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IDENTIFICATION

PRODUCT CODE: AC-E995C-MC
PRODUCT NAME: CXDTACO DTE20 MODULE
PRODUCT DATE: SEPTEMBER 1978
MAINTAINER: DEC/X11 SUPPORT GROUP

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1.0 ABSTRACT

"DTA" IS AN IOMOD THAT WILL EXERCISE UP TO FOUR DTE20'S SEQUENTIALLY. IT USES THE DIAGNOSTIC MODE TO VERIFY THE DTE20 UNIBUS INTERFACE AND THE LOGIC CONTROLLING THIS INTERFACE. IT PERFORMS SIMPLE RAM READ/WRITE AND ADDRESSING TESTS ALONG WITH VERIFICATION OF THE VECTORED INTERRUPT AND "MPP" FUNCTIONS. IT MAKES NO ATTEMPT TO COMMUNICATE WITH THE KL10 SIDE OF THE DEVICE.

2.0 REQUIREMENTS

HARDWARE: A PDP11 COMPUTER SYSTEM WITH AT LEAST ONE DTE20 KL10 INTERFACE.

STORAGE: DTA REQUIRES:

- 1. DECIMAL WORDS: 852
- 2. OCTAL WORDS: 1524
- 3. OCTAL BYTES: 3250

3.0 PASS DEFINITION

THE FIRST PASS OF "DXDTA" CONSISTS OF EXECUTING EACH SUB-TEST ONE TIME. SUBSEQUENT PASSES CONSIST OF 100(8) ITERATIONS OF THE TEST SEQUENCE FOR EACH DTE20 FOUND.

4.0 EXECUTION TIME

PASS TIME WILL VARY DEPENDING UPON THE NO. OF DTE20'S SELECTED AND THE CONFIGURATION BEING EXERCISED.

5.0 CONFIGURATION PARAMETERS

DEFAULT PARAMETERS:

DVA: 17400 VCT: 774 BR1: 4 BR2: 0 DVC: 1

REQUIRED PARAMETERS:

TO EXERCISE MORE THAN ONE DTE20 "DVC" MUST BE SET UP AS DESCRIBED IN PARA. 8.0 BELOW.

6.0 DEVICE OPTION SET-UP

NONE REQUIRED

7.0 MODULE OPERATION

BASIC TEST SEQUENCE:

- DT01: VERIFY THAT ALL ZEROES CAN BE WRITTEN AND READ FROM THE "DELAY COUNTER" REGISTER
- DT02: VERIFY THAT ALL ZEROES CAN BE WRITTEN AND READ FROM ALL ACTIVE "RAM" LOCATIONS
- DT03: VERIFY THAT ALL ONES CAN BE WRITTEN AND READ FROM THE "DELAY COUNTER" REGISTER
- DT04: VERIFY THAT ALL ONES CAN BE WRITTEN AND READ FROM ALL ACTIVE "RAM" LOCATIONS
- DT05: VERIFY THAT EACH "RAM" LOCATION IS UNIQUELY ADDRESSABLE
- DT06: VERIFY THAT THE "RMF=0" BIT DOES NOT SET WHEN A FLOATING ONE IS READ OUT OF THE "RAM"
- DT07: VERIFY THAT THE "TO10 DONE" BIT CAN CAUSE AN INTERRUPT TO THE PROPER VECTOR
- DT10: VERIFY THAT THE "IO REQ INT" BIT CAN CAUSE AN INTERRUPT TO THE PROPER VECTOR
- DT11: VERIFY THAT THE "TO11 DONE" BIT CAN CAUSE AN INTERRUPT TO THE PROPER VECTOR
- DT12: VERIFY THAT THE "TO10 ER" CAN CAUSE AN INTERRUPT TO THE PROPER VECTOR
- DT13: VERIFY THAT THE "TO11 ER" BIT CAN CAUSE AN INTERRUPT TO THE PROPER VECTOR
- DT14: VERIFY THAT "MSTR CLR" CAN CLEAR THE "TO11 BC" REG.
- DT15: VERIFY THAT THE "ABC" REGISTER INCREMENTS DURING A "TO11 TRANSFER"
- DT16: VERIFY THAT THE "TO11 DONE" BIT SETS PROPERLY
- DT17: VERIFY THAT THE "STST NULL" FLOP CAN BE SET PROPERLY
- DT20: VERIFY THAT THE "ABC" REGISTER INCREMENTS DURING A "TO10" E-BUFF FILL

8.0 OPERATOR OPTIONS

RELATIVE LOCATION "DTA 14" (DVID1) MUST BE MODIFIED TO EXERCISE
MORE THAN ONE DTE20 AS SHOWN BELOW:

DVID1 BIT00=1 DTE20 #0
DVID1 BIT01=1 DTE20 #1 (DEFAULT)
DVID1 BIT02=1 DTE20 #2
DVID1 BIT03=1 DTE20 #3

TO Deselect A DTE20 THE APPROPRIATE BIT IN "DVID1" MUST
BE SET TO A ZERO. IF THE PROGRAM FINDS ALL FOUR BITS = "0"
THE MODULE WILL BE DROPPED.

