



@server

iSeries

Control panel

Version 5 Release 3





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Note

Before using this information and the product it supports, be sure to read the information in "Notices," on page 25.

Second Edition (August 2005)

This edition applies to version 5, release 3, modification 0 of IBM Operating System/400 (5722-SS1) and to all subsequent releases and modifications until otherwise indicated in new editions. This version does not run on all reduced instruction set computer (RISC) models nor does it run on CISC models.

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Control panel

The control panel is your initial interface to your iSeries server. From the control panel, you can process system functions such as the following:

- Power on or off the system
- Perform an initial program load (IPL)
- Display and get attributes or error codes to analyze problems
- Determine processor activity

Attention:

- If you have a partitioned system, only the primary partition can access the control panel. All secondary partitions use the remote control panel through the primary partition.
- The information in this topic pertains only to IBM 270 and 8xx model servers. If you have a different model server, see the eServer Information Center for more information.

The following topics provide information for you to set up the virtual control panel or the remote control panel, access control panel functions, and use APIs to operate your remote control panel with a user-written program.

Print this topic

Print this entire topic.

Control panel concepts

This information explains the differences between control panel options. It also provides details about functions that the control panel can perform.

Set up your control panel

These instructions provide detailed information that you can use to get the remote control panel and the virtual control panel up and running.

Access control panel functions

This information provides steps that explain how to access the control panel functions.

Instructions and descriptions for control panel functions

This information describes each control panel function, the uses and procedures for each function, and when you must use each function.

Use remote control panel APIs

Use these APIs to write a program that can access the control panel remotely. Your program can access many commands and queries using these APIs.

Print this topic

To view or download the PDF version of this document, select Control panel (about 335 KB).

You can view or download these related topics:

- Basic systems operations (257 KB) contains the following topics:
 - iSeries™ basic operations
 - Start and Stop the iSeries
 - OS/400 concepts


- Analyze and report system problems

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Control panel concepts

The following information explains the difference between the virtual control panel, remote control panel, and the physical control panel. It also provides detailed information about the functions that the control panel can perform.

Types of control panels

This information compares and contrasts the virtual control panel, remote control panel, and physical control panel.

Control panel functions

This information provides a table that shows each control panel function and whether each type of control panel supports it.

Control panel buttons, lights, and indicators

This information describes the interface for each type of control panel.

Types of control panels

You can use the physical control panel, remote control panel, and virtual control panel to perform almost all of the same functions. The remote control panel and virtual control panel provide a way to perform control panel functions from a PC.

The following topics have more information about control panel options.

- Physical control panel
- Remote control panel
- Virtual control panel

Physical control panel

The physical control panel is your initial interface with the iSeries server. You can use the physical control panel to perform functions such as IPL, power on, and power off. Control panel functions range in complexity from functions that display status (such as IPL speed) to low-level service functions that only service representatives must access.

Note: If the system has multiple partitions, some secondary partitions might not power on if they have been configured to "hold". To power on and off a partitioned system, see Restart and power down a system with logical partitions in the Logical partitions topic.

For information about using the physical control panel see Access control panel functions. See Control panel buttons, lights, and indicators for a description of the interface for the physical control panel.

Remote control panel

The remote control panel is a way to use control panel functions through a PC. The graphical user interface of the remote control panel looks similar to the physical control panel. The following are characteristics of the remote control panel:

- The remote control panel installs through Operations Console.
- You can use the interface for the remote control panel to restart and power off the server. Also, the remote control panel can power up the server if it is cabled directly to the server. It cannot power up the server if it is connected through a LAN. You can use the remote control panel to perform most of the same functions as the physical control panel.
- You can use the remote control panel through a direct connection using a serial port or a parallel port, depending on your server model. You can also use the remote control panel through a LAN or remotely with a modem connection.
- You can use remote control panel APIs to automate control of the remote control panel through a user-created program.
- If your server uses a joystick, the **mode** button works with the same functions as the physical control panel, depending on whether the joystick is inserted.

See Set up your control panel for information about setting up the remote control panel. For information about using the remote control panel see Access control panel functions. See Control panel buttons, lights, and indicators for a description of the interface for the remote control panel.

Virtual control panel

The virtual control panel is an alternative to the remote control panel for parallel cable. Like the remote control panel, the virtual control panel is a way to use control panel functions through a PC. The graphical user interface for the virtual control panel is identical to the remote control panel. Also, the virtual control panel can perform most of the same functions as the remote control panel. If your server uses a joystick, the **mode** button works with the same functions as the physical control panel, depending on whether the joystick is inserted.

The biggest functional difference between the remote control panel and the virtual control panel is that the virtual control panel cannot power on the server. As an alternative, if you need to power on the system at a later time, you can use the IPL scheduling function in Operational Assistant, by pressing the **Attention** key. You can also use the GO POWER command and select option 2 (Change power on and off schedule).

Considerations for the virtual control panel

If you use the virtual control panel, you should be aware of the following considerations:

- The virtual control panel must have a direct connection to the server from Operations Console using the serial console cable.
- The virtual control panel is only available while the Operations Console is connected.
- You cannot use the virtual control panel remotely through a dial up connection.
- There are prerequisites to installing the virtual control panel such as PTFs for the server and service packs for the client.
- If the PC has a parallel cable connection for a remote control panel, you must remove it before you can install and use your virtual control panel.
- A unique service tools device profile must exist for each virtual control panel connection.
- You cannot use an existing network name.
- More than one virtual control panel and remote control panel can be active at the same time.

- The service tools user profile used to authenticate the connection must have the Partition remote panel key privilege in order to use the mode function provided by the virtual control panel. To verify that your SST user ID has this privilege, see [Change the functional privileges for a service tools user ID using SST](#).

