(V2P05)	HV200-R006
	Q2Z30	HQ200-L008
R051		
- ALU IN2 BIT 4		
	(X2M05)	HX210-R051
	(N2U13)	HN200-R016
	(R2S13)	HR200-R016
	(R2Z33)	HR200-R017
	(V2M05)	HV200-R007
	Q2Z33	HQ200-L008
R052		
- ALU IN2 BIT 5		
	(X2M03)	HX210-R052
	(N2S13)	HN200-R017
	(R2U13)	HR200-R016
	(R2Z13)	HR200-R017
	(V2M03)	HV200-R008
	Q2Z13	HQ200-L008
R053		
- ALU IN2 BIT 6		
	(X2G10)	HX210-R053
	(N2S08)	HN200-R018
	(R2S07)	HR200-R016
	(R2Z28)	HR200-R017
	(V2G10)	HV200-R009
	Q2Z28	HQ200-L008
R054		
- ALU IN2 BIT 7		
	(X2P02)	HX210-R054
	(N2U05)	HN200-R019
	(R2U05)	HR200-R016
	(R2Z05)	HR200-R017
	(V2P02)	HV200-R010
	Q2Z05	HQ200-L008
R055		
- ALU IN2 BIT P		
	(X2P04)	HX210-R055
	(N2U02)	HN200-R020
	(R2S08)	HR200-R016
	(R2Z06)	HR200-R017
	(V2P04)	HV200-R011
	Q2Z06	HQ200-L008

BI-DIRECTIONAL DEV. CONTROLLER XRL HX210

LINE/SIGNAL	PIN	SHEET/LINE
R056		
- CHECK TWO		
	(X2J09)	HX210-R056
	(F2S09)	HF200-R040
	(J2U10)	HJ200-R017
	(N2D04)	HN200-R010
	R2S09	HR200-L027
R057		
+ FIRST SYNC IN 1		
	(X2J06)	HX210-R057
	J2P13	HJ200-L055
R058		
+ FIRST SYNC IN 2		
	(X2J11)	HX210-R058
	J2M09	HJ200-L057
R059		
- END OP LATCHED T4		
	(X2J12)	HX210-R059
	J2M08	HJ200-L064
R060		
+ TAG IN BIT 0		
	(X2Y25)	HX210-R060
1T-A1	*BB05 *	
R061		
- TAG IN BIT 0		
	(X2Y05)	HX210-R061
1T-A1	*BB04 *	
R062		
+ TAG IN BIT 1		
	(X2Y26)	HX210-R062
1T-A1	*BD06 *	
R063		
- TAG IN BIT 1		
	(X2Y06)	HX210-R063
1T-A1	*BD07 *	
R064		
+ CONNECTION CHECK ALERT		
	(X2Y27)	HX210-R064
1T-A1	*BB06 *	
R065		
- CONNECTION CHECK ALERT		
	(X2Y07)	HX210-R065
1T-A1	*BB11 *	

BI-DIRECTIONAL DEV. CONTROLLER XRL HX210

SEQNO	PGE OF	FICHE CD	FRM	PAGEID	TYP	CARD NAME	MODEL	FEATURE	VERSION	CARD LOC
JA020	1	1	A01	AA000	BLI	N/A	N/A	N/A	N/A	N/A
JA020	2	1	A03	JC200	CRD	CMPC	2X	ALL	EXPANDED STORAGE	1B-A1C2
JA020	3	1	A05	JC200	XRL	CMPC	2X	ALL	EXPANDED STORAGE	1B-A1C2
JA020	5	1	A09	JD200	CRD	CMPB	2X	ALL	EXPANDED STORAGE	1B-A1D2
JA020	6	1	A11	JD200	XRL	CMPB	2X	ALL	EXPANDED STORAGE	1B-A1D2
JA020	8	1	A15	JE200	CRD	CMPB	2X	ALL	EXPANDED STORAGE	1B-A1E2
JA020	9	1	A17	JE200	XRL	CMPB	2X	ALL	EXPANDED STORAGE	1B-A1E2
JA020	11	1	B03	JF200	CRD	CMPC	2X	ALL	EXPANDED STORAGE	1B-A1F2
JA020	12	1	B05	JF200	XRL	CMPC	2X	ALL	EXPANDED STORAGE	1B-A1F2
JA020	14	1	B09	JG200	CRD	CMPB	2X	ALL	EXPANDED STORAGE	1B-A1G2
JA020	15	1	B11	JG200	XRL	CMPB	2X	ALL	EXPANDED STORAGE	1B-A1G2
JA020	17	1	B15	JH200	CRD	CMPB	2X	ALL	EXPANDED STORAGE	1B-A1H2
JA020	18	1	B17	JH200	XRL	CMPB	2X	ALL	EXPANDED STORAGE	1B-A1H2
JA020	20	1	C03	JJ200	CRD	CME1	2X	ALL	EXPANDED STORAGE	1B-A1J2
JA020	21	1	C05	JJ200	XRL	CME1	2X	ALL	EXPANDED STORAGE	1B-A1J2
JA020	23	1	C09	JK200	CRD	CME2	2X	ALL	EXPANDED STORAGE	1B-A1K2
JA020	24	1	C11	JK200	XRL	CME2	2X	ALL	EXPANDED STORAGE	1B-A1K2
JA020	27	1	C17	JL200	CRD	CME3	2X	ALL	EXPANDED STORAGE	1B-A1L2
JA020	28	1	D01	JL200	XRL	CME3	2X	ALL	EXPANDED STORAGE	1B-A1L2
JA020	31	1	D07	JM200	CRD	CMDDM	2X	ALL	EXPANDED STORAGE	1B-A1M2
JA020	32	1	D09	JM200	XRL	CMDDM	2X	ALL	EXPANDED STORAGE	1B-A1M2
JA020	34	1	D13	JN200	CRD	CMDDN	2X	ALL	EXPANDED STORAGE	1B-A1N2
JA020	35	1	D15	JN200	XRL	CMDDN	2X	ALL	EXPANDED STORAGE	1B-A1N2
JA020	37	1	E01	JP200	CRD	CMC1	2X	ALL	EXPANDED STORAGE	1B-A1P2
JA020	38	1	E03	JP200	XRL	CMC1	2X	ALL	EXPANDED STORAGE	1B-A1P2
JA020	40	1	E07	JQ210	CRD	CLC2	2X	ALL	EXPANDED STORAGE	1B-A1Q2
JA020	41	1	E09	JQ210	XRL	CLC2	2X	ALL	EXPANDED STORAGE	1B-A1Q2
JA020	43	1	E13	JR200	CRD	CMSA	2X	ALL	EXPANDED STORAGE	1B-A1R2
JA020	44	1	E15	JR200	XRL	CMSA	2X	ALL	EXPANDED STORAGE	1B-A1R2
JA020	46	2	A01	AA000	BLI	N/A	N/A	N/A	N/A	N/A
JA020	47	2	A03	JS200	CRD	CMSA	2X	ALL	EXPANDED STORAGE	1B-A1S2
JA020	48	2	A05	JS200	XRL	CMSA	2X	ALL	EXPANDED STORAGE	1B-A1S2
JA020	50	2	A09	JT210	CRD	CLDA	2X	ALL	EXPANDED STORAGE	1B-A1T2
JA020	51	2	A11	JT210	XRL	CLDA	2X	ALL	EXPANDED STORAGE	1B-A1T2

GLOSSARY OF ABBREVIATIONS USED

ABBR.	EXPLANATION
ASDM	AUXILIARY STORAGE DIRECTOR MICROCONTROLLER
BLI	BOARD LOGIC INDEX
CD	CARD (MICROFICHE)
CRD	CARD REFERENCE DIAGRAM
EW	ELECTRONIC WRAP
FRM	FRAME (MICROFICHE)
HDSCS	HIGH DENSITY STATIC CONTROL STORAGE
IR	INDIRECT REGISTER
MDM	VOLUME R30
PA	PORT ADAPTER (CMCD CARD)
SAR	STORAGE ADDRESS REGISTER
SB1	STORAGE BOARD 1
SD1	STORAGE DIRECTOR 1
SDM	STORAGE DIRECTOR MICROCONTROLLER
XRL	CROSS REFERENCE LIST
2X1	TWO CHANNEL SWITCH
4X1	TWO CHANNEL ADDITIONAL OR FOUR CHANNEL

NOTES USED ON CROSS REFERENCE PAGES

THE LEGEND ON THE CROSS REFERENCE PAGES
SHOW ( ) AS THE SOURCE(S) OF THE SIGNAL
AND * * AS THE CABLE SOCKET PINS

IN ADDITION THE FOLLOWING SPECIAL DESIGNATIONS
WILL ALSO SHOW ON THESE PAGES

ANANN FOLLOWED BY
+2-CH *ANANN* INDICATES PREWIRING FOR TWO CHANNEL ADDITIONAL
->MDM *AANNN* REFERENCES MDM PAGE
->MNT *DEV * INDICATES A LINE TO THE MAINTENANCE DEVICE

NOTE: THE LINE NAME IN THE MDM MANUAL FOR A GIVEN NET WILL IN GENERAL NOT MATCH THE LINE NAME IN THE LRM EXACTLY.

NOTE: MANY OF THE LINE NAMES ARE OF THE FORM
'+ PPS BBB LINE NAME'
WHERE 'PP' IS THE LAST TWO CHARACTERS OF THE PNAME OF THE SOURCE. 'S' IS THE BOARD POSITION ON THE SOURCE AND 'BBB' IS A BOARD WITH WHICH THE LINE IS ASSOCIATED.

003 - CAM SD1 REG ADDRESS (0-7,P) == * = 003
004 - CAM SD1 REGISTER R/W CLOCK --- J11 004
005 - CAM SD1 REGISTER READ GATE --- G08 005
006 - CAM SD1 REGISTER WRITE GATE -- J07 006
007 - C1P SD1 PC READ ENABLE ------- J12 007
008 - C1P SD1 PC DLYD READ CLOCK --- G12 008
009 - E3L SD1 PC READ ENABLE ------- M05 009
010 - E3L SD1 PC DLYD READ CLOCK --- M02 010
011 - PBD SD1 PC READ ENABLE ------- P05 011
012 - PBD SD1 PC DLYD READ CLOCK --- P04 012
013 - PBE SD1 PC READ ENABLE ------- P06 013
014 - PBE SD1 PC DLYD READ CLOCK --- P07 014
015 - SAR SD1 PC READ ENABLE ------- J13 015
016 - SAR SD1 PC DLYD READ CLOCK --- G13 016
017 - SD1 SS +5V POWER OFF --------- J06 017
018 - PCC SPARE RECEIVER IN 1 ------ B13 018
019 - PCC SPARE RECEIVER IN 2 ------ J02 019
020 - PCC SPARE DRIVER IN 1 -------- P09 020

= * - CAM SD1 REG R/W DATA (0-7,P) = 003
= * - PCC SD1 PB/E3 ADDRESS (0-7,P) 004
= * - PCC SD1 PB/E3 R/W DATA (0-7,P) 005
= * - PCC SD1 C1/SA ADDRESS (0-7,P) 006
= * - PCC SD1 C1/SA R/W DATA (0-7,P) 007
P02 - PCC SD1 C1/SA READ GATE ------ 008
M03 - PCC SD1 C1/SA WRITE GATE ----- 009
G11 - PCC SD1 C1/SA R/W CLK -------- 010
S04 - PCC SD1 PB/E3 READ GATE ------ 011
U09 - PCC SD1 PB/E3 WRITE GATE ----- 012
S08 - PCC SD1 PB/E3 R/W CLK -------- 013
M11 - PCC SD1 REG READ CLOCK DELAYED 014
P12 - PCC SD1 PARITY ERROR --------- 015
P10 - PCC SD1 READ PARITY ERROR ---- 016
G03 - PCC SPARE RECEIVER OUT 1 ----- 017
J04 - PCC SPARE RECEIVER OUT 2 ----- 018
P11 - PCC SPARE DRIVER OUT 1 ------- 019
W07 - PCC SD1 PB/E3 WRITE GATE ----- 020
W11 - PCC SD1 PB/E3 READ GATE ------ 021
X07 - PCC SD1 PB/E3 R/W CLK -------- 022
= * - PCC SD1 PB/E3 R/W DATA (0-7,P) 023
= * - PCC SD1 PB/E3 ADDRESS (0-7,P) 024

CMPC CARD

OVERVIEW

The CMPC (Port Controller) card serves as the interface between the Storage Director and Storage Control board Indirect Register bus.

PRIMARY FUNCTIONS

- Provides address and data bus redrive.
- Parity checks the Indirect Register bus during write and read operations.

PRIMARY COMPONENTS

- Indirect Register Bus Drivers and Receivers.
- Parity Check logic.
- Control Line Redrivers.

ERROR CHECKING

- PC IR Parity Error (CCOMACK, bit 5).
  - This bit indicates a parity error was detected on the indirect register address bus during a write or read operation. It also indicates a parity error on the indirect register data bus on a write operation only.
- PC IR Read Parity Error (CCOMACK, bit 6).
  - This bit indicates a parity error was detected on either C1/SA data bus or the PB/E3 data bus on a read.

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- CAM SD1 REG ADDRESS 0		
	C2D04	JC200-L003
1A-B4 (M2X27)		HM200-R041
1B-A1 *A2D07*		
L003		
- CAM SD1 REG ADDRESS 1		
	C2B03	JC200-L003
1A-B4 (M2X25)		HM200-R041
1B-A1 *A2D05*		
L003		
- CAM SD1 REG ADDRESS 2		
	C2B04	JC200-L003
1A-B4 (M2X26)		HM200-R041
1B-A1 *A2D06*		
L003		
- CAM SD1 REG ADDRESS 3		
	C2B09	JC200-L003
1A-B4 (M2X05)		HM200-R041
1B-A1 *A2B05*		
L003		
- CAM SD1 REG ADDRESS 4		
	C2B08	JC200-L003
1A-B4 (M2X24)		HM200-R041
1B-A1 *A2D04*		
L003		
- CAM SD1 REG ADDRESS 5		
	C2D09	JC200-L003
1A-B4 (M2X03)		HM200-R041
1B-A1 *A2B03*		
L003		
- CAM SD1 REG ADDRESS 6		
	C2D11	JC200-L003
1A-B4 (M2X22)		HM200-R041
1B-A1 *A2D02*		
L003		
- CAM SD1 REG ADDRESS 7		
	C2D13	JC200-L003
1A-B4 (M2X23)		HM200-R041
1B-A1 *A2D03*		
L003		
- CAM SD1 REG ADDRESS P		
	C2B07	JC200-L003
1A-B4 (M2X33)		HM200-R041
1B-A1 *A2D13*		
L004		
- CAM SD1 REGISTER R/W CLOCK		
	C2J11	JC200-L004
1A-B4 (M2D10)		HM200-R038
1B-A1 *A5D09*		
1A-B4 *N6D02*		
L005		
- CAM SD1 REGISTER READ GATE		
	C2G08	JC200-L005
1A-B4 (M2B08)		HM200-R040
1B-A1 *A5D11*		
1A-B4 *P6A02*		

LINE/SIGNAL	PIN	SHEET/LINE
L006		
- CAM SD1 REGISTER WRITE GATE		
	C2J07	JC200-L006
1A-B4 (M2D11)		HM200-R039
1B-A1 *A5D10*		
1A-B4 *N6E02*		
L007		
- C1P SD1 PC READ ENABLE		
	C2J12	JC200-L007
	(P2C08)	JP200-R004
L008		
- C1P SD1 PC DLYD READ CLOCK		
	C2G12	JC200-L008
	(P2C02)	JP200-R003
L009		
- E3L SD1 PC READ ENABLE		
	C2M05	JC200-L009
	(L2J05)	JL200-R012
L010		
- E3L SD1 PC DLYD READ CLOCK		
	C2M02	JC200-L010
	(L2D05)	JL200-R006
L011		
- PBD SD1 PC READ ENABLE		
	C2P05	JC200-L011
	(D2P09)	JD200-R007
L012		
- PBD SD1 PC DLYD READ CLOCK		
	C2P04	JC200-L012
	(D2G08)	JD200-R008
L013		
- PBE SD1 PC READ ENABLE		
	C2P06	JC200-L013
	(E2P09)	JE200-R007
L014		
- PBE SD1 PC DLYD READ CLOCK		
	C2P07	JC200-L014
	(E2G08)	JE200-R008
L015		
- SAR SD1 PC READ ENABLE		
	C2J13	JC200-L015
	(R2D07)	JR200-R004
L016		
- SAR SD1 PC DLYD READ CLOCK		
	C2G13	JC200-L016
	(R2B02)	JR200-R005

LINE/SIGNAL	PIN	SHEET/LINE
L017		
- SD1 SS +5V POWER OFF		
	C2J06	JC200-L017
1A-B3 (M2S07)		GM200-R020
1A-B1 (J2D10)		EJ200-R008
	P2C09	JP200-L054
1B-A1 *V3D05*		
1B-A1 *A5D07*		
1B-A1 *B5D03*		
1A-B1 *V5D05*		
1A-B3 *M6C02*		
L018		
- PCC SPARE RECEIVER IN 1		
	C2B13	JC200-L018
L019		
- PCC SPARE RECEIVER IN 2		
	C2J02	JC200-L019
L020		
- PCC SPARE DRIVER IN 1		
	C2P09	JC200-L020
R003		
- CAM SD1 REG R/W DATA 0		
	(C2M04)	JC200-R003
1A-B4 (M2X29)		HM200-R033
1B-A1 *A2D09*		
R003		
- CAM SD1 REG R/W DATA 1		
	(C2U07)	JC200-R003
1A-B4 (M2X12)		HM200-R033
1B-A1 *A2B12*		
R003		
- CAM SD1 REG R/W DATA 2		
	(C2S06)	JC200-R003
1A-B4 (M2X32)		HM200-R033
1B-A1 *A2D12*		
R003		
- CAM SD1 REG R/W DATA 3		
	(C2S07)	JC200-R003
1A-B4 (M2X11)		HM200-R033
1B-A1 *A2B11*		
R003		
- CAM SD1 REG R/W DATA 4		
	(C2S05)	JC200-R003
1A-B4 (M2X31)		HM200-R033
1B-A1 *A2D11*		
R003		
- CAM SD1 REG R/W DATA 5		
	(C2U06)	JC200-R003
1A-B4 (M2X10)		HM200-R033
1B-A1 *A2B10*		
R003		
- CAM SD1 REG R/W DATA 6		
	(C2S03)	JC200-R003
1A-B4 (M2X30)		HM200-R033
1B-A1 *A2D10*		

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- CAM SD1 REG R/W DATA 7		
	(C2U04)	JC200-R003
1A-B4 (M2X07)		HM200-R033
1B-A1 *A2B07*		
R003		
- CAM SD1 REG R/W DATA P		
	(C2U05)	JC200-R003
1A-B4 (M2X02)		HM200-R033
1B-A1 *A2B02*		
R004		
- PCC SD1 PB/E3 ADDRESS 0		
	(C2U10)	JC200-R004
	(C2W25)	JC200-R024
	D2W25	JD200-L021
	E2W25	JE200-L021
	L2B11	JL200-L003
R004		
- PCC SD1 PB/E3 ADDRESS 1		
	(C2S10)	JC200-R004
	(C2W29)	JC200-R024
	D2W29	JD200-L021
	E2W29	JE200-L021
	L2G02	JL200-L003
R004		
- PCC SD1 PB/E3 ADDRESS 2		
	(C2U11)	JC200-R004
	(C2W33)	JC200-R024
	D2W33	JD200-L021
	E2W33	JE200-L021
	L2G03	JL200-L003
R004		
- PCC SD1 PB/E3 ADDRESS 3		
	(C2S11)	JC200-R004
	(C2X22)	JC200-R024
	D2X22	JD200-L021
	E2X22	JE200-L021
	L2J02	JL200-L003
R004		
- PCC SD1 PB/E3 ADDRESS 4		
	(C2U12)	JC200-R004
	(C2X25)	JC200-R024
	D2X25	JD200-L021
	E2X25	JE200-L021
	L2G11	JL200-L003
R004		
- PCC SD1 PB/E3 ADDRESS 5		
	(C2S12)	JC200-R004
	(C2X29)	JC200-R024
	D2X29	JD200-L021
	E2X29	JE200-L021
	L2J07	JL200-L003
R004		
- PCC SD1 PB/E3 ADDRESS 6		
	(C2U13)	JC200-R004
	(C2X33)	JC200-R024
	D2X33	JD200-L021
	E2X33	JE200-L021
	L2G12	JL200-L003

LINE/SIGNAL	PIN	SHEET/LINE
R004		
- PCC SD1 PB/E3 ADDRESS 7		
	(C2S13)	JC200-R004
	(C2X11)	JC200-R024
	D2X11	JD200-L021
	E2X11	JE200-L021
	L2G10	JL200-L003
R004		
- PCC SD1 PB/E3 ADDRESS P		
	(C2S09)	JC200-R004
	(C2W22)	JC200-R024
	D2W22	JD200-L021
	E2W22	JE200-L021
	L2B06	JL200-L003
R005		
- PCC SD1 PB/E3 R/W DATA 0		
	(C2M08)	JC200-R005
	(C2W05)	JC200-R023
	(D2W05)	JD200-R017
	(E2W05)	JE200-R017
	(L2M05)	JL200-R003
R005		
- PCC SD1 PB/E3 R/W DATA 1		
	(C2M09)	JC200-R005
	(C2W09)	JC200-R023
	(D2W09)	JD200-R017
	(E2W09)	JE200-R017
	(L2M04)	JL200-R003
R005		
- PCC SD1 PB/E3 R/W DATA 2		
	(C2M10)	JC200-R005
	(C2W13)	JC200-R023
	(D2W13)	JD200-R017
	(E2W13)	JE200-R017
	(L2P07)	JL200-R003
R005		
- PCC SD1 PB/E3 R/W DATA 3		
	(C2M12)	JC200-R005
	(C2X02)	JC200-R023
	(D2X02)	JD200-R017
	(E2X02)	JE200-R017
	(L2S04)	JL200-R003
R005		
- PCC SD1 PB/E3 R/W DATA 4		
	(C2P13)	JC200-R005
	(C2X05)	JC200-R023
	(D2X05)	JD200-R017
	(E2X05)	JE200-R017
	(L2S06)	JL200-R003
R005		
- PCC SD1 PB/E3 R/W DATA 5		
	(C2M13)	JC200-R005
	(C2X09)	JC200-R023
	(D2X09)	JD200-R017
	(E2X09)	JE200-R017
	(L2P06)	JL200-R003

LINE/SIGNAL	PIN	SHEET/LINE
R005		
- PCC SD1 PB/E3 R/W DATA 6		
	(C2U02)	JC200-R005
	(C2X13)	JC200-R023
	(D2X13)	JD200-R017
	(E2X13)	JE200-R017
	(L2M07)	JL200-R003
R005		
- PCC SD1 PB/E3 R/W DATA 7		
	(C2S02)	JC200-R005
	(C2X32)	JC200-R023
	(D2X32)	JD200-R017
	(E2X32)	JE200-R017
	(L2P05)	JL200-R003
R005		
- PCC SD1 PB/E3 R/W DATA P		
	(C2M07)	JC200-R005
	(C2W02)	JC200-R023
	(D2W02)	JD200-R017
	(E2W02)	JE200-R017
	(L2U07)	JL200-R003
R006		
- PCC SD1 C1/SA ADDRESS 0		
	(C2B06)	JC200-R006
	P2B05	JP200-L003
	R2B04	JR200-L003
R006		
- PCC SD1 C1/SA ADDRESS 1		
	(C2D07)	JC200-R006
	P2D11	JP200-L003
	R2D11	JR200-L003
R006		
- PCC SD1 C1/SA ADDRESS 2		
	(C2D05)	JC200-R006
	P2C10	JP200-L003
	R2D02	JR200-L003
R006		
- PCC SD1 C1/SA ADDRESS 3		
	(C2D06)	JC200-R006
	P2D05	JP200-L003
	R2D05	JR200-L003
R006		
- PCC SD1 C1/SA ADDRESS 4		
	(C2B11)	JC200-R006
	P2D10	JP200-L003
	R2B10	JR200-L003
R006		
- PCC SD1 C1/SA ADDRESS 5		
	(C2D12)	JC200-R006
	P2B09	JP200-L003
	R2D09	JR200-L003
R006		
- PCC SD1 C1/SA ADDRESS 6		
	(C2D10)	JC200-R006
	P2B11	JP200-L003
	R2D10	JR200-L003

PORT CONTROL - SD1 XRL JC200

LINE/SIGNAL	PIN	SHEET/LINE
R006		
- PCC SD1 C1/SA ADDRESS 7		
	(C2B10)	JC200-R006
	P2D09	JP200-L003
	R2B09	JR200-L003
R006		
- PCC SD1 C1/SA ADDRESS P		
	(C2D02)	JC200-R006
	P2C04	JP200-L003
	R2B05	JR200-L003
R007		
- PCC SD1 C1/SA R/W DATA 0		
	(C2J10)	JC200-R007
	(P2H05)	JP200-R010
	(R2D04)	JR200-R003
R007		
- PCC SD1 C1/SA R/W DATA 1		
	(C2G10)	JC200-R007
	(P2H03)	JP200-R010
	(R2B07)	JR200-R003
R007		
- PCC SD1 C1/SA R/W DATA 2		
	(C2G09)	JC200-R007
	(P2J10)	JP200-R010
	(R2B08)	JR200-R003
R007		
- PCC SD1 C1/SA R/W DATA 3		
	(C2J09)	JC200-R007
	(P2G05)	JP200-R010
	(R2B11)	JR200-R003
R007		
- PCC SD1 C1/SA R/W DATA 4		
	(C2G07)	JC200-R007
	(P2G11)	JP200-R010
	(R2D12)	JR200-R003
R007		
- PCC SD1 C1/SA R/W DATA 5		
	(C2G05)	JC200-R007
	(P2H04)	JP200-R010
	(R2B12)	JR200-R003
R007		
- PCC SD1 C1/SA R/W DATA 6		
	(C2J05)	JC200-R007
	(P2G04)	JP200-R010
	(R2D13)	JR200-R003
R007		
- PCC SD1 C1/SA R/W DATA 7		
	(C2G04)	JC200-R007
	(P2C11)	JP200-R010
	(R2B13)	JR200-R003
R007		
- PCC SD1 C1/SA R/W DATA P		
	(C2G02)	JC200-R007
	(P2G03)	JP200-R010
	(R2D06)	JR200-R003

LINE/SIGNAL	PIN	SHEET/LINE
R008		
- PCC SD1 C1/SA READ GATE		
	(C2P02)	JC200-R008
	P2D06	JP200-L005
	R2B06	JR200-L005
R009		
- PCC SD1 C1/SA WRITE GATE		
	(C2M03)	JC200-R009
	P2B02	JP200-L006
	R2B03	JR200-L004
R010		
- PCC SD1 C1/SA R/W CLK		
	(C2G11)	JC200-R010
	P2D02	JP200-L004
	R2G11	JR200-L006
R011		
- PCC SD1 PB/E3 READ GATE		
	(C2S04)	JC200-R011
	(C2W11)	JC200-R021
	D2W11	JD200-L024
	E2W11	JE200-L024
	L2J12	JL200-L006
R012		
- PCC SD1 PB/E3 WRITE GATE		
	(C2U09)	JC200-R012
	(C2W07)	JC200-R020
	D2W07	JD200-L023
	E2W07	JE200-L023
	L2P04	JL200-L008
R013		
- PCC SD1 PB/E3 R/W CLK		
	(C2S08)	JC200-R013
	(C2X07)	JC200-R022
	D2X07	JD200-L022
	E2X07	JE200-L022
	L2D07	JL200-L007
R014		
- PCC SD1 REG READ CLOCK DELAYED		
	(C2M11)	JC200-R014
1A-B4	M2X06	HM200-L026
1B-A1	*A2B06*	
R015		
- PCC SD1 PARITY ERROR		
	(C2P12)	JC200-R015
1A-B4	M2U07	HM200-L007
1B-A1	*A5D05*	
1A-B4	*M6E02*	
R016		
- PCC SD1 READ PARITY ERROR		
	(C2P10)	JC200-R016
1A-B4	M2S08	HM200-L008
1B-A1	*A5D04*	
1A-B4	*M6D02*	
R017		
- PCC SPARE RECEIVER OUT 1		
	(C2G03)	JC200-R017

LINE/SIGNAL	PIN	SHEET/LINE
R018		
- PCC SPARE RECEIVER OUT 2		
	(C2J04)	JC200-R018
R019		
- PCC SPARE DRIVER OUT 1		
	(C2P11)	JC200-R019
R020		
- PCC SD1 PB/E3 WRITE GATE		
	(C2W07)	JC200-R020
	(C2U09)	JC200-R012
	D2W07	JD200-L023
	E2W07	JE200-L023
	L2P04	JL200-L008
R021		
- PCC SD1 PB/E3 READ GATE		
	(C2W11)	JC200-R021
	(C2S04)	JC200-R011
	D2W11	JD200-L024
	E2W11	JE200-L024
	L2J12	JL200-L006
R022		
- PCC SD1 PB/E3 R/W CLK		
	(C2X07)	JC200-R022
	(C2S08)	JC200-R013
	D2X07	JD200-L022
	E2X07	JE200-L022
	L2D07	JL200-L007
R023		
- PCC SD1 PB/E3 R/W DATA 0		
	(C2W05)	JC200-R023
	(C2M08)	JC200-R005
	(D2W05)	JD200-R017
	(E2W05)	JE200-R017
	(L2M05)	JL200-R003
R023		
- PCC SD1 PB/E3 R/W DATA 1		
	(C2W09)	JC200-R023
	(C2M09)	JC200-R005
	(D2W09)	JD200-R017
	(E2W09)	JE200-R017
	(L2M04)	JL200-R003
R023		
- PCC SD1 PB/E3 R/W DATA 2		
	(C2W13)	JC200-R023
	(C2M10)	JC200-R005
	(D2W13)	JD200-R017
	(E2W13)	JE200-R017
	(L2P07)	JL200-R003
R023		
- PCC SD1 PB/E3 R/W DATA 3		
	(C2X02)	JC200-R023
	(C2M12)	JC200-R005
	(D2X02)	JD200-R017
	(E2X02)	JE200-R017
	(L2S04)	JL200-R003

LINE/SIGNAL	PIN	SHEET/LINE
R023		
- PCC SD1 PB/E3 R/W DATA 4		
	(C2X05)	JC200-R023
	(C2P13)	JC200-R005
	(D2X05)	JD200-R017
	(E2X05)	JE200-R017
	(L2S06)	JL200-R003
R023		
- PCC SD1 PB/E3 R/W DATA 5		
	(C2X09)	JC200-R023
	(C2M13)	JC200-R005
	(D2X09)	JD200-R017
	(E2X09)	JE200-R017
	(L2P06)	JL200-R003
R023		
- PCC SD1 PB/E3 R/W DATA 6		
	(C2X13)	JC200-R023
	(C2U02)	JC200-R005
	(D2X13)	JD200-R017
	(E2X13)	JE200-R017
	(L2M07)	JL200-R003
R023		
- PCC SD1 PB/E3 R/W DATA 7		
	(C2X32)	JC200-R023
	(C2S02)	JC200-R005
	(D2X32)	JD200-R017
	(E2X32)	JE200-R017
	(L2P05)	JL200-R003
R023		
- PCC SD1 PB/E3 R/W DATA P		
	(C2W02)	JC200-R023
	(C2M07)	JC200-R005
	(D2W02)	JD200-R017
	(E2W02)	JE200-R017
	(L2U07)	JL200-R003
R024		
- PCC SD1 PB/E3 ADDRESS 0		
	(C2N25)	JC200-R024
	(C2U10)	JC200-R004
	D2W25	JD200-L021
	E2W25	JE200-L021
	L2B11	JL200-L003
R024		
- PCC SD1 PB/E3 ADDRESS 1		
	(C2W29)	JC200-R024
	(C2S10)	JC200-R004
	D2W29	JD200-L021
	E2W29	JE200-L021
	L2G02	JL200-L003
R024		
- PCC SD1 PB/E3 ADDRESS 2		
	(C2W33)	JC200-R024
	(C2U11)	JC200-R004
	D2W33	JD200-L021
	E2W33	JE200-L021
	L2G03	JL200-L003

LINE/SIGNAL	PIN	SHEET/LINE
R024		
- PCC SD1 PB/E3 ADDRESS 3		
	(C2X22)	JC200-R024
	(C2S11)	JC200-R004
	D2X22	JD200-L021
	E2X22	JE200-L021
	L2J02	JL200-L003
R024		
- PCC SD1 PB/E3 ADDRESS 4		
	(C2X25)	JC200-R024
	(C2U12)	JC200-R004
	D2X25	JD200-L021
	E2X25	JE200-L021
	L2G11	JL200-L003
R024		
- PCC SD1 PB/E3 ADDRESS 5		
	(C2X29)	JC200-R024
	(C2S12)	JC200-R004
	D2X29	JD200-L021
	E2X29	JE200-L021
	L2J07	JL200-L003
R024		
- PCC SD1 PB/E3 ADDRESS 6		
	(C2X33)	JC200-R024
	(C2U13)	JC200-R004
	D2X33	JD200-L021
	E2X33	JE200-L021
	L2G12	JL200-L003
R024		
- PCC SD1 PB/E3 ADDRESS 7		
	(C2X11)	JC200-R024
	(C2S13)	JC200-R004
	D2X11	JD200-L021
	E2X11	JE200-L021
	L2G10	JL200-L003
R024		
- PCC SD1 PB/E3 ADDRESS P		
	(C2W22)	JC200-R024
	(C2S09)	JC200-R004
	D2W22	JD200-L021
	E2W22	JE200-L021
	L2B06	JL200-L003

003 - CDN SD1 DATA RDY/TKN UPPER --- G12
004 - CDN SD1 R/W CLOCK UPPER ------ M02
005 - C2Q PHASE CLOCK 1 ------------ G04
006 - C2Q PHASE CLOCK 2 ------------ G03
007 - C2Q PHASE CLOCK 1.1 ---------- G05
008 - C2Q PHASE CLOCK 1.2 ---------- J05
009 - C2Q PHASE CLOCK 1.3 ---------- G02
010 - C2Q PHASE CLOCK 1.4 ---------- B12
011 - C2Q PHASE CLOCK 1.5 ---------- B13
012 - C2Q SD1 UPPER PB SELECTED ---- G11
013 - SAR SD1 UPPER RUN/STORE DATA - J04
014 - SAR SD1 UPPER RUN/FETCH DATA - J06
015 - SAR SD1 UPPER CHECK RESET ---- P05
016 - SAR SD1 UPPER SRC INACTIVE --- M04
017 - C1P SD1 PB/PC POR MACH RESET - P06
018 + ENABLE SD1 UPPER PC DECODE --- J07
019 - SAR SD1 UP DATA GT SSARS (0-2) * =
020 - C2Q SD1 UPPER PB DRIVER ENABLE J13
021 - PCC SD1 PB/E3 ADDRESS (0-7,P) * =
022 - PCC SD1 PB/E3 R/W CLK -------- X07
023 - PCC SD1 PB/E3 WRITE GATE ----- W07
024 - PCC SD1 PB/E3 READ GATE ------ W11

CMPB CARD

OVERVIEW

The CMPB (Port Buffer) card provides asynchronous data buffering between the one byte data bus of the CMCD card and the four byte data bus of the ECC functional island.

PRIMARY FUNCTIONS

- The byte counter counts the number of data bytes transferred between the CMCD card and the port buffer.
- The byte count shadow counts the number of data and pad bytes transferred betweeen the CMPB card and the ECC functional island.
- On store operations, pad bytes are appended if the byte count plus SRC (if part of the transfer) are not an integer multiple of 16.
- Data is buffered in a swinging array structure. As the CMCD card works on one array, the ECC functional island empties (store) or fills (fetch) the other array. Storage cycle requests are made by the CMPB card under the following conditions:
  - On a store operation when an array has been filled or the byte count goes to zero (partial array).
  - On a fetch operation when the byte count shadow is non-zero and an array is empty.

PRIMARY COMPONENTS

- Byte counter and byte count shadow registers.
- Contains two for each of the following functions:
  - Array address counters.
  - Array quantity counters.
  - Fast access arrays.
- Array read/write control logic.
- Input and output registers for multiplexing and demultiplexing of the one byte and four byte data busses.
- Receivers and drivers.

ERROR CHECKING

- PB Overrun/Underrun Check (U/L PBCK, bit 0):
  - Reading an empty array or writing a full array.
  - Attempting to read the empty CMCD output register on a fetch.
- Byte Count Zero Check (U/L PBCK, bit 1).
  - This bit indicates a conflict between the Byte Count Equal Zero logic and the byte counter contents when run is activated.
- Byte Counter Parity Check (U/L PBCK, bit 3).
  - This bit indicates a parity error on the byte counter for either store or fetch operation.
- Byte Counter Shadow Parity Check (U/L PBCK, bit 4).
  - This bit indicates a parity error on the byte counter shadow for either store or fetch operation.
- PA/PB Data In Parity Check (U/L PBCK, bit 5).
  - This bit indicates a parity error on the bi-directional bus on a store operation.
- ECC/PB Data In Parity Check 1 (U/L PBCK, bit 6).
  - On a fetch operation this bit indicates a parity error at the port buffer holding the first 128 bytes.
- ECC/PB Data In Parity Check 2 (U/L PBCK, bit 7).
  - On a fetch operation this bit indicates a parity error at the port buffer holding the second 128 bytes.

PORT BUFFER UPPER - SD1 CRD JD200

= * - PBD PORT BFR DATA (0-31,P0-P3) 003
= * - CDN SD1 R/W DATA UPPER (0-7,P) 004
J09 - PBD SD1 DATA RDY/TKN UPPER --- 005
J10 - PBD SD1 LAST DATA BYTE TKN UP 006
P09 - PBD SD1 PC READ ENABLE ------- 007
G08 - PBD SD1 PC DLYD READ CLOCK --- 008
P12 - PBD PORT BUFFER DATA CLOCK --- 009
U02 - PBD SD1 UPPER OP COMPLETE ---- 010
U05 - PBD SD1 UPPER RQST STG CYCLE - 011
M09 - PBD SD1 UPPER PORT CHECK ----- 012
J02 - PBD SD1 UPPER PC DECODE ACTIVE 013
G07 - PBD SD1 UP PC INTERFACE CHECK 014
= * - PBD SD1 UP DATA GT REQD (0-2) 015
S04 - PBD SD1 HALT CHANNEL --------- 016
= * - PCC SD1 PB/E3 R/W DATA (0-7,P) 017

PORT BUFFER UPPER - SD1 XRL JD200

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- CDN SD1 DATA RDY/TKN UPPER		
	D2G12	JD200-L003
	1A-B4 (N2X12)	HN200-R057
	1B-A1 *A3B12*	
L004		
- CDN SD1 R/W CLOCK UPPER		
	D2M02	JD200-L004
	1A-B4 (N2X05)	HN200-R058
	1B-A1 *A3B05*	
L005		
- C2Q PHASE CLOCK 1		
	D2G04	JD200-L005
	(Q2H02)	JQ210-R003
	E2G04	JE200-L005
	G2G04	JG200-L005
	H2G04	JH200-L005
	L2U04	JL200-L023
L006		
- C2Q PHASE CLOCK 2		
	D2G03	JD200-L006
	(Q2P09)	JQ210-R004
	E2G03	JE200-L006
	G2G03	JG200-L006
	H2G03	JH200-L006
	L2P09	JL200-L021
L007		
- C2Q PHASE CLOCK 1.1		
	D2G05	JD200-L007
	(Q2G02)	JQ210-R005
	E2G05	JE200-L007
	G2G05	JG200-L007
	H2G05	JH200-L007
	L2M09	JL200-L024
L008		
- C2Q PHASE CLOCK 1.2		
	D2J05	JD200-L008
	(Q2H13)	JQ210-R006
	E2J05	JE200-L008
	G2J05	JG200-L008
	H2J05	JH200-L008
	L2M08	JL200-L025
L009		
- C2Q PHASE CLOCK 1.3		
	D2G02	JD200-L009
	(Q2J02)	JQ210-R007
	E2G02	JE200-L009
	G2G02	JG200-L009
	H2G02	JH200-L009
	L2U02	JL200-L026
L010		
- C2Q PHASE CLOCK 1.4		
	D2B12	JD200-L010
	(Q2M10)	JQ210-R008
	E2B12	JE200-L010
	G2B12	JG200-L010
	H2B12	JH200-L010
	L2M10	JL200-L027

LINE/SIGNAL	PIN	SHEET/LINE
L011		
- C2Q PHASE CLOCK 1.5		
	D2B13	JD200-L011
	(Q2G05)	JQ210-R009
	E2B13	JE200-L011
	G2B13	JG200-L011
	H2B13	JH200-L011
	L2P10	JL200-L033
L012		
- C2Q SD1 UPPER PB SELECTED		
	D2G11	JD200-L012
	(Q2M07)	JQ210-R014
L013		
- SAR SD1 UPPER RUN/STORE DATA		
	D2J04	JD200-L013
	(R2U06)	JR200-R006
	Q2H10	JQ210-L022
L014		
- SAR SD1 UPPER RUN/FETCH DATA		
	D2J06	JD200-L014
	(R2G05)	JR200-R008
	Q2M03	JQ210-L024
L015		
- SAR SD1 UPPER CHECK RESET		
	D2P05	JD200-L015
	(R2J10)	JR200-R014
	L2B07	JL200-L012
	P2J09	JP200-L035
L016		
- SAR SD1 UPPER SRC INACTIVE		
	D2M04	JD200-L016
	(R2G13)	JR200-R010
L017		
- C1P SD1 PB/PC POR MACH RESET		
	D2P06	JD200-L017
	(P2B06)	JP200-R031
	E2P06	JE200-L017
L018		
+ ENABLE SD1 UPPER PC DECODE		
	D2J07	JD200-L018
L019		
- SAR SD1 UP DATA GT SSARS 0		
	D2P02	JD200-L019
	(R2M07)	JR200-R022
L019		
- SAR SD1 UP DATA GT SSARS 1		
	D2G10	JD200-L019
	(R2U05)	JR200-R022
L019		
- SAR SD1 UP DATA GT SSARS 2		
	D2G13	JD200-L019
	(R2P07)	JR200-R022

LINE/SIGNAL	PIN	SHEET/LINE
L020		
- C2Q SD1 UPPER PB DRIVER ENABLE		
	D2J13	JD200-L020
	(Q2M11)	JQ210-R016
L021		
- PCC SD1 PB/E3 ADDRESS 0		
	D2W25	JD200-L021
	(C2U10)	JC200-R004
	(C2W25)	JC200-R024
	E2W25	JE200-L021
	L2B11	JL200-L003
L021		
- PCC SD1 PB/E3 ADDRESS 1		
	D2W29	JD200-L021
	(C2S10)	JC200-R004
	(C2W29)	JC200-R024
	E2W29	JE200-L021
	L2G02	JL200-L003
L021		
- PCC SD1 PB/E3 ADDRESS 2		
	D2W33	JD200-L021
	(C2U11)	JC200-R004
	(C2W33)	JC200-R024
	E2W33	JE200-L021
	L2G03	JL200-L003
L021		
- PCC SD1 PB/E3 ADDRESS 3		
	D2X22	JD200-L021
	(C2S11)	JC200-R004
	(C2X22)	JC200-R024
	E2X22	JE200-L021
	L2J02	JL200-L003
L021		
- PCC SD1 PB/E3 ADDRESS 4		
	D2X25	JD200-L021
	(C2U12)	JC200-R004
	(C2X25)	JC200-R024
	E2X25	JE200-L021
	L2G11	JL200-L003
L021		
- PCC SD1 PB/E3 ADDRESS 5		
	D2X29	JD200-L021
	(C2S12)	JC200-R004
	(C2X29)	JC200-R024
	E2X29	JE200-L021
	L2J07	JL200-L003
L021		
- PCC SD1 PB/E3 ADDRESS 6		
	D2X33	JD200-L021
	(C2U13)	JC200-R004
	(C2X33)	JC200-R024
	E2X33	JE200-L021
	L2G12	JL200-L003

LINE/SIGNAL	PIN	SHEET/LINE
L021		
- PCC SD1 PB/E3 ADDRESS 7		
	D2X11	JD200-L021
	(C2S13)	JC200-R004
	(C2X11)	JC200-R024
	E2X11	JE200-L021
	L2G10	JL200-L003
L021		
- PCC SD1 PB/E3 ADDRESS P		
	D2W22	JD200-L021
	(C2S09)	JC200-R004
	(C2N22)	JC200-R024
	E2W22	JE200-L021
	L2B06	JL200-L003
L022		
- PCC SD1 PB/E3 R/W CLK		
	D2X07	JD200-L022
	(C2S08)	JC200-R013
	(C2X07)	JC200-R022
	E2X07	JE200-L022
	L2D07	JL200-L007
L023		
- PCC SD1 PB/E3 WRITE GATE		
	D2W07	JD200-L023
	(C2U09)	JC200-R012
	(C2N07)	JC200-R020
	E2W07	JE200-L023
	L2P04	JL200-L008
L024		
- PCC SD1 PB/E3 READ GATE		
	D2W11	JD200-L024
	(C2S04)	JC200-R011
	(C2W11)	JC200-R021
	E2W11	JE200-L024
	L2J12	JL200-L006
R003		
- PBD PORT BFR DATA 0		
	(D2D11)	JD200-R003
	(E2D11)	JE200-R003
	(G2D11)	JG200-R003
	(H2D11)	JH200-R003
	(J2D06)	JJ200-R003
R003		
- PBD PORT BFR DATA 1		
	(D2U10)	JD200-R003
	(E2U10)	JE200-R003
	(G2U10)	JG200-R003
	(H2U10)	JH200-R003
	(J2B08)	JJ200-R003
R003		
- PBD PORT BFR DATA 2		
	(D2B05)	JD200-R003
	(E2B05)	JE200-R003
	(G2B05)	JG200-R003
	(H2B05)	JH200-R003
	(J2B03)	JJ200-R003

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- PBD PORT BFR DATA 3		
	(D2B06)	JD200-R003
	(E2B06)	JE200-R003
	(G2B06)	JG200-R003
	(H2B06)	JH200-R003
	(J2D09)	JJ200-R003
R003		
- PBD PORT BFR DATA 4		
	(D2U06)	JD200-R003
	(E2U06)	JE200-R003
	(G2U06)	JG200-R003
	(H2U06)	JH200-R003
	(J2B05)	JJ200-R003
R003		
- PBD PORT BFR DATA 5		
	(D2B09)	JD200-R003
	(E2B09)	JE200-R003
	(G2B09)	JG200-R003
	(H2B09)	JH200-R003
	(J2D10)	JJ200-R003
R003		
- PBD PORT BFR DATA 6		
	(D2D04)	JD200-R003
	(E2D04)	JE200-R003
	(G2D04)	JG200-R003
	(H2D04)	JH200-R003
	(J2B04)	JJ200-R003
R003		
- PBD PORT BFR DATA 7		
	(D2D02)	JD200-R003
	(E2D02)	JE200-R003
	(G2D02)	JG200-R003
	(H2D02)	JH200-R003
	(J2D05)	JJ200-R003
R003		
- PBD PORT BFR DATA 8		
	(D2B07)	JD200-R003
	(E2B07)	JE200-R003
	(G2B07)	JG200-R003
	(H2B07)	JH200-R003
	(J2M10)	JJ200-R003
R003		
- PBD PORT BFR DATA 9		
	(D2D13)	JD200-R003
	(E2D13)	JE200-R003
	(G2D13)	JG200-R003
	(H2D13)	JH200-R003
	(J2P09)	JJ200-R003
R003		
- PBD PORT BFR DATA 10		
	(D2B11)	JD200-R003
	(E2B11)	JE200-R003
	(G2B11)	JG200-R003
	(H2B11)	JH200-R003
	(J2P04)	JJ200-R003

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- PBD PORT BFR DATA 11		
	(D2S08)	JD200-R003
	(E2S08)	JE200-R003
	(G2S08)	JG200-R003
	(H2S08)	JH200-R003
	(J2M04)	JJ200-R003
R003		
- PBD PORT BFR DATA 12		
	(D2U13)	JD200-R003
	(E2U13)	JE200-R003
	(G2U13)	JG200-R003
	(H2U13)	JH200-R003
	(J2M13)	JJ200-R003
R003		
- PBD PORT BFR DATA 13		
	(D2U11)	JD200-R003
	(E2U11)	JE200-R003
	(G2U11)	JG200-R003
	(H2U11)	JH200-R003
	(J2S12)	JJ200-R003
R003		
- PBD PORT BFR DATA 14		
	(D2S05)	JD200-R003
	(E2S05)	JE200-R003
	(G2S05)	JG200-R003
	(H2S05)	JH200-R003
	(J2P07)	JJ200-R003
R003		
- PBD PORT BFR DATA 15		
	(D2D09)	JD200-R003
	(E2D09)	JE200-R003
	(G2D09)	JG200-R003
	(H2D09)	JH200-R003
	(J2M08)	JJ200-R003
R003		
- PBD PORT BFR DATA 16		
	(D2U09)	JD200-R003
	(E2U09)	JE200-R003
	(G2U09)	JG200-R003
	(H2U09)	JH200-R003
	(K2B05)	JK200-R003
R003		
- PBD PORT BFR DATA 17		
	(D2U12)	JD200-R003
	(E2U12)	JE200-R003
	(G2U12)	JG200-R003
	(H2U12)	JH200-R003
	(K2B11)	JK200-R003
R003		
- PBD PORT BFR DATA 18		
	(D2S11)	JD200-R003
	(E2S11)	JE200-R003
	(G2S11)	JG200-R003
	(H2S11)	JH200-R003
	(K2B03)	JK200-R003

PORT BUFFER UPPER - SD1 XRL JD200

PORT BUFFER UPPER - SD1 XRL JD200

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- PBD PORT BFR DATA 19		
	(D2S06)	JD200-R003
	(E2S06)	JE200-R003
	(G2S06)	JG200-R003
	(H2S06)	JH200-R003
	(K2B10)	JK200-R003
R003		
- PBD PORT BFR DATA 20		
	(D2D10)	JD200-R003
	(E2D10)	JE200-R003
	(G2D10)	JG200-R003
	(H2D10)	JH200-R003
	(K2D11)	JK200-R003
R003		
- PBD PORT BFR DATA 21		
	(D2S09)	JD200-R003
	(E2S09)	JE200-R003
	(G2S09)	JG200-R003
	(H2S09)	JH200-R003
	(K2B09)	JK200-R003
R003		
- PBD PORT BFR DATA 22		
	(D2D05)	JD200-R003
	(E2D05)	JE200-R003
	(G2D05)	JG200-R003
	(H2D05)	JH200-R003
	(K2D05)	JK200-R003
R003		
- PBD PORT BFR DATA 23		
	(D2D07)	JD200-R003
	(E2D07)	JE200-R003
	(G2D07)	JG200-R003
	(H2D07)	JH200-R003
	(K2B04)	JK200-R003
R003		
- PBD PORT BFR DATA 24		
	(D2D12)	JD200-R003
	(E2D12)	JE200-R003
	(G2D12)	JG200-R003
	(H2D12)	JH200-R003
	(K2S05)	JK200-R003
R003		
- PBD PORT BFR DATA 25		
	(D2B08)	JD200-R003
	(E2B08)	JE200-R003
	(G2B08)	JG200-R003
	(H2B08)	JH200-R003
	(K2S06)	JK200-R003
R003		
- PBD PORT BFR DATA 26		
	(D2B04)	JD200-R003
	(E2B04)	JE200-R003
	(G2B04)	JG200-R003
	(H2B04)	JH200-R003
	(K2U07)	JK200-R003
R003		
- PBD PORT BFR DATA 27		
	(D2B02)	JD200-R003
	(E2B02)	JE200-R003
	(G2B02)	JG200-R003
	(H2B02)	JH200-R003
	(K2U06)	JK200-R003
R003		
- PBD PORT BFR DATA 28		
	(D2D06)	JD200-R003
	(E2D06)	JE200-R003
	(G2D06)	JG200-R003
	(H2D06)	JH200-R003
	(K2S04)	JK200-R003
R003		
- PBD PORT BFR DATA 29		
	(D2U07)	JD200-R003
	(E2U07)	JE200-R003
	(G2U07)	JG200-R003
	(H2U07)	JH200-R003
	(K2S03)	JK200-R003
R003		
- PBD PORT BFR DATA 30		
	(D2B10)	JD200-R003
	(E2B10)	JE200-R003
	(G2B10)	JG200-R003
	(H2B10)	JH200-R003
	(K2U05)	JK200-R003
R003		
- PBD PORT BFR DATA 31		
	(D2B03)	JD200-R003
	(E2B03)	JE200-R003
	(G2B03)	JG200-R003
	(H2B03)	JH200-R003
	(K2U04)	JK200-R003
R003		
- PBD PORT BFR DATA P0		
	(D2S12)	JD200-R003
	(E2S12)	JE200-R003
	(G2S12)	JG200-R003
	(H2S12)	JH200-R003
	(J2D07)	JJ200-R003
R003		
- PBD PORT BFR DATA P1		
	(D2S10)	JD200-R003
	(E2S10)	JE200-R003
	(G2S10)	JG200-R003
	(H2S10)	JH200-R003
	(J2M09)	JJ200-R003
R003		
- PBD PORT BFR DATA P2		
	(D2S07)	JD200-R003
	(E2S07)	JE200-R003
	(G2S07)	JG200-R003
	(H2S07)	JH200-R003
	(K2U09)	JK200-R004
R003		
- PBD PORT BFR DATA P3		
	(D2S13)	JD200-R003
	(E2S13)	JE200-R003
	(G2S13)	JG200-R003
	(H2S13)	JH200-R003
	(K2S13)	JK200-R004
R004		
- CDN SD1 R/W DATA UPPER 0		
	(D2M03)	JD200-R004
1A-B4	(N2X29)	HN200-R056
1B-A1	*A3D09*	
R004		
- CDN SD1 R/W DATA UPPER 1		
	(D2M05)	JD200-R004
1A-B4	(N2X03)	HN200-R056
1B-A1	*A3B03*	
R004		
- CDN SD1 R/W DATA UPPER 2		
	(D2P07)	JD200-R004
1A-B4	(N2X02)	HN200-R056
1B-A1	*A3B02*	
R004		
- CDN SD1 R/W DATA UPPER 3		
	(D2P04)	JD200-R004
1A-B4	(N2X07)	HN200-R056
1B-A1	*A3B07*	
R004		
- CDN SD1 R/W DATA UPPER 4		
	(D2M08)	JD200-R004
1A-B4	(N2X06)	HN200-R056
1B-A1	*A3B06*	
R004		
- CDN SD1 R/W DATA UPPER 5		
	(D2P10)	JD200-R004
1A-B4	(N2X31)	HN200-R056
1B-A1	*A3D11*	
R004		
- CDN SD1 R/W DATA UPPER 6		
	(D2J11)	JD200-R004
1A-B4	(N2X10)	HN200-R056
1B-A1	*A3B10*	
R004		
- CDN SD1 R/W DATA UPPER 7		
	(D2J12)	JD200-R004
1A-B4	(N2X32)	HN200-R056
1B-A1	*A3D12*	
R004		
- CDN SD1 R/W DATA UPPER P		
	(D2M07)	JD200-R004
1A-B4	(N2X30)	HN200-R056
1B-A1	*A3D10*	
R005		
- PBD SD1 DATA RDY/TKN UPPER		
	(D2J09)	JD200-R005
1A-B4	N2X22	HN200-L043
1B-A1	*A3D02*	
R006		
- PBD SD1 LAST DATA BYTE TKN UP		
	(D2J10)	JD200-R006
1A-B4	N2X23	HN200-L044
1B-A1	*A3D03*	
R007		
- PBD SD1 PC READ ENABLE		
	(D2P09)	JD200-R007
	C2P05	JC200-L011
R008		
- PBD SD1 PC DLYD READ CLOCK		
	(D2G08)	JD200-R008
	C2P04	JC200-L012
R009		
- PBD PORT BUFFER DATA CLOCK		
	(D2P12)	JD200-R009
	(E2P12)	JE200-R009
	(G2P12)	JG200-R009
	(H2P12)	JH200-R009
	J2G10	JJ200-L003
	K2G05	JK200-L003
R010		
- PBD SD1 UPPER OP COMPLETE		
	(D2U02)	JD200-R010
	R2J04	JR200-L013
R011		
- PBD SD1 UPPER RQST STG CYCLE		
	(D2U05)	JD200-R011
	Q2S08	JQ210-L003
R012		
- PBD SD1 UPPER PORT CHECK		
	(D2M09)	JD200-R012
	R2S08	JR200-L007
R013		
- PBD SD1 UPPER PC DECODE ACTIVE		
	(D2J02)	JD200-R013
	R2P04	JR200-L009
R014		
- PBD SD1 UP PC INTERFACE CHECK		
	(D2G07)	JD200-R014
	R2U02	JR200-L011
R015		
- PBD SD1 UP DATA GT REQD 0		
	(D2M12)	JD200-R015
	Q2S07	JQ210-L005
R015		
- PBD SD1 UP DATA GT REQD 1		
	(D2M13)	JD200-R015
	Q2D12	JQ210-L005
R015		
- PBD SD1 UP DATA GT REQD 2		
	(D2P13)	JD200-R015
	Q2N11	JQ210-L005
R016		
- PBD SD1 HALT CHANNEL		
	(D2S04)	JD200-R016
1A-B4	N2Z05	HN200-L045
1B-A1	*A4B05*	
R017		
- PCC SD1 PB/E3 R/W DATA 0		
	(D2W05)	JD200-R017
	(C2M08)	JC200-R005
	(C2W05)	JC200-R023
	(E2W05)	JE200-R017
	(L2M05)	JL200-R003
R017		
- PCC SD1 PB/E3 R/W DATA 1		
	(D2W09)	JD200-R017
	(C2M09)	JC200-R005
	(C2W09)	JC200-R023
	(E2W09)	JE200-R017
	(L2M04)	JL200-R003
R017		
- PCC SD1 PB/E3 R/W DATA 2		
	(D2W13)	JD200-R017
	(C2M10)	JC200-R005
	(C2W13)	JC200-R023
	(E2W13)	JE200-R017
	(L2P07)	JL200-R003
R017		
- PCC SD1 PB/E3 R/W DATA 3		
	(D2X02)	JD200-R017
	(C2M12)	JC200-R005
	(C2X02)	JC200-R023
	(E2X02)	JE200-R017
	(L2S04)	JL200-R003
R017		
- PCC SD1 PB/E3 R/W DATA 4		
	(D2X05)	JD200-R017
	(C2P13)	JC200-R005
	(C2X05)	JC200-R023
	(E2X05)	JE200-R017
	(L2S06)	JL200-R003
R017		
- PCC SD1 PB/E3 R/W DATA 5		
	(D2X09)	JD200-R017
	(C2M13)	JC200-R005
	(C2X09)	JC200-R023
	(E2X09)	JE200-R017
	(L2P06)	JL200-R003
R017		
- PCC SD1 PB/E3 R/W DATA 6		
	(D2X13)	JD200-R017
	(C2U02)	JC200-R005
	(C2X13)	JC200-R023
	(E2X13)	JE200-R017
	(L2M07)	JL200-R003
R017		
- PCC SD1 PB/E3 R/W DATA 7		
	(D2X32)	JD200-R017
	(C2S02)	JC200-R005
	(C2X32)	JC200-R023
	(E2X32)	JE200-R017
	(L2P05)	JL200-R003
R017		
- PCC SD1 PB/E3 R/W DATA P		
	(D2W02)	JD200-R017
	(C2M07)	JC200-R005
	(C2W02)	JC200-R023
	(E2W02)	JE200-R017
	(L2U07)	JL200-R003

PORT BUFFER LOWER - SD1 CRD JE200

003 - CDN SD1 DATA RDY/TKN LOWER --- G12
004 - CDN SD1 R/W CLOCK LOWER ------ M02
005 - C2Q PHASE CLOCK 1 ------------ G04
006 - C2Q PHASE CLOCK 2 ------------ G03
007 - C2Q PHASE CLOCK 1.1 ---------- G05
008 - C2Q PHASE CLOCK 1.2 ---------- J05
009 - C2Q PHASE CLOCK 1.3 ---------- G02
010 - C2Q PHASE CLOCK 1.4 ---------- B12
011 - C2Q PHASE CLOCK 1.5 ---------- B13
012 - C2Q SD1 LOWER PB SELECTED ---- G11
013 - SAR SD1 LOWER RUN/STORE DATA - J04
014 - SAR SD1 LOWER RUN/FETCH DATA - J06
015 - SAR SD1 LOWER CHECK RESET ---- P05
016 - SAR SD1 LOWER SRC INACTIVE --- M04
017 - C1P SD1 PB/PC POR MACH RESET - P06
018 - ENABLE SD1 LOWER PC DECODE --- J07
019 - SAR SD1 LO DATA GT SSARS (0-2) * =
020 - C2Q SD1 LOWER PB DRIVER ENABLE J13
021 - PCC SD1 PB/E3 ADDRESS (0-7,P) * =
022 - PCC SD1 PB/E3 R/W CLK -------- X07
023 - PCC SD1 PB/E3 WRITE GATE ----- W07
024 - PCC SD1 PB/E3 READ GATE ------ W11

= * - PBD PORT BFR DATA (0-31,P0-P3) 003
= * - CDN SD1 R/W DATA LOWER (0-7,P) 004
J09 - PBE SD1 DATA RDY/TKN LOWER --- 005
J10 - PBE SD1 LAST DATA BYTE TKN LO 006
P09 - PBE SD1 PC READ ENABLE ------- 007
G08 - PBE SD1 PC DLYD READ CLOCK --- 008
P12 - PBD PORT BUFFER DATA CLOCK --- 009
U02 - PBE SD1 LOWER OP COMPLETE ---- 010
U05 - PBE SD1 LOWER RQST STG CYCLE - 011
M09 - PBE SD1 LOWER PORT CHECK ----- 012
J02 - PBE SD1 LOWER PC DECODE ACTIVE 013
G07 - PBE SD1 LO PC INTERFACE CHECK 014
= * - PBE SD1 LO DATA GT REQD (0-2) 015
S04 - PBE SD1 HALT CHANNEL --------- 016
= * - PCC SD1 PB/E3 R/W DATA (0-7,P) 017

CMPB CARD

OVERVIEW

The CMPB (Port Buffer) card provides asynchronous data buffering between the one byte data bus of the CMCD card and the four byte data bus of the ECC functional island.

PRIMARY FUNCTIONS

- The byte counter counts the number of data bytes transferred between the CMCD card and the port buffer.
- The byte count shadow counts the number of data and pad bytes transferred betweeen the CMPB card and the ECC functional island.
- On store operations, pad bytes are appended if the byte count plus SRC (if part of the transfer) are not an integer multiple of 16.
- Data is buffered in a swinging array structure. As the CMCD card works on one array, the ECC functional island empties (store) or fills (fetch) the other array. Storage cycle requests are made by the CMPB card under the following conditions:
  - On a store operation when an array has been filled or the byte count goes to zero (partial array).
  - On a fetch operation when the byte count shadow is non-zero and an array is empty.

PRIMARY COMPONENTS

- Byte counter and byte count shadow registers.
- Contains two for each of the following functions:
  - Array address counters.
  - Array quantity counters.
  - Fast access arrays.
- Array read/write control logic.
- Input and output registers for multiplexing and demultiplexing of the one byte and four byte data busses.
- Receivers and drivers.

ERROR CHECKING

- PB Overrun/Underrun Check (U/L PBCK, bit 0):
  - Reading an empty array or writing a full array.
  - Attempting to read the empty CMCD output register on a fetch.
- Byte Count Zero Check (U/L PBCK, bit 1).
  - This bit indicates a conflict between the Byte Count Equal Zero logic and the byte counter contents when run is activated.
- Byte Counter Parity Check (U/L PBCK, bit 3).
  - This bit indicates a parity error on the byte counter for either store or fetch operation.
- Byte Counter Shadow Parity Check (U/L PBCK, bit 4).
  - This bit indicates a parity error on the byte counter shadow for either store or fetch operation.
- PA/PB Data In Parity Check (U/L PBCK, bit 5).
  - This bit indicates a parity error on the bi-directional bus on a store operation.
- ECC/PB Data In Parity Check 1 (U/L PBCK, bit 6).
  - On a fetch operation this bit indicates a parity error at the port buffer holding the first 128 bytes.
- ECC/PB Data In Parity Check 2 (U/L PBCK, bit 7).
  - On a fetch operation this bit indicates a parity error at the port buffer holding the second 128 bytes.

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- CDN SD1 DATA RDY/TKN LOWER		
	E2G12	JE200-L003
1A-B4 (N2Z23)		HN200-R061
1B-A1 *A4D03*		
L004		
- CDN SD1 R/W CLOCK LOWER		
	E2M02	JE200-L004
1A-B4 (N2Z22)		HN200-R062
1B-A1 *A4D02*		
L005		
- C2Q PHASE CLOCK 1		
	E2G04	JE200-L005
	(Q2H02)	JQ210-R003
	D2G04	JD200-L005
	G2G04	JG200-L005
	H2G04	JH200-L005
	L2U04	JL200-L023
L006		
- C2Q PHASE CLOCK 2		
	E2G03	JE200-L006
	(Q2P09)	JQ210-R004
	D2G03	JD200-L006
	G2G03	JG200-L006
	H2G03	JH200-L006
	L2P09	JL200-L021
L007		
- C2Q PHASE CLOCK 1.1		
	E2G05	JE200-L007
	(Q2G02)	JQ210-R005
	D2G05	JD200-L007
	G2G05	JG200-L007
	H2G05	JH200-L007
	L2M09	JL200-L024
L008		
- C2Q PHASE CLOCK 1.2		
	E2J05	JE200-L008
	(Q2H13)	JQ210-R006
	D2J05	JD200-L008
	G2J05	JG200-L008
	H2J05	JH200-L008
	L2M08	JL200-L025
L009		
- C2Q PHASE CLOCK 1.3		
	E2G02	JE200-L009
	(Q2J02)	JQ210-R007
	D2G02	JD200-L009
	G2G02	JG200-L009
	H2G02	JH200-L009
	L2U02	JL200-L026
L010		
- C2Q PHASE CLOCK 1.4		
	E2B12	JE200-L010
	(Q2M10)	JQ210-R008
	D2B12	JD200-L010
	G2B12	JG200-L010
	H2B12	JH200-L010
	L2M10	JL200-L027

LINE/SIGNAL	PIN	SHEET/LINE
L011		
- C2Q PHASE CLOCK 1.5		
	E2B13	JE200-L011
	(Q2G05)	JQ210-R009
	D2B13	JD200-L011
	G2B13	JG200-L011
	H2B13	JH200-L011
	L2P10	JL200-L033
L012		
- C2Q SD1 LOWER PB SELECTED		
	E2G11	JE200-L012
	(Q2U02)	JQ210-R015
L013		
- SAR SD1 LOWER RUN/STORE DATA		
	E2J04	JE200-L013
	(R2M09)	JR200-R007
	Q2J10	JQ210-L023
L014		
- SAR SD1 LOWER RUN/FETCH DATA		
	E2J06	JE200-L014
	(R2M11)	JR200-R009
	Q2G12	JQ210-L025
L015		
- SAR SD1 LOWER CHECK RESET		
	E2P05	JE200-L015
	(R2G04)	JR200-R015
	L2B08	JL200-L013
	P2G07	JP200-L036
L016		
- SAR SD1 LOWER SRC INACTIVE		
	E2M04	JE200-L016
	(R2U11)	JR200-R011
L017		
- CIP SD1 PB/PC POR MACH RESET		
	E2P06	JE200-L017
	(P2B06)	JP200-R031
	D2P06	JD200-L017
L018		
- ENABLE SD1 LOWER PC DECODE		
	E2J07	JE200-L018
1B-A1 *E3D08*		
L019		
- SAR SD1 LO DATA GT SSARS 0		
	E2P02	JE200-L019
	(R2J11)	JR200-R023
L019		
- SAR SD1 LO DATA GT SSARS 1		
	E2G10	JE200-L019
	(R2G08)	JR200-R023
L019		
- SAR SD1 LO DATA GT SSARS 2		
	E2G13	JE200-L019
	(R2J09)	JR200-R023

LINE/SIGNAL	PIN	SHEET/LINE
L020		
- C2Q SD1 LOWER PB DRIVER ENABLE		
	E2J13	JE200-L020
	(Q2P07)	JQ210-R017
L021		
- PCC SD1 PB/E3 ADDRESS 0		
	E2W25	JE200-L021
	(C2U10)	JC200-R004
	(C2W25)	JC200-R024
	D2W25	JD200-L021
	L2B11	JL200-L003
L021		
- PCC SD1 PB/E3 ADDRESS 1		
	E2W29	JE200-L021
	(C2S10)	JC200-R004
	(C2W29)	JC200-R024
	D2W29	JD200-L021
	L2G02	JL200-L003
L021		
- PCC SD1 PB/E3 ADDRESS 2		
	E2W33	JE200-L021
	(C2U11)	JC200-R004
	(C2W33)	JC200-R024
	D2W33	JD200-L021
	L2G03	JL200-L003
L021		
- PCC SD1 PB/E3 ADDRESS 3		
	E2X22	JE200-L021
	(C2S11)	JC200-R004
	(C2X22)	JC200-R024
	D2X22	JD200-L021
	L2J02	JL200-L003
L021		
- PCC SD1 PB/E3 ADDRESS 4		
	E2X25	JE200-L021
	(C2U12)	JC200-R004
	(C2X25)	JC200-R024
	D2X25	JD200-L021
	L2G11	JL200-L003
L021		
- PCC SD1 PB/E3 ADDRESS 5		
	E2X29	JE200-L021
	(C2S12)	JC200-R004
	(C2X29)	JC200-R024
	D2X29	JD200-L021
	L2J07	JL200-L003
L021		
- PCC SD1 PB/E3 ADDRESS 6		
	E2X33	JE200-L021
	(C2U13)	JC200-R004
	(C2X33)	JC200-R024
	D2X33	JD200-L021
	L2G12	JL200-L003

LINE/SIGNAL	PIN	SHEET/LINE
L021		
- PCC SD1 PB/E3 ADDRESS 7		
	E2X11	JE200-L021
	(C2S13)	JC200-R004
	(C2X11)	JC200-R024
	D2X11	JD200-L021
	L2G10	JL200-L003
L021		
- PCC SD1 PB/E3 ADDRESS P		
	E2W22	JE200-L021
	(C2S09)	JC200-R004
	(C2W22)	JC200-R024
	D2W22	JD200-L021
	L2B06	JL200-L003
L022		
- PCC SD1 PB/E3 R/W CLK		
	E2X07	JE200-L022
	(C2S08)	JC200-R013
	(C2X07)	JC200-R022
	D2X07	JD200-L022
	L2D07	JL200-L007
L023		
- PCC SD1 PB/E3 WRITE GATE		
	E2W07	JE200-L023
	(C2U09)	JC200-R012
	(C2W07)	JC200-R020
	D2W07	JD200-L023
	L2P04	JL200-L008
L024		
- PCC SD1 PB/E3 READ GATE		
	E2W11	JE200-L024
	(C2S04)	JC200-R011
	(C2W11)	JC200-R021
	D2W11	JD200-L024
	L2J12	JL200-L006
R003		
- PBD PORT BFR DATA 0		
	(E2D11)	JE200-R003
	(D2D11)	JD200-R003
	(G2D11)	JG200-R003
	(H2D11)	JH200-R003
	(J2D06)	JJ200-R003
R003		
- PBD PORT BFR DATA 1		
	(E2U10)	JE200-R003
	(D2U10)	JD200-R003
	(G2U10)	JG200-R003
	(H2U10)	JH200-R003
	(J2B08)	JJ200-R003
R003		
- PBD PORT BFR DATA 2		
	(E2B05)	JE200-R003
	(D2B05)	JD200-R003
	(G2B05)	JG200-R003
	(H2B05)	JH200-R003
	(J2B03)	JJ200-R003

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- PBD PORT BFR DATA 3		
	(E2B06)	JE200-R003
	(D2B06)	JD200-R003
	(G2B06)	JG200-R003
	(H2B06)	JH200-R003
	(J2D09)	JJ200-R003
R003		
- PBD PORT BFR DATA 4		
	(E2U06)	JE200-R003
	(D2U06)	JD200-R003
	(G2U06)	JG200-R003
	(H2U06)	JH200-R003
	(J2B05)	JJ200-R003
R003		
- PBD PORT BFR DATA 5		
	(E2B09)	JE200-R003
	(D2B09)	JD200-R003
	(G2B09)	JG200-R003
	(H2B09)	JH200-R003
	(J2D10)	JJ200-R003
R003		
- PBD PORT BFR DATA 6		
	(E2D04)	JE200-R003
	(D2D04)	JD200-R003
	(G2D04)	JG200-R003
	(H2D04)	JH200-R003
	(J2B04)	JJ200-R003
R003		
- PBD PORT BFR DATA 7		
	(E2D02)	JE200-R003
	(D2D02)	JD200-R003
	(G2D02)	JG200-R003
	(H2D02)	JH200-R003
	(J2D05)	JJ200-R003
R003		
- PBD PORT BFR DATA 8		
	(E2B07)	JE200-R003
	(D2B07)	JD200-R003
	(G2B07)	JG200-R003
	(H2B07)	JH200-R003
	(J2M10)	JJ200-R003
R003		
- PBD PORT BFR DATA 9		
	(E2D13)	JE200-R003
	(D2D13)	JD200-R003
	(G2D13)	JG200-R003
	(H2D13)	JH200-R003
	(J2P09)	JJ200-R003
R003		
- PBD PORT BFR DATA 10		
	(E2B11)	JE200-R003
	(D2B11)	JD200-R003
	(G2B11)	JG200-R003
	(H2B11)	JH200-R003
	(J2P04)	JJ200-R003

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- PBD PORT BFR DATA 11		
	(E2S08)	JE200-R003
	(D2S08)	JD200-R003
	(G2S08)	JG200-R003
	(H2S08)	JH200-R003
	(J2M04)	JJ200-R003
R003		
- PBD PORT BFR DATA 12		
	(E2U13)	JE200-R003
	(D2U13)	JD200-R003
	(G2U13)	JG200-R003
	(H2U13)	JH200-R003
	(J2M13)	JJ200-R003
R003		
- PBD PORT BFR DATA 13		
	(E2U11)	JE200-R003
	(D2U11)	JD200-R003
	(G2U11)	JG200-R003
	(H2U11)	JH200-R003
	(J2S12)	JJ200-R003
R003		
- PBD PORT BFR DATA 14		
	(E2S05)	JE200-R003
	(D2S05)	JD200-R003
	(G2S05)	JG200-R003
	(H2S05)	JH200-R003
	(J2P07)	JJ200-R003
R003		
- PBD PORT BFR DATA 15		
	(E2D09)	JE200-R003
	(D2D09)	JD200-R003
	(G2D09)	JG200-R003
	(H2D09)	JH200-R003
	(J2M08)	JJ200-R003
R003		
- PBD PORT BFR DATA 16		
	(E2U09)	JE200-R003
	(D2U09)	JD200-R003
	(G2U09)	JG200-R003
	(H2U09)	JH200-R003
	(K2B05)	JK200-R003
R003		
- PBD PORT BFR DATA 17		
	(E2U12)	JE200-R003
	(D2U12)	JD200-R003
	(G2U12)	JG200-R003
	(H2U12)	JH200-R003
	(K2B11)	JK200-R003
R003		
- PBD PORT BFR DATA 18		
	(E2S11)	JE200-R003
	(D2S11)	JD200-R003
	(G2S11)	JG200-R003
	(H2S11)	JH200-R003
	(K2B03)	JK200-R003

PORT BUFFER LOWER - SD1 XRL JE200

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- PBD PORT BFR DATA 19		
	(E2S06)	JE200-R003
	(D2S06)	JD200-R003
	(G2S06)	JG200-R003
	(H2S06)	JH200-R003
	(K2B10)	JK200-R003
R003		
- PBD PORT BFR DATA 20		
	(E2D10)	JE200-R003
	(D2D10)	JD200-R003
	(G2D10)	JG200-R003
	(H2D10)	JH200-R003
	(K2D11)	JK200-R003
R003		
- PBD PORT BFR DATA 21		
	(E2S09)	JE200-R003
	(D2S09)	JD200-R003
	(G2S09)	JG200-R003
	(H2S09)	JH200-R003
	(K2B09)	JK200-R003
R003		
- PBD PORT BFR DATA 22		
	(E2D05)	JE200-R003
	(D2D05)	JD200-R003
	(G2D05)	JG200-R003
	(H2D05)	JH200-R003
	(K2D05)	JK200-R003
R003		
- PBD PORT BFR DATA 23		
	(E2D07)	JE200-R003
	(D2D07)	JD200-R003
	(G2D07)	JG200-R003
	(H2D07)	JH200-R003
	(K2B04)	JK200-R003
R003		
- PBD PORT BFR DATA 24		
	(E2D12)	JE200-R003
	(D2D12)	JD200-R003
	(G2D12)	JG200-R003
	(H2D12)	JH200-R003
	(K2S05)	JK200-R003
R003		
- PBD PORT BFR DATA 25		
	(E2B08)	JE200-R003
	(D2B08)	JD200-R003
	(G2B08)	JG200-R003
	(H2B08)	JH200-R003
	(K2S06)	JK200-R003
R003		
- PBD PORT BFR DATA 26		
	(E2B04)	JE200-R003
	(D2B04)	JD200-R003
	(G2B04)	JG200-R003
	(H2B04)	JH200-R003
	(K2U07)	JK200-R003

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- PBD PORT BFR DATA 27		
	(E2B02)	JE200-R003
	(D2B02)	JD200-R003
	(G2B02)	JG200-R003
	(H2B02)	JH200-R003
	(K2U06)	JK200-R003
R003		
- PBD PORT BFR DATA 28		
	(E2D06)	JE200-R003
	(D2D06)	JD200-R003
	(G2D06)	JG200-R003
	(H2D06)	JH200-R003
	(K2S04)	JK200-R003
R003		
- PBD PORT BFR DATA 29		
	(E2U07)	JE200-R003
	(D2U07)	JD200-R003
	(G2U07)	JG200-R003
	(H2U07)	JH200-R003
	(K2S03)	JK200-R003
R003		
- PBD PORT BFR DATA 30		
	(E2B10)	JE200-R003
	(D2B10)	JD200-R003
	(G2B10)	JG200-R003
	(H2B10)	JH200-R003
	(K2U05)	JK200-R003
R003		
- PBD PORT BFR DATA 31		
	(E2B03)	JE200-R003
	(D2B03)	JD200-R003
	(G2B03)	JG200-R003
	(H2B03)	JH200-R003
	(K2U04)	JK200-R003
R003		
- PBD PORT BFR DATA P0		
	(E2S12)	JE200-R003
	(D2S12)	JD200-R003
	(G2S12)	JG200-R003
	(H2S12)	JH200-R003
	(J2D07)	JJ200-R003
R003		
- PBD PORT BFR DATA P1		
	(E2S10)	JE200-R003
	(D2S10)	JD200-R003
	(G2S10)	JG200-R003
	(H2S10)	JH200-R003
	(J2M09)	JJ200-R003
R003		
- PBD PORT BFR DATA P2		
	(E2S07)	JE200-R003
	(D2S07)	JD200-R003
	(G2S07)	JG200-R003
	(H2S07)	JH200-R003
	(K2U09)	JK200-R004

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- PBD PORT BFR DATA P3		
	(E2S13)	JE200-R003
	(D2S13)	JD200-R003
	(G2S13)	JG200-R003
	(H2S13)	JH200-R003
	(K2S13)	JK200-R004
R004		
- CDN SD1 R/W DATA LOWER 0		
	(E2M03)	JE200-R004
1A-B4	(N2Z30)	HN200-R042
1B-A1	*A4D10*	
R004		
- CDN SD1 R/W DATA LOWER 1		
	(E2M05)	JE200-R004
1A-B4	(N2Z29)	HN200-R042
1B-A1	*A4D09*	
R004		
- CDN SD1 R/W DATA LOWER 2		
	(E2P07)	JE200-R004
1A-B4	(N2Z27)	HN200-R042
1B-A1	*A4D07*	
R004		
- CDN SD1 R/W DATA LOWER 3		
	(E2P04)	JE200-R004
1A-B4	(N2Z26)	HN200-R042
1B-A1	*A4D06*	
R004		
- CDN SD1 R/W DATA LOWER 4		
	(E2M08)	JE200-R004
1A-B4	(N2Z11)	HN200-R042
1B-A1	*A4B11*	
R004		
- CDN SD1 R/W DATA LOWER 5		
	(E2P10)	JE200-R004
1A-B4	(N2Z12)	HN200-R042
1B-A1	*A4B12*	
R004		
- CDN SD1 R/W DATA LOWER 6		
	(E2J11)	JE200-R004
1A-B4	(N2Z25)	HN200-R042
1B-A1	*A4D05*	
R004		
- CDN SD1 R/W DATA LOWER 7		
	(E2J12)	JE200-R004
1A-B4	(N2Z24)	HN200-R042
1B-A1	*A4D04*	
R004		
- CDN SD1 R/W DATA LOWER P		
	(E2M07)	JE200-R004
1A-B4	(N2Z31)	HN200-R042
1B-A1	*A4D11*	

LINE/SIGNAL	PIN	SHEET/LINE
R005		
- PBE SD1 DATA RDY/TKN LOWER		
	(E2J09)	JE200-R005
1A-B4	N2X33	HN200-L046
1B-A1	*A3D13*	
R006		
- PBE SD1 LAST DATA BYTE TKN LO		
	(E2J10)	JE200-R006
1A-B4	N2X27	HN200-L047
1B-A1	*A3D07*	
R007		
- PBE SD1 PC READ ENABLE		
	(E2P09)	JE200-R007
	C2P06	JC200-L013
R008		
- PBE SD1 PC DLYD READ CLOCK		
	(E2G08)	JE200-R008
	C2P07	JC200-L014
R009		
- PBD PORT BUFFER DATA CLOCK		
	(E2P12)	JE200-R009
	(D2P12)	JD200-R009
	(G2P12)	JG200-R009
	(H2P12)	JH200-R009
	J2G10	JJ200-L003
	K2G05	JK200-L003
R010		
- PBE SD1 LOWER OP COMPLETE		
	(E2U02)	JE200-R010
	R2P13	JR200-L014
R011		
- PBE SD1 LOWER RQST STG CYCLE		
	(E2U05)	JE200-R011
	Q2U04	JQ210-L004
R012		
- PBE SD1 LOWER PORT CHECK		
	(E2M09)	JE200-R012
	R2J07	JR200-L008
R013		
- PBE SD1 LOWER PC DECODE ACTIVE		
	(E2J02)	JE200-R013
	R2M03	JR200-L010
R014		
- PBE SD1 LO PC INTERFACE CHECK		
	(E2G07)	JE200-R014
	R2S03	JR200-L012
R015		
- PBE SD1 LO DATA GT REQD 0		
	(E2M12)	JE200-R015
	Q2U07	JQ210-L006
R015		
- PBE SD1 LO DATA GT REQD 1		
	(E2M13)	JE200-R015
	Q2M08	JQ210-L006

LINE/SIGNAL	PIN	SHEET/LINE
R015		
- PBE SD1 LO DATA GT REQD 2		
	(E2P13)	JE200-R015
	Q2S06	JQ210-L006
R016		
- PBE SD1 HALT CHANNEL		
	(E2S04)	JE200-R016
R017		
- PCC SD1 PB/E3 R/W DATA 0		
	(E2W05)	JE200-R017
	(C2M08)	JC200-R005
	(C2W05)	JC200-R023
	(D2W05)	JD200-R017
	(L2M05)	JL200-R003
R017		
- PCC SD1 PB/E3 R/W DATA 1		
	(E2W09)	JE200-R017
	(C2M09)	JC200-R005
	(C2W09)	JC200-R023
	(D2W09)	JD200-R017
	(L2M04)	JL200-R003
R017		
- PCC SD1 PB/E3 R/W DATA 2		
	(E2W13)	JE200-R017
	(C2M10)	JC200-R005
	(C2W13)	JC200-R023
	(D2W13)	JD200-R017
	(L2P07)	JL200-R003
R017		
- PCC SD1 PB/E3 R/W DATA 3		
	(E2X02)	JE200-R017
	(C2M12)	JC200-R005
	(C2X02)	JC200-R023
	(D2X02)	JD200-R017
	(L2S04)	JL200-R003
R017		
- PCC SD1 PB/E3 R/W DATA 4		
	(E2X05)	JE200-R017
	(C2P13)	JC200-R005
	(C2X05)	JC200-R023
	(D2X05)	JD200-R017
	(L2S06)	JL200-R003
R017		
- PCC SD1 PB/E3 R/W DATA 5		
	(E2X09)	JE200-R017
	(C2M13)	JC200-R005
	(C2X09)	JC200-R023
	(D2X09)	JD200-R017
	(L2P06)	JL200-R003
R017		
- PCC SD1 PB/E3 R/W DATA 6		
	(E2X13)	JE200-R017
	(C2U02)	JC200-R005
	(C2X13)	JC200-R023
	(D2X13)	JD200-R017
	(L2M07)	JL200-R003

LINE/SIGNAL	PIN	SHEET/LINE
R017		
- PCC SD1 PB/E3 R/W DATA 7		
	(E2X32)	JE200-R017
	(C2S02)	JC200-R005
	(C2X32)	JC200-R023
	(D2X32)	JD200-R017
	(L2P05)	JL200-R003
R017		
- PCC SD1 PB/E3 R/W DATA P		
	(E2W02)	JE200-R017
	(C2M07)	JC200-R005
	(C2W02)	JC200-R023
	(D2W02)	JD200-R017
	(L2U07)	JL200-R003

003 - CAM SD2 REG ADDRESS (0-7,P) == * =
004 - CAM SD2 REGISTER R/W CLOCK --- J11
005 - CAM SD2 REGISTER READ GATE --- G08
006 - CAM SD2 REGISTER WRITE GATE -- J07
007 - C1P SD2 PC READ ENABLE ------- J12
008 - C1P SD2 PC DLYD READ CLOCK --- G12
009 - E3L SD2 PC READ ENABLE ------- M05
010 - E3L SD2 PC DLYD READ CLOCK --- M02
011 - PBG SD2 PC READ ENABLE ------- P05
012 - PBG SD2 PC DLYD READ CLOCK --- P04
013 - PBH SD2 PC READ ENABLE ------- P06
014 - PBH SD2 PC DLYD READ CLOCK --- P07
015 - SAS SD2 PC READ ENABLE ------- J13
016 - SAS SD2 PC DLYD READ CLOCK --- G13
017 - SD1 SS +5V POWER OFF RP ------ J06
018 - PCF SPARE RECEIVER IN 1 ------ B13
019 - PCF SPARE RECEIVER IN 2 ------ J02
020 - PCF SPARE DRIVER IN 1 -------- P09

CMPC CARD

OVERVIEW

The CMPC (Port Controller) card serves as the interface between the Storage Director and Storage Control board Indirect Register bus.