9.0 NON STANDARD PRINTOUTS

DTA USES THE DATA ERROR PRINTOUT IN SOME CASES TO REPORT OTHER THAN NORMAL DATA ERRORS. REFER TO THE ACTUAL
ERROR CALL "APC" TO LOCATE THE CALL IN THE LISTING AND ANALYZE
THE INSTRUCTIONS PRECEDING THE "DATA ERR" CALL TO OBTAIN THE
INTERPRETATION OF THE INFORMATION PRINTED.

```

000000 TOMOD <DTAC >,174400,774,4,0,0,4,157
000000 MODULE 140000,DTAC,174400,774,4,0,0,4,157
; TITLE DTAC DEC/X11 SYSTEM EXERCISER MODULE
; DDACDH VERSION 6 23-MAY-78
;*****LIST BIN*****
000000 BEGIN: ASCII /DTAC / ;MODULE NAME
000000 XFLAG: -BYTE OPEN ;USED TO KEEP TRACK OF WBUF USAGE
000000 ADDR: 174400+0 ;1ST DEVICE ADDR.
000000 VECTOR: 774+0 ;1ST DEVICE VECTOR.
000000 BR1: -BYTE ;1ST BR LEVEL.
000000 BR2: -BYTE PRTV4+0 ;2ND BR LEVEL.
000000 DVID1: 0+1 ;DEVICE INDICATOR 1.
000000 SR1: OPEN ;SWITCH REGISTER 1
000000 SR2: OPEN ;SWITCH REGISTER 2
000000 SR3: OPEN ;SWITCH REGISTER 3
000000 SR4: OPEN ;SWITCH REGISTER 4
;*****LIST BIN*****
000026 140000 STAT: 140000 ;STATUS WORD
000030 000224 INIT: START ;MODULE START ADDR.
000032 000224 SPOINT: MODSP ;MODULE STACK POINTER.
000034 000000 PASCNT: 0 ;PASS COUNTER.
000036 000004 ICOUNT: 4 ;# OF ITERATIONS PER PASS=4
000040 000000 ICOUNT: 0 ;LOC TO COUNT ITERATIONS
000042 000000 SOFCNT: 0 ;LOC TO SAVE TOTAL SOFT ERRORS
000044 000000 HRDCNT: 0 ;LOC TO SAVE TOTAL HARD ERRORS
000046 000000 SOFPAS: 0 ;LOC TO SAVE SOFT ERRORS PER PASS
000050 000000 HRDPAS: 0 ;LOC TO SAVE HARD ERRORS PER PASS
000052 000000 SYSCNT: 0 ;# OF SYS ERRORS ACCUMULATED
000054 000000 RANNUM: 0 ;HOLDS RANDOM # WHEN RAND MACRO IS CALLED
000056 000000 COMF LG: 0 ;RESERVED FOR MONITOR USE
000060 000000 RES1: 0 ;RESERVED FOR MONITOR USE
000062 000000 SVR0: OPEN ;LOC TO SAVE R0.
000064 000000 SVR1: OPEN ;LOC TO SAVE R1.
000066 000000 SVR2: OPEN ;LOC TO SAVE R2.
000070 000000 SVR3: OPEN ;LOC TO SAVE R3.
000072 000000 SVR4: OPEN ;LOC TO SAVE R4.
000074 000000 SVR5: OPEN ;LOC TO SAVE R5.
000076 000000 SVR6: OPEN ;LOC TO SAVE R6.
000100 000000 CSRA: OPEN ;ADDR OF CURRENT CSR.
000102 000000 SBADR: OPEN ;ADDR OF GOOD DATA, OP
000104 000000 WASADR: OPEN ;CONTENTS OF CSR.
000106 000000 ASTAT: OPEN ;ADDR OF BAD DATA, OP
000108 000000 ERR1: OPEN ;STATUS REG CONTENTS.
000110 000000 ASB: OPEN ;TYPE OF ERROR
000112 000246 AWAS: OPEN ;EXPECTED DATA.
000114 000000 RSTR: RESTR ;ACTUAL DATA.
000116 000000 WDT0: OPEN ;RESTART ADDRESS AFTER END OF PASS
000120 000000 INTR: OPEN ;WORDS TO MEMORY PER ITERATION
000122 000157 IDNUM: 157 ;WORDS FROM MEMORY PER ITERATION
;REPT SPSIZ ;# OF INTERRUPTS PER ITERATION
;MODULE IDENTIFICATION NUMBER=157
;MODULE STACK STARTS HERE.

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;*****LIST BIN*****
000224 MODSP:
;*****LIST BIN*****
239
240
241 000040 DTESIZ= 000040 ;16 REGISTERS PER DTE20
242 000004 DTEMAX= 000004 ;UP TO FOUR DTE'S CAN BE TESTED
243 020000 TO11BN= BIT13 ;TO-11 BYTE MODE
244 002000 DS05= BIT10 ;DIAGNOSTIC STATUS
245 000000 PULSE= BIT41BITS ;SINGLE PULSE THE 10/11 CLOCK
246 000040 D1011= BIT5 ;10/11 INTERFACE DIAGNOSTIC MODE
247 000200 T010= BIT7 ;INTERFACE MAJOR STATE - T010 TRANSFER
248 040000 EDONES= BIT14 ;SET E-BUS DCNE