How to choose between the virtual control panel and remote control panel

The following table shows which server models are recommended for the virtual control panel and which models are recommended for the remote control panel.

Virtual control panel	Remote control panel
270	170
800	250
810	6xx
820	7xx
825	Sxx
830	
840	
870	
890	

For information such as prerequisites, setup instructions, and configuration instructions for the virtual control panel, see the [iSeries™ Access !\[\]\(0f848bbd71cef6b345273b16f905912a_img.jpg\) Web site](#).

For information on using the virtual control panel see [Access control panel functions](#). See [Control panel buttons, lights, and indicators](#) for a description of the interface for the virtual control panel.

Control panel functions

There are few functional differences among the remote control panel, virtual control panel, and physical control panel. The main difference is that the physical control panel and the remote control panel, when it is cabled directly to the server, can power up the iSeries server. The virtual control panel and the remote control panel, if it is connected through a LAN, cannot power up the server.

The following table describes all of the control panel functions and whether the virtual control panel and remote control panel support them.

The following table lists the code for the control panel functions and the descriptions of the control panel functions.

Notes:

1. Some control panel functions might not be available on all system types.
2. The x can be any number 0 through 9, any letter A through F, or a blank.
3. If you have selected a function, find the selected function in the table below and verify that you have completed the correct function.
4. If you cannot change the *Function/Data* display or complete the selected function, contact your service provider.

Control panel (32-character) function codes

Function code	Remote control panel code	Virtual control panel function?	Function description
01	01	Yes	<ol style="list-style-type: none"> 1. Displays the currently selected IPL type (and logical key mode on some system types). 2. Displays the currently selected IPL speed override for the next IPL.
02	02	Yes	Selects the IPL type, logical key mode, and IPL speed.
03	03	Yes	Starts an IPL to load the system. The IPL uses the selected IPL options.
04	04	Yes	Lamp test all displays and indicators will be switched on.
05	05	No	System power control network (SPCN) system reference code (SRC). Displays an SRC on the control panel.
07	Not applicable	Not applicable	Allows you to perform SPCN service functions.
08	08	Yes	Fast power off. To perform a fast power off, see Stop the system in the Basic system operations topic.
09 through 10	Not applicable	Not applicable	Reserved.
11 through 19	11 through 19	Yes	System reference code (SRC) displays an SRC on the control panel.
20	20	Yes	Displays the machine type, model, processor feature code, processor class indicator, and IPL path description.
21	21	Yes	Causes the Use Dedicated Service Tool (DST) display to appear on the system console. To exit DST, select the <i>Resume operating system display</i> option.
22	22	Yes	Forces system main storage dump.
23	Not applicable	Not applicable	Reserved.
24	Not applicable	Not applicable	Reserved.
25	25	Yes	Uses Service switches 1 and 2 to enable or disable functions 50 through 70.

Function code	Remote control panel code	Virtual control panel function?	Function description
26	26	Yes	Uses Service switches 1 and 2 to enable or disable functions 50 through 70.
27 through 32	Not applicable	Not applicable	Reserved.
33	33	Yes	Reorders SPCN addressing.
34	34	Yes	Retries (MSD) IPL.
35 through 49	Not applicable	Not applicable	Reserved.
50	Not applicable	Not applicable	System processing unit stop.
51	Not applicable	Not applicable	System processing unit status displays the following values: B0 register contents, Next Instruction Address (NIA), and current Task Dispatching Element (TDE) contents
52	Not applicable	Not applicable	System processing unit start.
53	53	No	De-configure an intermittently failing processor (Repeat GARD function)
54 through 56	Not applicable	Not applicable	Reserved.
57	Not applicable	Not applicable	Displays area addresses for system data.
58	Not applicable	Not applicable	Sets the first character of the base address for the function 62 display.
59	Not applicable	Not applicable	Sets the second character of the base address for the function 62 display.
60	Not applicable	Not applicable	Sets the third character of base address for function 62 display.
61	Not applicable	Not applicable	Sets the fourth character of base address for function 62 display.
62	Not applicable	Not applicable	Displays service processor storage.
63	Not applicable	Not applicable	System status SRC trace.
64	Not applicable	Not applicable	Service processor diagnostic status SRC trace.
65	65	Yes	Deactivates remote service.
66	66	Yes	Activates remote service.
67	67	Yes	Disk unit IOP reset/reload is enabled only by specific disk unit SRCs.

Function code	Remote control panel code	Virtual control panel function?	Function description
68	68	Yes	Concurrent maintenance power domain Power Off.
69	69	Yes	Concurrent maintenance power domain Power On.
70	70	No	Dump service processor control storage.
Power button	Power button in graphical interface — for powering on and off the server. (LAN connected remote control panels cannot power on the server.)	Power button in graphical interface — for powering off the server only.	OFF = Delayed power off ON = Immediate power on (can be timed power on)
Keystick	See note.	See note.	IPL keylock - Manual, Auto, Normal, Secure
Attention light	Graphical attention light	Yes	Attention state LED
Power Indicator	Power indicator in graphical interface	Power indicator in graphical interface	Lit when power is fully operational
<p>Note: The remote control panel and virtual control panel recognize the presence of a keystick. If your server uses a keystick, the mode button works with the same functions as the physical control panel, depending on whether or not the keystick is inserted. LAN connected remote control panels need special authority to use the mode button.</p>			

If you cannot find the function code in the previous table, the customer support for added features or devices might not have been available when this information was produced. Look for any supplemental unit function code information for the function code you displayed on the control panel.

For more details about the functions, see Instructions and descriptions for control panel functions.