PRIMARY FUNCTIONS

- Provides address and data bus redrive.
- Parity checks the Indirect Register bus during write and read operations.

PRIMARY COMPONENTS

- Indirect Register Bus Drivers and Receivers.
- Parity Check logic.
- Control Line Redrivers.

ERROR CHECKING

- PC IR Parity Error (CCOMACK, bit 5).
  - This bit indicates a parity error was detected on the indirect register address bus during a write or read operation. It also indicates a parity error on the indirect register data bus on a write operation only.
- PC IR Read Parity Error (CCOMACK, bit 6).
  - This bit indicates a parity error was detected on either C1/SA data bus or the PB/E3 data bus on a read.

= * - CAM SD2 REG R/W DATA (0-7,P) = 003
= * - PCF SD2 PB/E3 ADDRESS (0-7,P) 004
= * - PCF SD2 FB/E3 R/W DATA (0-7,P) 005
= * - PCF SD2 C1/SA ADDRESS (0-7,P) 006
= * - PCF SD2 C1/SA R/W DATA (0-7,P) 007
P02 - PCF SD2 C1/SA READ GATE ------ 008
M03 - PCF SD2 C1/SA WRITE GATE ----- 009
G11 - PCF SD2 C1/SA R/W CLK -------- 010
S04 - PCF SD2 PB/E3 READ GATE ------ 011
U09 - PCF SD2 PB/E3 WRITE GATE ----- 012
S08 - PCF SD2 PB/E3 R/W CLK -------- 013
M11 - PCF SD2 REG READ CLOCK DELAYED 014
P12 - PCF SD2 PARITY ERROR --------- 015
P10 - PCF SD2 READ PARITY ERROR ---- 016
G03 - PCF SPARE RECEIVER OUT 1 ----- 017
J04 - PCF SPARE RECEIVER OUT 2 ----- 018
P11 - PCF SPARE DRIVER OUT 1 ------- 019
W07 - PCF SD2 PB/E3 WRITE GATE ----- 020
W11 - PCF SD2 PB/E3 READ GATE ------ 021
X07 - PCF SD2 PB/E3 R/W CLK -------- 022
= * - PCF SD2 PB/E3 R/W DATA (0-7,P) 023
= * - PCF SD2 PB/E3 ADDRESS (0-7,P) 024

PORT CONTROL - SD2 XRL JF200

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- CAM SD2 REG ADDRESS 0	F2D04	JF200-L003
	1A-B3 (M2X27)	GM200-R041
	1B-A1 *B2D07*	
L003		
- CAM SD2 REG ADDRESS 1	F2B03	JF200-L003
	1A-B3 (M2X25)	GM200-R041
	1B-A1 *B2D05*	
L003		
- CAM SD2 REG ADDRESS 2	F2B04	JF200-L003
	1A-B3 (M2X26)	GM200-R041
	1B-A1 *B2D06*	
L003		
- CAM SD2 REG ADDRESS 3	F2B09	JF200-L003
	1A-B3 (M2X05)	GM200-R041
	1B-A1 *B2B05*	
L003		
- CAM SD2 REG ADDRESS 4	F2B08	JF200-L003
	1A-B3 (M2X24)	GM200-R041
	1B-A1 *B2D04*	
L003		
- CAM SD2 REG ADDRESS 5	F2D09	JF200-L003
	1A-B3 (M2X03)	GM200-R041
	1B-A1 *B2B03*	
L003		
- CAM SD2 REG ADDRESS 6	F2D11	JF200-L003
	1A-B3 (M2X22)	GM200-R041
	1B-A1 *B2D02*	
L003		
- CAM SD2 REG ADDRESS 7	F2D13	JF200-L003
	1A-B3 (M2X23)	GM200-R041
	1B-A1 *B2D03*	
L003		
- CAM SD2 REG ADDRESS P	F2B07	JF200-L003
	1A-B3 (M2X33)	GM200-R041
	1B-A1 *B2D13*	
L004		
- CAM SD2 REGISTER R/W CLOCK	F2J11	JF200-L004
	1A-B3 (M2D10)	GM200-R038
	1B-A1 *B5D09*	
	1A-B3 *N6D02*	
L005		
- CAM SD2 REGISTER READ GATE	F2G08	JF200-L005
	1A-B3 (M2B08)	GM200-R040
	1B-A1 *B5D11*	
	1A-B3 *P6A02*	
L006		
- CAM SD2 REGISTER WRITE GATE	F2J07	JF200-L006
	1A-B3 (M2D11)	GM200-R039
	1B-A1 *B5D10*	
	1A-B3 *N6E02*	
L007		
- C1P SD2 PC READ ENABLE	F2J12	JF200-L007
	(P2P10)	JP200-R012
L008		
- C1P SD2 PC DLYD READ CLOCK	F2G12	JF200-L008
	(P2N06)	JP200-R011
L009		
- E3L SD2 PC READ ENABLE	F2M05	JF200-L009
	(L2D06)	JL200-R014
L010		
- E3L SD2 PC DLYD READ CLOCK	F2M02	JF200-L010
	(L2D11)	JL200-R013
L011		
- PBG SD2 PC READ ENABLE	F2P05	JF200-L011
	(G2P09)	JG200-R007
L012		
- PBG SD2 PC DLYD READ CLOCK	F2P04	JF200-L012
	(G2G08)	JG200-R008
L013		
- PBH SD2 PC READ ENABLE	F2P06	JF200-L013
	(H2P09)	JH200-R007
L014		
- PBH SD2 PC DLYD READ CLOCK	F2P07	JF200-L014
	(H2G08)	JH200-R008
L015		
- SAS SD2 PC READ ENABLE	F2J13	JF200-L015
	(S2D07)	JS200-R004
L016		
- SAS SD2 PC DLYD READ CLOCK	F2G13	JF200-L016
	(S2B02)	JS200-R005
L017		
- SD1 SS +5V POWER OFF RP	F2J06	JF200-L017
	1A-B4 (M2S07)	HM200-R020
	P2B08	JP200-L055
	1B-A1 *A5D03*	
	1A-B4 *M6C02*	
L018		
- PCF SPARE RECEIVER IN 1	F2B13	JF200-L018
L019		
- PCF SPARE RECEIVER IN 2	F2J02	JF200-L019
L020		
- PCF SPARE DRIVER IN 1	F2P09	JF200-L020
R003		
- CAM SD2 REG R/W DATA 0	(F2M04)	JF200-R003
	1A-B3 (M2X29)	GM200-R033
	1B-A1 *B2D09*	
R003		
- CAM SD2 REG R/W DATA 1	(F2U07)	JF200-R003
	1A-B3 (M2X12)	GM200-R033
	1B-A1 *B2B12*	
R003		
- CAM SD2 REG R/W DATA 2	(F2S06)	JF200-R003
	1A-B3 (M2X32)	GM200-R033
	1B-A1 *B2D12*	
R003		
- CAM SD2 REG R/W DATA 3	(F2S07)	JF200-R003
	1A-B3 (M2X11)	GM200-R033
	1B-A1 *B2B11*	
R003		
- CAM SD2 REG R/W DATA 4	(F2S05)	JF200-R003
	1A-B3 (M2X31)	GM200-R033
	1B-A1 *B2D11*	
R003		
- CAM SD2 REG R/W DATA 5	(F2U06)	JF200-R003
	1A-B3 (M2X10)	GM200-R033
	1B-A1 *B2B10*	
R003		
- CAM SD2 REG R/W DATA 6	(F2S03)	JF200-R003
	1A-B3 (M2X30)	GM200-R033
	1B-A1 *B2D10*	
R003		
- CAM SD2 REG R/W DATA 7	(F2U04)	JF200-R003
	1A-B3 (M2X07)	GM200-R033
	1B-A1 *B2B07*	
R003		
- CAM SD2 REG R/W DATA P	(F2U05)	JF200-R003
	1A-B3 (M2X02)	GM200-R033
	1B-A1 *B2B02*	
R004		
- PCF SD2 PB/E3 ADDRESS 0	(F2U10)	JF200-R004
	(F2N25)	JF200-R024
	G2N25	JG200-L021
	H2N25	JH200-L021
	L2B13	JL200-L004
R004		
- PCF SD2 PB/E3 ADDRESS 1	(F2S10)	JF200-R004
	(F2W29)	JF200-R024
	G2W29	JG200-L021
	H2N29	JH200-L021
	L2B10	JL200-L004
R004		
- PCF SD2 PB/E3 ADDRESS 2	(F2U11)	JF200-R004
	(F2W33)	JF200-R024
	G2W33	JG200-L021
	H2W33	JH200-L021
	L2G05	JL200-L004
R004		
- PCF SD2 PB/E3 ADDRESS 3	(F2S11)	JF200-R004
	(F2X22)	JF200-R024
	G2X22	JG200-L021
	H2X22	JH200-L021
	L2B09	JL200-L004
R004		
- PCF SD2 PB/E3 ADDRESS 4	(F2U12)	JF200-R004
	(F2X25)	JF200-R024
	G2X25	JG200-L021
	H2X25	JH200-L021
	L2B03	JL200-L004
R004		
- PCF SD2 PB/E3 ADDRESS 5	(F2S12)	JF200-R004
	(F2X29)	JF200-R024
	G2X29	JG200-L021
	H2X29	JH200-L021
	L2J06	JL200-L004
R004		
- PCF SD2 PB/E3 ADDRESS 6	(F2U13)	JF200-R004
	(F2X33)	JF200-R024
	G2X33	JG200-L021
	H2X33	JH200-L021
	L2D13	JL200-L004
R004		
- PCF SD2 PB/E3 ADDRESS 7	(F2S13)	JF200-R004
	(F2X11)	JF200-R024
	G2X11	JG200-L021
	H2X11	JH200-L021
	L2D04	JL200-L004
R004		
- PCF SD2 PB/E3 ADDRESS P	(F2S09)	JF200-R004
	(F2W22)	JF200-R024
	G2W22	JG200-L021
	H2W22	JH200-L021
	L2B12	JL200-L004
R005		
- PCF SD2 PB/E3 R/W DATA 0	(F2M08)	JF200-R005
	(F2W05)	JF200-R023
	(G2W05)	JG200-R017
	(H2W05)	JH200-R017
	(L2M11)	JL200-R004
R005		
- PCF SD2 PB/E3 R/W DATA 1	(F2M09)	JF200-R005
	(F2W09)	JF200-R023
	(G2W09)	JG200-R017
	(H2W09)	JH200-R017
	(L2P11)	JL200-R004
R005		
- PCF SD2 PB/E3 R/W DATA 2	(F2M10)	JF200-R005
	(F2W13)	JF200-R023
	(G2W13)	JG200-R017
	(H2W13)	JH200-R017
	(L2U05)	JL200-R004
R005		
- PCF SD2 PB/E3 R/W DATA 3	(F2M12)	JF200-R005
	(F2X02)	JF200-R023
	(G2X02)	JG200-R017
	(H2X02)	JH200-R017
	(L2S03)	JL200-R004
R005		
- PCF SD2 PB/E3 R/W DATA 4	(F2P13)	JF200-R005
	(F2X05)	JF200-R023
	(G2X05)	JG200-R017
	(H2X05)	JH200-R017
	(L2M13)	JL200-R004
R005		
- PCF SD2 PB/E3 R/W DATA 5	(F2M13)	JF200-R005
	(F2X09)	JF200-R023
	(G2X09)	JG200-R017
	(H2X09)	JH200-R017
	(L2P13)	JL200-R004
R005		
- PCF SD2 PB/E3 R/W DATA 6	(F2U02)	JF200-R005
	(F2X13)	JF200-R023
	(G2X13)	JG200-R017
	(H2X13)	JH200-R017
	(L2P12)	JL200-R004
R005		
- PCF SD2 PB/E3 R/W DATA 7	(F2S02)	JF200-R005
	(F2X32)	JF200-R023
	(G2X32)	JG200-R017
	(H2X32)	JH200-R017
	(L2M02)	JL200-R004
R005		
- PCF SD2 PB/E3 R/W DATA P	(F2M07)	JF200-R005
	(F2W02)	JF200-R023
	(G2W02)	JG200-R017
	(H2W02)	JH200-R017
	(L2M03)	JL200-R004
R006		
- PCF SD2 C1/SA ADDRESS 0	(F2B06)	JF200-R006
	P2N07	JP200-L007
	S2B04	JS200-L003
R006		
- PCF SD2 C1/SA ADDRESS 1	(F2D07)	JF200-R006
	P2P13	JP200-L007
	S2D11	JS200-L003
R006		
- PCF SD2 C1/SA ADDRESS 2	(F2D05)	JF200-R006
	P2M08	JP200-L007
	S2D02	JS200-L003
R006		
- PCF SD2 C1/SA ADDRESS 3	(F2D06)	JF200-R006
	P2N08	JP200-L007
	S2D05	JS200-L003
R006		
- PCF SD2 C1/SA ADDRESS 4	(F2B11)	JF200-R006
	P2M13	JP200-L007
	S2B10	JS200-L003
R006		
- PCF SD2 C1/SA ADDRESS 5	(F2D12)	JF200-R006
	P2P11	JP200-L007
	S2D09	JS200-L003
R006		
- PCF SD2 C1/SA ADDRESS 6	(F2D10)	JF200-R006
	P2P12	JP200-L007
	S2D10	JS200-L003
R006		
- PCF SD2 C1/SA ADDRESS 7	(F2B10)	JF200-R006
	P2N12	JP200-L007
	S2B09	JS200-L003

LINE/SIGNAL	PIN	SHEET/LINE
R006		
- PCF SD2 C1/SA ADDRESS P		
	(F2D02)	JF200-R006
	P2P07	JP200-L007
	S2B05	JS200-L003
R007		
- PCF SD2 C1/SA R/W DATA 0		
	(F2J10)	JF200-R007
	(P2D13)	JP200-R018
	(S2D04)	JS200-R003
R007		
- PCF SD2 C1/SA R/W DATA 1		
	(F2G10)	JF200-R007
	(P2J02)	JP200-R018
	(S2B07)	JS200-R003
R007		
- PCF SD2 C1/SA R/W DATA 2		
	(F2G09)	JF200-R007
	(P2G02)	JP200-R018
	(S2B08)	JS200-R003
R007		
- PCF SD2 C1/SA R/W DATA 3		
	(F2J09)	JF200-R007
	(P2C12)	JP200-R018
	(S2B11)	JS200-R003
R007		
- PCF SD2 C1/SA R/W DATA 4		
	(F2G07)	JF200-R007
	(P2T09)	JP200-R018
	(S2D12)	JS200-R003
R007		
- PCF SD2 C1/SA R/W DATA 5		
	(F2G05)	JF200-R007
	(P2S07)	JP200-R018
	(S2B12)	JS200-R003
R007		
- PCF SD2 C1/SA R/W DATA 6		
	(F2J05)	JF200-R007
	(P2U07)	JP200-R018
	(S2D13)	JS200-R003
R007		
- PCF SD2 C1/SA R/W DATA 7		
	(F2G04)	JF200-R007
	(P2U06)	JP200-R018
	(S2B13)	JS200-R003
R007		
- PCF SD2 C1/SA R/W DATA P		
	(F2G02)	JF200-R007
	(P2N04)	JP200-R018
	(S2D06)	JS200-R003
R008		
- PCF SD2 C1/SA READ GATE		
	(F2P02)	JF200-R008
	P2M09	JP200-L009
	S2B06	JS200-L005

LINE/SIGNAL	PIN	SHEET/LINE
R009		
- PCF SD2 C1/SA WRITE GATE		
	(F2M03)	JF200-R009
	P2N05	JP200-L010
	S2B03	JS200-L004
R010		
- PCF SD2 C1/SA R/W CLK		
	(F2G11)	JF200-R010
	P2P05	JP200-L008
	S2G11	JS200-L006
R011		
- PCF SD2 PB/E3 READ GATE		
	(F2S04)	JF200-R011
	(F2W11)	JF200-R021
	G2W11	JG200-L024
	H2W11	JH200-L024
	L2J09	JL200-L009
R012		
- PCF SD2 PB/E3 WRITE GATE		
	(F2U09)	JF200-R012
	(F2W07)	JF200-R020
	G2W07	JG200-L023
	H2W07	JH200-L023
	L2P02	JL200-L010
R013		
- PCF SD2 PB/E3 R/W CLK		
	(F2S08)	JF200-R013
	(F2X07)	JF200-R022
	G2X07	JG200-L022
	H2X07	JH200-L022
	L2D10	JL200-L005
R014		
- PCF SD2 REG READ CLOCK DELAYED		
	(F2M11)	JF200-R014
1A-B3	M2X06	GM200-L026
1B-A1	*B2B06*	
R015		
- PCF SD2 PARITY ERROR		
	(F2P12)	JF200-R015
1A-B3	M2U07	GM200-L007
1B-A1	*B5D05*	
1A-B3	*M6E02*	
R016		
- PCF SD2 READ PARITY ERROR		
	(F2P10)	JF200-R016
1A-B3	M2S08	GM200-L008
1B-A1	*B5D04*	
1A-B3	*M6D02*	
R017		
- PCF SPARE RECEIVER OUT 1		
	(F2G03)	JF200-R017
R018		
- PCF SPARE RECEIVER OUT 2		
	(F2J04)	JF200-R018

LINE/SIGNAL	PIN	SHEET/LINE
R019		
- PCF SPARE DRIVER OUT 1		
	(F2P11)	JF200-R019
R020		
- PCF SD2 PB/E3 WRITE GATE		
	(F2W07)	JF200-R020
	(F2U09)	JF200-R012
	G2W07	JG200-L023
	H2W07	JH200-L023
	L2P02	JL200-L010
R021		
- PCF SD2 PB/E3 READ GATE		
	(F2W11)	JF200-R021
	(F2S04)	JF200-R011
	G2W11	JG200-L024
	H2W11	JH200-L024
	L2J09	JL200-L009
R022		
- PCF SD2 PB/E3 R/W CLK		
	(F2X07)	JF200-R022
	(F2S08)	JF200-R013
	G2X07	JG200-L022
	H2X07	JH200-L022
	L2D10	JL200-L005
R023		
- PCF SD2 PB/E3 R/W DATA 0		
	(F2W05)	JF200-R023
	(F2M08)	JF200-R005
	(G2W05)	JG200-R017
	(H2W05)	JH200-R017
	(L2M11)	JL200-R004
R023		
- PCF SD2 PB/E3 R/W DATA 1		
	(F2W09)	JF200-R023
	(F2M09)	JF200-R005
	(G2W09)	JG200-R017
	(H2W09)	JH200-R017
	(L2P11)	JL200-R004
R023		
- PCF SD2 PB/E3 R/W DATA 2		
	(F2W13)	JF200-R023
	(F2M10)	JF200-R005
	(G2W13)	JG200-R017
	(H2W13)	JH200-R017
	(L2U05)	JL200-R004
R023		
- PCF SD2 PB/E3 R/W DATA 3		
	(F2X02)	JF200-R023
	(F2M12)	JF200-R005
	(G2X02)	JG200-R017
	(H2X02)	JH200-R017
	(L2S03)	JL200-R004
R023		
- PCF SD2 PB/E3 R/W DATA 4		
	(F2X05)	JF200-R023
	(F2P13)	JF200-R005
	(G2X05)	JG200-R017
	(H2X05)	JH200-R017
	(L2M13)	JL200-R004

LINE/SIGNAL	PIN	SHEET/LINE
R023		
- PCF SD2 PB/E3 R/W DATA 5		
	(F2X09)	JF200-R023
	(F2M13)	JF200-R005
	(G2X09)	JG200-R017
	(H2X09)	JH200-R017
	(L2P13)	JL200-R004
R023		
- PCF SD2 PB/E3 R/W DATA 6		
	(F2X13)	JF200-R023
	(F2U02)	JF200-R005
	(G2X13)	JG200-R017
	(H2X13)	JH200-R017
	(L2P12)	JL200-R004
R023		
- PCF SD2 PB/E3 R/W DATA 7		
	(F2X32)	JF200-R023
	(F2S02)	JF200-R005
	(G2X32)	JG200-R017
	(H2X32)	JH200-R017
	(L2M02)	JL200-R004
R023		
- PCF SD2 PB/E3 R/W DATA P		
	(F2W02)	JF200-R023
	(F2M07)	JF200-R005
	(G2W02)	JG200-R017
	(H2W02)	JH200-R017
	(L2M03)	JL200-R004
R024		
- PCF SD2 PB/E3 ADDRESS 0		
	(F2W25)	JF200-R024
	(F2U10)	JF200-R004
	G2W25	JG200-L021
	H2W25	JH200-L021
	L2B13	JL200-L004
R024		
- PCF SD2 PB/E3 ADDRESS 1		
	(F2W29)	JF200-R024
	(F2S10)	JF200-R004
	G2W29	JG200-L021
	H2W29	JH200-L021
	L2B10	JL200-L004
R024		
- PCF SD2 PB/E3 ADDRESS 2		
	(F2W33)	JF200-R024
	(F2U11)	JF200-R004
	G2W33	JG200-L021
	H2W33	JH200-L021
	L2G05	JL200-L004
R024		
- PCF SD2 PB/E3 ADDRESS 3		
	(F2X22)	JF200-R024
	(F2S11)	JF200-R004
	G2X22	JG200-L021
	H2X22	JH200-L021
	L2B09	JL200-L004

LINE/SIGNAL	PIN	SHEET/LINE
R024		
- PCF SD2 PB/E3 ADDRESS 4		
	(F2X25)	JF200-R024
	(F2U12)	JF200-R004
	G2X25	JG200-L021
	H2X25	JH200-L021
	L2B03	JL200-L004
R024		
- PCF SD2 PB/E3 ADDRESS 5		
	(F2X29)	JF200-R024
	(F2S12)	JF200-R004
	G2X29	JG200-L021
	H2X29	JH200-L021
	L2J06	JL200-L004
R024		
- PCF SD2 PB/E3 ADDRESS 6		
	(F2X33)	JF200-R024
	(F2U13)	JF200-R004
	G2X33	JG200-L021
	H2X33	JH200-L021
	L2D13	JL200-L004
R024		
- PCF SD2 PB/E3 ADDRESS 7		
	(F2X11)	JF200-R024
	(F2S13)	JF200-R004
	G2X11	JG200-L021
	H2X11	JH200-L021
	L2D04	JL200-L004
R024		
- PCF SD2 PB/E3 ADDRESS P		
	(F2W22)	JF200-R024
	(F2S09)	JF200-R004
	G2W22	JG200-L021
	H2W22	JH200-L021
	L2B12	JL200-L004

PORT BUFFER UPPER - SD2 CRD JG200

```
003 - CDN SD2 DATA RDY/TKN UPPER --- G12
004 - CDN SD2 R/W CLOCK UPPER ------ M02
005 - C2Q PHASE CLOCK 1 ------------ G04
006 - C2Q PHASE CLOCK 2 ------------ G03
007 - C2Q PHASE CLOCK 1.1 ---------- G05
008 - C2Q PHASE CLOCK 1.2 ---------- J05
009 - C2Q PHASE CLOCK 1.3 ---------- G02
010 - C2Q PHASE CLOCK 1.4 ---------- B12
011 - C2Q PHASE CLOCK 1.5 ---------- B13
012 - C2Q SD2 UPPER PB SELECTED ---- G11
013 - SAS SD2 UPPER RUN/STORE DATA - J04
014 - SAS SD2 UPPER RUN/FETCH DATA - J06
015 - SAS SD2 UPPER CHECK RESET ---- P05
016 - SAS SD2 UPPER SRC INACTIVE --- M04
017 - C1P SD2 PB/PC POR MACH RESET - P06
018 + ENABLE SD2 UPPER PC DECODE --- J07
019 - SAS SD2 UP DATA GT SSARS (0-2) * =
020 - C2Q SD2 UPPER PB DRIVER ENABLE J13
021 - PCF SD2 PB/E3 ADDRESS (0-7,P)  * =
022 - PCF SD2 PB/E3 R/W CLK -------- X07
023 - PCF SD2 PB/E3 WRITE GATE ----- W07
024 - PCF SD2 PB/E3 READ GATE ------ W11
```

CMPB CARD

OVERVIEW

The CMPB (Port Buffer) card provides asynchronous data buffering between the one byte data bus of the CMCD card and the four byte data bus of the ECC functional island.

PRIMARY FUNCTIONS

- The byte counter counts the number of data bytes transferred between the CMCD card and the port buffer.
- The byte count shadow counts the number of data and pad bytes transferred between the CMPB card and the ECC functional island.
- On store operations, pad bytes are appended if the byte count plus SRC (if part of the transfer) are not an integer multiple of 16.
- Data is buffered in a swinging array structure. As the CMCD card works on one array, the ECC functional island empties (store) or fills (fetch) the other array. Storage cycle requests are made by the CMPB card under the following conditions:
  - On a store operation when an array has been filled or the byte count goes to zero (partial array).
  - On a fetch operation when the byte count shadow is non-zero and an array is empty.

PRIMARY COMPONENTS

- Byte counter and byte count shadow registers.
- Contains two for each of the following functions:
  - Array address counters.
  - Array quantity counters.
  - Fast access arrays.
- Array read/write control logic.
- Input and output registers for multiplexing and demultiplexing of the one byte and four byte data busses.
- Receivers and drivers.

ERROR CHECKING

- PB Overrun/Underrun Check (U/L PBCK, bit 0):
  - Reading an empty array or writing a full array.
  - Attempting to read the empty CMCD output register on a fetch.
- Byte Count Zero Check (U/L PBCK, bit 1).
  - This bit indicates a conflict between the Byte Count Equal Zero logic and the byte counter contents when run is activated.
- Byte Counter Parity Check (U/L PBCK, bit 3).
  - This bit indicates a parity error on the byte counter for either store or fetch operation.
- Byte Counter Shadow Parity Check (U/L PBCK, bit 4).
  - This bit indicates a parity error on the byte counter shadow for either store or fetch operation.
- PA/PB Data In Parity Check (U/L PBCK, bit 5).
  - This bit indicates a parity error on the bi-directional bus on a store operation.
- ECC/PB Data In Parity Check 1 (U/L PBCK, bit 6).
  - On a fetch operation this bit indicates a parity error at the port buffer holding the first 128 bytes.
- ECC/PB Data In Parity Check 2 (U/L PBCK, bit 7).
  - On a fetch operation this bit indicates a parity error at the port buffer holding the second 128 bytes.

```
= * - PBD PORT BFR DATA (0-31,P0-P3) 003
= * - CDN SD2 R/W DATA UPPER (0-7,P) 004
J09 - PBG SD2 DATA RDY/TKN UPPER --- 005
J10 - PBG SD2 LAST DATA BYTE TKN UP  006
P09 - PBG SD2 PC READ ENABLE ------- 007
G08 - PBG SD2 PC DLYD READ CLOCK --- 008
P12 - PBD PORT BUFFER DATA CLOCK --- 009
U02 - PBG SD2 UPPER OP COMPLETE ---- 010
U05 - PBG SD2 UPPER RQST STG CYCLE - 011
M09 - PBG SD2 UPPER PORT CHECK ----- 012
J02 - PBG SD2 UPPER PC DECODE ACTIVE 013
G07 - PBG SD2 UP PC INTERFACE CHECK  014
= * - PBG SD2 UP DATA GT REQD (0-2)  015
S04 - PBG SD2 HALT CHANNEL --------- 016
= * - PCF SD2 PB/E3 R/W DATA (0-7,P) 017
```


PORT BUFFER UPPER - SD2 CRD JG200

PORT BUFFER UPPER - SD2 XRL JG200

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- CDN SD2 DATA RDY/TKN UPPER		
	G2G12	JG200-L003
1A-B3 (N2X12)		GN200-R056
1B-A1 *B3B12*		
L004		
- CDN SD2 R/W CLOCK UPPER		
	G2M02	JG200-L004
1A-B3 (N2X05)		GN200-R057
1B-A1 *B3B05*		
L005		
- C2Q PHASE CLOCK 1		
	G2G04	JG200-L005
	(Q2H02)	JQ210-R003
	D2G04	JD200-L005
	E2G04	JE200-L005
	H2G04	JH200-L005
	L2U04	JL200-L023
L006		
- C2Q PHASE CLOCK 2		
	G2G03	JG200-L006
	(Q2P09)	JQ210-R004
	D2G03	JD200-L006
	E2G03	JE200-L006
	H2G03	JH200-L006
	L2P09	JL200-L021
L007		
- C2Q PHASE CLOCK 1.1		
	G2G05	JG200-L007
	(Q2G02)	JQ210-R005
	D2G05	JD200-L007
	E2G05	JE200-L007
	H2G05	JH200-L007
	L2M09	JL200-L024
L008		
- C2Q PHASE CLOCK 1.2		
	G2J05	JG200-L008
	(Q2H13)	JQ210-R006
	D2J05	JD200-L008
	E2J05	JE200-L008
	H2J05	JH200-L008
	L2M08	JL200-L025
L009		
- C2Q PHASE CLOCK 1.3		
	G2G02	JG200-L009
	(Q2J02)	JQ210-R007
	D2G02	JD200-L009
	E2G02	JE200-L009
	H2G02	JH200-L009
	L2U02	JL200-L026
L010		
- C2Q PHASE CLOCK 1.4		
	G2B12	JG200-L010
	(Q2M10)	JQ210-R008
	D2B12	JD200-L010
	E2B12	JE200-L010
	H2B12	JH200-L010
	L2M10	JL200-L027
L011		
- C2Q PHASE CLOCK 1.5		
	G2B13	JG200-L011
	(Q2G05)	JQ210-R009
	D2B13	JD200-L011
	E2B13	JE200-L011
	H2B13	JH200-L011
	L2P10	JL200-L033
L012		
- C2Q SD2 UPPER PB SELECTED		
	G2G11	JG200-L012
	(Q2P05)	JQ210-R018
L013		
- SAS SD2 UPPER RUN/STORE DATA		
	G2J04	JG200-L013
	(S2U06)	JS200-R006
	Q2J09	JQ210-L028
L014		
- SAS SD2 UPPER RUN/FETCH DATA		
	G2J06	JG200-L014
	(S2G05)	JS200-R008
	Q2G07	JQ210-L030
L015		
- SAS SD2 UPPER CHECK RESET		
	G2P05	JG200-L015
	(S2J10)	JS200-R014
	L2D09	JL200-L014
	P2G13	JP200-L037
L016		
- SAS SD2 UPPER SRC INACTIVE		
	G2M04	JG200-L016
	(S2G13)	JS200-R010
L017		
- C1P SD2 PB/PC POR MACH RESET		
	G2P06	JG200-L017
	(P2B10)	JP200-R032
	H2P06	JH200-L017
L018		
+ ENABLE SD2 UPPER PC DECODE		
	G2J07	JG200-L018
L019		
- SAS SD2 UP DATA GT SSARS 0		
	G2P02	JG200-L019
	(S2M07)	JS200-R022
L019		
- SAS SD2 UP DATA GT SSARS 1		
	G2G10	JG200-L019
	(S2U05)	JS200-R022
L019		
- SAS SD2 UP DATA GT SSARS 2		
	G2G13	JG200-L019
	(S2P07)	JS200-R022
L020		
- C2Q SD2 UPPER PB DRIVER ENABLE		
	G2J13	JG200-L020
	(Q2H07)	JQ210-R020
L021		
- PCF SD2 PB/E3 ADDRESS 0		
	G2W25	JG200-L021
	(F2U10)	JF200-R004
	(F2W25)	JF200-R024
	H2W25	JH200-L021
	L2B13	JL200-L004
L021		
- PCF SD2 PB/E3 ADDRESS 1		
	G2W29	JG200-L021
	(F2S10)	JF200-R004
	(F2W29)	JF200-R024
	H2W29	JH200-L021
	L2B10	JL200-L004
L021		
- PCF SD2 PB/E3 ADDRESS 2		
	G2W33	JG200-L021
	(F2U11)	JF200-R004
	(F2W33)	JF200-R024
	H2W33	JH200-L021
	L2G05	JL200-L004
L021		
- PCF SD2 PB/E3 ADDRESS 3		
	G2X22	JG200-L021
	(F2S11)	JF200-R004
	(F2X22)	JF200-R024
	H2X22	JH200-L021
	L2B09	JL200-L004
L021		
- PCF SD2 PB/E3 ADDRESS 4		
	G2X25	JG200-L021
	(F2U12)	JF200-R004
	(F2X25)	JF200-R024
	H2X25	JH200-L021
	L2B03	JL200-L004
L021		
- PCF SD2 PB/E3 ADDRESS 5		
	G2X29	JG200-L021
	(F2S12)	JF200-R004
	(F2X29)	JF200-R024
	H2X29	JH200-L021
	L2J06	JL200-L004
L021		
- PCF SD2 PB/E3 ADDRESS 6		
	G2X33	JG200-L021
	(F2U13)	JF200-R004
	(F2X33)	JF200-R024
	H2X33	JH200-L021
	L2D13	JL200-L004
L021		
- PCF SD2 PB/E3 ADDRESS 7		
	G2X11	JG200-L021
	(F2S13)	JF200-R004
	(F2X11)	JF200-R024
	H2X11	JH200-L021
	L2D04	JL200-L004
L021		
- PCF SD2 PB/E3 ADDRESS P		
	G2W22	JG200-L021
	(F2S09)	JF200-R004
	(F2W22)	JF200-R024
	H2W22	JH200-L021
	L2B12	JL200-L004
L022		
- PCF SD2 PB/E3 R/W CLK		
	G2X07	JG200-L022
	(F2S08)	JF200-R013
	(F2X07)	JF200-R022
	H2X07	JH200-L022
	L2D10	JL200-L005
L023		
- PCF SD2 PB/E3 WRITE GATE		
	G2W07	JG200-L023
	(F2U09)	JF200-R012
	(F2W07)	JF200-R020
	H2W07	JH200-L023
	L2P02	JL200-L010
L024		
- PCF SD2 PB/E3 READ GATE		
	G2W11	JG200-L024
	(F2S04)	JF200-R011
	(F2W11)	JF200-R021
	H2W11	JH200-L024
	L2J09	JL200-L009
R003		
- PBD PORT BFR DATA 0		
	(G2D11)	JG200-R003
	(D2D11)	JD200-R003
	(E2D11)	JE200-R003
	(H2D11)	JH200-R003
	(J2D06)	JJ200-R003
R003		
- PBD PORT BFR DATA 1		
	(G2U10)	JG200-R003
	(D2U10)	JD200-R003
	(E2U10)	JE200-R003
	(H2U10)	JH200-R003
	(J2B08)	JJ200-R003
R003		
- PBD PORT BFR DATA 2		
	(G2B05)	JG200-R003
	(D2B05)	JD200-R003
	(E2B05)	JE200-R003
	(H2B05)	JH200-R003
	(J2B03)	JJ200-R003
R003		
- PBD PORT BFR DATA 3		
	(G2B06)	JG200-R003
	(D2B06)	JD200-R003
	(E2B06)	JE200-R003
	(H2B06)	JH200-R003
	(J2D09)	JJ200-R003
R003		
- PBD PORT BFR DATA 4		
	(G2U06)	JG200-R003
	(D2U06)	JD200-R003
	(E2U06)	JE200-R003
	(H2U06)	JH200-R003
	(J2B05)	JJ200-R003
R003		
- PBD PORT BFR DATA 5		
	(G2B09)	JG200-R003
	(D2B09)	JD200-R003
	(E2B09)	JE200-R003
	(H2B09)	JH200-R003
	(J2D10)	JJ200-R003
R003		
- PBD PORT BFR DATA 6		
	(G2D04)	JG200-R003
	(D2D04)	JD200-R003
	(E2D04)	JE200-R003
	(H2D04)	JH200-R003
	(J2B04)	JJ200-R003
R003		
- PBD PORT BFR DATA 7		
	(G2D02)	JG200-R003
	(D2D02)	JD200-R003
	(E2D02)	JE200-R003
	(H2D02)	JH200-R003
	(J2D05)	JJ200-R003
R003		
- PBD PORT BFR DATA 8		
	(G2B07)	JG200-R003
	(D2B07)	JD200-R003
	(E2B07)	JE200-R003
	(H2B07)	JH200-R003
	(J2M10)	JJ200-R003
R003		
- PBD PORT BFR DATA 9		
	(G2D13)	JG200-R003
	(D2D13)	JD200-R003
	(E2D13)	JE200-R003
	(H2D13)	JH200-R003
	(J2P09)	JJ200-R003
R003		
- PBD PORT BFR DATA 10		
	(G2B11)	JG200-R003
	(D2B11)	JD200-R003
	(E2B11)	JE200-R003
	(H2B11)	JH200-R003
	(J2P04)	JJ200-R003
R003		
- PBD PORT BFR DATA 11		
	(G2S08)	JG200-R003
	(D2S08)	JD200-R003
	(E2S08)	JE200-R003
	(H2S08)	JH200-R003
	(J2M04)	JJ200-R003
R003		
- PBD PORT BFR DATA 12		
	(G2U13)	JG200-R003
	(D2U13)	JD200-R003
	(E2U13)	JE200-R003
	(H2U13)	JH200-R003
	(J2M13)	JJ200-R003
R003		
- PBD PORT BFR DATA 13		
	(G2U11)	JG200-R003
	(D2U11)	JD200-R003
	(E2U11)	JE200-R003
	(H2U11)	JH200-R003
	(J2S12)	JJ200-R003
R003		
- PBD PORT BFR DATA 14		
	(G2S05)	JG200-R003
	(D2S05)	JD200-R003
	(E2S05)	JE200-R003
	(H2S05)	JH200-R003
	(J2P07)	JJ200-R003
R003		
- PBD PORT BFR DATA 15		
	(G2D09)	JG200-R003
	(D2D09)	JD200-R003
	(E2D09)	JE200-R003
	(H2D09)	JH200-R003
	(J2M08)	JJ200-R003
R003		
- PBD PORT BFR DATA 16		
	(G2U09)	JG200-R003
	(D2U09)	JD200-R003
	(E2U09)	JE200-R003
	(H2U09)	JH200-R003
	(K2B05)	JK200-R003
R003		
- PBD PORT BFR DATA 17		
	(G2U12)	JG200-R003
	(D2U12)	JD200-R003
	(E2U12)	JE200-R003
	(H2U12)	JH200-R003
	(K2B11)	JK200-R003
R003		
- PBD PORT BFR DATA 18		
	(G2S11)	JG200-R003
	(D2S11)	JD200-R003
	(E2S11)	JE200-R003
	(H2S11)	JH200-R003
	(K2B03)	JK200-R003

PORT BUFFER UPPER - SD2 XRL JG200

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- PBD PORT BFR DATA 19		
	(G2S06)	JG200-R003
	(D2S06)	JD200-R003
	(E2S06)	JE200-R003
	(H2S06)	JH200-R003
	(K2B10)	JK200-R003
R003		
- PBD PORT BFR DATA 20		
	(G2D10)	JG200-R003
	(D2D10)	JD200-R003
	(E2D10)	JE200-R003
	(H2D10)	JH200-R003
	(K2D11)	JK200-R003
R003		
- PBD PORT BFR DATA 21		
	(G2S09)	JG200-R003
	(D2S09)	JD200-R003
	(E2S09)	JE200-R003
	(H2S09)	JH200-R003
	(K2B09)	JK200-R003
R003		
- PBD PORT BFR DATA 22		
	(G2D05)	JG200-R003
	(D2D05)	JD200-R003
	(E2D05)	JE200-R003
	(H2D05)	JH200-R003
	(K2D05)	JK200-R003
R003		
- PBD PORT BFR DATA 23		
	(G2D07)	JG200-R003
	(D2D07)	JD200-R003
	(E2D07)	JE200-R003
	(H2D07)	JH200-R003
	(K2B04)	JK200-R003
R003		
- PBD PORT BFR DATA 24		
	(G2D12)	JG200-R003
	(D2D12)	JD200-R003
	(E2D12)	JE200-R003
	(H2D12)	JH200-R003
	(K2S05)	JK200-R003
R003		
- PBD PORT BFR DATA 25		
	(G2B08)	JG200-R003
	(D2B08)	JD200-R003
	(E2B08)	JE200-R003
	(H2B08)	JH200-R003
	(K2S06)	JK200-R003
R003		
- PBD PORT BFR DATA 26		
	(G2B04)	JG200-R003
	(D2B04)	JD200-R003
	(E2B04)	JE200-R003
	(H2B04)	JH200-R003
	(K2U07)	JK200-R003

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- PBD PORT BFR DATA 27		
	(G2B02)	JG200-R003
	(D2B02)	JD200-R003
	(E2B02)	JE200-R003
	(H2B02)	JH200-R003
	(K2U06)	JK200-R003
R003		
- PBD PORT BFR DATA 28		
	(G2D06)	JG200-R003
	(D2D06)	JD200-R003
	(E2D06)	JE200-R003
	(H2D06)	JH200-R003
	(K2S04)	JK200-R003
R003		
- PBD PORT BFR DATA 29		
	(G2U07)	JG200-R003
	(D2U07)	JD200-R003
	(E2U07)	JE200-R003
	(H2U07)	JH200-R003
	(K2S03)	JK200-R003
R003		
- PBD PORT BFR DATA 30		
	(G2B10)	JG200-R003
	(D2B10)	JD200-R003
	(E2B10)	JE200-R003
	(H2B10)	JH200-R003
	(K2U05)	JK200-R003
R003		
- PBD PORT BFR DATA 31		
	(G2B03)	JG200-R003
	(D2B03)	JD200-R003
	(E2B03)	JE200-R003
	(H2B03)	JH200-R003
	(K2U04)	JK200-R003
R003		
- PBD PORT BFR DATA P0		
	(G2S12)	JG200-R003
	(D2S12)	JD200-R003
	(E2S12)	JE200-R003
	(H2S12)	JH200-R003
	(J2D07)	JJ200-R003
R003		
- PBD PORT BFR DATA P1		
	(G2S10)	JG200-R003
	(D2S10)	JD200-R003
	(E2S10)	JE200-R003
	(H2S10)	JH200-R003
	(J2M09)	JJ200-R003
R003		
- PBD PORT BFR DATA P2		
	(G2S07)	JG200-R003
	(D2S07)	JD200-R003
	(E2S07)	JE200-R003
	(H2S07)	JH200-R003
	(K2U09)	JK200-R004

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- PBD PORT BFR DATA P3		
	(G2S13)	JG200-R003
	(D2S13)	JD200-R003
	(E2S13)	JE200-R003
	(H2S13)	JH200-R003
	(K2S13)	JK200-R004
R004		
- CDN SD2 R/W DATA UPPER 0		
	(G2M03)	JG200-R004
1A-B3	(N2X29)	GN200-R055
1B-A1	*B3D09*	
R004		
- CDN SD2 R/W DATA UPPER 1		
	(G2M05)	JG200-R004
1A-B3	(N2X03)	GN200-R055
1B-A1	*B3B03*	
R004		
- CDN SD2 R/W DATA UPPER 2		
	(G2P07)	JG200-R004
1A-B3	(N2X02)	GN200-R055
1B-A1	*B3B02*	
R004		
- CDN SD2 R/W DATA UPPER 3		
	(G2P04)	JG200-R004
1A-B3	(N2X07)	GN200-R055
1B-A1	*B3B07*	
R004		
- CDN SD2 R/W DATA UPPER 4		
	(G2M08)	JG200-R004
1A-B3	(N2X06)	GN200-R055
1B-A1	*B3B06*	
R004		
- CDN SD2 R/W DATA UPPER 5		
	(G2P10)	JG200-R004
1A-B3	(N2X31)	GN200-R055
1B-A1	*B3D11*	
R004		
- CDN SD2 R/W DATA UPPER 6		
	(G2J11)	JG200-R004
1A-B3	(N2X10)	GN200-R055
1B-A1	*B3B10*	
R004		
- CDN SD2 R/W DATA UPPER 7		
	(G2J12)	JG200-R004
1A-B3	(N2X32)	GN200-R055
1B-A1	*B3D12*	
R004		
- CDN SD2 R/W DATA UPPER P		
	(G2M07)	JG200-R004
1A-B3	(N2X30)	GN200-R055
1B-A1	*B3D10*	

LINE/SIGNAL	PIN	SHEET/LINE
R005		
- PBG SD2 DATA RDY/TKN UPPER		
	(G2J09)	JG200-R005
1A-B3	N2X22	GN200-L043
1B-A1	*B3D02*	
R006		
- PBG SD2 LAST DATA BYTE TKN UP		
	(G2J10)	JG200-R006
1A-B3	N2X23	GN200-L044
1B-A1	*B3D03*	
R007		
- PBG SD2 PC READ ENABLE		
	(G2P09)	JG200-R007
	F2P05	JF200-L011
R008		
- PBG SD2 PC DLYD READ CLOCK		
	(G2G08)	JG200-R008
	F2P04	JF200-L012
R009		
- PBD PORT BUFFER DATA CLOCK		
	(G2P12)	JG200-R009
	(D2P12)	JD200-R009
	(E2P12)	JE200-R009
	(H2P12)	JH200-R009
	J2G10	JJ200-L003
	K2G05	JK200-L003
R010		
- PBG SD2 UPPER OP COMPLETE		
	(G2U02)	JG200-R010
	S2J04	JS200-L013
R011		
- PBG SD2 UPPER RQST STG CYCLE		
	(G2U05)	JG200-R011
	Q2T05	JQ210-L007
R012		
- PBG SD2 UPPER PORT CHECK		
	(G2M09)	JG200-R012
	S2S08	JS200-L007
R013		
- PBG SD2 UPPER PC DECODE ACTIVE		
	(G2J02)	JG200-R013
	S2P04	JS200-L009
R014		
- PBG SD2 UP PC INTERFACE CHECK		
	(G2G07)	JG200-R014
	S2U02	JS200-L011
R015		
- PBG SD2 UP DATA GT REQD 0		
	(G2M12)	JG200-R015
	Q2T08	JQ210-L009
R015		
- PBG SD2 UP DATA GT REQD 1		
	(G2M13)	JG200-R015
	Q2N07	JQ210-L009

LINE/SIGNAL	PIN	SHEET/LINE
R015		
- PBG SD2 UP DATA GT REQD 2		
	(G2P13)	JG200-R015
	Q2J11	JQ210-L009
R016		
- PBG SD2 HALT CHANNEL		
	(G2S04)	JG200-R016
1A-B3	N2Z05	GN200-L045
1B-A1	*B4B05*	
R017		
- PCF SD2 PB/E3 R/W DATA 0		
	(G2W05)	JG200-R017
	(F2M08)	JF200-R005
	(F2W05)	JF200-R023
	(H2W05)	JH200-R017
	(L2M11)	JL200-R004
R017		
- PCF SD2 PB/E3 R/W DATA 1		
	(G2W09)	JG200-R017
	(F2M09)	JF200-R005
	(F2W09)	JF200-R023
	(H2W09)	JH200-R017
	(L2P11)	JL200-R004
R017		
- PCF SD2 PB/E3 R/W DATA 2		
	(G2W13)	JG200-R017
	(F2M10)	JF200-R005
	(F2W13)	JF200-R023
	(H2W13)	JH200-R017
	(L2U05)	JL200-R004
R017		
- PCF SD2 PB/E3 R/W DATA 3		
	(G2X02)	JG200-R017
	(F2M12)	JF200-R005
	(F2X02)	JF200-R023
	(H2X02)	JH200-R017
	(L2S03)	JL200-R004
R017		
- PCF SD2 PB/E3 R/W DATA 4		
	(G2X05)	JG200-R017
	(F2P13)	JF200-R005
	(F2X05)	JF200-R023
	(H2X05)	JH200-R017
	(L2M13)	JL200-R004
R017		
- PCF SD2 PB/E3 R/W DATA 5		
	(G2X09)	JG200-R017
	(F2M13)	JF200-R005
	(F2X09)	JF200-R023
	(H2X09)	JH200-R017
	(L2P13)	JL200-R004
R017		
- PCF SD2 PB/E3 R/W DATA 6		
	(G2X13)	JG200-R017
	(F2U02)	JF200-R005
	(F2X13)	JF200-R023
	(H2X13)	JH200-R017
	(L2P12)	JL200-R004

LINE/SIGNAL	PIN	SHEET/LINE
R017		
- PCF SD2 PB/E3 R/W DATA 7		
	(G2X32)	JG200-R017
	(F2S02)	JF200-R005
	(F2X32)	JF200-R023
	(H2X32)	JH200-R017
	(L2M02)	JL200-R004
R017		
- PCF SD2 PB/E3 R/W DATA P		
	(G2W02)	JG200-R017
	(F2M07)	JF200-R005
	(F2W02)	JF200-R023
	(H2W02)	JH200-R017
	(L2M03)	JL200-R004

003 - CDN SD2 DATA RDY/TKN LOWER --- G12
004 - CDN SD2 R/W CLOCK LOWER ------ M02
005 - C2Q PHASE CLOCK 1 ------------ G04
006 - C2Q PHASE CLOCK 2 ------------ G03
007 - C2Q PHASE CLOCK 1.1 ---------- G05
008 - C2Q PHASE CLOCK 1.2 ---------- J05
009 - C2Q PHASE CLOCK 1.3 ---------- G02
010 - C2Q PHASE CLOCK 1.4 ---------- B12
011 - C2Q PHASE CLOCK 1.5 ---------- B13
012 - C2Q SD2 LOWER PB SELECTED ---- G11
013 - SAS SD2 LOWER RUN/STORE DATA - J04
014 - SAS SD2 LOWER RUN/FETCH DATA - J06
015 - SAS SD2 LOWER CHECK RESET ---- P05
016 - SAS SD2 LOWER SRC INACTIVE --- M04
017 - C1P SD2 PB/PC POR MACH RESET - P06
018 - ENABLE SD2 LOWER PC DECODE --- J07
019 - SAS SD2 LO DATA GT SSARS (0-2) * =
020 - C2Q SD2 LOWER PB DRIVER ENABLE J13
021 - PCF SD2 PB/E3 ADDRESS (0-7,P) * =
022 - PCF SD2 PB/E3 R/W CLK -------- X07
023 - PCF SD2 PB/E3 WRITE GATE ----- W07
024 - PCF SD2 PB/E3 READ GATE ------ W11

CMPB CARD

OVERVIEW

The CMPB (Port Buffer) card provides asynchronous data buffering between the one byte data bus of the CMCD card and the four byte data bus of the ECC functional island.

PRIMARY FUNCTIONS

- The byte counter counts the number of data bytes transferred between the CMCD card and the port buffer.
- The byte count shadow counts the number of data and pad bytes transferred between the CMPB card and the ECC functional island.
- On store operations, pad bytes are appended if the byte count plus SRC (if part of the transfer) are not an integer multiple of 16.
- Data is buffered in a swinging array structure. As the CMCD card works on one array, the ECC functional island empties (store) or fills (fetch) the other array. Storage cycle requests are made by the CMPB card under the following conditions:
  - On a store operation when an array has been filled or the byte count goes to zero (partial array).
  - On a fetch operation when the byte count shadow is non-zero and an array is empty.

PRIMARY COMPONENTS

- Byte counter and byte count shadow registers.
- Contains two for each of the following functions:
  - Array address counters.
  - Array quantity counters.
  - Fast access arrays.
- Array read/write control logic.
- Input and output registers for multiplexing and demultiplexing of the one byte and four byte data busses.
- Receivers and drivers.

ERROR CHECKING

- PB Overrun/Underrun Check (U/L PBCK, bit 0):
  - Reading an empty array or writing a full array.
  - Attempting to read the empty CMCD output register on a fetch.
- Byte Count Zero Check (U/L PBCK, bit 1).
  - This bit indicates a conflict between the Byte Count Equal Zero logic and the byte counter contents when run is activated.
- Byte Counter Parity Check (U/L PBCK, bit 3).
  - This bit indicates a parity error on the byte counter for either store or fetch operation.
- Byte Counter Shadow Parity Check (U/L PBCK, bit 4).
  - This bit indicates a parity error on the byte counter shadow for either store or fetch operation.
- PA/PB Data In Parity Check (U/L PBCK, bit 5).
  - This bit indicates a parity error on the bi-directional bus on a store operation.
- ECC/PB Data In Parity Check 1 (U/L PBCK, bit 6).
  - On a fetch operation this bit indicates a parity error at the port buffer holding the first 128 bytes.
- ECC/PB Data In Parity Check 2 (U/L PBCK, bit 7).
  - On a fetch operation this bit indicates a parity error at the port buffer holding the second 128 bytes.

PORT BUFFER LOWER - SD2 CRD JH200

= * - PBD PORT BFR DATA (0-31,P0-P3) 003
= * - CDN SD2 R/W DATA LOWER (0-7,P) 004
J09 - PBH SD2 DATA RDY/TKN LOWER --- 005
J10 - PBH SD2 LAST DATA BYTE TKN LO 006
P09 - PBH SD2 PC READ ENABLE ------- 007
G08 - PBH SD2 PC DLYD READ CLOCK --- 008
P12 - PBD PORT BUFFER DATA CLOCK --- 009
U02 - PBH SD2 LOWER OP COMPLETE ---- 010
U05 - PBH SD2 LOWER RQST STG CYCLE - 011
M09 - PBH SD2 LOWER PORT CHECK ----- 012
J02 - PBH SD2 LOWER PC DECODE ACTIVE 013
G07 - PBH SD2 LO PC INTERFACE CHECK 014
= * - PBH SD2 LO DATA GT REQD (0-2) 015
S04 - PBH SD2 HALT CHANNEL --------- 016
= * - PCF SD2 PB/E3 R/W DATA (0-7,P) 017

PORT BUFFER LOWER - SD2 XRL JH200

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- CDN SD2 DATA RDY/TKN LOWER		
	H2G12	JH200-L003
	1A-B3 (N2Z23)	GN200-R060
	1B-A1 *B4D03*	
L004		
- CDN SD2 R/W CLOCK LOWER		
	H2M02	JH200-L004
	1A-B3 (N2Z22)	GN200-R061
	1B-A1 *B4D02*	
L005		
- C2Q PHASE CLOCK 1		
	H2G04	JH200-L005
	(Q2H02)	JQ210-R003
	D2G04	JD200-L005
	E2G04	JE200-L005
	G2G04	JG200-L005
	L2U04	JL200-L023
L006		
- C2Q PHASE CLOCK 2		
	H2G03	JH200-L006
	(Q2P09)	JQ210-R004
	D2G03	JD200-L006
	E2G03	JE200-L006
	G2G03	JG200-L006
	L2F09	JL200-L021
L007		
- C2Q PHASE CLOCK 1.1		
	H2G05	JH200-L007
	(Q2G02)	JQ210-R005
	D2G05	JD200-L007
	E2G05	JE200-L007
	G2G05	JG200-L007
	L2M09	JL200-L024
L008		
- C2Q PHASE CLOCK 1.2		
	H2J05	JH200-L008
	(Q2H13)	JQ210-R006
	D2J05	JD200-L008
	E2J05	JE200-L008
	G2J05	JG200-L008
	L2M08	JL200-L025
L009		
- C2Q PHASE CLOCK 1.3		
	H2G02	JH200-L009
	(Q2J02)	JQ210-R007
	D2G02	JD200-L009
	E2G02	JE200-L009
	G2G02	JG200-L009
	L2U02	JL200-L026
L010		
- C2Q PHASE CLOCK 1.4		
	H2B12	JH200-L010
	(Q2M10)	JQ210-R008
	D2B12	JD200-L010
	E2B12	JE200-L010
	G2B12	JG200-L010
	L2N10	JL200-L027

LINE/SIGNAL	PIN	SHEET/LINE
L011		
- C2Q PHASE CLOCK 1.5		
	H2B13	JH200-L011
	(Q2G05)	JQ210-R009
	D2B13	JD200-L011
	E2B13	JE200-L011
	G2B13	JG200-L011
	L2P10	JL200-L033
L012		
- C2Q SD2 LOWER PB SELECTED		
	H2G11	JH200-L012
	(Q2M05)	JQ210-R019
L013		
- SAS SD2 LOWER RUN/STORE DATA		
	H2J04	JH200-L013
	(S2M09)	JS200-R007
	Q2H09	JQ210-L029
L014		
- SAS SD2 LOWER RUN/FETCH DATA		
	H2J06	JH200-L014
	(S2M11)	JS200-R009
	Q2G08	JQ210-L031
L015		
- SAS SD2 LOWER CHECK RESET		
	H2P05	JH200-L015
	(S2G04)	JS200-R015
	L2G09	JL200-L015
	P2J12	JP200-L038
L016		
- SAS SD2 LOWER SRC INACTIVE		
	H2M04	JH200-L016
	(S2U11)	JS200-R011
L017		
- C1P SD2 PB/PC FOR MACH RESET		
	H2P06	JH200-L017
	(P2B10)	JP200-R032
	G2P06	JG200-L017
L018		
- ENABLE SD2 LOWER PC DECODE		
	H2J07	JH200-L018
	1B-A1 *H3D08*	
L019		
- SAS SD2 LO DATA GT SSARS 0		
	H2P02	JH200-L019
	(S2J11)	JS200-R023
L019		
- SAS SD2 LO DATA GT SSARS 1		
	H2G10	JH200-L019
	(S2G08)	JS200-R023
L019		
- SAS SD2 LO DATA GT SSARS 2		
	H2G13	JH200-L019
	(S2J09)	JS200-R023

LINE/SIGNAL	PIN	SHEET/LINE
L020		
- C2Q SD2 LOWER PB DRIVER ENABLE		
	H2J13	JH200-L020
	(Q2H11)	JQ210-R021
L021		
- PCF SD2 PB/E3 ADDRESS 0		
	H2N25	JH200-L021
	(F2U10)	JF200-R004
	(F2N25)	JF200-R024
	G2N25	JG200-L021
	L2B13	JL200-L004
L021		
- PCF SD2 PB/E3 ADDRESS 1		
	H2N29	JH200-L021
	(F2S10)	JF200-R004
	(F2W29)	JF200-R024
	G2W29	JG200-L021
	L2B10	JL200-L004
L021		
- PCF SD2 PB/E3 ADDRESS 2		
	H2N33	JH200-L021
	(F2U11)	JF200-R004
	(F2N33)	JF200-R024
	G2W33	JG200-L021
	L2G05	JL200-L004
L021		
- PCF SD2 PB/E3 ADDRESS 3		
	H2X22	JH200-L021
	(F2S11)	JF200-R004
	(F2X22)	JF200-R024
	G2X22	JG200-L021
	L2B09	JL200-L004
L021		
- PCF SD2 PB/E3 ADDRESS 4		
	H2X25	JH200-L021
	(F2U12)	JF200-R004
	(F2X25)	JF200-R024
	G2X25	JG200-L021
	L2B03	JL200-L004
L021		
- PCF SD2 PB/E3 ADDRESS 5		
	H2X29	JH200-L021
	(F2S12)	JF200-R004
	(F2X29)	JF200-R024
	G2X29	JG200-L021
	L2J06	JL200-L004
L021		
- PCF SD2 PB/E3 ADDRESS 6		
	H2X33	JH200-L021
	(F2U13)	JF200-R004
	(F2X33)	JF200-R024
	G2X33	JG200-L021
	L2D13	JL200-L004

LINE/SIGNAL	PIN	SHEET/LINE
L021		
- PCF SD2 PB/E3 ADDRESS 7		
	H2X11	JH200-L021
	(F2S13)	JF200-R004
	(F2X11)	JF200-R024
	G2X11	JG200-L021
	L2D04	JL200-L004
L021		
- PCF SD2 PB/E3 ADDRESS P		
	H2W22	JH200-L021
	(F2S09)	JF200-R004
	(F2W22)	JF200-R024
	G2W22	JG200-L021
	L2B12	JL200-L004
L022		
- PCF SD2 PB/E3 R/W CLK		
	H2X07	JH200-L022
	(F2S08)	JF200-R013
	(F2X07)	JF200-R022
	G2X07	JG200-L022
	L2D10	JL200-L005
L023		
- PCF SD2 PB/E3 WRITE GATE		
	H2N07	JH200-L023
	(F2U09)	JF200-R012
	(F2N07)	JF200-R020
	G2N07	JG200-L023
	L2P02	JL200-L010
L024		
- PCF SD2 PB/E3 READ GATE		
	H2W11	JH200-L024
	(F2S04)	JF200-R011
	(F2N11)	JF200-R021
	G2W11	JG200-L024
	L2J09	JL200-L009
R003		
- PBD PORT BFR DATA 0		
	(H2D11)	JH200-R003
	(D2D11)	JD200-R003
	(E2D11)	JE200-R003
	(G2D11)	JG200-R003
	(J2D06)	JJ200-R003
R003		
- PBD PORT BFR DATA 1		
	(H2U10)	JH200-R003
	(D2U10)	JD200-R003
	(E2U10)	JE200-R003
	(G2U10)	JG200-R003
	(J2B08)	JJ200-R003
R003		
- PBD PORT BFR DATA 2		
	(H2B05)	JH200-R003
	(D2B05)	JD200-R003
	(E2B05)	JE200-R003
	(G2B05)	JG200-R003
	(J2B03)	JJ200-R003

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- PBD PORT BFR DATA 3		
	(H2B06)	JH200-R003
	(D2B06)	JD200-R003
	(E2B06)	JE200-R003
	(G2B06)	JG200-R003
	(J2D09)	JJ200-R003
R003		
- PBD PORT BFR DATA 4		
	(H2U06)	JH200-R003
	(D2U06)	JD200-R003
	(E2U06)	JE200-R003
	(G2U06)	JG200-R003
	(J2B05)	JJ200-R003
R003		
- PBD PORT BFR DATA 5		
	(H2B09)	JH200-R003
	(D2B09)	JD200-R003
	(E2B09)	JE200-R003
	(G2B09)	JG200-R003
	(J2D10)	JJ200-R003
R003		
- PBD PORT BFR DATA 6		
	(H2D04)	JH200-R003
	(D2D04)	JD200-R003
	(E2D04)	JE200-R003
	(G2D04)	JG200-R003
	(J2B04)	JJ200-R003
R003		
- PBD PORT BFR DATA 7		
	(H2D02)	JH200-R003
	(D2D02)	JD200-R003
	(E2D02)	JE200-R003
	(G2D02)	JG200-R003
	(J2D05)	JJ200-R003
R003		
- PBD PORT BFR DATA 8		
	(H2B07)	JH200-R003
	(D2B07)	JD200-R003
	(E2B07)	JE200-R003
	(G2B07)	JG200-R003
	(J2M10)	JJ200-R003
R003		
- PBD PORT BFR DATA 9		
	(H2D13)	JH200-R003
	(D2D13)	JD200-R003
	(E2D13)	JE200-R003
	(G2D13)	JG200-R003
	(J2P09)	JJ200-R003
R003		
- PBD PORT BFR DATA 10		
	(H2B11)	JH200-R003
	(D2B11)	JD200-R003
	(E2B11)	JE200-R003
	(G2B11)	JG200-R003
	(J2P04)	JJ200-R003

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- PBD PORT BFR DATA 11		
	(H2S08)	JH200-R003
	(D2S08)	JD200-R003
	(E2S08)	JE200-R003
	(G2S08)	JG200-R003
	(J2M04)	JJ200-R003
R003		
- PBD PORT BFR DATA 12		
	(H2U13)	JH200-R003
	(D2U13)	JD200-R003
	(E2U13)	JE200-R003
	(G2U13)	JG200-R003
	(J2M13)	JJ200-R003
R003		
- PBD PORT BFR DATA 13		
	(H2U11)	JH200-R003
	(D2U11)	JD200-R003
	(E2U11)	JE200-R003
	(G2U11)	JG200-R003
	(J2S12)	JJ200-R003
R003		
- PBD PORT BFR DATA 14		
	(H2S05)	JH200-R003
	(D2S05)	JD200-R003
	(E2S05)	JE200-R003
	(G2S05)	JG200-R003
	(J2P07)	JJ200-R003
R003		
- PBD PORT BFR DATA 15		
	(H2D09)	JH200-R003
	(D2D09)	JD200-R003
	(E2D09)	JE200-R003
	(G2D09)	JG200-R003
	(J2M08)	JJ200-R003
R003		
- PBD PORT BFR DATA 16		
	(H2U09)	JH200-R003
	(D2U09)	JD200-R003
	(E2U09)	JE200-R003
	(G2U09)	JG200-R003
	(K2B05)	JK200-R003
R003		
- PBD PORT BFR DATA 17		
	(H2U12)	JH200-R003
	(D2U12)	JD200-R003
	(E2U12)	JE200-R003
	(G2U12)	JG200-R003
	(K2B11)	JK200-R003
R003		
- PBD PORT BFR DATA 18		
	(H2S11)	JH200-R003
	(D2S11)	JD200-R003
	(E2S11)	JE200-R003
	(G2S11)	JG200-R003
	(K2B03)	JK200-R003

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- PBD PORT BFR DATA 19		
	(H2S06)	JH200-R003
	(D2S06)	JD200-R003
	(E2S06)	JE200-R003
	(G2S06)	JG200-R003
	(K2B10)	JK200-R003
R003		
- PBD PORT BFR DATA 20		
	(H2D10)	JH200-R003
	(D2D10)	JD200-R003
	(E2D10)	JE200-R003
	(G2D10)	JG200-R003
	(K2D11)	JK200-R003
R003		
- PBD PORT BFR DATA 21		
	(H2S09)	JH200-R003
	(D2S09)	JD200-R003
	(E2S09)	JE200-R003
	(G2S09)	JG200-R003
	(K2B09)	JK200-R003
R003		
- PBD PORT BFR DATA 22		
	(H2D05)	JH200-R003
	(D2D05)	JD200-R003
	(E2D05)	JE200-R003
	(G2D05)	JG200-R003
	(K2D05)	JK200-R003
R003		
- PBD PORT BFR DATA 23		
	(H2D07)	JH200-R003
	(D2D07)	JD200-R003
	(E2D07)	JE200-R003
	(G2D07)	JG200-R003
	(K2B04)	JK200-R003
R003		
- PBD PORT BFR DATA 24		
	(H2D12)	JH200-R003
	(D2D12)	JD200-R003
	(E2D12)	JE200-R003
	(G2D12)	JG200-R003
	(K2S05)	JK200-R003
R003		
- PBD PORT BFR DATA 25		
	(H2B08)	JH200-R003
	(D2B08)	JD200-R003
	(E2B08)	JE200-R003
	(G2B08)	JG200-R003
	(K2S06)	JK200-R003
R003		
- PBD PORT BFR DATA 26		
	(H2B04)	JH200-R003
	(D2B04)	JD200-R003
	(E2B04)	JE200-R003
	(G2B04)	JG200-R003
	(K2U07)	JK200-R003
R003		
- PBD PORT BFR DATA 27		
	(H2B02)	JH200-R003
	(D2B02)	JD200-R003
	(E2B02)	JE200-R003
	(G2B02)	JG200-R003
	(K2U06)	JK200-R003
R003		
- PBD PORT BFR DATA 28		
	(H2D06)	JH200-R003
	(D2D06)	JD200-R003
	(E2D06)	JE200-R003
	(G2D06)	JG200-R003
	(K2S04)	JK200-R003
R003		
- PBD PORT BFR DATA 29		
	(H2U07)	JH200-R003
	(D2U07)	JD200-R003
	(E2U07)	JE200-R003
	(G2U07)	JG200-R003
	(K2S03)	JK200-R003
R003		
- PBD PORT BFR DATA 30		
	(H2B10)	JH200-R003
	(D2B10)	JD200-R003
	(E2B10)	JE200-R003
	(G2B10)	JG200-R003
	(K2U05)	JK200-R003
R003		
- PBD PORT BFR DATA 31		
	(H2B03)	JH200-R003
	(D2B03)	JD200-R003
	(E2B03)	JE200-R003
	(G2B03)	JG200-R003
	(K2U04)	JK200-R003
R003		
- PBD PORT BFR DATA P0		
	(H2S12)	JH200-R003
	(D2S12)	JD200-R003
	(E2S12)	JE200-R003
	(G2S12)	JG200-R003
	(J2D07)	JJ200-R003
R003		
- PBD PORT BFR DATA P1		
	(H2S10)	JH200-R003
	(D2S10)	JD200-R003
	(E2S10)	JE200-R003
	(G2S10)	JG200-R003
	(J2M09)	JJ200-R003
R003		
- PBD PORT BFR DATA P2		
	(H2S07)	JH200-R003
	(D2S07)	JD200-R003
	(E2S07)	JE200-R003
	(G2S07)	JG200-R003
	(K2U09)	JK200-R004
R003		
- PBD PORT BFR DATA P3		
	(H2S13)	JH200-R003
	(D2S13)	JD200-R003
	(E2S13)	JE200-R003
	(G2S13)	JG200-R003
	(K2S13)	JK200-R004
R004		
- CDN SD2 R/W DATA LOWER 0		
	(H2M03)	JH200-R004
1A-B3	(N2Z30)	GN200-R042
1B-A1	*B4D10*	
R004		
- CDN SD2 R/W DATA LOWER 1		
	(H2M05)	JH200-R004
1A-B3	(N2Z29)	GN200-R042
1B-A1	*B4D09*	
R004		
- CDN SD2 R/W DATA LOWER 2		
	(H2P07)	JH200-R004
1A-B3	(N2Z27)	GN200-R042
1B-A1	*B4D07*	
R004		
- CDN SD2 R/W DATA LOWER 3		
	(H2P04)	JH200-R004
1A-B3	(N2Z26)	GN200-R042
1B-A1	*B4D06*	
R004		
- CDN SD2 R/W DATA LOWER 4		
	(H2M08)	JH200-R004
1A-B3	(N2Z11)	GN200-R042
1B-A1	*B4B11*	
R004		
- CDN SD2 R/W DATA LOWER 5		
	(H2P10)	JH200-R004
1A-B3	(N2Z12)	GN200-R042
1B-A1	*B4B12*	
R004		
- CDN SD2 R/W DATA LOWER 6		
	(H2J11)	JH200-R004
1A-B3	(N2Z25)	GN200-R042
1B-A1	*B4D05*	
R004		
- CDN SD2 R/W DATA LOWER 7		
	(H2J12)	JH200-R004
1A-B3	(N2Z24)	GN200-R042
1B-A1	*B4D04*	
R004		
- CDN SD2 R/W DATA LOWER P		
	(H2M07)	JH200-R004
1A-B3	(N2Z31)	GN200-R042
1B-A1	*B4D11*	
R005		
- PBH SD2 DATA RDY/TKN LOWER		
	(H2J09)	JH200-R005
1A-B3	N2X33	GN200-L046
1B-A1	*B3D13*	
R006		
- PBH SD2 LAST DATA BYTE TKN LO		
	(H2J10)	JH200-R006
1A-B3	N2X27	GN200-L047
1B-A1	*B3D07*	
R007		
- PBH SD2 PC READ ENABLE		
	(H2P09)	JH200-R007
	F2P06	JF200-L013
R008		
- PBH SD2 PC DLYD READ CLOCK		
	(H2G08)	JH200-R008
	F2P07	JF200-L014
R009		
- PBD PORT BUFFER DATA CLOCK		
	(H2P12)	JH200-R009
	(D2P12)	JD200-R009
	(E2P12)	JE200-R009
	(G2P12)	JG200-R009
	J2G10	JJ200-L003
	K2G05	JK200-L003
R010		
- PBH SD2 LOWER OP COMPLETE		
	(H2U02)	JH200-R010
	S2P13	JS200-L014
R011		
- PBH SD2 LOWER RQST STG CYCLE		
	(H2U05)	JH200-R011
	Q2T03	JQ210-L008
R012		
- PBH SD2 LOWER PORT CHECK		
	(H2M09)	JH200-R012
	S2J07	JS200-L008
R013		
- PBH SD2 LOWER PC DECODE ACTIVE		
	(H2J02)	JH200-R013
	S2M03	JS200-L010
R014		
- PBH SD2 LO PC INTERFACE CHECK		
	(H2G07)	JH200-R014
	S2S03	JS200-L012
R015		
- PBH SD2 LO DATA GT REQD 0		
	(H2M12)	JH200-R015
	Q2S02	JQ210-L010
R015		
- PBH SD2 LO DATA GT REQD 1		
	(H2M13)	JH200-R015
	Q2S05	JQ210-L010
R015		
- PBH SD2 LO DATA GT REQD 2		
	(H2P13)	JH200-R015
	Q2J12	JQ210-L010
R016		
- PBH SD2 HALT CHANNEL		
	(H2S04)	JH200-R016
R017		
- PCF SD2 PB/E3 R/W DATA 0		
	(H2W05)	JH200-R017
	(F2M08)	JF200-R005
	(F2W05)	JF200-R023
	(G2W05)	JG200-R017
	(L2M11)	JL200-R004
R017		
- PCF SD2 PB/E3 R/W DATA 1		
	(H2W09)	JH200-R017
	(F2M09)	JF200-R005
	(F2W09)	JF200-R023
	(G2W09)	JG200-R017
	(L2P11)	JL200-R004
R017		
- PCF SD2 PB/E3 R/W DATA 2		
	(H2W13)	JH200-R017
	(F2M10)	JF200-R005
	(F2W13)	JF200-R023
	(G2W13)	JG200-R017
	(L2U05)	JL200-R004
R017		
- PCF SD2 PB/E3 R/W DATA 3		
	(H2X02)	JH200-R017
	(F2M12)	JF200-R005
	(F2X02)	JF200-R023
	(G2X02)	JG200-R017
	(L2S03)	JL200-R004
R017		
- PCF SD2 PB/E3 R/W DATA 4		
	(H2X05)	JH200-R017
	(F2P13)	JF200-R005
	(F2X05)	JF200-R023
	(G2X05)	JG200-R017
	(L2M13)	JL200-R004
R017		
- PCF SD2 PB/E3 R/W DATA 5		
	(H2X09)	JH200-R017
	(F2M13)	JF200-R005
	(F2X09)	JF200-R023
	(G2X09)	JG200-R017
	(L2P13)	JL200-R004
R017		
- PCF SD2 PB/E3 R/W DATA 6		
	(H2X13)	JH200-R017
	(F2U02)	JF200-R005
	(F2X13)	JF200-R023
	(G2X13)	JG200-R017
	(L2P12)	JL200-R004
R017		
- PCF SD2 PB/E3 R/W DATA 7		
	(H2X32)	JH200-R017
	(F2S02)	JF200-R005
	(F2X32)	JF200-R023
	(G2X32)	JG200-R017
	(L2M02)	JL200-R004
R017		
- PCF SD2 PB/E3 R/W DATA P		
	(H2W02)	JH200-R017
	(F2M07)	JF200-R005
	(F2W02)	JF200-R023
	(G2W02)	JG200-R017
	(L2M03)	JL200-R004

```
003 - PBD PORT BUFFER DATA CLOCK --- G10
004 - C1P ECC TST LOOP WRITE TO READ D04
005 - C2Q PB RECEIVE/ECC SEND DAT E1 U12
006 - C1P CONTROL BD POR/MACH RESET  M12
007 - E3L 0.5 SUM DRIVER ENABLE ---- G12
008 + E3L ROS S1 ADDRESS (0-7) ===== * =
009 + E3L ROS S2 ADDRESS (0-7) ===== * =
010 - E3L UNGATED ECC SINGLE ERROR - X07
011 - E3L UNGATED ECC DOUBLE ERROR - X28
012 - E3L DIAGNOSTIC CONTROL (1-3) = * =
013 - E3L STORE CYCLE -------------- Y05
014 - E3L CHECK/SYNDROME MPX SELECT  Y09
015 - E3L INPUT REG FETCH CLOCK A -- Y24
016 - E3L INPUT REG FETCH CLOCK B -- Y32
017 - E3L STORAGE DRIVER SELECT A -- Y30
018 - E3L STORAGE DRIVER SELECT B -- Y26
019 - E3L 0.5 SUM DATA LOAD CLOCK -- Z03
020 - E3L 1.0 SUM DATA LOAD CLOCK -- Y28
021 - E3L ECC CORRECTED DATA A CLK - Z05
022 - E3L ECC CORRECTED DATA B CLK - Z09
023 + E3L PHASE CLOCK 1 ------------ Z11
024 + E3L PHASE CLOCK 2 ------------ Z24
025 + E3L PHASE CLOCK 1.4 ---------- Z32
026 + E3L ECC/PB DRIVER ENABLE A --- Z30
027 + E3L ECC/PB DRIVER ENABLE B --- Z26
028 - E3L ENABLE DIAG DECODE ------- Z28
```

CME1 CARD

OVERVIEW

The CME1 (Error Correction Code #1) card provides one half of the data interface between the port buffer and the Data Driver card. On store operations, it generates partial ECC check bits and drives data and check to the Data Driver card. On fetch operations, it generates partial ECC syndrome bits, provides error correction for one half of the Storage Data and drives data to the Port Buffer cards.