249 000100 DRES1= BIT6 ;PERFORM DIAGNOSTIC CLEAR
250 000040 INTR0N= BIT5 ;ENABLE DTE20 TO INTR. THE 11
251 000002 ERR11S= BIT1 ;SET T011 ERROR
252 100000 T010DN= BIT15 ;T010 DONE
253 010000 RAMIS0= BIT2 ;OUTPUT READ FROM RAM IS ALL ZEROES
254 000040 T010S0= BIT8 ;REQ 10 INTERRUPT - DOORBELL FROM 11
255 000040 NULSTP= BIT5 ;NULL STOP
256 020000 ERR10S= BIT13 ;SET TO 10 ERROR
257 100000 D011S0= BIT5 ;SET TO 10 DONE
258 000200 T011= BIT6 ;SET TO 11 DONE
259 000100 T011DB= BIT11 ;INTERFACE MAJOR STATE - T011 XFR
260 004000 T01DN= BIT11
261 000200 ZSTOP= BIT14 ;STOP ON NULL (ZERO) CHAR
262 040000
263
264 000224 016767 177564 003000 START: MOV DVID1 TDVD1 ;GET DEVICE SELECT PARAMETER
265 000322 042767 177760 002772 RIC #177760,TDVD1 ;CLEAR OUT UNUSED BITS
266 000240 001002 BNE RESTR ;ZBR IF ANY DTE20'S SELECTED
267 000242 104410 000000 ENDS,BEGIN ;
268
269 000246 016767 002760 002760 RESTR: MOV TDVD1 TDVD2 ;SAVE THE SELECT BITS
270 000254 016705 177526 ADDR,R5 ;GET THE FIRST DTE20 ADDRESS
271 000260 016700 177524 MOV VECTOR,R0 ;GET THE FIRST VECTOR ADDRESS
272 000266 000257 002742 1$: CCC ;CLEAR OUT THE "C" BIT
273 000272 103002 ROR TDVD2 ;"C" WILL SET IF A DTE IS SELECTED
274 000274 004767 000016 2$: ROR 2S ;RIF SELECT BIT = 0
275 000300 062705 000040 JSR PC,GOEXDT ;GO EXERCISE SELECTED DTE
276 000304 162700 000040 ADD #DTE5IZ,R5 ;GENERATE NEXT DTE START ADDR.
277 000310 104413 000000 SUB #DTEMAX,R0 ;GENERATE NEXT DTE VECTOR ADDR.
278 000314 000763 BR 1$ ;SIGNAL END OF ITERATION.
279 ;MONITOR SHALL TEST END OF PASS
280
281 000316 012702 003172 GOEXDT: MOV #DLYCNT,R2 ;POINT TO FIRST TABLE ENTRY
282 000322 005003 CLR R3 ;INIT R3 TO COUNT BY +2
283 000324 010512 MOV R5,(R2) ;STORE A DTE ADDRESS
284 000326 060312 ADD R3,(R2)+ ;MAKE IT THE RIGHT ADDRESS
285 000330 005723 TST (R3)+ ;ADD +2 TO R3
286 000332 022703 CMP #DTE5IZ,R3 ;STOPPED ALL DTE ADDRESSES ??
287 000336 001372 BNE 1$ ;RIF NOT

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289 000340 016767 002670
290 000346 005367 002664
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293
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296 000352 005067 177530
297 000356 004767 002356
298 000367 004767 002366
299 000366 012777 000000 002576
300 000374 017767 002572 177506
301 000407 001412
302 000404 010567 177470
303 000410 016767 002556 177466
304 000416 012767 000106 177456
305 000424 104404 000000
306
307
308
309
310
311 000430 005067 177452
312 000434 016703 002532
313 000440 004767 002274
314 000444 004767 002304
315 000450 005067 002144
316 000455 020323 002544
317 000456 001370
318 000460 004767 002254
319 000464 004767 002144
320 000470 014367 177414
321 000474 001411
322 000476 010367 177402
323 000502 017767 000106 177372
324 000510 010567 177364
325
326 000514 104404 000000
327
328 000520 032777 010000 002500
329 000526 001012
330 000530 010567 177344
331 000534 017767 002466 177342
332 000542 005067 177340
333
334 000546 104405 000000 000000
335
336 000554 020367 002412
337 000560 003337
338
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341
342 000562 012767 177777 177316
343 000570 004767 002154
344 000574 004767 002154