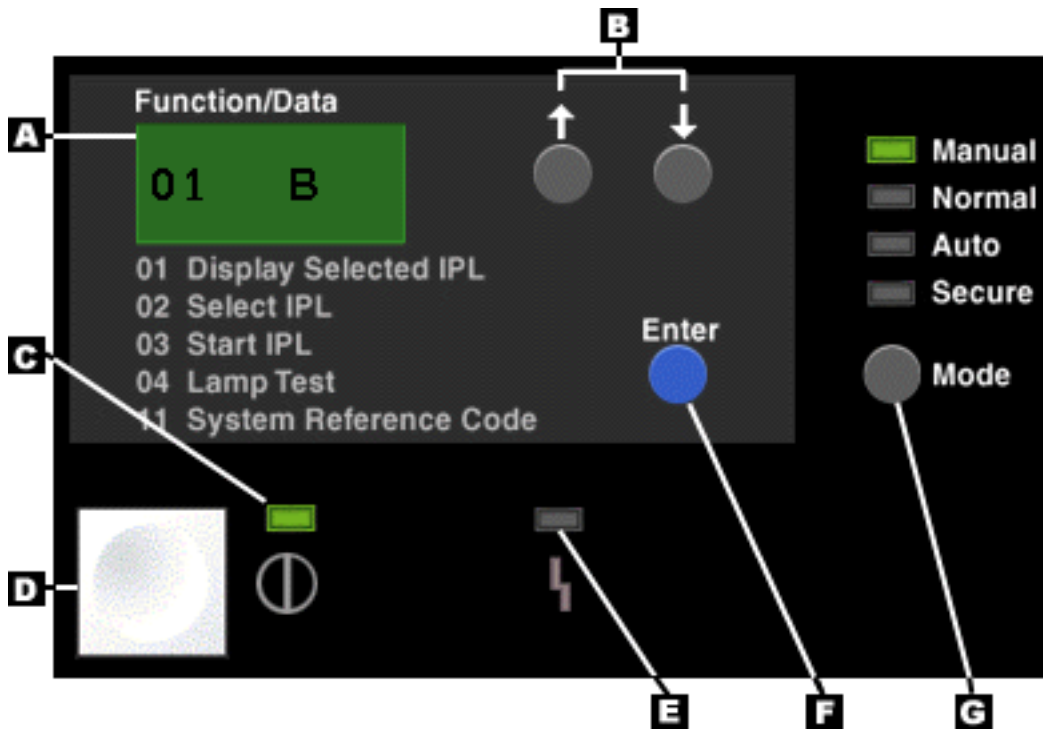
Control panel buttons, lights, and indicators

This topic describes the buttons, lights, and indicators for the control panel. It also describes the interface for the virtual control panel and remote control panel. The interface for the virtual control panel and remote control panel are identical.

The following figures show:

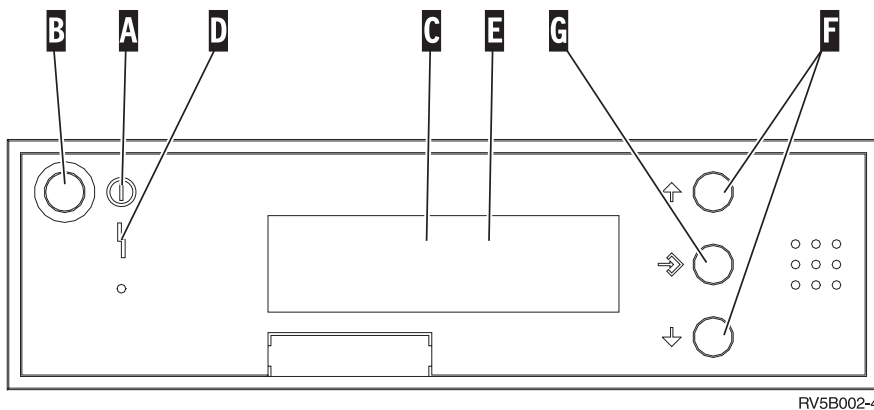
- The remote control panel or virtual control panel
- A control panel without a keystick
- A control panel with a key stick

Remote control panel and virtual control panel



- (A) Function/Data display
- (B) Increment and Decrement buttons
- (C) Power on indicator
- (D) Power button
- (E) System Attention light
- (F) Enter button
- (G) Mode button

Physical control panel without a keystick



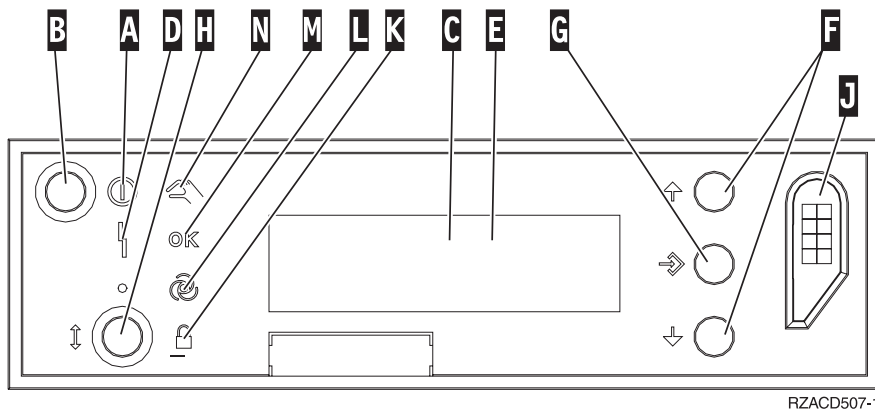
RV5B002-4

- (A) Power On Light
 - A blinking light indicates power to the unit.
 - A constant light indicates that the unit is up and is working.
- (B) Power button
- (C) Processor Activity
- (D) System Attention

- (E) Function/Data Display
- (F) Increment and Decrement buttons
- (G) Enter button

Physical control panel with a keystick

A keystick gives the operator security control over the control panel functions and control over data that is accessible from the control panel. The keystick for the electronic keylock activates the Mode button.