PRIMARY FUNCTIONS

- Connects half of the Port Buffer bus in/out to the Data Driver card in the M2 position.
- Generates partial ECC check bits.
- Generates partial ECC syndrome bits.
- Provides data correction for half of the Storage Data.
- Generates parity on the data to the Data Driver card during store operations:

PRIMARY COMPONENTS

- Input buffer multiplexor registers - latches data from either Port Buffer interface (on a store) or the Storage Data bus (on a fetch).
- ECC check/syndrome generator - partial check (on a store) or partial syndrome (on a fetch).
- ROS S1 and S2 Correction look-up tables.
- Data correction logic for single or double bit errors.
- Three state Drivers - on the Port Buffer and Storage Data buses.

ERROR CHECKING

- PB/ECC Data In Check 1 (ECCCK, bit 1)
  - This bit indicates that the Port Buffer data (which is registered prior to the check syndrome matrix) contains a parity error.
- ECC Data In or ROS Check E1 (ECCCK, bit 3)
  - This bit indicates that the Port Buffer data at the multiplexor output of the two registers from the Port Buffer contains a parity error.
  - This bit also indicates a byte parity error on the output of either the 8K x 9 ROS S1 or S2. ROS S1 is used in correcting single and double bit errors while ROS S2 is used in corrrecting double bit errors.

```
= * - PBD PORT BFR DATA (0-15,P0-P1) 003
= * - E1J/E2K ECC DATA (0-35) ====== 004
= * - E1J/E2K ECC DATA PARITY (0-1)  005
P12 - E1J PB TO ECC PTY CHK 1 ------ 006
= * + E1J PARTIAL CHK/SYN (0-15) === 007
W07 - E1J STORE/ROS-S1-S2 PTY ERR 1  008
```

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- PBD PORT BUFFER DATA CLOCK		
	J2G10	JJ200-L003
	(D2P12)	JD200-R009
	(E2P12)	JE200-R009
	(G2P12)	JG200-R009
	(H2P12)	JH200-R009
	K2G05	JK200-L003
L004		
- C1P ECC TST LOOP WRITE TO READ		
	J2D04	JJ200-L004
	(P2B13)	JP200-R019
	K2D02	JK200-L005
	Q2S04	JQ210-L014
L005		
- C2Q PB RECEIVE/ECC SEND DAT E1		
	J2U12	JJ200-L005
	(Q2J06)	JQ210-R026
L006		
- C1P CONTROL BD POR/MACH RESET		
	J2M12	JJ200-L006
	(P2C06)	JP200-R030
	K2U02	JK200-L007
	L2J04	JL200-L011
	Q2U10	JQ210-L019
	R2P06	JR200-L017
	S2P06	JS200-L017
	T2M04	JT210-L008
L007		
- E3L 0.5 SUM DRIVER ENABLE		
	J2G12	JJ200-L007
	(L2U10)	JL200-R015
L008		
+ E3L ROS S1 ADDRESS 0		
	J2W03	JJ200-L008
	(L2W03)	JL200-R016
	K2W03	JK200-L008
L008		
+ E3L ROS S1 ADDRESS 1		
	J2W11	JJ200-L008
	(L2W11)	JL200-R016
	K2W11	JK200-L008
L008		
+ E3L ROS S1 ADDRESS 2		
	J2X03	JJ200-L008
	(L2X03)	JL200-R016
	K2X03	JK200-L008
L008		
+ E3L ROS S1 ADDRESS 3		
	J2X11	JJ200-L008
	(L2X11)	JL200-R016
	K2X11	JK200-L008
L008		
+ E3L ROS S1 ADDRESS 4		
	J2W24	JJ200-L008
	(L2W24)	JL200-R016
	K2W24	JK200-L008

LINE/SIGNAL	PIN	SHEET/LINE
L008		
+ E3L ROS S1 ADDRESS 5		
	J2W32	JJ200-L008
	(L2W32)	JL200-R016
	K2W32	JK200-L008
L008		
+ E3L ROS S1 ADDRESS 6		
	J2X24	JJ200-L008
	(L2X24)	JL200-R016
	K2X24	JK200-L008
L008		
+ E3L ROS S1 ADDRESS 7		
	J2X32	JJ200-L008
	(L2X32)	JL200-R016
	K2X32	JK200-L008
L009		
+ E3L ROS S2 ADDRESS 0		
	J2W05	JJ200-L009
	(L2W05)	JL200-R017
	K2W05	JK200-L009
L009		
+ E3L ROS S2 ADDRESS 1		
	J2W09	JJ200-L009
	(L2W09)	JL200-R017
	K2W09	JK200-L009
L009		
+ E3L ROS S2 ADDRESS 2		
	J2X05	JJ200-L009
	(L2X05)	JL200-R017
	K2X05	JK200-L009
L009		
+ E3L ROS S2 ADDRESS 3		
	J2X09	JJ200-L009
	(L2X09)	JL200-R017
	K2X09	JK200-L009
L009		
+ E3L ROS S2 ADDRESS 4		
	J2W26	JJ200-L009
	(L2W26)	JL200-R017
	K2W26	JK200-L009
L009		
+ E3L ROS S2 ADDRESS 5		
	J2W30	JJ200-L009
	(L2W30)	JL200-R017
	K2W30	JK200-L009
L009		
+ E3L ROS S2 ADDRESS 6		
	J2X26	JJ200-L009
	(L2X26)	JL200-R017
	K2X26	JK200-L009
L009		
+ E3L ROS S2 ADDRESS 7		
	J2X30	JJ200-L009
	(L2X30)	JL200-R017
	K2X30	JK200-L009

LINE/SIGNAL	PIN	SHEET/LINE
L010		
- E3L UNGATED ECC SINGLE ERROR		
	J2X07	JJ200-L010
	(L2X07)	JL200-R021
	K2X07	JK200-L010
L011		
- E3L UNGATED ECC DOUBLE ERROR		
	J2X28	JJ200-L011
	(L2X28)	JL200-R022
	K2X28	JK200-L011
L012		
- E3L DIAGNOSTIC CONTROL 1		
	J2Y03	JJ200-L012
	(L2Y03)	JL200-R023
	K2Y03	JK200-L012
L012		
- E3L DIAGNOSTIC CONTROL 2		
	J2Y07	JJ200-L012
	(L2Y07)	JL200-R023
	K2Y07	JK200-L012
L012		
- E3L DIAGNOSTIC CONTROL 3		
	J2Y11	JJ200-L012
	(L2Y11)	JL200-R023
	K2Y11	JK200-L012
L013		
- E3L STORE CYCLE		
	J2Y05	JJ200-L013
	(L2Y05)	JL200-R024
	K2Y05	JK200-L013
L014		
- E3L CHECK/SYNDROME MPX SELECT		
	J2Y09	JJ200-L014
	(L2Y09)	JL200-R025
	K2Y09	JK200-L014
L015		
- E3L INPUT REG FETCH CLOCK A		
	J2Y24	JJ200-L015
	(L2Y24)	JL200-R026
	K2Y24	JK200-L015
L016		
- E3L INPUT REG FETCH CLOCK B		
	J2Y32	JJ200-L016
	(L2Y32)	JL200-R027
	K2Y32	JK200-L016
L017		
- E3L STORAGE DRIVER SELECT A		
	J2Y30	JJ200-L017
	(L2Y30)	JL200-R030
	K2Y30	JK200-L017
L018		
- E3L STORAGE DRIVER SELECT B		
	J2Y26	JJ200-L018
	(L2Y26)	JL200-R028
	K2Y26	JK200-L018

LINE/SIGNAL	PIN	SHEET/LINE
L019		
- E3L 0.5 SUM DATA LOAD CLOCK		
	J2Z03	JJ200-L019
	(L2Z03)	JL200-R031
	K2Z03	JK200-L019
L020		
- E3L 1.0 SUM DATA LOAD CLOCK		
	J2Y28	JJ200-L020
	(L2Y28)	JL200-R029
	K2Y28	JK200-L020
L021		
- E3L ECC CORRECTED DATA A CLK		
	J2Z05	JJ200-L021
	(L2Z05)	JL200-R032
	K2Z05	JK200-L021
L022		
- E3L ECC CORRECTED DATA B CLK		
	J2Z09	JJ200-L022
	(L2Z09)	JL200-R034
	K2Z09	JK200-L022
L023		
+ E3L PHASE CLOCK 1		
	J2Z11	JJ200-L023
	(L2Z11)	JL200-R035
	K2Z11	JK200-L023
L024		
+ E3L PHASE CLOCK 2		
	J2Z24	JJ200-L024
	(L2Z24)	JL200-R036
	K2Z24	JK200-L024
L025		
+ E3L PHASE CLOCK 1.4		
	J2Z32	JJ200-L025
	(L2Z32)	JL200-R037
	K2Z32	JK200-L025
L026		
+ E3L ECC/PB DRIVER ENABLE A		
	J2Z30	JJ200-L026
	(L2Z30)	JL200-R039
	K2Z30	JK200-L026
L027		
+ E3L ECC/PB DRIVER ENABLE B		
	J2Z26	JJ200-L027
	(L2Z26)	JL200-R038
	K2Z26	JK200-L027
L028		
- E3L ENABLE DIAG DECODE		
	J2Z28	JJ200-L028
	(L2Z28)	JL200-R040
	K2Z28	JK200-L029
R003		
- PBD PORT BFR DATA 0		
	(J2D06)	JJ200-R003
	(D2D11)	JD200-R003
	(E2D11)	JE200-R003
	(G2D11)	JG200-R003
	(H2D11)	JH200-R003

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- PBD PORT BFR DATA 1		
	(J2B08)	JJ200-R003
	(D2U10)	JD200-R003
	(E2U10)	JE200-R003
	(G2U10)	JG200-R003
	(H2U10)	JH200-R003
R003		
- PBD PORT BFR DATA 2		
	(J2B03)	JJ200-R003
	(D2B05)	JD200-R003
	(E2B05)	JE200-R003
	(G2B05)	JG200-R003
	(H2B05)	JH200-R003
R003		
- PBD PORT BFR DATA 3		
	(J2D09)	JJ200-R003
	(D2B06)	JD200-R003
	(E2B06)	JE200-R003
	(G2B06)	JG200-R003
	(H2B06)	JH200-R003
R003		
- PBD PORT BFR DATA 4		
	(J2B05)	JJ200-R003
	(D2U06)	JD200-R003
	(E2U06)	JE200-R003
	(G2U06)	JG200-R003
	(H2U06)	JH200-R003
R003		
- PBD PORT BFR DATA 5		
	(J2D10)	JJ200-R003
	(D2B09)	JD200-R003
	(E2B09)	JE200-R003
	(G2B09)	JG200-R003
	(H2B09)	JH200-R003
R003		
- PBD PORT BFR DATA 6		
	(J2B04)	JJ200-R003
	(D2D04)	JD200-R003
	(E2D04)	JE200-R003
	(G2D04)	JG200-R003
	(H2D04)	JH200-R003
R003		
- PBD PORT BFR DATA 7		
	(J2D05)	JJ200-R003
	(D2D02)	JD200-R003
	(E2D02)	JE200-R003
	(G2D02)	JG200-R003
	(H2D02)	JH200-R003
R003		
- PBD PORT BFR DATA 8		
	(J2M10)	JJ200-R003
	(D2B07)	JD200-R003
	(E2B07)	JE200-R003
	(G2B07)	JG200-R003
	(H2B07)	JH200-R003

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- PBD PORT BFR DATA 9		
	(J2P09)	JJ200-R003
	(D2D13)	JD200-R003
	(E2D13)	JE200-R003
	(G2D13)	JG200-R003
	(H2D13)	JH200-R003
R003		
- PBD PORT BFR DATA 10		
	(J2P04)	JJ200-R003
	(D2B11)	JD200-R003
	(E2B11)	JE200-R003
	(G2B11)	JG200-R003
	(H2B11)	JH200-R003
R003		
- PBD PORT BFR DATA 11		
	(J2M04)	JJ200-R003
	(D2S08)	JD200-R003
	(E2S08)	JE200-R003
	(G2S08)	JG200-R003
	(H2S08)	JH200-R003
R003		
- PBD PORT BFR DATA 12		
	(J2M13)	JJ200-R003
	(D2U13)	JD200-R003
	(E2U13)	JE200-R003
	(G2U13)	JG200-R003
	(H2U13)	JH200-R003
R003		
- PBD PORT BFR DATA 13		
	(J2S12)	JJ200-R003
	(D2U11)	JD200-R003
	(E2U11)	JE200-R003
	(G2U11)	JG200-R003
	(H2U11)	JH200-R003
R003		
- PBD PORT BFR DATA 14		
	(J2P07)	JJ200-R003
	(D2S05)	JD200-R003
	(E2S05)	JE200-R003
	(G2S05)	JG200-R003
	(H2S05)	JH200-R003
R003		
- PBD PORT BFR DATA 15		
	(J2M08)	JJ200-R003
	(D2D09)	JD200-R003
	(E2D09)	JE200-R003
	(G2D09)	JG200-R003
	(H2D09)	JH200-R003
R003		
- PBD PORT BFR DATA P0		
	(J2D07)	JJ200-R003
	(D2S12)	JD200-R003
	(E2S12)	JE200-R003
	(G2S12)	JG200-R003
	(H2S12)	JH200-R003

ERROR CORRECTION CODE 1 XRL JJ200

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- PBD PORT BFR DATA P1	(J2M09)	JJ200-R003
	(D2S10)	JD200-R003
	(E2S10)	JE200-R003
	(G2S10)	JG200-R003
	(H2S10)	JH200-R003
R004		
- E1J/E2K ECC DATA 0	(J2B12)	JJ200-R004
	(K2Z33)	JK200-R005
	(L2Z33)	JL200-R018
	(M2B05)	JM200-R003
R004		
- E1J/E2K ECC DATA 1	(J2B10)	JJ200-R004
	(K2Z29)	JK200-R005
	(L2Z29)	JL200-R018
	(M2D04)	JM200-R003
R004		
- E1J/E2K ECC DATA 2	(J2B02)	JJ200-R004
	(K2Z25)	JK200-R005
	(L2Z25)	JL200-R018
	(M2C07)	JM200-R003
R004		
- E1J/E2K ECC DATA 3	(J2B09)	JJ200-R004
	(K2Z22)	JK200-R005
	(L2Z22)	JL200-R018
	(M2D07)	JM200-R003
R004		
- E1J/E2K ECC DATA 4	(J2G02)	JJ200-R004
	(M2B06)	JM200-R003
R004		
- E1J/E2K ECC DATA 5	(J2J02)	JJ200-R004
	(M2B07)	JM200-R003
R004		
- E1J/E2K ECC DATA 6	(J2D11)	JJ200-R004
	(M2B11)	JM200-R003
R004		
- E1J/E2K ECC DATA 7	(J2S11)	JJ200-R004
	(M2B12)	JM200-R003
R004		
- E1J/E2K ECC DATA 8	(J2D12)	JJ200-R004
	(K2Y33)	JK200-R005
	(L2Y33)	JL200-R018
	(M2M12)	JM200-R003
R004		
- E1J/E2K ECC DATA 9	(J2U11)	JJ200-R004
	(M2T04)	JM200-R003
R004		
- E1J/E2K ECC DATA 10	(J2S08)	JJ200-R004
	(M2T02)	JM200-R003
R004		
- E1J/E2K ECC DATA 11	(J2U04)	JJ200-R004
	(M2S02)	JM200-R003
R004		
- E1J/E2K ECC DATA 12	(J2U10)	JJ200-R004
	(M2N12)	JM200-R003
R004		
- E1J/E2K ECC DATA 13	(J2S03)	JJ200-R004
	(M2M13)	JM200-R003
R004		
- E1J/E2K ECC DATA 14	(J2S09)	JJ200-R004
	(M2S04)	JM200-R003
R004		
- E1J/E2K ECC DATA 15	(J2S06)	JJ200-R004
	(M2P12)	JM200-R003
R004		
- E1J/E2K ECC DATA 16	(J2S04)	JJ200-R004
	(M2J05)	JM200-R003
R004		
- E1J/E2K ECC DATA 17	(J2S05)	JJ200-R004
	(K2Y29)	JK200-R005
	(L2Y29)	JL200-R018
	(M2H05)	JM200-R003
R004		
- E1J/E2K ECC DATA 18	(J2J05)	JJ200-R004
	(M2G04)	JM200-R003
R004		
- E1J/E2K ECC DATA 19	(J2G05)	JJ200-R004
	(M2J02)	JM200-R003
R004		
- E1J/E2K ECC DATA 20	(J2J04)	JJ200-R004
	(M2G05)	JM200-R003
R004		
- E1J/E2K ECC DATA 21	(J2G03)	JJ200-R004
	(M2J04)	JM200-R003
R004		
- E1J/E2K ECC DATA 22	(J2G08)	JJ200-R004
	(M2H03)	JM200-R003
R004		
- E1J/E2K ECC DATA 23	(J2J09)	JJ200-R004
	(M2G03)	JM200-R003
R004		
- E1J/E2K ECC DATA 24	(J2J06)	JJ200-R004
	(M2U13)	JM200-R003
R004		
- E1J/E2K ECC DATA 25	(J2B07)	JJ200-R004
	(M2S10)	JM200-R003
R004		
- E1J/E2K ECC DATA 26	(J2G13)	JJ200-R004
	(K2Y25)	JK200-R005
	(L2Y25)	JL200-R018
	(M2U10)	JM200-R003
R004		
- E1J/E2K ECC DATA 27	(J2S07)	JJ200-R004
	(M2U09)	JM200-R003
R004		
- E1J/E2K ECC DATA 28	(J2U02)	JJ200-R004
	(M2T10)	JM200-R003
R004		
- E1J/E2K ECC DATA 29	(J2U07)	JJ200-R004
	(M2S13)	JM200-R003
R004		
- E1J/E2K ECC DATA 30	(J2U09)	JJ200-R004
	(M2T13)	JM200-R003
R004		
- E1J/E2K ECC DATA 31	(J2S02)	JJ200-R004
	(M2T09)	JM200-R003
R004		
- E1J/E2K ECC DATA 32	(J2S10)	JJ200-R004
	(M2U02)	JM200-R003
R004		
- E1J/E2K ECC DATA 33	(J2U05)	JJ200-R004
	(M2N11)	JM200-R003
R004		
- E1J/E2K ECC DATA 34	(J2U06)	JJ200-R004
	(M2M11)	JM200-R003
R004		
- E1J/E2K ECC DATA 35	(J2B06)	JJ200-R004
	(K2Y22)	JK200-R006
	(L2Y22)	JL200-R019
	(M2P11)	JM200-R003
R005		
- E1J/E2K ECC DATA PARITY 0	(J2G07)	JJ200-R005
	M2C12	JM200-L006
R005		
- E1J/E2K ECC DATA PARITY 1	(J2J07)	JJ200-R005
	M2C11	JM200-L006
R006		
- E1J PB TO ECC PTY CHK 1	(J2P12)	JJ200-R006
	L2G07	JL200-L034
R007		
+ E1J PARTIAL CHK/SYN 0	(J2G09)	JJ200-R007
	K2M03	JK200-L004
R007		
+ E1J PARTIAL CHK/SYN 1	(J2J13)	JJ200-R007
	K2M02	JK200-L004
R007		
+ E1J PARTIAL CHK/SYN 2	(J2M05)	JJ200-R007
	K2G11	JK200-L004
R007		
+ E1J PARTIAL CHK/SYN 3	(J2P06)	JJ200-R007
	K2P09	JK200-L004
R007		
+ E1J PARTIAL CHK/SYN 4	(J2P05)	JJ200-R007
	K2M05	JK200-L004
R007		
+ E1J PARTIAL CHK/SYN 5	(J2M02)	JJ200-R007
	K2P07	JK200-L004
R007		
+ E1J PARTIAL CHK/SYN 6	(J2M03)	JJ200-R007
	K2P02	JK200-L004
R007		
+ E1J PARTIAL CHK/SYN 7	(J2M07)	JJ200-R007
	K2G13	JK200-L004
R007		
+ E1J PARTIAL CHK/SYN 8	(J2P13)	JJ200-R007
	K2J13	JK200-L004
R007		
+ E1J PARTIAL CHK/SYN 9	(J2P02)	JJ200-R007
	K2G12	JK200-L004
R007		
+ E1J PARTIAL CHK/SYN 10	(J2P11)	JJ200-R007
	K2P06	JK200-L004
R007		
+ E1J PARTIAL CHK/SYN 11	(J2J12)	JJ200-R007
	K2J12	JK200-L004
R007		
+ E1J PARTIAL CHK/SYN 12	(J2M11)	JJ200-R007
	K2J10	JK200-L004
R007		
+ E1J PARTIAL CHK/SYN 13	(J2P10)	JJ200-R007
	K2J11	JK200-L004
R007		
+ E1J PARTIAL CHK/SYN 14	(J2J10)	JJ200-R007
	K2M04	JK200-L004
R007		
+ E1J PARTIAL CHK/SYN 15	(J2J11)	JJ200-R007
	K2P04	JK200-L004
R008		
- E1J STORE/ROS-S1-S2 PTY ERR 1	(J2W07)	JJ200-R008
	L2W07	JL200-L037

```
003 - PBD PORT BUFFER DATA CLOCK --- G05
004 + E1J PARTIAL CHK/SYN (0-15) === * =
005 - C1P ECC TST LOOP WRITE TO READ D02
006 - C2Q PB RECEIVE/ECC SEND DAT E2 U10
007 - C1P CONTROL BD POR/MACH RESET  U02
008 + E3L ROS S1 ADDRESS (0-7) ===== * =
009 + E3L ROS S2 ADDRESS (0-7) ===== * =
010 - E3L UNGATED ECC SINGLE ERROR - X07
011 - E3L UNGATED ECC DOUBLE ERROR - X28
012 - E3L DIAGNOSTIC CONTROL (1-3) = * =
013 - E3L STORE CYCLE ---------------- Y05
014 - E3L CHECK/SYNDROME MPX SELECT  Y09
015 - E3L INPUT REG FETCH CLOCK A -- Y24
016 - E3L INPUT REG FETCH CLOCK B -- Y32
017 - E3L STORAGE DRIVER SELECT A -- Y30
018 - E3L STORAGE DRIVER SELECT B -- Y26
019 - E3L 0.5 SUM DATA LOAD CLOCK -- Z03
020 - E3L 1.0 SUM DATA LOAD CLOCK -- Y28
021 - E3L ECC CORRECTED DATA A CLK - Z05
022 - E3L ECC CORRECTED DATA B CLK - Z09
023 + E3L PHASE CLOCK 1 ------------ Z11
024 + E3L PHASE CLOCK 2 ------------ Z24
025 + E3L PHASE CLOCK 1.4 ---------- Z32
026 + E3L ECC/PB DRIVER ENABLE A --- Z30
027 + E3L ECC/PB DRIVER ENABLE B --- Z26
028 - E3L WRITE CHECK GATE ENABLE -- Z07
029 - E3L ENABLE DIAG DECODE ------- Z28
```

CME2 CARD

OVERVIEW

The CME2 (Error Correction Code #2) card provides one half of the data interface between the port buffer and the Data Driver card. On store operations, it receives partial ECC check bits from CME1, computes full ECC check bits and drives data and check to the Data Driver card. On fetch operations, it receives partial ECC syndrome bits from CME1, computes full ECC syndrome bits and drives data and syndrome to the Data Driver card.

PRIMARY FUNCTIONS

- Connects half of the Port Buffer bus in/out to the Data Driver card in the N2 position.
- Generates full ECC check bits.
- Generates full ECC syndrome bits.
- Provides correction for half the Storage Data.
- Provides correctable single/double error flags.
- Generates parity on the data to the Data Driver card during store operations.

PRIMARY COMPONENTS

- Input buffer multiplexor registers - latch data from either Port Buffer interface (on a store) or the Storage Data bus (on a fetch).
- ECC check/syndrome generator - full check (on a store) or full syndrome (on a fetch).
- ROS S1 and S2 Correction look-up tables.
- Data correction logic for single or double bit errors.
- Three state Drivers - on the Port Buffer and Storage Data buses.

ERROR CHECKING

- PB/ECC Data In Check 2 (ECCCK, bit 2)
  - This bit indicates that the Port Buffer data (which is registered prior to the check syndrome matrix) contains a parity error.
- ECC Data In or ROS Check E2 (ECCCK, bit 4)
  - This bit indicates that the Port Buffer data at the multiplexor output of the two registers from the Port Buffer contains a parity error.
  - This bit also indicates a byte parity error on the output of either the 8K x 9 ROS S1 or S2. ROS S1 is used in correcting single and double bit errors while the ROS S2 is used in corrrecting double bit errors.

ERROR CORRECTION CODE 2 CRD JK200

```
= * - PBD PORT BFR DATA (16-31) ==== 003
= * - PBD PORT BFR DATA (P2-P3) ==== 004
= * - E1J/E2K ECC DATA (0-3,8,17,26) 005
= * - E1J/E2K ECC DATA (35-71) ===== 006
= * - E1J/E2K ECC DATA PARITY (2-3)  007
P12 - E2K CORRECTABLE SINGLE ERROR - 008
P13 - E2K CORRECTABLE DOUBLE ERROR - 009
P05 - E2K PB TO ECC PTY CHK 2 ------ 010
= * + E2K ECC SYNDROME BITS (0-15) = 011
W28 - E2K STORE/ROS-S1-S2 PTY ERR 2  012
```

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- PBD PORT BUFFER DATA CLOCK		
	K2G05	JK200-L003
	(D2P12)	JD200-R009
	(E2P12)	JE200-R009
	(G2P12)	JG200-R009
	(H2P12)	JH200-R009
	J2G10	JJ200-L003
L004		
+ E1J PARTIAL CHK/SYN 0		
	K2M03	JK200-L004
	(J2G09)	JJ200-R007
L004		
+ E1J PARTIAL CHK/SYN 1		
	K2M02	JK200-L004
	(J2J13)	JJ200-R007
L004		
+ E1J PARTIAL CHK/SYN 2		
	K2G11	JK200-L004
	(J2M05)	JJ200-R007
L004		
+ E1J PARTIAL CHK/SYN 3		
	K2P09	JK200-L004
	(J2P06)	JJ200-R007
L004		
+ E1J PARTIAL CHK/SYN 4		
	K2M05	JK200-L004
	(J2P05)	JJ200-R007
L004		
+ E1J PARTIAL CHK/SYN 5		
	K2P07	JK200-L004
	(J2M02)	JJ200-R007
L004		
+ E1J PARTIAL CHK/SYN 6		
	K2P02	JK200-L004
	(J2M03)	JJ200-R007
L004		
+ E1J PARTIAL CHK/SYN 7		
	K2G13	JK200-L004
	(J2M07)	JJ200-R007
L004		
+ E1J PARTIAL CHK/SYN 8		
	K2J13	JK200-L004
	(J2P13)	JJ200-R007
L004		
+ E1J PARTIAL CHK/SYN 9		
	K2G12	JK200-L004
	(J2P02)	JJ200-R007
L004		
+ E1J PARTIAL CHK/SYN 10		
	K2P06	JK200-L004
	(J2P11)	JJ200-R007
L004		
+ E1J PARTIAL CHK/SYN 11		
	K2J12	JK200-L004
	(J2J12)	JJ200-R007
L004		
+ E1J PARTIAL CHK/SYN 12		
	K2J10	JK200-L004
	(J2M11)	JJ200-R007
L004		
+ E1J PARTIAL CHK/SYN 13		
	K2J11	JK200-L004
	(J2P10)	JJ200-R007
L004		
+ E1J PARTIAL CHK/SYN 14		
	K2M04	JK200-L004
	(J2J10)	JJ200-R007
L004		
+ E1J PARTIAL CHK/SYN 15		
	K2P04	JK200-L004
	(J2J11)	JJ200-R007
L005		
- C1P ECC TST LOOP WRITE TO READ		
	K2D02	JK200-L005
	(P2B13)	JP200-R019
	J2D04	JJ200-L004
	Q2S04	JQ210-L014
L006		
- C2Q PB RECEIVE/ECC SEND DAT E2		
	K2U10	JK200-L006
	(Q2G13)	JQ210-R027
L007		
- C1P CONTROL BD POR/MACH RESET		
	K2U02	JK200-L007
	(P2C06)	JP200-R030
	J2M12	JJ200-L006
	L2J04	JL200-L011
	Q2U10	JQ210-L019
	R2P06	JR200-L017
	S2P06	JS200-L017
	T2M04	JT210-L008
L008		
+ E3L ROS S1 ADDRESS 0		
	K2W03	JK200-L008
	(L2W03)	JL200-R016
	J2W03	JJ200-L008
L008		
+ E3L ROS S1 ADDRESS 1		
	K2W11	JK200-L008
	(L2W11)	JL200-R016
	J2W11	JJ200-L008
L008		
+ E3L ROS S1 ADDRESS 2		
	K2X03	JK200-L008
	(L2X03)	JL200-R016
	J2X03	JJ200-L008
L008		
+ E3L ROS S1 ADDRESS 3		
	K2X11	JK200-L008
	(L2X11)	JL200-R016
	J2X11	JJ200-L008
L008		
+ E3L ROS S1 ADDRESS 4		
	K2W24	JK200-L008
	(L2W24)	JL200-R016
	J2W24	JJ200-L008
L008		
+ E3L ROS S1 ADDRESS 5		
	K2W32	JK200-L008
	(L2W32)	JL200-R016
	J2W32	JJ200-L008
L008		
+ E3L ROS S1 ADDRESS 6		
	K2X24	JK200-L008
	(L2X24)	JL200-R016
	J2X24	JJ200-L008
L008		
+ E3L ROS S1 ADDRESS 7		
	K2X32	JK200-L008
	(L2X32)	JL200-R016
	J2X32	JJ200-L008
L009		
+ E3L ROS S2 ADDRESS 0		
	K2W05	JK200-L009
	(L2W05)	JL200-R017
	J2W05	JJ200-L009
L009		
+ E3L ROS S2 ADDRESS 1		
	K2W09	JK200-L009
	(L2W09)	JL200-R017
	J2W09	JJ200-L009
L009		
+ E3L ROS S2 ADDRESS 2		
	K2X05	JK200-L009
	(L2X05)	JL200-R017
	J2X05	JJ200-L009
L009		
+ E3L ROS S2 ADDRESS 3		
	K2X09	JK200-L009
	(L2X09)	JL200-R017
	J2X09	JJ200-L009
L009		
+ E3L ROS S2 ADDRESS 4		
	K2W26	JK200-L009
	(L2W26)	JL200-R017
	J2W26	JJ200-L009
L009		
+ E3L ROS S2 ADDRESS 5		
	K2W30	JK200-L009
	(L2W30)	JL200-R017
	J2W30	JJ200-L009
L009		
+ E3L ROS S2 ADDRESS 6		
	K2X26	JK200-L009
	(L2X26)	JL200-R017
	J2X26	JJ200-L009
L009		
+ E3L ROS S2 ADDRESS 7		
	K2X30	JK200-L009
	(L2X30)	JL200-R017
	J2X30	JJ200-L009
L010		
- E3L UNGATED ECC SINGLE ERROR		
	K2X07	JK200-L010
	(L2X07)	JL200-R021
	J2X07	JJ200-L010
L011		
- E3L UNGATED ECC DOUBLE ERROR		
	K2X28	JK200-L011
	(L2X28)	JL200-R022
	J2X28	JJ200-L011
L012		
- E3L DIAGNOSTIC CONTROL 1		
	K2Y03	JK200-L012
	(L2Y03)	JL200-R023
	J2Y03	JJ200-L012
L012		
- E3L DIAGNOSTIC CONTROL 2		
	K2Y07	JK200-L012
	(L2Y07)	JL200-R023
	J2Y07	JJ200-L012
L012		
- E3L DIAGNOSTIC CONTROL 3		
	K2Y11	JK200-L012
	(L2Y11)	JL200-R023
	J2Y11	JJ200-L012
L013		
- E3L STORE CYCLE		
	K2Y05	JK200-L013
	(L2Y05)	JL200-R024
	J2Y05	JJ200-L013
L014		
- E3L CHECK/SYNDROME MPX SELECT		
	K2Y09	JK200-L014
	(L2Y09)	JL200-R025
	J2Y09	JJ200-L014
L015		
- E3L INPUT REG FETCH CLOCK A		
	K2Y24	JK200-L015
	(L2Y24)	JL200-R026
	J2Y24	JJ200-L015
L016		
- E3L INPUT REG FETCH CLOCK B		
	K2Y32	JK200-L016
	(L2Y32)	JL200-R027
	J2Y32	JJ200-L016
L017		
- E3L STORAGE DRIVER SELECT A		
	K2Y30	JK200-L017
	(L2Y30)	JL200-R030
	J2Y30	JJ200-L017
L018		
- E3L STORAGE DRIVER SELECT B		
	K2Y26	JK200-L018
	(L2Y26)	JL200-R028
	J2Y26	JJ200-L018
L019		
- E3L 0.5 SUM DATA LOAD CLOCK		
	K2Z03	JK200-L019
	(L2Z03)	JL200-R031
	J2Z03	JJ200-L019
L020		
- E3L 1.0 SUM DATA LOAD CLOCK		
	K2Y28	JK200-L020
	(L2Y28)	JL200-R029
	J2Y28	JJ200-L020
L021		
- E3L ECC CORRECTED DATA A CLK		
	K2Z05	JK200-L021
	(L2Z05)	JL200-R032
	J2Z05	JJ200-L021
L022		
- E3L ECC CORRECTED DATA B CLK		
	K2Z09	JK200-L022
	(L2Z09)	JL200-R034
	J2Z09	JJ200-L022
L023		
+ E3L PHASE CLOCK 1		
	K2Z11	JK200-L023
	(L2Z11)	JL200-R035
	J2Z11	JJ200-L023
L024		
+ E3L PHASE CLOCK 2		
	K2Z24	JK200-L024
	(L2Z24)	JL200-R036
	J2Z24	JJ200-L024
L025		
+ E3L PHASE CLOCK 1.4		
	K2Z32	JK200-L025
	(L2Z32)	JL200-R037
	J2Z32	JJ200-L025
L026		
+ E3L ECC/PB DRIVER ENABLE A		
	K2Z30	JK200-L026
	(L2Z30)	JL200-R039
	J2Z30	JJ200-L026
L027		
+ E3L ECC/PB DRIVER ENABLE B		
	K2Z26	JK200-L027
	(L2Z26)	JL200-R038
	J2Z26	JJ200-L027
L028		
- E3L WRITE CHECK GATE ENABLE		
	K2Z07	JK200-L028
	(L2Z07)	JL200-R033
L029		
- E3L ENABLE DIAG DECODE		
	K2Z28	JK200-L029
	(L2Z28)	JL200-R040
	J2Z28	JJ200-L028
R003		
- PBD PORT BFR DATA 16		
	(K2B05)	JK200-R003
	(D2U09)	JD200-R003
	(E2U09)	JE200-R003
	(G2U09)	JG200-R003
	(H2U09)	JH200-R003
R003		
- PBD PORT BFR DATA 17		
	(K2B11)	JK200-R003
	(D2U12)	JD200-R003
	(E2U12)	JE200-R003
	(G2U12)	JG200-R003
	(H2U12)	JH200-R003
R003		
- PBD PORT BFR DATA 18		
	(K2B03)	JK200-R003
	(D2S11)	JD200-R003
	(E2S11)	JE200-R003
	(G2S11)	JG200-R003
	(H2S11)	JH200-R003
R003		
- PBD PORT BFR DATA 19		
	(K2B10)	JK200-R003
	(D2S06)	JD200-R003
	(E2S06)	JE200-R003
	(G2S06)	JG200-R003
	(H2S06)	JH200-R003
R003		
- PBD PORT BFR DATA 20		
	(K2D11)	JK200-R003
	(D2D10)	JD200-R003
	(E2D10)	JE200-R003
	(G2D10)	JG200-R003
	(H2D10)	JH200-R003
R003		
- PBD PORT BFR DATA 21		
	(K2B09)	JK200-R003
	(D2S09)	JD200-R003
	(E2S09)	JE200-R003
	(G2S09)	JG200-R003
	(H2S09)	JH200-R003
R003		
- PBD PORT BFR DATA 22		
	(K2D05)	JK200-R003
	(D2D05)	JD200-R003
	(E2D05)	JE200-R003
	(G2D05)	JG200-R003
	(H2D05)	JH200-R003

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- PBD PORT BFR DATA 23		
	(K2B04)	JK200-R003
	(D2D07)	JD200-R003
	(E2D07)	JE200-R003
	(G2D07)	JG200-R003
	(H2D07)	JH200-R003
R003		
- PBD PORT BFR DATA 24		
	(K2S05)	JK200-R003
	(D2D12)	JD200-R003
	(E2D12)	JE200-R003
	(G2D12)	JG200-R003
	(H2D12)	JH200-R003
R003		
- PBD PORT BFR DATA 25		
	(K2S06)	JK200-R003
	(D2B08)	JD200-R003
	(E2B08)	JE200-R003
	(G2B08)	JG200-R003
	(H2B08)	JH200-R003
R003		
- PBD PORT BFR DATA 26		
	(K2U07)	JK200-R003
	(D2B04)	JD200-R003
	(E2B04)	JE200-R003
	(G2B04)	JG200-R003
	(H2B04)	JH200-R003
R003		
- PBD PORT BFR DATA 27		
	(K2U06)	JK200-R003
	(D2B02)	JD200-R003
	(E2B02)	JE200-R003
	(G2B02)	JG200-R003
	(H2B02)	JH200-R003
R003		
- PBD PORT BFR DATA 28		
	(K2S04)	JK200-R003
	(D2D06)	JD200-R003
	(E2D06)	JE200-R003
	(G2D06)	JG200-R003
	(H2D06)	JH200-R003
R003		
- PBD PORT BFR DATA 29		
	(K2S03)	JK200-R003
	(D2U07)	JD200-R003
	(E2U07)	JE200-R003
	(G2U07)	JG200-R003
	(H2U07)	JH200-R003
R003		
- PBD PORT BFR DATA 30		
	(K2U05)	JK200-R003
	(D2B10)	JD200-R003
	(E2B10)	JE200-R003
	(G2B10)	JG200-R003
	(H2B10)	JH200-R003
R003		
- PBD PORT BFR DATA 31		
	(K2U04)	JK200-R003
	(D2B03)	JD200-R003
	(E2B03)	JE200-R003
	(G2B03)	JG200-R003
	(H2B03)	JH200-R003
R004		
- PBD PORT BFR DATA P2		
	(K2U09)	JK200-R004
	(D2S07)	JD200-R003
	(E2S07)	JE200-R003
	(G2S07)	JG200-R003
	(H2S07)	JH200-R003
R004		
- PBD PORT BFR DATA P3		
	(K2S13)	JK200-R004
	(D2S13)	JD200-R003
	(E2S13)	JE200-R003
	(G2S13)	JG200-R003
	(H2S13)	JH200-R003
R005		
- E1J/E2K ECC DATA 0		
	(K2Z33)	JK200-R005
	(J2B12)	JJ200-R004
	(L2Z33)	JL200-R018
	(M2B05)	JM200-R003
R005		
- E1J/E2K ECC DATA 1		
	(K2Z29)	JK200-R005
	(J2B10)	JJ200-R004
	(L2Z29)	JL200-R018
	(M2D04)	JM200-R003
R005		
- E1J/E2K ECC DATA 2		
	(K2Z25)	JK200-R005
	(J2B02)	JJ200-R004
	(L2Z25)	JL200-R018
	(M2C07)	JM200-R003
R005		
- E1J/E2K ECC DATA 3		
	(K2Z22)	JK200-R005
	(J2B09)	JJ200-R004
	(L2Z22)	JL200-R018
	(M2D07)	JM200-R003
R005		
- E1J/E2K ECC DATA 8		
	(K2Y33)	JK200-R005
	(J2D12)	JJ200-R004
	(L2Y33)	JL200-R018
	(M2M12)	JM200-R003
R005		
- E1J/E2K ECC DATA 17		
	(K2Y29)	JK200-R005
	(J2S05)	JJ200-R004
	(L2Y29)	JL200-R018
	(M2H05)	JM200-R003
R005		
- E1J/E2K ECC DATA 26		
	(K2Y25)	JK200-R005
	(J2G13)	JJ200-R004
	(L2Y25)	JL200-R018
	(M2U10)	JM200-R003
R006		
- E1J/E2K ECC DATA 35		
	(K2Y22)	JK200-R006
	(J2B06)	JJ200-R004
	(L2Y22)	JL200-R019
	(M2P11)	JM200-R003
R006		
- E1J/E2K ECC DATA 36		
	(K2G02)	JK200-R006
	(L2Z13)	JL200-R019
	(N2B05)	JN200-R003
R006		
- E1J/E2K ECC DATA 37		
	(K2G04)	JK200-R006
	(L2Z10)	JL200-R019
	(N2D04)	JN200-R003
R006		
- E1J/E2K ECC DATA 38		
	(K2G07)	JK200-R006
	(L2Z06)	JL200-R019
	(N2C07)	JN200-R003
R006		
- E1J/E2K ECC DATA 39		
	(K2G08)	JK200-R006
	(L2Z02)	JL200-R019
	(N2D07)	JN200-R003
R006		
- E1J/E2K ECC DATA 40		
	(K2S02)	JK200-R006
	(N2B06)	JN200-R003
R006		
- E1J/E2K ECC DATA 41		
	(K2M13)	JK200-R006
	(N2B07)	JN200-R003
R006		
- E1J/E2K ECC DATA 42		
	(K2G03)	JK200-R006
	(N2B11)	JN200-R003
R006		
- E1J/E2K ECC DATA 43		
	(K2J09)	JK200-R006
	(N2B12)	JN200-R003
R006		
- E1J/E2K ECC DATA 44		
	(K2G09)	JK200-R006
	(L2Y13)	JL200-R019
	(N2M12)	JN200-R003
R006		
- E1J/E2K ECC DATA 45		
	(K2B06)	JK200-R006
	(N2T04)	JN200-R003
R006		
- E1J/E2K ECC DATA 46		
	(K2B08)	JK200-R006
	(N2T02)	JN200-R003
R006		
- E1J/E2K ECC DATA 47		
	(K2D04)	JK200-R006
	(N2S02)	JN200-R003
R006		
- E1J/E2K ECC DATA 48		
	(K2B02)	JK200-R006
	(N2N12)	JN200-R003
R006		
- E1J/E2K ECC DATA 49		
	(K2B07)	JK200-R006
	(N2M13)	JN200-R003
R006		
- E1J/E2K ECC DATA 50		
	(K2D12)	JK200-R006
	(N2S04)	JN200-R003
R006		
- E1J/E2K ECC DATA 51		
	(K2D06)	JK200-R006
	(N2P12)	JN200-R003
R006		
- E1J/E2K ECC DATA 52		
	(K2D07)	JK200-R006
	(N2J05)	JN200-R003
R006		
- E1J/E2K ECC DATA 53		
	(K2G10)	JK200-R006
	(L2Y10)	JL200-R019
	(N2H05)	JN200-R003
R006		
- E1J/E2K ECC DATA 54		
	(K2J07)	JK200-R006
	(N2G04)	JN200-R003
R006		
- E1J/E2K ECC DATA 55		
	(K2J06)	JK200-R006
	(N2J02)	JN200-R003
R006		
- E1J/E2K ECC DATA 56		
	(K2J05)	JK200-R006
	(N2G05)	JN200-R003
R006		
- E1J/E2K ECC DATA 57		
	(K2D09)	JK200-R006
	(N2J04)	JN200-R003
R006		
- E1J/E2K ECC DATA 58		
	(K2J04)	JK200-R006
	(N2H03)	JN200-R003
R006		
- E1J/E2K ECC DATA 59		
	(K2D10)	JK200-R006
	(N2G03)	JN200-R003
R006		
- E1J/E2K ECC DATA 60		
	(K2J02)	JK200-R006
	(N2U13)	JN200-R003
R006		
- E1J/E2K ECC DATA 61		
	(K2D13)	JK200-R006
	(N2S10)	JN200-R003
R006		
- E1J/E2K ECC DATA 62		
	(K2B12)	JK200-R006
	(L2Y06)	JL200-R020
	(N2U10)	JN200-R003
R006		
- E1J/E2K ECC DATA 63		
	(K2M11)	JK200-R006
	(N2U09)	JN200-R003
R006		
- E1J/E2K ECC DATA 64		
	(K2M12)	JK200-R006
	(N2T10)	JN200-R003
R006		
- E1J/E2K ECC DATA 65		
	(K2M08)	JK200-R006
	(N2S13)	JN200-R003
R006		
- E1J/E2K ECC DATA 66		
	(K2M07)	JK200-R006
	(N2T13)	JN200-R003
R006		
- E1J/E2K ECC DATA 67		
	(K2M10)	JK200-R006
	(N2T09)	JN200-R003
R006		
- E1J/E2K ECC DATA 68		
	(K2M09)	JK200-R006
	(N2U02)	JN200-R003
R006		
- E1J/E2K ECC DATA 69		
	(K2P10)	JK200-R006
	(N2N11)	JN200-R003
R006		
- E1J/E2K ECC DATA 70		
	(K2P11)	JK200-R006
	(N2M11)	JN200-R003
R006		
- E1J/E2K ECC DATA 71		
	(K2B13)	JK200-R006
	(L2Y02)	JL200-R020
	(N2P11)	JN200-R003
R007		
- E1J/E2K ECC DATA PARITY 2		
	(K2U11)	JK200-R007
	N2C12	JN200-L006
R007		
- E1J/E2K ECC DATA PARITY 3		
	(K2U13)	JK200-R007
	N2C11	JN200-L006
R008		
- E2K CORRECTABLE SINGLE ERROR		
	(K2P12)	JK200-R008
	P2J07	JP200-L042
R009		
- E2K CORRECTABLE DOUBLE ERROR		
	(K2P13)	JK200-R009
	P2G09	JP200-L041
R010		
- E2K PB TO ECC PTY CHK 2		
	(K2P05)	JK200-R010
	L2G08	JL200-L035
R011		
+ E2K ECC SYNDROME BITS 0		
	(K2W02)	JK200-R011
	L2W02	JL200-L036
R011		
+ E2K ECC SYNDROME BITS 1		
	(K2W06)	JK200-R011
	L2W06	JL200-L036
R011		
+ E2K ECC SYNDROME BITS 2		
	(K2W10)	JK200-R011
	L2W10	JL200-L036
R011		
+ E2K ECC SYNDROME BITS 3		
	(K2W13)	JK200-R011
	L2W13	JL200-L036
R011		
+ E2K ECC SYNDROME BITS 4		
	(K2X02)	JK200-R011
	L2X02	JL200-L036
R011		
+ E2K ECC SYNDROME BITS 5		
	(K2X06)	JK200-R011
	L2X06	JL200-L036
R011		
+ E2K ECC SYNDROME BITS 6		
	(K2X10)	JK200-R011
	L2X10	JL200-L036

ERROR CORRECTION CODE 2 XRL JK200

LINE/SIGNAL	PIN	SHEET/LINE
R011 + E2K ECC SYNDROME BITS 7	(K2X13) L2X13	JK200-R011 JL200-L036
R011 + E2K ECC SYNDROME BITS 8	(K2W22) L2W22	JK200-R011 JL200-L036
R011 + E2K ECC SYNDROME BITS 9	(K2W25) L2W25	JK200-R011 JL200-L036
R011 + E2K ECC SYNDROME BITS 10	(K2W29) L2W29	JK200-R011 JL200-L036
R011 + E2K ECC SYNDROME BITS 11	(K2W33) L2W33	JK200-R011 JL200-L036
R011 + E2K ECC SYNDROME BITS 12	(K2X22) L2X22	JK200-R011 JL200-L036
R011 + E2K ECC SYNDROME BITS 13	(K2X25) L2X25	JK200-R011 JL200-L036
R011 + E2K ECC SYNDROME BITS 14	(K2X29) L2X29	JK200-R011 JL200-L036
R011 + E2K ECC SYNDROME BITS 15	(K2X33) L2X33	JK200-R011 JL200-L036
R012 - E2K STORE/ROS-S1-S2 PTY ERR 2	(K2W28) L2W28	JK200-R012 JL200-L038

```
003 - PCC SD1 PB/E3 ADDRESS (0-7,P)  * =
004 - PCF SD2 PB/E3 ADDRESS (0-7,P)  * =
005 - PCF SD2 PB/E3 R/W CLK -------- D10
006 - PCC SD1 PB/E3 READ GATE ------ J12
007 - PCC SD1 PB/E3 R/W CLK -------- D07
008 - PCC SD1 PB/E3 WRITE GATE ----- P04
009 - PCF SD2 PB/E3 READ GATE ------ J09
010 - PCF SD2 PB/E3 WRITE GATE ----- P02
011 - C1P CONTROL BD POR/MACH RESET  J04
012 - SAR SD1 UPPER CHECK RESET ---- B07
013 - SAR SD1 LOWER CHECK RESET ---- B08
014 - SAS SD2 UPPER CHECK RESET ---- D09
015 - SAS SD2 LOWER CHECK RESET ---- G09
016 - C2Q SD1 UPPER STORAGE CYCLE -- B04
017 - DDM SDB PARITY CHECK --------- M12
018 - DDN SDB PARITY CHECK --------- S02
019 - C2Q SD1 LOWER STORAGE CYCLE -- B05
020 - C2Q SD2 LOWER STORAGE CYCLE -- D02
021 - C2Q PHASE CLOCK 2 ------------ P09
022 - C2Q SD2 UPPER STORAGE CYCLE -- B02
023 - C2Q PHASE CLOCK 1 ------------ U04
024 - C2Q PHASE CLOCK 1.1 ---------- M09
025 - C2Q PHASE CLOCK 1.2 ---------- M08
026 - C2Q PHASE CLOCK 1.3 ---------- U02
027 - C2Q PHASE CLOCK 1.4 ---------- M10
028 - C2Q PB SEND/ECC RECEIVE DATA - S08
029 - C2Q SEND SDB DATA ------------ S07
030 - C2Q RECEIVE SDB DATA --------- U06
031 - C2Q FETCH CONTROL ENABLE ----- U09
032 - C2Q STORE / + FETCH ---------- S05
033 - C2Q PHASE CLOCK 1.5 ---------- P10
034 - E1J PB TO ECC PTY CHK 1 ------ G07
035 - E2K PB TO ECC PTY CHK 2 ------ G08
036 + E2K ECC SYNDROME BITS (0-15) = * =
037 - E1J STORE/ROS-S1-S2 PTY ERR 1  W07
038 - E2K STORE/ROS-S1-S2 PTY ERR 2  W28
```

CME3 CARD

OVERVIEW

The CME3 (Error Correction Code #3) card is the physical connection between the ECC functional island and the PC functional island. It also accepts and interprets control information from the SC/SA functional island to generate internal ECC timings.

PRIMARY FUNCTIONS

- Provides register space to store ECC diagnostic controls, error check conditions, soft error recovery Write Check Bit data, and ECC check bit / syndrome information.
- Monitors and responds to the indirect register buses from SD1 and SD2 for Port Control initiated communications (register reads and/or writes).
- Generates timing and control signals for the ECC functional island from the phase clocks and SC/SA functional island inputs.
- Performs syndrome translation and generates addressing for correction by the CME1 and 2 cards.
- Generates indications for single and double bit correctable errors and triple bit uncorrectable errors.
- Provides ECC Check Bit Hold control and alternate pathing for Write Check Bit data during soft error recovery.

PRIMARY COMPONENTS

- Upper and lower check registers.
- Syndrome translation, ROS S1 and S2 address generation and error detection logic.
- ECC Check Bits / Syndrome Bits register.
- Diagnostics and Soft Error Recovery Write Check Bits registers.
- ROS M Correction Look-up Tables for 1st,2nd,3rd and 4th 8K Groups.
- Three state Receivers and drivers.

