
1 Features

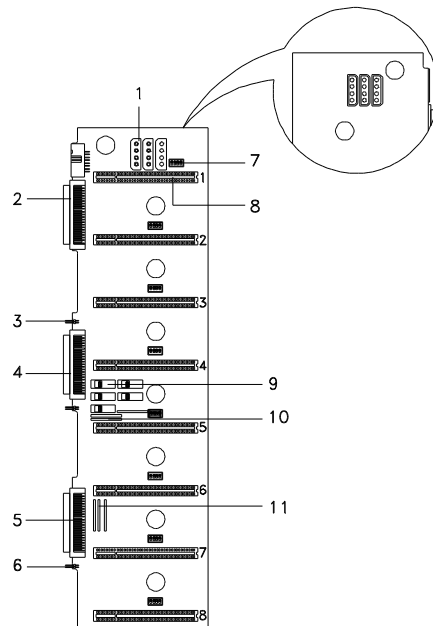
The BP-W8 wide SCSI backplane subsystem consists of backplane board and drive trays that support both narrow and wide SCSI hard disk drives. The BP-W8 backplane is specifically designed for a tower housing (IDUR or IDUN) that accommodates up to eight SCSI drives.

The backplane subsystem has the following major features:

- “Hot-swap” feature that allows replacement of a defective hard drive even while the system is in full operation. This feature requires a RAID controller board and RAID drivers.
- Two LEDs on the SCSI drive front panel to indicate power and drive failure
- Supports mixed configuration of both wide (16-bit) and narrow (8-bit) SCSI drives in a single channel
- Allows ‘split’ and ‘combine’ SCSI-channel configurations
- SCSI ID strapping that allows wide SCSI HDD ID configuration through the backplane switches instead of configuring the individual drive IDs
- Supports drive trays with either wide SCSI or narrow SCSI connector
- Fixed 2.85-volt and controlled impedance of 90 ohms for more stable hard disk performance (for ultra SCSI, the impedance is 90 ohms $\pm 10\%$)
- Supports other external SCSI devices through the external SCSI connector

2 Major Components

2.1 Backplane Board



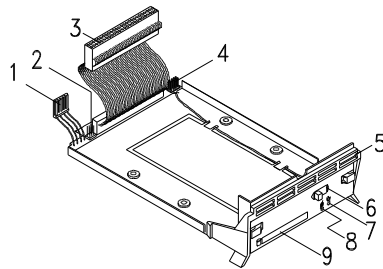
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|---|--------------------------|----|--------------------------------|
| 1 | Power connectors | 7 | SCSI ID switch |
| 2 | SCSI channel 1 (input) | 8 | SCSI drive slot |
| 3 | HDD ID/power jumper (J3) | 9 | Channel configuration switches |
| 4 | SCSI channel 2 (input) | 10 | Terminators RA4, RA5, RA6 |
| 5 | SCSI channel 3 (output) | 11 | Terminators RA1, RA2, RA3 |
| 6 | HDD ID/power jumper (J4) | | |

Figure 1 Backplane Board Components

2.2 Hot-swap SCSI Drive Tray

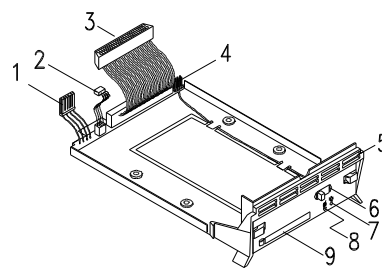
The backplane subsystem comes with either a 50-pin narrow SCSI or 68-pin wide SCSI drive tray.

50-pin Narrow SCSI Drive Tray



- 1 Power connector
- 2 6-pin ID cable connector (J2)¹
- 3 50-pin narrow SCSI connector
- 4 Power control connector (J4)
- 5 Drive tray handle
- 6 Power switch
- 7 Power LED
- 8 Faulty drive LED
- 9 Drive activity LED window

68-pin Wide SCSI Drive Tray



- 1 Power connector
- 2 8/12-pin wide SCSI ID cable²
- 3 68-pin wide SCSI connector
- 4 Power control connector (J4)
- 5 Drive tray handle
- 6 Power switch
- 7 Power LED
- 8 Faulty drive LED
- 9 Drive activity LED window

Figure 2 Hot-swap SCSI Drive Tray Components

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- ¹ The 6-pin narrow SCSI ID cable DOES NOT come with the package.
 - ² The 8-pin connector connects to J2 on the drive tray while the 12-pin connector on the other end connects to the SCSI hard disk.