- (A) Power On Light
 - A blinking light indicates power to the unit.
 - A constant light indicates that the unit is up and is working.
- (B) Power button
- (C) Processor Activity
- (D) System Attention
- (E) Function/Data Display
- (F) Increment and Decrement buttons
- (G) Enter button
- (H) Mode button
- (J) Electronic Keystick Slot
- (K) Secure
- (L) Auto
- (M) Normal
- (N) Manual

Set up your control panel

Both the remote control panel and the virtual control panel are set up through an Operations Console configuration. You will need to install Operations Console and configure a remote control panel or a virtual control panel to receive control panel functions. For more specific setup instructions:


Set up your remote control panel

In order to set up the remote control panel, you will need to install Operations Console. During the configuration wizard, you will be given the option to select the remote control panel function.

Considerations for configuring a remote control panel configuration:

- You are required to have a special remote control panel cable to support your configuration. See [Installing Operations Console cables for specific requirements](#).
- A local console through dial-up support does not support the remote control panel functions. A remote console through dial-up support only supports the remote control panel functions if the local console it connects to has the cable installed and configured.

Set up your virtual control panel

The iSeries™ Access  web site has specific set up instructions for setting up your virtual control panel. You must have a local console directly attached to the server configured in order for the virtual control panel to function. In order to set up a local console directly attached to the server configuration, you will need to follow the set up instructions in Operations Console. The use of virtual control panel functions has some limitations and restrictions so be sure to look at those in the installation instructions.

See [Troubleshoot Operations Console connections](#) for information on troubleshooting the remote control panel or virtual control panel.

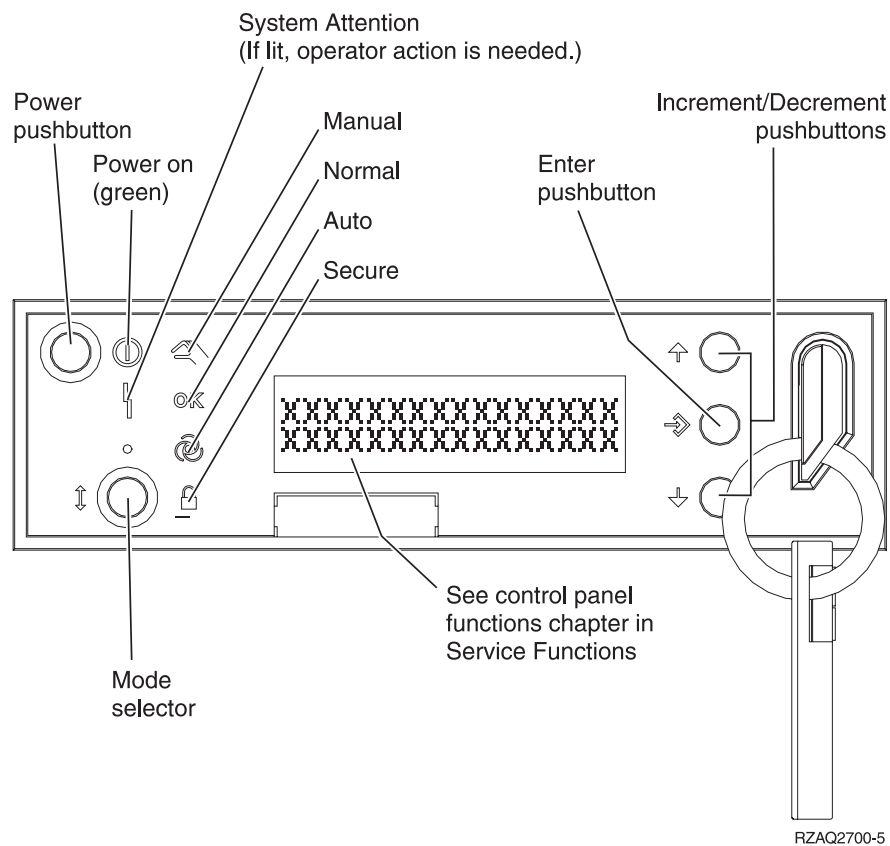
Access control panel functions

These instructions apply to the physical control panel, remote control panel, or virtual control panel. If you are using the virtual control panel or remote control panel, click the button where the instructions say press. To use the control panel, perform the following steps.

1. If your physical control panel has a joystick, insert the joystick and press the Mode button to select manual mode. You must do this step even if you are using the remote control panel or virtual control panel.
2. To select a function number, press (or click) the Increment (^) or Decrement (V) button on the control panel until the desired function number is in the display.
3. Press (or click) the Enter button.

Control panel with a joystick

Note: [Control panel buttons, lights, and indicators](#) describes the interface for the virtual control panel and remote control panel.



This graphic shows these items on the control panel:

- Power On Indicator
- Power pushbutton
- System Attention light
- Function/Data display
- Increment and Decrement buttons
- Enter pushbutton
- Mode selector
- Electronic keystick slot

Instructions and descriptions for control panel functions

This topic has detailed information that describes all of the control panel functions and how to use them. The remote control panel and virtual control panel can perform most of these functions. The physical control panel can perform all of them.

You can think of control panel functions in three categories:

Normal control panel functions.

Normal control panel functions are functions that are performed the most often. They include functions such as displaying IPL speed and forcing the server to perform an IPL. They also include functions such as forcing DST and forcing a main storage dump. These functions are 01 through 49.

Extended control panel functions.

Extended control panel functions are performed less often. They are functions that only support service representatives must perform. Extended functions are 50 through 70.