```
DOAGIN: MOV ITCNT,ICOUN ;INITIALIZE ITERATION COUNTER  
          ICOUN ;COUNT ONE ITERATION  
          ;ZERES TEST TO DELAY COUNTER  
          ;-----  
DT01: CLR ASB ;RESULT S/R = 000000  
       JSR PC,DIAGRT ;GO DO DIAGNOSTIC RESET  
       PC,DIAGME ;GO SET UP DIAGNOSTIC MODE  
       MOV #0,DLVCNT ;ZERO THE DELAY COUNT REG.  
       MOV DLVCNT,AWAS ;GET THE DELAY COUNT REG.  
       BEQ DT02 ;BR IF DATA CORRECT  
       MOV R5,CSRA ;SAVE THE ERROR INFO  
       MOV DLVCNT,WASADR  
       MOV #ASB,SBADR  
       ;*****  
       DATERS,BEGIN ;DATA ERROR!!!  
       ;*****  
          ;TEST TO WRITE ZEROES IN ALL ACTIVE RAM LOCATIONS  
          ;-----  
DT02: CLR ASB ;RESULT S/R = 000000  
       MOV DLVCNT,R3 ;POINT R3 TO FIRST RAM LOC.  
       JSR PC,DIAGRT ;GO DO A DIAGNOSTIC RESET  
       JSR PC,DIAGME ;GO SET UP DIAGNOSTIC MODE  
       CLR (R3)+ ;ZERO A RAM LOCATION  
       CMP R3,DIAG1 ;DONE ALL ACTIVE LOCATIONS ??  
       BNE 15 ;BR IF NOT  
       JSR PC,DIAGRT ;GO DO DIAGNOSTIC RESET  
       JSR PC,DIAGME ;GO SET DIAGNOSTIC MODE  
       MOV (R3),AWAS ;GET CONTENTS OF RAM  
       BEQ 35 ;BR IF IT WAS 000000  
       MOV R3,WASADR ;SAVE THE ERROR INFO  
       MOV #ASB,SBADR  
       MOV #R5,CSRA  
       ;*****  
       DATERS,BEGIN ;DATA ERROR!!!  
       ;*****  
       BIT #RAMISO,@STATUS ;DID RMF=0 BIT SET  
       BNE 35 ;BR IF IT DID  
       MOV R5,CSRA ;SAVE THE ERROR INFO  
       MOV @STATUS,ASTAT  
       CLR R5  
       ;*****  
       DATERS,BEGIN ;DATA ERROR!!!  
       ;*****  
       BIT #RAMF0,@STATUS ;RMF=0 FAILED TO SET  
       BNE 45 ;BR IF IT DID  
       MOV R5,CSRA ;SAVE THE ERROR INFO  
       MOV @STATUS,ASTAT  
       CLR R5  
       ;*****  
       DATERS,BEGIN ;DATA ERROR!!!  
       ;*****  
DT03: MOV #1,ASB ;RESULT S/R = 177777  
       JSR PC,DIAGRT ;GO DO A DIAGNOSTIC RESET  
       JSR PC,DIAGME ;GO SET UP DIAGNOSTIC MODE
```

345 000600 012777 177777 002364
346 000606 017767 002360 177274
347 000614 026767 177266 177266
348 000622 001412
349 000624 016767 002342 177252
350 000632 017767 000106 177242
351 000640 010567 177234
352
353 000644 104404 000000
354
355
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359 000650 016703 002316
360 000654 004767 002060
361 000660 004767 002070
362 000664 012723 177777
363 000670 020367 002326
364 000674 001367
365 000676 012767 177777 177202
366 000704 004767 002030
367 000710 004767 002040
368 000714 014367 177170
369 000720 026767 177162 177162
370 000726 001411
371 000730 010367 177150
372 000734 012767 000106 177140
373 000742 010567 177132
374
375 000746 104404 000000
376
377 000752 020367 002214
378 000756 003347
379
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382
383 000760 016703 002206
384 000764 005004
385 000766 004767 001746
386 000776 004767 001756
387 000776 010423
388 001000 062704 021042
389 001004 020367 002212
390 001010 001372
391 001012 061304 021042
392 001016 010467 177064
393 001022 016367 177776 177060
394 001030 020443
395 001032 001411
396 001034 010367 177044
397 001040 012767 000106 177034
398 001046 010567 177026
399
400 001052 104404 000000