ERROR CHECKING

- ECC Uncorrectable Check (U/L ECCCK, bit 0).
  - Uncorrectable error occurs if a word fetched from cache contains a triple error.
- ROS-M Check (U/L ECCCK, bit 5).
  - This bit indicates a byte parity error on the output of 32kX9 ROS.
- ECC IR Check (CSACK, bit 5).
  - The Port Control Address Data (SD1 or SD2) contains bad parity.
  - An Invalid Port Control Sequence (R/W Clock without read or write gates or R/W Clock with both read and write gates).
  - The Port Control Write Data (SD1 or SD2) has bad parity during a write operation.
- Upper/Lower Port Check (CSTAT1, bit 0,1).
  - SD1/SD2 Port Check - when any SD1 or SD2 upper/lower check register bit is set. This check is a summary of the error check bits from the CME1,2 or 3 cards. Bit 0 and 1 represents upper and lower port checks respectively.

```
= * - PCC SD1 PB/E3 R/W DATA (0-7,P) 003
= * - PCF SD2 PB/E3 R/W DATA (0-7,P) 004
G13 - E3L SD1 U/L DECODE ACTIVE ---- 005
D05 - E3L SD1 PC DLYD READ CLOCK --- 006
G04 - E3L SD1 U/L PC INTERFACE CHECK 007
J13 - E3L SD2 U/L DECODE ACTIVE ---- 008
J11 - E3L SD1 PORT CHECK ----------- 009
D12 - E3L SD2 U/L PC INTERFACE CHECK 010
J10 - E3L SD2 PORT CHECK ----------- 011
J05 - E3L SD1 PC READ ENABLE ------- 012
D11 - E3L SD2 PC DLYD READ CLOCK --- 013
D06 - E3L SD2 PC READ ENABLE ------- 014
U10 - E3L 0.5 SUM DRIVER ENABLE ---- 015
= * + E3L ROS S1 ADDRESS (0-7) ===== 016
= * + E3L ROS S2 ADDRESS (0-7) ===== 017
= * - E1J/E2K ECC DATA (0-3,8,17,26) 018
= * - E1J/E2K ECC DATA (35-39,44,53) 019
= * - E1J/E2K ECC DATA (62,71) ===== 020
X07 - E3L UNGATED ECC SINGLE ERROR - 021
X28 - E3L UNGATED ECC DOUBLE ERROR - 022
= * - E3L DIAGNOSTIC CONTROL (1-3) = 023
Y05 - E3L STORE CYCLE -------------- 024
Y09 - E3L CHECK/SYNDROME MPX SELECT  025
Y24 - E3L INPUT REG FETCH CLOCK A -- 026
Y32 - E3L INPUT REG FETCH CLOCK B -- 027
Y26 - E3L STORAGE DRIVER SELECT B -- 028
Y28 - E3L 1.0 SUM DATA LOAD CLOCK -- 029
Y30 - E3L STORAGE DRIVER SELECT A -- 030
Z03 - E3L 0.5 SUM DATA LOAD CLOCK -- 031
Z05 - E3L ECC CORRECTED DATA A CLK - 032
Z07 - E3L WRITE CHECK GATE ENABLE -- 033
Z09 - E3L ECC CORRECTED DATA B CLK - 034
Z11 + E3L PHASE CLOCK 1 ------------ 035
Z24 + E3L PHASE CLOCK 2 ------------ 036
Z32 + E3L PHASE CLOCK 1.4 ---------- 037
Z26 + E3L ECC/PB DRIVER ENABLE B --- 038
Z30 + E3L ECC/PB DRIVER ENABLE A --- 039
Z28 - E3L ENABLE DIAG DECODE ------- 040
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LINE/SIGNAL	PIN	SHEET/LINE
L003		
- PCC SD1 PB/E3 ADDRESS 0		
	L2B11	JL200-L003
	(C2U10)	JC200-R004
	(C2W25)	JC200-R024
	D2W25	JD200-L021
	E2W25	JE200-L021
L003		
- PCC SD1 PB/E3 ADDRESS 1		
	L2G02	JL200-L003
	(C2S10)	JC200-R004
	(C2W29)	JC200-R024
	D2W29	JD200-L021
	E2W29	JE200-L021
L003		
- PCC SD1 PB/E3 ADDRESS 2		
	L2G03	JL200-L003
	(C2U11)	JC200-R004
	(C2W33)	JC200-R024
	D2W33	JD200-L021
	E2W33	JE200-L021
L003		
- PCC SD1 PB/E3 ADDRESS 3		
	L2J02	JL200-L003
	(C2S11)	JC200-R004
	(C2X22)	JC200-R024
	D2X22	JD200-L021
	E2X22	JE200-L021
L003		
- PCC SD1 PB/E3 ADDRESS 4		
	L2G11	JL200-L003
	(C2U12)	JC200-R004
	(C2X25)	JC200-R024
	D2X25	JD200-L021
	E2X25	JE200-L021
L003		
- PCC SD1 PB/E3 ADDRESS 5		
	L2J07	JL200-L003
	(C2S12)	JC200-R004
	(C2X29)	JC200-R024
	D2X29	JD200-L021
	E2X29	JE200-L021
L003		
- PCC SD1 PB/E3 ADDRESS 6		
	L2G12	JL200-L003
	(C2U13)	JC200-R004
	(C2X33)	JC200-R024
	D2X33	JD200-L021
	E2X33	JE200-L021
L003		
- PCC SD1 PB/E3 ADDRESS 7		
	L2G10	JL200-L003
	(C2S13)	JC200-R004
	(C2X11)	JC200-R024
	D2X11	JD200-L021
	E2X11	JE200-L021

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- PCC SD1 PB/E3 ADDRESS P		
	L2B06	JL200-L003
	(C2S09)	JC200-R004
	(C2W22)	JC200-R024
	D2W22	JD200-L021
	E2W22	JE200-L021
L004		
- PCF SD2 PB/E3 ADDRESS 0		
	L2B13	JL200-L004
	(F2U10)	JF200-R004
	(F2W25)	JF200-R024
	G2W25	JG200-L021
	H2W25	JH200-L021
L004		
- PCF SD2 PB/E3 ADDRESS 1		
	L2B10	JL200-L004
	(F2S10)	JF200-R004
	(F2W29)	JF200-R024
	G2W29	JG200-L021
	H2W29	JH200-L021
L004		
- PCF SD2 PB/E3 ADDRESS 2		
	L2G05	JL200-L004
	(F2U11)	JF200-R004
	(F2W33)	JF200-R024
	G2W33	JG200-L021
	H2W33	JH200-L021
L004		
- PCF SD2 PB/E3 ADDRESS 3		
	L2B09	JL200-L004
	(F2S11)	JF200-R004
	(F2X22)	JF200-R024
	G2X22	JG200-L021
	H2X22	JH200-L021
L004		
- PCF SD2 PB/E3 ADDRESS 4		
	L2B03	JL200-L004
	(F2U12)	JF200-R004
	(F2X25)	JF200-R024
	G2X25	JG200-L021
	H2X25	JH200-L021
L004		
- PCF SD2 PB/E3 ADDRESS 5		
	L2J06	JL200-L004
	(F2S12)	JF200-R004
	(F2X29)	JF200-R024
	G2X29	JG200-L021
	H2X29	JH200-L021
L004		
- PCF SD2 PB/E3 ADDRESS 6		
	L2D13	JL200-L004
	(F2U13)	JF200-R004
	(F2X33)	JF200-R024
	G2X33	JG200-L021
	H2X33	JH200-L021

LINE/SIGNAL	PIN	SHEET/LINE
L004		
- PCF SD2 PB/E3 ADDRESS 7		
	L2D04	JL200-L004
	(F2S13)	JF200-R004
	(F2X11)	JF200-R024
	G2X11	JG200-L021
	H2X11	JH200-L021
L004		
- PCF SD2 PB/E3 ADDRESS P		
	L2B12	JL200-L004
	(F2S09)	JF200-R004
	(F2W22)	JF200-R024
	G2W22	JG200-L021
	H2W22	JH200-L021
L005		
- PCF SD2 PB/E3 R/W CLK		
	L2D10	JL200-L005
	(F2S08)	JF200-R013
	(F2X07)	JF200-R022
	G2X07	JG200-L022
	H2X07	JH200-L022
L006		
- PCC SD1 PB/E3 READ GATE		
	L2J12	JL200-L006
	(C2S04)	JC200-R011
	(C2W11)	JC200-R021
	D2W11	JD200-L024
	E2W11	JE200-L024
L007		
- PCC SD1 PB/E3 R/W CLK		
	L2D07	JL200-L007
	(C2S08)	JC200-R013
	(C2X07)	JC200-R022
	D2X07	JD200-L022
	E2X07	JE200-L022
L008		
- PCC SD1 PB/E3 WRITE GATE		
	L2P04	JL200-L008
	(C2U09)	JC200-R012
	(C2W07)	JC200-R020
	D2W07	JD200-L023
	E2W07	JE200-L023
L009		
- PCF SD2 PB/E3 READ GATE		
	L2J09	JL200-L009
	(F2S04)	JF200-R011
	(F2W11)	JF200-R021
	G2W11	JG200-L024
	H2W11	JH200-L024
L010		
- PCF SD2 PB/E3 WRITE GATE		
	L2P02	JL200-L010
	(F2U09)	JF200-R012
	(F2W07)	JF200-R020
	G2W07	JG200-L023
	H2W07	JH200-L023

LINE/SIGNAL	PIN	SHEET/LINE
L011		
- C1P CONTROL BD POR/MACH RESET		
	L2J04	JL200-L011
	(P2C06)	JP200-R030
	J2M12	JJ200-L006
	K2U02	JK200-L007
	Q2U10	JQ210-L019
	R2P06	JR200-L017
	S2P06	JS200-L017
	T2M04	JT210-L008
L012		
- SAR SD1 UPPER CHECK RESET		
	L2B07	JL200-L012
	(R2J10)	JR200-R014
	D2P05	JD200-L015
	P2J09	JP200-L035
L013		
- SAR SD1 LOWER CHECK RESET		
	L2B08	JL200-L013
	(R2G04)	JR200-R015
	E2P05	JE200-L015
	P2G07	JP200-L036
L014		
- SAS SD2 UPPER CHECK RESET		
	L2D09	JL200-L014
	(S2J10)	JS200-R014
	G2P05	JG200-L015
	P2G13	JP200-L037
L015		
- SAS SD2 LOWER CHECK RESET		
	L2G09	JL200-L015
	(S2G04)	JS200-R015
	H2P05	JH200-L015
	P2J12	JP200-L038
L016		
- C2Q SD1 UPPER STORAGE CYCLE		
	L2B04	JL200-L016
	(Q2P13)	JQ210-R010
	P2T04	JP200-L011
	T2G04	JT210-L009
L017		
- DDM SDB PARITY CHECK		
	L2M12	JL200-L017
	(M2G12)	JM200-R008
L018		
- DDN SDB PARITY CHECK		
	L2S02	JL200-L018
	(N2G12)	JN200-R008
L019		
- C2Q SD1 LOWER STORAGE CYCLE		
	L2B05	JL200-L019
	(Q2N13)	JQ210-R011
	P2S03	JP200-L012
	T2J07	JT210-L010

LINE/SIGNAL	PIN	SHEET/LINE
L020		
- C2Q SD2 LOWER STORAGE CYCLE		
	L2D02	JL200-L020
	(Q2N10)	JQ210-R013
	P2U02	JP200-L014
	T2J05	JT210-L013
L021		
- C2Q PHASE CLOCK 2		
	L2P09	JL200-L021
	(Q2P09)	JQ210-R004
	D2G03	JD200-L006
	E2G03	JE200-L006
	G2G03	JG200-L006
	H2G03	JH200-L006
L022		
- C2Q SD2 UPPER STORAGE CYCLE		
	L2B02	JL200-L022
	(Q2M09)	JQ210-R012
	P2T02	JP200-L013
	T2G07	JT210-L012
L023		
- C2Q PHASE CLOCK 1		
	L2U04	JL200-L023
	(Q2H02)	JQ210-R003
	D2G04	JD200-L005
	E2G04	JE200-L005
	G2G04	JG200-L005
	H2G04	JH200-L005
L024		
- C2Q PHASE CLOCK 1.1		
	L2M09	JL200-L024
	(Q2G02)	JQ210-R005
	D2G05	JD200-L007
	E2G05	JE200-L007
	G2G05	JG200-L007
	H2G05	JH200-L007
L025		
- C2Q PHASE CLOCK 1.2		
	L2M08	JL200-L025
	(Q2H13)	JQ210-R006
	D2J05	JD200-L008
	E2J05	JE200-L008
	G2J05	JG200-L008
	H2J05	JH200-L008
L026		
- C2Q PHASE CLOCK 1.3		
	L2U02	JL200-L026
	(Q2J02)	JQ210-R007
	D2G02	JD200-L009
	E2G02	JE200-L009
	G2G02	JG200-L009
	H2G02	JH200-L009
L027		
- C2Q PHASE CLOCK 1.4		
	L2M10	JL200-L027
	(Q2M10)	JQ210-R008
	D2B12	JD200-L010
	E2B12	JE200-L010
	G2B12	JG200-L010
	H2B12	JH200-L010

LINE/SIGNAL	PIN	SHEET/LINE
L028		
- C2Q PB SEND/ECC RECEIVE DATA		
	L2S08	JL200-L028
	(Q2P04)	JQ210-R022
L029		
- C2Q SEND SDB DATA		
	L2S07	JL200-L029
	(Q2G04)	JQ210-R023
L030		
- C2Q RECEIVE SDB DATA		
	L2U06	JL200-L030
	(Q2J05)	JQ210-R024
L031		
- C2Q FETCH CONTROL ENABLE		
	L2U09	JL200-L031
	(Q2J04)	JQ210-R025
L032		
- C2Q STORE / + FETCH		
	L2S05	JL200-L032
	(Q2U06)	JQ210-R028
	M2P05	JM200-L007
	N2P05	JN200-L007
L033		
- C2Q PHASE CLOCK 1.5		
	L2P10	JL200-L033
	(Q2G05)	JQ210-R009
	D2B13	JD200-L011
	E2B13	JE200-L011
	G2B13	JG200-L011
	H2B13	JH200-L011
L034		
- E1J PB TO ECC PTY CHK 1		
	L2G07	JL200-L034
	(J2P12)	JJ200-R006
L035		
- E2K PB TO ECC PTY CHK 2		
	L2G08	JL200-L035
	(K2P05)	JK200-R010
L036		
+ E2K ECC SYNDROME BITS 0		
	L2W02	JL200-L036
	(K2W02)	JK200-R011
L036		
+ E2K ECC SYNDROME BITS 1		
	L2W06	JL200-L036
	(K2W06)	JK200-R011
L036		
+ E2K ECC SYNDROME BITS 2		
	L2W10	JL200-L036
	(K2W10)	JK200-R011
L036		
+ E2K ECC SYNDROME BITS 3		
	L2W13	JL200-L036
	(K2W13)	JK200-R011

LINE/SIGNAL	PIN	SHEET/LINE
L036		
+ E2K ECC SYNDROME BITS 4		
	L2X02	JL200-L036
	(K2X02)	JK200-R011
L036		
+ E2K ECC SYNDROME BITS 5		
	L2X06	JL200-L036
	(K2X06)	JK200-R011
L036		
+ E2K ECC SYNDROME BITS 6		
	L2X10	JL200-L036
	(K2X10)	JK200-R011
L036		
+ E2K ECC SYNDROME BITS 7		
	L2X13	JL200-L036
	(K2X13)	JK200-R011
L036		
+ E2K ECC SYNDROME BITS 8		
	L2W22	JL200-L036
	(K2W22)	JK200-R011
L036		
+ E2K ECC SYNDROME BITS 9		
	L2W25	JL200-L036
	(K2W25)	JK200-R011
L036		
+ E2K ECC SYNDROME BITS 10		
	L2W29	JL200-L036
	(K2W29)	JK200-R011
L036		
+ E2K ECC SYNDROME BITS 11		
	L2W33	JL200-L036
	(K2W33)	JK200-R011
L036		
+ E2K ECC SYNDROME BITS 12		
	L2X22	JL200-L036
	(K2X22)	JK200-R011
L036		
+ E2K ECC SYNDROME BITS 13		
	L2X25	JL200-L036
	(K2X25)	JK200-R011
L036		
+ E2K ECC SYNDROME BITS 14		
	L2X29	JL200-L036
	(K2X29)	JK200-R011
L036		
+ E2K ECC SYNDROME BITS 15		
	L2X33	JL200-L036
	(K2X33)	JK200-R011
L037		
- E1J STORE/ROS-S1-S2 PTY ERR 1		
	L2W07	JL200-L037
	(J2W07)	JJ200-R008

LINE/SIGNAL	PIN	SHEET/LINE
L038		
- E2K STORE/ROS-S1-S2 PTY ERR 2		
	L2W28	JL200-L038
	(K2W28)	JK200-R012
R003		
- PCC SD1 PB/E3 R/W DATA 0		
	(L2M05)	JL200-R003
	(C2M08)	JC200-R005
	(C2W05)	JC200-R023
	(D2W05)	JD200-R017
	(E2W05)	JE200-R017
R003		
- PCC SD1 PB/E3 R/W DATA 1		
	(L2M04)	JL200-R003
	(C2M09)	JC200-R005
	(C2W09)	JC200-R023
	(D2W09)	JD200-R017
	(E2W09)	JE200-R017
R003		
- PCC SD1 PB/E3 R/W DATA 2		
	(L2P07)	JL200-R003
	(C2M10)	JC200-R005
	(C2W13)	JC200-R023
	(D2W13)	JD200-R017
	(E2W13)	JE200-R017
R003		
- PCC SD1 PB/E3 R/W DATA 3		
	(L2S04)	JL200-R003
	(C2M12)	JC200-R005
	(C2X02)	JC200-R023
	(D2X02)	JD200-R017
	(E2X02)	JE200-R017
R003		
- PCC SD1 PB/E3 R/W DATA 4		
	(L2S06)	JL200-R003
	(C2P13)	JC200-R005
	(C2X05)	JC200-R023
	(D2X05)	JD200-R017
	(E2X05)	JE200-R017
R003		
- PCC SD1 PB/E3 R/W DATA 5		
	(L2P06)	JL200-R003
	(C2M13)	JC200-R005
	(C2X09)	JC200-R023
	(D2X09)	JD200-R017
	(E2X09)	JE200-R017
R003		
- PCC SD1 PB/E3 R/W DATA 6		
	(L2M07)	JL200-R003
	(C2U02)	JC200-R005
	(C2X13)	JC200-R023
	(D2X13)	JD200-R017
	(E2X13)	JE200-R017

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- PCC SD1 PB/E3 R/W DATA 7		
	(L2P05)	JL200-R003
	(C2S02)	JC200-R005
	(C2X32)	JC200-R023
	(D2X32)	JD200-R017
	(E2X32)	JE200-R017
R003		
- PCC SD1 PB/E3 R/W DATA P		
	(L2U07)	JL200-R003
	(C2M07)	JC200-R005
	(C2W02)	JC200-R023
	(D2W02)	JD200-R017
	(E2W02)	JE200-R017
R004		
- PCF SD2 PB/E3 R/W DATA 0		
	(L2M11)	JL200-R004
	(F2M08)	JF200-R005
	(F2W05)	JF200-R023
	(G2W05)	JG200-R017
	(H2W05)	JH200-R017
R004		
- PCF SD2 PB/E3 R/W DATA 1		
	(L2P11)	JL200-R004
	(F2M09)	JF200-R005
	(F2W09)	JF200-R023
	(G2W09)	JG200-R017
	(H2W09)	JH200-R017
R004		
- PCF SD2 PB/E3 R/W DATA 2		
	(L2U05)	JL200-R004
	(F2M10)	JF200-R005
	(F2W13)	JF200-R023
	(G2W13)	JG200-R017
	(H2W13)	JH200-R017
R004		
- PCF SD2 PB/E3 R/W DATA 3		
	(L2S03)	JL200-R004
	(F2M12)	JF200-R005
	(F2X02)	JF200-R023
	(G2X02)	JG200-R017
	(H2X02)	JH200-R017
R004		
- PCF SD2 PB/E3 R/W DATA 4		
	(L2M13)	JL200-R004
	(F2P13)	JF200-R005
	(F2X05)	JF200-R023
	(G2X05)	JG200-R017
	(H2X05)	JH200-R017
R004		
- PCF SD2 PB/E3 R/W DATA 5		
	(L2P13)	JL200-R004
	(F2M13)	JF200-R005
	(F2X09)	JF200-R023
	(G2X09)	JG200-R017
	(H2X09)	JH200-R017

LINE/SIGNAL	PIN	SHEET/LINE
R004		
- PCF SD2 PB/E3 R/W DATA 6		
	(L2P12)	JL200-R004
	(F2U02)	JF200-R005
	(F2X13)	JF200-R023
	(G2X13)	JG200-R017
	(H2X13)	JH200-R017
R004		
- PCF SD2 PB/E3 R/W DATA 7		
	(L2M02)	JL200-R004
	(F2S02)	JF200-R005
	(F2X32)	JF200-R023
	(G2X32)	JG200-R017
	(H2X32)	JH200-R017
R004		
- PCF SD2 PB/E3 R/W DATA P		
	(L2M03)	JL200-R004
	(F2M07)	JF200-R005
	(F2W02)	JF200-R023
	(G2W02)	JG200-R017
	(H2W02)	JH200-R017
R005		
- E3L SD1 U/L DECODE ACTIVE		
	(L2G13)	JL200-R005
	R2M02	JR200-L034
R006		
- E3L SD1 PC DLYD READ CLOCK		
	(L2D05)	JL200-R006
	C2M02	JC200-L010
R007		
- E3L SD1 U/L PC INTERFACE CHECK		
	(L2G04)	JL200-R007
	R2U10	JR200-L035
R008		
- E3L SD2 U/L DECODE ACTIVE		
	(L2J13)	JL200-R008
	S2M02	JS200-L034
R009		
- E3L SD1 PORT CHECK		
	(L2J11)	JL200-R009
	R2G02	JR200-L033
R010		
- E3L SD2 U/L PC INTERFACE CHECK		
	(L2D12)	JL200-R010
	S2U10	JS200-L035
R011		
- E3L SD2 PORT CHECK		
	(L2J10)	JL200-R011
	S2G02	JS200-L033
R012		
- E3L SD1 PC READ ENABLE		
	(L2J05)	JL200-R012
	C2M05	JC200-L009

LINE/SIGNAL	PIN	SHEET/LINE
R013		
- E3L SD2 PC DLYD READ CLOCK		
	(L2D11)	JL200-R013
	F2M02	JF200-L010
R014		
- E3L SD2 PC READ ENABLE		
	(L2D06)	JL200-R014
	F2M05	JF200-L009
R015		
- E3L 0.5 SUM DRIVER ENABLE		
	(L2U10)	JL200-R015
	J2G12	JJ200-L007
R016		
+ E3L ROS S1 ADDRESS 0		
	(L2W03)	JL200-R016
	J2W03	JJ200-L008
	K2W03	JK200-L008
R016		
+ E3L ROS S1 ADDRESS 1		
	(L2W11)	JL200-R016
	J2W11	JJ200-L008
	K2W11	JK200-L008
R016		
+ E3L ROS S1 ADDRESS 2		
	(L2X03)	JL200-R016
	J2X03	JJ200-L008
	K2X03	JK200-L008
R016		
+ E3L ROS S1 ADDRESS 3		
	(L2X11)	JL200-R016
	J2X11	JJ200-L008
	K2X11	JK200-L008
R016		
+ E3L ROS S1 ADDRESS 4		
	(L2W24)	JL200-R016
	J2W24	JJ200-L008
	K2W24	JK200-L008
R016		
+ E3L ROS S1 ADDRESS 5		
	(L2W32)	JL200-R016
	J2W32	JJ200-L008
	K2W32	JK200-L008
R016		
+ E3L ROS S1 ADDRESS 6		
	(L2X24)	JL200-R016
	J2X24	JJ200-L008
	K2X24	JK200-L008
R016		
+ E3L ROS S1 ADDRESS 7		
	(L2X32)	JL200-R016
	J2X32	JJ200-L008
	K2X32	JK200-L008

LINE/SIGNAL	PIN	SHEET/LINE
R017		
+ E3L ROS S2 ADDRESS 0		
	(L2W05)	JL200-R017
	J2W05	JJ200-L009
	K2W05	JK200-L009
R017		
+ E3L ROS S2 ADDRESS 1		
	(L2W09)	JL200-R017
	J2W09	JJ200-L009
	K2W09	JK200-L009
R017		
+ E3L ROS S2 ADDRESS 2		
	(L2X05)	JL200-R017
	J2X05	JJ200-L009
	K2X05	JK200-L009
R017		
+ E3L ROS S2 ADDRESS 3		
	(L2X09)	JL200-R017
	J2X09	JJ200-L009
	K2X09	JK200-L009
R017		
+ E3L ROS S2 ADDRESS 4		
	(L2W26)	JL200-R017
	J2W26	JJ200-L009
	K2W26	JK200-L009
R017		
+ E3L ROS S2 ADDRESS 5		
	(L2W30)	JL200-R017
	J2W30	JJ200-L009
	K2W30	JK200-L009
R017		
+ E3L ROS S2 ADDRESS 6		
	(L2X26)	JL200-R017
	J2X26	JJ200-L009
	K2X26	JK200-L009
R017		
+ E3L ROS S2 ADDRESS 7		
	(L2X30)	JL200-R017
	J2X30	JJ200-L009
	K2X30	JK200-L009
R018		
- E1J/E2K ECC DATA 0		
	(L2Z33)	JL200-R018
	(J2B12)	JJ200-R004
	(K2Z33)	JK200-R005
	(M2B05)	JM200-R003
R018		
- E1J/E2K ECC DATA 1		
	(L2Z29)	JL200-R018
	(J2B10)	JJ200-R004
	(K2Z29)	JK200-R005
	(M2D04)	JM200-R003

ERROR CORRECTION CODE 3 XRL JL200

LINE/SIGNAL	PIN	SHEET/LINE
R018		
- E1J/E2K ECC DATA 2		
	(L2Z25)	JL200-R018
	(J2B02)	JJ200-R004
	(K2Z25)	JK200-R005
	(M2C07)	JM200-R003
R018		
- E1J/E2K ECC DATA 3		
	(L2Z22)	JL200-R018
	(J2B09)	JJ200-R004
	(K2Z22)	JK200-R005
	(M2D07)	JM200-R003
R018		
- E1J/E2K ECC DATA 8		
	(L2Y33)	JL200-R018
	(J2D12)	JJ200-R004
	(K2Y33)	JK200-R005
	(M2M12)	JM200-R003
R018		
- E1J/E2K ECC DATA 17		
	(L2Y29)	JL200-R018
	(J2S05)	JJ200-R004
	(K2Y29)	JK200-R005
	(M2H05)	JM200-R003
R018		
- E1J/E2K ECC DATA 26		
	(L2Y25)	JL200-R018
	(J2G13)	JJ200-R004
	(K2Y25)	JK200-R005
	(M2U10)	JM200-R003
R019		
- E1J/E2K ECC DATA 35		
	(L2Y22)	JL200-R019
	(J2B06)	JJ200-R004
	(K2Y22)	JK200-R006
	(M2P11)	JM200-R003
R019		
- E1J/E2K ECC DATA 36		
	(L2Z13)	JL200-R019
	(K2G02)	JK200-R006
	(N2B05)	JN200-R003
R019		
- E1J/E2K ECC DATA 37		
	(L2Z10)	JL200-R019
	(K2G04)	JK200-R006
	(N2D04)	JN200-R003
R019		
- E1J/E2K ECC DATA 38		
	(L2Z06)	JL200-R019
	(K2G07)	JK200-R006
	(N2C07)	JN200-R003
R019		
- E1J/E2K ECC DATA 39		
	(L2Z02)	JL200-R019
	(K2G08)	JK200-R006
	(N2D07)	JN200-R003

LINE/SIGNAL	PIN	SHEET/LINE
R019		
- E1J/E2K ECC DATA 44		
	(L2Y13)	JL200-R019
	(K2G09)	JK200-R006
	(N2M12)	JN200-R003
R019		
- E1J/E2K ECC DATA 53		
	(L2Y10)	JL200-R019
	(K2G10)	JK200-R006
	(N2H05)	JN200-R003
R020		
- E1J/E2K ECC DATA 62		
	(L2Y06)	JL200-R020
	(K2B12)	JK200-R006
	(N2U10)	JN200-R003
R020		
- E1J/E2K ECC DATA 71		
	(L2Y02)	JL200-R020
	(K2B13)	JK200-R006
	(N2P11)	JN200-R003
R021		
- E3L UNGATED ECC SINGLE ERROR		
	(L2X07)	JL200-R021
	J2X07	JJ200-L010
	K2X07	JK200-L010
R022		
- E3L UNGATED ECC DOUBLE ERROR		
	(L2X28)	JL200-R022
	J2X28	JJ200-L011
	K2X28	JK200-L011
R023		
- E3L DIAGNOSTIC CONTROL 1		
	(L2Y03)	JL200-R023
	J2Y03	JJ200-L012
	K2Y03	JK200-L012
R023		
- E3L DIAGNOSTIC CONTROL 2		
	(L2Y07)	JL200-R023
	J2Y07	JJ200-L012
	K2Y07	JK200-L012
R023		
- E3L DIAGNOSTIC CONTROL 3		
	(L2Y11)	JL200-R023
	J2Y11	JJ200-L012
	K2Y11	JK200-L012
R024		
- E3L STORE CYCLE		
	(L2Y05)	JL200-R024
	J2Y05	JJ200-L013
	K2Y05	JK200-L013
R025		
- E3L CHECK/SYNDROME MPX SELECT		
	(L2Y09)	JL200-R025
	J2Y09	JJ200-L014
	K2Y09	JK200-L014

LINE/SIGNAL	PIN	SHEET/LINE
R026		
- E3L INPUT REG FETCH CLOCK A		
	(L2Y24)	JL200-R026
	J2Y24	JJ200-L015
	K2Y24	JK200-L015
R027		
- E3L INPUT REG FETCH CLOCK B		
	(L2Y32)	JL200-R027
	J2Y32	JJ200-L016
	K2Y32	JK200-L016
R028		
- E3L STORAGE DRIVER SELECT B		
	(L2Y26)	JL200-R028
	J2Y26	JJ200-L018
	K2Y26	JK200-L018
R029		
- E3L 1.0 SUM DATA LOAD CLOCK		
	(L2Y28)	JL200-R029
	J2Y28	JJ200-L020
	K2Y28	JK200-L020
R030		
- E3L STORAGE DRIVER SELECT A		
	(L2Y30)	JL200-R030
	J2Y30	JJ200-L017
	K2Y30	JK200-L017
R031		
- E3L 0.5 SUM DATA LOAD CLOCK		
	(L2Z03)	JL200-R031
	J2Z03	JJ200-L019
	K2Z03	JK200-L019
R032		
- E3L ECC CORRECTED DATA A CLK		
	(L2Z05)	JL200-R032
	J2Z05	JJ200-L021
	K2Z05	JK200-L021
R033		
- E3L WRITE CHECK GATE ENABLE		
	(L2Z07)	JL200-R033
	K2Z07	JK200-L028
R034		
- E3L ECC CORRECTED DATA B CLK		
	(L2Z09)	JL200-R034
	J2Z09	JJ200-L022
	K2Z09	JK200-L022
R035		
+ E3L PHASE CLOCK 1		
	(L2Z11)	JL200-R035
	J2Z11	JJ200-L023
	K2Z11	JK200-L023
R036		
+ E3L PHASE CLOCK 2		
	(L2Z24)	JL200-R036
	J2Z24	JJ200-L024
	K2Z24	JK200-L024

LINE/SIGNAL	PIN	SHEET/LINE
R037		
+ E3L PHASE CLOCK 1.4		
	(L2Z32)	JL200-R037
	J2Z32	JJ200-L025
	K2Z32	JK200-L025
R038		
+ E3L ECC/PB DRIVER ENABLE B		
	(L2Z26)	JL200-R038
	J2Z26	JJ200-L027
	K2Z26	JK200-L027
R039		
+ E3L ECC/PB DRIVER ENABLE A		
	(L2Z30)	JL200-R039
	J2Z30	JJ200-L026
	K2Z30	JK200-L026
R040		
- E3L ENABLE DIAG DECODE		
	(L2Z28)	JL200-R040
	J2Z28	JJ200-L028
	K2Z28	JK200-L029

003 - DAT STG BD1 SELECTED --------- P07
004 - DAT STG BD2 SELECTED --------- N07
005 - DDM SPARE DRIVER IN ---------- N05
006 - E1J/E2K ECC DATA PARITY (0-1) * =
007 - C2Q STORE / + FETCH ---------- P05

= * - E1J/E2K ECC DATA (0-35) ====== 003
= * - DDM,N SG1 DATA (0-35) ======== 004
= * - DDM,N SG2 DATA (0-35) ======== 005
= * - DDM,N SG1 PARITY (0-1) ======= 006
= * - DDM,N SG2 PARITY (0-1) ======= 007
G12 - DDM SDB PARITY CHECK --------- 008
P09 - DDM SPARE DRIVER OUT --------- 009

CMDD CARD

OVERVIEW

The CMDD (Data Driver) card provides redrive for the storage data from the ECC cards on the Storage Control board and the CMDR cards on the Storage board.

PRIMARY FUNCTIONS

- Redrives data to/from the Storage data bus.
- Parity checks data to/from the Storage data bus.

PRIMARY COMPONENTS

- Data Transceivers.
- Parity Check logic.
- Parity Drivers.

ERROR CHECKING

- E1/DD Storage Data Out Parity Check (U/L ECCCK, bit 6).
  - This bit indicates that a parity error is detected on the output of the CMDD drivers for the storage data bus from E1 card. This error is sampled and latched on the CME3 card during store operation only.

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- DAT STG BD1 SELECTED	M2P07	JM200-L003
	(T2P09)	JT210-R004
	N2P07	JN200-L003
L004		
- DAT STG BD2 SELECTED	M2N07	JM200-L004
	(T2P07)	JT210-R019
	N2N07	JN200-L004
L005		
- DDM SPARE DRIVER IN	M2N05	JM200-L005
1B-A1 *M4D08*		
L006		
- E1J/E2K ECC DATA PARITY 0	M2C12	JM200-L006
	(J2G07)	JJ200-R005
L006		
- E1J/E2K ECC DATA PARITY 1	M2C11	JM200-L006
	(J2J07)	JJ200-R005
L007		
- C2Q STORE / + FETCH	M2P05	JM200-L007
	(Q2U06)	JQ210-R028
	L2S05	JL200-L032
	N2F05	JN200-L007
R003		
- E1J/E2K ECC DATA 0	(M2B05)	JM200-R003
	(J2B12)	JJ200-R004
	(K2Z33)	JK200-R005
	(L2Z33)	JL200-R018
R003		
- E1J/E2K ECC DATA 1	(M2D04)	JM200-R003
	(J2B10)	JJ200-R004
	(K2Z29)	JK200-R005
	(L2Z29)	JL200-R018
R003		
- E1J/E2K ECC DATA 2	(M2C07)	JM200-R003
	(J2B02)	JJ200-R004
	(K2Z25)	JK200-R005
	(L2Z25)	JL200-R018
R003		
- E1J/E2K ECC DATA 3	(M2D07)	JM200-R003
	(J2B09)	JJ200-R004
	(K2Z22)	JK200-R005
	(L2Z22)	JL200-R018
R003		
- E1J/E2K ECC DATA 4	(M2B06)	JM200-R003
	(J2G02)	JJ200-R004

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- E1J/E2K ECC DATA 5	(M2B07)	JM200-R003
	(J2J02)	JJ200-R004
R003		
- E1J/E2K ECC DATA 6	(M2B11)	JM200-R003
	(J2D11)	JJ200-R004
R003		
- E1J/E2K ECC DATA 7	(M2B12)	JM200-R003
	(J2S11)	JJ200-R004
R003		
- E1J/E2K ECC DATA 8	(M2M12)	JM200-R003
	(J2D12)	JJ200-R004
	(K2Y33)	JK200-R005
	(L2Y33)	JL200-R018
R003		
- E1J/E2K ECC DATA 9	(M2T04)	JM200-R003
	(J2U11)	JJ200-R004
R003		
- E1J/E2K ECC DATA 10	(M2T02)	JM200-R003
	(J2S08)	JJ200-R004
R003		
- E1J/E2K ECC DATA 11	(M2S02)	JM200-R003
	(J2U04)	JJ200-R004
R003		
- E1J/E2K ECC DATA 12	(M2N12)	JM200-R003
	(J2U10)	JJ200-R004
R003		
- E1J/E2K ECC DATA 13	(M2M13)	JM200-R003
	(J2S03)	JJ200-R004
R003		
- E1J/E2K ECC DATA 14	(M2S04)	JM200-R003
	(J2S09)	JJ200-R004
R003		
- E1J/E2K ECC DATA 15	(M2P12)	JM200-R003
	(J2S06)	JJ200-R004
R003		
- E1J/E2K ECC DATA 16	(M2J05)	JM200-R003
	(J2S04)	JJ200-R004

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- E1J/E2K ECC DATA 17	(M2N05)	JM200-R003
	(J2S05)	JJ200-R004
	(K2Y29)	JK200-R005
	(L2Y29)	JL200-R018
R003		
- E1J/E2K ECC DATA 18	(M2G04)	JM200-R003
	(J2J05)	JJ200-R004
R003		
- E1J/E2K ECC DATA 19	(M2J02)	JM200-R003
	(J2G05)	JJ200-R004
R003		
- E1J/E2K ECC DATA 20	(M2G05)	JM200-R003
	(J2J04)	JJ200-R004
R003		
- E1J/E2K ECC DATA 21	(M2J04)	JM200-R003
	(J2G03)	JJ200-R004
R003		
- E1J/E2K ECC DATA 22	(M2N03)	JM200-R003
	(J2G08)	JJ200-R004
R003		
- E1J/E2K ECC DATA 23	(M2G03)	JM200-R003
	(J2J09)	JJ200-R004
R003		
- E1J/E2K ECC DATA 24	(M2U13)	JM200-R003
	(J2J06)	JJ200-R004
R003		
- E1J/E2K ECC DATA 25	(M2S10)	JM200-R003
	(J2B07)	JJ200-R004
R003		
- E1J/E2K ECC DATA 26	(M2U10)	JM200-R003
	(J2G13)	JJ200-R004
	(K2Y25)	JK200-R005
	(L2Y25)	JL200-R018
R003		
- E1J/E2K ECC DATA 27	(M2U09)	JM200-R003
	(J2S07)	JJ200-R004
R003		
- E1J/E2K ECC DATA 28	(M2T10)	JM200-R003
	(J2U02)	JJ200-R004

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- E1J/E2K ECC DATA 29	(M2S13)	JM200-R003
	(J2U07)	JJ200-R004
R003		
- E1J/E2K ECC DATA 30	(M2T13)	JM200-R003
	(J2U09)	JJ200-R004
R003		
- E1J/E2K ECC DATA 31	(M2T09)	JM200-R003
	(J2S02)	JJ200-R004
R003		
- E1J/E2K ECC DATA 32	(M2U02)	JM200-R003
	(J2S10)	JJ200-R004
R003		
- E1J/E2K ECC DATA 33	(M2N11)	JM200-R003
	(J2U05)	JJ200-R004
R003		
- E1J/E2K ECC DATA 34	(M2M11)	JM200-R003
	(J2U06)	JJ200-R004
R003		
- E1J/E2K ECC DATA 35	(M2P11)	JM200-R003
	(J2B06)	JJ200-R004
	(K2Y22)	JK200-R006
	(L2Y22)	JL200-R019
R004		
- DDM,N SG1 DATA 0	(M2D05)	JM200-R004
1B-B2	(A2S13)	MA200-R003
1B-A1	*C1E13*	
1B-B2	*G6A04*	
R004		
- DDM,N SG1 DATA 1	(M2B03)	JM200-R004
1B-B2	(A2S12)	MA200-R003
1B-A1	*C1D13*	
1B-B2	*F6E04*	
R004		
- DDM,N SG1 DATA 2	(M2C03)	JM200-R004
1B-B2	(A2S10)	MA200-R003
1B-A1	*C1B13*	
1B-B2	*F6C04*	
R004		
- DDM,N SG1 DATA 3	(M2G11)	JM200-R004
1B-B2	(A2S09)	MA200-R003
1B-A1	*C1A13*	
1B-B2	*F6B04*	

LINE/SIGNAL	PIN	SHEET/LINE
R004		
- DDM,N SG1 DATA 4	(M2D02)	JM200-R004
1B-B2	(A2S06)	MA200-R003
1B-A1	*B1B13*	
1B-B2	*E6C04*	
R004		
- DDM,N SG1 DATA 5	(M2B04)	JM200-R004
1B-B2	(A2S02)	MA200-R003
1B-A1	*A1D13*	
1B-B2	*D6E04*	
R004		
- DDM,N SG1 DATA 6	(M2C02)	JM200-R004
1B-B2	(A2M13)	MA200-R003
1B-A1	*A1D11*	
1B-B2	*D6E02*	
R004		
- DDM,N SG1 DATA 7	(M2B02)	JM200-R004
1B-B2	(A2M12)	MA200-R003
1B-A1	*A1E11*	
1B-B2	*E6A02*	
R004		
- DDM,N SG1 DATA 8	(M2J07)	JM200-R004
1B-B2	(A2M09)	MA200-R003
1B-A1	*B1C11*	
1B-B2	*E6D02*	
R004		
- DDM,N SG1 DATA 9	(M2S05)	JM200-R004
1B-B2	(A2M06)	MA200-R003
1B-A1	*C1B11*	
1B-B2	*F6C02*	
R004		
- DDM,N SG1 DATA 10	(M2U05)	JM200-R004
1B-B2	(A2M05)	MA200-R003
1B-A1	*C1C11*	
1B-B2	*F6D02*	
R004		
- DDM,N SG1 DATA 11	(M2P13)	JM200-R004
1B-B2	(A2S11)	MA200-R003
1B-A1	*C1C13*	
1B-B2	*F6D04*	
R004		
- DDM,N SG1 DATA 12	(M2M02)	JM200-R004
1B-B2	(A2S08)	MA200-R003
1B-A1	*B1D13*	
1B-B2	*E6E04*	

LINE/SIGNAL	PIN	SHEET/LINE
R004		
- DDM,N SG1 DATA 13	(M2N06)	JM200-R004
1B-B2	(A2S07)	MA200-R003
1B-A1	*B1C13*	
1B-B2	*E6D04*	
R004		
- DDM,N SG1 DATA 14	(M2N13)	JM200-R004
1B-B2	(A2S05)	MA200-R003
1B-A1	*B1A13*	
1B-B2	*E6B04*	
R004		
- DDM,N SG1 DATA 15	(M2P06)	JM200-R004
1B-B2	(A2S04)	MA200-R003
1B-A1	*A1E13*	
1B-B2	*E6A04*	
R004		
- DDM,N SG1 DATA 16	(M2H10)	JM200-R004
1B-B2	(A2M11)	MA200-R003
1B-A1	*B1A11*	
1B-B2	*E6B02*	
R004		
- DDM,N SG1 DATA 17	(M2H09)	JM200-R004
1B-B2	(A2M10)	MA200-R003
1B-A1	*B1B11*	
1B-B2	*E6C02*	
R004		
- DDM,N SG1 DATA 18	(M2H08)	JM200-R004
1B-B2	(A2M08)	MA200-R003
1B-A1	*B1D11*	
1B-B2	*E6E02*	
R004		
- DDM,N SG1 DATA 19	(M2H07)	JM200-R004
1B-B2	(A2M07)	MA200-R003
1B-A1	*C1A11*	
1B-B2	*F6B02*	
R004		
- DDM,N SG1 DATA 20	(M2J06)	JM200-R004
1B-B2	(A2G06)	MA200-R003
1B-A1	*F1C13*	
1B-B2	*F1C13*	
R004		
- DDM,N SG1 DATA 21	(M2H13)	JM200-R004
1B-B2	(A2G05)	MA200-R003
1B-A1	*F1B13*	
1B-B2	*F1B13*	

LINE/SIGNAL	PIN	SHEET/LINE
R004		
- DDM,N SG1 DATA 22		
	(M2D13)	JM200-R004
1B-B2	(A2G04)	MA200-R003
1B-A1	*E1E13*	
1B-B2	*E1E13*	
R004		
- DDM,N SG1 DATA 23		
	(M2H12)	JM200-R004
1B-B2	(A2G03)	MA200-R003
1B-A1	*E1D13*	
1B-B2	*E1D13*	
R004		
- DDM,N SG1 DATA 24		
	(M2S11)	JM200-R004
1B-B2	(A2G02)	MA200-R003
1B-A1	*E1C13*	
1B-B2	*E1C13*	
R004		
- DDM,N SG1 DATA 25		
	(M2U04)	JM200-R004
1B-B2	(A2B11)	MA200-R003
1B-A1	*E1A13*	
1B-B2	*E1A13*	
R004		
- DDM,N SG1 DATA 26		
	(M2T03)	JM200-R004
1B-B2	(A2B10)	MA200-R003
1B-A1	*D1E13*	
1B-B2	*D1E13*	
R004		
- DDM,N SG1 DATA 27		
	(M2T12)	JM200-R004
1B-B2	(A2B06)	MA200-R003
1B-A1	*E1D11*	
1B-B2	*E1D11*	
R004		
- DDM,N SG1 DATA 28		
	(M2U11)	JM200-R004
1B-B2	(A2B05)	MA200-R003
1B-A1	*E1C11*	
1B-B2	*E1C11*	
R004		
- DDM,N SG1 DATA 29		
	(M2U12)	JM200-R004
1B-B2	(A2B04)	MA200-R003
1B-A1	*E1B11*	
1B-B2	*E1B11*	
R004		
- DDM,N SG1 DATA 30		
	(M2S12)	JM200-R004
1B-B2	(A2B03)	MA200-R003
1B-A1	*E1A11*	
1B-B2	*E1A11*	

LINE/SIGNAL	PIN	SHEET/LINE
R004		
- DDM,N SG1 DATA 31		
	(M2T11)	JM200-R004
1B-B2	(A2B02)	MA200-R003
1B-A1	*D1E11*	
1B-B2	*D1E11*	
R004		
- DDM,N SG1 DATA 32		
	(M2M03)	JM200-R004
1B-B2	(A2B13)	MA200-R003
1B-A1	*E1B13*	
1B-B2	*E1B13*	
R004		
- DDM,N SG1 DATA 33		
	(M2S03)	JM200-R004
1B-B2	(A2B09)	MA200-R003
1B-A1	*F1C11*	
1B-B2	*F1C11*	
R004		
- DDM,N SG1 DATA 34		
	(M2N02)	JM200-R004
1B-B2	(A2B08)	MA200-R003
1B-A1	*F1B11*	
1B-B2	*F1B11*	
R004		
- DDM,N SG1 DATA 35		
	(M2M09)	JM200-R004
1B-B2	(A2B07)	MA200-R003
1B-A1	*E1E11*	
1B-B2	*E1E11*	
R005		
- DDM,N SG2 DATA 0		
	(M2J11)	JM200-R005
1B-A1	*C6E04*	
R005		
- DDM,N SG2 DATA 1		
	(M2D06)	JM200-R005
1B-A1	*C6D04*	
R005		
- DDM,N SG2 DATA 2		
	(M2G02)	JM200-R005
1B-A1	*C6B04*	
R005		
- DDM,N SG2 DATA 3		
	(M2H02)	JM200-R005
1B-A1	*C6A04*	
R005		
- DDM,N SG2 DATA 4		
	(M2J10)	JM200-R005
1B-A1	*B6B04*	
R005		
- DDM,N SG2 DATA 5		
	(M2D09)	JM200-R005
1B-A1	*A6D04*	

LINE/SIGNAL	PIN	SHEET/LINE
R005		
- DDM,N SG2 DATA 6		
	(M2D10)	JM200-R005
1B-A1	*A6D02*	
R005		
- DDM,N SG2 DATA 7		
	(M2D11)	JM200-R005
1B-A1	*A6E02*	
R005		
- DDM,N SG2 DATA 8		
	(M2M07)	JM200-R005
1B-A1	*B6C02*	
R005		
- DDM,N SG2 DATA 9		
	(M2P10)	JM200-R005
1B-A1	*C6B02*	
R005		
- DDM,N SG2 DATA 10		
	(M2N08)	JM200-R005
1B-A1	*C6C02*	
R005		
- DDM,N SG2 DATA 11		
	(M2H11)	JM200-R005
1B-A1	*C6C04*	
R005		
- DDM,N SG2 DATA 12		
	(M2M10)	JM200-R005
1B-A1	*B6D04*	
R005		
- DDM,N SG2 DATA 13		
	(M2N10)	JM200-R005
1B-A1	*B6C04*	
R005		
- DDM,N SG2 DATA 14		
	(M2M08)	JM200-R005
1B-A1	*B6A04*	
R005		
- DDM,N SG2 DATA 15		
	(M2N09)	JM200-R005
1B-A1	*A6E04*	
R005		
- DDM,N SG2 DATA 16		
	(M2P04)	JM200-R005
1B-A1	*B6A02*	
R005		
- DDM,N SG2 DATA 17		
	(M2G08)	JM200-R005
1B-A1	*B6B02*	
R005		
- DDM,N SG2 DATA 18		
	(M2J09)	JM200-R005
1B-A1	*B6D02*	

LINE/SIGNAL	PIN	SHEET/LINE
R005		
- DDM,N SG2 DATA 19		
	(M2G13)	JM200-R005
1B-A1	*C6A02*	
R005		
- DDM,N SG2 DATA 20		
	(M2G09)	JM200-R005
1B-A1	*F6C04*	
R005		
- DDM,N SG2 DATA 21		
	(M2G10)	JM200-R005
1B-A1	*F6B04*	
R005		
- DDM,N SG2 DATA 22		
	(M2J13)	JM200-R005
1B-A1	*E6E04*	
R005		
- DDM,N SG2 DATA 23		
	(M2J12)	JM200-R005
1B-A1	*E6D04*	
R005		
- DDM,N SG2 DATA 24		
	(M2T05)	JM200-R005
1B-A1	*E6C04*	
R005		
- DDM,N SG2 DATA 25		
	(M2S09)	JM200-R005
1B-A1	*E6A04*	
R005		
- DDM,N SG2 DATA 26		
	(M2U06)	JM200-R005
1B-A1	*D6E04*	
R005		
- DDM,N SG2 DATA 27		
	(M2S06)	JM200-R005
1B-A1	*E6D02*	
R005		
- DDM,N SG2 DATA 28		
	(M2S07)	JM200-R005
1B-A1	*E6C02*	
R005		
- DDM,N SG2 DATA 29		
	(M2T06)	JM200-R005
1B-A1	*E6B02*	
R005		
- DDM,N SG2 DATA 30		
	(M2S08)	JM200-R005
1B-A1	*E6A02*	
R005		
- DDM,N SG2 DATA 31		
	(M2U07)	JM200-R005
1B-A1	*D6E02*	

LINE/SIGNAL	PIN	SHEET/LINE
R005		
- DDM,N SG2 DATA 32		
	(M2N04)	JM200-R005
1B-A1	*E6B04*	
R005		
- DDM,N SG2 DATA 33		
	(M2P02)	JM200-R005
1B-A1	*F6C02*	
R005		
- DDM,N SG2 DATA 34		
	(M2M05)	JM200-R005
1B-A1	*F6B02*	
R005		
- DDM,N SG2 DATA 35		
	(M2N03)	JM200-R005
1B-A1	*E6E02*	
R006		
- DDM,N SG1 PARITY 0		
	(M2M04)	JM200-R006
1B-B2	A2G08	MA200-L003
1B-A1	*F1D13*	
1B-B2	*F1D13*	
R006		
- DDM,N SG1 PARITY 1		
	(M2C13)	JM200-R006
1B-B2	A2G11	MA200-L003
1B-A1	*G1A11*	
1B-B2	*G1A11*	
R007		
- DDM,N SG2 PARITY 0		
	(M2B13)	JM200-R007
1B-A1	*F6D04*	
R007		
- DDM,N SG2 PARITY 1		
	(M2D12)	JM200-R007
1B-A1	*G6A02*	
R008		
- DDM SDB PARITY CHECK		
	(M2G12)	JM200-R008
	L2M12	JL200-L017
R009		
- DDM SPARE DRIVER OUT		
	(M2P09)	JM200-R009

STORAGE DRIVER DATA CRD JN200

003 - DAT STG BD1 SELECTED --------- P07
004 - DAT STG BD2 SELECTED --------- N07
005 - DDN SPARE DRIVER IN ---------- N05
006 - E1J/E2K ECC DATA PARITY (2-3) * =
007 - C2Q STORE / + FETCH ---------- P05

= * - E1J/E2K ECC DATA (36-71) ===== 003
= * - DDM,N SG1 DATA (36-71) ======= 004
= * - DDM,N SG2 DATA (36-71) ======= 005
= * - DDM,N SG1 PARITY (2-3) ======= 006
= * - DDM,N SG2 PARITY (2-3) ======= 007
G12 - DDN SDB PARITY CHECK --------- 008
P09 - DDN SPARE DRIVER OUT --------- 009

CMDD CARD

OVERVIEW

The CMDD (Data Driver) card provides redrive for the storage data from the ECC cards on the Storage Control board and the CMDR cards on the Storage board.

PRIMARY FUNCTIONS

- Redrives data from the Storage data bus.
- Parity checks data from the Storage data bus.

PRIMARY COMPONENTS

- Data Transceivers.
- Parity Check logic.
- Parity Drivers.

ERROR CHECKING

- E2/DD Storage Data Out Parity Check (U/L ECCCK, bit 7).
  - This bit indicates that a parity error is detected on the output of the CMDD drivers for the storage data bus from E2 card. This error is sampled and latched on the CME3 card during store operation only.

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- DAT STG BD1 SELECTED		
	N2P07	JN200-L003
	(T2P09)	JT210-R004
	M2P07	JM200-L003
L004		
- DAT STG BD2 SELECTED		
	N2N07	JN200-L004
	(T2P07)	JT210-R019
	M2N07	JM200-L004
L005		
- DDN SPARE DRIVER IN		
	N2N05	JN200-L005
1B-A1 *N4D08*		
L006		
- E1J/E2K ECC DATA PARITY 2		
	N2C12	JN200-L006
	(K2U11)	JK200-R007
L006		
- E1J/E2K ECC DATA PARITY 3		
	N2C11	JN200-L006
	(K2U13)	JK200-R007
L007		
- C2Q STORE / + FETCH		
	N2P05	JN200-L007
	(Q2U06)	JQ210-R028
	L2S05	JL200-L032
	M2P05	JM200-L007
R003		
- E1J/E2K ECC DATA 36		
	(N2B05)	JN200-R003
	(K2G02)	JK200-R006
	(L2Z13)	JL200-R019
R003		
- E1J/E2K ECC DATA 37		
	(N2D04)	JN200-R003
	(K2G04)	JK200-R006
	(L2Z10)	JL200-R019
R003		
- E1J/E2K ECC DATA 38		
	(N2C07)	JN200-R003
	(K2G07)	JK200-R006
	(L2Z06)	JL200-R019
R003		
- E1J/E2K ECC DATA 39		
	(N2D07)	JN200-R003
	(K2G08)	JK200-R006
	(L2Z02)	JL200-R019
R003		
- E1J/E2K ECC DATA 40		
	(N2B06)	JN200-R003
	(K2S02)	JK200-R006
R003		
- E1J/E2K ECC DATA 41		
	(N2B07)	JN200-R003
	(K2M13)	JK200-R006
R003		
- E1J/E2K ECC DATA 42		
	(N2B11)	JN200-R003
	(K2G03)	JK200-R006
R003		
- E1J/E2K ECC DATA 43		
	(N2B12)	JN200-R003
	(K2J09)	JK200-R006
R003		
- E1J/E2K ECC DATA 44		
	(N2M12)	JN200-R003
	(K2G09)	JK200-R006
	(L2Y13)	JL200-R019
R003		
- E1J/E2K ECC DATA 45		
	(N2T04)	JN200-R003
	(K2B06)	JK200-R006
R003		
- E1J/E2K ECC DATA 46		
	(N2T02)	JN200-R003
	(K2B08)	JK200-R006
R003		
- E1J/E2K ECC DATA 47		
	(N2S02)	JN200-R003
	(K2D04)	JK200-R006
R003		
- E1J/E2K ECC DATA 48		
	(N2N12)	JN200-R003
	(K2B02)	JK200-R006
R003		
- E1J/E2K ECC DATA 49		
	(N2M13)	JN200-R003
	(K2B07)	JK200-R006
R003		
- E1J/E2K ECC DATA 50		
	(N2S04)	JN200-R003
	(K2D12)	JK200-R006
R003		
- E1J/E2K ECC DATA 51		
	(N2P12)	JN200-R003
	(K2D06)	JK200-R006
R003		
- E1J/E2K ECC DATA 52		
	(N2J05)	JN200-R003
	(K2D07)	JK200-R006
R003		
- E1J/E2K ECC DATA 53		
	(N2H05)	JN200-R003
	(K2G10)	JK200-R006
	(L2Y10)	JL200-R019
R003		
- E1J/E2K ECC DATA 54		
	(N2G04)	JN200-R003
	(K2J07)	JK200-R006
R003		
- E1J/E2K ECC DATA 55		
	(N2J02)	JN200-R003
	(K2J06)	JK200-R006
R003		
- E1J/E2K ECC DATA 56		
	(N2G05)	JN200-R003
	(K2J05)	JK200-R006
R003		
- E1J/E2K ECC DATA 57		
	(N2J04)	JN200-R003
	(K2D09)	JK200-R006
R003		
- E1J/E2K ECC DATA 58		
	(N2H03)	JN200-R003
	(K2J04)	JK200-R006
R003		
- E1J/E2K ECC DATA 59		
	(N2G03)	JN200-R003
	(K2D10)	JK200-R006
R003		
- E1J/E2K ECC DATA 60		
	(N2U13)	JN200-R003
	(K2J02)	JK200-R006
R003		
- E1J/E2K ECC DATA 61		
	(N2S10)	JN200-R003
	(K2D13)	JK200-R006
R003		
- E1J/E2K ECC DATA 62		
	(N2U10)	JN200-R003
	(K2B12)	JK200-R006
	(L2Y06)	JL200-R020
R003		
- E1J/E2K ECC DATA 63		
	(N2U09)	JN200-R003
	(K2M11)	JK200-R006
R003		
- E1J/E2K ECC DATA 64		
	(N2T10)	JN200-R003
	(K2M12)	JK200-R006
R003		
- E1J/E2K ECC DATA 65		
	(N2S13)	JN200-R003
	(K2M08)	JK200-R006
R003		
- E1J/E2K ECC DATA 66		
	(N2T13)	JN200-R003
	(K2M07)	JK200-R006
R003		
- E1J/E2K ECC DATA 67		
	(N2T09)	JN200-R003
	(K2M10)	JK200-R006
R003		
- E1J/E2K ECC DATA 68		
	(N2U02)	JN200-R003
	(K2M09)	JK200-R006
R003		
- E1J/E2K ECC DATA 69		
	(N2N11)	JN200-R003
	(K2P10)	JK200-R006
R003		
- E1J/E2K ECC DATA 70		
	(N2M11)	JN200-R003
	(K2P11)	JK200-R006
R003		
- E1J/E2K ECC DATA 71		
	(N2P11)	JN200-R003
	(K2B13)	JK200-R006
	(L2Y02)	JL200-R020
R004		
- DDM,N SG1 DATA 36		
	(N2D05)	JN200-R004
1B-B2	(V2S13)	MV200-R003
1B-A1	*H1A13*	
1B-B2	*P6E04*	
R004		
- DDM,N SG1 DATA 37		
	(N2B03)	JN200-R004
1B-B2	(V2S12)	MV200-R003
1B-A1	*H1B13*	
1B-B2	*Q6A04*	
R004		
- DDM,N SG1 DATA 38		
	(N2C03)	JN200-R004
1B-B2	(V2S10)	MV200-R003
1B-A1	*H1D13*	
1B-B2	*Q6C04*	
R004		
- DDM,N SG1 DATA 39		
	(N2G11)	JN200-R004
1B-B2	(V2S09)	MV200-R003
1B-A1	*H1E13*	
1B-B2	*Q6D04*	
R004		
- DDM,N SG1 DATA 40		
	(N2D02)	JN200-R004
1B-B2	(V2S06)	MV200-R003
1B-A1	*J1D13*	
1B-B2	*R6C04*	
R004		
- DDM,N SG1 DATA 41		
	(N2B04)	JN200-R004
1B-B2	(V2S02)	MV200-R003
1B-A1	*K1B13*	
1B-B2	*S6A04*	
R004		
- DDM,N SG1 DATA 42		
	(N2C02)	JN200-R004
1B-B2	(V2M13)	MV200-R003
1B-A1	*K1B11*	
1B-B2	*S6A02*	
R004		
- DDM,N SG1 DATA 43		
	(N2B02)	JN200-R004
1B-B2	(V2M12)	MV200-R003
1B-A1	*K1A11*	
1B-B2	*R6E02*	
R004		
- DDM,N SG1 DATA 44		
	(N2J07)	JN200-R004
1B-B2	(V2M09)	MV200-R003
1B-A1	*J1C11*	
1B-B2	*R6B02*	
R004		
- DDM,N SG1 DATA 45		
	(N2S05)	JN200-R004
1B-B2	(V2M06)	MV200-R003
1B-A1	*H1D11*	
1B-B2	*Q6C02*	
R004		
- DDM,N SG1 DATA 46		
	(N2U05)	JN200-R004
1B-B2	(V2M05)	MV200-R003
1B-A1	*H1C11*	
1B-B2	*Q6B02*	
R004		
- DDM,N SG1 DATA 47		
	(N2P13)	JN200-R004
1B-B2	(V2S11)	MV200-R003
1B-A1	*H1C13*	
1B-B2	*Q6B04*	
R004		
- DDM,N SG1 DATA 48		
	(N2M02)	JN200-R004
1B-B2	(V2S08)	MV200-R003
1B-A1	*J1A13*	
1B-B2	*Q6E04*	
R004		
- DDM,N SG1 DATA 49		
	(N2N06)	JN200-R004
1B-B2	(V2S07)	MV200-R003
1B-A1	*J1C13*	
1B-B2	*R6B04*	
R004		
- DDM,N SG1 DATA 50		
	(N2N13)	JN200-R004
1B-B2	(V2S05)	MV200-R003
1B-A1	*J1E13*	
1B-B2	*R6D04*	
R004		
- DDM,N SG1 DATA 51		
	(N2P06)	JN200-R004
1B-B2	(V2S04)	MV200-R003
1B-A1	*K1A13*	
1B-B2	*R6E04*	
R004		
- DDM,N SG1 DATA 52		
	(N2H10)	JN200-R004
1B-B2	(V2M11)	MV200-R003
1B-A1	*J1E11*	
1B-B2	*R6D02*	
R004		
- DDM,N SG1 DATA 53		
	(N2H09)	JN200-R004
1B-B2	(V2M10)	MV200-R003
1B-A1	*J1D11*	
1B-B2	*R6C02*	
R004		
- DDM,N SG1 DATA 54		
	(N2H08)	JN200-R004
1B-B2	(V2M08)	MV200-R003
1B-A1	*J1A11*	
1B-B2	*Q6E02*	
R004		
- DDM,N SG1 DATA 55		
	(N2H07)	JN200-R004
1B-B2	(V2M07)	MV200-R003
1B-A1	*H1E11*	
1B-B2	*Q6D02*	
R004		
- DDM,N SG1 DATA 56		
	(N2J06)	JN200-R004
1B-B2	(V2G06)	MV200-R003
1B-A1	*M1B13*	
1B-B2	*Q1C13*	
R004		
- DDM,N SG1 DATA 57		
	(N2H13)	JN200-R004
1B-B2	(V2G05)	MV200-R003
1B-A1	*M1C13*	
1B-B2	*Q1D13*	
R004		
- DDM,N SG1 DATA 58		
	(N2D13)	JN200-R004
1B-B2	(V2G04)	MV200-R003
1B-A1	*M1D13*	
1B-B2	*Q1E13*	
R004		
- DDM,N SG1 DATA 59		
	(N2H12)	JN200-R004
1B-B2	(V2G03)	MV200-R003
1B-A1	*N1A13*	
1B-B2	*R1B13*	

LINE/SIGNAL	PIN	SHEET/LINE
R004		
- DDM,N SG1 DATA 60	(N2S11)	JN200-R004
1B-B2	(V2G02)	MV200-R003
1B-A1	*N1B13*	
1B-B2	*R1C13*	
R004		
- DDM,N SG1 DATA 61	(N2U04)	JN200-R004
1B-B2	(V2B11)	MV200-R003
1B-A1	*N1D13*	
1B-B2	*R1E13*	
R004		
- DDM,N SG1 DATA 62	(N2T03)	JN200-R004
1B-B2	(V2B10)	MV200-R003
1B-A1	*N1E13*	
1B-B2	*S1A13*	
R004		
- DDM,N SG1 DATA 63	(N2T12)	JN200-R004
1B-B2	(V2B06)	MV200-R003
1B-A1	*N1A11*	
1B-B2	*R1B11*	
R004		
- DDM,N SG1 DATA 64	(N2U11)	JN200-R004
1B-B2	(V2B05)	MV200-R003
1B-A1	*N1B11*	
1B-B2	*R1C11*	
R004		
- DDM,N SG1 DATA 65	(N2U12)	JN200-R004
1B-B2	(V2B04)	MV200-R003
1B-A1	*N1C11*	
1B-B2	*R1D11*	
R004		
- DDM,N SG1 DATA 66	(N2S12)	JN200-R004
1B-B2	(V2B03)	MV200-R003
1B-A1	*N1D11*	
1B-B2	*R1E11*	
R004		
- DDM,N SG1 DATA 67	(N2T11)	JN200-R004
1B-B2	(V2B02)	MV200-R003
1B-A1	*N1E11*	
1B-B2	*S1A11*	
R004		
- DDM,N SG1 DATA 68	(N2M03)	JN200-R004
1B-B2	(V2B13)	MV200-R003
1B-A1	*N1C13*	
1B-B2	*R1D13*	

LINE/SIGNAL	PIN	SHEET/LINE
R004		
- DDM,N SG1 DATA 69	(N2S03)	JN200-R004
1B-B2	(V2B09)	MV200-R003
1B-A1	*M1B11*	
1B-B2	*Q1C11*	
R004		
- DDM,N SG1 DATA 70	(N2N02)	JN200-R004
1B-B2	(V2B08)	MV200-R003
1B-A1	*M1C11*	
1B-B2	*Q1D11*	
R004		
- DDM,N SG1 DATA 71	(N2M09)	JN200-R004
1B-B2	(V2B07)	MV200-R003
1B-A1	*M1D11*	
1B-B2	*Q1E11*	
R005		
- DDM,N SG2 DATA 36	(N2J11)	JN200-R005
1B-A1	*H6A04*	
R005		
- DDM,N SG2 DATA 37	(N2D06)	JN200-R005
1B-A1	*H6B04*	
R005		
- DDM,N SG2 DATA 38	(N2G02)	JN200-R005
1B-A1	*H6D04*	
R005		
- DDM,N SG2 DATA 39	(N2H02)	JN200-R005
1B-A1	*H6E04*	
R005		
- DDM,N SG2 DATA 40	(N2J10)	JN200-R005
1B-A1	*J6D04*	
R005		
- DDM,N SG2 DATA 41	(N2D09)	JN200-R005
1B-A1	*K6B04*	
R005		
- DDM,N SG2 DATA 42	(N2D10)	JN200-R005
1B-A1	*K6B02*	
R005		
- DDM,N SG2 DATA 43	(N2D11)	JN200-R005
1B-A1	*K6A02*	
R005		
- DDM,N SG2 DATA 44	(N2M07)	JN200-R005
1B-A1	*J6C02*	

LINE/SIGNAL	PIN	SHEET/LINE
R005		
- DDM,N SG2 DATA 45	(N2P10)	JN200-R005
1B-A1	*H6D02*	
R005		
- DDM,N SG2 DATA 46	(N2N08)	JN200-R005
1B-A1	*H6C02*	
R005		
- DDM,N SG2 DATA 47	(N2H11)	JN200-R005
1B-A1	*H6C04*	
R005		
- DDM,N SG2 DATA 48	(N2M10)	JN200-R005
1B-A1	*J6A04*	
R005		
- DDM,N SG2 DATA 49	(N2N10)	JN200-R005
1B-A1	*J6C04*	
R005		
- DDM,N SG2 DATA 50	(N2M08)	JN200-R005
1B-A1	*J6E04*	
R005		
- DDM,N SG2 DATA 51	(N2N09)	JN200-R005
1B-A1	*K6A04*	
R005		
- DDM,N SG2 DATA 52	(N2P04)	JN200-R005
1B-A1	*J6E02*	
R005		
- DDM,N SG2 DATA 53	(N2G08)	JN200-R005
1B-A1	*J6D02*	
R005		
- DDM,N SG2 DATA 54	(N2J09)	JN200-R005
1B-A1	*J6A02*	
R005		
- DDM,N SG2 DATA 55	(N2G13)	JN200-R005
1B-A1	*H6E02*	
R005		
- DDM,N SG2 DATA 56	(N2G09)	JN200-R005
1B-A1	*M6B04*	
R005		
- DDM,N SG2 DATA 57	(N2G10)	JN200-R005
1B-A1	*M6C04*	

LINE/SIGNAL	PIN	SHEET/LINE
R005		
- DDM,N SG2 DATA 58	(N2J13)	JN200-R005
1B-A1	*M6D04*	
R005		
- DDM,N SG2 DATA 59	(N2J12)	JN200-R005
1B-A1	*N6A04*	
R005		
- DDM,N SG2 DATA 60	(N2T05)	JN200-R005
1B-A1	*N6B04*	
R005		
- DDM,N SG2 DATA 61	(N2S09)	JN200-R005
1B-A1	*N6D04*	
R005		
- DDM,N SG2 DATA 62	(N2U06)	JN200-R005
1B-A1	*N6E04*	
R005		
- DDM,N SG2 DATA 63	(N2S06)	JN200-R005
1B-A1	*N6A02*	
R005		
- DDM,N SG2 DATA 64	(N2S07)	JN200-R005
1B-A1	*N6B02*	
R005		
- DDM,N SG2 DATA 65	(N2T06)	JN200-R005
1B-A1	*N6C02*	
R005		
- DDM,N SG2 DATA 66	(N2S08)	JN200-R005
1B-A1	*N6D02*	
R005		
- DDM,N SG2 DATA 67	(N2U07)	JN200-R005
1B-A1	*N6E02*	
R005		
- DDM,N SG2 DATA 68	(N2N04)	JN200-R005
1B-A1	*N6C04*	
R005		
- DDM,N SG2 DATA 69	(N2P02)	JN200-R005
1B-A1	*M6B02*	
R005		
- DDM,N SG2 DATA 70	(N2M05)	JN200-R005
1B-A1	*M6C02*	

LINE/SIGNAL	PIN	SHEET/LINE
R005		
- DDM,N SG2 DATA 71	(N2N03)	JN200-R005
1B-A1	*M6D02*	
R006		
- DDM,N SG1 PARITY 2	(N2M04)	JN200-R006
1B-B2	V2G08	MV200-L003
1B-A1	*M1A13*	
1B-B2	*Q1B13*	
R006		
- DDM,N SG1 PARITY 3	(N2C13)	JN200-R006
1B-B2	V2G11	MV200-L003
1B-A1	*L1D11*	
1B-B2	*P1E11*	
R007		
- DDM,N SG2 PARITY 2	(N2B13)	JN200-R007
1B-A1	*M6A04*	
R007		
- DDM,N SG2 PARITY 3	(N2D12)	JN200-R007
1B-A1	*L6D02*	
R008		
- DDN SDB PARITY CHECK	(N2G12)	JN200-R008
	L2S02	JL200-L018
R009		
- DDN SPARE DRIVER OUT	(N2P09)	JN200-R009

003 - PCC SD1 C1/SA ADDRESS (0-7,P) * =
004 - PCC SD1 C1/SA R/W CLK -------- D02
005 - PCC SD1 C1/SA READ GATE ------ D06
006 - PCC SD1 C1/SA WRITE GATE ----- B02
007 - PCF SD2 C1/SA ADDRESS (0-7,P) * =
008 - PCF SD2 C1/SA R/W CLK -------- P05
009 - PCF SD2 C1/SA READ GATE ------ M09
010 - PCF SD2 C1/SA WRITE GATE ----- N05
011 - C2Q SD1 UPPER STORAGE CYCLE -- T04
012 - C2Q SD1 LOWER STORAGE CYCLE -- S03
013 - C2Q SD2 UPPER STORAGE CYCLE -- T02
014 - C2Q SD2 LOWER STORAGE CYCLE -- U02
015 - C2Q STG CNTL CLK CHECK ------- U05
016 - C2Q STG CNTL SEL CHECK ------- T05
017 - SG1/2 DRA DATA PARITY ERROR -- U10
018 - SG1/2 DRV DATA PARITY ERROR -- S10
019 - SG1/2 DRA CLOCK ERROR -------- T10
020 - SG1/2 DRV CLOCK ERROR -------- U09
021 - SG1/2 ARK DATA OP ERROR BCDE - N03
022 - SG1/2 ARK DATA OP ERROR FGHJ - M04
023 - SG1/2 ARL DATA OP ERROR MNPQ - M03
024 - SG1/2 ARL DATA OP ERROR RSTU - P04
025 - SG1/2 ARK IN ADDR PARITY ERROR N02
026 - SG1/2 ARL IN ADDR PARITY ERROR H12
027 - SG1/2 ARK REFRESH ERROR BCHJ - P02
028 - SG1/2 ARK REFRESH ERROR DEFG - M02
029 - SG1/2 ARL REFRESH ERROR MNTU - U13
030 - SG1/2 ARL REFRESH ERROR PQRS - U12
031 - SG1/2 ARK IN REFRESH ERROR --- U11
032 - SG1/2 ARL IN REFRESH ERROR --- T12
033 - ENABLE TS DVRS FOR BD1 REFRESH T06
034 - ENABLE TS DVRS FOR BD2 REFRESH U04
035 - SAR SD1 UPPER CHECK RESET ---- J09
036 - SAR SD1 LOWER CHECK RESET ---- G07
037 - SAS SD2 UPPER CHECK RESET ---- G13
038 - SAS SD2 LOWER CHECK RESET ---- J12
039 - SAR SD1 FORCE C1 DECODE ACTIVE C03
040 - SAS SD2 FORCE C1 DECODE ACTIVE M05
041 - E2K CORRECTABLE DOUBLE ERROR - G09
042 - E2K CORRECTABLE SINGLE ERROR - J07
043 - SAR SD1 RUN UPPER ------------ D12
044 - SAR SD1 RUN LOWER ------------ H07
045 - SAS SD2 RUN UPPER ------------ H08
046 - SAS SD2 RUN LOWER ------------ J04
047 - C2Q CMR START CLOCK ---------- H10
048 - C2Q CMR STOP CLOCK ----------- H09
049 + SG1 CABLE CHECK -------------- G12
050 + SG2 CABLE CHECK -------------- H13
051 - SD1 DIAGNOSTIC MODE ---------- J13
052 - SD2 DIAGNOSTIC MODE ---------- J11
053 - SS POWER RESET --------------- B04
054 - SD1 SS +5V POWER OFF --------- C09
055 - SD1 SS +5V POWER OFF RP ------ B08

CMC1 CARD

OVERVIEW

The CMC1 (Storage Control #1) card acts as an accumulation point of error and status checking for all the functional islands.

PRIMARY FUNCTIONS

- Provides common registers for status, control and check conditions.
- Provides general registers for functions and diagnostics.
- Provides control board resets.

PRIMARY COMPONENTS

- Indirect Register interface for SD1 and SD2:
  - Upper Storage Control checks.
  - Lower Storage Control checks.
  - Upper Storage Control Address checks.
  - Lower Storage Control Address checks.
  - Test and Set register.
  - Microcode Register.
  - General Diagnostics.
  - Storage Size/Cables In.
  - ID Switches.
  - Common Storage card Refresh Address Check.
  - Common Storage Control Check.
  - Common Status 2 for SD1 and SD2.
  - Common Control Shadow for SD1 and SD2.
- Three state drivers and receivers.

ERROR CHECKING

- Common Storage IR Check (CSACK, bit 7).
  - This bit indicates port control address parity error, data parity error or control error (missing read/write gate or both read and write gate active).

C02 - C1P SD1 PC DLYD READ CLOCK --- 003
C08 - C1P SD1 PC READ ENABLE ------- 004
D04 - C1P SD1 SA DECODE ACTIVE ----- 005
B03 - C1P SD1 SA IR CHECK ---------- 006
C07 - C1P SD1 PORT CHECK UPPER ----- 007
D07 - C1P SD1 PORT CHECK LOWER ----- 008
B07 - C1P SD1 COMMON CHECK --------- 009
= * - PCC SD1 C1/SA R/W DATA (0-7,P) 010
N06 - C1P SD2 PC DLYD READ CLOCK --- 011
P10 - C1P SD2 PC READ ENABLE ------- 012
M07 - C1P SD2 SA DECODE ACTIVE ----- 013
P06 - C1P SD2 SA IR CHECK ---------- 014
N09 - C1P SD2 PORT CHECK UPPER ----- 015
P09 - C1P SD2 PORT CHECK LOWER ----- 016
N10 - C1P SD2 COMMON CHECK --------- 017
= * - PCF SD2 C1/SA R/W DATA (0-7,P) 018
B13 - C1P ECC TST LOOP WRITE TO READ 019
C13 - C1P CACHE TST LOOP WRITE/READ 020
G10 - C1P FORCE DR CLK A ERROR ----- 021
H11 - C1P FORCE DR CLK B ERROR ----- 022
B12 - C1P DEGATE CACHE OSC --------- 023
J06 - C1P FORCE STG SELECT ERROR --- 024
J05 - C1P SD1 SA GTS OWNER --------- 025
H06 - C1P SD2 SA GTS OWNER --------- 026
H02 - C1P SD1 COMMON CHECK RESET --- 027
G08 - C1P SD2 COMMON CHECK RESET --- 028
C05 - C1P POWER ON RESET ----------- 029
C06 - C1P CONTROL BD POR/MACH RESET 030
B06 - C1P SD1 PB/PC POR MACH RESET - 031
B10 - C1P SD2 PB/PC POR MACH RESET - 032
M10 - C1P FORCE DATA/REF COMMAND CHK 033
S05 - C1P 8 MB SWITCH -------------- 034
S08 - C1P 16 MB SWITCH ------------- 035

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- PCC SD1 C1/SA ADDRESS 0		
	P2B05	JP200-L003
	(C2B06)	JC200-R006
	R2B04	JR200-L003
L003		
- PCC SD1 C1/SA ADDRESS 1		
	P2D11	JP200-L003
	(C2D07)	JC200-R006
	R2D11	JR200-L003
L003		
- PCC SD1 C1/SA ADDRESS 2		
	P2C10	JP200-L003
	(C2D05)	JC200-R006
	R2D02	JR200-L003
L003		
- PCC SD1 C1/SA ADDRESS 3		
	P2D05	JP200-L003
	(C2D06)	JC200-R006
	R2D05	JR200-L003
L003		
- PCC SD1 C1/SA ADDRESS 4		
	P2D10	JP200-L003
	(C2B11)	JC200-R006
	R2B10	JR200-L003
L003		
- PCC SD1 C1/SA ADDRESS 5		
	P2B09	JP200-L003
	(C2D12)	JC200-R006
	R2D09	JR200-L003
L003		
- PCC SD1 C1/SA ADDRESS 6		
	P2B11	JP200-L003
	(C2D10)	JC200-R006
	R2D10	JR200-L003
L003		
- PCC SD1 C1/SA ADDRESS 7		
	P2D09	JP200-L003
	(C2B10)	JC200-R006
	R2B09	JR200-L003
L003		
- PCC SD1 C1/SA ADDRESS P		
	P2C04	JP200-L003
	(C2D02)	JC200-R006
	R2B05	JR200-L003
L004		
- PCC SD1 C1/SA R/W CLK		
	P2D02	JP200-L004
	(C2G11)	JC200-R010
	R2G11	JR200-L006
L005		
- PCC SD1 C1/SA READ GATE		
	P2D06	JP200-L005
	(C2P02)	JC200-R008
	R2B06	JR200-L005

LINE/SIGNAL	PIN	SHEET/LINE
L006		
- PCC SD1 C1/SA WRITE GATE		
	P2B02	JP200-L006
	(C2M03)	JC200-R009
	R2B03	JR200-L004
L007		
- PCF SD2 C1/SA ADDRESS 0		
	P2N07	JP200-L007
	(F2B06)	JF200-R006
	S2B04	JS200-L003
L007		
- PCF SD2 C1/SA ADDRESS 1		
	P2P13	JP200-L007
	(F2D07)	JF200-R006
	S2D11	JS200-L003
L007		
- PCF SD2 C1/SA ADDRESS 2		
	P2M08	JP200-L007
	(F2D05)	JF200-R006
	S2D02	JS200-L003
L007		
- PCF SD2 C1/SA ADDRESS 3		
	P2N08	JP200-L007
	(F2D06)	JF200-R006
	S2D05	JS200-L003
L007		
- PCF SD2 C1/SA ADDRESS 4		
	P2M13	JP200-L007
	(F2B11)	JF200-R006
	S2B10	JS200-L003
L007		
- PCF SD2 C1/SA ADDRESS 5		
	P2P11	JP200-L007
	(F2D12)	JF200-R006
	S2D09	JS200-L003
L007		
- PCF SD2 C1/SA ADDRESS 6		
	P2P12	JP200-L007
	(F2D10)	JF200-R006
	S2D10	JS200-L003
L007		
- PCF SD2 C1/SA ADDRESS 7		
	P2N12	JP200-L007
	(F2B10)	JF200-R006
	S2B09	JS200-L003
L007		
- PCF SD2 C1/SA ADDRESS P		
	P2P07	JP200-L007
	(F2D02)	JF200-R006
	S2B05	JS200-L003
L008		
- PCF SD2 C1/SA R/W CLK		
	P2P05	JP200-L008
	(F2G11)	JF200-R010
	S2G11	JS200-L006

LINE/SIGNAL	PIN	SHEET/LINE
L009		
- PCF SD2 C1/SA READ GATE		
	P2M09	JP200-L009
	(F2P02)	JF200-R008
	S2B06	JS200-L005
L010		
- PCF SD2 C1/SA WRITE GATE		
	P2N05	JP200-L010
	(F2M03)	JF200-R009
	S2B03	JS200-L004
L011		
- C2Q SD1 UPPER STORAGE CYCLE		
	P2T04	JP200-L011
	(Q2P13)	JQ210-R010
	L2B04	JL200-L016
	T2G04	JT210-L009
L012		
- C2Q SD1 LOWER STORAGE CYCLE		
	P2S03	JP200-L012
	(Q2N13)	JQ210-R011
	L2B05	JL200-L019
	T2J07	JT210-L010
L013		
- C2Q SD2 UPPER STORAGE CYCLE		
	P2T02	JP200-L013
	(Q2M09)	JQ210-R012
	L2B02	JL200-L022
	T2G07	JT210-L012
L014		
- C2Q SD2 LOWER STORAGE CYCLE		
	P2U02	JP200-L014
	(Q2N10)	JQ210-R013
	L2D02	JL200-L020
	T2J05	JT210-L013
L015		
- C2Q STG CNTL CLK CHECK		
	P2U05	JP200-L015
	(Q2N02)	JQ210-R034
L016		
- C2Q STG CNTL SEL CHECK		
	P2T05	JP200-L016
	(Q2U05)	JQ210-R033
L017		
- SG1/2 DRA DATA PARITY ERROR		
	P2U10	JP200-L017
1B-B2	(A2G09)	MA200-R007
1B-A1	*F1E11*	
1B-A1	*F6E02*	
1B-B2	*F1E11*	
L018		
- SG1/2 DRV DATA PARITY ERROR		
	P2S10	JP200-L018
1B-B2	(V2G09)	MV200-R006
1B-A1	*L1E11*	
1B-A1	*L6E02*	
1B-B2	*Q1A11*	

LINE/SIGNAL	PIN	SHEET/LINE
L019		
- SG1/2 DRA CLOCK ERROR		
	P2T10	JP200-L019
1B-B2	(A2S03)	MA200-R008
1B-A1	*C1E11*	
1B-A1	*C6E02*	
1B-B2	*G6A02*	
L020		
- SG1/2 DRV CLOCK ERROR		
	P2U09	JP200-L020
1B-B2	(V2S03)	MV200-R007
1B-A1	*H1A11*	
1B-A1	*H6A02*	
1B-B2	*F6E02*	
L021		
- SG1/2 ARK DATA OP ERROR BCDE		
	P2N03	JP200-L021
1B-B2	(K2B02)	MK210-R029
1B-A1	*Q1C13*	
1B-A1	*Q6C04*	
1B-B2	*H1D13*	
L022		
- SG1/2 ARK DATA OP ERROR FGHJ		
	P2M04	JP200-L022
1B-B2	(K2D02)	MK210-R030
1B-A1	*Q1D11*	
1B-A1	*Q6D02*	
1B-B2	*H1E11*	
L023		
- SG1/2 ARL DATA OP ERROR MNPQ		
	P2M03	JP200-L023
1B-B2	(L2D02)	ML210-R029
1B-A1	*U1C11*	
1B-A1	*U6C02*	
1B-B2	*N1A11*	
L024		
- SG1/2 ARL DATA OP ERROR RSTU		
	P2P04	JP200-L024
1B-B2	(L2B02)	ML210-R030
1B-A1	*U1D11*	
1B-A1	*U6D02*	
1B-B2	*N1B11*	
L025		
- SG1/2 ARK IN ADDR PARITY ERROR		
	P2N02	JP200-L025
1B-B2	(K2U10)	MK210-R031
1B-A1	*V2B12*	
1B-A1	*V5B12*	
1B-B2	*K6A04*	
L026		
- SG1/2 ARL IN ADDR PARITY ERROR		
	P2H12	JP200-L026
1B-B2	(L2U10)	ML210-R031
1B-A1	*V2B10*	
1B-A1	*V5B10*	
1B-B2	*J6D04*	

LINE/SIGNAL	PIN	SHEET/LINE
L027		
- SG1/2 ARK REFRESH ERROR BCHJ		
	P2P02	JP200-L027
1B-B2	(K2B04)	MK210-R028
1B-A1	*Q1E13*	
1B-A1	*Q6E04*	
1B-B2	*J1A13*	
L028		
- SG1/2 ARK REFRESH ERROR DEFG		
	P2M02	JP200-L028
1B-B2	(K2B03)	MK210-R027
1B-A1	*Q1D13*	
1B-A1	*Q6D04*	
1B-B2	*H1E13*	
L029		
- SG1/2 ARL REFRESH ERROR MNTU		
	P2U13	JP200-L029
1B-B2	(L2B04)	ML210-R028
1B-A1	*U1D13*	
1B-A1	*U6D04*	
1B-B2	*N1B13*	
L030		
- SG1/2 ARL REFRESH ERROR PQRS		
	P2U12	JP200-L030
1B-B2	(L2B03)	ML210-R027
1B-A1	*U1C13*	
1B-A1	*U6C04*	
1B-B2	*N1A13*	
L031		
- SG1/2 ARK IN REFRESH ERROR		
	P2U11	JP200-L031
1B-B2	(K2U11)	MK210-R032
1B-A1	*V2B13*	
1B-A1	*V5B13*	
1B-B2	*K6B04*	
L032		
- SG1/2 ARL IN REFRESH ERROR		
	P2T12	JP200-L032
1B-B2	(L2U11)	ML210-R032
1B-A1	*V2B11*	
1B-A1	*V5B11*	
1B-B2	*J6E04*	
L033		
- ENABLE TS DVRS FOR BD1 REFRESH		
	P2T06	JP200-L033
	(T2S04)	JT210-R014
L034		
- ENABLE TS DVRS FOR BD2 REFRESH		
	P2U04	JP200-L034
	(T2U07)	JT210-R015
L035		
- SAR SD1 UPPER CHECK RESET		
	P2J09	JP200-L035
	(R2J10)	JR200-R014
	D2P05	JD200-L015
	L2B07	JL200-L012

LINE/SIGNAL	PIN	SHEET/LINE
L036		
- SAR SD1 LOWER CHECK RESET		
	P2G07	JP200-L036
	(R2G04)	JR200-R015
	E2P05	JE200-L015
	L2B08	JL200-L013
L037		
- SAS SD2 UPPER CHECK RESET		
	P2G13	JP200-L037
	(S2J10)	JS200-R014
	G2P05	JG200-L015
	L2D09	JL200-L014
L038		
- SAS SD2 LOWER CHECK RESET		
	P2J12	JP200-L038
	(S2G04)	JS200-R015
	H2P05	JH200-L015
	L2G09	JL200-L015
L039		
- SAR SD1 FORCE C1 DECODE ACTIVE		
	P2C03	JP200-L039
	(R2J05)	JR200-R020
L040		
- SAS SD2 FORCE C1 DECODE ACTIVE		
	P2M05	JP200-L040
	(S2J05)	JS200-R020
L041		
- E2K CORRECTABLE DOUBLE ERROR		
	P2G09	JP200-L041
	(K2P13)	JK200-R009
L042		
- E2K CORRECTABLE SINGLE ERROR		
	P2J07	JP200-L042
	(K2P12)	JK200-R008
L043		
- SAR SD1 RUN UPPER		
	P2D12	JP200-L043
	(R2J02)	JR200-R012
L044		
- SAR SD1 RUN LOWER		
	P2H07	JP200-L044
	(R2G09)	JR200-R013
L045		
- SAS SD2 RUN UPPER		
	P2H08	JP200-L045
	(S2J02)	JS200-R012
L046		
- SAS SD2 RUN LOWER		
	P2J04	JP200-L046
	(S2G09)	JS200-R013
L047		
- C2Q CMR START CLOCK		
	P2H10	JP200-L047
	(Q2B12)	JQ210-R031

LINE/SIGNAL	PIN	SHEET/LINE
L048		
- C2Q CMR STOP CLOCK		
	P2H09	JP200-L048
	(Q2P10)	JQ210-R032
L049		
+ SG1 CABLE CHECK		
	P2G12	JP200-L049
1B-A1	*V2B08*	
1B-A1	*J1B13*	
1B-A1	*M1E13*	
1B-A1	*U1B13*	
1B-A1	*R1A13*	
1B-A1	*F1A13*	
1B-A1	*B1E13*	
1B-B2	*J6B04*	
1B-B2	*R6A04*	
1B-B2	*R1A13*	
1B-B2	*M1E13*	
1B-B2	*J1B13*	
1B-B2	*F1A13*	
1B-B2	*F6A04*	
L050		
+ SG2 CABLE CHECK		
	P2H13	JP200-L050
1B-A1	*V5B08*	
1B-A1	*J6B04*	
1B-A1	*M6E04*	
1B-A1	*U6B04*	
1B-A1	*R6A04*	
1B-A1	*F6A04*	
1B-A1	*B6E04*	
L051		
- SD1 DIAGNOSTIC MODE		
	P2J13	JP200-L051
1B-A1	*V4B02*	
->MDM	*YC900*	
L052		
- SD2 DIAGNOSTIC MODE		
	P2J11	JP200-L052
1B-A1	*V4B03*	
->MDM	*YC900*	
L053		
- SS POWER RESET		
	P2B04	JP200-L053
1A-B1	(J2U04)	EJ200-R021
1A-B3	M2G04	GM200-L056
1A-B4	M2G04	HM200-L056
1B-A1	*V3D07*	
1B-A1	*A5B05*	
1B-A1	*B5B05*	
1A-B1	*V5D07*	
1A-B4	*M6E04*	
1A-B3	*M6E04*	

LINE/SIGNAL	PIN	SHEET/LINE
L054		
- SD1 SS +5V POWER OFF		
	P2C09	JP200-L054
1A-B3	(M2S07)	GM200-R020
1A-B1	(J2D10)	EJ200-R008
	C2J06	JC200-L017
1B-A1	*V3D05*	
1B-A1	*A5D07*	
1B-A1	*B5D03*	
1A-B1	*V5D05*	
1A-B3	*M6C02*	
L055		
- SD1 SS +5V POWER OFF RP		
	P2B08	JP200-L055
1A-B4	(M2S07)	HM200-R020
	F2J06	JF200-L017
1B-A1	*A5D03*	
1A-B4	*M6C02*	
R003		
- C1P SD1 PC DLYD READ CLOCK		
	(P2C02)	JP200-R003
	C2G12	JC200-L008
R004		
- C1P SD1 PC READ ENABLE		
	(P2C08)	JP200-R004
	C2J12	JC200-L007
R005		
- C1P SD1 SA DECODE ACTIVE		
	(P2D04)	JP200-R005
	R2P02	JR200-L023
R006		
- C1P SD1 SA IR CHECK		
	(P2B03)	JP200-R006
	R2S04	JR200-L021
R007		
- C1P SD1 PORT CHECK UPPER		
	(P2C07)	JP200-R007
	R2U07	JR200-L019
R008		
- C1P SD1 PORT CHECK LOWER		
	(P2D07)	JP200-R008
	R2G07	JR200-L020
R009		
- C1P SD1 COMMON CHECK		
	(P2B07)	JP200-R009
	R2J13	JR200-L018
R010		
- PCC SD1 C1/SA R/W DATA 0		
	(P2H05)	JP200-R010
	(C2J10)	JC200-R007
	(R2D04)	JR200-R003
R010		
- PCC SD1 C1/SA R/W DATA 1		
	(P2H03)	JP200-R010
	(C2G10)	JC200-R007
	(R2B07)	JR200-R003

LINE/SIGNAL	PIN	SHEET/LINE
R010		
- PCC SD1 C1/SA R/W DATA 2		
	(P2J10)	JP200-R010
	(C2G09)	JC200-R007
	(R2B08)	JR200-R003
R010		
- PCC SD1 C1/SA R/W DATA 3		
	(P2G05)	JP200-R010
	(C2J09)	JC200-R007
	(R2B11)	JR200-R003
R010		
- PCC SD1 C1/SA R/W DATA 4		
	(P2G11)	JP200-R010
	(C2G07)	JC200-R007
	(R2D12)	JR200-R003
R010		
- PCC SD1 C1/SA R/W DATA 5		
	(P2H04)	JP200-R010
	(C2G05)	JC200-R007
	(R2B12)	JR200-R003
R010		
- PCC SD1 C1/SA R/W DATA 6		
	(P2G04)	JP200-R010
	(C2J05)	JC200-R007
	(R2D13)	JR200-R003
R010		
- PCC SD1 C1/SA R/W DATA 7		
	(P2C11)	JP200-R010
	(C2G04)	JC200-R007
	(R2B13)	JR200-R003
R010		
- PCC SD1 C1/SA R/W DATA P		
	(P2G03)	JP200-R010
	(C2G02)	JC200-R007
	(R2D06)	JR200-R003
R011		
- C1P SD2 PC DLYD READ CLOCK		
	(P2N06)	JP200-R011
	F2G12	JF200-L008
R012		
- C1P SD2 PC READ ENABLE		
	(P2P10)	JP200-R012
	F2J12	JF200-L007
R013		
- C1P SD2 SA DECODE ACTIVE		
	(P2N07)	JP200-R013
	S2P02	JS200-L023
R014		
- C1P SD2 SA IR CHECK		
	(P2P06)	JP200-R014
	S2S04	JS200-L021
R015		
- C1P SD2 PORT CHECK UPPER		
	(P2N09)	JP200-R015
	S2U07	JS200-L019

LINE/SIGNAL	PIN	SHEET/LINE
R016		
- C1P SD2 PORT CHECK LOWER		
	(P2P09)	JP200-R016
	S2G07	JS200-L020
R017		
- C1P SD2 COMMON CHECK		
	(P2N10)	JP200-R017
	S2J13	JS200-L018
R018		
- PCF SD2 C1/SA R/W DATA 0		
	(P2D13)	JP200-R018
	(F2J10)	JF200-R007
	(S2D04)	JS200-R003
R018		
- PCF SD2 C1/SA R/W DATA 1		
	(P2J02)	JP200-R018
	(F2G10)	JF200-R007
	(S2B07)	JS200-R003
R018		
- PCF SD2 C1/SA R/W DATA 2		
	(P2G02)	JP200-R018
	(F2G09)	JF200-R007
	(S2B08)	JS200-R003
R018		
- PCF SD2 C1/SA R/W DATA 3		
	(P2C12)	JP200-R018
	(F2J09)	JF200-R007
	(S2B11)	JS200-R003
R018		
- PCF SD2 C1/SA R/W DATA 4		
	(P2T09)	JP200-R018
	(F2G07)	JF200-R007
	(S2D12)	JS200-R003
R018		
- PCF SD2 C1/SA R/W DATA 5		
	(P2S07)	JP200-R018
	(F2G05)	JF200-R007
	(S2B12)	JS200-R003
R018		
- PCF SD2 C1/SA R/W DATA 6		
	(P2U07)	JP200-R018
	(F2J05)	JF200-R007
	(S2D13)	JS200-R003
R018		
- PCF SD2 C1/SA R/W DATA 7		
	(P2U06)	JP200-R018
	(F2G04)	JF200-R007
	(S2B13)	JS200-R003
R018		
- PCF SD2 C1/SA R/W DATA P		
	(P2N04)	JP200-R018
	(F2G02)	JF200-R007
	(S2D06)	JS200-R003

LINE/SIGNAL	PIN	SHEET/LINE
R019		
- C1P ECC TST LOOP WRITE TO READ		
	(P2B13)	JP200-R019
	J2D04	JJ200-L004
	K2D02	JK200-L005
	Q2S04	JQ210-L014
R020		
- C1P CACHE TST LOOP WRITE/READ		
	(P2C13)	JP200-R020
	Q2T04	JQ210-L015
R021		
- C1P FORCE DR CLK A ERROR		
	(P2G10)	JP200-R021
	Q2D13	JQ210-L016
R022		
- C1P FORCE DR CLK B ERROR		
	(P2H11)	JP200-R022
	Q2G03	JQ210-L017
R023		
- C1P DEGATE CACHE OSC		
	(P2B12)	JP200-R023
	Q2S03	JQ210-L013
R024		
- C1P FORCE STG SELECT ERROR		
	(P2J06)	JP200-R024
	Q2P11	JQ210-L018
R025		
- C1P SD1 SA GTS OWNER		
	(P2J05)	JP200-R025
	R2P05	JR200-L024
R026		
- C1P SD2 SA GTS OWNER		
	(P2H06)	JP200-R026
	S2P05	JS200-L024
R027		
- C1P SD1 COMMON CHECK RESET		
	(P2H02)	JP200-R027
	R2J12	JR200-L022
R028		
- C1P SD2 COMMON CHECK RESET		
	(P2G08)	JP200-R028
	S2J12	JS200-L022
R029		
- C1P POWER ON RESET		
	(P2C05)	JP200-R029
	Q2M02	JQ210-L020
R030		
- C1P CONTROL BD POR/MACH RESET		
	(P2C06)	JP200-R030
	J2M12	JJ200-L006
	K2U02	JK200-L007
	L2J04	JL200-L011
	Q2U10	JQ210-L019
	R2P06	JR200-L017
	S2P06	JS200-L017
	T2M04	JT210-L008

LINE/SIGNAL	PIN	SHEET/LINE
R031		
- C1P SD1 PB/PC POR MACH RESET		
	(P2B06)	JP200-R031
	D2P06	JD200-L017
	E2P06	JE200-L017
R032		
- C1P SD2 PB/PC POR MACH RESET		
	(P2B10)	JP200-R032
	G2P06	JG200-L017
	H2P06	JH200-L017
R033		
- C1P FORCE DATA/REF COMMAND CHK		
	(P2M10)	JP200-R033
	Q2T13	JQ210-L021
R034		
- C1P 8 MB SWITCH		
	(P2S05)	JP200-R034
	T2B05	JT210-L016
R035		
- C1P 16 MB SWITCH		
	(P2S08)	JP200-R035
	T2B11	JT210-L017

003 - FBD SD1 UPPER RQST STG CYCLE - S08
004 - FBE SD1 LOWER RQST STG CYCLE - U04
005 - FBD SD1 UP DATA GT REQD (0-2) * =
006 - FBE SD1 LO DATA GT REQD (0-2) * =
007 - FBG SD2 UPPER RQST STG CYCLE - T05
008 - FBH SD2 LOWER RQST STG CYCLE - T03
009 - FBG SD2 UP DATA GT REQD (0-2) * =
010 - FBH SD2 LO DATA GT REQD (0-2) * =
011 + C2Q OSCILLATOR JUMPER -------- N06
012 + C2Q STG PRIORITY CLOCK JUMPER T10
013 - C1P DEGATE CACHE OSC --------- S03
014 - C1P ECC TST LOOP WRITE TO READ S04
015 - C1P CACHE TST LOOP WRITE/READ T04
016 - C1P FORCE DR CLK A ERROR ----- D13
017 - C1P FORCE DR CLK B ERROR ----- G03
018 - C1P FORCE STG SELECT ERROR --- P11
019 - C1P CONTROL BD POR/MACH RESET U10
020 - C1P POWER ON RESET ---------- M02
021 - C1P FORCE DATA/REF COMMAND CHK T13
022 - SAR SD1 UPPER RUN/STORE DATA - H10
023 - SAR SD1 LOWER RUN/STORE DATA - J10
024 - SAR SD1 UPPER RUN/FETCH DATA - M03
025 - SAR SD1 LOWER RUN/FETCH DATA - G12
026 - SAR SD1 UPPER/COMMON CHECK --- P02
027 - SAR SD1 LOWER/COMMON CHECK --- C13
028 - SAS SD2 UPPER RUN/STORE DATA - J09
029 - SAS SD2 LOWER RUN/STORE DATA - H09
030 - SAS SD2 UPPER RUN/FETCH DATA - G07
031 - SAS SD2 LOWER RUN/FETCH DATA - G08
032 - SAS SD2 UPPER/COMMON CHECK --- M13
033 - SAS SD2 LOWER/COMMON CHECK --- J13
034 - SAS SD2 CONTINUE ON ERROR ---- N03
035 - DAT ADDRESS BUS BIT 2 -------- B10
036 - DAT REFRESH ADDR BUS BIT 9 --- N09
037 - DAT SG1 DATA GT A SAR (0-2) == * =
038 - SAR SD1 CONTINUE ON ERROR ---- N04

CLC2 CARD

OVERVIEW

The CLC2 (Storage Control #2) card generates the seven phase clocks from a 25 MHZ oscillator which are used both on the card and throughout the Storage Control board. It also handles requests from the port buffer functional island and implements the storage cycle priority algorithm. In addition, it generates timing signals for all functional islands on the Storage Control board (including refresh).

PRIMARY FUNCTIONS

- Generates the following signals:
  - Phase clocks for Storage Control board timing.
  - Port Buffer and ECC functional island controls.
  - Storage board timing and controls.
- Implements the priority algorithm used for proper port selection.

PRIMARY COMPONENTS

- Phase clock generator - a 25 MHZ crystal oscillator is used as the time base. It is divided down into seven phase clocks.
- Storage cycle priority latches - determine which port will be granted the next storage cycle (based on current and previous storage cycle requests).
- Timing and control module.

ERROR CHECKING

- Storage Control Clock Check (CSCCK, bit 0).
  - This bit indicates that the phase clock generation circuit is not functioning properly.
- Storage Control Selection Check (CSCCK, bit 1).
  - This bit indicates a malfunction of the storage priority algorithm. It is signaled if more than one port is granted a storage cycle.

H02 - C2Q PHASE CLOCK 1 ------------ 003
P09 - C2Q PHASE CLOCK 2 ------------ 004
G02 - C2Q PHASE CLOCK 1.1 ---------- 005
H13 - C2Q PHASE CLOCK 1.2 ---------- 006
J02 - C2Q PHASE CLOCK 1.3 ---------- 007
M10 - C2Q PHASE CLOCK 1.4 ---------- 008
G05 - C2Q PHASE CLOCK 1.5 ---------- 009
P13 - C2Q SD1 UPPER STORAGE CYCLE -- 010
N13 - C2Q SD1 LOWER STORAGE CYCLE -- 011
M09 - C2Q SD2 UPPER STORAGE CYCLE -- 012
N10 - C2Q SD2 LOWER STORAGE CYCLE -- 013
M07 - C2Q SD1 UPPER PB SELECTED ---- 014
U02 - C2Q SD1 LOWER PB SELECTED ---- 015
M11 - C2Q SD1 UPPER PB DRIVER ENABLE 016
P07 - C2Q SD1 LOWER PB DRIVER ENABLE 017
P05 - C2Q SD2 UPPER PB SELECTED ---- 018
M05 - C2Q SD2 LOWER PB SELECTED ---- 019
H07 - C2Q SD2 UPPER PB DRIVER ENABLE 020
H11 - C2Q SD2 LOWER PB DRIVER ENABLE 021
P04 - C2Q PB SEND/ECC RECEIVE DATA - 022
G04 - C2Q SEND SDB DATA ------------ 023
J05 - C2Q RECEIVE SDB DATA --------- 024
J04 - C2Q FETCH CONTROL ENABLE ----- 025
J06 - C2Q PB RECEIVE/ECC SEND DAT E1 026
G13 - C2Q PB RECEIVE/ECC SEND DAT E2 027
U06 - C2Q STORE / + FETCH ---------- 028
P06 + C2Q OSCILLATOR JUMPER -------- 029
U09 + C2Q STG PRIORITY CLOCK JUMPER 030
B12 - C2Q CMR START CLOCK ---------- 031
P10 - C2Q CMR STOP CLOCK ----------- 032
U05 - C2Q STG CNTL SEL CHECK ------- 033
N02 - C2Q STG CNTL CLK CHECK ------- 034
G09 + C2Q SD1 UP INHIBIT OP COMPLETE 035
G10 + C2Q SD1 LO INHIBIT OP COMPLETE 036
T07 - C2Q LOAD INCREMENTED ADDR ---- 037
H04 - C2Q CLOCK SCHOONER ADDR ------ 038
T06 + C2Q SD2 UP INHIBIT OP COMPLETE 039
H08 + C2Q SD2 LO INHIBIT OP COMPLETE 040
S13 - C2Q EXPANDED STORAGE INSTALLED 041
T02 - C2Q CARD SELECT TIMING ------- 042
J07 - C2Q REFRESH TIMING ----------- 043
N12 - C2Q CLOCK REFRESH COUNTER L2 - 044
H03 - C2Q SAMPLE CS/WORD PARITY ---- 045
N08 - C2Q SAMPLE ADDRESS IN PARITY - 046
C05 - C2Q SG1 REFRESH -------------- 047
B08 - C2Q SG1 READ ----------------- 048
B11 - C2Q SG1 WRITE ---------------- 049
D07 - C2Q SG1 CS SELECT ------------ 050
C11 - C2Q SG1 POWER ON RESET ------- 051
= * - C2Q SG1 DATA GATE (A-B) ====== 052
C09 - C2Q SG1 RESET REFRESH ERROR -- 053
D10 - C2Q SG1 COMMAND PARITY ------- 054
P12 - C2Q SG2 REFRESH -------------- 055
M12 - C2Q SG2 READ ----------------- 056
H05 - C2Q SG2 WRITE ---------------- 057
B06 - C2Q SG2 CS SELECT ------------ 058
B09 - C2Q SG2 POWER ON RESET ------- 059
= * - C2Q SG2 DATA GATE (A-B) ====== 060
C06 - C2Q SG2 RESET REFRESH ERROR -- 061
H06 - C2Q SG2 COMMAND PARITY ------- 062
= * - C2Q SG1 FETCH ENABLE (A-B) === 063
D09 - C2Q SG1 STORE ENABLE --------- 064
= * - C2Q SG1 SAMPLE CLOCK (A-B) === 065
= * - C2Q SG2 FETCH ENABLE (A-B) === 066
D06 - C2Q SG2 STORE ENABLE --------- 067
= * - C2Q SG2 LOAD REG (A-B) ====== 068
= * - C2Q SG2 SAMPLE CLOCK (A-B) === 069
= * - C2Q SG1 LOAD REG (A-B) ======= 070
B13 - C2Q CLOCK DG B SAR REGS ------ 071

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- PBD SD1 UPPER RQST STG CYCLE		
	Q2S08	JQ210-L003
	(D2U05)	JD200-R011
L004		
- PBE SD1 LOWER RQST STG CYCLE		
	Q2U04	JQ210-L004
	(E2U05)	JE200-R011
L005		
- PBD SD1 UP DATA GT REQD 0		
	Q2S07	JQ210-L005
	(D2M12)	JD200-R015
L005		
- PBD SD1 UP DATA GT REQD 1		
	Q2D12	JQ210-L005
	(D2M13)	JD200-R015
L005		
- PBD SD1 UP DATA GT REQD 2		
	Q2N11	JQ210-L005
	(D2P13)	JD200-R015
L006		
- PBE SD1 LO DATA GT REQD 0		
	Q2U07	JQ210-L006
	(E2M12)	JE200-R015
L006		
- PBE SD1 LO DATA GT REQD 1		
	Q2M08	JQ210-L006
	(E2M13)	JE200-R015
L006		
- PBE SD1 LO DATA GT REQD 2		
	Q2S06	JQ210-L006
	(E2P13)	JE200-R015
L007		
- PBG SD2 UPPER RQST STG CYCLE		
	Q2T05	JQ210-L007
	(G2U05)	JG200-R011
L008		
- PBH SD2 LOWER RQST STG CYCLE		
	Q2T03	JQ210-L008
	(H2U05)	JH200-R011
L009		
- PBG SD2 UP DATA GT REQD 0		
	Q2T08	JQ210-L009
	(G2M12)	JG200-R015
L009		
- PBG SD2 UP DATA GT REQD 1		
	Q2N07	JQ210-L009
	(G2M13)	JG200-R015
L009		
- PBG SD2 UP DATA GT REQD 2		
	Q2J11	JQ210-L009
	(G2P13)	JG200-R015

LINE/SIGNAL	PIN	SHEET/LINE
L010		
- PBH SD2 LO DATA GT REQD 0		
	Q2S02	JQ210-L010
	(H2M12)	JH200-R015
L010		
- PBH SD2 LO DATA GT REQD 1		
	Q2S05	JQ210-L010
	(H2M13)	JH200-R015
L010		
- PBH SD2 LO DATA GT REQD 2		
	Q2J12	JQ210-L010
	(H2P13)	JH200-R015
L011		
+ C2Q OSCILLATOR JUMPER		
	Q2N06	JQ210-L011
	(Q2P06)	JQ210-R029
L012		
+ C2Q STG PRIORITY CLOCK JUMPER		
	Q2T10	JQ210-L012
	(Q2U09)	JQ210-R030
L013		
- C1P DEGATE CACHE OSC		
	Q2S03	JQ210-L013
	(P2B12)	JP200-R023
L014		
- C1P ECC TST LOOP WRITE TO READ		
	Q2S04	JQ210-L014
	(P2B13)	JP200-R019
	J2D04	JJ200-L004
	K2D02	JK200-L005
L015		
- C1P CACHE TST LOOP WRITE/READ		
	Q2T04	JQ210-L015
	(P2C13)	JP200-R020
L016		
- C1P FORCE DR CLK A ERROR		
	Q2D13	JQ210-L016
	(P2G10)	JP200-R021
L017		
- C1P FORCE DR CLK B ERROR		
	Q2G03	JQ210-L017
	(P2H11)	JP200-R022
L018		
- C1P FORCE STG SELECT ERROR		
	Q2P11	JQ210-L018
	(P2J06)	JP200-R024
L019		
- C1P CONTROL BD POR/MACH RESET		
	Q2U10	JQ210-L019
	(P2C06)	JP200-R030
	J2M12	JJ200-L006
	K2U02	JK200-L007
	L2J04	JL200-L011
	R2P06	JR200-L017
	S2P06	JS200-L017
	T2M04	JT210-L008

LINE/SIGNAL	PIN	SHEET/LINE
L020		
- C1P POWER ON RESET		
	Q2M02	JQ210-L020
	(P2C05)	JP200-R029
L021		
- C1P FORCE DATA/REF COMMAND CHK		
	Q2T13	JQ210-L021
	(P2M10)	JP200-R033
L022		
- SAR SD1 UPPER RUN/STORE DATA		
	Q2H10	JQ210-L022
	(R2U06)	JR200-R006
	D2J04	JD200-L013
L023		
- SAR SD1 LOWER RUN/STORE DATA		
	Q2J10	JQ210-L023
	(R2M09)	JR200-R007
	E2J04	JE200-L013
L024		
- SAR SD1 UPPER RUN/FETCH DATA		
	Q2M03	JQ210-L024
	(R2G05)	JR200-R008
	D2J06	JD200-L014
L025		
- SAR SD1 LOWER RUN/FETCH DATA		
	Q2G12	JQ210-L025
	(R2M11)	JR200-R009
	E2J06	JE200-L014
L026		
- SAR SD1 UPPER/COMMON CHECK		
	Q2P02	JQ210-L026
	(R2M10)	JR200-R016
L027		
- SAR SD1 LOWER/COMMON CHECK		
	Q2C13	JQ210-L027
	(R2M05)	JR200-R017
L028		
- SAS SD2 UPPER RUN/STORE DATA		
	Q2J09	JQ210-L028
	(S2U06)	JS200-R006
	G2J04	JG200-L013
L029		
- SAS SD2 LOWER RUN/STORE DATA		
	Q2H09	JQ210-L029
	(S2M09)	JS200-R007
	H2J04	JH200-L013
L030		
- SAS SD2 UPPER RUN/FETCH DATA		
	Q2G07	JQ210-L030
	(S2G05)	JS200-R008
	G2J06	JG200-L014
L031		
- SAS SD2 LOWER RUN/FETCH DATA		
	Q2G08	JQ210-L031
	(S2M11)	JS200-R009
	H2J06	JH200-L014

LINE/SIGNAL	PIN	SHEET/LINE
L032		
- SAS SD2 UPPER/COMMON CHECK		
	Q2M13	JQ210-L032
	(S2M10)	JS200-R016
L033		
- SAS SD2 LOWER/COMMON CHECK		
	Q2J13	JQ210-L033
	(S2M05)	JS200-R017
L034		
- SAS SD2 CONTINUE ON ERROR		
	Q2N03	JQ210-L034
	(S2G03)	JS200-R018
L035		
- DAT ADDRESS BUS BIT 2		
	Q2B10	JQ210-L035
	(T2D06)	JT210-R017
L036		
- DAT REFRESH ADDR BUS BIT 9		
	Q2N09	JQ210-L036
	(T2U13)	JT210-R016
L037		
- DAT SG1 DATA GT A SAR 0		
	Q2N05	JQ210-L037
	(T2J11)	JT210-R008
1B-B2	K2B09	MK210-L009
1B-B2	L2B09	ML210-L009
1B-A1	*R1E11*	
1B-B2	*K1A11*	
L037		
- DAT SG1 DATA GT A SAR 1		
	Q2M04	JQ210-L037
	(T2G11)	JT210-R008
1B-B2	K2B10	MK210-L009
1B-B2	L2B10	ML210-L009
1B-A1	*S1A11*	
1B-B2	*K1B11*	
L037		
- DAT SG1 DATA GT A SAR 2		
	Q2H12	JQ210-L037
	(T2P02)	JT210-R008
1B-B2	K2D09	MK210-L009
1B-B2	L2D09	ML210-L009
1B-A1	*R1E13*	
1B-B2	*K1A13*	
L038		
- SAR SD1 CONTINUE ON ERROR		
	Q2N04	JQ210-L038
	(R2G03)	JR200-R018
R003		
- C2Q PHASE CLOCK 1		
	(Q2H02)	JQ210-R003
	D2G04	JD200-L005
	E2G04	JE200-L005
	G2G04	JG200-L005
	H2G04	JH200-L005
	L2U04	JL200-L023

LINE/SIGNAL	PIN	SHEET/LINE
R004		
- C2Q PHASE CLOCK 2		
	(Q2P09)	JQ210-R004
	D2G03	JD200-L006
	E2G03	JE200-L006
	G2G03	JG200-L006
	H2G03	JH200-L006
	L2P09	JL200-L021
R005		
- C2Q PHASE CLOCK 1.1		
	(Q2G02)	JQ210-R005
	D2G05	JD200-L007
	E2G05	JE200-L007
	G2G05	JG200-L007
	H2G05	JH200-L007
	L2M09	JL200-L024
R006		
- C2Q PHASE CLOCK 1.2		
	(Q2H13)	JQ210-R006
	D2J05	JD200-L008
	E2J05	JE200-L008
	G2J05	JG200-L008
	H2J05	JH200-L008
	L2M08	JL200-L025
R007		
- C2Q PHASE CLOCK 1.3		
	(Q2J02)	JQ210-R007
	D2G02	JD200-L009
	E2G02	JE200-L009
	G2G02	JG200-L009
	H2G02	JH200-L009
	L2U02	JL200-L026
R008		
- C2Q PHASE CLOCK 1.4		
	(Q2M10)	JQ210-R008
	D2B12	JD200-L010
	E2B12	JE200-L010
	G2B12	JG200-L010
	H2B12	JH200-L010
	L2M10	JL200-L027
R009		
- C2Q PHASE CLOCK 1.5		
	(Q2G05)	JQ210-R009
	D2B13	JD200-L011
	E2B13	JE200-L011
	G2B13	JG200-L011
	H2B13	JH200-L011
	L2P10	JL200-L033
R010		
- C2Q SD1 UPPER STORAGE CYCLE		
	(Q2P13)	JQ210-R010
	L2B04	JL200-L016
	P2T04	JP200-L011
	T2G04	JT210-L009

LINE/SIGNAL	PIN	SHEET/LINE
R011		
- C2Q SD1 LOWER STORAGE CYCLE		
	(Q2N13)	JQ210-R011
	L2B05	JL200-L019
	P2S03	JP200-L012
	T2J07	JT210-L010
R012		
- C2Q SD2 UPPER STORAGE CYCLE		
	(Q2M09)	JQ210-R012
	L2B02	JL200-L022
	P2T02	JP200-L013
	T2G07	JT210-L012
R013		
- C2Q SD2 LOWER STORAGE CYCLE		
	(Q2N10)	JQ210-R013
	L2D02	JL200-L020
	P2U02	JP200-L014
	T2J05	JT210-L013
R014		
- C2Q SD1 UPPER PB SELECTED		
	(Q2M07)	JQ210-R014
	D2G11	JD200-L012
R015		
- C2Q SD1 LOWER PB SELECTED		
	(Q2U02)	JQ210-R015
	E2G11	JE200-L012
R016		
- C2Q SD1 UPPER PB DRIVER ENABLE		
	(Q2M11)	JQ210-R016
	D2J13	JD200-L020
R017		
- C2Q SD1 LOWER PB DRIVER ENABLE		
	(Q2P07)	JQ210-R017
	E2J13	JE200-L020
R018		
- C2Q SD2 UPPER PB SELECTED		
	(Q2P05)	JQ210-R018
	G2G11	JG200-L012
R019		
- C2Q SD2 LOWER PB SELECTED		
	(Q2M05)	JQ210-R019
	H2G11	JH200-L012
R020		
- C2Q SD2 UPPER PB DRIVER ENABLE		
	(Q2H07)	JQ210-R020
	G2J13	JG200-L020
R021		
- C2Q SD2 LOWER PB DRIVER ENABLE		
	(Q2H11)	JQ210-R021
	H2J13	JH200-L020
R022		
- C2Q PB SEND/ECC RECEIVE DATA		
	(Q2P04)	JQ210-R022
	L2S08	JL200-L028

LINE/SIGNAL	PIN	SHEET/LINE
R023		
- C2Q SEND SDB DATA		
	(Q2G04)	JQ210-R023
	L2S07	JL200-L029
R024		
- C2Q RECEIVE SDB DATA		
	(Q2J05)	JQ210-R024
	L2U06	JL200-L030
R025		
- C2Q FETCH CONTROL ENABLE		
	(Q2J04)	JQ210-R025
	L2U09	JL200-L031
R026		
- C2Q PB RECEIVE/ECC SEND DAT E1		
	(Q2J06)	JQ210-R026
	J2U12	JJ200-L005
R027		
- C2Q PB RECEIVE/ECC SEND DAT E2		
	(Q2G13)	JQ210-R027
	K2U10	JK200-L006
R028		
- C2Q STORE / + FETCH		
	(Q2U06)	JQ210-R028
	L2S05	JL200-L032
	M2P05	JM200-L007
	N2P05	JN200-L007
R029		
+ C2Q OSCILLATOR JUMPER		
	(Q2P06)	JQ210-R029
	Q2N06	JQ210-L011
R030		
+ C2Q STG PRIORITY CLOCK JUMPER		
	(Q2U09)	JQ210-R030
	Q2T10	JQ210-L012
R031		
- C2Q CMR START CLOCK		
	(Q2B12)	JQ210-R031
	P2H10	JP200-L047
R032		
- C2Q CMR STOP CLOCK		
	(Q2P10)	JQ210-R032
	P2H09	JP200-L048
R033		
- C2Q STG CNTL SEL CHECK		
	(Q2U05)	JQ210-R033
	P2T05	JP200-L016
R034		
- C2Q STG CNTL CLK CHECK		
	(Q2N02)	JQ210-R034
	P2U05	JP200-L015
R035		
+ C2Q SD1 UP INHIBIT OP COMPLETE		
	(Q2G09)	JQ210-R035
	R2J06	JR200-L025

LINE/SIGNAL	PIN	SHEET/LINE
R036		
+ C2Q SD1 LO INHIBIT OP COMPLETE		
	(Q2G10)	JQ210-R036
	R2P12	JR200-L026
R037		
- C2Q LOAD INCREMENTED ADDR		
	(Q2T07)	JQ210-R037
	R2N04	JR200-L015
	S2N04	JS200-L015
R038		
- C2Q CLOCK SCHOONER ADDR		
	(Q2H04)	JQ210-R038
	R2U09	JR200-L016
	S2U09	JS200-L016
R039		
+ C2Q SD2 UP INHIBIT OP COMPLETE		
	(Q2T06)	JQ210-R039
	S2J06	JS200-L025
R040		
+ C2Q SD2 LO INHIBIT OP COMPLETE		
	(Q2H08)	JQ210-R040
	S2P12	JS200-L026
R041		
- C2Q EXPANDED STORAGE INSTALLED		
	(Q2S13)	JQ210-R041
1A-B3	N2Z02	GN200-L051
1A-B4	N2Z02	HN200-L051
1B-A1	*A4B02*	
1B-A1	*B4B02*	
R042		
- C2Q CARD SELECT TIMING		
	(Q2T02)	JQ210-R042
	T2P06	JT210-L005
R043		
- C2Q REFRESH TIMING		
	(Q2J07)	JQ210-R043
	T2M03	JT210-L004
R044		
- C2Q CLOCK REFRESH COUNTER L2		
	(Q2N12)	JQ210-R044
	T2M05	JT210-L006
R045		
- C2Q SAMPLE CS/WORD PARITY		
	(Q2H03)	JQ210-R045
	T2M12	JT210-L011
R046		
- C2Q SAMPLE ADDRESS IN PARITY		
	(Q2N08)	JQ210-R046
	T2M08	JT210-L003
R047		
- C2Q SG1 REFRESH		
	(Q2C05)	JQ210-R047
1B-B2	K2N03	MK210-L014
1B-B2	L2N03	ML210-L014
1B-A1	*T1D13*	
1B-B2	*M1B13*	

LINE/SIGNAL	PIN	SHEET/LINE
R048		
- C2Q SG1 READ		
	(Q2B08)	JQ210-R048
1B-B2	K2N05	MK210-L015
1B-B2	L2N05	ML210-L015
1B-A1	*T1E13*	
1B-B2	*M1C13*	
R049		
- C2Q SG1 WRITE		
	(Q2B11)	JQ210-R049
1B-B2	K2N09	MK210-L016
1B-B2	L2N09	ML210-L016
1B-A1	*U1A13*	
1B-B2	*M1D13*	
R050		
- C2Q SG1 CS SELECT		
	(Q2D07)	JQ210-R050
1B-B2	K2D12	MK210-L007
1B-B2	L2D12	ML210-L007
1B-A1	*U1A11*	
1B-B2	*M1D11*	
R051		
- C2Q SG1 POWER ON RESET		
	(Q2C11)	JQ210-R051
1B-B2	K2C13	MK210-L008
1B-B2	L2C13	ML210-L008
1B-A1	*R1D11*	
1B-B2	*J1E11*	
R052		
- C2Q SG1 DATA GATE A		
	(Q2D02)	JQ210-R052
1B-B2	K2D10	MK210-L010
1B-B2	L2D10	ML210-L010
1B-A1	*S1A13*	
1B-B2	*K1B13*	
R052		
- C2Q SG1 DATA GATE B		
	(Q2B03)	JQ210-R052
1B-B2	K2C10	MK210-L012
1B-B2	L2C10	ML210-L012
1B-A1	*T1B13*	
1B-B2	*L1E13*	
R053		
- C2Q SG1 RESET REFRESH ERROR		
	(Q2C09)	JQ210-R053
1B-B2	K2S11	MK210-L025
1B-B2	L2S11	ML210-L025
1B-A1	*V2D13*	
1B-B2	*K6B02*	
R054		
- C2Q SG1 COMMAND PARITY		
	(Q2D10)	JQ210-R054
1B-B2	K2C11	MK210-L026
1B-B2	L2C11	ML210-L026
1B-A1	*U1E11*	
1B-B2	*N1C11*	

LINE/SIGNAL	PIN	SHEET/LINE
R055		
- C2Q SG2 REFRESH		
	(Q2P12)	JQ210-R055
1B-A1	*T6D04*	
R056		
- C2Q SG2 READ		
	(Q2M12)	JQ210-R056
1B-A1	*T6E04*	
R057		
- C2Q SG2 WRITE		
	(Q2H05)	JQ210-R057
1B-A1	*U6A04*	
R058		
- C2Q SG2 CS SELECT		
	(Q2B06)	JQ210-R058
1B-A1	*U6A02*	
R059		
- C2Q SG2 POWER ON RESET		
	(Q2B09)	JQ210-R059
1B-A1	*R6D02*	
R060		
- C2Q SG2 DATA GATE A		
	(Q2C03)	JQ210-R060
1B-A1	*S6A04*	
R060		
- C2Q SG2 DATA GATE B		
	(Q2C07)	JQ210-R060
1B-A1	*T6B04*	
R061		
- C2Q SG2 RESET REFRESH ERROR		
	(Q2C06)	JQ210-R061
1B-A1	*V5D13*	
R062		
- C2Q SG2 COMMAND PARITY		
	(Q2H06)	JQ210-R062
1B-A1	*U6E02*	
R063		
- C2Q SG1 FETCH ENABLE A		
	(Q2B07)	JQ210-R063
1B-B2	A2H07	MA200-L009
1B-A1	*F1D11*	
1B-B2	*F1D11*	
R063		
- C2Q SG1 FETCH ENABLE B		
	(Q2C02)	JQ210-R063
1B-B2	V2H07	MV200-L010
1B-A1	*M1A11*	
1B-B2	*Q1B11*	
R064		
- C2Q SG1 STORE ENABLE		
	(Q2D09)	JQ210-R064
1B-B2	A2H10	MA200-L010
1B-A1	*F1E13*	
1B-B2	*F1E13*	

LINE/SIGNAL	PIN	SHEET/LINE
R065		
- C2Q SG1 SAMPLE CLOCK A		
	(Q2C10)	JQ210-R065
1B-B2	A2J12	MA200-L011
1B-A1	*L1E13*	
1B-B2	*Q1A13*	
R065		
- C2Q SG1 SAMPLE CLOCK B		
	(Q2B02)	JQ210-R065
1B-B2	V2J12	MV200-L012
1B-A1	*H1B11*	
1B-B2	*Q6A02*	
R066		
- C2Q SG2 FETCH ENABLE A		
	(Q2B04)	JQ210-R066
1B-A1	*F6D02*	
R066		
- C2Q SG2 FETCH ENABLE B		
	(Q2C04)	JQ210-R066
1B-A1	*M6A02*	
R067		
- C2Q SG2 STORE ENABLE		
	(Q2D06)	JQ210-R067
1B-A1	*F6E04*	
R068		
- C2Q SG2 LOAD REG A		
	(Q2D11)	JQ210-R068
1B-A1	*G6A04*	
R068		
- C2Q SG2 LOAD REG B		
	(Q2D05)	JQ210-R068
1B-A1	*L6D04*	
R069		
- C2Q SG2 SAMPLE CLOCK A		
	(Q2C12)	JQ210-R069
1B-A1	*L6E04*	
R069		
- C2Q SG2 SAMPLE CLOCK B		
	(Q2C08)	JQ210-R069
1B-A1	*H6B02*	
R070		
- C2Q SG1 LOAD REG A		
	(Q2D04)	JQ210-R070
1B-B2	A2H12	MA200-L012
1B-A1	*G1A13*	
1B-B2	*G1A13*	
R070		
- C2Q SG1 LOAD REG B		
	(Q2B05)	JQ210-R070
1B-B2	V2H12	MV200-L013
1B-A1	*L1D13*	
1B-B2	*P1E13*	
R071		
- C2Q CLOCK DG B SAR REGS		
	(Q2B13)	JQ210-R071
	T2P05	JT210-L007