Low-level debug panel functions

These are functions 57 through 70 and must only be performed by support service representatives.

Note: The examples in the following topics show control panels with a 4-word (32 character) display. Control panels with a 1-word (8 character) display only show the first word (8 characters) of each function.

The following topics have detailed information and instructions to use the control panel functions:

- Normal control panel functions
- Extended control panel functions
- Low-level debug panel functions

Normal control panel functions

Following are instructions to use function 01 through 49. Functions 21 through 49 are available when you select manual mode.

The instructions you follow for function 01 or function 02 depends on whether your server uses a keystick. Also, the instructions for function 01 and 02 alternate between servers with a keystick and servers without a keystick.

To determine how to activate functions 01 and 02 on a control panel, do the following:

1. Does the control panel have an electronic keylock (a keystick)?

Yes Go to the next step.

No The system displays the IPL key mode (M or N only). The IPL key modes, Auto and Secure, are not supported. Follow function 01 and 02 procedures for **system without a keystick**.

2. Insert the keystick.

Press the Mode-selection button to select the IPL mode. Follow function 01 and 02 procedures for **systems with a keystick**.

Note: The function that is displayed is not activated until you press Enter on the control panel.

To select a function number, press the Increment (^) or Decrement (V) button on the control panel. To activate the function, press Enter on the control panel while the system displays the required function number.

Function 01-Display Selected IPL Type and IPL Speed (on Systems with a Keystick)

This function allows you to display the selected type and speed for the next IPL.

1. Display IPL types (A, B, C, or D).
2. Display IPL speed (F, S, SE, V=F, or V=S).

When selected, function 01 displays the currently selected IPL type and IPL speed values (where each _ represents 1 character):

The following table shows a function 01 example with a keystick.

Function 01 on systems with a keystick

Function/data	Action or description
0 1 _	Use the Increment or Decrement buttons to scroll to function 01.
0 1 _ _ A _ _ _ _ _ V = F _ _ _ _ _ _ _ _ _ _ _ _ _	Valid IPL types are A, B, C, and D. Valid IPL speed displays are F, S, SE, V=F, or V=S.
0 1 _	Use the Increment or Decrement buttons to scroll through the control panel functions.

Function 01-Display Selected IPL Type, Logical Key Mode, and IPL Speed (on Systems without a Keystick)

This function allows you to display the selected IPL type, logical key mode, and speed for the next IPL.

1. Display IPL types (A, B, C, or D).
2. Display the valid logical key modes (M or N).
3. Display IPL speed (F, S, SE, V=F, or V=S).

The following table shows a function 01 example on systems without a keystick.

Function 01 on systems without a keystick

Function/data	Action or description
0 1 _	Use the Increment or Decrement buttons to scroll to function 01.
0 1 _ _ A _ _ M _ _ V = F _ _ _ _ _ _ _ _ _ _ _ _ _	Valid IPL types are A, B, C, and D. Valid logical key modes are M and N. Valid IPL speed displays are F, S, SE, V=F, or V=S.
0 1 _	Use the Increment or Decrement buttons to scroll through the control panel functions.

Function 02 with a keystick - Select IPL Type and IPL Speed Override (on Systems with a Keystick)

Before you can use function 02, you must have the system in Manual mode. You can make selection changes to IPL types with the system powered on or off. However, to select the IPL speed override, you must power off the system.

The following table shows the sequence used to select the IPL type on iSeries™ servers that are powered on.

Function 02 selects IPL type on powered-on systems with a keystick

Function/data	Action or description
0 2 _	Use the Increment or Decrement buttons to scroll to function 02.
0 2 _ _ A < _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _	Press Enter to start function 02. The current IPL type is displayed with a pointer.

Function/data	Action or description
0 2 _ _ B < _	Use the Increment or Decrement buttons to scroll through the IPL types.
0 2 _	Press Enter to select the IPL type and exit function 02.
0 1 _	Use the Increment or Decrement buttons to scroll through the control panel functions.

The following table shows the sequence used to select the IPL type and IPL speed on iSeries 400 systems that are powered off.

Function 02 selects IPL type and IPL speed on powered-off systems with a keystick

Function/Data	Action or Description
0 2 _	Use Increment or Decrement buttons to scroll to function 02.
0 2 _ _ A < _ _ _ _ _ V _ _ _ _ _ _ _ _ _ _ _ _ _ _	Press Enter to start function 02: <ul style="list-style-type: none"> The current IPL type is displayed with pointer. The current IPL speed is displayed.
0 2 _ _ B < _ _ _ _ _ V _ _ _ _ _ _ _ _ _ _ _ _ _ _	Use the Increment or Decrement buttons to scroll through the IPL types and speeds.
0 2 _ _ B _ _ _ _ _ V _ _ < _ _ _ _ _ _ _ _ _ _ _ _	Press Enter to select the IPL type. <ul style="list-style-type: none"> The current IPL type is displayed. The current IPL speed is displayed with a pointer.
0 2 _ _ B _ _ _ _ _ S _ _ < _ _ _ _ _ _ _ _ _ _ _ _	Use the Increment or Decrement buttons to scroll through the IPL speeds.
0 2 _	Press Enter to select the IPL speed and exit function 02.
0 1 _	Use the Increment or Decrement buttons to scroll through the control panel functions.

Function 02 without a keystick-Select IPL Type, IPL Speed Override, and Logical Key Mode (on Systems without a Keystick.)

You can use function 02 in either normal mode or manual mode. With the system either powered on or off, this function allows you to select the IPL type and logical key mode. Before you can select the IPL speed override, you must power off the system.

Powered-on systems

For powered-on systems without a keystick, function 02 is used to select the IPL mode and logical key mode. The following table shows an example of the function 02 IPL type and logical key mode selection sequence for a powered-on system that does not have a keystick.