```
MOV #1,DLVCNT ;ALL 1'S TO DELAY COUNT REG.  
MOV DLVCNT,AWAS ;GET THE CONTENTS OF DELAY COUNT  
CMP ASB,AWAS ;WAS IT ALL ONES ??  
BEQ DT04 ;BR IF YES  
MOV DLVCNT,WASADR ;SAVE THE ERROR INFO  
MOV #ASB,SBADR  
MOV #R5,CSRA  
;*****  
DATERS,BEGIN ;DATA ERROR!!!  
;*****  
          ;TEST TO WRITE ALL 1'S INTO ACTIVE RAM LOCATIONS  
          ;-----  
DT04: MOV DLVCNT,R3 ;R3 POINTS TO 1ST ADDRESS  
       JSR PC,DIAGRT ;GO DO A DIAGNOSTIC RESET  
       JSR PC,DIAGME ;GO SET DIAGNOSTIC MODE  
       MOV #1,(R3)+ ;LOAD ALL 1'S INTO RAM  
       CMP R3,DIAG1 ;LOADED ALL LOCATIONS ??  
       BNE 25 ;BR IF NOT  
       MOV #1,ASB ;RESULT S/R = 177777  
       JSR PC,DIAGRT ;GO DO A DIAGNOSTIC RESET  
       JSR PC,DIAGME ;GO SET DIAGNOSTIC MODE  
       MOV -(R3),AWAS ;READ A RAM LOCATION  
       CMP ASB,AWAS ;WAS IT 177777 ??  
       BEQ 35 ;BR IF YES  
       MOV R3,WASADR ;SAVE THE ERROR INFO  
       MOV #ASB,SBADR  
       MOV #R5,CSRA  
       ;*****  
       DATERS,BEGIN ;DATA ERROR!!!  
       ;*****  
       CMP R3,DLVCNT ;CHECKED THEM ALL YET ??  
       BGT 25 ;BR IF NOT  
          ;RAM MEMORY ADDRESS TEST  
          ;-----  
DT05: MOV DLVCNT,R3 ;START WITH 1ST RAM LOC  
       CLR R4 ;R4 CONTAINS FOUR ZEROBYTES (4 BITS EACH)  
       JSR PC,DIAGRT ;GO DO A DIAGNOSTIC RESET  
       JSR PC,DIAGME ;GO SET DIAGNOSTIC MODE  
       MOV R4,(R3)+ ;LOAD A RAM LOCATION-UPDATE POINTER  
       ADD #2,R4 ;ADD +2 TO EACH DATA BYTE  
       CMP R3,DIAG1 ;LOADED THEM ALL ??  
       BNE 15 ;BR IF NOT  
       SUB #1042,R4 ;INIT R4 TO START CHECKING DATA  
       MOV #ASB,ASB ;SAVE S/R DATA  
       MOV -(R3),AWAS ;GET CONTENTS OF RAM  
       CMP R4,-(R3) ;CORRECT CONTENTS ??  
       BEQ 35 ;BR IF YES  
       MOV R3,WASADR ;SAVE THE ERROR DATA  
       MOV #ASB,SBADR  
       MOV #R5,CSRA  
       ;*****  
       DATERS,BEGIN ;DATA ERROR!!!  
       ;*****
```