```
003 - PCC SD1 C1/SA ADDRESS (0-7,P)  * =
004 - PCC SD1 C1/SA WRITE GATE ----- B03
005 - PCC SD1 C1/SA READ GATE ------ B06
006 - PCC SD1 C1/SA R/W CLK -------- G11
007 - PBD SD1 UPPER PORT CHECK ----- S08
008 - PBE SD1 LOWER PORT CHECK ----- J07
009 - PBD SD1 UPPER PC DECODE ACTIVE P04
010 - PBE SD1 LOWER PC DECODE ACTIVE M03
011 - PBD SD1 UP PC INTERFACE CHECK  U02
012 - PBE SD1 LO PC INTERFACE CHECK  S03
013 - PBD SD1 UPPER OP COMPLETE ---- J04
014 - PBE SD1 LOWER OP COMPLETE ---- P13
015 - C2Q LOAD INCREMENTED ADDR ---- M04
016 - C2Q CLOCK SCHOONER ADDR ------ U09
017 - C1P CONTROL BD POR/MACH RESET  P06
018 - C1P SD1 COMMON CHECK --------- J13
019 - C1P SD1 PORT CHECK UPPER ----- U07
020 - C1P SD1 PORT CHECK LOWER ----- G07
021 - C1P SD1 SA IR CHECK ---------- S04
022 - C1P SD1 COMMON CHECK RESET --- J12
023 - C1P SD1 SA DECODE ACTIVE ----- P02
024 - C1P SD1 SA GTS OWNER --------- P05
025 + C2Q SD1 UP INHIBIT OP COMPLETE J06
026 + C2Q SD1 LO INHIBIT OP COMPLETE P12
027 + CDN SD1 CHECK UPPER ---------- S02
028 + CDN SD1 CHECK LOWER ---------- M13
029 + CDN SD1 CHECK COMMON --------- M08
030 - CAM SD1 REG ADR DECODED ON SD  P09
031 - CDN SD1 DATA XFER COMPLETE UPR U04
032 - CDN SD1 DATA XFER COMPLETE LWR M12
033 - E3L SD1 PORT CHECK ----------- G02
034 - E3L SD1 U/L DECODE ACTIVE ---- M02
035 - E3L SD1 U/L PC INTERFACE CHECK U10
036 + SD1 CARD IDENTIFIER PIN ------ P10
037 - DAT CARD SELECT CHECK -------- Y29
038 - DAT STG ADDR PTY CHK --------- Y33
039 - DAT INPUT PARITY CHECK ------- Y28
040 - DAT REFRESH INCREMENTER CHECK  Y30
041 - DAT REFRESH ADDR PTY CHK ----- Y32
042 - DAT SD1 UPPER STG CYCLE ------ Y22
043 - DAT SD1 LOWER STG CYCLE ------ Y24
044 - DAT SD2 UPPER STG CYCLE ------ Y25
045 - DAT SD2 LOWER STG CYCLE ------ Y26
```

CMSA CARD

OVERVIEW

The CMSA (Storage Address) card provides storage array addressing for the storage cards.

PRIMARY FUNCTIONS

- Addresses up to 32 Mbytes of storage arrays.
- Steers and latches data operations and refresh related errors detected by the Storage Subsystem.

PRIMARY COMPONENTS

- Address bus drivers.
- Storage Address Registers (SAR's).
- Operation control registers.
- Control registers.
- Check registers.

ERROR CHECKING

- SA PC Upper/Lower IR Check (CSACK, bit 6).
  - This bit indicates a parity error on the indirect register address or data bus. It also indicates a control lines check.
- SA Multiple Address Decode Check (CSACK, bit 1).
  - This bit indicates that none or more than one functional island decodes on indirect register address during a non-shadowed write or read. It also indicates none or more than two functional island decodes on address during a shadowed write.
- Test and Set Check (CSACK, bit 0).
  - This bit indicates that both storage directors have their test and set obtained bit active at the same time.
- Storage Cycle Check (U/L SADPCK, bit 1).
  - This bit indicates that none or more than one storage cycles are active during store or fetch operations.
- SSAR Increment Check (U/L SADPCK, bit 0).
  - This bit indicates that a parity error occured in the parity predict circuitry or in the incrementer itself while incrementing ssars.
- Upper Port Check (CSTAT1, bit 0).
  - This bit indicates that an error was detected on the upper port by at least one of the functional islands during a storage opeation. This is an 'or' of the checks.
- Lower Port Check (CSTAT1, bit 1).
  - This bit indicates that an error was detected on the lower port by at least one of the functional islands during a storage opeation. This is an 'or' of the checks.
- Common Check (CSTAT1, bit 3).
  - This is an 'or' of checks associated with hardware such as the indirect register hardware and storage hardware.
- Control Board IR Summary Check (CSPRDIC, bit 4).
  - This is an 'or' of all of the indirect register errors for the control board and is sent to the storage directors.
- Summary Check
  - This is an 'or' of all storage operation errors such as upper and lower port check and common check. This will generate check 2.

```
= * - PCC SD1 C1/SA R/W DATA (0-7,P) 003
D07 - SAR SD1 PC READ ENABLE ------- 004
B02 - SAR SD1 PC DLYD READ CLOCK --- 005
U06 - SAR SD1 UPPER RUN/STORE DATA - 006
M09 - SAR SD1 LOWER RUN/STORE DATA - 007
G05 - SAR SD1 UPPER RUN/FETCH DATA - 008
M11 - SAR SD1 LOWER RUN/FETCH DATA - 009
G13 - SAR SD1 UPPER SRC INACTIVE --- 010
U11 - SAR SD1 LOWER SRC INACTIVE --- 011
J02 - SAR SD1 RUN UPPER ------------ 012
G09 - SAR SD1 RUN LOWER ------------ 013
J10 - SAR SD1 UPPER CHECK RESET ---- 014
G04 - SAR SD1 LOWER CHECK RESET ---- 015
M10 - SAR SD1 UPPER/COMMON CHECK --- 016
M05 - SAR SD1 LOWER/COMMON CHECK --- 017
G03 - SAR SD1 CONTINUE ON ERROR ---- 018
P11 + SAR SD1 SUMMARY CHECK DR ----- 019
J05 - SAR SD1 FORCE C1 DECODE ACTIVE 020
G10 + SAR SD1 CNTL BD IR CHECK ----- 021
= * - SAR SD1 UP DATA GT SSARS (0-2) 022
= * - SAR SD1 LO DATA GT SSARS (0-2) 023
= * - SA ADDRESS BUS (0-23,P0-P2) == 024
= * - SA DA FORCE BITS (0-3) ======= 025
W28 - SA SD1 TEST AND SET OBTAINED - 026
W29 - SA SD2 TEST AND SET OBTAINED - 027
```

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- PCC SD1 C1/SA ADDRESS 0		
	R2B04	JR200-L003
	(C2B06)	JC200-R006
	P2B05	JP200-L003
L003		
- PCC SD1 C1/SA ADDRESS 1		
	R2D11	JR200-L003
	(C2D07)	JC200-R006
	P2D11	JP200-L003
L003		
- PCC SD1 C1/SA ADDRESS 2		
	R2D02	JR200-L003
	(C2D05)	JC200-R006
	P2C10	JP200-L003
L003		
- PCC SD1 C1/SA ADDRESS 3		
	R2D05	JR200-L003
	(C2D06)	JC200-R006
	P2D05	JP200-L003
L003		
- PCC SD1 C1/SA ADDRESS 4		
	R2B10	JR200-L003
	(C2B11)	JC200-R006
	P2D10	JP200-L003
L003		
- PCC SD1 C1/SA ADDRESS 5		
	R2D09	JR200-L003
	(C2D12)	JC200-R006
	P2B09	JP200-L003
L003		
- PCC SD1 C1/SA ADDRESS 6		
	R2D10	JR200-L003
	(C2D10)	JC200-R006
	P2B11	JP200-L003
L003		
- PCC SD1 C1/SA ADDRESS 7		
	R2B09	JR200-L003
	(C2B10)	JC200-R006
	P2D09	JP200-L003
L003		
- PCC SD1 C1/SA ADDRESS P		
	R2B05	JR200-L003
	(C2D02)	JC200-R006
	P2C04	JP200-L003
L004		
- PCC SD1 C1/SA WRITE GATE		
	R2B03	JR200-L004
	(C2M03)	JC200-R009
	P2B02	JP200-L006
L005		
- PCC SD1 C1/SA READ GATE		
	R2B06	JR200-L005
	(C2P02)	JC200-R008
	P2D06	JP200-L005
L006		
- PCC SD1 C1/SA R/W CLK		
	R2G11	JR200-L006
	(C2G11)	JC200-R010
	P2D02	JP200-L004
L007		
- PBD SD1 UPPER PORT CHECK		
	R2S08	JR200-L007
	(D2M09)	JD200-R012
L008		
- PBE SD1 LOWER PORT CHECK		
	R2J07	JR200-L008
	(E2M09)	JE200-R012
L009		
- PBD SD1 UPPER PC DECODE ACTIVE		
	R2P04	JR200-L009
	(D2J02)	JD200-R013
L010		
- PBE SD1 LOWER PC DECODE ACTIVE		
	R2M03	JR200-L010
	(E2J02)	JE200-R013
L011		
- PBD SD1 UP PC INTERFACE CHECK		
	R2U02	JR200-L011
	(D2G07)	JD200-R014
L012		
- PBE SD1 LO PC INTERFACE CHECK		
	R2S03	JR200-L012
	(E2G07)	JE200-R014
L013		
- PBD SD1 UPPER OP COMPLETE		
	R2J04	JR200-L013
	(D2U02)	JD200-R010
L014		
- PBE SD1 LOWER OP COMPLETE		
	R2P13	JR200-L014
	(E2U02)	JE200-R010
L015		
- C2Q LOAD INCREMENTED ADDR		
	R2M04	JR200-L015
	(Q2T07)	JQ210-R037
	S2M04	JS200-L015
L016		
- C2Q CLOCK SCHOONER ADDR		
	R2U09	JR200-L016
	(Q2N04)	JQ210-R038
	S2U09	JS200-L016
L017		
- C1P CONTROL BD POR/MACH RESET		
	R2P06	JR200-L017
	(P2C06)	JP200-R030
	J2M12	JJ200-L006
	K2U02	JK200-L007
	L2J04	JL200-L011
	Q2U10	JQ210-L019
	S2P06	JS200-L017
	T2M04	JT210-L008
L018		
- C1P SD1 COMMON CHECK		
	R2J13	JR200-L018
	(P2B07)	JP200-R009
L019		
- C1P SD1 PORT CHECK UPPER		
	R2U07	JR200-L019
	(P2C07)	JP200-R007
L020		
- C1P SD1 PORT CHECK LOWER		
	R2S07	JR200-L020
	(P2D07)	JP200-R008
L021		
- C1P SD1 SA IR CHECK		
	R2S04	JR200-L021
	(P2B03)	JP200-R006
L022		
- C1P SD1 COMMON CHECK RESET		
	R2J12	JR200-L022
	(P2H02)	JP200-R027
L023		
- C1P SD1 SA DECODE ACTIVE		
	R2P02	JR200-L023
	(P2D04)	JP200-R005
L024		
- C1P SD1 SA GTS OWNER		
	R2P05	JR200-L024
	(P2J05)	JP200-R025
L025		
+ C2Q SD1 UP INHIBIT OP COMPLETE		
	R2J06	JR200-L025
	(Q2G09)	JQ210-R035
L026		
+ C2Q SD1 LO INHIBIT OP COMPLETE		
	R2P12	JR200-L026
	(Q2G10)	JQ210-R036
L027		
+ CDN SD1 CHECK UPPER		
	R2S02	JR200-L027
1A-B4	(N2S02)	HN200-R051
1B-A1	*A5D12*	
1A-B4	*P6B02*	
L028		
+ CDN SD1 CHECK LOWER		
	R2M13	JR200-L028
1A-B4	(N2Z32)	HN200-R052
1B-A1	*A4D12*	
L029		
+ CDN SD1 CHECK COMMON		
	R2M08	JR200-L029
1A-B4	(N2X25)	HN200-R050
1B-A1	*A3D05*	
L030		
- CAM SD1 REG ADR DECODED ON SD		
	R2P09	JR200-L030
1A-B4	(M2G09)	HM200-R030
1B-A1	*A5D02*	
1A-B4	*M6B02*	
L031		
- CDN SD1 DATA XFER COMPLETE UPR		
	R2U04	JR200-L031
1A-B4	(N2X11)	HN200-R059
1B-A1	*A3B11*	
L032		
- CDN SD1 DATA XFER COMPLETE LWR		
	R2M12	JR200-L032
1A-B4	(N2Z06)	HN200-R063
1B-A1	*A4B06*	
L033		
- E3L SD1 PORT CHECK		
	R2G02	JR200-L033
	(L2J11)	JL200-R009
L034		
- E3L SD1 U/L DECODE ACTIVE		
	R2M02	JR200-L034
	(L2G13)	JL200-R005
L035		
- E3L SD1 U/L PC INTERFACE CHECK		
	R2U10	JR200-L035
	(L2G04)	JL200-R007
L036		
+ SD1 CARD IDENTIFIER PIN		
	R2P10	JR200-L036
L037		
- DAT CARD SELECT CHECK		
	R2Y29	JR200-L037
	(T2Y29)	JT210-R033
	S2Y29	JS200-L037
L038		
- DAT STG ADDR PTY CHK		
	R2Y33	JR200-L038
	(T2Y33)	JT210-R036
	S2Y33	JS200-L038
L039		
- DAT INPUT PARITY CHECK		
	R2Y28	JR200-L039
	(T2Y28)	JT210-R032
	S2Y28	JS200-L039
L040		
- DAT REFRESH INCREMENTER CHECK		
	R2Y30	JR200-L040
	(T2Y30)	JT210-R034
	S2Y30	JS200-L040
L041		
- DAT REFRESH ADDR PTY CHK		
	R2Y32	JR200-L041
	(T2Y32)	JT210-R035
	S2Y32	JS200-L041
L042		
- DAT SD1 UPPER STG CYCLE		
	R2Y22	JR200-L042
	(T2Y22)	JT210-R028
	S2Y22	JS200-L042
L043		
- DAT SD1 LOWER STG CYCLE		
	R2Y24	JR200-L043
	(T2Y24)	JT210-R029
	S2Y24	JS200-L043
L044		
- DAT SD2 UPPER STG CYCLE		
	R2Y25	JR200-L044
	(T2Y25)	JT210-R030
	S2Y25	JS200-L044
L045		
- DAT SD2 LOWER STG CYCLE		
	R2Y26	JR200-L045
	(T2Y26)	JT210-R031
	S2Y26	JS200-L045
R003		
- PCC SD1 C1/SA R/W DATA 0		
	(R2D04)	JR200-R003
	(C2J10)	JC200-R007
	(P2H05)	JP200-R010
R003		
- PCC SD1 C1/SA R/W DATA 1		
	(R2B07)	JR200-R003
	(C2G10)	JC200-R007
	(P2H03)	JP200-R010
R003		
- PCC SD1 C1/SA R/W DATA 2		
	(R2B08)	JR200-R003
	(C2G09)	JC200-R007
	(P2J10)	JP200-R010
R003		
- PCC SD1 C1/SA R/W DATA 3		
	(R2B11)	JR200-R003
	(C2J09)	JC200-R007
	(P2G05)	JP200-R010
R003		
- PCC SD1 C1/SA R/W DATA 4		
	(R2D12)	JR200-R003
	(C2G07)	JC200-R007
	(P2G11)	JP200-R010
R003		
- PCC SD1 C1/SA R/W DATA 5		
	(R2B12)	JR200-R003
	(C2G05)	JC200-R007
	(P2H04)	JP200-R010
R003		
- PCC SD1 C1/SA R/W DATA 6		
	(R2D13)	JR200-R003
	(C2J05)	JC200-R007
	(P2G04)	JP200-R010
R003		
- PCC SD1 C1/SA R/W DATA 7		
	(R2B13)	JR200-R003
	(C2G04)	JC200-R007
	(P2C11)	JP200-R010
R003		
- PCC SD1 C1/SA R/W DATA P		
	(R2D06)	JR200-R003
	(C2G02)	JC200-R007
	(P2G03)	JP200-R010
R004		
- SAR SD1 PC READ ENABLE		
	(R2D07)	JR200-R004
	C2J13	JC200-L015
R005		
- SAR SD1 PC DLYD READ CLOCK		
	(R2B02)	JR200-R005
	C2G13	JC200-L016
R006		
- SAR SD1 UPPER RUN/STORE DATA		
	(R2U06)	JR200-R006
	D2J04	JD200-L013
	Q2H10	JQ210-L022
R007		
- SAR SD1 LOWER RUN/STORE DATA		
	(R2M09)	JR200-R007
	E2J04	JE200-L013
	Q2J10	JQ210-L023
R008		
- SAR SD1 UPPER RUN/FETCH DATA		
	(R2G05)	JR200-R008
	D2J06	JD200-L014
	Q2M03	JQ210-L024
R009		
- SAR SD1 LOWER RUN/FETCH DATA		
	(R2M11)	JR200-R009
	E2J06	JE200-L014
	Q2G12	JQ210-L025
R010		
- SAR SD1 UPPER SRC INACTIVE		
	(R2G13)	JR200-R010
	D2M04	JD200-L016

LINE/SIGNAL	PIN	SHEET/LINE
R011		
- SAR SD1 LOWER SRC INACTIVE		
	(R2U11)	JR200-R011
	E2M04	JE200-L016
R012		
- SAR SD1 RUN UPPER		
	(R2J02)	JR200-R012
	P2D12	JP200-L043
R013		
- SAR SD1 RUN LOWER		
	(R2G09)	JR200-R013
	P2H07	JP200-L044
R014		
- SAR SD1 UPPER CHECK RESET		
	(R2J10)	JR200-R014
	D2P05	JD200-L015
	L2B07	JL200-L012
	P2J09	JP200-L035
R015		
- SAR SD1 LOWER CHECK RESET		
	(R2G04)	JR200-R015
	E2P05	JE200-L015
	L2B08	JL200-L013
	P2G07	JP200-L036
R016		
- SAR SD1 UPPER/COMMON CHECK		
	(R2M10)	JR200-R016
	Q2P02	JQ210-L026
R017		
- SAR SD1 LOWER/COMMON CHECK		
	(R2M05)	JR200-R017
	Q2C13	JQ210-L027
R018		
- SAR SD1 CONTINUE ON ERROR		
	(R2G03)	JR200-R018
	Q2N04	JQ210-L038
R019		
+ SAR SD1 SUMMARY CHECK DR		
	(R2P11)	JR200-R019
1A-B4	N2X26	HN200-L040
1B-A1	*A3D06*	
R020		
- SAR SD1 FORCE C1 DECODE ACTIVE		
	(R2J05)	JR200-R020
	P2C03	JP200-L039
R021		
+ SAR SD1 CNTL BD IR CHECK		
	(R2G10)	JR200-R021
1A-B4	N2X24	HN200-L039
1B-A1	*A3D04*	
R022		
- SAR SD1 UP DATA GT SSARS 0		
	(R2M07)	JR200-R022
	D2P02	JD200-L019
R022		
- SAR SD1 UP DATA GT SSARS 1		
	(R2U05)	JR200-R022
	D2G10	JD200-L019
R022		
- SAR SD1 UP DATA GT SSARS 2		
	(R2P07)	JR200-R022
	D2G13	JD200-L019
R023		
- SAR SD1 LO DATA GT SSARS 0		
	(R2J11)	JR200-R023
	E2P02	JE200-L019
R023		
- SAR SD1 LO DATA GT SSARS 1		
	(R2G08)	JR200-R023
	E2G10	JE200-L019
R023		
- SAR SD1 LO DATA GT SSARS 2		
	(R2J09)	JR200-R023
	E2G13	JE200-L019
R024		
- SA ADDRESS BUS 0		
	(R2W02)	JR200-R024
	(S2W02)	JS200-R024
	T2W02	JT210-L014
R024		
- SA ADDRESS BUS 1		
	(R2W03)	JR200-R024
	(S2W03)	JS200-R024
	T2W03	JT210-L014
R024		
- SA ADDRESS BUS 2		
	(R2W05)	JR200-R024
	(S2W05)	JS200-R024
	T2W05	JT210-L014
R024		
- SA ADDRESS BUS 3		
	(R2W06)	JR200-R024
	(S2W06)	JS200-R024
	T2W06	JT210-L014
R024		
- SA ADDRESS BUS 4		
	(R2W07)	JR200-R024
	(S2W07)	JS200-R024
	T2W07	JT210-L014
R024		
- SA ADDRESS BUS 5		
	(R2W09)	JR200-R024
	(S2W09)	JS200-R024
	T2W09	JT210-L014
R024		
- SA ADDRESS BUS 6		
	(R2W10)	JR200-R024
	(S2W10)	JS200-R024
	T2W10	JT210-L014
R024		
- SA ADDRESS BUS 7		
	(R2W11)	JR200-R024
	(S2W11)	JS200-R024
	T2W11	JT210-L014
R024		
- SA ADDRESS BUS 8		
	(R2X02)	JR200-R024
	(S2X02)	JS200-R024
	T2X02	JT210-L014
R024		
- SA ADDRESS BUS 9		
	(R2X03)	JR200-R024
	(S2X03)	JS200-R024
	T2X03	JT210-L014
R024		
- SA ADDRESS BUS 10		
	(R2X05)	JR200-R024
	(S2X05)	JS200-R024
	T2X05	JT210-L014
R024		
- SA ADDRESS BUS 11		
	(R2X06)	JR200-R024
	(S2X06)	JS200-R024
	T2X06	JT210-L014
R024		
- SA ADDRESS BUS 12		
	(R2X07)	JR200-R024
	(S2X07)	JS200-R024
	T2X07	JT210-L014
R024		
- SA ADDRESS BUS 13		
	(R2X09)	JR200-R024
	(S2X09)	JS200-R024
	T2X09	JT210-L014
R024		
- SA ADDRESS BUS 14		
	(R2X10)	JR200-R024
	(S2X10)	JS200-R024
	T2X10	JT210-L014
R024		
- SA ADDRESS BUS 15		
	(R2X11)	JR200-R024
	(S2X11)	JS200-R024
	T2X11	JT210-L014
R024		
- SA ADDRESS BUS 16		
	(R2Y02)	JR200-R024
	(S2Y02)	JS200-R024
	T2Y02	JT210-L014
R024		
- SA ADDRESS BUS 17		
	(R2Y03)	JR200-R024
	(S2Y03)	JS200-R024
	T2Y03	JT210-L014
R024		
- SA ADDRESS BUS 18		
	(R2Y05)	JR200-R024
	(S2Y05)	JS200-R024
	T2Y05	JT210-L014
R024		
- SA ADDRESS BUS 19		
	(R2Y06)	JR200-R024
	(S2Y06)	JS200-R024
	T2Y06	JT210-L014
R024		
- SA ADDRESS BUS 20		
	(R2Y07)	JR200-R024
	(S2Y07)	JS200-R024
	T2Y07	JT210-L014
R024		
- SA ADDRESS BUS 21		
	(R2Y09)	JR200-R024
	(S2Y09)	JS200-R024
	T2Y09	JT210-L014
R024		
- SA ADDRESS BUS 22		
	(R2Y10)	JR200-R024
	(S2Y10)	JS200-R024
	T2Y10	JT210-L014
R024		
- SA ADDRESS BUS 23		
	(R2Y11)	JR200-R024
	(S2Y11)	JS200-R024
	T2Y11	JT210-L014
R024		
- SA ADDRESS BUS P0		
	(R2W13)	JR200-R024
	(S2W13)	JS200-R024
	T2W13	JT210-L014
R024		
- SA ADDRESS BUS P1		
	(R2X13)	JR200-R024
	(S2X13)	JS200-R024
	T2X13	JT210-L014
R024		
- SA ADDRESS BUS P2		
	(R2Y13)	JR200-R024
	(S2Y13)	JS200-R024
	T2Y13	JT210-L014
R025		
- SA DA FORCE BITS 0		
	(R2W22)	JR200-R025
	(S2W22)	JS200-R025
	T2W22	JT210-L015
R025		
- SA DA FORCE BITS 1		
	(R2W24)	JR200-R025
	(S2W24)	JS200-R025
	T2W24	JT210-L015
R025		
- SA DA FORCE BITS 2		
	(R2W25)	JR200-R025
	(S2W25)	JS200-R025
	T2W25	JT210-L015
R025		
- SA DA FORCE BITS 3		
	(R2W26)	JR200-R025
	(S2W26)	JS200-R025
	T2W26	JT210-L015
R026		
- SA SD1 TEST AND SET OBTAINED		
	(R2W28)	JR200-R026
	(S2W28)	JS200-R026
R027		
- SA SD2 TEST AND SET OBTAINED		
	(R2W29)	JR200-R027
	(S2W29)	JS200-R027

SEQNO	PGE OF	FICHE CD	FRM	PAGEID	TYP	CARD NAME	MODEL	FEATURE	VERSION	CARD LOC
JA020	1	1	A01	AA000	BLI	N/A	N/A	N/A	N/A	N/A
JA020	2	1	A03	JC200	CRD	CMPC	2X	ALL	EXPANDED STORAGE	1B-A1C2
JA020	3	1	A05	JC200	XRL	CMPC	2X	ALL	EXPANDED STORAGE	1B-A1C2
JA020	5	1	A09	JD200	CRD	CMPB	2X	ALL	EXPANDED STORAGE	1B-A1D2
JA020	6	1	A11	JD200	XRL	CMPB	2X	ALL	EXPANDED STORAGE	1B-A1D2
JA020	8	1	A15	JE200	CRD	CMPB	2X	ALL	EXPANDED STORAGE	1B-A1E2
JA020	9	1	A17	JE200	XRL	CMPB	2X	ALL	EXPANDED STORAGE	1B-A1E2
JA020	11	1	B03	JF200	CRD	CMPC	2X	ALL	EXPANDED STORAGE	1B-A1F2
JA020	12	1	B05	JF200	XRL	CMPC	2X	ALL	EXPANDED STORAGE	1B-A1F2
JA020	14	1	B09	JG200	CRD	CMPB	2X	ALL	EXPANDED STORAGE	1B-A1G2
JA020	15	1	B11	JG200	XRL	CMPB	2X	ALL	EXPANDED STORAGE	1B-A1G2
JA020	17	1	B15	JH200	CRD	CMPB	2X	ALL	EXPANDED STORAGE	1B-A1H2
JA020	18	1	B17	JH200	XRL	CMPB	2X	ALL	EXPANDED STORAGE	1B-A1H2
JA020	20	1	C03	JJ200	CRD	CME1	2X	ALL	EXPANDED STORAGE	1B-A1J2
JA020	21	1	C05	JJ200	XRL	CME1	2X	ALL	EXPANDED STORAGE	1B-A1J2
JA020	23	1	C09	JK200	CRD	CME2	2X	ALL	EXPANDED STORAGE	1B-A1K2
JA020	24	1	C11	JK200	XRL	CME2	2X	ALL	EXPANDED STORAGE	1B-A1K2
JA020	27	1	C17	JL200	CRD	CME3	2X	ALL	EXPANDED STORAGE	1B-A1L2
JA020	28	1	D01	JL200	XRL	CME3	2X	ALL	EXPANDED STORAGE	1B-A1L2
JA020	31	1	D07	JM200	CRD	CMDDM	2X	ALL	EXPANDED STORAGE	1B-A1M2
JA020	32	1	D09	JM200	XRL	CMDDM	2X	ALL	EXPANDED STORAGE	1B-A1M2
JA020	34	1	D13	JN200	CRD	CMDDN	2X	ALL	EXPANDED STORAGE	1B-A1N2
JA020	35	1	D15	JN200	XRL	CMDDN	2X	ALL	EXPANDED STORAGE	1B-A1N2
JA020	37	1	E01	JP200	CRD	CMC1	2X	ALL	EXPANDED STORAGE	1B-A1P2
JA020	38	1	E03	JP200	XRL	CMC1	2X	ALL	EXPANDED STORAGE	1B-A1P2
JA020	40	1	E07	JQ210	CRD	CLC2	2X	ALL	EXPANDED STORAGE	1B-A1Q2
JA020	41	1	E09	JQ210	XRL	CLC2	2X	ALL	EXPANDED STORAGE	1B-A1Q2
JA020	43	1	E13	JR200	CRD	CMSA	2X	ALL	EXPANDED STORAGE	1B-A1R2
JA020	44	1	E15	JR200	XRL	CMSA	2X	ALL	EXPANDED STORAGE	1B-A1R2
JA020	46	2	A01	AA000	BLI	N/A	N/A	N/A	N/A	N/A
JA020	47	2	A03	JS200	CRD	CMSA	2X	ALL	EXPANDED STORAGE	1B-A1S2
JA020	48	2	A05	JS200	XRL	CMSA	2X	ALL	EXPANDED STORAGE	1B-A1S2
JA020	50	2	A09	JT210	CRD	CLDA	2X	ALL	EXPANDED STORAGE	1B-A1T2
JA020	51	2	A11	JT210	XRL	CLDA	2X	ALL	EXPANDED STORAGE	1B-A1T2

GLOSSARY OF ABBREVIATIONS USED

ABBR.	EXPLANATION
ASDM	AUXILIARY STORAGE DIRECTOR MICROCONTROLLER
BLI	BOARD LOGIC INDEX
CD	CARD (MICROFICHE)
CRD	CARD REFERENCE DIAGRAM
EW	ELECTRONIC WRAP
FRM	FRAME (MICROFICHE)
HDSCS	HIGH DENSITY STATIC CONTROL STORAGE
IR	INDIRECT REGISTER
MDM	VOLUME R30
PA	PORT ADAPTER (CMCD CARD)
SAR	STORAGE ADDRESS REGISTER
SB1	STORAGE BOARD 1
SD1	STORAGE DIRECTOR 1
SDM	STORAGE DIRECTOR MICROCONTROLLER
XRL	CROSS REFERENCE LIST
2X1	TWO CHANNEL SWITCH
4X1	TWO CHANNEL ADDITIONAL OR FOUR CHANNEL

NOTES USED ON CROSS REFERENCE PAGES

THE LEGEND ON THE CROSS REFERENCE PAGES
SHOW ( ) AS THE SOURCE(S) OF THE SIGNAL
AND * * AS THE CABLE SOCKET PINS

IN ADDITION THE FOLLOWING SPECIAL DESIGNATIONS
WILL ALSO SHOW ON THESE PAGES

ANANN FOLLOWED BY
+2-CH *ANANN* INDICATES PREWIRING FOR TWO CHANNEL ADDITIONAL

->MDM *AANNN* REFERENCES MDM PAGE

->MNT *DEV * INDICATES A LINE TO THE MAINTENANCE DEVICE

NOTE: THE LINE NAME IN THE MDM MANUAL FOR A GIVEN NET WILL IN GENERAL NOT MATCH THE LINE NAME IN THE LRM EXACTLY.

NOTE: MANY OF THE LINE NAMES ARE OF THE FORM
'+ PPS BBB LINE NAME'
WHERE 'PP' IS THE LAST TWO CHARACTERS OF THE PNAME OF THE SOURCE. 'S' IS THE BOARD POSITION ON THE SOURCE AND 'BBB' IS A BOARD WITH WHICH THE LINE IS ASSOCIATED.

```
003 - PCF SD2 C1/SA ADDRESS (0-7,P)  * =
004 - PCF SD2 C1/SA WRITE GATE ----- B03
005 - PCF SD2 C1/SA READ GATE ------ B06
006 - PCF SD2 C1/SA R/W CLK -------- G11
007 - PBG SD2 UPPER PORT CHECK ----- S08
008 - PBH SD2 LOWER PORT CHECK ----- J07
009 - PBG SD2 UPPER PC DECODE ACTIVE P04
010 - PBH SD2 LOWER PC DECODE ACTIVE M03
011 - PBG SD2 UP PC INTERFACE CHECK  U02
012 - PBH SD2 LO PC INTERFACE CHECK  S03
013 - PBG SD2 UPPER OP COMPLETE ---- J04
014 - PBH SD2 LOWER OP COMPLETE ---- P13
015 - C2Q LOAD INCREMENTED ADDR ---- M04
016 - C2Q CLOCK SCHOONER ADDR ------ U09
017 - C1P CONTROL BD POR/MACH RESET  P06
018 - C1P SD2 COMMON CHECK --------- J13
019 - C1P SD2 PORT CHECK UPPER ----- U07
020 - C1P SD2 PORT CHECK LOWER ----- G07
021 - C1P SD2 SA IR CHECK ---------- S04
022 - C1P SD2 COMMON CHECK RESET --- J12
023 - C1P SD2 SA DECODE ACTIVE ----- P02
024 - C1P SD2 SA GTS OWNER --------- P05
025 + C2Q SD2 UP INHIBIT OP COMPLETE J06
026 + C2Q SD2 LO INHIBIT OP COMPLETE P12
027 + CDN SD2 CHECK UPPER ---------- S02
028 + CDN SD2 CHECK LOWER ---------- M13
029 + CDN SD2 CHECK COMMON --------- M08
030 - CAM SD2 REG ADR DECODED ON SD  P09
031 - CDN SD2 DATA XFER COMPLETE UPR U04
032 - CDN SD2 DATA XFER COMPLETE LWR M12
033 - E3L SD2 PORT CHECK ----------- G02
034 - E3L SD2 U/L DECODE ACTIVE ---- M02
035 - E3L SD2 U/L PC INTERFACE CHECK U10
036 - SD2 CARD IDENTIFIER PIN ------ P10
037 - DAT CARD SELECT CHECK -------- Y29
038 - DAT STG ADDR PTY CHK --------- Y33
039 - DAT INPUT PARITY CHECK ------- Y28
040 - DAT REFRESH INCREMENTER CHECK  Y30
041 - DAT REFRESH ADDR PTY CHK ----- Y32
042 - DAT SD1 UPPER STG CYCLE ------ Y22
043 - DAT SD1 LOWER STG CYCLE ------ Y24
044 - DAT SD2 UPPER STG CYCLE ------ Y25
045 - DAT SD2 LOWER STG CYCLE ------ Y26
```

CMSA CARD

OVERVIEW

The CMSA (Storage Address) card provides storage array addressing for the storage cards.

PRIMARY FUNCTIONS

- Addresses up to 32 Mbytes of storage arrays.
- Steers and latches data operations and refresh related errors detected by the Storage Subsystem.

PRIMARY COMPONENTS

- Address bus drivers.
- Storage Address Registers (SAR's).
- Operation control registers.
- Control registers.
- Check registers.

ERROR CHECKING

- SA PC Upper/Lower IR Check (CSACK, bit 6).
  - This bit indicates a parity error on the indirect register address or data bus. It also indicates a control lines check.
- SA Multiple Address Decode Check (CSACK, bit 1).
  - This bit indicates that none or more than one functional island decodes on indirect register address during a non-shadowed write or read. It also indicates none or more than two functional island decodes on address during a shadowed write.
- Test and Set Check (CSACK, bit 0).
  - This bit indicates that both storage directors have their test and set obtained bit active at the same time.
- Storage Cycle Check (U/L SADPCK, bit 1).
  - This bit indicates that none or more than one storage cycles are active during store or fetch operations.
- SSAR Increment Check (U/L SADPCK, bit 0).
  - This bit indicates that a parity error occured in the parity predict circuitry or in the incrementer itself while incrementing ssars.
- Upper Port Check (CSTAT1, bit 0).
  - This bit indicates that an error was detected on the upper port by at least one of the functional islands during a storage opeation. This is an 'or' of the checks.
- Lower Port Check (CSTAT1, bit 1).
  - This bit indicates that an error was detected on the lower port by at least one of the functional islands during a storage opeation. This is an 'or' of the checks.
- Common Check (CSTAT1, bit 3).
  - This is an 'or' of checks associated with hardware such as the indirect register hardware and storage hardware.
- Control Board IR Summary Check (CSPRDIC, bit 4).
  - This is an 'or' of all of the indirect register errors for the control board and is sent to the storage directors.
- Summary Check
  - This is an 'or' of all storage operation errors such as upper and lower port check and common check. This will generate check 2.