Function 02 selects IPL type and logical key mode on powered-on systems without a keystick

Function/data	Action or description
0 2 _	Use the Increment or Decrement buttons to scroll to function 02.

Function/data	Action or description
0 2 _ _ A < _ M _	Press Enter to start function 02. <ul style="list-style-type: none"> The current IPL type is displayed with a pointer. The current logical key mode is displayed.
0 2 _ _ B < _ M _	Use the Increment or Decrement buttons to scroll through the IPL types.
0 2 _ _ B _ _ M < _	Press Enter to select the IPL type.
0 2 _ _ B _ _ N < _	Use the Increment or Decrement buttons to scroll through the logical key modes.
0 2 _	Press Enter to select the logical key mode and exit function 02.
0 1 _	Use the Increment or Decrement buttons to scroll through the control panel functions.

Powered-off systems

For powered-off systems without a joystick, function 02 is used to select the IPL type, logical key mode, and IPL speed indicators. The following table shows an example of the function 02 IPL type, logical key mode, and IPL speed selection sequence for a powered-off system that does not have a joystick.

Function 02 selects IPL type, logical key mode, and IPL speed on powered-off systems without a joystick

Function/data	Action or description
0 2 _	Use the Increment or Decrement buttons to scroll to function 02.
0 2 _ _ A < _ M _ _ _ _ V _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _	Press Enter to start function 02. <ul style="list-style-type: none"> The current IPL type is displayed with a pointer. The current logical key mode is displayed. The current IPL speed is displayed.
0 2 _ _ B < _ M _ _ _ _ V _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _	Use the Increment or Decrement buttons to scroll through the IPL types.
0 2 _ _ B _ _ M < _ _ _ _ V _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _	Press Enter to select the IPL type. <ul style="list-style-type: none"> The current IPL type is displayed. The current logical key mode is displayed with a pointer. The current IPL speed is displayed.
0 2 _ _ B _ _ N < _ _ _ _ V _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _	Use the Increment or Decrement buttons to scroll through the logical key modes.
0 2 _ _ B _ _ N _ _ _ _ V _ _ < _ _ _ _ _ _ _ _ _ _ _ _ _ _ _	Press Enter to select the logical key mode. <ul style="list-style-type: none"> The current IPL type is displayed. The current logical key mode is displayed. The current IPL speed is displayed with a pointer.
0 2 _ _ B _ _ N _ _ _ _ S _ _ < _ _ _ _ _ _ _ _ _ _ _ _ _ _ _	Use the Increment or Decrement buttons to scroll through the IPL speeds.
0 2 _	Press Enter to select the IPL speed and exit function 02.

Function/data	Action or description
0 1 _	Use the Increment or Decrement buttons to scroll through the control panel functions.

Function 03-Start IPL

The system enables function 03 only when the key mode is in manual and the system power is on.

This function starts an IPL of the selected IPL type when you press the Enter button. The system will load all the Licensed Internal Code.

Attention: The system does not perform a system shutdown before the IPL. The use of this function can cause loss of data.

Function 04-Lamp Test

This function shows whether any control panel indicators are burned out and whether characters that are displayed on the control panel *Function/Data* display are valid. When you activate this test, all the control panel lights and indicators flash on and off.

The lamp test continues on the system control panel until you perform another control panel function or a power procedure. The lamp test for the expansion unit control panel is active for 25 seconds and does not flash.

Use this procedure to verify that the lights on the system control panel are working correctly. If you cannot complete these steps, contact your service provider.

1. Power on the system.
2. Press the Increment (^) or Decrement (V) buttons on the control panel to display Function 04. Press Enter on the control panel.
3. Do all of the lights and indicators on the system control panel flash on and off?

Yes Proceed to the next step.
No Need to exchange the control panel or the replaceable unit that contains the control panel function (system unit backplane (MB1) or tower card (CB1)). Contact your service provider.

4. Do all the control panel lights on the expansion unit come on?

Yes End.
No Exchange the control panel on the expansion unit.

The lights on the system control panel are working correctly.

Function 05-SPCN SRC

Function 05 displays information about power faults and provides informational reference codes during disk-unit concurrent maintenance procedures. The format for this function is as follows:

SPCN SRC formats

Formats
13, 17
Function IOP SRC

05	1RRU rrrr
----	-----------

RR = The frame number where the failing unit is installed
U = The SPCN port to which the failing unit is connected
rrrr = Unit reference code (URC)

RBAFH500-0

Function 07

Function 07 is only used during service by authorized IBM service representatives.

Function 08-Fast Power Off

Function 08 is enabled only when the key mode is in manual mode and the system power is on.

Use this function when the system is suspended and you cannot perform a power down.

The first time that you select function 08 and press Enter, the system displays an attention SRC, 11 A1xx 8008. This SRC indicates that you selected function 08. The second time that you select function 08 and press Enter, you confirm the request to power off. To perform a fast power off, see Stop the system in the Basic system operations topic.

Attention: No system shutdown is performed before the IPL. The use of this function can cause loss of data.

Attention: If the system password was changed at the most recent IPL, performing a fast power off might cause that new password information to be lost.

Functions 09 to 10-Reserved

These functions are reserved for future control panel operations.

Functions 11 to 19 - System Reference Code (SRC)

Functions 11 through 19, if enabled, represent the words of the SRC.

You must record SRC information for error reporting and contact your service provider.