```
53 001532 005767 001502 TST INTFLG ;DID THE INTR OCCUR ??
54 001532 001915 176334 BNE CSRA ;BR IF IT DID
55 001540 010567 176332 MOV #R11,ASTAT ;SAVE THE ERROR INFO
56 001544 012767 000042 JSR PC,DIAGRT ;GO DO A DIAGNOSTIC RESET
57 001552 004767 001162 JSR #23,ERRTYP
58 001556 012767 000023 176322 MOV #R5,CSRA
59 001564 104405 000000 000000 HRDERS,BEGIN,NULL ;"TO11ER" FAILED TO CAUSE AN INTERRUPT
60 ***** ;*****
61 001572 010010 000000 1S: MOV R0,(R0) ;RESTORE TRAP CATCHER IN DTE
62 001574 022720 000002 ADD R0,R0+ ;BR IF NOT
63 001600 005010 CLR R0 ;BEFORE LEAVING
64 001602 005740 TST -(R0)
65 ***** ;*****
66 ;TEST TO VERIFY "MSTR CLR" CAN CLEAR "TO11 BC"
67 -----
68 001604 004767 001130 DT14: JSR PC,DIAGRT ;GO DO A DIAGNOSTIC RESET
69 001610 016767 001432 MOV #R10,ASB ;GET NPR ADDRESS
70 001616 012777 007777 001364 MOV #R11,@TO11BC ;LOAD TO11 BYTE COUNT
71 001624 004767 001110 JSR PC,DIAGRT ;GO DO A DIAGNOSTIC RESET
72 001630 000240 001356 MOV #R11,@TO11AD ;LOAD TO 11 ADDRESS
73 001636 000240 NOP ;STALL A LITTLE
74 001644 000240 NOP
75 001648 000240 NOP
76 001652 026767 001344 176236 MOV #R11,@TO11AD,AWAS ;GET THE TO 11 ADDRESS
77 001656 026767 176230 176230 CMP #R11,AWAS ;DID IT GET MODIFIED ??
78 001660 001412 BEQ DT15 ;BR IF NOT
79 001664 016767 001326 176214 MOV #R11,@TO11AD,WASADR ;SAVE THE ERROR INFO
80 001670 010567 176198 MOV #R5,CSADR
81 ***** ;*****
82 001702 104404 000000 DTERS,BEGIN ;DATA ERROR!!!
83 ***** ;*****
84 ;TEST TO VERIFY ABC REG INCREMENTS DURING TO11 TRANSFER
85 -----
86 001706 016767 001334 176172 DT15: MOV #R11,@TO11AD,ASB ;GET THE NPR ADDRESS
87 001714 005267 176166 INC ASB ;INCREMENT IT
88 001720 004767 001014 JSR PC,DIAGRT ;GO DO A DIAGNOSTIC RESET
89 001724 016773 001316 MOV #R11,@TO11AD,R3 ;GET NPR ADDRESS AGAIN
90 001730 006703 000002 ADD #2,R3 ;ADD #2 TO IT
91 001734 004767 001034 JSR PC,@TO11AD,ASB ;GO LOCK IN TO11 MAJOR STATE
92 001740 005067 176142 CLR #R5,ERRTYP
93 ***** ;*****
94 001744 104405 000000 000000 HRDERS,BEGIN,NULL ;FAILED TO LOCK IN "TO11" MAJOR STATE
95 ***** ;*****
96 BR DT16 ;GO TO NEXT TEST
97 001752 000450 MOV #R11,@TO11AD,ASB ;LOAD TO 11 BYTE COUNT REG.
98 001754 016777 027777 001226 MOV #R11,@TO11AD,ASB ;LOAD TO 11 ADDR REG.
99 001762 016777 001260 001226 MOV #R11,@TO11AD,ASB ;GET UP DIAC REG.
100 001770 012777 040010 001226 MOV #R11,@TO11AD,ASB ;GO PULSE THE CLOCK
101 001776 004767 000722 JSR PC,DIAGRT ;CHANGE DIAC REG.
102 001784 012777 000014 JSR #R4,@DIAG2 ;GO PULSE THE CLOCK
103 002010 004767 000710 MOV #R4,@DIAG2 ;CHANGE THE DIAC REG.
104 002014 012777 000020 JSR #R4,@DIAG2 ;CHANGE THE DIAC REG.
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569 002022 004767 000676 JSR PC,DIAGRT ;GO PULSE THE CLOCK
570 002026 017767 001632 MOV #R11,@TO11AD,AWAS ;GET THE TO 11 ADDRESS
571 002034 026767 176046 176046 CMP #R11,AWAS ;DID IT INCREMENT PROPERLY ??
572 002042 001414 BEQ DT16 ;BR IF NOT
573 002052 015767 001144 176032 MOV #R11,@TO11AD,WASADR ;SAVE THE ERROR INFO
574 002056 015767 000014 176022 JSR #R5,CSADR
575 002060 010567 176014 MOV #R5,CSADR
576 002064 004767 000650 JSR PC,DIAGRT ;GO DO DIAGNOSTIC RESET
577 ***** ;*****
578 002070 104404 000000 000000 DTERS,BEGIN ;DATA ERROR!!!
579 ***** ;*****
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625  
626 002300 104405 000000 000000  
627  
628 002306 000422  
629 002310 009769  
630 002317 009769 000710 175570 4S:  
631 002320 032767 000200 175562  
632 002326 001012  
633 002334 012767 175544  
634 002334 012767 000110 175542  
635 002342 012767 000106 175532  
636  
637 002350 104404 000000  
638  
639  
640  
641  
642  
643 002354 012767 000040 175524 DT17: MOV #NULSTP,ASB ;NULSTP SHOULD GET SET  
644 002362 004767 000402 ;PC,T11L0R ;LOCK IN TO 11 STATE  
645 002366 005067 175514 CLR CRTYP  
646  
647 002372 104405 000000 000000  
648  
649  
650 002400 000446  
651 002402 012777 077777 000600  
652 002410 005077 000604  
653 002422 016777 000626 000572  
654 002426 043777 040010 000574  
655 002430 004767 000270  
