Network System Business Division

Backgrounder

Hot Pluggable SCSI Backplane Subsystem for IDUN housing (BP-W8)

Acer. has introduced an innovative Hot Plug Wide SCSI Backplane subsystem to support its customers as the Small Computer System Interface (SCSI) technology migrates from Fast SCSI (10 MB/s) to Fast & Wide SCSI (20 MB/s)

BACKGROUND

Hot Plug Backplane

For the server class computer systems, easy replacement and fault resilient/tolerant features of the storage system are essential to customers. In order to implement this feature, we need not only a SCSI/RAID controller but also a backplane subsystem to support it.

The backplane subsystem is an interface between the SCSI hard drives and the SCSI/RAID controllers. It connects SCSI hard drives to SCSI/RAID controllers in the computer system.

The connectors on the backplane board and the trays that hold the SCSI hard drives are designed to make the trays easily added or removed to the SCSI bus without powering down the system and quieting the SCSI bus.

Fast-Wide SCSI-2

SCSI is an I/O bus widely used today in the computer industry to attach peripheral devices such as hard drives, tape drives, and CD-ROM drives to the computer's central processor.

When SCSI was first introduced, it was an 8-bit parallel bus, transferring a single byte of data with each bus cycle. When operating in synchronous mode (the fastest mode possible) data phase transfers could run at a maximum rate of 5 MB/s. With the introduction of Fast-SCSI-2, the bus speed is doubled up and the data transfer rate is increased to 10 MB/s.

Fast-Wide SCSI-2 was developed to double the transfer rate one more time. This is accomplished by "widening" the parallel bus to 16 bits and using the same bus speed as Fast-SCSI-2. The result is that Fast-Wide SCSI-2 has a maximum transfer rate of 20 MB/s.

INTRODUCTION

The IDUN SCSI Backplane subsystem supports Fast-Wide and Narrow SCSI hard drives to be connected to the SCSI/RAID controllers on the computer system that resides in the IDUN (tower) housing.

The Backplane subsystem includes

One BP-W8 backplane board:
The SCSI backplane board with eight edge-style connectors supports both Fast SCSI and Fast & Wide SCSI controllers (Fig. 1)

Trays supporting narrow SCSI hard drives:
Each hard drive tray with a 50-pin connector connects a narrow SCSI hard drive to the BP-W8 backplane board.

Trays supporting wide SCSI hard drives:
Each hard drive tray with a 68-pin connector connects a wide SCSI hard drive to the BP-W8 backplane board.
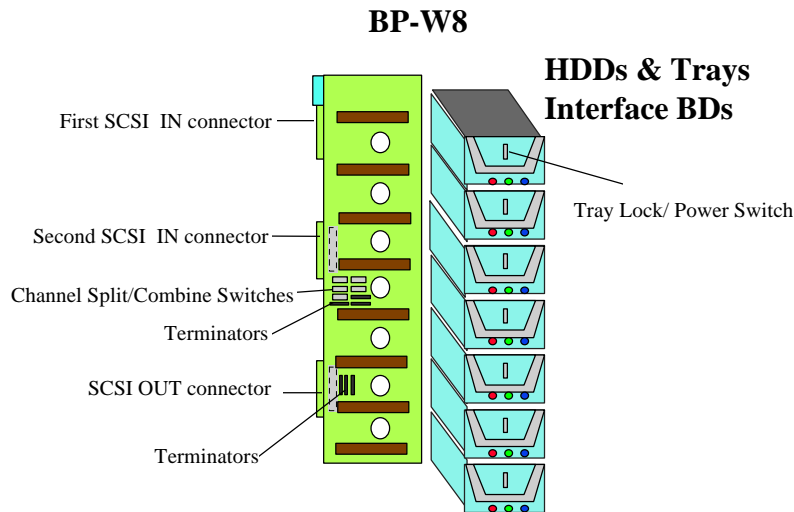
IDUN Backplane Subsystem

BP-W8

HDDs & Trays
Interface BDs

First SCSI IN connector

Tray Lock/ Power Switch

Second SCSI IN connector

Channel Split/Combine Switches

Terminators

SCSI OUT connector

Terminators

Figure 1. IDUN Backplane Subsystem

KEY FEATURES

Hot-swap Features for Fast SCSI and Fast & Wide SCSI Hard drives

BP-W8 will accomodate both fast & wide (16 bit) and fast & narrow (8 bit) SCSI hard disk drives in hot pluggable trays. The connectors on BP-W8 and the trays were designed to allow the HDDs/trays to be plugged in and removed from the SCSI bus without powering down the system, and without quieting the SCSI bus. Wide and narrow devices can be mixed on the same channel with a single connector supporting either type of disk.

Two types of interface board are installed at the inner end of the trays for connecting the hard drives to the BP-W8 --- IFN interface board for narrow SCSI drives, and IFW for wide SCSI drives.

Flexible design to support up to two channels in a single backplane

BP-W8 has two 68-pin SCSI input connectors and supports up to two SCSI channels . BP-W8 also has an external SCSI out connector for expandability. The flexible design allows users to utilize either one SCSI channel or two SCSI channels at a time as long as the devices attached to the SCSI channel conform to the SCSI specification (7 for Fast-SCSI-2 and 15 for Fast-Wide SCSI-2 devices).

If the backplane is configured to support one SCSI channels, the top connector is used. If the backplane is configured to support two SCSI channels, the top connector will support top four SCSI bays, and the lower SCSI connector will support the bottom four SCSI bays.

Flexible Expandability

With the external SCSI output connector on BP-W8, user can easily connect external SCSI devices to the SCSI bus.

Since each BP-W8 can be configured into either one or two channels by setting the split/combine switches, users can configure the Backplane subsystem from single channel with 8 devices to two channels with 4 devices in each.

This design provides great expandability and flexibility to end users.

Active terminators

The Backplane subsystem will be more reliable and consume less power by utilizing the active terminators.

TECHNICAL SPECIFICATIONS

SCSI Connectors

The three connectors on the BP-W8 backplane, and the connector on the IFW interface card in the hard drive tray are 68-pin P type wide SCSI connectors. The connector on the IFN interface card is 50-pin SCSI connector.

Terminators

Two sets of active SCSI terminators are provided on the BP-W8 backplane one for each channel. If users would like to configure the Backplane into single channel the terminators located between the fourth and fifth edge connectors must be removed.

SCSI Hard Drive ID Setting

Since the SCSI hard drives is to be configured on the BP-W8 backplane, one 3 bits ID signals switches (indicating SCSI device ID 0 to 7) is installed for each slot on the backplane board. The default setting is ID0 for top slot and ID7 for the bottom one.

Hard Drive Power Connector

Power is supplied to the HDD through a standard 4-pin power connector on the interface card.

Power Control

The +12 and +5 voltages are controlled by FET with one micro switch to protect the SCSI bus signals and avoid glitch.

Impedance

The controlled range for impedance of BP-W8 backplane is 80 -100 OHM.