3 Jumper Settings

The backplane has two jumpers, J3 and J4, that allow you to select the terminator power source. J3 supports the four upper drive slots (slots 1, 2, 3, and 4) on the backplane. J4 supports the four lower drive slots (slots 5, 6, 7, and 8).

Figure 3 shows the settings for jumpers J3 and J4.

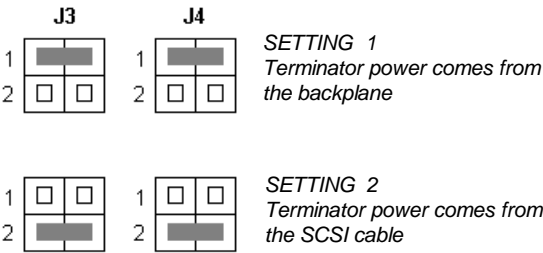


Figure 3 Jumper Settings for 4-pin J3 and J4



You may also set J3 to setting 1 and J4 to setting 2, or vice versa.

For single-channel configuration, settings 1 and 2 for J3 are disabled since terminators RA4, RA5, and RA6 are removed.

Some versions of the backplane board come with a 6-pin J3 and J4 jumpers. The two additional pins are for setting more hard disk IDs. Note that the hard disk ID switches in these versions have only three on/off switches. See section 4 for details on hard disk ID settings.

Figure 4 shows the settings for backplane boards with a 6-pin J3 and J4 jumpers.

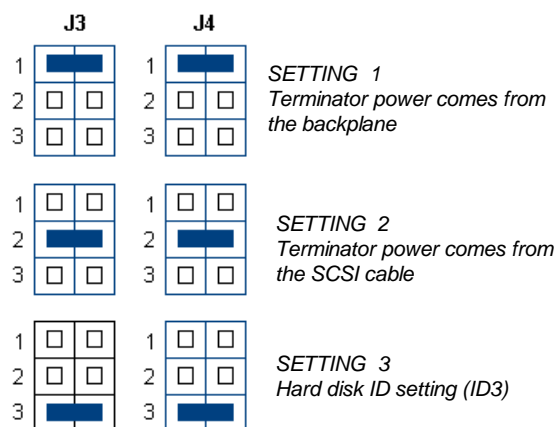


Figure 4 Jumper Settings for 6-pin J3 and J4

4 Hard Disk ID Setting Options

The wide SCSI hot-swap drive tray includes an 8/12-pin ID cable (see Figure 2). This cable allows you to define the hard disk ID using the ID switches on the backplane board.

The narrow SCSI drive tray comes with a 6-pin ID connector but no cable since narrow SCSI drive specifications vary depending on the brand. The ID setting feature on the backplane board does not work if you do not connect an ID cable.



If you are using a narrow SCSI drive tray and you want to use this feature, ask your vendor for information on the ID cable that corresponds to your SCSI hard disk drive.

Figure 5 shows the pin definition of ID cable connector J2 on the drive tray to help you connect the cable properly. Make sure to match pin 1 on the cable with pin 1 on J2.

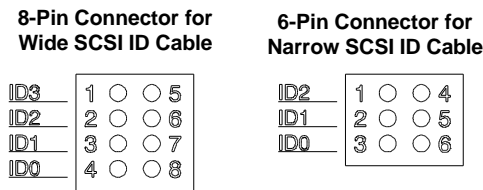


Figure 5 ID Cable Connector Pin Definitions

Figure 6 shows the ID switch default settings with the corresponding hard disk IDs for backplane boards with 4-pin J3 and J4 jumpers, and 4-on/off ID switches.

















ID Switch Setting	Hard Disk ID	Hard Disk ID	ID Switch Setting
ON 	0	8	
ON 	1	9	
ON 	2	10	
ON 	3	11	
ON 	4	12	
ON 	5	13	
ON 	6	14	
ON 	7	15	

Figure 6 *Hard Disk ID Switch Settings
(for backplane versions with 4-on/off switches)*

Figure 7 shows the ID switch default settings for backplane boards with 6-pin J3 and J4 jumpers, and 3-on/off ID switches.