```
= * - PCF SD2 C1/SA R/W DATA (0-7,P) 003
D07 - SAS SD2 PC READ ENABLE ------- 004
B02 - SAS SD2 PC DLYD READ CLOCK --- 005
U06 - SAS SD2 UPPER RUN/STORE DATA - 006
M09 - SAS SD2 LOWER RUN/STORE DATA - 007
G05 - SAS SD2 UPPER RUN/FETCH DATA - 008
M11 - SAS SD2 LOWER RUN/FETCH DATA - 009
G13 - SAS SD2 UPPER SRC INACTIVE --- 010
U11 - SAS SD2 LOWER SRC INACTIVE --- 011
J02 - SAS SD2 RUN UPPER ------------ 012
G09 - SAS SD2 RUN LOWER ------------ 013
J10 - SAS SD2 UPPER CHECK RESET ---- 014
G04 - SAS SD2 LOWER CHECK RESET ---- 015
M10 - SAS SD2 UPPER/COMMON CHECK --- 016
M05 - SAS SD2 LOWER/COMMON CHECK --- 017
G03 - SAS SD2 CONTINUE ON ERROR ---- 018
P11 + SAS SD2 SUMMARY CHECK DR ----- 019
J05 - SAS SD2 FORCE C1 DECODE ACTIVE 020
G10 + SAS SD2 CNTL BD IR CHECK ----- 021
= * - SAS SD2 UP DATA GT SSARS (0-2) 022
= * - SAS SD2 LO DATA GT SSARS (0-2) 023
= * - SA ADDRESS BUS (0-23,P0-P2) == 024
= * - SA DA FORCE BITS (0-3) ======= 025
W28 - SA SD1 TEST AND SET OBTAINED - 026
W29 - SA SD2 TEST AND SET OBTAINED - 027
```

STORAGE ADDRESS - SD2 XRL JS200

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- PCF SD2 C1/SA ADDRESS 0	S2B04	JS200-L003
	(F2B06)	JF200-R006
	P2N07	JP200-L007
L003		
- PCF SD2 C1/SA ADDRESS 1	S2D11	JS200-L003
	(F2D07)	JF200-R006
	P2P13	JP200-L007
L003		
- PCF SD2 C1/SA ADDRESS 2	S2D02	JS200-L003
	(F2D05)	JF200-R006
	P2M08	JP200-L007
L003		
- PCF SD2 C1/SA ADDRESS 3	S2D05	JS200-L003
	(F2D06)	JF200-R006
	P2N08	JP200-L007
L003		
- PCF SD2 C1/SA ADDRESS 4	S2B10	JS200-L003
	(F2B11)	JF200-R006
	P2M13	JP200-L007
L003		
- PCF SD2 C1/SA ADDRESS 5	S2D09	JS200-L003
	(F2D12)	JF200-R006
	P2P11	JP200-L007
L003		
- PCF SD2 C1/SA ADDRESS 6	S2D10	JS200-L003
	(F2D10)	JF200-R006
	P2P12	JP200-L007
L003		
- PCF SD2 C1/SA ADDRESS 7	S2B09	JS200-L003
	(F2B10)	JF200-R006
	P2N12	JP200-L007
L003		
- PCF SD2 C1/SA ADDRESS P	S2B05	JS200-L003
	(F2D02)	JF200-R006
	P2P07	JP200-L007
L004		
- PCF SD2 C1/SA WRITE GATE	S2B03	JS200-L004
	(F2M03)	JF200-R009
	P2N05	JP200-L010
L005		
- PCF SD2 C1/SA READ GATE	S2B06	JS200-L005
	(F2P02)	JF200-R008
	P2M09	JP200-L009

LINE/SIGNAL	PIN	SHEET/LINE
L006		
- PCF SD2 C1/SA R/W CLK	S2G11	JS200-L006
	(F2G11)	JF200-R010
	P2P05	JP200-L008
L007		
- PBG SD2 UPPER PORT CHECK	S2S08	JS200-L007
	(G2M09)	JG200-R012
L008		
- PBH SD2 LOWER PORT CHECK	S2J07	JS200-L008
	(H2M09)	JH200-R012
L009		
- PBG SD2 UPPER PC DECODE ACTIVE	S2P04	JS200-L009
	(G2J02)	JG200-R013
L010		
- PBH SD2 LOWER PC DECODE ACTIVE	S2M03	JS200-L010
	(H2J02)	JH200-R013
L011		
- PBG SD2 UP PC INTERFACE CHECK	S2U02	JS200-L011
	(G2G07)	JG200-R014
L012		
- PBH SD2 LO PC INTERFACE CHECK	S2S03	JS200-L012
	(H2G07)	JH200-R014
L013		
- PBG SD2 UPPER OP COMPLETE	S2J04	JS200-L013
	(G2U02)	JG200-R010
L014		
- PBH SD2 LOWER OP COMPLETE	S2P13	JS200-L014
	(H2U02)	JH200-R010
L015		
- C2Q LOAD INCREMENTED ADDR	S2M04	JS200-L015
	(Q2T07)	JQ210-R037
	R2M04	JR200-L015
L016		
- C2Q CLOCK SCHOONER ADDR	S2U09	JS200-L016
	(Q2H04)	JQ210-R038
	R2U09	JR200-L016

LINE/SIGNAL	PIN	SHEET/LINE
L017		
- C1P CONTROL BD POR/MACH RESET	S2P06	JS200-L017
	(P2C06)	JP200-R030
	J2M12	JJ200-L006
	K2U02	JK200-L007
	L2J04	JL200-L011
	Q2U10	JQ210-L019
	R2P06	JR200-L017
	T2N04	JT210-L008
L018		
- C1P SD2 COMMON CHECK	S2J13	JS200-L018
	(P2N10)	JP200-R017
L019		
- C1P SD2 PORT CHECK UPPER	S2U07	JS200-L019
	(P2N09)	JP200-R015
L020		
- C1P SD2 PORT CHECK LOWER	S2G07	JS200-L020
	(P2P09)	JP200-R016
L021		
- C1P SD2 SA IR CHECK	S2S04	JS200-L021
	(P2P06)	JP200-R014
L022		
- C1P SD2 COMMON CHECK RESET	S2J12	JS200-L022
	(P2G08)	JP200-R028
L023		
- C1P SD2 SA DECODE ACTIVE	S2P02	JS200-L023
	(P2M07)	JP200-R013
L024		
- C1P SD2 SA GTS OWNER	S2P05	JS200-L024
	(P2H06)	JP200-R026
L025		
+ C2Q SD2 UP INHIBIT OP COMPLETE	S2J06	JS200-L025
	(Q2T06)	JQ210-R039
L026		
+ C2Q SD2 LO INHIBIT OP COMPLETE	S2P12	JS200-L026
	(Q2H08)	JQ210-R040
L027		
+ CDN SD2 CHECK UPPER	S2S02	JS200-L027
1A-B3	(N2S02)	GN200-R050
1B-A1	*B5D12*	
1A-B3	*P6B02*	

LINE/SIGNAL	PIN	SHEET/LINE
L028		
+ CDN SD2 CHECK LOWER	S2M13	JS200-L028
1A-B3	(N2Z32)	GN200-R051
1B-A1	*B4D12*	
L029		
+ CDN SD2 CHECK COMMON	S2M08	JS200-L029
1A-B3	(N2X25)	GN200-R049
1B-A1	*B3D05*	
L030		
- CAM SD2 REG ADR DECODED ON SD	S2P09	JS200-L030
1A-B3	(N2G09)	GN200-R030
1B-A1	*B5D02*	
1A-B3	*M6B02*	
L031		
- CDN SD2 DATA XFER COMPLETE UPR	S2U04	JS200-L031
1A-B3	(N2X11)	GN200-R058
1B-A1	*B3B11*	
L032		
- CDN SD2 DATA XFER COMPLETE LWR	S2M12	JS200-L032
1A-B3	(N2Z06)	GN200-R062
1B-A1	*B4B06*	
L033		
- E3L SD2 PORT CHECK	S2G02	JS200-L033
	(L2J10)	JL200-R011
L034		
- E3L SD2 U/L DECODE ACTIVE	S2M02	JS200-L034
	(L2J13)	JL200-R008
L035		
- E3L SD2 U/L PC INTERFACE CHECK	S2U10	JS200-L035
	(L2D12)	JL200-R010
L036		
- SD2 CARD IDENTIFIER PIN	S2P10	JS200-L036
1B-A1	*S4D08*	
L037		
- DAT CARD SELECT CHECK	S2Y29	JS200-L037
	(T2Y29)	JT210-R033
	R2Y29	JR200-L037
L038		
- DAT STG ADDR PTY CHK	S2Y33	JS200-L038
	(T2Y33)	JT210-R036
	R2Y33	JR200-L038

LINE/SIGNAL	PIN	SHEET/LINE
L039		
- DAT INPUT PARITY CHECK	S2Y28	JS200-L039
	(T2Y28)	JT210-R032
	R2Y28	JR200-L039
L040		
- DAT REFRESH INCREMENTER CHECK	S2Y30	JS200-L040
	(T2Y30)	JT210-R034
	R2Y30	JR200-L040
L041		
- DAT REFRESH ADDR PTY CHK	S2Y32	JS200-L041
	(T2Y32)	JT210-R035
	R2Y32	JR200-L041
L042		
- DAT SD1 UPPER STG CYCLE	S2Y22	JS200-L042
	(T2Y22)	JT210-R028
	R2Y22	JR200-L042
L043		
- DAT SD1 LOWER STG CYCLE	S2Y24	JS200-L043
	(T2Y24)	JT210-R029
	R2Y24	JR200-L043
L044		
- DAT SD2 UPPER STG CYCLE	S2Y25	JS200-L044
	(T2Y25)	JT210-R030
	R2Y25	JR200-L044
L045		
- DAT SD2 LOWER STG CYCLE	S2Y26	JS200-L045
	(T2Y26)	JT210-R031
	R2Y26	JR200-L045
R003		
- PCF SD2 C1/SA R/W DATA 0	(S2D04)	JS200-R003
	(F2J10)	JF200-R007
	(P2D13)	JP200-R018
R003		
- PCF SD2 C1/SA R/W DATA 1	(S2B07)	JS200-R003
	(F2G10)	JF200-R007
	(P2J02)	JP200-R018
R003		
- PCF SD2 C1/SA R/W DATA 2	(S2B08)	JS200-R003
	(F2G09)	JF200-R007
	(P2G02)	JP200-R018
R003		
- PCF SD2 C1/SA R/W DATA 3	(S2B11)	JS200-R003
	(F2J09)	JF200-R007
	(P2C12)	JP200-R018

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- PCF SD2 C1/SA R/W DATA 4	(S2D12)	JS200-R003
	(F2G07)	JF200-R007
	(P2T09)	JP200-R018
R003		
- PCF SD2 C1/SA R/W DATA 5	(S2B12)	JS200-R003
	(F2G05)	JF200-R007
	(P2S07)	JP200-R018
R003		
- PCF SD2 C1/SA R/W DATA 6	(S2D13)	JS200-R003
	(F2J05)	JF200-R007
	(P2U07)	JP200-R018
R003		
- PCF SD2 C1/SA R/W DATA 7	(S2B13)	JS200-R003
	(F2G04)	JF200-R007
	(P2U06)	JP200-R018
R003		
- PCF SD2 C1/SA R/W DATA P	(S2D06)	JS200-R003
	(F2G02)	JF200-R007
	(P2N04)	JP200-R018
R004		
- SAS SD2 PC READ ENABLE	(S2D07)	JS200-R004
	F2J13	JF200-L015
R005		
- SAS SD2 PC DLYD READ CLOCK	(S2B02)	JS200-R005
	F2G13	JF200-L016
R006		
- SAS SD2 UPPER RUN/STORE DATA	(S2U06)	JS200-R006
	G2J04	JG200-L013
	Q2J09	JQ210-L028
R007		
- SAS SD2 LOWER RUN/STORE DATA	(S2M09)	JS200-R007
	H2J04	JH200-L013
	Q2H09	JQ210-L029
R008		
- SAS SD2 UPPER RUN/FETCH DATA	(S2G05)	JS200-R008
	G2J06	JG200-L014
	Q2G07	JQ210-L030
R009		
- SAS SD2 LOWER RUN/FETCH DATA	(S2M11)	JS200-R009
	H2J06	JH200-L014
	Q2G08	JQ210-L031

STORAGE ADDRESS - SD2 XRL JS200

LINE/SIGNAL	PIN	SHEET/LINE
R010		
- SAS SD2 UPPER SRC INACTIVE	(S2G13)	JS200-R010
	G2M04	JG200-L016
R011		
- SAS SD2 LOWER SRC INACTIVE	(S2U11)	JS200-R011
	H2M04	JH200-L016
R012		
- SAS SD2 RUN UPPER	(S2J02)	JS200-R012
	P2H08	JP200-L045
R013		
- SAS SD2 RUN LOWER	(S2G09)	JS200-R013
	P2J04	JP200-L046
R014		
- SAS SD2 UPPER CHECK RESET	(S2J10)	JS200-R014
	G2P05	JG200-L015
	L2D09	JL200-L014
	P2G13	JP200-L037
R015		
- SAS SD2 LOWER CHECK RESET	(S2G04)	JS200-R015
	H2P05	JH200-L015
	L2G09	JL200-L015
	P2J12	JP200-L038
R016		
- SAS SD2 UPPER/COMMON CHECK	(S2M10)	JS200-R016
	Q2M13	JQ210-L032
R017		
- SAS SD2 LOWER/COMMON CHECK	(S2M05)	JS200-R017
	Q2J13	JQ210-L033
R018		
- SAS SD2 CONTINUE ON ERROR	(S2G03)	JS200-R018
	Q2N03	JQ210-L034
R019		
+ SAS SD2 SUMMARY CHECK DR	(S2P11)	JS200-R019
1A-B3	N2X26	GN200-L040
1B-A1	*B3D06*	
R020		
- SAS SD2 FORCE C1 DECODE ACTIVE	(S2J05)	JS200-R020
	P2M05	JP200-L040
R021		
+ SAS SD2 CNTL BD IR CHECK	(S2G10)	JS200-R021
1A-B3	N2X24	GN200-L039
1B-A1	*B3D04*	
R022		
- SAS SD2 UP DATA GT SSARS 0	(S2M07)	JS200-R022
	G2P02	JG200-L019
R022		
- SAS SD2 UP DATA GT SSARS 1	(S2U05)	JS200-R022
	G2G10	JG200-L019
R022		
- SAS SD2 UP DATA GT SSARS 2	(S2P07)	JS200-R022
	G2G13	JG200-L019
R023		
- SAS SD2 LO DATA GT SSARS 0	(S2J11)	JS200-R023
	H2P02	JH200-L019
R023		
- SAS SD2 LO DATA GT SSARS 1	(S2G08)	JS200-R023
	H2G10	JH200-L019
R023		
- SAS SD2 LO DATA GT SSARS 2	(S2J09)	JS200-R023
	H2G13	JH200-L019
R024		
- SA ADDRESS BUS 0	(S2W02)	JS200-R024
	(R2W02)	JR200-R024
	T2W02	JT210-L014
R024		
- SA ADDRESS BUS 1	(S2W03)	JS200-R024
	(R2W03)	JR200-R024
	T2W03	JT210-L014
R024		
- SA ADDRESS BUS 2	(S2W05)	JS200-R024
	(R2W05)	JR200-R024
	T2W05	JT210-L014
R024		
- SA ADDRESS BUS 3	(S2W06)	JS200-R024
	(R2W06)	JR200-R024
	T2W06	JT210-L014
R024		
- SA ADDRESS BUS 4	(S2W07)	JS200-R024
	(R2W07)	JR200-R024
	T2W07	JT210-L014
R024		
- SA ADDRESS BUS 5	(S2W09)	JS200-R024
	(R2W09)	JR200-R024
	T2W09	JT210-L014
R024		
- SA ADDRESS BUS 6	(S2W10)	JS200-R024
	(R2W10)	JR200-R024
	T2W10	JT210-L014
R024		
- SA ADDRESS BUS 7	(S2W11)	JS200-R024
	(R2W11)	JR200-R024
	T2W11	JT210-L014
R024		
- SA ADDRESS BUS 8	(S2X02)	JS200-R024
	(R2X02)	JR200-R024
	T2X02	JT210-L014
R024		
- SA ADDRESS BUS 9	(S2X03)	JS200-R024
	(R2X03)	JR200-R024
	T2X03	JT210-L014
R024		
- SA ADDRESS BUS 10	(S2X05)	JS200-R024
	(R2X05)	JR200-R024
	T2X05	JT210-L014
R024		
- SA ADDRESS BUS 11	(S2X06)	JS200-R024
	(R2X06)	JR200-R024
	T2X06	JT210-L014
R024		
- SA ADDRESS BUS 12	(S2X07)	JS200-R024
	(R2X07)	JR200-R024
	T2X07	JT210-L014
R024		
- SA ADDRESS BUS 13	(S2X09)	JS200-R024
	(R2X09)	JR200-R024
	T2X09	JT210-L014
R024		
- SA ADDRESS BUS 14	(S2X10)	JS200-R024
	(R2X10)	JR200-R024
	T2X10	JT210-L014
R024		
- SA ADDRESS BUS 15	(S2X11)	JS200-R024
	(R2X11)	JR200-R024
	T2X11	JT210-L014
R024		
- SA ADDRESS BUS 16	(S2Y02)	JS200-R024
	(R2Y02)	JR200-R024
	T2Y02	JT210-L014
R024		
- SA ADDRESS BUS 17	(S2Y03)	JS200-R024
	(R2Y03)	JR200-R024
	T2Y03	JT210-L014
R024		
- SA ADDRESS BUS 18	(S2Y05)	JS200-R024
	(R2Y05)	JR200-R024
	T2Y05	JT210-L014
R024		
- SA ADDRESS BUS 19	(S2Y06)	JS200-R024
	(R2Y06)	JR200-R024
	T2Y06	JT210-L014
R024		
- SA ADDRESS BUS 20	(S2Y07)	JS200-R024
	(R2Y07)	JR200-R024
	T2Y07	JT210-L014
R024		
- SA ADDRESS BUS 21	(S2Y09)	JS200-R024
	(R2Y09)	JR200-R024
	T2Y09	JT210-L014
R024		
- SA ADDRESS BUS 22	(S2Y10)	JS200-R024
	(R2Y10)	JR200-R024
	T2Y10	JT210-L014
R024		
- SA ADDRESS BUS 23	(S2Y11)	JS200-R024
	(R2Y11)	JR200-R024
	T2Y11	JT210-L014
R024		
- SA ADDRESS BUS P0	(S2W13)	JS200-R024
	(R2W13)	JR200-R024
	T2W13	JT210-L014
R024		
- SA ADDRESS BUS P1	(S2X13)	JS200-R024
	(R2X13)	JR200-R024
	T2X13	JT210-L014
R024		
- SA ADDRESS BUS P2	(S2Y13)	JS200-R024
	(R2Y13)	JR200-R024
	T2Y13	JT210-L014
R025		
- SA DA FORCE BITS 0	(S2W22)	JS200-R025
	(R2W22)	JR200-R025
	T2W22	JT210-L015
R025		
- SA DA FORCE BITS 1	(S2W24)	JS200-R025
	(R2W24)	JR200-R025
	T2W24	JT210-L015
R025		
- SA DA FORCE BITS 2	(S2W25)	JS200-R025
	(R2W25)	JR200-R025
	T2W25	JT210-L015
R025		
- SA DA FORCE BITS 3	(S2W26)	JS200-R025
	(R2W26)	JR200-R025
	T2W26	JT210-L015
R026		
- SA SD1 TEST AND SET OBTAINED	(S2W28)	JS200-R026
	(R2W28)	JR200-R026
R027		
- SA SD2 TEST AND SET OBTAINED	(S2W29)	JS200-R027
	(R2W29)	JR200-R027

003 - C2Q SAMPLE ADDRESS IN PARITY - M08
004 - C2Q REFRESH TIMING ---------- M03
005 - C2Q CARD SELECT TIMING ------- P06
006 - C2Q CLOCK REFRESH COUNTER L2 - M05
007 - C2Q CLOCK DG B SAR REGS ------ P05
008 - C1P CONTROL BD POR/MACH RESET M04
009 - C2Q SD1 UPPER STORAGE CYCLE -- G04
010 - C2Q SD1 LOWER STORAGE CYCLE -- J07
011 - C2Q SAMPLE CS/WORD PARITY ---- M12
012 - C2Q SD2 UPPER STORAGE CYCLE -- G07
013 - C2Q SD2 LOWER STORAGE CYCLE -- J05
014 - SA ADDRESS BUS (0-23,P0-P2) == * =
015 - SA DA FORCE BITS (0-3) ======= * =
016 - C1P 8 MB SWITCH -------------- B05
017 - C1P 16 MB SWITCH ------------- B11

CLDA CARD

OVERVIEW

The CLDA (Address Driver) card serves as the driver for all addressing lines going to the Storage Board.

PRIMARY FUNCTIONS

- Provides redrive and parity check/generation for:
  - The cs SAR's (storage address registers) and word SAR's.
  - The data gates A/B SAR's and bit SAR's.
- Contains the 10 bit incrementer used to generate refresh for the storage cards.

PRIMARY COMPONENTS

- Storage refresh control logic.
- Address bus drivers.
- Parity generators and checkers.

ERROR CHECKING

- Input Parity Check (U/L SADPCK, bit 4).
  - This bit indicates a parity error on the 24 bit address bus between CMSA and CLDA.
- Card Select Check (U/L SADPCK, bit 2).
  - This bit indicates that the card select decoder and the duplicate card select decoder miscompared when sampled with card sel timings.
- Storage Address Parity Check (U/L SADPCK, bit 3).
  - This bit indicates a parity error on the cs/word SAR's during a store or fetch operation.
- Refresh Incrementer Check (CSARCK, bit 6).
  - This bit indicates that the parity predict circuitry detected an error in the incrementer for the refresh address bus.
- Refresh Address Parity Check (CSARCK, bit 7).
  - This bit indicates that a parity error was detected after the drivers on the array/word SAR's during a refresh operation.

= * - DAT SG1 CARD SELECT GRP (0-3) 003
P09 - DAT STG BD1 SELECTED --------- 004
= * - DAT SG1 CS SAR (0-1) ========= 005
= * - DAT SG1 WORD SAR (0-7) ======= 006
B06 - DAT SG1 CS/WD SAR PARITY ----- 007
= * - DAT SG1 DATA GT A SAR (0-2) == 008
U05 - DAT SG1 DGA/BIT SAR PTY ------ 009
= * - DAT SG1 DATA GT B SAR (0-2) == 010
S05 - DAT SG1 DGB/BIT SAR PTY ------ 011
= * - DAT SG1 BIT SAR (0-6) ======== 012
P12 - DAT DATA GATE A = 8 ---------- 013
S04 - ENABLE TS DVRS FOR BD1 REFRESH 014
U07 - ENABLE TS DVRS FOR BD2 REFRESH 015
U13 - DAT REFRESH ADDR BUS BIT 9 --- 016
D06 - DAT ADDRESS BUS BIT 2 -------- 017
= * - DAT SG2 CARD SELECT GRP (0-3) 018
P07 - DAT STG BD2 SELECTED --------- 019
= * - DAT SG2 CS SAR (0-1) ========= 020
= * - DAT SG2 WORD SAR (0-7) ======= 021
D07 - DAT SG2 CS/WD SAR PARITY ----- 022
= * - DAT SG2 DATA GT A SAR (0-2) == 023
B04 - DAT SG2 DGA/BIT SAR PTY ------ 024
= * - DAT SG2 DATA GT B SAR (0-2) == 025
D11 - DAT SG2 DGB/BIT SAR PTY ------ 026
= * - DAT SG2 BIT SAR (0-6) ======== 027
Y22 - DAT SD1 UPPER STG CYCLE ------ 028
Y24 - DAT SD1 LOWER STG CYCLE ------ 029
Y25 - DAT SD2 UPPER STG CYCLE ------ 030
Y26 - DAT SD2 LOWER STG CYCLE ------ 031
Y28 - DAT INPUT PARITY CHECK ------- 032
Y29 - DAT CARD SELECT CHECK -------- 033
Y30 - DAT REFRESH INCREMENTER CHECK 034
Y32 - DAT REFRESH ADDR PTY CHK ----- 035
Y33 - DAT STG ADDR PTY CHK --------- 036
B09 - DAT SG1 UNUSED OUTPUT 0 ------ 037
G03 - DAT SG2 UNUSED OUTPUT 0 ------ 038

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- C2Q SAMPLE ADDRESS IN PARITY		
	T2N08	JT210-L003
	(Q2N08)	JQ210-R046
L004		
- C2Q REFRESH TIMING		
	T2N03	JT210-L004
	(Q2J07)	JQ210-R043
L005		
- C2Q CARD SELECT TIMING		
	T2P06	JT210-L005
	(Q2T02)	JQ210-R042
L006		
- C2Q CLOCK REFRESH COUNTER L2		
	T2N05	JT210-L006
	(Q2N12)	JQ210-R044
L007		
- C2Q CLOCK DG B SAR REGS		
	T2P05	JT210-L007
	(Q2B13)	JQ210-R071
L008		
- C1P CONTROL BD POR/MACH RESET		
	T2M04	JT210-L008
	(P2C06)	JP200-R030
	J2M12	JJ200-L006
	K2U02	JK200-L007
	L2J04	JL200-L011
	Q2U10	JQ210-L019
	R2P06	JR200-L017
	S2P06	JS200-L017
L009		
- C2Q SD1 UPPER STORAGE CYCLE		
	T2G04	JT210-L009
	(Q2P13)	JQ210-R010
	L2B04	JL200-L016
	P2T04	JP200-L011
L010		
- C2Q SD1 LOWER STORAGE CYCLE		
	T2J07	JT210-L010
	(Q2N13)	JQ210-R011
	L2B05	JL200-L019
	P2S03	JP200-L012
L011		
- C2Q SAMPLE CS/WORD PARITY		
	T2M12	JT210-L011
	(Q2H03)	JQ210-R045
L012		
- C2Q SD2 UPPER STORAGE CYCLE		
	T2G07	JT210-L012
	(Q2M09)	JQ210-R012
	L2B02	JL200-L022
	P2T02	JP200-L013

LINE/SIGNAL	PIN	SHEET/LINE
L013		
- C2Q SD2 LOWER STORAGE CYCLE		
	T2J05	JT210-L013
	(Q2N10)	JQ210-R013
	L2D02	JL200-L020
	P2U02	JP200-L014
L014		
- SA ADDRESS BUS 0		
	T2W02	JT210-L014
	(R2W02)	JR200-R024
	(S2W02)	JS200-R024
L014		
- SA ADDRESS BUS 1		
	T2W03	JT210-L014
	(R2W03)	JR200-R024
	(S2W03)	JS200-R024
L014		
- SA ADDRESS BUS 2		
	T2W05	JT210-L014
	(R2W05)	JR200-R024
	(S2W05)	JS200-R024
L014		
- SA ADDRESS BUS 3		
	T2W06	JT210-L014
	(R2W06)	JR200-R024
	(S2W06)	JS200-R024
L014		
- SA ADDRESS BUS 4		
	T2W07	JT210-L014
	(R2W07)	JR200-R024
	(S2W07)	JS200-R024
L014		
- SA ADDRESS BUS 5		
	T2W09	JT210-L014
	(R2W09)	JR200-R024
	(S2W09)	JS200-R024
L014		
- SA ADDRESS BUS 6		
	T2W10	JT210-L014
	(R2W10)	JR200-R024
	(S2W10)	JS200-R024
L014		
- SA ADDRESS BUS 7		
	T2W11	JT210-L014
	(R2W11)	JR200-R024
	(S2W11)	JS200-R024
L014		
- SA ADDRESS BUS 8		
	T2X02	JT210-L014
	(R2X02)	JR200-R024
	(S2X02)	JS200-R024
L014		
- SA ADDRESS BUS 9		
	T2X03	JT210-L014
	(R2X03)	JR200-R024
	(S2X03)	JS200-R024

LINE/SIGNAL	PIN	SHEET/LINE
L014		
- SA ADDRESS BUS 10		
	T2X05	JT210-L014
	(R2X05)	JR200-R024
	(S2X05)	JS200-R024
L014		
- SA ADDRESS BUS 11		
	T2X06	JT210-L014
	(R2X06)	JR200-R024
	(S2X06)	JS200-R024
L014		
- SA ADDRESS BUS 12		
	T2X07	JT210-L014
	(R2X07)	JR200-R024
	(S2X07)	JS200-R024
L014		
- SA ADDRESS BUS 13		
	T2X09	JT210-L014
	(R2X09)	JR200-R024
	(S2X09)	JS200-R024
L014		
- SA ADDRESS BUS 14		
	T2X10	JT210-L014
	(R2X10)	JR200-R024
	(S2X10)	JS200-R024
L014		
- SA ADDRESS BUS 15		
	T2X11	JT210-L014
	(R2X11)	JR200-R024
	(S2X11)	JS200-R024
L014		
- SA ADDRESS BUS 16		
	T2Y02	JT210-L014
	(R2Y02)	JR200-R024
	(S2Y02)	JS200-R024
L014		
- SA ADDRESS BUS 17		
	T2Y03	JT210-L014
	(R2Y03)	JR200-R024
	(S2Y03)	JS200-R024
L014		
- SA ADDRESS BUS 18		
	T2Y05	JT210-L014
	(R2Y05)	JR200-R024
	(S2Y05)	JS200-R024
L014		
- SA ADDRESS BUS 19		
	T2Y06	JT210-L014
	(R2Y06)	JR200-R024
	(S2Y06)	JS200-R024
L014		
- SA ADDRESS BUS 20		
	T2Y07	JT210-L014
	(R2Y07)	JR200-R024
	(S2Y07)	JS200-R024

LINE/SIGNAL	PIN	SHEET/LINE
L014		
- SA ADDRESS BUS 21		
	T2Y09	JT210-L014
	(R2Y09)	JR200-R024
	(S2Y09)	JS200-R024
L014		
- SA ADDRESS BUS 22		
	T2Y10	JT210-L014
	(R2Y10)	JR200-R024
	(S2Y10)	JS200-R024
L014		
- SA ADDRESS BUS 23		
	T2Y11	JT210-L014
	(R2Y11)	JR200-R024
	(S2Y11)	JS200-R024
L014		
- SA ADDRESS BUS P0		
	T2N13	JT210-L014
	(R2N13)	JR200-R024
	(S2N13)	JS200-R024
L014		
- SA ADDRESS BUS P1		
	T2X13	JT210-L014
	(R2X13)	JR200-R024
	(S2X13)	JS200-R024
L014		
- SA ADDRESS BUS P2		
	T2Y13	JT210-L014
	(R2Y13)	JR200-R024
	(S2Y13)	JS200-R024
L015		
- SA DA FORCE BITS 0		
	T2N22	JT210-L015
	(R2N22)	JR200-R025
	(S2N22)	JS200-R025
L015		
- SA DA FORCE BITS 1		
	T2N24	JT210-L015
	(R2N24)	JR200-R025
	(S2N24)	JS200-R025
L015		
- SA DA FORCE BITS 2		
	T2N25	JT210-L015
	(R2N25)	JR200-R025
	(S2N25)	JS200-R025
L015		
- SA DA FORCE BITS 3		
	T2N26	JT210-L015
	(R2N26)	JR200-R025
	(S2N26)	JS200-R025
L016		
- C1P 8 MB SWITCH		
	T2B05	JT210-L016
	(P2S05)	JP200-R034

LINE/SIGNAL	PIN	SHEET/LINE
L017		
- C1P 16 MB SWITCH		
	T2B11	JT210-L017
	(P2S08)	JP200-R035
R003		
- DAT SG1 CARD SELECT GRP 0		
	(T2J12)	JT210-R003
1B-B2	K2D06	MK210-L013
1B-B2	L2D06	ML210-L013
1B-A1	*R1B13*	
1B-B2	*J1C13*	
R003		
- DAT SG1 CARD SELECT GRP 1		
	(T2G12)	JT210-R003
1B-B2	K2D07	MK210-L013
1B-B2	L2D07	ML210-L013
1B-A1	*R1C13*	
1B-B2	*J1D13*	
R003		
- DAT SG1 CARD SELECT GRP 2		
	(T2J13)	JT210-R003
1B-B2	K2D04	MK210-L013
1B-B2	L2D04	ML210-L013
1B-A1	*R1D13*	
1B-B2	*J1E13*	
R003		
- DAT SG1 CARD SELECT GRP 3		
	(T2J09)	JT210-R003
1B-B2	K2D05	MK210-L013
1B-B2	L2D05	ML210-L013
1B-A1	*T1C13*	
1B-B2	*M1A13*	
R004		
- DAT STG BD1 SELECTED		
	(T2P09)	JT210-R004
	M2P07	JM200-L003
	N2P07	JN200-L003
R005		
- DAT SG1 CS SAR 0		
	(T2J06)	JT210-R005
1B-B2	K2D13	MK210-L005
1B-B2	L2D13	ML210-L005
1B-A1	*T1C11*	
1B-B2	*M1A11*	
R005		
- DAT SG1 CS SAR 1		
	(T2G05)	JT210-R005
1B-B2	K2J02	MK210-L005
1B-B2	L2J02	ML210-L005
1B-A1	*T1D11*	
1B-B2	*M1B11*	
R006		
- DAT SG1 WORD SAR 0		
	(T2P11)	JT210-R006
1B-B2	K2T02	MK210-L003
1B-B2	L2T02	ML210-L003
1B-A1	*V2D02*	
1B-B2	*H6A02*	

LINE/SIGNAL	PIN	SHEET/LINE
R006		
- DAT SG1 WORD SAR 1		
	(T2M07)	JT210-R006
1B-B2	K2T03	MK210-L003
1B-B2	L2T03	ML210-L003
1B-A1	*V2B02*	
1B-B2	*H6A04*	
R006		
- DAT SG1 WORD SAR 2		
	(T2P10)	JT210-R006
1B-B2	K2S03	MK210-L003
1B-B2	L2S03	ML210-L003
1B-A1	*V2D03*	
1B-B2	*H6B02*	
R006		
- DAT SG1 WORD SAR 3		
	(T2P13)	JT210-R006
1B-B2	K2U02	MK210-L003
1B-B2	L2U02	ML210-L003
1B-A1	*V2B03*	
1B-B2	*H6B04*	
R006		
- DAT SG1 WORD SAR 4		
	(T2P04)	JT210-R006
1B-B2	K2M13	MK210-L003
1B-B2	L2M13	ML210-L003
1B-A1	*V2D04*	
1B-B2	*H6C02*	
R006		
- DAT SG1 WORD SAR 5		
	(T2U11)	JT210-R006
1B-B2	K2S02	MK210-L003
1B-B2	L2S02	ML210-L003
1B-A1	*V2B04*	
1B-B2	*H6C04*	
R006		
- DAT SG1 WORD SAR 6		
	(T2S08)	JT210-R006
1B-B2	K2U04	MK210-L003
1B-B2	L2U04	ML210-L003
1B-A1	*V2D05*	
1B-B2	*H6D02*	
R006		
- DAT SG1 WORD SAR 7		
	(T2G08)	JT210-R006
1B-B2	K2B13	MK210-L003
1B-B2	L2B13	ML210-L003
1B-A1	*T1E11*	
1B-B2	*M1C11*	
R007		
- DAT SG1 CS/WD SAR PARITY		
	(T2B06)	JT210-R007
1B-B2	K2U06	MK210-L018
1B-B2	L2U06	ML210-L018
1B-A1	*V2D09*	
1B-B2	*J6C02*	

LINE/SIGNAL	PIN	SHEET/LINE
R008		
- DAT SG1 DATA GT A SAR 0		
	(T2J11)	JT210-R008
	Q2N05	JQ210-L037
1B-B2	K2B09	MK210-L009
1B-B2	L2B09	ML210-L009
1B-A1	*R1E11*	
1B-B2	*K1A11*	
R008		
- DAT SG1 DATA GT A SAR 1		
	(T2G11)	JT210-R008
	Q2M04	JQ210-L037
1B-B2	K2B10	MK210-L009
1B-B2	L2B10	ML210-L009
1B-A1	*S1A11*	
1B-B2	*K1B11*	
R008		
- DAT SG1 DATA GT A SAR 2		
	(T2P02)	JT210-R008
	Q2H12	JQ210-L037
1B-B2	K2D09	MK210-L009
1B-B2	L2D09	ML210-L009
1B-A1	*R1E13*	
1B-B2	*K1A13*	
R009		
- DAT SG1 DGA/BIT SAR PTY		
	(T2U05)	JT210-R009
1B-B2	K2S07	MK210-L019
1B-B2	L2S07	ML210-L019
1B-A1	*V2D10*	
1B-B2	*J6D02*	
R010		
- DAT SG1 DATA GT B SAR 0		
	(T2U10)	JT210-R010
1B-B2	K2C07	MK210-L011
1B-B2	L2C07	ML210-L011
1B-A1	*T1A11*	
1B-B2	*L1D11*	
R010		
- DAT SG1 DATA GT B SAR 1		
	(T2S03)	JT210-R010
1B-B2	K2C08	MK210-L011
1B-B2	L2C08	ML210-L011
1B-A1	*T1B11*	
1B-B2	*L1E11*	
R010		
- DAT SG1 DATA GT B SAR 2		
	(T2U12)	JT210-R010
1B-B2	K2C09	MK210-L011
1B-B2	L2C09	ML210-L011
1B-A1	*T1A13*	
1B-B2	*L1D13*	
R011		
- DAT SG1 DGB/BIT SAR PTY		
	(T2S05)	JT210-R011
1B-B2	K2U07	MK210-L020
1B-B2	L2U07	ML210-L020
1B-A1	*V2D11*	
1B-B2	*J6E02*	

LINE/SIGNAL	PIN	SHEET/LINE
R012		
- DAT SG1 BIT SAR 0		
	(T2D02)	JT210-R012
1B-B2	K2S04	MK210-L004
1B-B2	L2S04	ML210-L004
1B-A1	*V2B05*	
1B-B2	*H6D04*	
R012		
- DAT SG1 BIT SAR 1		
	(T2B08)	JT210-R012
1B-B2	K2S05	MK210-L004
1B-B2	L2S05	ML210-L004
1B-A1	*V2D06*	
1B-B2	*H6E02*	
R012		
- DAT SG1 BIT SAR 2		
	(T2B10)	JT210-R012
1B-B2	K2U05	MK210-L004
1B-B2	L2U05	ML210-L004
1B-A1	*V2D06*	
1B-B2	*H6E04*	
R012		
- DAT SG1 BIT SAR 3		
	(T2G09)	JT210-R012
1B-B2	K2S06	MK210-L004
1B-B2	L2S06	ML210-L004
1B-A1	*V2D07*	
1B-B2	*J6A02*	
R012		
- DAT SG1 BIT SAR 4		
	(T2M02)	JT210-R012
1B-B2	K2T04	MK210-L004
1B-B2	L2T04	ML210-L004
1B-A1	*V2B07*	
1B-B2	*J6A04*	
R012		
- DAT SG1 BIT SAR 5		
	(T2D05)	JT210-R012
1B-B2	K2G02	MK210-L004
1B-B2	L2G02	ML210-L004
1B-A1	*Q1E11*	
1B-B2	*J1A11*	
R012		
- DAT SG1 BIT SAR 6		
	(T2D09)	JT210-R012
1B-B2	K2B12	MK210-L004
1B-B2	L2B12	ML210-L004
1B-A1	*R1B11*	
1B-B2	*J1C11*	
R013		
- DAT DATA GATE A = 8		
	(T2P12)	JT210-R013
R014		
- ENABLE TS DVRS FOR BD1 REFRESH		
	(T2S04)	JT210-R014
	P2T06	JP200-L033

LINE/SIGNAL	PIN	SHEET/LINE
R015		
- ENABLE TS DVRS FOR BD2 REFRESH		
	(T2U07)	JT210-R015
	P2U04	JP200-L034
R016		
- DAT REFRESH ADDR BUS BIT 9		
	(T2U13)	JT210-R016
	Q2N09	JQ210-L036
R017		
- DAT ADDRESS BUS BIT 2		
	(T2D06)	JT210-R017
	Q2B10	JQ210-L035
R018		
- DAT SG2 CARD SELECT GRP 0		
	(T2G10)	JT210-R018
1B-A1	*R6B04*	
R018		
- DAT SG2 CARD SELECT GRP 1		
	(T2G13)	JT210-R018
1B-A1	*R6C04*	
R018		
- DAT SG2 CARD SELECT GRP 2		
	(T2J10)	JT210-R018
1B-A1	*R6D04*	
R018		
- DAT SG2 CARD SELECT GRP 3		
	(T2M13)	JT210-R018
1B-A1	*T6C04*	
R019		
- DAT STG BD2 SELECTED		
	(T2P07)	JT210-R019
	M2N07	JM200-L004
	N2N07	JN200-L004
R020		
- DAT SG2 CS SAR 0		
	(T2U04)	JT210-R020
1B-A1	*T6C02*	
R020		
- DAT SG2 CS SAR 1		
	(T2U09)	JT210-R020
1B-A1	*T6D02*	
R021		
- DAT SG2 WORD SAR 0		
	(T2S06)	JT210-R021
1B-A1	*V5D02*	
R021		
- DAT SG2 WORD SAR 1		
	(T2S12)	JT210-R021
1B-A1	*V5B02*	
R021		
- DAT SG2 WORD SAR 2		
	(T2S10)	JT210-R021
1B-A1	*V5D03*	

LINE/SIGNAL	PIN	SHEET/LINE
R021		
- DAT SG2 WORD SAR 3		
	(T2S09)	JT210-R021
1B-A1	*V5B03*	
R021		
- DAT SG2 WORD SAR 4		
	(T2S13)	JT210-R021
1B-A1	*V5D04*	
R021		
- DAT SG2 WORD SAR 5		
	(T2S07)	JT210-R021
1B-A1	*V5B04*	
R021		
- DAT SG2 WORD SAR 6		
	(T2S11)	JT210-R021
1B-A1	*V5D05*	
R021		
- DAT SG2 WORD SAR 7		
	(T2U06)	JT210-R021
1B-A1	*T6E02*	
R022		
- DAT SG2 CS/WD SAR PARITY		
	(T2D07)	JT210-R022
1B-A1	*V5D09*	
R023		
- DAT SG2 DATA GT A SAR 0		
	(T2D04)	JT210-R023
1B-A1	*R6E02*	
R023		
- DAT SG2 DATA GT A SAR 1		
	(T2B07)	JT210-R023
1B-A1	*S6A02*	
R023		
- DAT SG2 DATA GT A SAR 2		
	(T2D10)	JT210-R023
1B-A1	*R6E04*	
R024		
- DAT SG2 DGA/BIT SAR PTY		
	(T2B04)	JT210-R024
1B-A1	*V5D10*	
R025		
- DAT SG2 DATA GT B SAR 0		
	(T2M09)	JT210-R025
1B-A1	*T6A02*	
R025		
- DAT SG2 DATA GT B SAR 1		
	(T2M10)	JT210-R025
1B-A1	*T6B02*	
R025		
- DAT SG2 DATA GT B SAR 2		
	(T2M11)	JT210-R025
1B-A1	*T6A04*	

LINE/SIGNAL	PIN	SHEET/LINE
R026		
- DAT SG2 DGB/BIT SAR PTY		
	(T2D11)	JT210-R026
1B-A1	*V5D11*	
R027		
- DAT SG2 BIT SAR 0		
	(T2B13)	JT210-R027
1B-A1	*V5B05*	
R027		
- DAT SG2 BIT SAR 1		
	(T2G02)	JT210-R027
1B-A1	*V5D06*	
R027		
- DAT SG2 BIT SAR 2		
	(T2J04)	JT210-R027
1B-A1	*V5B06*	
R027		
- DAT SG2 BIT SAR 3		
	(T2D13)	JT210-R027
1B-A1	*V5D07*	
R027		
- DAT SG2 BIT SAR 4		
	(T2B12)	JT210-R027
1B-A1	*V5B07*	
R027		
- DAT SG2 BIT SAR 5		
	(T2D12)	JT210-R027
1B-A1	*Q6E02*	
R027		
- DAT SG2 BIT SAR 6		
	(T2J02)	JT210-R027
1B-A1	*R6B02*	
R028		
- DAT SD1 UPPER STG CYCLE		
	(T2Y22)	JT210-R028
	R2Y22	JR200-L042
	S2Y22	JS200-L042
R029		
- DAT SD1 LOWER STG CYCLE		
	(T2Y24)	JT210-R029
	R2Y24	JR200-L043
	S2Y24	JS200-L043
R030		
- DAT SD2 UPPER STG CYCLE		
	(T2Y25)	JT210-R030
	R2Y25	JR200-L044
	S2Y25	JS200-L044
R031		
- DAT SD2 LOWER STG CYCLE		
	(T2Y26)	JT210-R031
	R2Y26	JR200-L045
	S2Y26	JS200-L045

LINE/SIGNAL	PIN	SHEET/LINE
R032		
- DAT INPUT PARITY CHECK		
	(T2Y28)	JT210-R032
	R2Y28	JR200-L039
	S2Y28	JS200-L039
R033		
- DAT CARD SELECT CHECK		
	(T2Y29)	JT210-R033
	R2Y29	JR200-L037
	S2Y29	JS200-L037
R034		
- DAT REFRESH INCREMENTER CHECK		
	(T2Y30)	JT210-R034
	R2Y30	JR200-L040
	S2Y30	JS200-L040
R035		
- DAT REFRESH ADDR PTY CHK		
	(T2Y32)	JT210-R035
	R2Y32	JR200-L041
	S2Y32	JS200-L041
R036		
- DAT STG ADDR PTY CHK		
	(T2Y33)	JT210-R036
	R2Y33	JR200-L038
	S2Y33	JS200-L038
R037		
- DAT SG1 UNUSED OUTPUT 0		
	(T2B09)	JT210-R037
1B-B2	K2C12	MK210-L006
1B-B2	L2C12	ML210-L006
1B-A1	*R1C11*	
1B-B2	*J1D11*	
R038		
- DAT SG2 UNUSED OUTPUT 0		
	(T2G03)	JT210-R038
1B-A1	*R6C02*	

SEQNO	PGE OF	FICHE CD	FRM	PAGEID	TYP	CARD NAME	MODEL	FEATURE	VERSION	CARD LOC
MA020	1	1	A01	AA000	BLI	N/A	N/A	N/A	N/A	N/A
MA020	2	1	A03	MA200	CRD	CMDRA	2X	ALL	EXPANDED STORAGE	1B-B2A2
MA020	3	1	A05	MA200	XRL	CMDRA	2X	ALL	EXPANDED STORAGE	1B-B2A2
MA020	6	1	A11	MC210	CRD	CMCL	2X	ALL	EXPANDED STORAGE	1B-B2C2
MA020	7	1	A13	MC210	XRL	CMCL	2X	ALL	EXPANDED STORAGE	1B-B2C2
MA020	9	1	A17	MD210	CRD	CMCL	2X	ALL	EXPANDED STORAGE	1B-B2D2
MA020	10	1	B01	MD210	XRL	CMCL	2X	ALL	EXPANDED STORAGE	1B-B2D2
MA020	12	1	B05	MG210	CRD	CMCL	2X	ALL	EXPANDED STORAGE	1B-B2G2
MA020	13	1	B07	MG210	XRL	CMCL	2X	ALL	EXPANDED STORAGE	1B-B2G2
MA020	15	1	B11	MH210	CRD	CMCL	2X	ALL	EXPANDED STORAGE	1B-B2H2
MA020	16	1	B13	MH210	XRL	CMCL	2X	ALL	EXPANDED STORAGE	1B-B2H2
MA020	18	1	B17	MK210	CRD	CLARK	2X	ALL	EXPANDED STORAGE	1B-B2K2
MA020	19	1	C01	MK210	XRL	CLARK	2X	ALL	EXPANDED STORAGE	1B-B2K2
MA020	22	1	C07	ML210	CRD	CLARL	2X	ALL	EXPANDED STORAGE	1B-B2L2
MA020	23	1	C09	ML210	XRL	CLARL	2X	ALL	EXPANDED STORAGE	1B-B2L2
MA020	26	1	C15	MN210	CRD	CMCL	2X	ALL	EXPANDED STORAGE	1B-B2N2
MA020	27	1	C17	MN210	XRL	CMCL	2X	ALL	EXPANDED STORAGE	1B-B2N2
MA020	29	1	D03	MP210	CRD	CMCL	2X	ALL	EXPANDED STORAGE	1B-B2P2
MA020	30	1	D05	MP210	XRL	CMCL	2X	ALL	EXPANDED STORAGE	1B-B2P2
MA020	32	1	D09	MS210	CRD	CMCL	2X	ALL	EXPANDED STORAGE	1B-B2S2
MA020	33	1	D11	MS210	XRL	CMCL	2X	ALL	EXPANDED STORAGE	1B-B2S2
MA020	35	1	D15	MT210	CRD	CMCL	2X	ALL	EXPANDED STORAGE	1B-B2T2
MA020	36	1	D17	MT210	XRL	CMCL	2X	ALL	EXPANDED STORAGE	1B-B2T2
MA020	38	1	E03	MV200	CRD	CMDRV	2X	ALL	EXPANDED STORAGE	1B-B2V2
MA020	39	1	E05	MV200	XRL	CMDRV	2X	ALL	EXPANDED STORAGE	1B-B2V2

GLOSSARY OF ABBREVIATIONS USED

ABBR.	EXPLANATION
ASDM	AUXILIARY STORAGE DIRECTOR MICROCONTROLLER
BLI	BOARD LOGIC INDEX
CD	CARD (MICROFICHE)
CRD	CARD REFERENCE DIAGRAM
EW	ELECTRONIC WRAP
FRM	FRAME (MICROFICHE)
HDSCS	HIGH DENSITY STATIC CONTROL STORAGE
IR	INDIRECT REGISTER
MDM	VOLUME R30
PA	PORT ADAPTER (CMCD CARD)
SAR	STORAGE ADDRESS REGISTER
SB1	STORAGE BOARD 1
SD1	STORAGE DIRECTOR 1
SDM	STORAGE DIRECTOR MICROCONTROLLER
XRL	CROSS REFERENCE LIST
2X1	TWO CHANNEL SWITCH
4X1	TWO CHANNEL ADDITIONAL OR FOUR CHANNEL

NOTES USED ON CROSS REFERENCE PAGES

THE LEGEND ON THE CROSS REFERENCE PAGES
SHOW ( ) AS THE SOURCE(S) OF THE SIGNAL
AND * * AS THE CABLE SOCKET PINS

IN ADDITION THE FOLLOWING SPECIAL DESIGNATIONS
WILL ALSO SHOW ON THESE PAGES

ANANN FOLLOWED BY
+2-CH *ANANN* INDICATES PREWIRING FOR TWO CHANNEL ADDITIONAL

->MDM *AANNN* REFERENCES MDM PAGE

->MNT *DEV * INDICATES A LINE TO THE MAINTENANCE DEVICE

NOTE: THE LINE NAME IN THE MDM MANUAL FOR A GIVEN NET WILL IN GENERAL NOT MATCH THE LINE NAME IN THE LRM EXACTLY.

NOTE: MANY OF THE LINE NAMES ARE OF THE FORM
'+ PPS BBB LINE NAME'
WHERE 'PP' IS THE LAST TWO CHARACTERS OF THE PNAME OF THE SOURCE. 'S' IS THE BOARD POSITION ON THE SOURCE AND 'BBB' IS A BOARD WITH WHICH THE LINE IS ASSOCIATED.

```
003 - DDM,N SG1 PARITY (0-1) ======= * =
004 - DRV SG1 FETCH ENABLE B ------- G10
005 - DRV SG1 SAMPLE CLOCK B ------- M02
006 - DRV SG1 LOAD REG B ----------- G13
007 - ARK SG1 ERROR LATCH RESET ---- P02
008 + ARK SG1 COMMAND CMDR --------- M03
009 - C2Q SG1 FETCH ENABLE A ------- H07
010 - C2Q SG1 STORE ENABLE --------- H10
011 - C2Q SG1 SAMPLE CLOCK A ------- J12
012 - C2Q SG1 LOAD REG A ----------- H12
013 - DRA SG1 FETCH ENABLE A ------- J09
014 - DRA SG1 STORE ENABLE --------- J11
015 - DRA SG1 SAMPLE CLOCK A ------- G12
016 - DRA SG1 LOAD REG A ----------- J13
```

CMDR CARD

OVERVIEW

The CMDR (Data Multiplexing) card provides buffering capability for 72 bits of data during data transfer operations.

PRIMARY FUNCTIONS

- Repowers the load clock A and sample clock A lines for data from the CME1 card during data operations.
- Repowers a store enable line from the multiplexor to the storage cards.
- Repowers the fetch enable A lines for data fetch from the CMC2 card.
- Strips parity bits off the data going to the storage cards.

PRIMARY COMPONENTS

- A/B multiplexor registers for data transfer drivers.
- Three state Receivers and drivers.

ERROR CHECKING

- Data Parity Check (U/L SCCK, bit 0).
  - This bit idicates that a parity error is detected on the data bus to storage.
- DR Clock Check (U/L SCCK, bit 2).
  - This bit indicates that the multiplexor did not receive load clock before a sample clock (during store operation only).

```
= * - DDM,N SG1 DATA (0-35) ======== 003
= * - DRA SG1 DATA A (0-35) ======== 004
= * - DRA SG1 DATA B (0-35) ======== 005
H13 - DRA SG1 LOAD REG A ----------- 006
G09 - SG1/2 DRA DATA PARITY ERROR -- 007
S03 - SG1/2 DRA CLOCK ERROR -------- 008
H09 - DRA SG1 FETCH ENABLE A ------- 009
H11 - DRA SG1 STORE ENABLE --------- 010
M04 - DRA SG1 SAMPLE CLOCK A ------- 011
```

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- DDM,N SG1 PARITY 0		
	A2G08	MA200-L003
1B-A1	(M2N04)	JM200-R006
1B-A1	*F1D13*	
1B-B2	*F1D13*	
L003		
- DDM,N SG1 PARITY 1		
	A2G11	MA200-L003
1B-A1	(M2C13)	JM200-R006
1B-A1	*G1A11*	
1B-B2	*G1A11*	
L004		
- DRV SG1 FETCH ENABLE B		
	A2G10	MA200-L004
	(V2H09)	MV200-R008
	V2G10	MV200-L014
L005		
- DRV SG1 SAMPLE CLOCK B		
	A2M02	MA200-L005
	(V2M04)	MV200-R010
	V2M02	MV200-L015
L006		
- DRV SG1 LOAD REG B		
	A2G13	MA200-L006
	(V2H13)	MV200-R011
	V2G13	MV200-L016
L007		
- ARK SG1 ERROR LATCH RESET		
	A2P02	MA200-L007
	(K2S10)	MK210-R034
L008		
+ ARK SG1 COMMAND CMDR		
	A2M03	MA200-L008
	(K2T05)	MK210-R015
L009		
- C2Q SG1 FETCH ENABLE A		
	A2H07	MA200-L009
1B-A1	(Q2B07)	JQ210-R063
1B-A1	*F1D11*	
1B-B2	*F1D11*	
L010		
- C2Q SG1 STORE ENABLE		
	A2H10	MA200-L010
1B-A1	(Q2D09)	JQ210-R064
1B-A1	*F1E13*	
1B-B2	*F1E13*	
L011		
- C2Q SG1 SAMPLE CLOCK A		
	A2J12	MA200-L011
1B-A1	(Q2C10)	JQ210-R065
1B-A1	*L1E13*	
1B-B2	*Q1A13*	

LINE/SIGNAL	PIN	SHEET/LINE
L012		
- C2Q SG1 LOAD REG A		
	A2H12	MA200-L012
1B-A1	(Q2D04)	JQ210-R070
1B-A1	*G1A13*	
1B-B2	*G1A13*	
L013		
- DRA SG1 FETCH ENABLE A		
	A2J09	MA200-L013
	(A2H09)	MA200-R009
	V2J09	MV200-L004
L014		
- DRA SG1 STORE ENABLE		
	A2J11	MA200-L014
	(A2H11)	MA200-R010
	V2J11	MV200-L005
L015		
- DRA SG1 SAMPLE CLOCK A		
	A2G12	MA200-L015
	(A2M04)	MA200-R011
	V2G12	MV200-L006
L016		
- DRA SG1 LOAD REG A		
	A2J13	MA200-L016
	(A2H13)	MA200-R006
	V2J13	MV200-L007
R003		
- DDM,N SG1 DATA 0		
	(A2S13)	MA200-R003
1B-A1	(M2D05)	JM200-R004
1B-A1	*C1E13*	
1B-B2	*G6A04*	
R003		
- DDM,N SG1 DATA 1		
	(A2S12)	MA200-R003
1B-A1	(M2B03)	JM200-R004
1B-A1	*C1D13*	
1B-B2	*F6E04*	
R003		
- DDM,N SG1 DATA 2		
	(A2S10)	MA200-R003
1B-A1	(M2C03)	JM200-R004
1B-A1	*C1B13*	
1B-B2	*F6C04*	
R003		
- DDM,N SG1 DATA 3		
	(A2S09)	MA200-R003
1B-A1	(M2G11)	JM200-R004
1B-A1	*C1A13*	
1B-B2	*F6B04*	
R003		
- DDM,N SG1 DATA 4		
	(A2S06)	MA200-R003
1B-A1	(M2D02)	JM200-R004
1B-A1	*B1B13*	
1B-B2	*E6C04*	

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- DDM,N SG1 DATA 5		
	(A2S02)	MA200-R003
1B-A1	(M2B04)	JM200-R004
1B-A1	*A1D13*	
1B-B2	*D6E04*	
R003		
- DDM,N SG1 DATA 6		
	(A2M13)	MA200-R003
1B-A1	(M2C02)	JM200-R004
1B-A1	*A1D11*	
1B-B2	*D6E02*	
R003		
- DDM,N SG1 DATA 7		
	(A2M12)	MA200-R003
1B-A1	(M2B02)	JM200-R004
1B-A1	*A1E11*	
1B-B2	*E6A02*	
R003		
- DDM,N SG1 DATA 8		
	(A2M09)	MA200-R003
1B-A1	(M2J07)	JM200-R004
1B-A1	*B1C11*	
1B-B2	*E6D02*	
R003		
- DDM,N SG1 DATA 9		
	(A2M06)	MA200-R003
1B-A1	(M2S05)	JM200-R004
1B-A1	*C1B11*	
1B-B2	*F6C02*	
R003		
- DDM,N SG1 DATA 10		
	(A2M05)	MA200-R003
1B-A1	(M2U05)	JM200-R004
1B-A1	*C1C11*	
1B-B2	*F6D02*	
R003		
- DDM,N SG1 DATA 11		
	(A2S11)	MA200-R003
1B-A1	(M2P13)	JM200-R004
1B-A1	*C1C13*	
1B-B2	*F6D04*	
R003		
- DDM,N SG1 DATA 12		
	(A2S08)	MA200-R003
1B-A1	(M2M02)	JM200-R004
1B-A1	*B1D13*	
1B-B2	*E6E04*	
R003		
- DDM,N SG1 DATA 13		
	(A2S07)	MA200-R003
1B-A1	(M2N06)	JM200-R004
1B-A1	*B1C13*	
1B-B2	*E6D04*	

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- DDM,N SG1 DATA 14		
	(A2S05)	MA200-R003
1B-A1	(M2N13)	JM200-R004
1B-A1	*B1A13*	
1B-B2	*E6B04*	
R003		
- DDM,N SG1 DATA 15		
	(A2S04)	MA200-R003
1B-A1	(M2P06)	JM200-R004
1B-A1	*A1E13*	
1B-B2	*E6A04*	
R003		
- DDM,N SG1 DATA 16		
	(A2M11)	MA200-R003
1B-A1	(M2H10)	JM200-R004
1B-A1	*B1A11*	
1B-B2	*E6B02*	
R003		
- DDM,N SG1 DATA 17		
	(A2M10)	MA200-R003
1B-A1	(M2H09)	JM200-R004
1B-A1	*B1B11*	
1B-B2	*E6C02*	
R003		
- DDM,N SG1 DATA 18		
	(A2M08)	MA200-R003
1B-A1	(M2H08)	JM200-R004
1B-A1	*B1D11*	
1B-B2	*E6E02*	
R003		
- DDM,N SG1 DATA 19		
	(A2M07)	MA200-R003
1B-A1	(M2H07)	JM200-R004
1B-A1	*C1A11*	
1B-B2	*F6B02*	
R003		
- DDM,N SG1 DATA 20		
	(A2G06)	MA200-R003
1B-A1	(M2J06)	JM200-R004
1B-A1	*F1C13*	
1B-B2	*F1C13*	
R003		
- DDM,N SG1 DATA 21		
	(A2G05)	MA200-R003
1B-A1	(M2H13)	JM200-R004
1B-A1	*F1B13*	
1B-B2	*F1B13*	
R003		
- DDM,N SG1 DATA 22		
	(A2G04)	MA200-R003
1B-A1	(M2D13)	JM200-R004
1B-A1	*E1E13*	
1B-B2	*E1E13*	

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- DDM,N SG1 DATA 23		
	(A2G03)	MA200-R003
1B-A1	(M2H12)	JM200-R004
1B-A1	*E1D13*	
1B-B2	*E1D13*	
R003		
- DDM,N SG1 DATA 24		
	(A2G02)	MA200-R003
1B-A1	(M2S11)	JM200-R004
1B-A1	*E1C13*	
1B-B2	*E1C13*	
R003		
- DDM,N SG1 DATA 25		
	(A2B11)	MA200-R003
1B-A1	(M2U04)	JM200-R004
1B-A1	*E1A13*	
1B-B2	*E1A13*	
R003		
- DDM,N SG1 DATA 26		
	(A2B10)	MA200-R003
1B-A1	(M2T03)	JM200-R004
1B-A1	*D1E13*	
1B-B2	*D1E13*	
R003		
- DDM,N SG1 DATA 27		
	(A2B06)	MA200-R003
1B-A1	(M2T12)	JM200-R004
1B-A1	*E1D11*	
1B-B2	*E1D11*	
R003		
- DDM,N SG1 DATA 28		
	(A2B05)	MA200-R003
1B-A1	(M2U11)	JM200-R004
1B-A1	*E1C11*	
1B-B2	*E1C11*	
R003		
- DDM,N SG1 DATA 29		
	(A2B04)	MA200-R003
1B-A1	(M2U12)	JM200-R004
1B-A1	*E1B11*	
1B-B2	*E1B11*	
R003		
- DDM,N SG1 DATA 30		
	(A2B03)	MA200-R003
1B-A1	(M2S12)	JM200-R004
1B-A1	*E1A11*	
1B-B2	*E1A11*	
R003		
- DDM,N SG1 DATA 31		
	(A2B02)	MA200-R003
1B-A1	(M2T11)	JM200-R004
1B-A1	*D1E11*	
1B-B2	*D1E11*	

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- DDM,N SG1 DATA 32		
	(A2B13)	MA200-R003
1B-A1	(M2M03)	JM200-R004
1B-A1	*E1B13*	
1B-B2	*E1B13*	
R003		
- DDM,N SG1 DATA 33		
	(A2B09)	MA200-R003
1B-A1	(M2S03)	JM200-R004
1B-A1	*F1C11*	
1B-B2	*F1C11*	
R003		
- DDM,N SG1 DATA 34		
	(A2B08)	MA200-R003
1B-A1	(M2N02)	JM200-R004
1B-A1	*F1B11*	
1B-B2	*F1B11*	
R003		
- DDM,N SG1 DATA 35		
	(A2B07)	MA200-R003
1B-A1	(M2M09)	JM200-R004
1B-A1	*E1E11*	
1B-B2	*E1E11*	
R004		
- DRA SG1 DATA A 0		
	(A2T13)	MA200-R004
	(C2U13)	MC210-R003
	(D2U13)	MD210-R003
R004		
- DRA SG1 DATA A 1		
	(A2T12)	MA200-R004
	(C2U12)	MC210-R003
	(D2U12)	MD210-R003
R004		
- DRA SG1 DATA A 2		
	(A2T10)	MA200-R004
	(C2U11)	MC210-R003
	(D2U11)	MD210-R003
R004		
- DRA SG1 DATA A 3		
	(A2T09)	MA200-R004
	(C2U10)	MC210-R003
	(D2U10)	MD210-R003
R004		
- DRA SG1 DATA A 4		
	(A2T06)	MA200-R004
	(C2U09)	MC210-R003
	(D2U09)	MD210-R003
R004		
- DRA SG1 DATA A 5		
	(A2T02)	MA200-R004
	(C2U07)	MC210-R003
	(D2U07)	MD210-R003

LINE/SIGNAL	PIN	SHEET/LINE
R004		
- DRA SG1 DATA A 6	(A2N13)	MA200-R004
	(C2U06)	MC210-R003
	(D2U06)	MD210-R003
R004		
- DRA SG1 DATA A 7	(A2N12)	MA200-R004
	(C2U05)	MC210-R003
	(D2U05)	MD210-R003
R004		
- DRA SG1 DATA A 8	(A2N09)	MA200-R004
	(C2U04)	MC210-R003
	(D2U04)	MD210-R003
R004		
- DRA SG1 DATA A 9	(A2N06)	MA200-R004
	(C2U02)	MC210-R003
	(D2U02)	MD210-R003
R004		
- DRA SG1 DATA A 10	(A2N05)	MA200-R004
	(C2P13)	MC210-R003
	(D2P13)	MD210-R003
R004		
- DRA SG1 DATA A 11	(A2T11)	MA200-R004
	(C2S12)	MC210-R003
	(D2S12)	MD210-R003
R004		
- DRA SG1 DATA A 12	(A2T08)	MA200-R004
	(C2S10)	MC210-R003
	(D2S10)	MD210-R003
R004		
- DRA SG1 DATA A 13	(A2T07)	MA200-R004
	(C2S09)	MC210-R003
	(D2S09)	MD210-R003
R004		
- DRA SG1 DATA A 14	(A2T05)	MA200-R004
	(C2S08)	MC210-R003
	(D2S08)	MD210-R003
R004		
- DRA SG1 DATA A 15	(A2T03)	MA200-R004
	(C2S07)	MC210-R003
	(D2S07)	MD210-R003
R004		
- DRA SG1 DATA A 16	(A2N11)	MA200-R004
	(C2S05)	MC210-R003
	(D2S05)	MD210-R003

LINE/SIGNAL	PIN	SHEET/LINE
R004		
- DRA SG1 DATA A 17	(A2N10)	MA200-R004
	(C2S04)	MC210-R003
	(D2S04)	MD210-R003
R004		
- DRA SG1 DATA A 18	(A2N08)	MA200-R004
	(C2S03)	MC210-R003
	(D2S03)	MD210-R003
R004		
- DRA SG1 DATA A 19	(A2N07)	MA200-R004
	(C2S02)	MC210-R003
	(D2S02)	MD210-R003
R004		
- DRA SG1 DATA A 20	(A2N06)	MA200-R004
	(C2J02)	MC210-R003
	(D2J02)	MD210-R003
R004		
- DRA SG1 DATA A 21	(A2N05)	MA200-R004
	(C2G02)	MC210-R003
	(D2G02)	MD210-R003
R004		
- DRA SG1 DATA A 22	(A2N04)	MA200-R004
	(C2D13)	MC210-R003
	(D2D13)	MD210-R003
R004		
- DRA SG1 DATA A 23	(A2N03)	MA200-R004
	(C2D12)	MC210-R003
	(D2D12)	MD210-R003
R004		
- DRA SG1 DATA A 24	(A2N02)	MA200-R004
	(C2D11)	MC210-R003
	(D2D11)	MD210-R003
R004		
- DRA SG1 DATA A 25	(A2C12)	MA200-R004
	(C2D10)	MC210-R003
	(D2D10)	MD210-R003
R004		
- DRA SG1 DATA A 26	(A2C11)	MA200-R004
	(C2D09)	MC210-R003
	(D2D09)	MD210-R003
R004		
- DRA SG1 DATA A 27	(A2C06)	MA200-R004
	(C2D07)	MC210-R003
	(D2D07)	MD210-R003

LINE/SIGNAL	PIN	SHEET/LINE
R004		
- DRA SG1 DATA A 28	(A2C05)	MA200-R004
	(C2D06)	MC210-R003
	(D2D06)	MD210-R003
R004		
- DRA SG1 DATA A 29	(A2C04)	MA200-R004
	(C2D05)	MC210-R003
	(D2D05)	MD210-R003
R004		
- DRA SG1 DATA A 30	(A2C03)	MA200-R004
	(C2D04)	MC210-R003
	(D2D04)	MD210-R003
R004		
- DRA SG1 DATA A 31	(A2C02)	MA200-R004
	(C2D02)	MC210-R003
	(D2D02)	MD210-R003
R004		
- DRA SG1 DATA A 32	(A2C13)	MA200-R004
	(C2B10)	MC210-R003
	(D2B10)	MD210-R003
R004		
- DRA SG1 DATA A 33	(A2C10)	MA200-R004
	(C2B09)	MC210-R003
	(D2B09)	MD210-R003
R004		
- DRA SG1 DATA A 34	(A2C09)	MA200-R004
	(C2B08)	MC210-R003
	(D2B08)	MD210-R003
R004		
- DRA SG1 DATA A 35	(A2C07)	MA200-R004
	(C2B07)	MC210-R003
	(D2B07)	MD210-R003
R005		
- DRA SG1 DATA B 0	(A2U13)	MA200-R005
	(G2U13)	MG210-R003
	(H2U13)	MH210-R003
R005		
- DRA SG1 DATA B 1	(A2U12)	MA200-R005
	(G2U12)	MG210-R003
	(H2U12)	MH210-R003
R005		
- DRA SG1 DATA B 2	(A2U10)	MA200-R005
	(G2U11)	MG210-R003
	(H2U11)	MH210-R003

LINE/SIGNAL	PIN	SHEET/LINE
R005		
- DRA SG1 DATA B 3	(A2U09)	MA200-R005
	(G2U10)	MG210-R003
	(H2U10)	MH210-R003
R005		
- DRA SG1 DATA B 4	(A2U05)	MA200-R005
	(G2U09)	MG210-R003
	(H2U09)	MH210-R003
R005		
- DRA SG1 DATA B 5	(A2U02)	MA200-R005
	(G2U07)	MG210-R003
	(H2U07)	MH210-R003
R005		
- DRA SG1 DATA B 6	(A2P13)	MA200-R005
	(G2U06)	MG210-R003
	(H2U06)	MH210-R003
R005		
- DRA SG1 DATA B 7	(A2P12)	MA200-R005
	(G2U05)	MG210-R003
	(H2U05)	MH210-R003
R005		
- DRA SG1 DATA B 8	(A2P09)	MA200-R005
	(G2U04)	MG210-R003
	(H2U04)	MH210-R003
R005		
- DRA SG1 DATA B 9	(A2P05)	MA200-R005
	(G2U02)	MG210-R003
	(H2U02)	MH210-R003
R005		
- DRA SG1 DATA B 10	(A2P04)	MA200-R005
	(G2P13)	MG210-R003
	(H2P13)	MH210-R003
R005		
- DRA SG1 DATA B 11	(A2U11)	MA200-R005
	(G2S12)	MG210-R003
	(H2S12)	MH210-R003
R005		
- DRA SG1 DATA B 12	(A2U07)	MA200-R005
	(G2S10)	MG210-R003
	(H2S10)	MH210-R003
R005		
- DRA SG1 DATA B 13	(A2U06)	MA200-R005
	(G2S09)	MG210-R003
	(H2S09)	MH210-R003

LINE/SIGNAL	PIN	SHEET/LINE
R005		
- DRA SG1 DATA B 14	(A2U04)	MA200-R005
	(G2S08)	MG210-R003
	(H2S08)	MH210-R003
R005		
- DRA SG1 DATA B 15	(A2T04)	MA200-R005
	(G2S07)	MG210-R003
	(H2S07)	MH210-R003
R005		
- DRA SG1 DATA B 16	(A2P11)	MA200-R005
	(G2S05)	MG210-R003
	(H2S05)	MH210-R003
R005		
- DRA SG1 DATA B 17	(A2P10)	MA200-R005
	(G2S04)	MG210-R003
	(H2S04)	MH210-R003
R005		
- DRA SG1 DATA B 18	(A2P07)	MA200-R005
	(G2S03)	MG210-R003
	(H2S03)	MH210-R003
R005		
- DRA SG1 DATA B 19	(A2P06)	MA200-R005
	(G2S02)	MG210-R003
	(H2S02)	MH210-R003
R005		
- DRA SG1 DATA B 20	(A2J07)	MA200-R005
	(G2J02)	MG210-R003
	(H2J02)	MH210-R003
R005		
- DRA SG1 DATA B 21	(A2J06)	MA200-R005
	(G2G02)	MG210-R003
	(H2G02)	MH210-R003
R005		
- DRA SG1 DATA B 22	(A2J05)	MA200-R005
	(G2D13)	MG210-R003
	(H2D13)	MH210-R003
R005		
- DRA SG1 DATA B 23	(A2J04)	MA200-R005
	(G2D12)	MG210-R003
	(H2D12)	MH210-R003
R005		
- DRA SG1 DATA B 24	(A2J02)	MA200-R005
	(G2D11)	MG210-R003
	(H2D11)	MH210-R003

LINE/SIGNAL	PIN	SHEET/LINE
R005		
- DRA SG1 DATA B 25	(A2D12)	MA200-R005
	(G2D10)	MG210-R003
	(H2D10)	MH210-R003
R005		
- DRA SG1 DATA B 26	(A2D11)	MA200-R005
	(G2D09)	MG210-R003
	(H2D09)	MH210-R003
R005		
- DRA SG1 DATA B 27	(A2D07)	MA200-R005
	(G2D07)	MG210-R003
	(H2D07)	MH210-R003
R005		
- DRA SG1 DATA B 28	(A2D06)	MA200-R005
	(G2D06)	MG210-R003
	(H2D06)	MH210-R003
R005		
- DRA SG1 DATA B 29	(A2D05)	MA200-R005
	(G2D05)	MG210-R003
	(H2D05)	MH210-R003
R005		
- DRA SG1 DATA B 30	(A2D04)	MA200-R005
	(G2D04)	MG210-R003
	(H2D04)	MH210-R003
R005		
- DRA SG1 DATA B 31	(A2D02)	MA200-R005
	(G2D02)	MG210-R003
	(H2D02)	MH210-R003
R005		
- DRA SG1 DATA B 32	(A2D13)	MA200-R005
	(G2B10)	MG210-R003
	(H2B10)	MH210-R003
R005		
- DRA SG1 DATA B 33	(A2D10)	MA200-R005
	(G2B09)	MG210-R003
	(H2B09)	MH210-R003
R005		
- DRA SG1 DATA B 34	(A2D09)	MA200-R005
	(G2B08)	MG210-R003
	(H2B08)	MH210-R003
R005		
- DRA SG1 DATA B 35	(A2C08)	MA200-R005
	(G2B07)	MG210-R003
	(H2B07)	MH210-R003

DATA REPOWER XRL MA200

LINE/SIGNAL	PIN	SHEET/LINE
R006		
- DRA SG1 LOAD REG A		
	(A2H13)	MA200-R006
	A2J13	MA200-L016
	V2J13	MV200-L007
R007		
- SG1/2 DRA DATA PARITY ERROR		
	(A2G09)	MA200-R007
1B-A1	P2U10	JP200-L017
1B-A1	*F1E11*	
1B-A1	*F6E02*	
1B-B2	*F1E11*	
R008		
- SG1/2 DRA CLOCK ERROR		
	(A2S03)	MA200-R008
1B-A1	P2T10	JP200-L019
1B-A1	*C1E11*	
1B-A1	*C6E02*	
1B-B2	*G6A02*	
R009		
- DRA SG1 FETCH ENABLE A		
	(A2H09)	MA200-R009
	A2J09	MA200-L013
	V2J09	MV200-L004
R010		
- DRA SG1 STORE ENABLE		
	(A2H11)	MA200-R010
	A2J11	MA200-L014
	V2J11	MV200-L005
R011		
- DRA SG1 SAMPLE CLOCK A		
	(A2M04)	MA200-R011
	A2G12	MA200-L015
	V2G12	MV200-L006

003 - ARK SG1 WORD SAR Y (0-7) ===== * =
004 - ARK SG1 BIT SAR Y (0-6) ====== * =
005 - ARK SG1 DATA GATE A Y -------- J06
006 - ARK SG1 DATA GT A SAR Y (0-2) * =
007 - ARK SG1 CS SELECT Y ---------- J10
008 - ARK SG1 CS SAR Y (0-1) ======= * =
009 - ARK SG1 UNUSED OUTPUTS (2-3) = * =
010 - ARK SG1 CARD SELECT GRP (3) == * =
011 - ARK SG1 REFRESH -------------- G03
012 - ARK SG1 POWER ON RESET ------- M03
013 - ARK SG1 READ ----------------- M05
014 - ARK SG1 WRITE ---------------- M09
015 - ARK SG1 CS/WORD SAR PTY Y----- G13
016 - ARK SG1 DGA/BIT SAR PTY Y ---- P04

CLP4/CLP2 CARD

OVERVIEW

The CLP4/CLP2 card is a 4/2 Megabyte capacity data storage array. The storage is organized 36 bits wide by 1 or 1/2 Meg deep. The use of data gates allows up to 8 store/fetch operations per bit for each card access.

PRIMARY FUNCTIONS

- Provides 4/2 Megabyte of storage capacity for data from the 36 bit storage data bus.
- Checks parity of the address bus.
- Decodes cs, word, bit and data gate SAR's.

PRIMARY COMPONENTS

- 4/2 data storage array segments:
  - A segment contains 36 memories, each of which is 256k x 1 bit size.
- Address buffers and parity checkers.
- SAR (Storage address register) and select line decoders.
- Bidirectional data receivers and drivers.

ERROR CHECKING

- Data Op (address) parity error generated and latched on CLAR cards and appropriate bit is set in reg USCACK/LSCACK.
- Refresh (address) parity error is generated and latched on CLAR cards and appropriate bit is set in reg CSCRACK.

= * - DRA SG1 DATA A (0-35) ======== 003
J05 - SH1 SG1 DATA OP ERROR BCDE --- 004
G10 - SH1 SG1 REFRESH ERROR BCHJ --- 005
M06 - SH CARD IN C ----------------- 006
P07 - SH CARD IN CH ---------------- 007

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- ARK SG1 WORD SAR Y 0		
	C2P02	MC210-L003
	(K2P02)	MK210-R016
	H2P02	MH210-L003
L003		
- ARK SG1 WORD SAR Y 1		
	C2P10	MC210-L003
	(K2N10)	MK210-R016
	H2P10	MH210-L003
L003		
- ARK SG1 WORD SAR Y 2		
	C2M04	MC210-L003
	(K2N04)	MK210-R016
	H2M04	MH210-L003
L003		
- ARK SG1 WORD SAR Y 3		
	C2P12	MC210-L003
	(K2P13)	MK210-R016
	H2P12	MH210-L003
L003		
- ARK SG1 WORD SAR Y 4		
	C2M10	MC210-L003
	(K2M11)	MK210-R016
	H2M10	MH210-L003
L003		
- ARK SG1 WORD SAR Y 5		
	C2M12	MC210-L003
	(K2N13)	MK210-R016
	H2M12	MH210-L003
L003		
- ARK SG1 WORD SAR Y 6		
	C2P09	MC210-L003
	(K2P09)	MK210-R016
	H2P09	MH210-L003
L003		
- ARK SG1 WORD SAR Y 7		
	C2G09	MC210-L003
	(K2H08)	MK210-R016
	H2G09	MH210-L003
L004		
- ARK SG1 BIT SAR Y 0		
	C2P11	MC210-L004
	(K2N12)	MK210-R017
	H2P11	MH210-L004
L004		
- ARK SG1 BIT SAR Y 1		
	C2M07	MC210-L004
	(K2N07)	MK210-R017
	H2M07	MH210-L004
L004		
- ARK SG1 BIT SAR Y 2		
	C2P05	MC210-L004
	(K2N06)	MK210-R017
	H2P05	MH210-L004

LINE/SIGNAL	PIN	SHEET/LINE
L004		
- ARK SG1 BIT SAR Y 3		
	C2M02	MC210-L004
	(K2H13)	MK210-R017
	H2M02	MH210-L004
L004		
- ARK SG1 BIT SAR Y 4		
	C2M08	MC210-L004
	(K2N11)	MK210-R017
	H2M08	MH210-L004
L004		
- ARK SG1 BIT SAR Y 5		
	C2G05	MC210-L004
	(K2G05)	MK210-R017
	H2G05	MH210-L004
L004		
- ARK SG1 BIT SAR Y 6		
	C2J07	MC210-L004
	(K2J07)	MK210-R017
	H2J07	MH210-L004
L005		
- ARK SG1 DATA GATE A Y		
	C2J06	MC210-L005
	(K2J06)	MK210-R021
L006		
- ARK SG1 DATA GT A SAR Y 0		
	C2J11	MC210-L006
	(K2J11)	MK210-R020
L006		
- ARK SG1 DATA GT A SAR Y 1		
	C2G07	MC210-L006
	(K2G07)	MK210-R020
L006		
- ARK SG1 DATA GT A SAR Y 2		
	C2G12	MC210-L006
	(K2G12)	MK210-R020
L007		
- ARK SG1 CS SELECT Y		
	C2J10	MC210-L007
	(K2H09)	MK210-R019
	H2J10	MH210-L007
L008		
- ARK SG1 CS SAR Y 0		
	C2J12	MC210-L008
	(K2H11)	MK210-R018
	H2J12	MH210-L008
L008		
- ARK SG1 CS SAR Y 1		
	C2J04	MC210-L008
	(K2J04)	MK210-R018
	H2J04	MH210-L008
L009		
- ARK SG1 UNUSED OUTPUTS 2		
	C2J13	MC210-L009
	H2J13	MH210-L009
	K2H12	MK210-L017

LINE/SIGNAL	PIN	SHEET/LINE
L009		
- ARK SG1 UNUSED OUTPUTS 3		
	C2G08	MC210-L009
	H2G08	MH210-L009
	K2H07	MK210-L017
L010		
- ARK SG1 CARD SELECT GRP 3		
	C2G04	MC210-L010
	(K2D08)	MK210-R011
	H2G04	MH210-L010
L011		
- ARK SG1 REFRESH		
	C2G03	MC210-L011
	(K2G03)	MK210-R033
	D2G03	MD210-L011
	G2G03	MG210-L011
	H2G03	MH210-L011
L012		
- ARK SG1 POWER ON RESET		
	C2M03	MC210-L012
	(K2M03)	MK210-R012
	D2M03	MD210-L012
	G2M03	MG210-L012
	H2M03	MH210-L012
L013		
- ARK SG1 READ		
	C2M05	MC210-L013
	(K2M05)	MK210-R013
	D2M05	MD210-L013
	G2M05	MG210-L013
	H2M05	MH210-L013
L014		
- ARK SG1 WRITE		
	C2M09	MC210-L014
	(K2M09)	MK210-R014
	D2M09	MD210-L014
	G2M09	MG210-L014
	H2M09	MH210-L014
L015		
- ARK SG1 CS/WORD SAR PTY Y		
	C2G13	MC210-L015
	(K2H02)	MK210-R035
	H2G13	MH210-L015
L016		
- ARK SG1 DGA/BIT SAR PTY Y		
	C2P04	MC210-L016
	(K2P04)	MK210-R036
R003		
- DRA SG1 DATA A 0		
	(C2U13)	MC210-R003
	(A2T13)	MA200-R004
	(D2U13)	MD210-R003
R003		
- DRA SG1 DATA A 1		
	(C2U12)	MC210-R003
	(A2T12)	MA200-R004
	(D2U12)	MD210-R003

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- DRA SG1 DATA A 2		
	(C2U11)	MC210-R003
	(A2T10)	MA200-R004
	(D2U11)	MD210-R003
R003		
- DRA SG1 DATA A 3		
	(C2U10)	MC210-R003
	(A2T09)	MA200-R004
	(D2U10)	MD210-R003
R003		
- DRA SG1 DATA A 4		
	(C2U09)	MC210-R003
	(A2T06)	MA200-R004
	(D2U09)	MD210-R003
R003		
- DRA SG1 DATA A 5		
	(C2U07)	MC210-R003
	(A2T02)	MA200-R004
	(D2U07)	MD210-R003
R003		
- DRA SG1 DATA A 6		
	(C2U06)	MC210-R003
	(A2N13)	MA200-R004
	(D2U06)	MD210-R003
R003		
- DRA SG1 DATA A 7		
	(C2U05)	MC210-R003
	(A2N12)	MA200-R004
	(D2U05)	MD210-R003
R003		
- DRA SG1 DATA A 8		
	(C2U04)	MC210-R003
	(A2N09)	MA200-R004
	(D2U04)	MD210-R003
R003		
- DRA SG1 DATA A 9		
	(C2U02)	MC210-R003
	(A2N06)	MA200-R004
	(D2U02)	MD210-R003
R003		
- DRA SG1 DATA A 10		
	(C2P13)	MC210-R003
	(A2N05)	MA200-R004
	(D2P13)	MD210-R003
R003		
- DRA SG1 DATA A 11		
	(C2S12)	MC210-R003
	(A2T11)	MA200-R004
	(D2S12)	MD210-R003
R003		
- DRA SG1 DATA A 12		
	(C2S10)	MC210-R003
	(A2T08)	MA200-R004
	(D2S10)	MD210-R003

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- DRA SG1 DATA A 13		
	(C2S09)	MC210-R003
	(A2T07)	MA200-R004
	(D2S09)	MD210-R003
R003		
- DRA SG1 DATA A 14		
	(C2S08)	MC210-R003
	(A2T05)	MA200-R004
	(D2S08)	MD210-R003
R003		
- DRA SG1 DATA A 15		
	(C2S07)	MC210-R003
	(A2T03)	MA200-R004
	(D2S07)	MD210-R003
R003		
- DRA SG1 DATA A 16		
	(C2S05)	MC210-R003
	(A2N11)	MA200-R004
	(D2S05)	MD210-R003
R003		
- DRA SG1 DATA A 17		
	(C2S04)	MC210-R003
	(A2N10)	MA200-R004
	(D2S04)	MD210-R003
R003		
- DRA SG1 DATA A 18		
	(C2S03)	MC210-R003
	(A2N08)	MA200-R004
	(D2S03)	MD210-R003
R003		
- DRA SG1 DATA A 19		
	(C2S02)	MC210-R003
	(A2N07)	MA200-R004
	(D2S02)	MD210-R003
R003		
- DRA SG1 DATA A 20		
	(C2J02)	MC210-R003
	(A2H06)	MA200-R004
	(D2J02)	MD210-R003
R003		
- DRA SG1 DATA A 21		
	(C2G02)	MC210-R003
	(A2H05)	MA200-R004
	(D2G02)	MD210-R003
R003		
- DRA SG1 DATA A 22		
	(C2D13)	MC210-R003
	(A2H04)	MA200-R004
	(D2D13)	MD210-R003
R003		
- DRA SG1 DATA A 23		
	(C2D12)	MC210-R003
	(A2H03)	MA200-R004
	(D2D12)	MD210-R003

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- DRA SG1 DATA A 24		
	(C2D11)	MC210-R003
	(A2H02)	MA200-R004
	(D2D11)	MD210-R003
R003		
- DRA SG1 DATA A 25		
	(C2D10)	MC210-R003
	(A2C12)	MA200-R004
	(D2D10)	MD210-R003
R003		
- DRA SG1 DATA A 26		
	(C2D09)	MC210-R003
	(A2C11)	MA200-R004
	(D2D09)	MD210-R003
R003		
- DRA SG1 DATA A 27		
	(C2D07)	MC210-R003
	(A2C06)	MA200-R004
	(D2D07)	MD210-R003
R003		
- DRA SG1 DATA A 28		
	(C2D06)	MC210-R003
	(A2C05)	MA200-R004
	(D2D06)	MD210-R003
R003		
- DRA SG1 DATA A 29		
	(C2D05)	MC210-R003
	(A2C04)	MA200-R004
	(D2D05)	MD210-R003
R003		
- DRA SG1 DATA A 30		
	(C2D04)	MC210-R003
	(A2C03)	MA200-R004
	(D2D04)	MD210-R003
R003		
- DRA SG1 DATA A 31		
	(C2D02)	MC210-R003
	(A2C02)	MA200-R004
	(D2D02)	MD210-R003
R003		
- DRA SG1 DATA A 32		
	(C2B10)	MC210-R003
	(A2C13)	MA200-R004
	(D2B10)	MD210-R003
R003		
- DRA SG1 DATA A 33		
	(C2B09)	MC210-R003
	(A2C10)	MA200-R004
	(D2B09)	MD210-R003
R003		
- DRA SG1 DATA A 34		
	(C2B08)	MC210-R003
	(A2C09)	MA200-R004
	(D2B08)	MD210-R003

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- DRA SG1 DATA A 35		
	(C2B07)	MC210-R003
	(A2C07)	MA200-R004
	(D2B07)	MD210-R003
R004		
- SH1 SG1 DATA OP ERROR BCDE		
	(C2J05)	MC210-R004
	(D2J05)	MD210-R004
	K2G04	MK210-L023
R005		
- SH1 SG1 REFRESH ERROR BCHJ		
	(C2G10)	MC210-R005
	(H2G10)	MH210-R005
	K2J09	MK210-L022
R006		
- SH CARD IN C		
	(C2M06)	MC210-R006
R007		
- SH CARD IN CH		
	(C2P07)	MC210-R007
	(H2M06)	MH210-R006

003 - ARK SG1 WORD SAR X (0-7) ===== * =
004 - ARK SG1 BIT SAR X (0-6) ====== * =
005 - ARK SG1 DATA GATE A X -------- J06
006 - ARK SG1 DATA GT A SAR X (0-2) * =
007 - ARK SG1 CS SELECT X ---------- J10
008 - ARK SG1 CS SAR X (0-1) ======= * =
009 - ARK SG1 UNUSED OUTPUTS (0-1) = * =
010 - ARK SG1 CARD SELECT GRP (0) == * =
011 - ARK SG1 REFRESH -------------- G03
012 - ARK SG1 POWER ON RESET ------- M03
013 - ARK SG1 READ ----------------- M05
014 - ARK SG1 WRITE ---------------- M09
015 - ARK SG1 CS/WORD SAR PTY X----- G13
016 - ARK SG1 DGA/BIT SAR PTY X ---- P04

= * - DRA SG1 DATA A (0-35) ======== 003
J05 - SH1 SG1 DATA OP ERROR BCDE --- 004
G10 - SH1 SG1 REFRESH ERROR DEFG --- 005
M06 - SH CARD IN D ----------------- 006
P07 - SH CARD IN DG ---------------- 007

CLP4/CLP2 CARD

OVERVIEW

The CLP4/CLP2 card is a 4/2 Megabyte capacity data storage array. The storage is organized 36 bits wide by 1 or 1/2 Meg deep. The use of data gates allows up to 8 store/fetch operations per bit for each card access.

PRIMARY FUNCTIONS

- Provides 4/2 Megabyte of storage capacity for data from the 36 bit storage data bus.
- Checks parity of the address bus.
- Decodes cs, word, bit and data gate SAR's.

PRIMARY COMPONENTS

- 4/2 data storage array segments:
  - A segment contains 36 memories, each of which is 256k x 1 bit size.
- Address buffers and parity checkers.
- SAR (Storage address register) and select line decoders.
- Bidirectional data receivers and drivers.

ERROR CHECKING

- Data Op (address) parity error generated and latched on CLAR cards and appropriate bit is set in reg USCACK/LSCACK.
- Refresh (address) parity error is generated and latched on CLAR cards and appropriate bit is set in reg CSCRACK.

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- ARK SG1 WORD SAR X 0		
	D2P02	MD210-L003
	(K2N02)	MK210-R003
	G2P02	MG210-L003
L003		
- ARK SG1 WORD SAR X 1		
	D2P10	MD210-L003
	(K2P10)	MK210-R003
	G2P10	MG210-L003
L003		
- ARK SG1 WORD SAR X 2		
	D2M04	MD210-L003
	(K2M04)	MK210-R003
	G2M04	MG210-L003
L003		
- ARK SG1 WORD SAR X 3		
	D2P12	MD210-L003
	(K2P12)	MK210-R003
	G2P12	MG210-L003
L003		
- ARK SG1 WORD SAR X 4		
	D2M10	MD210-L003
	(K2M10)	MK210-R003
	G2M10	MG210-L003
L003		
- ARK SG1 WORD SAR X 5		
	D2M12	MD210-L003
	(K2M12)	MK210-R003
	G2M12	MG210-L003
L003		
- ARK SG1 WORD SAR X 6		
	D2P09	MD210-L003
	(K2N08)	MK210-R003
	G2P09	MG210-L003
L003		
- ARK SG1 WORD SAR X 7		
	D2G09	MD210-L003
	(K2G09)	MK210-R003
	G2G09	MG210-L003
L004		
- ARK SG1 BIT SAR X 0		
	D2P11	MD210-L004
	(K2P11)	MK210-R004
	G2P11	MG210-L004
L004		
- ARK SG1 BIT SAR X 1		
	D2M07	MD210-L004
	(K2M07)	MK210-R004
	G2M07	MG210-L004
L004		
- ARK SG1 BIT SAR X 2		
	D2P05	MD210-L004
	(K2P05)	MK210-R004
	G2P05	MG210-L004

LINE/SIGNAL	PIN	SHEET/LINE
L004		
- ARK SG1 BIT SAR X 3		
	D2M02	MD210-L004
	(K2M02)	MK210-R004
	G2M02	MG210-L004
L004		
- ARK SG1 BIT SAR X 4		
	D2M08	MD210-L004
	(K2M08)	MK210-R004
	G2M08	MG210-L004
L004		
- ARK SG1 BIT SAR X 5		
	D2G05	MD210-L004
	(K2H04)	MK210-R004
	G2G05	MG210-L004
L004		
- ARK SG1 BIT SAR X 6		
	D2J07	MD210-L004
	(K2H06)	MK210-R004
	G2J07	MG210-L004
L005		
- ARK SG1 DATA GATE A X		
	D2J06	MD210-L005
	(K2H05)	MK210-R008
L006		
- ARK SG1 DATA GT A SAR X 0		
	D2J11	MD210-L006
	(K2H10)	MK210-R007
L006		
- ARK SG1 DATA GT A SAR X 1		
	D2G07	MD210-L006
	(K2G06)	MK210-R007
L006		
- ARK SG1 DATA GT A SAR X 2		
	D2G12	MD210-L006
	(K2G11)	MK210-R007
L007		
- ARK SG1 CS SELECT X		
	D2J10	MD210-L007
	(K2J10)	MK210-R006
	G2J10	MG210-L007
L008		
- ARK SG1 CS SAR X 0		
	D2J12	MD210-L008
	(K2J12)	MK210-R005
	G2J12	MG210-L008
L008		
- ARK SG1 CS SAR X 1		
	D2J04	MD210-L008
	(K2H03)	MK210-R005
	G2J04	MG210-L008
L009		
- ARK SG1 UNUSED OUTPUTS 0		
	D2J13	MD210-L009
	G2J13	MG210-L009
	K2J13	MK210-L017

LINE/SIGNAL	PIN	SHEET/LINE
L009		
- ARK SG1 UNUSED OUTPUTS 1		
	D2G08	MD210-L009
	G2G08	MG210-L009
	K2G08	MK210-L017
L010		
- ARK SG1 CARD SELECT GRP 0		
	D2G04	MD210-L010
	(K2B05)	MK210-R011
	G2G04	MG210-L010
L011		
- ARK SG1 REFRESH		
	D2G03	MD210-L011
	(K2G03)	MK210-R033
	C2G03	MC210-L011
	G2G03	MG210-L011
	H2G03	MH210-L011
L012		
- ARK SG1 POWER ON RESET		
	D2M03	MD210-L012
	(K2M03)	MK210-R012
	C2M03	MC210-L012
	G2M03	MG210-L012
	H2M03	MH210-L012
L013		
- ARK SG1 READ		
	D2M05	MD210-L013
	(K2M05)	MK210-R013
	C2M05	MC210-L013
	G2M05	MG210-L013
	H2M05	MH210-L013
L014		
- ARK SG1 WRITE		
	D2M09	MD210-L014
	(K2M09)	MK210-R014
	C2M09	MC210-L014
	G2M09	MG210-L014
	H2M09	MH210-L014
L015		
- ARK SG1 CS/WORD SAR PTY X		
	D2G13	MD210-L015
	(K2G13)	MK210-R024
	G2G13	MG210-L015
L016		
- ARK SG1 DGA/BIT SAR PTY X		
	D2P04	MD210-L016
	(K2M06)	MK210-R025
R003		
- DRA SG1 DATA A 0		
	(D2U13)	MD210-R003
	(A2T13)	MA200-R004
	(C2U13)	MC210-R003
R003		
- DRA SG1 DATA A 1		
	(D2U12)	MD210-R003
	(A2T12)	MA200-R004
	(C2U12)	MC210-R003

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- DRA SG1 DATA A 2		
	(D2U11)	MD210-R003
	(A2T10)	MA200-R004
	(C2U11)	MC210-R003
R003		
- DRA SG1 DATA A 3		
	(D2U10)	MD210-R003
	(A2T09)	MA200-R004
	(C2U10)	MC210-R003
R003		
- DRA SG1 DATA A 4		
	(D2U09)	MD210-R003
	(A2T06)	MA200-R004
	(C2U09)	MC210-R003
R003		
- DRA SG1 DATA A 5		
	(D2U07)	MD210-R003
	(A2T02)	MA200-R004
	(C2U07)	MC210-R003
R003		
- DRA SG1 DATA A 6		
	(D2U06)	MD210-R003
	(A2N13)	MA200-R004
	(C2U06)	MC210-R003
R003		
- DRA SG1 DATA A 7		
	(D2U05)	MD210-R003
	(A2N12)	MA200-R004
	(C2U05)	MC210-R003
R003		
- DRA SG1 DATA A 8		
	(D2U04)	MD210-R003
	(A2N09)	MA200-R004
	(C2U04)	MC210-R003
R003		
- DRA SG1 DATA A 9		
	(D2U02)	MD210-R003
	(A2N06)	MA200-R004
	(C2U02)	MC210-R003
R003		
- DRA SG1 DATA A 10		
	(D2P13)	MD210-R003
	(A2N05)	MA200-R004
	(C2P13)	MC210-R003
R003		
- DRA SG1 DATA A 11		
	(D2S12)	MD210-R003
	(A2T11)	MA200-R004
	(C2S12)	MC210-R003
R003		
- DRA SG1 DATA A 12		
	(D2S10)	MD210-R003
	(A2T08)	MA200-R004
	(C2S10)	MC210-R003

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- DRA SG1 DATA A 13		
	(D2S09)	MD210-R003
	(A2T07)	MA200-R004
	(C2S09)	MC210-R003
R003		
- DRA SG1 DATA A 14		
	(D2S08)	MD210-R003
	(A2T05)	MA200-R004
	(C2S08)	MC210-R003
R003		
- DRA SG1 DATA A 15		
	(D2S07)	MD210-R003
	(A2T03)	MA200-R004
	(C2S07)	MC210-R003
R003		
- DRA SG1 DATA A 16		
	(D2S05)	MD210-R003
	(A2N11)	MA200-R004
	(C2S05)	MC210-R003
R003		
- DRA SG1 DATA A 17		
	(D2S04)	MD210-R003
	(A2N10)	MA200-R004
	(C2S04)	MC210-R003
R003		
- DRA SG1 DATA A 18		
	(D2S03)	MD210-R003
	(A2N08)	MA200-R004
	(C2S03)	MC210-R003
R003		
- DRA SG1 DATA A 19		
	(D2S02)	MD210-R003
	(A2N07)	MA200-R004
	(C2S02)	MC210-R003
R003		
- DRA SG1 DATA A 20		
	(D2J02)	MD210-R003
	(A2H06)	MA200-R004
	(C2J02)	MC210-R003
R003		
- DRA SG1 DATA A 21		
	(D2G02)	MD210-R003
	(A2H05)	MA200-R004
	(C2G02)	MC210-R003
R003		
- DRA SG1 DATA A 22		
	(D2D13)	MD210-R003
	(A2H04)	MA200-R004
	(C2D13)	MC210-R003
R003		
- DRA SG1 DATA A 23		
	(D2D12)	MD210-R003
	(A2H03)	MA200-R004
	(C2D12)	MC210-R003

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- DRA SG1 DATA A 24		
	(D2D11)	MD210-R003
	(A2H02)	MA200-R004
	(C2D11)	MC210-R003
R003		
- DRA SG1 DATA A 25		
	(D2D10)	MD210-R003
	(A2C12)	MA200-R004
	(C2D10)	MC210-R003
R003		
- DRA SG1 DATA A 26		
	(D2D09)	MD210-R003
	(A2C11)	MA200-R004
	(C2D09)	MC210-R003
R003		
- DRA SG1 DATA A 27		
	(D2D07)	MD210-R003
	(A2C06)	MA200-R004
	(C2D07)	MC210-R003
R003		
- DRA SG1 DATA A 28		
	(D2D06)	MD210-R003
	(A2C05)	MA200-R004
	(C2D06)	MC210-R003
R003		
- DRA SG1 DATA A 29		
	(D2D05)	MD210-R003
	(A2C04)	MA200-R004
	(C2D05)	MC210-R003
R003		
- DRA SG1 DATA A 30		
	(D2D04)	MD210-R003
	(A2C03)	MA200-R004
	(C2D04)	MC210-R003
R003		
- DRA SG1 DATA A 31		
	(D2D02)	MD210-R003
	(A2C02)	MA200-R004
	(C2D02)	MC210-R003
R003		
- DRA SG1 DATA A 32		
	(D2B10)	MD210-R003
	(A2C13)	MA200-R004
	(C2B10)	MC210-R003
R003		
- DRA SG1 DATA A 33		
	(D2B09)	MD210-R003
	(A2C10)	MA200-R004
	(C2B09)	MC210-R003
R003		
- DRA SG1 DATA A 34		
	(D2B08)	MD210-R003
	(A2C09)	MA200-R004
	(C2B08)	MC210-R003

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- DRA SG1 DATA A 35		
	(D2B07)	MD210-R003
	(A2C07)	MA200-R004
	(C2B07)	MC210-R003
R004		
- SH1 SG1 DATA OP ERROR BCDE		
	(D2J05)	MD210-R004
	(C2J05)	MC210-R004
	K2G04	MK210-L023
R005		
- SH1 SG1 REFRESH ERROR DEFG		
	(D2G10)	MD210-R005
	(G2G10)	MG210-R005
	K2G10	MK210-L021
R006		
- SH CARD IN D		
	(D2M06)	MD210-R006
R007		
- SH CARD IN DG		
	(D2P07)	MD210-R007
	(G2M06)	MG210-R006

003 - ARK SG1 WORD SAR X (0-7) ===== * =
004 - ARK SG1 BIT SAR X (0-6) ====== * =
005 - ARK SG1 DATA GATE B X -------- J06
006 - ARK SG1 DATA GT B SAR X (0-2) * =
007 - ARK SG1 CS SELECT X ---------- J10
008 - ARK SG1 CS SAR X (0-1) ======= * =
009 - ARK SG1 UNUSED OUTPUTS (0-1) = * =
010 - ARK SG1 CARD SELECT GRP (0) == * =
011 - ARK SG1 REFRESH -------------- G03
012 - ARK SG1 POWER ON RESET ------- M03
013 - ARK SG1 READ ----------------- M05
014 - ARK SG1 WRITE ---------------- M09
015 - ARK SG1 CS/WORD SAR PTY X----- G13
016 - ARK SG1 DGB/BIT SAR PTY X ---- P04

= * - DRA SG1 DATA B (0-35) ======== 003
J05 - SH1 SG1 DATA OP ERROR FGHJ --- 004
G10 - SH1 SG1 REFRESH ERROR DEFG --- 005
M06 - SH CARD IN DG ---------------- 006
P07 - SH CARD IN GP ---------------- 007

CLP4/CLP2 CARD

OVERVIEW

The CLP4/CLP2 card is a 4/2 Megabyte capacity data storage array. The storage is organized 36 bits wide by 1 or 1/2 Meg deep. The use of data gates allows up to 8 store/fetch operations per bit for each card access.

PRIMARY FUNCTIONS

- Provides 4/2 Megabyte of storage capacity for data from the 36 bit storage data bus.
- Checks parity of the address bus.
- Decodes cs, word, bit and data gate SAR's.

PRIMARY COMPONENTS

- 4/2 data storage array segments:
  - A segment contains 36 memories, each of which is 256k x 1 bit size.
- Address buffers and parity checkers.
- SAR (Storage address register) and select line decoders.
- Bidirectional data receivers and drivers.

ERROR CHECKING

- Data Op (address) parity error generated and latched on CLAR cards and appropriate bit is set in reg USCACK/LSCACK.
- Refresh (address) parity error is generated and latched on CLAR cards and appropriate bit is set in reg CSCRACK.

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- ARK SG1 WORD SAR X 0		
	G2P02	MG210-L003
	(K2N02)	MK210-R003
	D2P02	MD210-L003
L003		
- ARK SG1 WORD SAR X 1		
	G2P10	MG210-L003
	(K2P10)	MK210-R003
	D2P10	MD210-L003
L003		
- ARK SG1 WORD SAR X 2		
	G2M04	MG210-L003
	(K2M04)	MK210-R003
	D2M04	MD210-L003
L003		
- ARK SG1 WORD SAR X 3		
	G2P12	MG210-L003
	(K2P12)	MK210-R003
	D2P12	MD210-L003
L003		
- ARK SG1 WORD SAR X 4		
	G2M10	MG210-L003
	(K2M10)	MK210-R003
	D2M10	MD210-L003
L003		
- ARK SG1 WORD SAR X 5		
	G2M12	MG210-L003
	(K2M12)	MK210-R003
	D2M12	MD210-L003
L003		
- ARK SG1 WORD SAR X 6		
	G2P09	MG210-L003
	(K2N08)	MK210-R003
	D2P09	MD210-L003
L003		
- ARK SG1 WORD SAR X 7		
	G2G09	MG210-L003
	(K2G09)	MK210-R003
	D2G09	MD210-L003
L004		
- ARK SG1 BIT SAR X 0		
	G2P11	MG210-L004
	(K2P11)	MK210-R004
	D2P11	MD210-L004
L004		
- ARK SG1 BIT SAR X 1		
	G2M07	MG210-L004
	(K2M07)	MK210-R004
	D2M07	MD210-L004
L004		
- ARK SG1 BIT SAR X 2		
	G2P05	MG210-L004
	(K2P05)	MK210-R004
	D2P05	MD210-L004

LINE/SIGNAL	PIN	SHEET/LINE
L004		
- ARK SG1 BIT SAR X 3		
	G2M02	MG210-L004
	(K2M02)	MK210-R004
	D2M02	MD210-L004
L004		
- ARK SG1 BIT SAR X 4		
	G2M08	MG210-L004
	(K2M08)	MK210-R004
	D2M08	MD210-L004
L004		
- ARK SG1 BIT SAR X 5		
	G2G05	MG210-L004
	(K2H04)	MK210-R004
	D2G05	MD210-L004
L004		
- ARK SG1 BIT SAR X 6		
	G2J07	MG210-L004
	(K2H06)	MK210-R004
	D2J07	MD210-L004
L005		
- ARK SG1 DATA GATE B X		
	G2J06	MG210-L005
	(K2U13)	MK210-R010
L006		
- ARK SG1 DATA GT B SAR X 0		
	G2J11	MG210-L006
	(K2S08)	MK210-R009
L006		
- ARK SG1 DATA GT B SAR X 1		
	G2G07	MG210-L006
	(K2S12)	MK210-R009
L006		
- ARK SG1 DATA GT B SAR X 2		
	G2G12	MG210-L006
	(K2U09)	MK210-R009
L007		
- ARK SG1 CS SELECT X		
	G2J10	MG210-L007
	(K2J10)	MK210-R006
	D2J10	MD210-L007
L008		
- ARK SG1 CS SAR X 0		
	G2J12	MG210-L008
	(K2J12)	MK210-R005
	D2J12	MD210-L008
L008		
- ARK SG1 CS SAR X 1		
	G2J04	MG210-L008
	(K2H03)	MK210-R005
	D2J04	MD210-L008
L009		
- ARK SG1 UNUSED OUTPUTS 0		
	G2J13	MG210-L009
	D2J13	MD210-L009
	K2J13	MK210-L017

LINE/SIGNAL	PIN	SHEET/LINE
L009		
- ARK SG1 UNUSED OUTPUTS 1		
	G2G08	MG210-L009
	D2G08	MD210-L009
	K2G08	MK210-L017
L010		
- ARK SG1 CARD SELECT GRP 0		
	G2G04	MG210-L010
	(K2B05)	MK210-R011
	D2G04	MD210-L010
L011		
- ARK SG1 REFRESH		
	G2G03	MG210-L011
	(K2G03)	MK210-R033
	C2G03	MC210-L011
	D2G03	MD210-L011
	H2G03	MH210-L011
L012		
- ARK SG1 POWER ON RESET		
	G2M03	MG210-L012
	(K2M03)	MK210-R012
	C2M03	MC210-L012
	D2M03	MD210-L012
	H2M03	MH210-L012
L013		
- ARK SG1 READ		
	G2M05	MG210-L013
	(K2M05)	MK210-R013
	C2M05	MC210-L013
	D2M05	MD210-L013
	H2M05	MH210-L013
L014		
- ARK SG1 WRITE		
	G2M09	MG210-L014
	(K2M09)	MK210-R014
	C2M09	MC210-L014
	D2M09	MD210-L014
	H2M09	MH210-L014
L015		
- ARK SG1 CS/WORD SAR PTY X		
	G2G13	MG210-L015
	(K2G13)	MK210-R024
	D2G13	MD210-L015
L016		
- ARK SG1 DGB/BIT SAR PTY X		
	G2P04	MG210-L016
	(K2P07)	MK210-R026
R003		
- DRA SG1 DATA B 0		
	(G2U13)	MG210-R003
	(A2U13)	MA200-R005
	(H2U13)	MH210-R003
R003		
- DRA SG1 DATA B 1		
	(G2U12)	MG210-R003
	(A2U12)	MA200-R005
	(H2U12)	MH210-R003

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- DRA SG1 DATA B 2		
	(G2U11)	MG210-R003
	(A2U10)	MA200-R005
	(H2U11)	MH210-R003
R003		
- DRA SG1 DATA B 3		
	(G2U10)	MG210-R003
	(A2U09)	MA200-R005
	(H2U10)	MH210-R003
R003		
- DRA SG1 DATA B 4		
	(G2U09)	MG210-R003
	(A2U05)	MA200-R005
	(H2U09)	MH210-R003
R003		
- DRA SG1 DATA B 5		
	(G2U07)	MG210-R003
	(A2U02)	MA200-R005
	(H2U07)	MH210-R003
R003		
- DRA SG1 DATA B 6		
	(G2U06)	MG210-R003
	(A2P13)	MA200-R005
	(H2U06)	MH210-R003
R003		
- DRA SG1 DATA B 7		
	(G2U05)	MG210-R003
	(A2P12)	MA200-R005
	(H2U05)	MH210-R003
R003		
- DRA SG1 DATA B 8		
	(G2U04)	MG210-R003
	(A2P09)	MA200-R005
	(H2U04)	MH210-R003
R003		
- DRA SG1 DATA B 9		
	(G2U02)	MG210-R003
	(A2P05)	MA200-R005
	(H2U02)	MH210-R003
R003		
- DRA SG1 DATA B 10		
	(G2P13)	MG210-R003
	(A2P04)	MA200-R005
	(H2P13)	MH210-R003
R003		
- DRA SG1 DATA B 11		
	(G2S12)	MG210-R003
	(A2U11)	MA200-R005
	(H2S12)	MH210-R003
R003		
- DRA SG1 DATA B 12		
	(G2S10)	MG210-R003
	(A2U07)	MA200-R005
	(H2S10)	MH210-R003

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- DRA SG1 DATA B 13		
	(G2S09)	MG210-R003
	(A2U06)	MA200-R005
	(H2S09)	MH210-R003
R003		
- DRA SG1 DATA B 14		
	(G2S08)	MG210-R003
	(A2U04)	MA200-R005
	(H2S08)	MH210-R003
R003		
- DRA SG1 DATA B 15		
	(G2S07)	MG210-R003
	(A2T04)	MA200-R005
	(H2S07)	MH210-R003
R003		
- DRA SG1 DATA B 16		
	(G2S05)	MG210-R003
	(A2P11)	MA200-R005
	(H2S05)	MH210-R003
R003		
- DRA SG1 DATA B 17		
	(G2S04)	MG210-R003
	(A2P10)	MA200-R005
	(H2S04)	MH210-R003
R003		
- DRA SG1 DATA B 18		
	(G2S03)	MG210-R003
	(A2P07)	MA200-R005
	(H2S03)	MH210-R003
R003		
- DRA SG1 DATA B 19		
	(G2S02)	MG210-R003
	(A2P06)	MA200-R005
	(H2S02)	MH210-R003
R003		
- DRA SG1 DATA B 20		
	(G2J02)	MG210-R003
	(A2J07)	MA200-R005
	(H2J02)	MH210-R003
R003		
- DRA SG1 DATA B 21		
	(G2G02)	MG210-R003
	(A2J06)	MA200-R005
	(H2G02)	MH210-R003
R003		
- DRA SG1 DATA B 22		
	(G2D13)	MG210-R003
	(A2J05)	MA200-R005
	(H2D13)	MH210-R003
R003		
- DRA SG1 DATA B 23		
	(G2D12)	MG210-R003
	(A2J04)	MA200-R005
	(H2D12)	MH210-R003

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- DRA SG1 DATA B 24		
	(G2D11)	MG210-R003
	(A2J02)	MA200-R005
	(H2D11)	MH210-R003
R003		
- DRA SG1 DATA B 25		
	(G2D10)	MG210-R003
	(A2D12)	MA200-R005
	(H2D10)	MH210-R003
R003		
- DRA SG1 DATA B 26		
	(G2D09)	MG210-R003
	(A2D11)	MA200-R005
	(H2D09)	MH210-R003
R003		
- DRA SG1 DATA B 27		
	(G2D07)	MG210-R003
	(A2D07)	MA200-R005
	(H2D07)	MH210-R003
R003		
- DRA SG1 DATA B 28		
	(G2D06)	MG210-R003
	(A2D06)	MA200-R005
	(H2D06)	MH210-R003
R003		
- DRA SG1 DATA B 29		
	(G2D05)	MG210-R003
	(A2D05)	MA200-R005
	(H2D05)	MH210-R003
R003		
- DRA SG1 DATA B 30		
	(G2D04)	MG210-R003
	(A2D04)	MA200-R005
	(H2D04)	MH210-R003
R003		
- DRA SG1 DATA B 31		
	(G2D02)	MG210-R003
	(A2D02)	MA200-R005
	(H2D02)	MH210-R003
R003		
- DRA SG1 DATA B 32		
	(G2B10)	MG210-R003
	(A2D13)	MA200-R005
	(H2B10)	MH210-R003
R003		
- DRA SG1 DATA B 33		
	(G2B09)	MG210-R003
	(A2D10)	MA200-R005
	(H2B09)	MH210-R003
R003		
- DRA SG1 DATA B 34		
	(G2B08)	MG210-R003
	(A2D09)	MA200-R005
	(H2B08)	MH210-R003

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- DRA SG1 DATA B 35		
	(G2B07)	MG210-R003
	(A2C08)	MA200-R005
	(H2B07)	MH210-R003
R004		
- SH1 SG1 DATA OP ERROR FGHJ		
	(G2J05)	MG210-R004
	(H2J05)	MH210-R004
	K2J05	MK210-L024
R005		
- SH1 SG1 REFRESH ERROR DEFG		
	(G2G10)	MG210-R005
	(D2G10)	MD210-R005
	K2G10	MK210-L021
R006		
- SH CARD IN DG		
	(G2M06)	MG210-R006
	(D2P07)	MD210-R007
R007		
- SH CARD IN GP		
	(G2P07)	MG210-R007
	(P2M06)	MP210-R006

003 - ARK SG1 WORD SAR Y (0-7) ===== * =
004 - ARK SG1 BIT SAR Y (0-6) ====== * =
005 - ARK SG1 DATA GATE B Y -------- J06
006 - ARK SG1 DATA GT B SAR Y (0-2) * =
007 - ARK SG1 CS SELECT Y ---------- J10
008 - ARK SG1 CS SAR Y (0-1) ======= * =
009 - ARK SG1 UNUSED OUTPUTS (2-3) = * =
010 - ARK SG1 CARD SELECT GRP (3) == * =
011 - ARK SG1 REFRESH -------------- G03
012 - ARK SG1 POWER ON RESET ------- M03
013 - ARK SG1 READ ----------------- M05
014 - ARK SG1 WRITE ---------------- M09
015 - ARK SG1 CS/WORD SAR PTY Y----- G13
016 - ARK SG1 DGB/BIT SAR PTY Y ---- P04

= * - DRA SG1 DATA B (0-35) ======== 003
J05 - SH1 SG1 DATA OP ERROR FGHJ --- 004
G10 - SH1 SG1 REFRESH ERROR BCHJ --- 005
M06 - SH CARD IN CH ---------------- 006
P07 - SH CARD IN HN ---------------- 007

CLP4/CLP2 CARD

OVERVIEW

The CLP4/CLP2 card is a 4/2 Megabyte capacity data storage array. The storage is organized 36 bits wide by 1 or 1/2 Meg deep. The use of data gates allows up to 8 store/fetch operations per bit for each card access.

PRIMARY FUNCTIONS

- Provides 4/2 Megabyte of storage capacity for data from the 36 bit storage data bus.
- Checks parity of the address bus.
- Decodes cs, word, bit and data gate SAR's.

PRIMARY COMPONENTS

- 4/2 data storage array segments:
  - A segment contains 36 memories, each of which is 256k x 1 bit size.
- Address buffers and parity checkers.
- SAR (Storage address register) and select line decoders.
- Bidirectional data receivers and drivers.

ERROR CHECKING

- Data Op (address) parity error generated and latched on CLAR cards and appropriate bit is set in reg USCACK/LSCACK.
- Refresh (address) parity error is generated and latched on CLAR cards and appropriate bit is set in reg CSCRACK.

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- ARK SG1 WORD SAR Y 0	H2P02	MH210-L003
	(K2P02)	MK210-R016
	C2P02	MC210-L003
L003		
- ARK SG1 WORD SAR Y 1	H2P10	MH210-L003
	(K2N10)	MK210-R016
	C2P10	MC210-L003
L003		
- ARK SG1 WORD SAR Y 2	H2M04	MH210-L003
	(K2N04)	MK210-R016
	C2M04	MC210-L003
L003		
- ARK SG1 WORD SAR Y 3	H2P12	MH210-L003
	(K2P13)	MK210-R016
	C2P12	MC210-L003
L003		
- ARK SG1 WORD SAR Y 4	H2M10	MH210-L003
	(K2M11)	MK210-R016
	C2M10	MC210-L003
L003		
- ARK SG1 WORD SAR Y 5	H2M12	MH210-L003
	(K2N13)	MK210-R016
	C2M12	MC210-L003
L003		
- ARK SG1 WORD SAR Y 6	H2P09	MH210-L003
	(K2P09)	MK210-R016
	C2P09	MC210-L003
L003		
- ARK SG1 WORD SAR Y 7	H2G09	MH210-L003
	(K2H08)	MK210-R016
	C2G09	MC210-L003
L004		
- ARK SG1 BIT SAR Y 0	H2P11	MH210-L004
	(K2N12)	MK210-R017
	C2P11	MC210-L004
L004		
- ARK SG1 BIT SAR Y 1	H2M07	MH210-L004
	(K2N07)	MK210-R017
	C2M07	MC210-L004
L004		
- ARK SG1 BIT SAR Y 2	H2P05	MH210-L004
	(K2N06)	MK210-R017
	C2P05	MC210-L004

LINE/SIGNAL	PIN	SHEET/LINE
L004		
- ARK SG1 BIT SAR Y 3	H2M02	MH210-L004
	(K2H13)	MK210-R017
	C2M02	MC210-L004
L004		
- ARK SG1 BIT SAR Y 4	H2M08	MH210-L004
	(K2N11)	MK210-R017
	C2M08	MC210-L004
L004		
- ARK SG1 BIT SAR Y 5	H2G05	MH210-L004
	(K2G05)	MK210-R017
	C2G05	MC210-L004
L004		
- ARK SG1 BIT SAR Y 6	H2J07	MH210-L004
	(K2J07)	MK210-R017
	C2J07	MC210-L004
L005		
- ARK SG1 DATA GATE B Y	H2J06	MH210-L005
	(K2T08)	MK210-R023
L006		
- ARK SG1 DATA GT B SAR Y 0	H2J11	MH210-L006
	(K2S09)	MK210-R022
L006		
- ARK SG1 DATA GT B SAR Y 1	H2G07	MH210-L006
	(K2S13)	MK210-R022
L006		
- ARK SG1 DATA GT B SAR Y 2	H2G12	MH210-L006
	(K2U12)	MK210-R022
L007		
- ARK SG1 CS SELECT Y	H2J10	MH210-L007
	(K2H09)	MK210-R019
	C2J10	MC210-L007
L008		
- ARK SG1 CS SAR Y 0	H2J12	MH210-L008
	(K2H11)	MK210-R018
	C2J12	MC210-L008
L008		
- ARK SG1 CS SAR Y 1	H2J04	MH210-L008
	(K2J04)	MK210-R018
	C2J04	MC210-L008
L009		
- ARK SG1 UNUSED OUTPUTS 2	H2J13	MH210-L009
	C2J13	MC210-L009
	K2H12	MK210-L017

LINE/SIGNAL	PIN	SHEET/LINE
L009		
- ARK SG1 UNUSED OUTPUTS 3	H2G08	MH210-L009
	C2G08	MC210-L009
	K2H07	MK210-L017
L010		
- ARK SG1 CARD SELECT GRP 3	H2G04	MH210-L010
	(K2B08)	MK210-R011
	C2G04	MC210-L010
L011		
- ARK SG1 REFRESH	H2G03	MH210-L011
	(K2G03)	MK210-R033
	C2G03	MC210-L011
	D2G03	MD210-L011
	G2G03	MG210-L011
L012		
- ARK SG1 POWER ON RESET	H2M03	MH210-L012
	(K2M03)	MK210-R012
	C2M03	MC210-L012
	D2M03	MD210-L012
	G2M03	MG210-L012
L013		
- ARK SG1 READ	H2M05	MH210-L013
	(K2M05)	MK210-R013
	C2M05	MC210-L013
	D2M05	MD210-L013
	G2M05	MG210-L013
L014		
- ARK SG1 WRITE	H2M09	MH210-L014
	(K2M09)	MK210-R014
	C2M09	MC210-L014
	D2M09	MD210-L014
	G2M09	MG210-L014
L015		
- ARK SG1 CS/WORD SAR PTY Y	H2G13	MH210-L015
	(K2H02)	MK210-R035
	C2G13	MC210-L015
L016		
- ARK SG1 DGB/BIT SAR PTY Y	H2P04	MH210-L016
	(K2P06)	MK210-R037
R003		
- DRA SG1 DATA B 0	(H2U13)	MH210-R003
	(A2U13)	MA200-R005
	(G2U13)	MG210-R003
R003		
- DRA SG1 DATA B 1	(H2U12)	MH210-R003
	(A2U12)	MA200-R005
	(G2U12)	MG210-R003

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- DRA SG1 DATA B 2	(H2U11)	MH210-R003
	(A2U10)	MA200-R005
	(G2U11)	MG210-R003
R003		
- DRA SG1 DATA B 3	(H2U10)	MH210-R003
	(A2U09)	MA200-R005
	(G2U10)	MG210-R003
R003		
- DRA SG1 DATA B 4	(H2U09)	MH210-R003
	(A2U05)	MA200-R005
	(G2U09)	MG210-R003
R003		
- DRA SG1 DATA B 5	(H2U07)	MH210-R003
	(A2U02)	MA200-R005
	(G2U07)	MG210-R003
R003		
- DRA SG1 DATA B 6	(H2U06)	MH210-R003
	(A2P13)	MA200-R005
	(G2U06)	MG210-R003
R003		
- DRA SG1 DATA B 7	(H2U05)	MH210-R003
	(A2P12)	MA200-R005
	(G2U05)	MG210-R003
R003		
- DRA SG1 DATA B 8	(H2U04)	MH210-R003
	(A2P09)	MA200-R005
	(G2U04)	MG210-R003
R003		
- DRA SG1 DATA B 9	(H2U02)	MH210-R003
	(A2P05)	MA200-R005
	(G2U02)	MG210-R003
R003		
- DRA SG1 DATA B 10	(H2P13)	MH210-R003
	(A2P04)	MA200-R005
	(G2P13)	MG210-R003
R003		
- DRA SG1 DATA B 11	(H2S12)	MH210-R003
	(A2U11)	MA200-R005
	(G2S12)	MG210-R003
R003		
- DRA SG1 DATA B 12	(H2S10)	MH210-R003
	(A2U07)	MA200-R005
	(G2S10)	MG210-R003

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- DRA SG1 DATA B 13	(H2S09)	MH210-R003
	(A2U06)	MA200-R005
	(G2S09)	MG210-R003
R003		
- DRA SG1 DATA B 14	(H2S08)	MH210-R003
	(A2U04)	MA200-R005
	(G2S08)	MG210-R003
R003		
- DRA SG1 DATA B 15	(H2S07)	MH210-R003
	(A2T04)	MA200-R005
	(G2S07)	MG210-R003
R003		
- DRA SG1 DATA B 16	(H2S05)	MH210-R003
	(A2P11)	MA200-R005
	(G2S05)	MG210-R003
R003		
- DRA SG1 DATA B 17	(H2S04)	MH210-R003
	(A2P10)	MA200-R005
	(G2S04)	MG210-R003
R003		
- DRA SG1 DATA B 18	(H2S03)	MH210-R003
	(A2P07)	MA200-R005
	(G2S03)	MG210-R003
R003		
- DRA SG1 DATA B 19	(H2S02)	MH210-R003
	(A2P06)	MA200-R005
	(G2S02)	MG210-R003
R003		
- DRA SG1 DATA B 20	(H2J02)	MH210-R003
	(A2J07)	MA200-R005
	(G2J02)	MG210-R003
R003		
- DRA SG1 DATA B 21	(H2G02)	MH210-R003
	(A2J06)	MA200-R005
	(G2G02)	MG210-R003
R003		
- DRA SG1 DATA B 22	(H2D13)	MH210-R003
	(A2J05)	MA200-R005
	(G2D13)	MG210-R003
R003		
- DRA SG1 DATA B 23	(H2D12)	MH210-R003
	(A2J04)	MA200-R005
	(G2D12)	MG210-R003

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- DRA SG1 DATA B 24	(H2D11)	MH210-R003
	(A2J02)	MA200-R005
	(G2D11)	MG210-R003
R003		
- DRA SG1 DATA B 25	(H2D10)	MH210-R003
	(A2D12)	MA200-R005
	(G2D10)	MG210-R003
R003		
- DRA SG1 DATA B 26	(H2D09)	MH210-R003
	(A2D11)	MA200-R005
	(G2D09)	MG210-R003
R003		
- DRA SG1 DATA B 27	(H2D07)	MH210-R003
	(A2D07)	MA200-R005
	(G2D07)	MG210-R003
R003		
- DRA SG1 DATA B 28	(H2D06)	MH210-R003
	(A2D06)	MA200-R005
	(G2D06)	MG210-R003
R003		
- DRA SG1 DATA B 29	(H2D05)	MH210-R003
	(A2D05)	MA200-R005
	(G2D05)	MG210-R003
R003		
- DRA SG1 DATA B 30	(H2D04)	MH210-R003
	(A2D04)	MA200-R005
	(G2D04)	MG210-R003
R003		
- DRA SG1 DATA B 31	(H2D02)	MH210-R003
	(A2D02)	MA200-R005
	(G2D02)	MG210-R003
R003		
- DRA SG1 DATA B 32	(H2B10)	MH210-R003
	(A2D13)	MA200-R005
	(G2B10)	MG210-R003
R003		
- DRA SG1 DATA B 33	(H2B09)	MH210-R003
	(A2D10)	MA200-R005
	(G2B09)	MG210-R003
R003		
- DRA SG1 DATA B 34	(H2B08)	MH210-R003
	(A2D09)	MA200-R005
	(G2B08)	MG210-R003

SUBSYSTEM STORAGE XRL MH210

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- DRA SG1 DATA B 35		
	(H2B07)	MH210-R003
	(A2C08)	MA200-R005
	(G2B07)	MG210-R003
R004		
- SH1 SG1 DATA OP ERROR FGHJ		
	(H2J05)	MH210-R004
	(G2J05)	MG210-R004
	K2J05	MK210-L024
R005		
- SH1 SG1 REFRESH ERROR BCHJ		
	(H2G10)	MH210-R005
	(C2G10)	MC210-R005
	K2J09	MK210-L022
R006		
- SH CARD IN CH		
	(H2M06)	MH210-R006
	(C2P07)	MC210-R007
R007		
- SH CARD IN HN		
	(H2P07)	MH210-R007
	(N2M06)	MN210-R006