656 002434 012777 000014 000562  
657 002442 004767 000256  
658 002446 042767 000254 175434  
659 002454 042767 175420  
660 002470 01432  
661 002476 012767 175402  
662 002504 012767 000110 175400  
663 002504 012767 000106 175370  
664  
665 002512 104404 000000  
666  
667  
668  
669  
670  
671 002516 004767 000216 DT20: JSR PC,DIAGRT ;GO DO A DIAGNOSTIC RESET  
672 002522 016767 000520 ;NPRLOC,ASB ;SAVE NPR ADDRESS  
673 002530 032767 000001 175356 ADD #1,CASB ;INCREMENT IT  
674 002536 016767 000504 000446 MOV #NPRLOC,@T010AD ;LOAD THE T01 ADDR REG.  
675 002544 004767 000322 JSR PC,T10L0C ;GO LOCK IN TO 10 STATE  
676 002550 005067 175332 CLR CRTYP  
677  
678 002554 104405 000000 000000  
679  
680 002562 000441  
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681 002564 012777 000010 000432 MOV #10,@DIAG2  
682 002572 004767 000126 JSR PC,DIAG9P ;SET UP TO SHIFT STATES  
683 002576 012777 040000 000420 MOV #EDONES,@DIAG2 ;PULSE THE CLOCK  
684 002604 000240 ;SET EDONES BIT  
685 002606 012777 000014 000410 NOP  
686 002614 004767 000104 JSR PC,DIAG2 ;SHIFT STATES  
687 002620 004767 000100 JSR PC,DIAG9P ;PULSE THE CLOCK TWICE  
688 002624 012767 000348 MOV #ASB,AWAS ;PULSE THE CLOCK  
689 002632 026767 175250 175250 ;GET THE T010 ADDRESS  
690 002640 001412 ;DID IT GET INCREMENTED ??  
691 002642 010567 175232 BEQ DTEXT ;BR IF YES  
692 002646 010567 000348 MOV #ASB,AWAS ;SAVE THE ERROR INFO  
693 002654 012767 000106 175230 MOV #ASB,SBADR  
694  
695 002662 104404 000000  
696  
697  
698  
699 002666 005767 175142 DTEXT: TST PASCNT ;FIRST TIME THROUGH ?  
700 002672 001405 ;TST ;BR IF YES-QUICK PASS  
701 002674 005767 000336 BEQ ICDUN ;DO IT AGAIN ??  
702 002700 001402 BEQ ICDUN ;DO IT AGAIN ??  
703 002702 000167 175440 JMP DDAGIN ;GO DO IT  
704 002706 000207 RTS ;GO TO NEXT DTE20  
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737 003022 104407 000000 BREAKS,BEGIN ;THEN CONTINUE AT NEXT INSTRUCTION.
738 003026 005304 DEC R4 ;COUNT THE TIMER
739 003030 001364 BNE IS ;BR IF NO TIMEOUT
740 003032 016767 000164 175040 MOV DIAG1,CSRA ;SAVE THE ERROR INFO
741 003040 017767 000156 175034 MOV DIAG1,ACSR
742 003046 000207 RTS PC
743 003050 012777 002040 000144 T11KB: MOV #D1011DS05,@DIAG1 ;ERROR RETURN
744 003056 062716 000006 ADD #6,(SP) ;SET STATE HOLD
745 003062 000240 NOP ;MOVE PC AROUND ERROR CALL
746 003064 000207 RTS PC ;NOW RETURN
747 003066 004767 177646 T10LKB: JSR PC,DIAGRT ;GO DO A DIAGNOSTIC RESET
748 003072 004767 177656 T10LOC: JSR PC,DIAGME ;GO SET DIAG MODE
749 003076 005004 CLR R4 ;INIT TIME OUT COUNTER
750 003100 104407 000000 1$: BREAKS,BEGIN ;TEMPORARY RETURN TO MONITOR...
751 003104 104407 000000 BREAKS,BEGIN ;THEN CONTINUE AT NEXT INSTRUCTION.
752 003110 032777 000200 000104 BIT #T010,@DIAG1 ;SHIFT TO TO 10 STATE YET?
753 003116 001013 BNE IS ;BR IF YES
754 003120 004767 177564 JSR PC,DIAGPU ;PULSE THE CLOCK
755 003124 005304 DEC R4 ;COUNT THE TIMER
756 003126 001364 BNE IS ;BR IF NO TIMEOUT
757 003130 016767 000066 174742 MOV DIAG1,CSRA ;SAVE THE ERROR INFO
758 003136 017767 000060 174736 MOV DIAG1,ACSR
759 003140 000207 RTS PC
760 003144 000240 T10LKB: MOV #D1011DS05,@DIAG1 ;ERROR RETURN
761 003146 062716 000006 ADD #6,(SP) ;LOCK IN TO 10 STATE
762 003150 000240 NOP ;MOVE PC AROUND ERROR CALL
763 003154 000207 RTS PC ;NORMAL RETURN
764 003164 005167 000050 DTINT: CQM INTFLG ;SET SOFTWARE FLAG
765 003170 000002 RTI
766
767
768
769
770
771 ;CONSTANTS,ADDRESS TABLE, AND VARIABLES
772 ;-----
773 ;THIS TABLE GETS LOADED WITH THE ADDRESSES OF THE DTE REGISTERS
774
775 003172 000000 DLVCNT: 0
776 003174 000000 DEXWD3: 0
777 003176 000000 DEXWD2: 0
778 003178 000000 DEXWD1: 0
779 003200 000000 TENAD1: 0
780 003202 000000 TENAD2: 0
781 003204 000000 TD10BC: 0
782 003206 000000 TD11BC: 0
783 003210 000000 TD10AD: 0
784 003212 000000 TD11AD: 0
785 003214 000000 TD10DT: 0
786 003216 000000 TD11DT: 0
787 003220 000000 DIAG1: 0
788 003222 000000 DIAG2: 0
789 003224 000000 STATUS: 0
790 003226 000000 DIAG3: 0
791 003230 000000
792
    