ID Switch Setting	J3/J4 Setting 3 Open	J3/J4 Setting 3 Closed
ON 	0	8
ON 	1	9
ON 	2	10
ON 	3	11
ON 	4	12
ON 	5	13
ON 	6	14
ON 	7	15

Figure 7 *Hard Disk ID Switch Settings
(for backplane versions with 3-on/off switches)*



Normally, hard disk ID7 is reserved for the SCSI controller board.

5 SCSI Channel Configurations

You may configure the backplane as single-channel (combine) or dual-channel (split) controller.

5.1 Single-Channel Configuration

In a single-channel configuration, channel 1 supports the SCSI devices plugged into slots 1 to 8. Set the channel configuration switches to “Combine” and set the terminators accordingly (Table 1) to achieve a single-channel configuration. See Figure 1 for the locations of the switches and terminators.

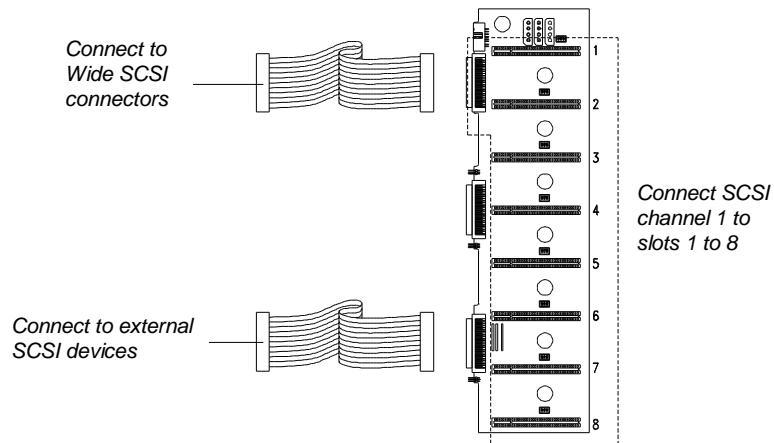


Figure 8 Single-Channel Configuration

Table 1 lists the terminator settings for the single-channel configuration.

Table 1 *Terminator Settings for Single-Channel Configuration*

Terminator	Setting
With External Device	
RA1, RA2, RA3 RA4, RA5, RA6	Removed Removed (see note)
Without External Device	
RA1, RA2, RA3 RA4, RA5, RA6	Installed Removed



*For configurations with external SCSI device,
terminate the signal at the external device.*

5.2 Dual-Channel Configuration

In a dual-channel configuration, channel 1 supports the devices in slots 1 to 4, and channel 2 supports the devices in slots 5 to 8. Set the channel configuration switches to “Split” and set the terminators accordingly (Table 2) to achieve a dual-channel configuration. See Figure 1 for the locations of the switches and terminators.

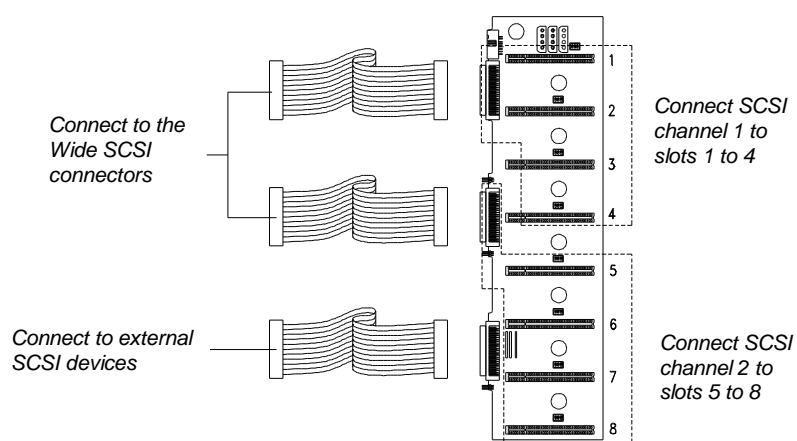


Figure 9 Dual-Channel Configuration

Table 2 lists the terminator settings for the dual-channel configuration.