Function 20-System Type, Model, Feature Code, Hardware Level, and IPL Path Description

This function displays the machine type, model, processor feature code, hardware level, and IPL path description in the following format:

```
t m m m c c c c _ _ _ _ _ _ _ _  
h h h h _ _ _ _ i i i i i i i i
```

Values for *t* indicate the machine type:

1	9401
2	9402

4	9404
6	9406

Values for *m* indicate the model:

mmm Model number (for example, 820)

Values for *c* indicate the system processor feature code:

cccc Processor feature code (for example, 23A4)

Values for *hhhh* indicate the system processor hardware level:

hhhh Processor hardware level (for example, 1025)

Values for *iiiiiii* indicate the description of the system power on or restart path:

iiiiiii The restart path description (for example, 00000001 indicates that the system was powered on by using the white button on the control panel).

You should record this information with the SRC.

Function 21-Make DST Available

This function makes DST available on the system console display. The *Use Dedicated Service Tools (DST)* display appears on the primary or alternative console.

To exit DST and return to the operating system, select the *Resume operating system display* option on the *Use Dedicated Service Tools (DST)* display.

Function 22-Dump Main Storage

This function dumps main storage and processor data to the disk.

Note: Before to pressing function 22, determine whether function 34 is available (00 shows in the panel after you select function 34). If it is available, then the system is attempting to run a main storage dump IPL. Using function 34 attempts to try the IPL again, such that the original dump is not lost. If function 34 is not enabled, (>FF shows in the panel after you select function 34), go back and start function 22.

The first time that you select function 22 and press Enter, the system displays attention SRC 11 A1xx 3022. This indicates that you selected function 22. To dump main storage and system processor data to the disk, you must select function 22 again and press Enter.

Use this function only when a main storage dump is necessary, for example, after a suspended (system hang) condition or after an operating system failure.

Attention: No system shutdown is performed before the main storage dump. The use of this function can cause loss of data.

Functions 25 and 26-Service Switches 1 and 2

In function 25, the service representative switch 1 is set. Function 25 is the first step necessary to set the service function range (50 to 99).

In function 26, the service representative switch 2 is set. Function 26 is the second step necessary to set the service function range (50 to 99).

Function 33-Reorder SPCN Addressing

This function puts the rack addresses in the correct order to show their position in the system power control network (SPCN). Use it when you have added racks to or removed them from the system.

Function 34-Retry MSD IPL

Function 34 is enabled only for main storage dump IPLs. You can use it when the system is hung during the (MSD) IPL to try the IPL again without losing the original dump information.

Extended control panel functions

The system enables service functions 50 through 70 when you select manual mode and enter function 25 (service switch 1), then function 26 (service switch 2). You use **subfunctions** with Functions 51 and 57 through 64.

Notes:

1. When a function has no data to display, FF is shown.
2. Some upper functions, 50 through 70, are not supported using the remote control panel and virtual control panel, depending on connectivity.
3. Non-supported functions for the remote control panel and virtual control panel display FF.

To enable functions 50 through 70:

1. Select function 25 and press Enter. The display reads 25 00.
2. Use the Increment button to select function 26 and press Enter. The display briefly reads 26 00. Then it usually displays 01 B when the upper functions have activated.

Functions 50 through 70 are now available.

You can disable the service functions by selecting and entering either function 25 (service switch 1) or function 26 (service switch 2).

To disable functions 50 through 70, select function 25 and press Enter. Functions 50 through 70 are then no longer available.

Using Subfunctions

To work with subfunctions, do the following:

1. Use the Increment or Decrement button to select the appropriate function and press Enter. The function number appears with asterisks (**); for example, 57**. The two asterisks indicate that subfunctions are available.
2. Press the Increment button. The first subfunction number appears; for example, 5700.
3. As the subfunction number is displayed, press Enter. The system displays data associated with the subfunction number.
4. Press the Increment button. The next subfunction number appears; for example, 5701.
5. As the subfunction number is displayed, press Enter. The system displays the data associated with the new subfunction number.

6. Repeat these steps to gather all the data that is associated with the subfunction.
7. Use the Increment or Decrement button to return to the function display with asterisks; for example 57**.
8. Press Enter to exit the subfunctions.

Function 50-System Processor Stop

This function stops the system processor.

Attention: This function might cause the system to end abnormally. Use only when directed by your next level of support.

Function 51-System Processor Status

This function displays the following values:

- Next instruction address (NIA)
- Current task dispatching element (TDE) address

The data can be displayed 8 digits at a time. Select and enter a subfunction number to display each word of data from 00 to 0F.

The following table is an example of a subfunction data display that shows NIA and TDE information.

Subfunction data display example

Function	Subfunction	Data Display
51	**	Subfunction mode entered
51	00, 01	NIA (8 bytes)
51	02, 03	Current TDE (8 bytes)

Function 52-System Processor Start

This function starts the system processor (after it has stopped).

Function 53- Repeat GARD

This function displays the following values:

- Clear memory, processor, L3 repeat GARD
- Enable memory, processor, L3 repeat GARD
- Disable memory, processor, L3 repeat GARD
- View enable/disable status

This function permanently de-configures an intermittently failing processor, during the IPL following the failure. This is performed in case the IPL diagnostics cannot detect the failure and automatically de-configure it. The failing processor must be replaced or the Repeat GARD function must be cleared before that processor can be used again.

Attention: This function can cause a good processor to be permanently de-configured following a power failure. Use only when directed by your next level of support.

The following table is an example of a subfunction data display that shows Repeat GARD information.

Subfunction data display example

Function	Subfunction	Data Display
53	**	Subfunction mode entered
53	00	Clear memory, processor, L3 repeat GARD
53	01	Enable memory, processor, L3 Repeat GARD
53	02	Disable memory, processor, L3 Repeat GARD
53	03	View enable/disable status (E=Enabled, D=Disabled)

Low-level debug panel functions 57 through 70

You can enable these functions by selecting manual mode and selecting Functions 25 and 26. The following is a list of all the low-level debug panel functions and a description of each:

Function 57 - Display Service Processor Diagnostic Data Area Addresses. These addresses can be used to display debug data in function 62.