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793
794 ;VARIABLES AND FLAGS
795 003232 000000 TDVD1: 0 ;DEVICE SELECT BITS BUFFERS
796 003234 000000 TDVD2: 0
797 003236 000000 ICOUN: 0 ;PASS ITERATION COUNTER
798 003240 000000 INTFLG: 0 ;SOFTWARE INTERRUPT FLAG
799 003242 000100 ITCNT: 100 ;NO. OF TEST ITERATIONS FOR EA. DTE20
800 003244 000000 NPRBUF: 0 ;NPR XFER BUFFER
801
802 ;CONSTANTS
803 003246 003244 NPRLOC: NPRBUF ;ADDRESS POINTER TO NPR BUFFER
804
805
806 .END
    
```

ACSR	000102R	221#	415*																	
ADDR	000006R	187#	270	741*	760*															
ADDR22=	001000R	239#																		
ASB	000106R	225#	295*	303	311*	323	342*	347	350	365*	369	372*	392*	397						
		408#	539	542	551*	552*	571	574	574	585*	635	643*	659	663						
		672*	673*	689	693															
ASTAT	000104R	223#	331*	417*	441*	460*	479*	498*	516*	609*	622*	643*	659	663						
AWAS	000110R	226#	299*	320*	346*	347	368*	369	393*	412*	415	538*	539	570*						
		271#	630*	631	634	657*	658*	659	662	688*	689									
BEGIN	000000R	184#	267	278	305	325	334	353	375	400	420	445	464	483						
		502	545	559	575	578	593	601	602	611	616	617	626	637						
		647	665	678	695	736	737	752	752	754										
BIT0 =	000001	239#	410																	
BIT1 =	000002	239#	251																	
BIT10 =	020000	239#	244																	
BIT11 =	004000	239#	260																	
BIT12 =	010000	239#	253																	
BIT13 =	020000	239#	253																	
BIT14 =	040000	239#	248	256																
BIT15 =	100000	239#	262	262																
BIT2 =	000004	239#	252	257																
BIT3 =	000010	239#	236																	
BIT4 =	000020	239#	245																	
BIT5 =	000040	239#	245	246	250	255														
BIT6 =	000100	239#	247	249																
BIT7 =	000200	239#	247	258	261															
BIT8 =	000400	239#	254																	
BIT9 =	001000	239#																		
BREAKS =	104407	239#																		
BR1	000012R	189#	601	602	616	617	736	737	752	753										
BR2	000013R	190#	432																	
BTODS =	104421	239#																		
COMDS =	003178R	777#																		
CONFIG	000056R	209#																		
CSRA	000100R	219#	301*	324*	330*	351*	373*	398*	416*	440*	459*	478*	497*	515*						
		543#	575*	607*	623*	633*	661*	691*	740*	759*										
DATCKS =	104411	239#																		
DATERS =	104404	239#																		
DEXTD1	003200R	779#	305	326	353	375	400	545	578	637	665	695								
DEXTD2	003176R	778#																		
DEXTD3	003177R	777#																		
DIAGME	002754R	797#																		
DIAGPU	002710R	797#	314	319	344	361	367	386	725#	731	749									
DIAGRT	002740R	797#	735	756																
		296#	313	318	343	360	366	385	408	429	442	451	461	470						
		480#	489	499	517	530	533	553	576	586	588	671	720#	730						
		748#																		
DIAG1	003222R	316#	363	389	598*	603	608	618	622	710*	715*	725*	733	740						
DIAG2	003224R	744#	743*	754	759	760	762*	788#												
DIAG3	003230R	791#	566*	568*	597*	653*	655*	681*	683*	685*	720*	789#								
DIAG9P	002724R	791#																		
DLVCMT	003172R	797#	567	569	654	656	682	686	687	715#										
		282#	298*	299	302	312	336	345*	346	349	359	377	383	411*						
		413#	419#	420#	421#	422#	423#	424#	425#	426#	427#	428#	429#	430#						
DOAGIN	000346R	413#																		
DDN10S =	100000	257#																		
DDN11S =	000200	258#	441	479																

DRESET =	000100	249#	720																	
DS05 =	002000	244#	715	743	762															
DIEMAX =	000004	242#																		
DTESIZ =	000040	727#	276	287																
DTEXTI	002666R	680#	680	690	699#															
DTINT	003164R	431#	768#																	
DT01	000352R	295#																		
DT02	000480R	300#																		
DT03	000550R	342#	311#																	
DT04	000650R	348#	359#																	
DT05	000760R	383#																		
DT06	001050R	408#																		
DT07	001160R	408#																		
DT10	001256R	430#																		
DT11	001342R	458#	451#																	
DT17	001426R	477#	470#																	
DT13	001512R	496#	489#																	
DT14	001604R	530#	508#																	
DT15	001706R	540#																		
DT16	002074R	561#	551#																	
DT17	002354R	595#	572	585#																
DT20	002516R	649#	613	641#	632	643#														
DVID1	000014R	191#	264																	
D101 =	000400	246#	710	715	725	743	762													
EDONES =	040000	248#	564	653	683															
ENDITS =	104413	239#	278																	
ENDS =	104410	239#	267																	
ERRTYP	000106R	244#																		

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 CROSS REFERENCE TABLE -- USER SYMBOLS

SFO 0019

NUL	=	000000	239#	334	420	445	464	483	502	520	559	593	611	626	647
NULSTP	=	000040	255#	643	658										
OPEN	=	000000	186#	192	193										
OTDAS	=	104420	222#	225	194	195	228	212	213	214	215	216	217	218	219
PASCNT	=	000034R	200#	699											
PIRQS	=	000004	239#												
POPS	=	005726	239#												
POSP2	=	022626	239#												
PRTY	=	000000	239#												
PRTY0	=	000000	190												
PRTY1	=	000040	239#	239#											
PRTY2	=	000100	239#												
PRTY3	=	000140	239#												
PRTY4	=	000200	189												
PRTY5	=	000240	239#	239#											
PRTY6	=	000300	239#												
PRTY7	=	000340	239#												
PS	=	177776	239#												
PSN	=	177776	239#												
PULSE	=	000060	239#	710	715										
PUSH	=	005746	239#												
PUSH2	=	-024646	239#												
RANR0	=	010000	239#	328	413										
RANDS	=	14447	239#												
RANNUM	=	000054R	208#												
RESTR	=	000246R	227#	266	269#										
RES1	=	00056R	210#												
RES2	=	000060	239#												
RSTR	=	000112R	237#												
SBADR	=	000102R	220#	303*	323*	350*	372*	397*	542*	574*	635*	663*	693*		
SOPCNT	=	000042R	203#												
SOPRS	=	104406	239#												
SOPPAS	=	000046R	205#												
SPOINT	=	000032R	199#												
SPSIZ	=	000040	1	232											
SR1	=	000040R	190#												
SR2	=	000020R	193#												
SR3	=	000022R	194#												
SR4	=	000024R	195#												
START	=	000026R	197#	264#											
STAT	=	000026R	197#												
STATUS	=	003226R	328#	331	413	417	434*	453*	472*	491*	509*	630	657	790#	
SVR0	=	000062R	212#												
SVR1	=	000062R	212#												
SVR2	=	000066R	214#												
SVR3	=	000070R	215#												
SVR4	=	000074R	216#												
SVR5	=	000076R	218#												
SVR6	=	000076R	218#												
SYSCNT	=	000052R	207#												
TDV1	=	00322R	264#	265*	269	795#									
TDV2	=	00322R	264#	273*	796#										
TENAD1	=	003202R	180#												
TENAD2	=	003204R	781#												

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 CROSS REFERENCE TABLE -- USER SYMBOLS

SEO 0020

TO10	=	000200	247#	754											
TO10AD	=	003212R	674#	688	692	784#									
TO10BC	=	003206R	182#												
TO10DB	=	000400	254#												
TO10DH	=	100000	252#												
TO10DT	=	003216R	189#												
TO11	=	000100	159#	603	618	733									
TO11AD	=	003214R	634#	538	541	563*	570	573	589*	652*	785#				
TO11BC	=	003210R	532#	562*	587*	596*	650*	743#							
TO11BH	=	020000	443#	460	463										
TO11DB	=	004000	460#	460	460										
TO11DH	=	000200	263#	585	631										
TO11DT	=	003220R	653#	787#											
TRPDFD	=	000022	239#												
T10LKB	=	003146R	455#	762#											
T10LOC	=	003072R	675#	749#											
T10LOR	=	003066R	748#												
T11KB	=	003066R	734#	743#											
T11KA	=	003000R	732#												
T11LOC	=	002774R	556#	590	731#										
T11LOR	=	002770R	644#	730#											
VECTDR	=	00001R	182#	271											
WASADR	=	000104R	122#	302*	322*	349*	371*	396*	541*	573*	634*	662*	692*		
WDFR	=	000116R	220#												
WDFD	=	000114R	220#												
XFLAG	=	000005R	118#												
ZSTOP	=	040000	262#	650											

- ABS. 000000 000
 003250 001

ERRORS DETECTED: 0
 DEFAULT GLOBALS GENERATED: 0
 XDTACO.XDTACO/SOL/CRF:SYN=DDXCON,XDTACO
 RUN-TIME: 1 4 SECONDS
 RUN-TIME RATIO: 16/5=3.2
 CORE USED: 7K (13 PAGES)