Table 2 Terminator Settings for Dual-Channel Configuration

Terminator	Setting
With External Device	
RA1, RA2, RA3	Removed
RA4, RA5, RA6	Installed
Without External Device	
RA1, RA2, RA3	Installed
RA4, RA5, RA6	Installed

6 Installation

6.1 Installing the Backplane Board

Follow these steps to install the backplane into a tower housing:

1. Set the terminator switches on the backplane according to your planned SCSI channel configuration. Refer to section 5 for the channel configurations.
2. Define the drive IDs by setting the SCSI ID switches on the backplane for wide SCSI, or on the individual drives for narrow SCSI. See section 4 for information on setting the SCSI ID switches.
3. Position the backplane to the front of the housing and push it back until it fits into place.
4. Secure the backplane with eight screws.

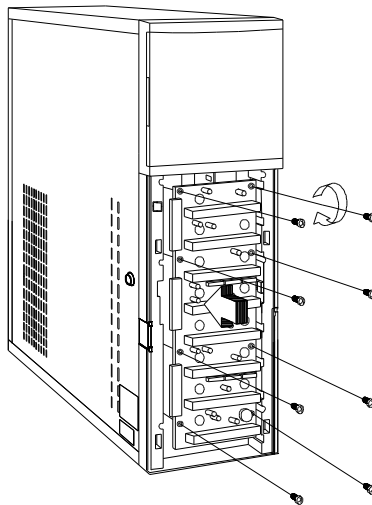


Figure 10 *Installing the Backplane Board*

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5. Connect one end of the SCSI cable to the SCSI connector on the system board and the other end to the channel on the backplane.

If your system board does not have SCSI connectors, you can install a SCSI controller board or a RAID controller board to accommodate the SCSI cables. In this case, connect the cable from the backplane to the corresponding channels on the controller board. Figure 11 shows the cabling.

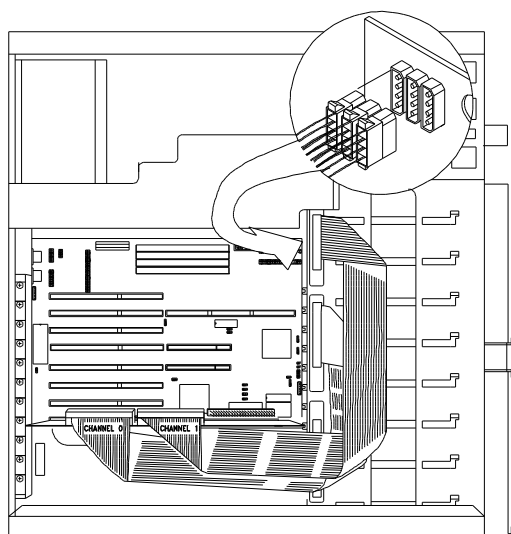


Figure 11 *Connecting the SCSI Cables*

6. Connect three power cables into the connectors at the back of the backplane board.

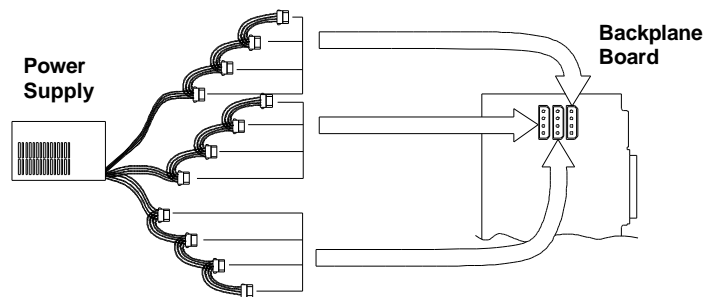


Figure 12 Power Cable Connections



Use connectors from at least two different power supply cables to prevent power overloading. Each power cable supports only up to four devices.

6.2 Installing a SCSI Hard Disk

Follow these steps to install a SCSI hard disk on a hot-swap drive tray:

1. Remove the terminators on each SCSI drive that you will install.
2. Position the drive over the hot-swap tray and connect the SCSI cable, drive ID cable (supplied for wide SCSI only), and power cable.