```
003 - DAT SG1 WORD SAR (0-7) ======= * =
004 - DAT SG1 BIT SAR (0-6) ======== * =
005 - DAT SG1 CS SAR (0-1) ========= * =
006 - DAT SG1 UNUSED OUTPUT 0 ------ C12
007 - C2Q SG1 CS SELECT ------------ D12
008 - C2Q SG1 POWER ON RESET ------- C13
009 - DAT SG1 DATA GT A SAR (0-2) == * =
010 - C2Q SG1 DATA GATE A ---------- D10
011 - DAT SG1 DATA GT B SAR (0-2) == * =
012 - C2Q SG1 DATA GATE B ---------- C10
013 - DAT SG1 CARD SELECT GRP (0-3)  * =
014 - C2Q SG1 REFRESH -------------- N03
015 - C2Q SG1 READ ----------------- N05
016 - C2Q SG1 WRITE ---------------- N09
017 - ARK SG1 UNUSED OUTPUTS (0-3) = * =
018 - DAT SG1 CS/WD SAR PARITY ----- U06
019 - DAT SG1 DGA/BIT SAR PTY ------ S07
020 - DAT SG1 DGB/BIT SAR PTY ------ U07
021 - SH1 SG1 REFRESH ERROR DEFG --- G10
022 - SH1 SG1 REFRESH ERROR BCHJ --- J09
023 - SH1 SG1 DATA OP ERROR BCDE --- G04
024 - SH1 SG1 DATA OP ERROR FGHJ --- J05
025 - C2Q SG1 RESET REFRESH ERROR -- S11
026 - C2Q SG1 COMMAND PARITY ------- C11
```

CLAR CARD

OVERVIEW

The CLAR (Address Repowering) card provides receiving and repowering capability for the Storage address bus for left half of the storage board. The bus is partitioned so that no more than 4 storage cards are accessed at any time.

PRIMARY FUNCTIONS

- Performs parity checks on the following:
  - Odd parity for cs SAR's (Storage Address Registers) and word SAR's.
  - Odd parity for data gate SAR's A/B and bit SAR's.
  - Odd parity for read, write and refresh signals.
- Repowers the storage address lines.
- Repowers the Data gates A/B for data fetch or store controls.
- Repowers 4 card select lines.
- Repowers read, write and refresh lines.

PRIMARY COMPONENTS

- Address drivers.
- Three state Receivers and Drivers.

ERROR CHECKING

- Storage Card Refresh Address Check (CSCRACK, bits 0,1).
  - These bits indicate the cards in slot positions 'BCHJ' or 'DEFG' detected an address parity error during refresh. 'BCHJ' detected error bit 0 and 'DEFG' detected error bit 1.
- AR Card Refresh Address Check (CSCRACK, bit 4).
  - This bit indicates CLAR card detected an address parity or command parity error during refresh.
- Storage Card Address Check (U/L SCACK, bits 0,1).
  - These bits indicate the cards in slot positions 'BCDE' or 'FGHJ' detected an address parity error during R/W operation. 'BCDE' detected error bit 0 and 'DEFG' detected error bit 1'
- AR Card Address Check (U/L SCACK, bit 4).
  - This bit indicates CLAR card detected an address parity or command parity error during R/W operation. It also indicates if no card group and more than one card group is selected during data operation.

```
= * - ARK SG1 WORD SAR X (0-7) ===== 003
= * - ARK SG1 BIT SAR X (0-6) ====== 004
= * - ARK SG1 CS SAR X (0-1) ======= 005
J10 - ARK SG1 CS SELECT X ---------- 006
= * - ARK SG1 DATA GT A SAR X (0-2)  007
H05 - ARK SG1 DATA GATE A X -------- 008
= * - ARK SG1 DATA GT B SAR X (0-2)  009
U13 - ARK SG1 DATA GATE B X -------- 010
= * - ARK SG1 CARD SELECT GRP (0-3)  011
M03 - ARK SG1 POWER ON RESET ------- 012
M05 - ARK SG1 READ ----------------- 013
M09 - ARK SG1 WRITE ---------------- 014
T05 + ARK SG1 COMMAND CMDR --------- 015
= * - ARK SG1 WORD SAR Y (0-7) ===== 016
= * - ARK SG1 BIT SAR Y (0-6) ====== 017
= * - ARK SG1 CS SAR Y (0-1) ======= 018
H09 - ARK SG1 CS SELECT Y ---------- 019
= * - ARK SG1 DATA GT A SAR Y (0-2)  020
J06 - ARK SG1 DATA GATE A Y -------- 021
= * - ARK SG1 DATA GT B SAR Y (0-2)  022
T08 - ARK SG1 DATA GATE B Y -------- 023
G13 - ARK SG1 CS/WORD SAR PTY X ---- 024
M06 - ARK SG1 DGA/BIT SAR PTY X ---- 025
P07 - ARK SG1 DGB/BIT SAR PTY X ---- 026
B03 - SG1/2 ARK REFRESH ERROR DEFG - 027
B04 - SG1/2 ARK REFRESH ERROR BCHJ - 028
B02 - SG1/2 ARK DATA OP ERROR BCDE - 029
D02 - SG1/2 ARK DATA OP ERROR FGHJ - 030
U10 - SG1/2 ARK IN ADDR PARITY ERROR 031
U11 - SG1/2 ARK IN REFRESH ERROR --- 032
G03 - ARK SG1 REFRESH -------------- 033
S10 - ARK SG1 ERROR LATCH RESET ---- 034
H02 - ARK SG1 CS/WORD SAR PTY Y ---- 035
P04 - ARK SG1 DGA/BIT SAR PTY Y ---- 036
P06 - ARK SG1 DGB/BIT SAR PTY Y ---- 037
```

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- DAT SG1 WORD SAR 0		
	K2T02	MK210-L003
1B-A1 (T2P11)		JT210-R006
	L2T02	ML210-L003
1B-A1 *V2D02*		
1B-B2 *H6A02*		
L003		
- DAT SG1 WORD SAR 1		
	K2T03	MK210-L003
1B-A1 (T2M07)		JT210-R006
	L2T03	ML210-L003
1B-A1 *V2B02*		
1B-B2 *H6A04*		
L003		
- DAT SG1 WORD SAR 2		
	K2S03	MK210-L003
1B-A1 (T2P10)		JT210-R006
	L2S03	ML210-L003
1B-A1 *V2D03*		
1B-B2 *H6B02*		
L003		
- DAT SG1 WORD SAR 3		
	K2U02	MK210-L003
1B-A1 (T2P13)		JT210-R006
	L2U02	ML210-L003
1B-A1 *V2B03*		
1B-B2 *H6B04*		
L003		
- DAT SG1 WORD SAR 4		
	K2M13	MK210-L003
1B-A1 (T2P04)		JT210-R006
	L2M13	ML210-L003
1B-A1 *V2D04*		
1B-B2 *H6C02*		
L003		
- DAT SG1 WORD SAR 5		
	K2S02	MK210-L003
1B-A1 (T2U11)		JT210-R006
	L2S02	ML210-L003
1B-A1 *V2B04*		
1B-B2 *H6C04*		
L003		
- DAT SG1 WORD SAR 6		
	K2U04	MK210-L003
1B-A1 (T2S08)		JT210-R006
	L2U04	ML210-L003
1B-A1 *V2D05*		
1B-B2 *H6D02*		
L003		
- DAT SG1 WORD SAR 7		
	K2B13	MK210-L003
1B-A1 (T2G08)		JT210-R006
	L2B13	ML210-L003
1B-A1 *T1E11*		
1B-B2 *M1C11*		

LINE/SIGNAL	PIN	SHEET/LINE
L004		
- DAT SG1 BIT SAR 0		
	K2S04	MK210-L004
1B-A1 (T2D02)		JT210-R012
	L2S04	ML210-L004
1B-A1 *V2B05*		
1B-B2 *H6D04*		
L004		
- DAT SG1 BIT SAR 1		
	K2S05	MK210-L004
1B-A1 (T2B08)		JT210-R012
	L2S05	ML210-L004
1B-A1 *V2D06*		
1B-B2 *H6E02*		
L004		
- DAT SG1 BIT SAR 2		
	K2U05	MK210-L004
1B-A1 (T2B10)		JT210-R012
	L2U05	ML210-L004
1B-A1 *V2B06*		
1B-B2 *H6E04*		
L004		
- DAT SG1 BIT SAR 3		
	K2S06	MK210-L004
1B-A1 (T2G09)		JT210-R012
	L2S06	ML210-L004
1B-A1 *V2D07*		
1B-B2 *J6A02*		
L004		
- DAT SG1 BIT SAR 4		
	K2T04	MK210-L004
1B-A1 (T2M02)		JT210-R012
	L2T04	ML210-L004
1B-A1 *V2B07*		
1B-B2 *J6A04*		
L004		
- DAT SG1 BIT SAR 5		
	K2G02	MK210-L004
1B-A1 (T2D05)		JT210-R012
	L2G02	ML210-L004
1B-A1 *Q1E11*		
1B-B2 *J1A11*		
L004		
- DAT SG1 BIT SAR 6		
	K2B12	MK210-L004
1B-A1 (T2D09)		JT210-R012
	L2B12	ML210-L004
1B-A1 *R1B11*		
1B-B2 *J1C11*		
L005		
- DAT SG1 CS SAR 0		
	K2D13	MK210-L005
1B-A1 (T2J06)		JT210-R005
	L2D13	ML210-L005
1B-A1 *T1C11*		
1B-B2 *M1A11*		

LINE/SIGNAL	PIN	SHEET/LINE
L005		
- DAT SG1 CS SAR 1		
	K2J02	MK210-L005
1B-A1 (T2G05)		JT210-R005
	L2J02	ML210-L005
1B-A1 *T1D11*		
1B-B2 *M1B11*		
L006		
- DAT SG1 UNUSED OUTPUT 0		
	K2C12	MK210-L006
1B-A1 (T2B09)		JT210-R037
	L2C12	ML210-L006
1B-A1 *R1C11*		
1B-B2 *J1D11*		
L007		
- C2Q SG1 CS SELECT		
	K2D12	MK210-L007
1B-A1 (Q2D07)		JQ210-R050
	L2D12	ML210-L007
1B-A1 *U1A11*		
1B-B2 *M1D11*		
L008		
- C2Q SG1 POWER ON RESET		
	K2C13	MK210-L008
1B-A1 (Q2C11)		JQ210-R051
	L2C13	ML210-L008
1B-A1 *R1D11*		
1B-B2 *J1E11*		
L009		
- DAT SG1 DATA GT A SAR 0		
	K2B09	MK210-L009
1B-A1 (T2J11)		JT210-R008
1B-A1	Q2N05	JQ210-L037
	L2B09	ML210-L009
1B-A1 *R1E11*		
1B-B2 *K1A11*		
L009		
- DAT SG1 DATA GT A SAR 1		
	K2B10	MK210-L009
1B-A1 (T2G11)		JT210-R008
1B-A1	Q2N04	JQ210-L037
	L2B10	ML210-L009
1B-A1 *S1A11*		
1B-B2 *K1B11*		
L009		
- DAT SG1 DATA GT A SAR 2		
	K2D09	MK210-L009
1B-A1 (T2P02)		JT210-R008
1B-A1	Q2H12	JQ210-L037
	L2D09	ML210-L009
1B-A1 *R1E13*		
1B-B2 *K1A13*		
L010		
- C2Q SG1 DATA GATE A		
	K2D10	MK210-L010
1B-A1 (Q2D02)		JQ210-R052
	L2D10	ML210-L010
1B-A1 *S1A13*		
1B-B2 *K1B13*		

LINE/SIGNAL	PIN	SHEET/LINE
L011		
- DAT SG1 DATA GT B SAR 0		
	K2C07	MK210-L011
1B-A1 (T2U10)		JT210-R010
	L2C07	ML210-L011
1B-A1 *T1A11*		
1B-B2 *L1D11*		
L011		
- DAT SG1 DATA GT B SAR 1		
	K2C08	MK210-L011
1B-A1 (T2S03)		JT210-R010
	L2C08	ML210-L011
1B-A1 *T1B11*		
1B-B2 *L1E11*		
L011		
- DAT SG1 DATA GT B SAR 2		
	K2C09	MK210-L011
1B-A1 (T2U12)		JT210-R010
	L2C09	ML210-L011
1B-A1 *T1A13*		
1B-B2 *L1D13*		
L012		
- C2Q SG1 DATA GATE B		
	K2C10	MK210-L012
1B-A1 (Q2B03)		JQ210-R052
	L2C10	ML210-L012
1B-A1 *T1B13*		
1B-B2 *L1E13*		
L013		
- DAT SG1 CARD SELECT GRP 0		
	K2D06	MK210-L013
1B-A1 (T2J12)		JT210-R003
	L2D06	ML210-L013
1B-A1 *R1B13*		
1B-B2 *J1C13*		
L013		
- DAT SG1 CARD SELECT GRP 1		
	K2D07	MK210-L013
1B-A1 (T2G12)		JT210-R003
	L2D07	ML210-L013
1B-A1 *R1C13*		
1B-B2 *J1D13*		
L013		
- DAT SG1 CARD SELECT GRP 2		
	K2D04	MK210-L013
1B-A1 (T2J13)		JT210-R003
	L2D04	ML210-L013
1B-A1 *R1D13*		
1B-B2 *J1E13*		
L013		
- DAT SG1 CARD SELECT GRP 3		
	K2D05	MK210-L013
1B-A1 (T2J09)		JT210-R003
	L2D05	ML210-L013
1B-A1 *T1C13*		
1B-B2 *M1A13*		

LINE/SIGNAL	PIN	SHEET/LINE
L014		
- C2Q SG1 REFRESH		
	K2N03	MK210-L014
1B-A1 (Q2C05)		JQ210-R047
	L2N03	ML210-L014
1B-A1 *T1D13*		
1B-B2 *M1B13*		
L015		
- C2Q SG1 READ		
	K2N05	MK210-L015
1B-A1 (Q2B08)		JQ210-R048
	L2N05	ML210-L015
1B-A1 *T1E13*		
1B-B2 *M1C13*		
L016		
- C2Q SG1 WRITE		
	K2N09	MK210-L016
1B-A1 (Q2B11)		JQ210-R049
	L2N09	ML210-L016
1B-A1 *U1A13*		
1B-B2 *M1D13*		
L017		
- ARK SG1 UNUSED OUTPUTS 0		
	K2J13	MK210-L017
	D2J13	MD210-L009
	G2J13	MG210-L009
L017		
- ARK SG1 UNUSED OUTPUTS 1		
	K2G08	MK210-L017
	D2G08	MD210-L009
	G2G08	MG210-L009
L017		
- ARK SG1 UNUSED OUTPUTS 2		
	K2H12	MK210-L017
	C2J13	MC210-L009
	H2J13	MH210-L009
L017		
- ARK SG1 UNUSED OUTPUTS 3		
	K2H07	MK210-L017
	C2G08	MC210-L009
	H2G08	MH210-L009
L018		
- DAT SG1 CS/WD SAR PARITY		
	K2U06	MK210-L018
1B-A1 (T2B06)		JT210-R007
	L2U06	ML210-L018
1B-A1 *V2D09*		
1B-B2 *J6C02*		
L019		
- DAT SG1 DGA/BIT SAR PTY		
	K2S07	MK210-L019
1B-A1 (T2U05)		JT210-R009
	L2S07	ML210-L019
1B-A1 *V2D10*		
1B-B2 *J6D02*		

LINE/SIGNAL	PIN	SHEET/LINE
L020		
- DAT SG1 DGB/BIT SAR PTY		
	K2U07	MK210-L020
1B-A1 (T2S05)		JT210-R011
	L2U07	ML210-L020
1B-A1 *V2D11*		
1B-B2 *J6E02*		
L021		
- SH1 SG1 REFRESH ERROR DEFG		
	K2G10	MK210-L021
	(D2G10)	MD210-R005
	(G2G10)	MG210-R005
L022		
- SH1 SG1 REFRESH ERROR BCHJ		
	K2J09	MK210-L022
	(C2G10)	MC210-R005
	(H2G10)	MH210-R005
L023		
- SH1 SG1 DATA OP ERROR BCDE		
	K2G04	MK210-L023
	(C2J05)	MC210-R004
	(D2J05)	MD210-R004
L024		
- SH1 SG1 DATA OP ERROR FGHJ		
	K2J05	MK210-L024
	(G2J05)	MG210-R004
	(H2J05)	MH210-R004
L025		
- C2Q SG1 RESET REFRESH ERROR		
	K2S11	MK210-L025
1B-A1 (Q2C09)		JQ210-R053
	L2S11	ML210-L025
1B-A1 *V2D13*		
1B-B2 *K6B02*		
L026		
- C2Q SG1 COMMAND PARITY		
	K2C11	MK210-L026
1B-A1 (Q2D10)		JQ210-R054
	L2C11	ML210-L026
1B-A1 *U1E11*		
1B-B2 *N1C11*		
R003		
- ARK SG1 WORD SAR X 0		
	(K2N02)	MK210-R003
	D2F02	MD210-L003
	G2F02	MG210-L003
R003		
- ARK SG1 WORD SAR X 1		
	(K2P10)	MK210-R003
	D2P10	MD210-L003
	G2P10	MG210-L003
R003		
- ARK SG1 WORD SAR X 2		
	(K2M04)	MK210-R003
	D2M04	MD210-L003
	G2M04	MG210-L003

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- ARK SG1 WORD SAR X 3	(K2P12)	MK210-R003
	D2P12	MD210-L003
	G2P12	MG210-L003
R003		
- ARK SG1 WORD SAR X 4	(K2M10)	MK210-R003
	D2M10	MD210-L003
	G2M10	MG210-L003
R003		
- ARK SG1 WORD SAR X 5	(K2M12)	MK210-R003
	D2M12	MD210-L003
	G2M12	MG210-L003
R003		
- ARK SG1 WORD SAR X 6	(K2N08)	MK210-R003
	D2P09	MD210-L003
	G2P09	MG210-L003
R003		
- ARK SG1 WORD SAR X 7	(K2G09)	MK210-R003
	D2G09	MD210-L003
	G2G09	MG210-L003
R004		
- ARK SG1 BIT SAR X 0	(K2P11)	MK210-R004
	D2P11	MD210-L004
	G2P11	MG210-L004
R004		
- ARK SG1 BIT SAR X 1	(K2M07)	MK210-R004
	D2M07	MD210-L004
	G2M07	MG210-L004
R004		
- ARK SG1 BIT SAR X 2	(K2P05)	MK210-R004
	D2P05	MD210-L004
	G2P05	MG210-L004
R004		
- ARK SG1 BIT SAR X 3	(K2M02)	MK210-R004
	D2M02	MD210-L004
	G2M02	MG210-L004
R004		
- ARK SG1 BIT SAR X 4	(K2M08)	MK210-R004
	D2M08	MD210-L004
	G2M08	MG210-L004
R004		
- ARK SG1 BIT SAR X 5	(K2H04)	MK210-R004
	D2G05	MD210-L004
	G2G05	MG210-L004

LINE/SIGNAL	PIN	SHEET/LINE
R004		
- ARK SG1 BIT SAR X 6	(K2H06)	MK210-R004
	D2J07	MD210-L004
	G2J07	MG210-L004
R005		
- ARK SG1 CS SAR X 0	(K2J12)	MK210-R005
	D2J12	MD210-L008
	G2J12	MG210-L008
R005		
- ARK SG1 CS SAR X 1	(K2H03)	MK210-R005
	D2J04	MD210-L008
	G2J04	MG210-L008
R006		
- ARK SG1 CS SELECT X	(K2J10)	MK210-R006
	D2J10	MD210-L007
	G2J10	MG210-L007
R007		
- ARK SG1 DATA GT A SAR X 0	(K2H10)	MK210-R007
	D2J11	MD210-L006
R007		
- ARK SG1 DATA GT A SAR X 1	(K2G06)	MK210-R007
	D2G07	MD210-L006
R007		
- ARK SG1 DATA GT A SAR X 2	(K2G11)	MK210-R007
	D2G12	MD210-L006
R008		
- ARK SG1 DATA GATE A X	(K2H05)	MK210-R008
	D2J06	MD210-L005
R009		
- ARK SG1 DATA GT B SAR X 0	(K2S08)	MK210-R009
	G2J11	MG210-L006
R009		
- ARK SG1 DATA GT B SAR X 1	(K2S12)	MK210-R009
	G2G07	MG210-L006
R009		
- ARK SG1 DATA GT B SAR X 2	(K2U09)	MK210-R009
	G2G12	MG210-L006
R010		
- ARK SG1 DATA GATE B X	(K2U13)	MK210-R010
	G2J06	MG210-L005

LINE/SIGNAL	PIN	SHEET/LINE
R011		
- ARK SG1 CARD SELECT GRP 0	(K2B05)	MK210-R011
	D2G04	MD210-L010
	G2G04	MG210-L010
R011		
- ARK SG1 CARD SELECT GRP 1	(K2B06)	MK210-R011
R011		
- ARK SG1 CARD SELECT GRP 2	(K2B07)	MK210-R011
R011		
- ARK SG1 CARD SELECT GRP 3	(K2B08)	MK210-R011
	C2G04	MC210-L010
	H2G04	MH210-L010
R012		
- ARK SG1 POWER ON RESET	(K2M03)	MK210-R012
	C2M03	MC210-L012
	D2M03	MD210-L012
	G2M03	MG210-L012
	H2M03	MH210-L012
R013		
- ARK SG1 READ	(K2M05)	MK210-R013
	C2M05	MC210-L013
	D2M05	MD210-L013
	G2M05	MG210-L013
	H2M05	MH210-L013
R014		
- ARK SG1 WRITE	(K2M09)	MK210-R014
	C2M09	MC210-L014
	D2M09	MD210-L014
	G2M09	MG210-L014
	H2M09	MH210-L014
R015		
+ ARK SG1 COMMAND CMDR	(K2T05)	MK210-R015
	A2M03	MA200-L008
R016		
- ARK SG1 WORD SAR Y 0	(K2P02)	MK210-R016
	C2P02	MC210-L003
	H2P02	MH210-L003
R016		
- ARK SG1 WORD SAR Y 1	(K2N10)	MK210-R016
	C2P10	MC210-L003
	H2P10	MH210-L003
R016		
- ARK SG1 WORD SAR Y 2	(K2N04)	MK210-R016
	C2M04	MC210-L003
	H2M04	MH210-L003

LINE/SIGNAL	PIN	SHEET/LINE
R016		
- ARK SG1 WORD SAR Y 3	(K2P13)	MK210-R016
	C2P12	MC210-L003
	H2P12	MH210-L003
R016		
- ARK SG1 WORD SAR Y 4	(K2M11)	MK210-R016
	C2M10	MC210-L003
	H2M10	MH210-L003
R016		
- ARK SG1 WORD SAR Y 5	(K2N13)	MK210-R016
	C2M12	MC210-L003
	H2M12	MH210-L003
R016		
- ARK SG1 WORD SAR Y 6	(K2P09)	MK210-R016
	C2P09	MC210-L003
	H2P09	MH210-L003
R016		
- ARK SG1 WORD SAR Y 7	(K2H08)	MK210-R016
	C2G09	MC210-L003
	H2G09	MH210-L003
R017		
- ARK SG1 BIT SAR Y 0	(K2N12)	MK210-R017
	C2P11	MC210-L004
	H2P11	MH210-L004
R017		
- ARK SG1 BIT SAR Y 1	(K2N07)	MK210-R017
	C2M07	MC210-L004
	H2M07	MH210-L004
R017		
- ARK SG1 BIT SAR Y 2	(K2N06)	MK210-R017
	C2P05	MC210-L004
	H2P05	MH210-L004
R017		
- ARK SG1 BIT SAR Y 3	(K2H13)	MK210-R017
	C2M02	MC210-L004
	H2M02	MH210-L004
R017		
- ARK SG1 BIT SAR Y 4	(K2N11)	MK210-R017
	C2M08	MC210-L004
	H2M08	MH210-L004
R017		
- ARK SG1 BIT SAR Y 5	(K2G05)	MK210-R017
	C2G05	MC210-L004
	H2G05	MH210-L004

LINE/SIGNAL	PIN	SHEET/LINE
R017		
- ARK SG1 BIT SAR Y 6	(K2J07)	MK210-R017
	C2J07	MC210-L004
	H2J07	MH210-L004
R018		
- ARK SG1 CS SAR Y 0	(K2H11)	MK210-R018
	C2J12	MC210-L008
	H2J12	MH210-L008
R018		
- ARK SG1 CS SAR Y 1	(K2J04)	MK210-R018
	C2J04	MC210-L008
	H2J04	MH210-L008
R019		
- ARK SG1 CS SELECT Y	(K2H09)	MK210-R019
	C2J10	MC210-L007
	H2J10	MH210-L007
R020		
- ARK SG1 DATA GT A SAR Y 0	(K2J11)	MK210-R020
	C2J11	MC210-L006
R020		
- ARK SG1 DATA GT A SAR Y 1	(K2G07)	MK210-R020
	C2G07	MC210-L006
R020		
- ARK SG1 DATA GT A SAR Y 2	(K2G12)	MK210-R020
	C2G12	MC210-L006
R021		
- ARK SG1 DATA GATE A Y	(K2J06)	MK210-R021
	C2J06	MC210-L005
R022		
- ARK SG1 DATA GT B SAR Y 0	(K2S09)	MK210-R022
	H2J11	MH210-L006
R022		
- ARK SG1 DATA GT B SAR Y 1	(K2S13)	MK210-R022
	H2G07	MH210-L006
R022		
- ARK SG1 DATA GT B SAR Y 2	(K2U12)	MK210-R022
	H2G12	MH210-L006
R023		
- ARK SG1 DATA GATE B Y	(K2T08)	MK210-R023
	H2J06	MH210-L005

LINE/SIGNAL	PIN	SHEET/LINE
R024		
- ARK SG1 CS/WORD SAR PTY X	(K2G13)	MK210-R024
	D2G13	MD210-L015
	G2G13	MG210-L015
R025		
- ARK SG1 DGA/BIT SAR PTY X	(K2M06)	MK210-R025
	D2P04	MD210-L016
R026		
- ARK SG1 DGB/BIT SAR PTY X	(K2P07)	MK210-R026
	G2P04	MG210-L016
R027		
- SG1/2 ARK REFRESH ERROR DEFG	(K2B03)	MK210-R027
	1B-A1 P2M02	JP200-L028
	1B-A1 *Q1D13*	
	1B-A1 *Q6D04*	
	1B-B2 *H1E13*	
R028		
- SG1/2 ARK REFRESH ERROR BCHJ	(K2B04)	MK210-R028
	1B-A1 P2P02	JP200-L027
	1B-A1 *Q1E13*	
	1B-A1 *Q6E04*	
	1B-B2 *J1A13*	
R029		
- SG1/2 ARK DATA OP ERROR BCDE	(K2B02)	MK210-R029
	1B-A1 P2N03	JP200-L021
	1B-A1 *Q1C13*	
	1B-A1 *Q6C04*	
	1B-B2 *H1D13*	
R030		
- SG1/2 ARK DATA OP ERROR FGHJ	(K2D02)	MK210-R030
	1B-A1 P2M04	JP200-L022
	1B-A1 *Q1D11*	
	1B-A1 *Q6D02*	
	1B-B2 *H1E11*	
R031		
- SG1/2 ARK IN ADDR PARITY ERROR	(K2U10)	MK210-R031
	1B-A1 P2N02	JP200-L025
	1B-A1 *V2B12*	
	1B-A1 *V5B12*	
	1B-B2 *K6A04*	
R032		
- SG1/2 ARK IN REFRESH ERROR	(K2U11)	MK210-R032
	1B-A1 P2U11	JP200-L031
	1B-A1 *V2B13*	
	1B-A1 *V5B13*	
	1B-B2 *K6B04*	

ADDRESS REPOWER XRL MK210

LINE/SIGNAL	PIN	SHEET/LINE
R033		
- ARK SG1 REFRESH		
	(K2G03)	MK210-R033
	C2G03	MC210-L011
	D2G03	MD210-L011
	G2G03	MG210-L011
	H2G03	MH210-L011
R034		
- ARK SG1 ERROR LATCH RESET		
	(K2S10)	MK210-R034
	A2P02	MA200-L007
R035		
- ARK SG1 CS/WORD SAR PTY Y		
	(K2H02)	MK210-R035
	C2G13	MC210-L015
	H2G13	MH210-L015
R036		
- ARK SG1 DGA/BIT SAR PTY Y		
	(K2P04)	MK210-R036
	C2P04	MC210-L016
R037		
- ARK SG1 DGB/BIT SAR PTY Y		
	(K2P06)	MK210-R037
	H2P04	MH210-L016

ADDRESS REPOWER XRL MK210

```
003 - DAT SG1 WORD SAR (0-7) ======= * =
004 - DAT SG1 BIT SAR (0-6) ======== * =
005 - DAT SG1 CS SAR (0-1) ========= * =
006 - DAT SG1 UNUSED OUTPUT 0 ------ C12
007 - C2Q SG1 CS SELECT ------------ D12
008 - C2Q SG1 POWER ON RESET ------- C13
009 - DAT SG1 DATA GT A SAR (0-2) == * =
010 - C2Q SG1 DATA GATE A ---------- D10
011 - DAT SG1 DATA GT B SAR (0-2) == * =
012 - C2Q SG1 DATA GATE B ---------- C10
013 - DAT SG1 CARD SELECT GRP (0-3)  * =
014 - C2Q SG1 REFRESH -------------- N03
015 - C2Q SG1 READ ----------------- N05
016 - C2Q SG1 WRITE ---------------- N09
017 - ARL SG1 UNUSED OUTPUTS (0-3) = * =
018 - DAT SG1 CS/WD SAR PARITY ----- U06
019 - DAT SG1 DGA/BIT SAR PTY ------ S07
020 - DAT SG1 DGB/BIT SAR PTY ------ U07
021 - SH2 SG1 REFRESH ERROR PQRS --- G10
022 - SH2 SG1 REFRESH ERROR MNTU --- J09
023 - SH2 SG1 DATA OP ERROR RSTU --- G04
024 - SH2 SG1 DATA OP ERROR MNPQ --- J05
025 - C2Q SG1 RESET REFRESH ERROR -- S11
026 - C2Q SG1 COMMAND PARITY ------- C11
```

CLAR CARD

OVERVIEW

The CLAR (Address Repowering) card provides receiving and repowering capability for the Storage address bus for right half of the storage board. The bus is partitioned so that no more than 4 storage cards are accessed at any time.

PRIMARY FUNCTIONS

- Performs parity checks on the following:
  - Odd parity for cs SAR's (Storage Address Registers) and word SAR's.
  - Odd parity for data gate SAR's A/B and bit SAR's.
  - Odd parity for read, write and refresh signals.
- Repowers the storage address lines.
- Repowers the Data gates A/B for data fetch or store controls.
- Repowers 4 card select lines.
- Repowers read, write and refresh lines.

PRIMARY COMPONENTS

- Address drivers.
- Three state Receivers and Drivers.

ERROR CHECKING

- Storage Card Refresh Address Check (CSCRACK, bits 2,3).
  - These bits indicate the cards in slot positions 'MNTU' or 'PQRS' detected an address parity error during refresh. 'MNTU' detected error bit 2 and 'PQRS' detected error bit 3.
- AR Card Refresh Address Check (CSCRACK, bit 5).
  - This bit indicates CLAR card detected an address parity or command parity error during refresh.
- Storage Card Address Check (U/L SCACK, bits 2,3).
  - These bits indicate the cards in slot positions 'MNPQ' or 'RSTU' detected an address parity error during R/W operation. 'MNPQ' detected error bit 2 and 'RSTU' detected error bit 3'
- AR Card Address Check (U/L SCACK, bit 5).
  - This bit indicates CLAR card detected an address parity or command parity error during R/W operation. It also indicates if no card group and more than one card group is selected during data operation.