Function 58 - Setting First Character of the Base Address for the Function 62 Display.

Function 59 - Setting Second Character of the Base Address for the Function 62 Display.

Function 60 - Setting Third Character of Address for Function 62 Display.

Function 61 - Setting Fourth Character of Address for Function 62 Display.

Function 62 - Display Service Processor Storage. This function displays service processor storage starting at the address that has been set with functions 58 through 61.

Function 63 - System Status SRC Trace. The system status SRC trace is a copy of the last 25 status SRCs (those that are typically associated with the IPL sequence or the power-off sequence). Enter a subfunction between hexadecimal 00 and 18 to look at the status SRCs in sequential order. The most recent SRC (the last status SRC) appears at subfunction hexadecimal 18.

Function 64-Diagnostic Status SRC Trace. The diagnostic status SRC trace is a copy of the last 25 status SRCs (those that are typically associated with the service processor function of problem analysis and main storage dump). Enter a subfunction between hexadecimal 00 and 18 to look at the status SRCs in sequence. You can see the most recent SRC (the last status SRC) at subfunction hexadecimal 18 and the extended SRC words for this SRC at subfunctions 19 through 1A.

Function 65-Deactivate Remote Service. Use this function to deactivate a remote service session or Operations Console. This function releases the communications port that was in use for a remote service session or Operations Console.

Function 66 - Activate Remote Service. Use this function to activate a remote service session or Operations Console. This function activates the communications port that is used by a remote service session or Operations Console.

Function 67 - Disk Unit IOP Reset/Reload. Function 67 is not available for all system types. Use this function to initiate an IOP dump and a disk unit IOP reset/reload. The function is enabled only when specific SRCs are displayed on the control panel and the associated IOP supports a reset/reload function.

Function 68 - Power off Disk Unit IOP/IOA Power Domain. Function 68 is enabled only by specific disk-unit system reference codes (SRCs) such as disk-unit attention SRCs.

Function 69 - Power on Disk Unit IOP/IOA Power Domain. Function 69 is enabled when the power domain is powered off.

Function 70 - Dump Service Processor Control Storage. This function saves the contents of the service processor control storage into nonvolatile storage for potential use from an error log.

Use remote control panel APIs

The remote control panel function of Operations Console provides a set of APIs (application program interfaces) that system administrators can use to control the server through programs. The APIs allow custom programs to interface with the system control panel and perform many common system control panel functions.

You can only use these APIs if you are using the remote control panel that is connected with the serial console cable. You cannot use these APIs with the virtual control panel or remote control panel connected with a parallel cable.

The interface to the remote control panel APIs is established through a standard TCP/IP socket connection. The socket connection can be implemented in any programming language that supports sockets on the Windows platform (Java™, C/C++, Visual Basic to name a few).

To use the remote control panel APIs you need to follow these steps:

1. Start Operations Console with the remote control panel function.
2. From a custom program open a socket connection to port 2150 on the same PC.
3. Send a supported command from the set of commands that are described below.
4. Receive the byte stream that is sent back on the same socket connection.
5. Repeat steps 3 and 4 as necessary on the same socket connection.
6. Close the socket connection when done.

Your program will need to interpret the byte stream sent back from the server. The returned byte stream consists of a predefined format which is the same for all commands. The byte stream will be at least 4 bytes long. Some commands will return additional bytes.

The first two bytes (0 and 1) will return the command status, typically successful or unsuccessful. The next two bytes (2 and 3) will be a 16-bit number N, which tells how many additional bytes will follow these first 4 bytes. If N is nonzero, then there will be additional information in bytes 4 through 4 + N.. This information will be additional data related to the command, such as TRUE or FALSE.

Note: If the command sent is not one of the command strings defined below, then the return code in bytes 0 and 1 of the return value will be 32 (0x20). This means Command not Supported.

Your programs can perform the following control panel functions by using the following APIs.

System power and test APIs:

- Power on the system (PowerOn)
- Perform panel lamp test (DoLampTest)
- Clear panel lamp test (ClearLampTest)

- Power off the system (PowerOff)

IPL-related APIs:

- Set IPL mode to manual (SetIPLModeManual)
- Set IPL mode to normal (SetIPLModeNormal)
- Set IPL mode to auto (SetIPLModeAuto)
- Set IPL mode to secure (SetIPLModeSecure)
- Set IPL type to A (SetIPLTypeA)
- Set IPL type to B (SetIPLTypeB)
- Set IPL type to C (SetIPLTypeC)
- Set IPL type to D (SetIPLTypeD)
- Start an IPL (Start IPL)
- Set IPL speed to fast (SetIPLSpeedFast)
- Set IPL speed to slow (SetIPLSpeedSlow)
- Set IPL speed to system default (SetIPLSpeedDefault)

Other system function APIs:

- Start dedicated service tools (DST) on the primary or alternative console (StartDST)
- Start a main storage dump (StartMSD)
- Disable continuously powered main storage (CPM) (DisableCMP)

APIs that question system status:

- Is CPM present? (GetCPMPresent)
- Is CPM enabled? GetCPMEnabled
- Is the key inserted? (GetKeyInserted)
- Is the power on? (GetPowerOn)
- Is the attention light lit? (GetAttentionLight)
- Is system powered control network (SPCN) present? (GetSPCNPresent)
- Get the IPL mode (GetIPLMode)
- Get the IPL type (GetIPLType)
- Get the IPL speed (GetIPLSpeed)
- Get type information and model information (GetType&Model)
- Get the SPCN SRC if available (GetSPCNSRC)
- Get all SRCs 1 - 9 if available (GetSRCs)

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