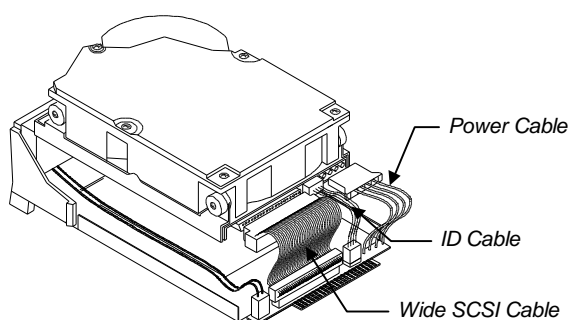


Figure 13 Connecting the Drive Cables (wide SCSI drive)

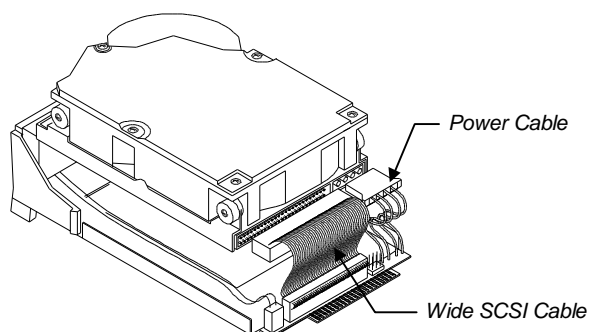


Figure 14 Connecting the Drive Cables (narrow SCSI drive)

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- Secure the drive to the tray using four screws.

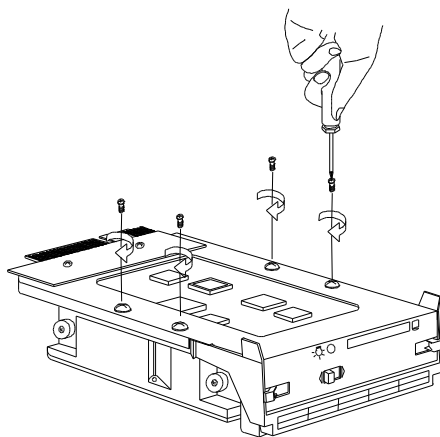


Figure 15 Securing a Drive to the Hot-swap Tray

- Install the drive tray into the backplane board. See Figure 16 on the following page.



Make sure that the power switch on the drive tray is set to the Unlock/Power Off position before you plug it to the board.

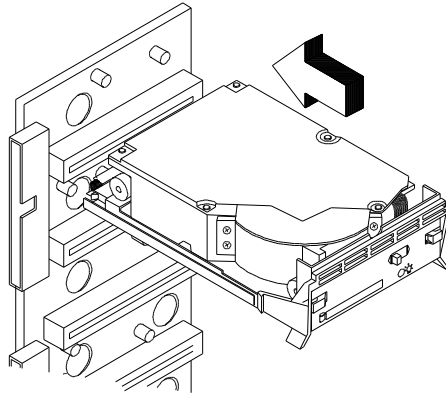


Figure 16 *Installing the Hot-swap Drive Tray*

5. Slide the power switch of the drive tray to the Lock/Power On position. The power LED lights up.

7 Using the Hot-swap Feature

The backplane board supports a hot-swap feature that allows you to change defective drives even while the system is running.



The hot-swap feature requires the RAID controller board and RAID drivers.

The faulty drive indicator¹ on the hot-swap drive tray lights up whenever the drive that it carries becomes bad or defective. When this happens, you can replace the defective drive without shutting off the system or even quitting any running application by utilizing the hot-swap feature.

Follow these steps to use the hot-swap feature:

1. Set the hot-swap drive tray power switch to the Unlock/Power Off position.
2. Pull out the drive tray.
3. Take out the defective drive from the tray.
4. Configure the new hard disk. If you are not using an ID cable, make sure that the new drive ID is the same as the old drive ID. If you are using an ID cable, make sure that you connect the cable properly.
5. Install the new disk according to the installation steps in section 5.



Make sure that the power switch on the drive tray is set to the Unlock/Power Off position before you plug it to the backplane board.

¹ This feature requires a software that coordinates the system signals prompting the indicator to light up.