```
= * - ARL SG1 WORD SAR X (0-7) ===== 003
= * - ARL SG1 BIT SAR X (0-6) ====== 004
= * - ARL SG1 CS SAR X (0-1) ======= 005
J10 - ARL SG1 CS SELECT X ---------- 006
= * - ARL SG1 DATA GT A SAR X (0-2)  007
H05 - ARL SG1 DATA GATE A X -------- 008
= * - ARL SG1 DATA GT B SAR X (0-2)  009
U13 - ARL SG1 DATA GATE B X -------- 010
= * - ARL SG1 CARD SELECT GRP (0-3)  011
M03 - ARL SG1 POWER ON RESET ------- 012
M05 - ARL SG1 READ ----------------- 013
M09 - ARL SG1 WRITE ---------------- 014
T05 + ARL SG1 COMMAND CMDR --------- 015
= * - ARL SG1 WORD SAR Y (0-7) ===== 016
= * - ARL SG1 BIT SAR Y (0-6) ====== 017
= * - ARL SG1 CS SAR Y (0-1) ======= 018
H09 - ARL SG1 CS SELECT Y ---------- 019
= * - ARL SG1 DATA GT A SAR Y (0-2)  020
J06 - ARL SG1 DATA GATE A Y -------- 021
= * - ARL SG1 DATA GT B SAR Y (0-2)  022
T08 - ARL SG1 DATA GATE B Y -------- 023
G13 - ARL SG1 CS/WORD SAR PTY X ---- 024
M06 - ARL SG1 DGA/BIT SAR PTY X ---- 025
P07 - ARL SG1 DGB/BIT SAR PTY X ---- 026
B03 - SG1/2 ARL REFRESH ERROR PQRS - 027
B04 - SG1/2 ARL REFRESH ERROR MNTU - 028
D02 - SG1/2 ARL DATA OP ERROR MNPQ - 029
B02 - SG1/2 ARL DATA OP ERROR RSTU - 030
U10 - SG1/2 ARL IN ADDR PARITY ERROR 031
U11 - SG1/2 ARL IN REFRESH ERROR --- 032
G03 - ARL SG1 REFRESH -------------- 033
S10 - ARL SG1 ERROR LATCH RESET ---- 034
H02 - ARL SG1 CS/WORD SAR PTY Y ---- 035
P04 - ARL SG1 DGA/BIT SAR PTY Y ---- 036
P06 - ARL SG1 DGB/BIT SAR PTY Y ---- 037
```

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- DAT SG1 WORD SAR 0		
	L2T02	ML210-L003
1B-A1	(T2P11)	JT210-R006
	K2T02	MK210-L003
1B-A1	*V2D02*	
1B-B2	*H6A02*	
L003		
- DAT SG1 WORD SAR 1		
	L2T03	ML210-L003
1B-A1	(T2M07)	JT210-R006
	K2T03	MK210-L003
1B-A1	*V2B02*	
1B-B2	*H6A04*	
L003		
- DAT SG1 WORD SAR 2		
	L2S03	ML210-L003
1B-A1	(T2P10)	JT210-R006
	K2S03	MK210-L003
1B-A1	*V2D03*	
1B-B2	*H6B02*	
L003		
- DAT SG1 WORD SAR 3		
	L2U02	ML210-L003
1B-A1	(T2P13)	JT210-R006
	K2U02	MK210-L003
1B-A1	*V2B03*	
1B-B2	*H6B04*	
L003		
- DAT SG1 WORD SAR 4		
	L2M13	ML210-L003
1B-A1	(T2P04)	JT210-R006
	K2M13	MK210-L003
1B-A1	*V2D04*	
1B-B2	*H6C02*	
L003		
- DAT SG1 WORD SAR 5		
	L2S02	ML210-L003
1B-A1	(T2U11)	JT210-R006
	K2S02	MK210-L003
1B-A1	*V2B04*	
1B-B2	*H6C04*	
L003		
- DAT SG1 WORD SAR 6		
	L2U04	ML210-L003
1B-A1	(T2S08)	JT210-R006
	K2U04	MK210-L003
1B-A1	*V2D05*	
1B-B2	*H6D02*	
L003		
- DAT SG1 WORD SAR 7		
	L2B13	ML210-L003
1B-A1	(T2G08)	JT210-R006
	K2B13	MK210-L003
1B-A1	*T1E11*	
1B-B2	*M1C11*	

LINE/SIGNAL	PIN	SHEET/LINE
L004		
- DAT SG1 BIT SAR 0		
	L2S04	ML210-L004
1B-A1	(T2D02)	JT210-R012
	K2S04	MK210-L004
1B-A1	*V2B05*	
1B-B2	*H6D04*	
L004		
- DAT SG1 BIT SAR 1		
	L2S05	ML210-L004
1B-A1	(T2B08)	JT210-R012
	K2S05	MK210-L004
1B-A1	*V2D06*	
1B-B2	*H6E02*	
L004		
- DAT SG1 BIT SAR 2		
	L2U05	ML210-L004
1B-A1	(T2B10)	JT210-R012
	K2U05	MK210-L004
1B-A1	*V2B06*	
1B-B2	*H6E04*	
L004		
- DAT SG1 BIT SAR 3		
	L2S06	ML210-L004
1B-A1	(T2G09)	JT210-R012
	K2S06	MK210-L004
1B-A1	*V2D07*	
1B-B2	*J6A02*	
L004		
- DAT SG1 BIT SAR 4		
	L2T04	ML210-L004
1B-A1	(T2M02)	JT210-R012
	K2T04	MK210-L004
1B-A1	*V2B07*	
1B-B2	*J6A04*	
L004		
- DAT SG1 BIT SAR 5		
	L2G02	ML210-L004
1B-A1	(T2D05)	JT210-R012
	K2G02	MK210-L004
1B-A1	*Q1E11*	
1B-B2	*J1A11*	
L004		
- DAT SG1 BIT SAR 6		
	L2B12	ML210-L004
1B-A1	(T2D09)	JT210-R012
	K2B12	MK210-L004
1B-A1	*R1B11*	
1B-B2	*J1C11*	
L005		
- DAT SG1 CS SAR 0		
	L2D13	ML210-L005
1B-A1	(T2J06)	JT210-R005
	K2D13	MK210-L005
1B-A1	*T1C11*	
1B-B2	*M1A11*	

LINE/SIGNAL	PIN	SHEET/LINE
L005		
- DAT SG1 CS SAR 1		
	L2J02	ML210-L005
1B-A1	(T2G05)	JT210-R005
	K2J02	MK210-L005
1B-A1	*T1D11*	
1B-B2	*M1B11*	
L006		
- DAT SG1 UNUSED OUTPUT 0		
	L2C12	ML210-L006
1B-A1	(T2B09)	JT210-R037
	K2C12	MK210-L006
1B-A1	*R1C11*	
1B-B2	*J1D11*	
L007		
- C2Q SG1 CS SELECT		
	L2D12	ML210-L007
1B-A1	(Q2D07)	JQ210-R050
	K2D12	MK210-L007
1B-A1	*U1A11*	
1B-B2	*M1D11*	
L008		
- C2Q SG1 POWER ON RESET		
	L2C13	ML210-L008
1B-A1	(Q2C11)	JQ210-R051
	K2C13	MK210-L008
1B-A1	*R1D11*	
1B-B2	*J1E11*	
L009		
- DAT SG1 DATA GT A SAR 0		
	L2B09	ML210-L009
1B-A1	(T2J11)	JT210-R008
1B-A1	Q2N05	JQ210-L037
	K2B09	MK210-L009
1B-A1	*R1E11*	
1B-B2	*K1A11*	
L009		
- DAT SG1 DATA GT A SAR 1		
	L2B10	ML210-L009
1B-A1	(T2G11)	JT210-R008
1B-A1	Q2M04	JQ210-L037
	K2B10	MK210-L009
1B-A1	*S1A11*	
1B-B2	*K1B11*	
L009		
- DAT SG1 DATA GT A SAR 2		
	L2D09	ML210-L009
1B-A1	(T2P02)	JT210-R008
1B-A1	Q2H12	JQ210-L037
	K2D09	MK210-L009
1B-A1	*R1E13*	
1B-B2	*K1A13*	
L010		
- C2Q SG1 DATA GATE A		
	L2D10	ML210-L010
1B-A1	(Q2D02)	JQ210-R052
	K2D10	MK210-L010
1B-A1	*S1A13*	
1B-B2	*K1B13*	

LINE/SIGNAL	PIN	SHEET/LINE
L011		
- DAT SG1 DATA GT B SAR 0		
	L2C07	ML210-L011
1B-A1	(T2U10)	JT210-R010
	K2C07	MK210-L011
1B-A1	*T1A11*	
1B-B2	*L1D11*	
L011		
- DAT SG1 DATA GT B SAR 1		
	L2C08	ML210-L011
1B-A1	(T2S03)	JT210-R010
	K2C08	MK210-L011
1B-A1	*T1B11*	
1B-B2	*L1E11*	
L011		
- DAT SG1 DATA GT B SAR 2		
	L2C09	ML210-L011
1B-A1	(T2U12)	JT210-R010
	K2C09	MK210-L011
1B-A1	*T1A13*	
1B-B2	*L1D13*	
L012		
- C2Q SG1 DATA GATE B		
	L2C10	ML210-L012
1B-A1	(Q2B03)	JQ210-R052
	K2C10	MK210-L012
1B-A1	*T1B13*	
1B-B2	*L1E13*	
L013		
- DAT SG1 CARD SELECT GRP 0		
	L2D06	ML210-L013
1B-A1	(T2J12)	JT210-R003
	K2D06	MK210-L013
1B-A1	*R1B13*	
1B-B2	*J1C13*	
L013		
- DAT SG1 CARD SELECT GRP 1		
	L2D07	ML210-L013
1B-A1	(T2G12)	JT210-R003
	K2D07	MK210-L013
1B-A1	*R1C13*	
1B-B2	*J1D13*	
L013		
- DAT SG1 CARD SELECT GRP 2		
	L2D04	ML210-L013
1B-A1	(T2J13)	JT210-R003
	K2D04	MK210-L013
1B-A1	*R1D13*	
1B-B2	*J1E13*	
L013		
- DAT SG1 CARD SELECT GRP 3		
	L2D05	ML210-L013
1B-A1	(T2J09)	JT210-R003
	K2D05	MK210-L013
1B-A1	*T1C13*	
1B-B2	*M1A13*	

LINE/SIGNAL	PIN	SHEET/LINE
L014		
- C2Q SG1 REFRESH		
	L2N03	ML210-L014
1B-A1	(Q2C05)	JQ210-R047
	K2N03	MK210-L014
1B-A1	*T1D13*	
1B-B2	*M1B13*	
L015		
- C2Q SG1 READ		
	L2N05	ML210-L015
1B-A1	(Q2B08)	JQ210-R048
	K2N05	MK210-L015
1B-A1	*T1E13*	
1B-B2	*M1C13*	
L016		
- C2Q SG1 WRITE		
	L2N09	ML210-L016
1B-A1	(Q2B11)	JQ210-R049
	K2N09	MK210-L016
1B-A1	*U1A13*	
1B-B2	*M1D13*	
L017		
- ARL SG1 UNUSED OUTPUTS 0		
	L2J13	ML210-L017
	P2J13	MP210-L009
	S2J13	MS210-L009
L017		
- ARL SG1 UNUSED OUTPUTS 1		
	L2G08	ML210-L017
	P2G08	MP210-L009
	S2G08	MS210-L009
L017		
- ARL SG1 UNUSED OUTPUTS 2		
	L2H12	ML210-L017
	N2J13	MN210-L009
	T2J13	MT210-L009
L017		
- ARL SG1 UNUSED OUTPUTS 3		
	L2H07	ML210-L017
	N2G08	MN210-L009
	T2G08	MT210-L009
L018		
- DAT SG1 CS/WD SAR PARITY		
	L2U06	ML210-L018
1B-A1	(T2B06)	JT210-R007
	K2U06	MK210-L018
1B-A1	*V2D09*	
1B-B2	*J6C02*	
L019		
- DAT SG1 DGA/BIT SAR PTY		
	L2S07	ML210-L019
1B-A1	(T2U05)	JT210-R009
	K2S07	MK210-L019
1B-A1	*V2D10*	
1B-B2	*J6D02*	

LINE/SIGNAL	PIN	SHEET/LINE
L020		
- DAT SG1 DGB/BIT SAR PTY		
	L2U07	ML210-L020
1B-A1	(T2S05)	JT210-R011
	K2U07	MK210-L020
1B-A1	*V2D11*	
1B-B2	*J6E02*	
L021		
- SH2 SG1 REFRESH ERROR PQRS		
	L2G10	ML210-L021
	(P2G10)	MP210-R005
	(S2G10)	MS210-R005
L022		
- SH2 SG1 REFRESH ERROR MNTU		
	L2J09	ML210-L022
	(N2G10)	MN210-R005
	(T2G10)	MT210-R005
L023		
- SH2 SG1 DATA OP ERROR RSTU		
	L2G04	ML210-L023
	(S2J05)	MS210-R004
	(T2J05)	MT210-R004
L024		
- SH2 SG1 DATA OP ERROR MNPQ		
	L2J05	ML210-L024
	(N2J05)	MN210-R004
	(P2J05)	MP210-R004
L025		
- C2Q SG1 RESET REFRESH ERROR		
	L2S11	ML210-L025
1B-A1	(Q2C09)	JQ210-R053
	K2S11	MK210-L025
1B-A1	*V2D13*	
1B-B2	*K6B02*	
L026		
- C2Q SG1 COMMAND PARITY		
	L2C11	ML210-L026
1B-A1	(Q2D10)	JQ210-R054
	K2C11	MK210-L026
1B-A1	*U1E11*	
1B-B2	*N1C11*	
R003		
- ARL SG1 WORD SAR X 0		
	(L2N02)	ML210-R003
	P2P02	MP210-L003
	S2P02	MS210-L003
R003		
- ARL SG1 WORD SAR X 1		
	(L2P10)	ML210-R003
	P2P10	MP210-L003
	S2P10	MS210-L003
R003		
- ARL SG1 WORD SAR X 2		
	(L2M04)	ML210-R003
	P2M04	MP210-L003
	S2M04	MS210-L003

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- ARL SG1 WORD SAR X 3		
	(L2P12)	ML210-R003
	P2P12	MP210-L003
	S2P12	MS210-L003
R003		
- ARL SG1 WORD SAR X 4		
	(L2M10)	ML210-R003
	P2M10	MP210-L003
	S2M10	MS210-L003
R003		
- ARL SG1 WORD SAR X 5		
	(L2M12)	ML210-R003
	P2M12	MP210-L003
	S2M12	MS210-L003
R003		
- ARL SG1 WORD SAR X 6		
	(L2N08)	ML210-R003
	P2P09	MP210-L003
	S2P09	MS210-L003
R003		
- ARL SG1 WORD SAR X 7		
	(L2G09)	ML210-R003
	P2G09	MP210-L003
	S2G09	MS210-L003
R004		
- ARL SG1 BIT SAR X 0		
	(L2P11)	ML210-R004
	P2P11	MP210-L004
	S2P11	MS210-L004
R004		
- ARL SG1 BIT SAR X 1		
	(L2M07)	ML210-R004
	P2M07	MP210-L004
	S2M07	MS210-L004
R004		
- ARL SG1 BIT SAR X 2		
	(L2P05)	ML210-R004
	P2P05	MP210-L004
	S2P05	MS210-L004
R004		
- ARL SG1 BIT SAR X 3		
	(L2M02)	ML210-R004
	P2M02	MP210-L004
	S2M02	MS210-L004
R004		
- ARL SG1 BIT SAR X 4		
	(L2M08)	ML210-R004
	P2M08	MP210-L004
	S2M08	MS210-L004
R004		
- ARL SG1 BIT SAR X 5		
	(L2H04)	ML210-R004
	P2G05	MP210-L004
	S2G05	MS210-L004

LINE/SIGNAL	PIN	SHEET/LINE
R004		
- ARL SG1 BIT SAR X 6		
	(L2H06)	ML210-R004
	P2J07	MP210-L004
	S2J07	MS210-L004
R005		
- ARL SG1 CS SAR X 0		
	(L2J12)	ML210-R005
	P2J12	MP210-L008
	S2J12	MS210-L008
R005		
- ARL SG1 CS SAR X 1		
	(L2H03)	ML210-R005
	P2J04	MP210-L008
	S2J04	MS210-L008
R006		
- ARL SG1 CS SELECT X		
	(L2J10)	ML210-R006
	P2J10	MP210-L007
	S2J10	MS210-L007
R007		
- ARL SG1 DATA GT A SAR X 0		
	(L2H10)	ML210-R007
	S2J11	MS210-L006
R007		
- ARL SG1 DATA GT A SAR X 1		
	(L2G06)	ML210-R007
	S2G07	MS210-L006
R007		
- ARL SG1 DATA GT A SAR X 2		
	(L2G11)	ML210-R007
	S2G12	MS210-L006
R008		
- ARL SG1 DATA GATE A X		
	(L2H05)	ML210-R008
	S2J06	MS210-L005
R009		
- ARL SG1 DATA GT B SAR X 0		
	(L2S08)	ML210-R009
	P2J11	MP210-L006
R009		
- ARL SG1 DATA GT B SAR X 1		
	(L2S12)	ML210-R009
	P2G07	MP210-L006
R009		
- ARL SG1 DATA GT B SAR X 2		
	(L2U09)	ML210-R009
	P2G12	MP210-L006
R010		
- ARL SG1 DATA GATE B X		
	(L2U13)	ML210-R010
	P2J06	MP210-L005

LINE/SIGNAL	PIN	SHEET/LINE
R011		
- ARL SG1 CARD SELECT GRP 0		
	(L2B05)	ML210-R011
	P2G04	MP210-L010
	S2G04	MS210-L010
R011		
- ARL SG1 CARD SELECT GRP 1		
	(L2B06)	ML210-R011
R011		
- ARL SG1 CARD SELECT GRP 2		
	(L2B07)	ML210-R011
R011		
- ARL SG1 CARD SELECT GRP 3		
	(L2B08)	ML210-R011
	N2G04	MN210-L010
	T2G04	MT210-L010
R012		
- ARL SG1 POWER ON RESET		
	(L2M03)	ML210-R012
	N2M03	MN210-L012
	P2M03	MP210-L012
	S2M03	MS210-L012
	T2M03	MT210-L012
R013		
- ARL SG1 READ		
	(L2M05)	ML210-R013
	N2M05	MN210-L013
	P2M05	MP210-L013
	S2M05	MS210-L013
	T2M05	MT210-L013
R014		
- ARL SG1 WRITE		
	(L2M09)	ML210-R014
	N2M09	MN210-L014
	P2M09	MP210-L014
	S2M09	MS210-L014
	T2M09	MT210-L014
R015		
+ ARL SG1 COMMAND CMDR		
	(L2T05)	ML210-R015
	V2M03	MV200-L009
R016		
- ARL SG1 WORD SAR Y 0		
	(L2P02)	ML210-R016
	N2P02	MN210-L003
	T2P02	MT210-L003
R016		
- ARL SG1 WORD SAR Y 1		
	(L2N10)	ML210-R016
	N2P10	MN210-L003
	T2P10	MT210-L003
R016		
- ARL SG1 WORD SAR Y 2		
	(L2N04)	ML210-R016
	N2M04	MN210-L003
	T2M04	MT210-L003

LINE/SIGNAL	PIN	SHEET/LINE
R016		
- ARL SG1 WORD SAR Y 3		
	(L2P13)	ML210-R016
	N2P12	MN210-L003
	T2P12	MT210-L003
R016		
- ARL SG1 WORD SAR Y 4		
	(L2M11)	ML210-R016
	N2M10	MN210-L003
	T2M10	MT210-L003
R016		
- ARL SG1 WORD SAR Y 5		
	(L2N13)	ML210-R016
	N2M12	MN210-L003
	T2M12	MT210-L003
R016		
- ARL SG1 WORD SAR Y 6		
	(L2P09)	ML210-R016
	N2P09	MN210-L003
	T2P09	MT210-L003
R016		
- ARL SG1 WORD SAR Y 7		
	(L2H08)	ML210-R016
	N2G09	MN210-L003
	T2G09	MT210-L003
R017		
- ARL SG1 BIT SAR Y 0		
	(L2N12)	ML210-R017
	N2P11	MN210-L004
	T2P11	MT210-L004
R017		
- ARL SG1 BIT SAR Y 1		
	(L2N07)	ML210-R017
	N2M07	MN210-L004
	T2M07	MT210-L004
R017		
- ARL SG1 BIT SAR Y 2		
	(L2N06)	ML210-R017
	N2P05	MN210-L004
	T2P05	MT210-L004
R017		
- ARL SG1 BIT SAR Y 3		
	(L2H13)	ML210-R017
	N2M02	MN210-L004
	T2M02	MT210-L004
R017		
- ARL SG1 BIT SAR Y 4		
	(L2N11)	ML210-R017
	N2M08	MN210-L004
	T2M08	MT210-L004
R017		
- ARL SG1 BIT SAR Y 5		
	(L2G05)	ML210-R017
	N2G05	MN210-L004
	T2G05	MT210-L004

LINE/SIGNAL	PIN	SHEET/LINE
R017		
- ARL SG1 BIT SAR Y 6		
	(L2J07)	ML210-R017
	N2J07	MN210-L004
	T2J07	MT210-L004
R018		
- ARL SG1 CS SAR Y 0		
	(L2H11)	ML210-R018
	N2J12	MN210-L008
	T2J12	MT210-L008
R018		
- ARL SG1 CS SAR Y 1		
	(L2J04)	ML210-R018
	N2J04	MN210-L008
	T2J04	MT210-L008
R019		
- ARL SG1 CS SELECT Y		
	(L2H09)	ML210-R019
	N2J10	MN210-L007
	T2J10	MT210-L007
R020		
- ARL SG1 DATA GT A SAR Y 0		
	(L2J11)	ML210-R020
	T2J11	MT210-L006
R020		
- ARL SG1 DATA GT A SAR Y 1		
	(L2G07)	ML210-R020
	T2G07	MT210-L006
R020		
- ARL SG1 DATA GT A SAR Y 2		
	(L2G12)	ML210-R020
	T2G12	MT210-L006
R021		
- ARL SG1 DATA GATE A Y		
	(L2J06)	ML210-R021
	T2J06	MT210-L005
R022		
- ARL SG1 DATA GT B SAR Y 0		
	(L2S09)	ML210-R022
	N2J11	MN210-L006
R022		
- ARL SG1 DATA GT B SAR Y 1		
	(L2S13)	ML210-R022
	N2G07	MN210-L006
R022		
- ARL SG1 DATA GT B SAR Y 2		
	(L2U12)	ML210-R022
	N2G12	MN210-L006
R023		
- ARL SG1 DATA GATE B Y		
	(L2T08)	ML210-R023
	N2J06	MN210-L005

LINE/SIGNAL	PIN	SHEET/LINE
R024		
- ARL SG1 CS/WORD SAR PTY X		
	(L2G13)	ML210-R024
	P2G13	MP210-L015
	S2G13	MS210-L015
R025		
- ARL SG1 DGA/BIT SAR PTY X		
	(L2M06)	ML210-R025
	S2P04	MS210-L016
R026		
- ARL SG1 DGB/BIT SAR PTY X		
	(L2P07)	ML210-R026
	P2P04	MP210-L016
R027		
- SG1/2 ARL REFRESH ERROR PQRS		
	(L2B03)	ML210-R027
1B-A1	P2U12	JP200-L030
1B-A1	*U1C13*	
1B-A1	*U6C04*	
1B-B2	*N1A13*	
R028		
- SG1/2 ARL REFRESH ERROR MNTU		
	(L2B04)	ML210-R028
1B-A1	P2U13	JP200-L029
1B-A1	*U1D13*	
1B-A1	*U6D04*	
1B-B2	*N1B13*	
R029		
- SG1/2 ARL DATA OP ERROR MNPQ		
	(L2D02)	ML210-R029
1B-A1	P2M03	JP200-L023
1B-A1	*U1C11*	
1B-A1	*U6C02*	
1B-B2	*N1A11*	
R030		
- SG1/2 ARL DATA OP ERROR RSTU		
	(L2B02)	ML210-R030
1B-A1	P2P04	JP200-L024
1B-A1	*U1D11*	
1B-A1	*U6D02*	
1B-B2	*N1B11*	
R031		
- SG1/2 ARL IN ADDR PARITY ERROR		
	(L2U10)	ML210-R031
1B-A1	P2H12	JP200-L026
1B-A1	*V2B10*	
1B-A1	*V5B10*	
1B-B2	*J6D04*	
R032		
- SG1/2 ARL IN REFRESH ERROR		
	(L2U11)	ML210-R032
1B-A1	P2T12	JP200-L032
1B-A1	*V2B11*	
1B-A1	*V5B11*	
1B-B2	*J6E04*	

LINE/SIGNAL	PIN	SHEET/LINE
R033		
- ARL SG1 REFRESH		
	(L2G03)	ML210-R033
	N2G03	MN210-L011
	P2G03	MP210-L011
	S2G03	MS210-L011
	T2G03	MT210-L011
R034		
- ARL SG1 ERROR LATCH RESET		
	(L2S10)	ML210-R034
	V2P02	MV200-L008
R035		
- ARL SG1 CS/WORD SAR PTY Y		
	(L2H02)	ML210-R035
	N2G13	MN210-L015
	T2G13	MT210-L015
R036		
- ARL SG1 DGA/BIT SAR PTY Y		
	(L2P04)	ML210-R036
	T2P04	MT210-L016
R037		
- ARL SG1 DGB/BIT SAR PTY Y		
	(L2P06)	ML210-R037
	N2P04	MN210-L016

003 - ARL SG1 WORD SAR Y (0-7) ===== * =
004 - ARL SG1 BIT SAR Y (0-6) ====== * =
005 - ARL SG1 DATA GATE B Y -------- J06
006 - ARL SG1 DATA GT B SAR Y (0-2) * =
007 - ARL SG1 CS SELECT Y ---------- J10
008 - ARL SG1 CS SAR Y (0-1) ======= * =
009 - ARL SG1 UNUSED OUTPUTS (2-3) = * =
010 - ARL SG1 CARD SELECT GRP (3) == * =
011 - ARL SG1 REFRESH -------------- G03
012 - ARL SG1 POWER ON RESET ------- M03
013 - ARL SG1 READ ----------------- M05
014 - ARL SG1 WRITE ---------------- M09
015 - ARL SG1 CS/WORD SAR PTY Y----- G13
016 - ARL SG1 DGB/BIT SAR PTY Y ---- P04

CLP4/CLP2 CARD

OVERVIEW

The CLP4/CLP2 card is a 4/2 Megabyte capacity data storage array. The storage is organized 36 bits wide by 1 or 1/2 Meg deep. The use of data gates allows up to 8 store/fetch operations per bit for each card access.

PRIMARY FUNCTIONS

- Provides 4/2 Megabyte of storage capacity for data from the 36 bit storage data bus.
- Checks parity of the address bus.
- Decodes cs, word, bit and data gate SAR's.

PRIMARY COMPONENTS

- 4/2 data storage array segments:
  - A segment contains 36 memories, each of which is 256k x 1 bit size.
- Address buffers and parity checkers.
- SAR (Storage address register) and select line decoders.
- Bidirectional data receivers and drivers.

ERROR CHECKING

- Data Op (address) parity error generated and latched on CLAR cards and appropriate bit is set in reg USCACK/LSCACK.
- Refresh (address) parity error is generated and latched on CLAR cards and appropriate bit is set in reg CSCRACK.

= * - DRV SG1 DATA B (36-71) ======= 003
J05 - SH2 SG1 DATA OP ERROR MNPQ --- 004
G10 - SH2 SG1 REFRESH ERROR MNTU --- 005
M06 - SH CARD IN HN ---------------- 006
P07 - SH CARD IN NT ---------------- 007

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- ARL SG1 WORD SAR Y 0		
	N2P02	MN210-L003
	(L2P02)	ML210-R016
	T2P02	MT210-L003
L003		
- ARL SG1 WORD SAR Y 1		
	N2P10	MN210-L003
	(L2N10)	ML210-R016
	T2P10	MT210-L003
L003		
- ARL SG1 WORD SAR Y 2		
	N2M04	MN210-L003
	(L2N04)	ML210-R016
	T2M04	MT210-L003
L003		
- ARL SG1 WORD SAR Y 3		
	N2P12	MN210-L003
	(L2P13)	ML210-R016
	T2P12	MT210-L003
L003		
- ARL SG1 WORD SAR Y 4		
	N2M10	MN210-L003
	(L2M11)	ML210-R016
	T2M10	MT210-L003
L003		
- ARL SG1 WORD SAR Y 5		
	N2M12	MN210-L003
	(L2N13)	ML210-R016
	T2M12	MT210-L003
L003		
- ARL SG1 WORD SAR Y 6		
	N2P09	MN210-L003
	(L2P09)	ML210-R016
	T2P09	MT210-L003
L003		
- ARL SG1 WORD SAR Y 7		
	N2G09	MN210-L003
	(L2H08)	ML210-R016
	T2G09	MT210-L003
L004		
- ARL SG1 BIT SAR Y 0		
	N2P11	MN210-L004
	(L2N12)	ML210-R017
	T2P11	MT210-L004
L004		
- ARL SG1 BIT SAR Y 1		
	N2M07	MN210-L004
	(L2N07)	ML210-R017
	T2M07	MT210-L004
L004		
- ARL SG1 BIT SAR Y 2		
	N2P05	MN210-L004
	(L2N06)	ML210-R017
	T2P05	MT210-L004

LINE/SIGNAL	PIN	SHEET/LINE
L004		
- ARL SG1 BIT SAR Y 3		
	N2M02	MN210-L004
	(L2N13)	ML210-R017
	T2M02	MT210-L004
L004		
- ARL SG1 BIT SAR Y 4		
	N2M08	MN210-L004
	(L2N11)	ML210-R017
	T2M08	MT210-L004
L004		
- ARL SG1 BIT SAR Y 5		
	N2G05	MN210-L004
	(L2G05)	ML210-R017
	T2G05	MT210-L004
L004		
- ARL SG1 BIT SAR Y 6		
	N2J07	MN210-L004
	(L2J07)	ML210-R017
	T2J07	MT210-L004
L005		
- ARL SG1 DATA GATE B Y		
	N2J06	MN210-L005
	(L2T08)	ML210-R023
L006		
- ARL SG1 DATA GT B SAR Y 0		
	N2J11	MN210-L006
	(L2S09)	ML210-R022
L006		
- ARL SG1 DATA GT B SAR Y 1		
	N2G07	MN210-L006
	(L2S13)	ML210-R022
L006		
- ARL SG1 DATA GT B SAR Y 2		
	N2G12	MN210-L006
	(L2U12)	ML210-R022
L007		
- ARL SG1 CS SELECT Y		
	N2J10	MN210-L007
	(L2H09)	ML210-R019
	T2J10	MT210-L007
L008		
- ARL SG1 CS SAR Y 0		
	N2J12	MN210-L008
	(L2H11)	ML210-R018
	T2J12	MT210-L008
L008		
- ARL SG1 CS SAR Y 1		
	N2J04	MN210-L008
	(L2J04)	ML210-R018
	T2J04	MT210-L008
L009		
- ARL SG1 UNUSED OUTPUTS 2		
	N2J13	MN210-L009
	L2H12	ML210-L017
	T2J13	MT210-L009

LINE/SIGNAL	PIN	SHEET/LINE
L009		
- ARL SG1 UNUSED OUTPUTS 3		
	N2G08	MN210-L009
	L2H07	ML210-L017
	T2G08	MT210-L009
L010		
- ARL SG1 CARD SELECT GRP 3		
	N2G04	MN210-L010
	(L2B08)	ML210-R011
	T2G04	MT210-L010
L011		
- ARL SG1 REFRESH		
	N2G03	MN210-L011
	(L2G03)	ML210-R033
	P2G03	MP210-L011
	S2G03	MS210-L011
	T2G03	MT210-L011
L012		
- ARL SG1 POWER ON RESET		
	N2M03	MN210-L012
	(L2M03)	ML210-R012
	P2M03	MP210-L012
	S2M03	MS210-L012
	T2M03	MT210-L012
L013		
- ARL SG1 READ		
	N2M05	MN210-L013
	(L2M05)	ML210-R013
	P2M05	MP210-L013
	S2M05	MS210-L013
	T2M05	MT210-L013
L014		
- ARL SG1 WRITE		
	N2M09	MN210-L014
	(L2M09)	ML210-R014
	P2M09	MP210-L014
	S2M09	MS210-L014
	T2M09	MT210-L014
L015		
- ARL SG1 CS/WORD SAR PTY Y		
	N2G13	MN210-L015
	(L2H02)	ML210-R035
	T2G13	MT210-L015
L016		
- ARL SG1 DGB/BIT SAR PTY Y		
	N2P04	MN210-L016
	(L2P06)	ML210-R037
R003		
- DRV SG1 DATA B 36		
	(N2U13)	MN210-R003
	(P2U13)	MP210-R003
	(V2U13)	MV200-R005
R003		
- DRV SG1 DATA B 37		
	(N2U12)	MN210-R003
	(P2U12)	MP210-R003
	(V2U12)	MV200-R005

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- DRV SG1 DATA B 38		
	(N2U11)	MN210-R003
	(P2U11)	MP210-R003
	(V2U10)	MV200-R005
R003		
- DRV SG1 DATA B 39		
	(N2U10)	MN210-R003
	(P2U10)	MP210-R003
	(V2U09)	MV200-R005
R003		
- DRV SG1 DATA B 40		
	(N2U09)	MN210-R003
	(P2U09)	MP210-R003
	(V2U05)	MV200-R005
R003		
- DRV SG1 DATA B 41		
	(N2U07)	MN210-R003
	(P2U07)	MP210-R003
	(V2U02)	MV200-R005
R003		
- DRV SG1 DATA B 42		
	(N2U06)	MN210-R003
	(P2U06)	MP210-R003
	(V2P13)	MV200-R005
R003		
- DRV SG1 DATA B 43		
	(N2U05)	MN210-R003
	(P2U05)	MP210-R003
	(V2P12)	MV200-R005
R003		
- DRV SG1 DATA B 44		
	(N2U04)	MN210-R003
	(P2U04)	MP210-R003
	(V2P09)	MV200-R005
R003		
- DRV SG1 DATA B 45		
	(N2U02)	MN210-R003
	(P2U02)	MP210-R003
	(V2P05)	MV200-R005
R003		
- DRV SG1 DATA B 46		
	(N2P13)	MN210-R003
	(P2P13)	MP210-R003
	(V2P04)	MV200-R005
R003		
- DRV SG1 DATA B 47		
	(N2S12)	MN210-R003
	(P2S12)	MP210-R003
	(V2U11)	MV200-R005
R003		
- DRV SG1 DATA B 48		
	(N2S10)	MN210-R003
	(P2S10)	MP210-R003
	(V2U07)	MV200-R005

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- DRV SG1 DATA B 49		
	(N2S09)	MN210-R003
	(P2S09)	MP210-R003
	(V2U06)	MV200-R005
R003		
- DRV SG1 DATA B 50		
	(N2S08)	MN210-R003
	(P2S08)	MP210-R003
	(V2U04)	MV200-R005
R003		
- DRV SG1 DATA B 51		
	(N2S07)	MN210-R003
	(P2S07)	MP210-R003
	(V2T04)	MV200-R005
R003		
- DRV SG1 DATA B 52		
	(N2S05)	MN210-R003
	(P2S05)	MP210-R003
	(V2P11)	MV200-R005
R003		
- DRV SG1 DATA B 53		
	(N2S04)	MN210-R003
	(P2S04)	MP210-R003
	(V2P10)	MV200-R005
R003		
- DRV SG1 DATA B 54		
	(N2S03)	MN210-R003
	(P2S03)	MP210-R003
	(V2P07)	MV200-R005
R003		
- DRV SG1 DATA B 55		
	(N2S02)	MN210-R003
	(P2S02)	MP210-R003
	(V2P06)	MV200-R005
R003		
- DRV SG1 DATA B 56		
	(N2J02)	MN210-R003
	(P2J02)	MP210-R003
	(V2J07)	MV200-R005
R003		
- DRV SG1 DATA B 57		
	(N2G02)	MN210-R003
	(P2G02)	MP210-R003
	(V2J06)	MV200-R005
R003		
- DRV SG1 DATA B 58		
	(N2D13)	MN210-R003
	(P2D13)	MP210-R003
	(V2J05)	MV200-R005
R003		
- DRV SG1 DATA B 59		
	(N2D12)	MN210-R003
	(P2D12)	MP210-R003
	(V2J04)	MV200-R005

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- DRV SG1 DATA B 60		
	(N2D11)	MN210-R003
	(P2D11)	MP210-R003
	(V2J02)	MV200-R005
R003		
- DRV SG1 DATA B 61		
	(N2D10)	MN210-R003
	(P2D10)	MP210-R003
	(V2D12)	MV200-R005
R003		
- DRV SG1 DATA B 62		
	(N2D09)	MN210-R003
	(P2D09)	MP210-R003
	(V2D11)	MV200-R005
R003		
- DRV SG1 DATA B 63		
	(N2D07)	MN210-R003
	(P2D07)	MP210-R003
	(V2D07)	MV200-R005
R003		
- DRV SG1 DATA B 64		
	(N2D06)	MN210-R003
	(P2D06)	MP210-R003
	(V2D06)	MV200-R005
R003		
- DRV SG1 DATA B 65		
	(N2D05)	MN210-R003
	(P2D05)	MP210-R003
	(V2D05)	MV200-R005
R003		
- DRV SG1 DATA B 66		
	(N2D04)	MN210-R003
	(P2D04)	MP210-R003
	(V2D04)	MV200-R005
R003		
- DRV SG1 DATA B 67		
	(N2D02)	MN210-R003
	(P2D02)	MP210-R003
	(V2D02)	MV200-R005
R003		
- DRV SG1 DATA B 68		
	(N2B10)	MN210-R003
	(P2B10)	MP210-R003
	(V2D13)	MV200-R005
R003		
- DRV SG1 DATA B 69		
	(N2B09)	MN210-R003
	(P2B09)	MP210-R003
	(V2D10)	MV200-R005
R003		
- DRV SG1 DATA B 70		
	(N2B08)	MN210-R003
	(P2B08)	MP210-R003
	(V2D09)	MV200-R005

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- DRV SG1 DATA B 71		
	(N2B07)	MN210-R003
	(P2B07)	MP210-R003
	(V2C08)	MV200-R005
R004		
- SH2 SG1 DATA OP ERROR MNPQ		
	(N2J05)	MN210-R004
	(P2J05)	MP210-R004
	L2J05	ML210-L024
R005		
- SH2 SG1 REFRESH ERROR MNTU		
	(N2G10)	MN210-R005
	(T2G10)	MT210-R005
	L2J09	ML210-L022
R006		
- SH CARD IN HN		
	(N2M06)	MN210-R006
	(H2P07)	MH210-R007
R007		
- SH CARD IN NT		
	(N2P07)	MN210-R007
	(T2M06)	MT210-R006

003 - ARL SG1 WORD SAR X (0-7) ===== * =
004 - ARL SG1 BIT SAR X (0-6) ====== * =
005 - ARL SG1 DATA GATE B X -------- J06
006 - ARL SG1 DATA GT B SAR X (0-2) * =
007 - ARL SG1 CS SELECT X ---------- J10
008 - ARL SG1 CS SAR X (0-1) ======= * =
009 - ARL SG1 UNUSED OUTPUTS (0-1) = * =
010 - ARL SG1 CARD SELECT GRP (0) == * =
011 - ARL SG1 REFRESH -------------- G03
012 - ARL SG1 POWER ON RESET ------- M03
013 - ARL SG1 READ ----------------- M05
014 - ARL SG1 WRITE ---------------- M09
015 - ARL SG1 CS/WORD SAR PTY X----- G13
016 - ARL SG1 DGB/BIT SAR PTY X ---- P04

= * - DRV SG1 DATA B (36-71) ======= 003
J05 - SH2 SG1 DATA OP ERROR MNPQ --- 004
G10 - SH2 SG1 REFRESH ERROR PQRS --- 005
M06 - SH CARD IN GP ---------------- 006
P07 - SH CARD IN PS ---------------- 007

CLP4/CLP2 CARD

OVERVIEW

The CLP4/CLP2 card is a 4/2 Megabyte capacity data storage array. The storage is organized 36 bits wide by 1 or 1/2 Meg deep. The use of data gates allows up to 8 store/fetch operations per bit for each card access.

PRIMARY FUNCTIONS

- Provides 4/2 Megabyte of storage capacity for data from the 36 bit storage data bus.
- Checks parity of the address bus.
- Decodes cs, word, bit and data gate SAR's.

PRIMARY COMPONENTS

- 4/2 data storage array segments:
  - A segment contains 36 memories, each of which is 256k x 1 bit size.
- Address buffers and parity checkers.
- SAR (Storage address register) and select line decoders.
- Bidirectional data receivers and drivers.

ERROR CHECKING

- Data Op (address) parity error generated and latched on CLAR cards and appropriate bit is set in reg USCACK/LSCACK.
- Refresh (address) parity error is generated and latched on CLAR cards and appropriate bit is set in reg CSCRACK.

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- ARL SG1 WORD SAR X 0		
	P2P02	MP210-L003
	(L2N02)	ML210-R003
	S2P02	MS210-L003
L003		
- ARL SG1 WORD SAR X 1		
	P2P10	MP210-L003
	(L2P10)	ML210-R003
	S2P10	MS210-L003
L003		
- ARL SG1 WORD SAR X 2		
	P2M04	MP210-L003
	(L2M04)	ML210-R003
	S2M04	MS210-L003
L003		
- ARL SG1 WORD SAR X 3		
	P2P12	MP210-L003
	(L2P12)	ML210-R003
	S2P12	MS210-L003
L003		
- ARL SG1 WORD SAR X 4		
	P2M10	MP210-L003
	(L2M10)	ML210-R003
	S2M10	MS210-L003
L003		
- ARL SG1 WORD SAR X 5		
	P2M12	MP210-L003
	(L2M12)	ML210-R003
	S2M12	MS210-L003
L003		
- ARL SG1 WORD SAR X 6		
	P2P09	MP210-L003
	(L2N08)	ML210-R003
	S2P09	MS210-L003
L003		
- ARL SG1 WORD SAR X 7		
	P2G09	MP210-L003
	(L2G09)	ML210-R003
	S2G09	MS210-L003
L004		
- ARL SG1 BIT SAR X 0		
	P2P11	MP210-L004
	(L2P11)	ML210-R004
	S2P11	MS210-L004
L004		
- ARL SG1 BIT SAR X 1		
	P2M07	MP210-L004
	(L2M07)	ML210-R004
	S2M07	MS210-L004
L004		
- ARL SG1 BIT SAR X 2		
	P2P05	MP210-L004
	(L2P05)	ML210-R004
	S2P05	MS210-L004

LINE/SIGNAL	PIN	SHEET/LINE
L004		
- ARL SG1 BIT SAR X 3		
	P2M02	MP210-L004
	(L2M02)	ML210-R004
	S2M02	MS210-L004
L004		
- ARL SG1 BIT SAR X 4		
	P2M08	MP210-L004
	(L2M08)	ML210-R004
	S2M08	MS210-L004
L004		
- ARL SG1 BIT SAR X 5		
	P2G05	MP210-L004
	(L2H04)	ML210-R004
	S2G05	MS210-L004
L004		
- ARL SG1 BIT SAR X 6		
	P2J07	MP210-L004
	(L2H06)	ML210-R004
	S2J07	MS210-L004
L005		
- ARL SG1 DATA GATE B X		
	P2J06	MP210-L005
	(L2U13)	ML210-R010
L006		
- ARL SG1 DATA GT B SAR X 0		
	P2J11	MP210-L006
	(L2S08)	ML210-R009
L006		
- ARL SG1 DATA GT B SAR X 1		
	P2G07	MP210-L006
	(L2S12)	ML210-R009
L006		
- ARL SG1 DATA GT B SAR X 2		
	P2G12	MP210-L006
	(L2U09)	ML210-R009
L007		
- ARL SG1 CS SELECT X		
	P2J10	MP210-L007
	(L2J10)	ML210-R006
	S2J10	MS210-L007
L008		
- ARL SG1 CS SAR X 0		
	P2J12	MP210-L008
	(L2J12)	ML210-R005
	S2J12	MS210-L008
L008		
- ARL SG1 CS SAR X 1		
	P2J04	MP210-L008
	(L2H03)	ML210-R005
	S2J04	MS210-L008
L009		
- ARL SG1 UNUSED OUTPUTS 0		
	P2J13	MP210-L009
	L2J13	ML210-L017
	S2J13	MS210-L009

LINE/SIGNAL	PIN	SHEET/LINE
L009		
- ARL SG1 UNUSED OUTPUTS 1		
	P2G08	MP210-L009
	L2G08	ML210-L017
	S2G08	MS210-L009
L010		
- ARL SG1 CARD SELECT GRP 0		
	P2G04	MP210-L010
	(L2B05)	ML210-R011
	S2G04	MS210-L010
L011		
- ARL SG1 REFRESH		
	P2G03	MP210-L011
	(L2G03)	ML210-R033
	N2G03	MN210-L011
	S2G03	MS210-L011
	T2G03	MT210-L011
L012		
- ARL SG1 POWER ON RESET		
	P2M03	MP210-L012
	(L2M03)	ML210-R012
	N2M03	MN210-L012
	S2M03	MS210-L012
	T2M03	MT210-L012
L013		
- ARL SG1 READ		
	P2M05	MP210-L013
	(L2M05)	ML210-R013
	N2M05	MN210-L013
	S2M05	MS210-L013
	T2M05	MT210-L013
L014		
- ARL SG1 WRITE		
	P2M09	MP210-L014
	(L2M09)	ML210-R014
	N2M09	MN210-L014
	S2M09	MS210-L014
	T2M09	MT210-L014
L015		
- ARL SG1 CS/WORD SAR PTY X		
	P2G13	MP210-L015
	(L2G13)	ML210-R024
	S2G13	MS210-L015
L016		
- ARL SG1 DGB/BIT SAR PTY X		
	P2P04	MP210-L016
	(L2P07)	ML210-R026
R003		
- DRV SG1 DATA B 36		
	(P2U13)	MP210-R003
	(N2U13)	MN210-R003
	(V2U13)	MV200-R005
R003		
- DRV SG1 DATA B 37		
	(P2U12)	MP210-R003
	(N2U12)	MN210-R003
	(V2U12)	MV200-R005

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- DRV SG1 DATA B 38		
	(P2U11)	MP210-R003
	(N2U11)	MN210-R003
	(V2U10)	MV200-R005
R003		
- DRV SG1 DATA B 39		
	(P2U10)	MP210-R003
	(N2U10)	MN210-R003
	(V2U09)	MV200-R005
R003		
- DRV SG1 DATA B 40		
	(P2U09)	MP210-R003
	(N2U09)	MN210-R003
	(V2U05)	MV200-R005
R003		
- DRV SG1 DATA B 41		
	(P2U07)	MP210-R003
	(N2U07)	MN210-R003
	(V2U02)	MV200-R005
R003		
- DRV SG1 DATA B 42		
	(P2U06)	MP210-R003
	(N2U06)	MN210-R003
	(V2P13)	MV200-R005
R003		
- DRV SG1 DATA B 43		
	(P2U05)	MP210-R003
	(N2U05)	MN210-R003
	(V2P12)	MV200-R005
R003		
- DRV SG1 DATA B 44		
	(P2U04)	MP210-R003
	(N2U04)	MN210-R003
	(V2P09)	MV200-R005
R003		
- DRV SG1 DATA B 45		
	(P2U02)	MP210-R003
	(N2U02)	MN210-R003
	(V2P05)	MV200-R005
R003		
- DRV SG1 DATA B 46		
	(P2P13)	MP210-R003
	(N2P13)	MN210-R003
	(V2P04)	MV200-R005
R003		
- DRV SG1 DATA B 47		
	(P2S12)	MP210-R003
	(N2S12)	MN210-R003
	(V2U11)	MV200-R005
R003		
- DRV SG1 DATA B 48		
	(P2S10)	MP210-R003
	(N2S10)	MN210-R003
	(V2U07)	MV200-R005

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- DRV SG1 DATA B 49		
	(P2S09)	MP210-R003
	(N2S09)	MN210-R003
	(V2U06)	MV200-R005
R003		
- DRV SG1 DATA B 50		
	(P2S08)	MP210-R003
	(N2S08)	MN210-R003
	(V2U04)	MV200-R005
R003		
- DRV SG1 DATA B 51		
	(P2S07)	MP210-R003
	(N2S07)	MN210-R003
	(V2T04)	MV200-R005
R003		
- DRV SG1 DATA B 52		
	(P2S05)	MP210-R003
	(N2S05)	MN210-R003
	(V2P11)	MV200-R005
R003		
- DRV SG1 DATA B 53		
	(P2S04)	MP210-R003
	(N2S04)	MN210-R003
	(V2P10)	MV200-R005
R003		
- DRV SG1 DATA B 54		
	(P2S03)	MP210-R003
	(N2S03)	MN210-R003
	(V2P07)	MV200-R005
R003		
- DRV SG1 DATA B 55		
	(P2S02)	MP210-R003
	(N2S02)	MN210-R003
	(V2P06)	MV200-R005
R003		
- DRV SG1 DATA B 56		
	(P2J02)	MP210-R003
	(N2J02)	MN210-R003
	(V2J07)	MV200-R005
R003		
- DRV SG1 DATA B 57		
	(P2G02)	MP210-R003
	(N2G02)	MN210-R003
	(V2J06)	MV200-R005
R003		
- DRV SG1 DATA B 58		
	(P2D13)	MP210-R003
	(N2D13)	MN210-R003
	(V2J05)	MV200-R005
R003		
- DRV SG1 DATA B 59		
	(P2D12)	MP210-R003
	(N2D12)	MN210-R003
	(V2J04)	MV200-R005

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- DRV SG1 DATA B 60		
	(P2D11)	MP210-R003
	(N2D11)	MN210-R003
	(V2J02)	MV200-R005
R003		
- DRV SG1 DATA B 61		
	(P2D10)	MP210-R003
	(N2D10)	MN210-R003
	(V2D12)	MV200-R005
R003		
- DRV SG1 DATA B 62		
	(P2D09)	MP210-R003
	(N2D09)	MN210-R003
	(V2D11)	MV200-R005
R003		
- DRV SG1 DATA B 63		
	(P2D07)	MP210-R003
	(N2D07)	MN210-R003
	(V2D07)	MV200-R005
R003		
- DRV SG1 DATA B 64		
	(P2D06)	MP210-R003
	(N2D06)	MN210-R003
	(V2D06)	MV200-R005
R003		
- DRV SG1 DATA B 65		
	(P2D05)	MP210-R003
	(N2D05)	MN210-R003
	(V2D05)	MV200-R005
R003		
- DRV SG1 DATA B 66		
	(P2D04)	MP210-R003
	(N2D04)	MN210-R003
	(V2D04)	MV200-R005
R003		
- DRV SG1 DATA B 67		
	(P2D02)	MP210-R003
	(N2D02)	MN210-R003
	(V2D02)	MV200-R005
R003		
- DRV SG1 DATA B 68		
	(P2B10)	MP210-R003
	(N2B10)	MN210-R003
	(V2D13)	MV200-R005
R003		
- DRV SG1 DATA B 69		
	(P2B09)	MP210-R003
	(N2B09)	MN210-R003
	(V2D10)	MV200-R005
R003		
- DRV SG1 DATA B 70		
	(P2B08)	MP210-R003
	(N2B08)	MN210-R003
	(V2D09)	MV200-R005

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- DRV SG1 DATA B 71		
	(P2B07)	MP210-R003
	(N2B07)	MN210-R003
	(V2C08)	MV200-R005
R004		
- SH2 SG1 DATA OP ERROR MNPQ		
	(P2J05)	MP210-R004
	(N2J05)	MN210-R004
	L2J05	ML210-L024
R005		
- SH2 SG1 REFRESH ERROR PQRS		
	(P2G10)	MP210-R005
	(S2G10)	MS210-R005
	L2G10	ML210-L021
R006		
- SH CARD IN GP		
	(P2M06)	MP210-R006
	(G2P07)	MG210-R007
R007		
- SH CARD IN PS		
	(P2P07)	MP210-R007
	(S2M06)	MS210-R006

003 - ARL SG1 WORD SAR X (0-7) ===== * =
004 - ARL SG1 BIT SAR X (0-6) ====== * =
005 - ARL SG1 DATA GATE A X -------- J06
006 - ARL SG1 DATA GT A SAR X (0-2) * =
007 - ARL SG1 CS SELECT X ---------- J10
008 - ARL SG1 CS SAR X (0-1) ======= * =
009 - ARL SG1 UNUSED OUTPUTS (0-1) = * =
010 - ARL SG1 CARD SELECT GRP (0) == * =
011 - ARL SG1 REFRESH -------------- G03
012 - ARL SG1 POWER ON RESET ------- M03
013 - ARL SG1 READ ----------------- M05
014 - ARL SG1 WRITE ---------------- M09
015 - ARL SG1 CS/WORD SAR PTY X----- G13
016 - ARL SG1 DGA/BIT SAR PTY X ---- P04

= * - DRV SG1 DATA A (36-71) ======= 003
J05 - SH2 SG1 DATA OP ERROR RSTU --- 004
G10 - SH2 SG1 REFRESH ERROR PQRS --- 005
M06 - SH CARD IN PS ---------------- 006
P07 - SHD SG1 CARD IN DGPS --------- 007

CLP4/CLP2 CARD

OVERVIEW

The CLP4/CLP2 card is a 4/2 Megabyte capacity data storage array. The storage is organized 36 bits wide by 1 or 1/2 Meg deep. The use of data gates allows up to 8 store/fetch operations per bit for each card access.

PRIMARY FUNCTIONS

- Provides 4/2 Megabyte of storage capacity for data from the 36 bit storage data bus.
- Checks parity of the address bus.
- Decodes cs, word, bit and data gate SAR's.

PRIMARY COMPONENTS

- 4/2 data storage array segments:
  - A segment contains 36 memories, each of which is 256k x 1 bit size.
- Address buffers and parity checkers.
- SAR (Storage address register) and select line decoders.
- Bidirectional data receivers and drivers.

ERROR CHECKING

- Data Op (address) parity error generated and latched on CLAR cards and appropriate bit is set in reg USCACK/LSCACK.
- Refresh (address) parity error is generated and latched on CLAR cards and appropriate bit is set in reg CSCRACK.

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- ARL SG1 WORD SAR X 0		
	S2P02	MS210-L003
	(L2N02)	ML210-R003
	P2P02	MP210-L003
L003		
- ARL SG1 WORD SAR X 1		
	S2P10	MS210-L003
	(L2P10)	ML210-R003
	P2P10	MP210-L003
L003		
- ARL SG1 WORD SAR X 2		
	S2M04	MS210-L003
	(L2M04)	ML210-R003
	P2M04	MP210-L003
L003		
- ARL SG1 WORD SAR X 3		
	S2P12	MS210-L003
	(L2P12)	ML210-R003
	P2P12	MP210-L003
L003		
- ARL SG1 WORD SAR X 4		
	S2M10	MS210-L003
	(L2M10)	ML210-R003
	P2M10	MP210-L003
L003		
- ARL SG1 WORD SAR X 5		
	S2M12	MS210-L003
	(L2M12)	ML210-R003
	P2M12	MP210-L003
L003		
- ARL SG1 WORD SAR X 6		
	S2P09	MS210-L003
	(L2N08)	ML210-R003
	P2P09	MP210-L003
L003		
- ARL SG1 WORD SAR X 7		
	S2G09	MS210-L003
	(L2G09)	ML210-R003
	P2G09	MP210-L003
L004		
- ARL SG1 BIT SAR X 0		
	S2P11	MS210-L004
	(L2P11)	ML210-R004
	P2P11	MP210-L004
L004		
- ARL SG1 BIT SAR X 1		
	S2M07	MS210-L004
	(L2M07)	ML210-R004
	P2M07	MP210-L004
L004		
- ARL SG1 BIT SAR X 2		
	S2P05	MS210-L004
	(L2P05)	ML210-R004
	P2P05	MP210-L004

LINE/SIGNAL	PIN	SHEET/LINE
L004		
- ARL SG1 BIT SAR X 3		
	S2M02	MS210-L004
	(L2M02)	ML210-R004
	P2M02	MP210-L004
L004		
- ARL SG1 BIT SAR X 4		
	S2M08	MS210-L004
	(L2M08)	ML210-R004
	P2M08	MP210-L004
L004		
- ARL SG1 BIT SAR X 5		
	S2G05	MS210-L004
	(L2H04)	ML210-R004
	P2G05	MP210-L004
L004		
- ARL SG1 BIT SAR X 6		
	S2J07	MS210-L004
	(L2H06)	ML210-R004
	P2J07	MP210-L004
L005		
- ARL SG1 DATA GATE A X		
	S2J06	MS210-L005
	(L2H05)	ML210-R008
L006		
- ARL SG1 DATA GT A SAR X 0		
	S2J11	MS210-L006
	(L2H10)	ML210-R007
L006		
- ARL SG1 DATA GT A SAR X 1		
	S2G07	MS210-L006
	(L2G06)	ML210-R007
L006		
- ARL SG1 DATA GT A SAR X 2		
	S2G12	MS210-L006
	(L2G11)	ML210-R007
L007		
- ARL SG1 CS SELECT X		
	S2J10	MS210-L007
	(L2J10)	ML210-R006
	P2J10	MP210-L007
L008		
- ARL SG1 CS SAR X 0		
	S2J12	MS210-L008
	(L2J12)	ML210-R005
	P2J12	MP210-L008
L008		
- ARL SG1 CS SAR X 1		
	S2J04	MS210-L008
	(L2H03)	ML210-R005
	P2J04	MP210-L008
L009		
- ARL SG1 UNUSED OUTPUTS 0		
	S2J13	MS210-L009
	L2J13	ML210-L017
	P2J13	MP210-L009

LINE/SIGNAL	PIN	SHEET/LINE
L009		
- ARL SG1 UNUSED OUTPUTS 1		
	S2G08	MS210-L009
	L2G08	ML210-L017
	P2G08	MP210-L009
L010		
- ARL SG1 CARD SELECT GRP 0		
	S2G04	MS210-L010
	(L2B05)	ML210-R011
	P2G04	MP210-L010
L011		
- ARL SG1 REFRESH		
	S2G03	MS210-L011
	(L2G03)	ML210-R033
	N2G03	MN210-L011
	P2G03	MP210-L011
	T2G03	MT210-L011
L012		
- ARL SG1 POWER ON RESET		
	S2M03	MS210-L012
	(L2M03)	ML210-R012
	N2M03	MN210-L012
	P2M03	MP210-L012
	T2M03	MT210-L012
L013		
- ARL SG1 READ		
	S2M05	MS210-L013
	(L2M05)	ML210-R013
	N2M05	MN210-L013
	P2M05	MP210-L013
	T2M05	MT210-L013
L014		
- ARL SG1 WRITE		
	S2M09	MS210-L014
	(L2M09)	ML210-R014
	N2M09	MN210-L014
	P2M09	MP210-L014
	T2M09	MT210-L014
L015		
- ARL SG1 CS/WORD SAR PTY X		
	S2G13	MS210-L015
	(L2G13)	ML210-R024
	P2G13	MP210-L015
L016		
- ARL SG1 DGA/BIT SAR PTY X		
	S2P04	MS210-L016
	(L2M06)	ML210-R025
R003		
- DRV SG1 DATA A 36		
	(S2U13)	MS210-R003
	(T2U13)	MT210-R003
	(V2T13)	MV200-R004
R003		
- DRV SG1 DATA A 37		
	(S2U12)	MS210-R003
	(T2U12)	MT210-R003
	(V2T12)	MV200-R004

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- DRV SG1 DATA A 38		
	(S2U11)	MS210-R003
	(T2U11)	MT210-R003
	(V2T10)	MV200-R004
R003		
- DRV SG1 DATA A 39		
	(S2U10)	MS210-R003
	(T2U10)	MT210-R003
	(V2T09)	MV200-R004
R003		
- DRV SG1 DATA A 40		
	(S2U09)	MS210-R003
	(T2U09)	MT210-R003
	(V2T06)	MV200-R004
R003		
- DRV SG1 DATA A 41		
	(S2U07)	MS210-R003
	(T2U07)	MT210-R003
	(V2T02)	MV200-R004
R003		
- DRV SG1 DATA A 42		
	(S2U06)	MS210-R003
	(T2U06)	MT210-R003
	(V2N13)	MV200-R004
R003		
- DRV SG1 DATA A 43		
	(S2U05)	MS210-R003
	(T2U05)	MT210-R003
	(V2N12)	MV200-R004
R003		
- DRV SG1 DATA A 44		
	(S2U04)	MS210-R003
	(T2U04)	MT210-R003
	(V2N09)	MV200-R004
R003		
- DRV SG1 DATA A 45		
	(S2U02)	MS210-R003
	(T2U02)	MT210-R003
	(V2N06)	MV200-R004
R003		
- DRV SG1 DATA A 46		
	(S2P13)	MS210-R003
	(T2P13)	MT210-R003
	(V2N05)	MV200-R004
R003		
- DRV SG1 DATA A 47		
	(S2S12)	MS210-R003
	(T2S12)	MT210-R003
	(V2T11)	MV200-R004
R003		
- DRV SG1 DATA A 48		
	(S2S10)	MS210-R003
	(T2S10)	MT210-R003
	(V2T08)	MV200-R004

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- DRV SG1 DATA A 49		
	(S2S09)	MS210-R003
	(T2S09)	MT210-R003
	(V2T07)	MV200-R004
R003		
- DRV SG1 DATA A 50		
	(S2S08)	MS210-R003
	(T2S08)	MT210-R003
	(V2T05)	MV200-R004
R003		
- DRV SG1 DATA A 51		
	(S2S07)	MS210-R003
	(T2S07)	MT210-R003
	(V2T03)	MV200-R004
R003		
- DRV SG1 DATA A 52		
	(S2S05)	MS210-R003
	(T2S05)	MT210-R003
	(V2N11)	MV200-R004
R003		
- DRV SG1 DATA A 53		
	(S2S04)	MS210-R003
	(T2S04)	MT210-R003
	(V2N10)	MV200-R004
R003		
- DRV SG1 DATA A 54		
	(S2S03)	MS210-R003
	(T2S03)	MT210-R003
	(V2N08)	MV200-R004
R003		
- DRV SG1 DATA A 55		
	(S2S02)	MS210-R003
	(T2S02)	MT210-R003
	(V2N07)	MV200-R004
R003		
- DRV SG1 DATA A 56		
	(S2J02)	MS210-R003
	(T2J02)	MT210-R003
	(V2H06)	MV200-R004
R003		
- DRV SG1 DATA A 57		
	(S2G02)	MS210-R003
	(T2G02)	MT210-R003
	(V2H05)	MV200-R004
R003		
- DRV SG1 DATA A 58		
	(S2D13)	MS210-R003
	(T2D13)	MT210-R003
	(V2H04)	MV200-R004
R003		
- DRV SG1 DATA A 59		
	(S2D12)	MS210-R003
	(T2D12)	MT210-R003
	(V2H03)	MV200-R004

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- DRV SG1 DATA A 60		
	(S2D11)	MS210-R003
	(T2D11)	MT210-R003
	(V2H02)	MV200-R004
R003		
- DRV SG1 DATA A 61		
	(S2D10)	MS210-R003
	(T2D10)	MT210-R003
	(V2C12)	MV200-R004
R003		
- DRV SG1 DATA A 62		
	(S2D09)	MS210-R003
	(T2D09)	MT210-R003
	(V2C11)	MV200-R004
R003		
- DRV SG1 DATA A 63		
	(S2D07)	MS210-R003
	(T2D07)	MT210-R003
	(V2C06)	MV200-R004
R003		
- DRV SG1 DATA A 64		
	(S2D06)	MS210-R003
	(T2D06)	MT210-R003
	(V2C05)	MV200-R004
R003		
- DRV SG1 DATA A 65		
	(S2D05)	MS210-R003
	(T2D05)	MT210-R003
	(V2C04)	MV200-R004
R003		
- DRV SG1 DATA A 66		
	(S2D04)	MS210-R003
	(T2D04)	MT210-R003
	(V2C03)	MV200-R004
R003		
- DRV SG1 DATA A 67		
	(S2D02)	MS210-R003
	(T2D02)	MT210-R003
	(V2C02)	MV200-R004
R003		
- DRV SG1 DATA A 68		
	(S2B10)	MS210-R003
	(T2B10)	MT210-R003
	(V2C13)	MV200-R004
R003		
- DRV SG1 DATA A 69		
	(S2B09)	MS210-R003
	(T2B09)	MT210-R003
	(V2C10)	MV200-R004
R003		
- DRV SG1 DATA A 70		
	(S2B08)	MS210-R003
	(T2B08)	MT210-R003
	(V2C09)	MV200-R004

LINE/SIGNAL	PIN	SHEET/LINE

R003
- DRV SG1 DATA A 71
(S2B07) MS210-R003
(T2B07) MT210-R003
(V2C07) MV200-R004

R004
- SH2 SG1 DATA OP ERROR RSTU
(S2J05) MS210-R004
(T2J05) MT210-R004
L2G04 ML210-L023

R005
- SH2 SG1 REFRESH ERROR PQRS
(S2G10) MS210-R005
(P2G10) MP210-R005
L2G10 ML210-L021

R006
- SH CARD IN PS
(S2M06) MS210-R006
(P2P07) MP210-R007

R007
- SHD SG1 CARD IN DGPS
(S2P07) MS210-R007
1B-A1 *V1A13*
1B-B2 *N1D13*

003 - ARL SG1 WORD SAR Y (0-7) ===== * =
004 - ARL SG1 BIT SAR Y (0-6) ====== * =
005 - ARL SG1 DATA GATE A Y -------- J06
006 - ARL SG1 DATA GT A SAR Y (0-2) * =
007 - ARL SG1 CS SELECT Y ---------- J10
008 - ARL SG1 CS SAR Y (0-1) ======= * =
009 - ARL SG1 UNUSED OUTPUTS (2-3) = * =
010 - ARL SG1 CARD SELECT GRP (3) == * =
011 - ARL SG1 REFRESH -------------- G03
012 - ARL SG1 POWER ON RESET ------- M03
013 - ARL SG1 READ ----------------- M05
014 - ARL SG1 WRITE ---------------- M09
015 - ARL SG1 CS/WORD SAR PTY Y----- G13
016 - ARL SG1 DGA/BIT SAR PTY Y ---- P04

= * - DRV SG1 DATA A (36-71) ======= 003
J05 - SH2 SG1 DATA OP ERROR RSTU --- 004
G10 - SH2 SG1 REFRESH ERROR MNTU --- 005
M06 - SH CARD IN NT ---------------- 006
P07 - SHC SG1 CARD IN CHNT --------- 007

CLP4/CLP2 CARD

OVERVIEW

The CLP4/CLP2 card is a 4/2 Megabyte capacity data storage array. The storage is organized 36 bits wide by 1 or 1/2 Meg deep. The use of data gates allows up to 8 store/fetch operations per bit for each card access.

PRIMARY FUNCTIONS

- Provides 4/2 Megabyte of storage capacity for data from the 36 bit storage data bus.
- Checks parity of the address bus.
- Decodes cs, word, bit and data gate SAR's.

PRIMARY COMPONENTS

- 4/2 data storage array segments:
  - A segment contains 36 memories, each of which is 256k x 1 bit size.
- Address buffers and parity checkers.
- SAR (Storage address register) and select line decoders.
- Bidirectional data receivers and drivers.

ERROR CHECKING

- Data Op (address) parity error generated and latched on CLAR cards and appropriate bit is set in reg USCACK/LSCACK.
- Refresh (address) parity error is generated and latched on CLAR cards and appropriate bit is set in reg CSCRACK.

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- ARL SG1 WORD SAR Y 0		
	T2P02	MT210-L003
	(L2P02)	ML210-R016
	N2P02	MN210-L003
L003		
- ARL SG1 WORD SAR Y 1		
	T2P10	MT210-L003
	(L2N10)	ML210-R016
	N2P10	MN210-L003
L003		
- ARL SG1 WORD SAR Y 2		
	T2M04	MT210-L003
	(L2N04)	ML210-R016
	N2M04	MN210-L003
L003		
- ARL SG1 WORD SAR Y 3		
	T2P12	MT210-L003
	(L2P13)	ML210-R016
	N2P12	MN210-L003
L003		
- ARL SG1 WORD SAR Y 4		
	T2M10	MT210-L003
	(L2M11)	ML210-R016
	N2M10	MN210-L003
L003		
- ARL SG1 WORD SAR Y 5		
	T2M12	MT210-L003
	(L2N13)	ML210-R016
	N2M12	MN210-L003
L003		
- ARL SG1 WORD SAR Y 6		
	T2P09	MT210-L003
	(L2P09)	ML210-R016
	N2P09	MN210-L003
L003		
- ARL SG1 WORD SAR Y 7		
	T2G09	MT210-L003
	(L2H08)	ML210-R016
	N2G09	MN210-L003
L004		
- ARL SG1 BIT SAR Y 0		
	T2P11	MT210-L004
	(L2N12)	ML210-R017
	N2P11	MN210-L004
L004		
- ARL SG1 BIT SAR Y 1		
	T2M07	MT210-L004
	(L2N07)	ML210-R017
	N2M07	MN210-L004
L004		
- ARL SG1 BIT SAR Y 2		
	T2P05	MT210-L004
	(L2N06)	ML210-R017
	N2P05	MN210-L004

LINE/SIGNAL	PIN	SHEET/LINE
L004		
- ARL SG1 BIT SAR Y 3		
	T2M02	MT210-L004
	(L2H13)	ML210-R017
	N2M02	MN210-L004
L004		
- ARL SG1 BIT SAR Y 4		
	T2M08	MT210-L004
	(L2N11)	ML210-R017
	N2M08	MN210-L004
L004		
- ARL SG1 BIT SAR Y 5		
	T2G05	MT210-L004
	(L2G05)	ML210-R017
	N2G05	MN210-L004
L004		
- ARL SG1 BIT SAR Y 6		
	T2J07	MT210-L004
	(L2J07)	ML210-R017
	N2J07	MN210-L004
L005		
- ARL SG1 DATA GATE A Y		
	T2J06	MT210-L005
	(L2J06)	ML210-R021
L006		
- ARL SG1 DATA GT A SAR Y 0		
	T2J11	MT210-L006
	(L2J11)	ML210-R020
L006		
- ARL SG1 DATA GT A SAR Y 1		
	T2G07	MT210-L006
	(L2G07)	ML210-R020
L006		
- ARL SG1 DATA GT A SAR Y 2		
	T2G12	MT210-L006
	(L2G12)	ML210-R020
L007		
- ARL SG1 CS SELECT Y		
	T2J10	MT210-L007
	(L2H09)	ML210-R019
	N2J10	MN210-L007
L008		
- ARL SG1 CS SAR Y 0		
	T2J12	MT210-L008
	(L2H11)	ML210-R018
	N2J12	MN210-L008
L008		
- ARL SG1 CS SAR Y 1		
	T2J04	MT210-L008
	(L2J04)	ML210-R018
	N2J04	MN210-L008
L009		
- ARL SG1 UNUSED OUTPUTS 2		
	T2J13	MT210-L009
	L2H12	ML210-L017
	N2J13	MN210-L009

LINE/SIGNAL	PIN	SHEET/LINE
L009		
- ARL SG1 UNUSED OUTPUTS 3		
	T2G08	MT210-L009
	L2H07	NL210-L017
	N2G08	MN210-L009
L010		
- ARL SG1 CARD SELECT GRP 3		
	T2G04	MT210-L010
	(L2B08)	ML210-R011
	N2G04	MN210-L010
L011		
- ARL SG1 REFRESH		
	T2G03	MT210-L011
	(L2G03)	ML210-R033
	N2G03	MN210-L011
	P2G03	MP210-L011
	S2G03	MS210-L011
L012		
- ARL SG1 POWER ON RESET		
	T2M03	MT210-L012
	(L2M03)	ML210-R012
	N2M03	MN210-L012
	P2M03	MP210-L012
	S2M03	MS210-L012
L013		
- ARL SG1 READ		
	T2M05	MT210-L013
	(L2M05)	ML210-R013
	N2M05	MN210-L013
	P2M05	MP210-L013
	S2M05	MS210-L013
L014		
- ARL SG1 WRITE		
	T2M09	MT210-L014
	(L2M09)	ML210-R014
	N2M09	MN210-L014
	P2M09	MP210-L014
	S2M09	MS210-L014
L015		
- ARL SG1 CS/WORD SAR PTY Y		
	T2G13	MT210-L015
	(L2H02)	ML210-R035
	N2G13	MN210-L015
L016		
- ARL SG1 DGA/BIT SAR PTY Y		
	T2P04	MT210-L016
	(L2P04)	ML210-R036
R003		
- DRV SG1 DATA A 36		
	(T2U13)	MT210-R003
	(S2U13)	MS210-R003
	(V2T13)	MV200-R004
R003		
- DRV SG1 DATA A 37		
	(T2U12)	MT210-R003
	(S2U12)	MS210-R003
	(V2T12)	MV200-R004

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- DRV SG1 DATA A 38		
	(T2U11)	MT210-R003
	(S2U11)	MS210-R003
	(V2T10)	MV200-R004
R003		
- DRV SG1 DATA A 39		
	(T2U10)	MT210-R003
	(S2U10)	MS210-R003
	(V2T09)	MV200-R004
R003		
- DRV SG1 DATA A 40		
	(T2U09)	MT210-R003
	(S2U09)	MS210-R003
	(V2T06)	MV200-R004
R003		
- DRV SG1 DATA A 41		
	(T2U07)	MT210-R003
	(S2U07)	MS210-R003
	(V2T02)	MV200-R004
R003		
- DRV SG1 DATA A 42		
	(T2U06)	MT210-R003
	(S2U06)	MS210-R003
	(V2N13)	MV200-R004
R003		
- DRV SG1 DATA A 43		
	(T2U05)	MT210-R003
	(S2U05)	MS210-R003
	(V2N12)	MV200-R004
R003		
- DRV SG1 DATA A 44		
	(T2U04)	MT210-R003
	(S2U04)	MS210-R003
	(V2N09)	MV200-R004
R003		
- DRV SG1 DATA A 45		
	(T2U02)	MT210-R003
	(S2U02)	MS210-R003
	(V2N06)	MV200-R004
R003		
- DRV SG1 DATA A 46		
	(T2P13)	MT210-R003
	(S2P13)	MS210-R003
	(V2N05)	MV200-R004
R003		
- DRV SG1 DATA A 47		
	(T2S12)	MT210-R003
	(S2S12)	MS210-R003
	(V2T11)	MV200-R004
R003		
- DRV SG1 DATA A 48		
	(T2S10)	MT210-R003
	(S2S10)	MS210-R003
	(V2T08)	MV200-R004

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- DRV SG1 DATA A 49		
	(T2S09)	MT210-R003
	(S2S09)	MS210-R003
	(V2T07)	MV200-R004
R003		
- DRV SG1 DATA A 50		
	(T2S08)	MT210-R003
	(S2S08)	MS210-R003
	(V2T05)	MV200-R004
R003		
- DRV SG1 DATA A 51		
	(T2S07)	MT210-R003
	(S2S07)	MS210-R003
	(V2T03)	MV200-R004
R003		
- DRV SG1 DATA A 52		
	(T2S05)	MT210-R003
	(S2S05)	MS210-R003
	(V2N11)	MV200-R004
R003		
- DRV SG1 DATA A 53		
	(T2S04)	MT210-R003
	(S2S04)	MS210-R003
	(V2N10)	MV200-R004
R003		
- DRV SG1 DATA A 54		
	(T2S03)	MT210-R003
	(S2S03)	MS210-R003
	(V2N08)	MV200-R004
R003		
- DRV SG1 DATA A 55		
	(T2S02)	MT210-R003
	(S2S02)	MS210-R003
	(V2N07)	MV200-R004
R003		
- DRV SG1 DATA A 56		
	(T2J02)	MT210-R003
	(S2J02)	MS210-R003
	(V2H06)	MV200-R004
R003		
- DRV SG1 DATA A 57		
	(T2G02)	MT210-R003
	(S2G02)	MS210-R003
	(V2H05)	MV200-R004
R003		
- DRV SG1 DATA A 58		
	(T2D13)	MT210-R003
	(S2D13)	MS210-R003
	(V2H04)	MV200-R004
R003		
- DRV SG1 DATA A 59		
	(T2D12)	MT210-R003
	(S2D12)	MS210-R003
	(V2H03)	MV200-R004

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- DRV SG1 DATA A 60		
	(T2D11)	MT210-R003
	(S2D11)	MS210-R003
	(V2H02)	MV200-R004
R003		
- DRV SG1 DATA A 61		
	(T2D10)	MT210-R003
	(S2D10)	MS210-R003
	(V2C12)	MV200-R004
R003		
- DRV SG1 DATA A 62		
	(T2D09)	MT210-R003
	(S2D09)	MS210-R003
	(V2C11)	MV200-R004
R003		
- DRV SG1 DATA A 63		
	(T2D07)	MT210-R003
	(S2D07)	MS210-R003
	(V2C06)	MV200-R004
R003		
- DRV SG1 DATA A 64		
	(T2D06)	MT210-R003
	(S2D06)	MS210-R003
	(V2C05)	MV200-R004
R003		
- DRV SG1 DATA A 65		
	(T2D05)	MT210-R003
	(S2D05)	MS210-R003
	(V2C04)	MV200-R004
R003		
- DRV SG1 DATA A 66		
	(T2D04)	MT210-R003
	(S2D04)	MS210-R003
	(V2C03)	MV200-R004
R003		
- DRV SG1 DATA A 67		
	(T2D02)	MT210-R003
	(S2D02)	MS210-R003
	(V2C02)	MV200-R004
R003		
- DRV SG1 DATA A 68		
	(T2B10)	MT210-R003
	(S2B10)	MS210-R003
	(V2C13)	MV200-R004
R003		
- DRV SG1 DATA A 69		
	(T2B09)	MT210-R003
	(S2B09)	MS210-R003
	(V2C10)	MV200-R004
R003		
- DRV SG1 DATA A 70		
	(T2B08)	MT210-R003
	(S2B08)	MS210-R003
	(V2C09)	MV200-R004

LINE/SIGNAL	PIN	SHEET/LINE

R003
- DRV SG1 DATA A 71
(T2B07) MT210-R003
(S2B07) MS210-R003
(V2C07) MV200-R004

R004
- SH2 SG1 DATA OP ERROR RSTU
(T2J05) MT210-R004
(S2J05) MS210-R004
L2G04 ML210-L023

R005
- SH2 SG1 REFRESH ERROR MNTU
(T2G10) MT210-R005
(N2G10) MN210-R005
L2J09 ML210-L022

R006
- SH CARD IN NT
(T2M06) MT210-R006
(N2P07) MN210-R007

R007
- SHC SG1 CARD IN CHNT
(T2P07) MT210-R007
1B-A1 *V1B13*
1B-B2 *N1E13*

003 - DDM,N SG1 PARITY (2-3) ======= * =
004 - DRA SG1 FETCH ENABLE A ------- J09
005 - DRA SG1 STORE ENABLE --------- J11
006 - DRA SG1 SAMPLE CLOCK A ------- G12
007 - DRA SG1 LOAD REG A ----------- J13
008 - ARL SG1 ERROR LATCH RESET ---- P02
009 + ARL SG1 COMMAND CMDR --------- N03
010 - C2Q SG1 FETCH ENABLE B ------- H07
011 DRV SG1 UNUSED INPUT 1 --------- H10
012 - C2Q SG1 SAMPLE CLOCK B ------- J12
013 - C2Q SG1 LOAD REG B ----------- H12
014 - DRV SG1 FETCH ENABLE B ------- G10
015 - DRV SG1 SAMPLE CLOCK B ------- M02
016 - DRV SG1 LOAD REG B ----------- G13

CMDR CARD

OVERVIEW

The CMDR (Data Multiplexing) card provides buffering capability for 72 bits of data during data transfer operations.

PRIMARY FUNCTIONS

- Repowers the load clock B and sample clock B lines for data from the CME1 card during data operations.
- Repowers the fetch enable b lines for data fetch from the CMC2 card.
- Strips parity bits off the data going to the storage cards.

PRIMARY COMPONENTS

- A/B multiplexor registers for data transfer drivers.
- Three state Receivers and drivers.

ERROR CHECKING

- Data Parity Check (U/L SCCK, bit 1).
  - This bit indicates that a parity error is detected on the data bus to storage.
- DR Clock Check (U/L SCCK, bit 3).
  - This bit idicates that the multiplexor did not receive load clock before a sample clock (during store operation only).

= * - DDM,N SG1 DATA (36-71) ======= 003
= * - DRV SG1 DATA A (36-71) ======= 004
= * - DRV SG1 DATA B (36-71) ======= 005
G09 - SG1/2 DRV DATA PARITY ERROR -- 006
S03 - SG1/2 DRV CLOCK ERROR -------- 007
H09 - DRV SG1 FETCH ENABLE B ------- 008
H11 DRV SG1 UNUSED OUTPUT 1 -------- 009
M04 - DRV SG1 SAMPLE CLOCK B ------- 010
H13 - DRV SG1 LOAD REG B ----------- 011

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- DDM,N SG1 PARITY 2		
	V2G08	MV200-L003
1B-A1	(N2M04)	JN200-R006
1B-A1	*M1A13*	
1B-B2	*Q1B13*	
L003		
- DDM,N SG1 PARITY 3		
	V2G11	MV200-L003
1B-A1	(N2C13)	JN200-R006
1B-A1	*L1D11*	
1B-B2	*P1E11*	
L004		
- DRA SG1 FETCH ENABLE A		
	V2J09	MV200-L004
	(A2H09)	MA200-R009
	A2J09	MA200-L013
L005		
- DRA SG1 STORE ENABLE		
	V2J11	MV200-L005
	(A2H11)	MA200-R010
	A2J11	MA200-L014
L006		
- DRA SG1 SAMPLE CLOCK A		
	V2G12	MV200-L006
	(A2M04)	MA200-R011
	A2G12	MA200-L015
L007		
- DRA SG1 LOAD REG A		
	V2J13	MV200-L007
	(A2H13)	MA200-R006
	A2J13	MA200-L016
L008		
- ARL SG1 ERROR LATCH RESET		
	V2P02	MV200-L008
	(L2S10)	ML210-R034
L009		
+ ARL SG1 COMMAND CMDR		
	V2M03	MV200-L009
	(L2T05)	ML210-R015
L010		
- C2Q SG1 FETCH ENABLE B		
	V2H07	MV200-L010
1B-A1	(Q2C02)	JQ210-R063
1B-A1	*M1A11*	
1B-B2	*Q1B11*	
L011		
DRV SG1 UNUSED INPUT 1		
	V2H10	MV200-L011
L012		
- C2Q SG1 SAMPLE CLOCK B		
	V2J12	MV200-L012
1B-A1	(Q2B02)	JQ210-R065
1B-A1	*H1B11*	
1B-B2	*Q6A02*	

LINE/SIGNAL	PIN	SHEET/LINE
L013		
- C2Q SG1 LOAD REG B		
	V2H12	MV200-L013
1B-A1	(Q2B05)	JQ210-R070
1B-A1	*L1D13*	
1B-B2	*P1E13*	
L014		
- DRV SG1 FETCH ENABLE B		
	V2G10	MV200-L014
	(V2H09)	MV200-R008
	A2G10	MA200-L004
L015		
- DRV SG1 SAMPLE CLOCK B		
	V2M02	MV200-L015
	(V2M04)	MV200-R010
	A2M02	MA200-L005
L016		
- DRV SG1 LOAD REG B		
	V2G13	MV200-L016
	(V2H13)	MV200-R011
	A2G13	MA200-L006
R003		
- DDM,N SG1 DATA 36		
	(V2S13)	MV200-R003
1B-A1	(N2D05)	JN200-R004
1B-A1	*H1A13*	
1B-B2	*P6E04*	
R003		
- DDM,N SG1 DATA 37		
	(V2S12)	MV200-R003
1B-A1	(N2B03)	JN200-R004
1B-A1	*H1B13*	
1B-B2	*Q6A04*	
R003		
- DDM,N SG1 DATA 38		
	(V2S10)	MV200-R003
1B-A1	(N2C03)	JN200-R004
1B-A1	*H1D13*	
1B-B2	*Q6C04*	
R003		
- DDM,N SG1 DATA 39		
	(V2S09)	MV200-R003
1B-A1	(N2G11)	JN200-R004
1B-A1	*H1E13*	
1B-B2	*Q6D04*	
R003		
- DDM,N SG1 DATA 40		
	(V2S06)	MV200-R003
1B-A1	(N2D02)	JN200-R004
1B-A1	*J1D13*	
1B-B2	*R6C04*	
R003		
- DDM,N SG1 DATA 41		
	(V2S02)	MV200-R003
1B-A1	(N2B04)	JN200-R004
1B-A1	*K1B13*	
1B-B2	*S6A04*	

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- DDM,N SG1 DATA 42		
	(V2M13)	MV200-R003
1B-A1	(N2C02)	JN200-R004
1B-A1	*K1B11*	
1B-B2	*S6A02*	
R003		
- DDM,N SG1 DATA 43		
	(V2M12)	MV200-R003
1B-A1	(N2B02)	JN200-R004
1B-A1	*K1A11*	
1B-B2	*R6E02*	
R003		
- DDM,N SG1 DATA 44		
	(V2M09)	MV200-R003
1B-A1	(N2J07)	JN200-R004
1B-A1	*J1C11*	
1B-B2	*R6B02*	
R003		
- DDM,N SG1 DATA 45		
	(V2M06)	MV200-R003
1B-A1	(N2S05)	JN200-R004
1B-A1	*H1D11*	
1B-B2	*Q6C02*	
R003		
- DDM,N SG1 DATA 46		
	(V2M05)	MV200-R003
1B-A1	(N2U05)	JN200-R004
1B-A1	*H1C11*	
1B-B2	*Q6B02*	
R003		
- DDM,N SG1 DATA 47		
	(V2S11)	MV200-R003
1B-A1	(N2P13)	JN200-R004
1B-A1	*H1C13*	
1B-B2	*Q6B04*	
R003		
- DDM,N SG1 DATA 48		
	(V2S08)	MV200-R003
1B-A1	(N2N02)	JN200-R004
1B-A1	*J1A13*	
1B-B2	*Q6E04*	
R003		
- DDM,N SG1 DATA 49		
	(V2S07)	MV200-R003
1B-A1	(N2N06)	JN200-R004
1B-A1	*J1C13*	
1B-B2	*R6B04*	
R003		
- DDM,N SG1 DATA 50		
	(V2S05)	MV200-R003
1B-A1	(N2N13)	JN200-R004
1B-A1	*J1E13*	
1B-B2	*R6D04*	

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- DDM,N SG1 DATA 51		
	(V2S04)	MV200-R003
1B-A1	(N2P06)	JN200-R004
1B-A1	*K1A13*	
1B-B2	*R6E04*	
R003		
- DDM,N SG1 DATA 52		
	(V2M11)	MV200-R003
1B-A1	(N2H10)	JN200-R004
1B-A1	*J1E11*	
1B-B2	*R6D02*	
R003		
- DDM,N SG1 DATA 53		
	(V2M10)	MV200-R003
1B-A1	(N2H09)	JN200-R004
1B-A1	*J1D11*	
1B-B2	*R6C02*	
R003		
- DDM,N SG1 DATA 54		
	(V2M08)	MV200-R003
1B-A1	(N2H08)	JN200-R004
1B-A1	*J1A11*	
1B-B2	*Q6E02*	
R003		
- DDM,N SG1 DATA 55		
	(V2M07)	MV200-R003
1B-A1	(N2H07)	JN200-R004
1B-A1	*H1E11*	
1B-B2	*Q6D02*	
R003		
- DDM,N SG1 DATA 56		
	(V2G06)	MV200-R003
1B-A1	(N2J06)	JN200-R004
1B-A1	*M1B13*	
1B-B2	*Q1C13*	
R003		
- DDM,N SG1 DATA 57		
	(V2G05)	MV200-R003
1B-A1	(N2H13)	JN200-R004
1B-A1	*M1C13*	
1B-B2	*Q1D13*	
R003		
- DDM,N SG1 DATA 58		
	(V2G04)	MV200-R003
1B-A1	(N2D13)	JN200-R004
1B-A1	*M1D13*	
1B-B2	*Q1E13*	
R003		
- DDM,N SG1 DATA 59		
	(V2G03)	MV200-R003
1B-A1	(N2H12)	JN200-R004
1B-A1	*N1A13*	
1B-B2	*R1B13*	

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- DDM,N SG1 DATA 60		
	(V2G02)	MV200-R003
1B-A1	(N2S11)	JN200-R004
1B-A1	*N1B13*	
1B-B2	*R1C13*	
R003		
- DDM,N SG1 DATA 61		
	(V2B11)	MV200-R003
1B-A1	(N2U04)	JN200-R004
1B-A1	*N1D13*	
1B-B2	*R1E13*	
R003		
- DDM,N SG1 DATA 62		
	(V2B10)	MV200-R003
1B-A1	(N2T03)	JN200-R004
1B-A1	*N1E13*	
1B-B2	*S1A13*	
R003		
- DDM,N SG1 DATA 63		
	(V2B06)	MV200-R003
1B-A1	(N2T12)	JN200-R004
1B-A1	*N1A11*	
1B-B2	*R1B11*	
R003		
- DDM,N SG1 DATA 64		
	(V2B05)	MV200-R003
1B-A1	(N2U11)	JN200-R004
1B-A1	*N1B11*	
1B-B2	*R1C11*	
R003		
- DDM,N SG1 DATA 65		
	(V2B04)	MV200-R003
1B-A1	(N2U12)	JN200-R004
1B-A1	*N1C11*	
1B-B2	*R1D11*	
R003		
- DDM,N SG1 DATA 66		
	(V2B03)	MV200-R003
1B-A1	(N2S12)	JN200-R004
1B-A1	*N1D11*	
1B-B2	*R1E11*	
R003		
- DDM,N SG1 DATA 67		
	(V2B02)	MV200-R003
1B-A1	(N2T11)	JN200-R004
1B-A1	*N1E11*	
1B-B2	*S1A11*	
R003		
- DDM,N SG1 DATA 68		
	(V2B13)	MV200-R003
1B-A1	(N2M03)	JN200-R004
1B-A1	*N1C13*	
1B-B2	*R1D13*	

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- DDM,N SG1 DATA 69		
	(V2B09)	MV200-R003
1B-A1	(N2S03)	JN200-R004
1B-A1	*M1B11*	
1B-B2	*Q1C11*	
R003		
- DDM,N SG1 DATA 70		
	(V2B08)	MV200-R003
1B-A1	(N2N02)	JN200-R004
1B-A1	*M1C11*	
1B-B2	*Q1D11*	
R003		
- DDM,N SG1 DATA 71		
	(V2B07)	MV200-R003
1B-A1	(N2M09)	JN200-R004
1B-A1	*M1D11*	
1B-B2	*Q1E11*	
R004		
- DRV SG1 DATA A 36		
	(V2T13)	MV200-R004
	(S2U13)	MS210-R003
	(T2U13)	MT210-R003
R004		
- DRV SG1 DATA A 37		
	(V2T12)	MV200-R004
	(S2U12)	MS210-R003
	(T2U12)	MT210-R003
R004		
- DRV SG1 DATA A 38		
	(V2T10)	MV200-R004
	(S2U11)	MS210-R003
	(T2U11)	MT210-R003
R004		
- DRV SG1 DATA A 39		
	(V2T09)	MV200-R004
	(S2U10)	MS210-R003
	(T2U10)	MT210-R003
R004		
- DRV SG1 DATA A 40		
	(V2T06)	MV200-R004
	(S2U09)	MS210-R003
	(T2U09)	MT210-R003
R004		
- DRV SG1 DATA A 41		
	(V2T02)	MV200-R004
	(S2U07)	MS210-R003
	(T2U07)	MT210-R003
R004		
- DRV SG1 DATA A 42		
	(V2N13)	MV200-R004
	(S2U06)	MS210-R003
	(T2U06)	MT210-R003

LINE/SIGNAL	PIN	SHEET/LINE
R004		
- DRV SG1 DATA A 43		
	(V2N12)	MV200-R004
	(S2U05)	MS210-R003
	(T2U05)	MT210-R003
R004		
- DRV SG1 DATA A 44		
	(V2N09)	MV200-R004
	(S2U04)	MS210-R003
	(T2U04)	MT210-R003
R004		
- DRV SG1 DATA A 45		
	(V2N06)	MV200-R004
	(S2U02)	MS210-R003
	(T2U02)	MT210-R003
R004		
- DRV SG1 DATA A 46		
	(V2N05)	MV200-R004
	(S2P13)	MS210-R003
	(T2P13)	MT210-R003
R004		
- DRV SG1 DATA A 47		
	(V2T11)	MV200-R004
	(S2S12)	MS210-R003
	(T2S12)	MT210-R003
R004		
- DRV SG1 DATA A 48		
	(V2T08)	MV200-R004
	(S2S10)	MS210-R003
	(T2S10)	MT210-R003
R004		
- DRV SG1 DATA A 49		
	(V2T07)	MV200-R004
	(S2S09)	MS210-R003
	(T2S09)	MT210-R003
R004		
- DRV SG1 DATA A 50		
	(V2T05)	MV200-R004
	(S2S08)	MS210-R003
	(T2S08)	MT210-R003
R004		
- DRV SG1 DATA A 51		
	(V2T03)	MV200-R004
	(S2S07)	MS210-R003
	(T2S07)	MT210-R003
R004		
- DRV SG1 DATA A 52		
	(V2N11)	MV200-R004
	(S2S05)	MS210-R003
	(T2S05)	MT210-R003
R004		
- DRV SG1 DATA A 53		
	(V2N10)	MV200-R004
	(S2S04)	MS210-R003
	(T2S04)	MT210-R003

LINE/SIGNAL	PIN	SHEET/LINE
R004		
- DRV SG1 DATA A 54		
	(V2N08)	MV200-R004
	(S2S03)	MS210-R003
	(T2S03)	MT210-R003
R004		
- DRV SG1 DATA A 55		
	(V2N07)	MV200-R004
	(S2S02)	MS210-R003
	(T2S02)	MT210-R003
R004		
- DRV SG1 DATA A 56		
	(V2H06)	MV200-R004
	(S2J02)	MS210-R003
	(T2J02)	MT210-R003
R004		
- DRV SG1 DATA A 57		
	(V2H05)	MV200-R004
	(S2G02)	MS210-R003
	(T2G02)	MT210-R003
R004		
- DRV SG1 DATA A 58		
	(V2H04)	MV200-R004
	(S2D13)	MS210-R003
	(T2D13)	MT210-R003
R004		
- DRV SG1 DATA A 59		
	(V2H03)	MV200-R004
	(S2D12)	MS210-R003
	(T2D12)	MT210-R003
R004		
- DRV SG1 DATA A 60		
	(V2H02)	MV200-R004
	(S2D11)	MS210-R003
	(T2D11)	MT210-R003
R004		
- DRV SG1 DATA A 61		
	(V2C12)	MV200-R004
	(S2D10)	MS210-R003
	(T2D10)	MT210-R003
R004		
- DRV SG1 DATA A 62		
	(V2C11)	MV200-R004
	(S2D09)	MS210-R003
	(T2D09)	MT210-R003
R004		
- DRV SG1 DATA A 63		
	(V2C06)	MV200-R004
	(S2D07)	MS210-R003
	(T2D07)	MT210-R003
R004		
- DRV SG1 DATA A 64		
	(V2C05)	MV200-R004
	(S2D06)	MS210-R003
	(T2D06)	MT210-R003

LINE/SIGNAL	PIN	SHEET/LINE
R004		
- DRV SG1 DATA A 65		
	(V2C04)	MV200-R004
	(S2D05)	MS210-R003
	(T2D05)	MT210-R003
R004		
- DRV SG1 DATA A 66		
	(V2C03)	MV200-R004
	(S2D04)	MS210-R003
	(T2D04)	MT210-R003
R004		
- DRV SG1 DATA A 67		
	(V2C02)	MV200-R004
	(S2D02)	MS210-R003
	(T2D02)	MT210-R003
R004		
- DRV SG1 DATA A 68		
	(V2C13)	MV200-R004
	(S2B10)	MS210-R003
	(T2B10)	MT210-R003
R004		
- DRV SG1 DATA A 69		
	(V2C10)	MV200-R004
	(S2B09)	MS210-R003
	(T2B09)	MT210-R003
R004		
- DRV SG1 DATA A 70		
	(V2C09)	MV200-R004
	(S2B08)	MS210-R003
	(T2B08)	MT210-R003
R004		
- DRV SG1 DATA A 71		
	(V2C07)	MV200-R004
	(S2B07)	MS210-R003
	(T2B07)	MT210-R003
R005		
- DRV SG1 DATA B 36		
	(V2U13)	MV200-R005
	(N2U13)	MN210-R003
	(P2U13)	MP210-R003
R005		
- DRV SG1 DATA B 37		
	(V2U12)	MV200-R005
	(N2U12)	MN210-R003
	(P2U12)	MP210-R003
R005		
- DRV SG1 DATA B 38		
	(V2U10)	MV200-R005
	(N2U11)	MN210-R003
	(P2U11)	MP210-R003
R005		
- DRV SG1 DATA B 39		
	(V2U09)	MV200-R005
	(N2U10)	MN210-R003
	(P2U10)	MP210-R003

LINE/SIGNAL	PIN	SHEET/LINE
R005		
- DRV SG1 DATA B 40		
	(V2U05)	MV200-R005
	(N2U09)	MN210-R003
	(P2U09)	MP210-R003
R005		
- DRV SG1 DATA B 41		
	(V2U02)	MV200-R005
	(N2U07)	MN210-R003
	(P2U07)	MP210-R003
R005		
- DRV SG1 DATA B 42		
	(V2P13)	MV200-R005
	(N2U06)	MN210-R003
	(P2U06)	MP210-R003
R005		
- DRV SG1 DATA B 43		
	(V2P12)	MV200-R005
	(N2U05)	MN210-R003
	(P2U05)	MP210-R003
R005		
- DRV SG1 DATA B 44		
	(V2P09)	MV200-R005
	(N2U04)	MN210-R003
	(P2U04)	MP210-R003
R005		
- DRV SG1 DATA B 45		
	(V2P05)	MV200-R005
	(N2U02)	MN210-R003
	(P2U02)	MP210-R003
R005		
- DRV SG1 DATA B 46		
	(V2P04)	MV200-R005
	(N2P13)	MN210-R003
	(P2P13)	MP210-R003
R005		
- DRV SG1 DATA B 47		
	(V2U11)	MV200-R005
	(N2S12)	MN210-R003
	(P2S12)	MP210-R003
R005		
- DRV SG1 DATA B 48		
	(V2U07)	MV200-R005
	(N2S10)	MN210-R003
	(P2S10)	MP210-R003
R005		
- DRV SG1 DATA B 49		
	(V2U06)	MV200-R005
	(N2S09)	MN210-R003
	(P2S09)	MP210-R003
R005		
- DRV SG1 DATA B 50		
	(V2U04)	MV200-R005
	(N2S08)	MN210-R003
	(P2S08)	MP210-R003

LINE/SIGNAL	PIN	SHEET/LINE
R005		
- DRV SG1 DATA B 51		
	(V2T04)	MV200-R005
	(N2S07)	MN210-R003
	(P2S07)	MP210-R003
R005		
- DRV SG1 DATA B 52		
	(V2P11)	MV200-R005
	(N2S05)	MN210-R003
	(P2S05)	MP210-R003
R005		
- DRV SG1 DATA B 53		
	(V2P10)	MV200-R005
	(N2S04)	MN210-R003
	(P2S04)	MP210-R003
R005		
- DRV SG1 DATA B 54		
	(V2P07)	MV200-R005
	(N2S03)	MN210-R003
	(P2S03)	MP210-R003
R005		
- DRV SG1 DATA B 55		
	(V2P06)	MV200-R005
	(N2S02)	MN210-R003
	(P2S02)	MP210-R003
R005		
- DRV SG1 DATA B 56		
	(V2J07)	MV200-R005
	(N2J02)	MN210-R003
	(P2J02)	MP210-R003
R005		
- DRV SG1 DATA B 57		
	(V2J06)	MV200-R005
	(N2G02)	MN210-R003
	(P2G02)	MP210-R003
R005		
- DRV SG1 DATA B 58		
	(V2J05)	MV200-R005
	(N2D13)	MN210-R003
	(P2D13)	MP210-R003
R005		
- DRV SG1 DATA B 59		
	(V2J04)	MV200-R005
	(N2D12)	MN210-R003
	(P2D12)	MP210-R003
R005		
- DRV SG1 DATA B 60		
	(V2J02)	MV200-R005
	(N2D11)	MN210-R003
	(P2D11)	MP210-R003
R005		
- DRV SG1 DATA B 61		
	(V2D12)	MV200-R005
	(N2D10)	MN210-R003
	(P2D10)	MP210-R003

LINE/SIGNAL	PIN	SHEET/LINE
R005		
- DRV SG1 DATA B 62		
	(V2D11)	MV200-R005
	(N2D09)	MN210-R003
	(P2D09)	MP210-R003
R005		
- DRV SG1 DATA B 63		
	(V2D07)	MV200-R005
	(N2D07)	MN210-R003
	(P2D07)	MP210-R003
R005		
- DRV SG1 DATA B 64		
	(V2D06)	MV200-R005
	(N2D06)	MN210-R003
	(P2D06)	MP210-R003
R005		
- DRV SG1 DATA B 65		
	(V2D05)	MV200-R005
	(N2D05)	MN210-R003
	(P2D05)	MP210-R003
R005		
- DRV SG1 DATA B 66		
	(V2D04)	MV200-R005
	(N2D04)	MN210-R003
	(P2D04)	MP210-R003
R005		
- DRV SG1 DATA B 67		
	(V2D02)	MV200-R005
	(N2D02)	MN210-R003
	(P2D02)	MP210-R003
R005		
- DRV SG1 DATA B 68		
	(V2D13)	MV200-R005
	(N2B10)	MN210-R003
	(P2B10)	MP210-R003
R005		
- DRV SG1 DATA B 69		
	(V2D10)	MV200-R005
	(N2B09)	MN210-R003
	(P2B09)	MP210-R003
R005		
- DRV SG1 DATA B 70		
	(V2D09)	MV200-R005
	(N2B08)	MN210-R003
	(P2B08)	MP210-R003
R005		
- DRV SG1 DATA B 71		
	(V2C08)	MV200-R005
	(N2B07)	MN210-R003
	(P2B07)	MP210-R003
R006		
- SG1/2 DRV DATA PARITY ERROR		
	(V2G09)	MV200-R006
1B-A1	P2S10	JP200-L018
1B-A1	*L1E11*	
1B-A1	*L6E02*	
1B-B2	*Q1A11*	

LINE/SIGNAL	PIN	SHEET/LINE

R007
- SG1/2 DRV CLOCK ERROR
(V2S03) MV200-R007
1B-A1 P2U09 JP200-L020
1B-A1 *H1A11*
1B-A1 *H6A02*
1B-B2 *P6E02*

R008
- DRV SG1 FETCH ENABLE B
(V2H09) MV200-R003
A2G10 MA200-L004
V2G10 MV200-L014

R009
DRV SG1 UNUSED OUTPUT 1
(V2H11) MV200-R009

R010
- DRV SG1 SAMPLE CLOCK B
(V2M04) MV200-R010
A2M02 MA200-L005
V2M02 MV200-L015

R011
- DRV SG1 LOAD REG B
(V2H13) MV200-R011
A2G13 MA200-L006
V2G13 MV200-L016