invent

hp SCSI terminators

performance

SCSI (Small Computer System Interface) has a long and proven history in the computing industry. Since SCSI became an industry standard, the interface has evolved to keep pace with the demands of the most sophisticated systems. The data path has been widened and transfer speeds have been increased to keep pace with system requirements. SCSI is preferred were performance is critical. Some of the benefits of SCSI include:

- speed: up to speeds of 160 Mb/second, will expand to 320 Mb/second and to 640 Mb/second in the future
- backward and forward compatible: compatible with previous generation devices and can be seamlessly integrated into new SCSI environments
- interoperable: capable of supporting mixed speed, cross-generational implementations
- distance: support for distances up to 25 feet depending on the mode of operation
- reliable: the most implemented and proven standards
- plug and play: easy to use

All SCSI signal lines must be terminated at both ends of the bus. If the SCSI chain is not properly terminated, the electrical signals being sent down a chain bounce back or reflect into the incoming data stream. The reflection of signals could cause noise and bus failure. A terminator tells the signals where the end of the chain exists.

In most cases, a terminator must be attached to the host bus adapter card in a server and the last peripheral on the bus. Devices in the middle of the bus are not terminated. Not all devices require external termination since some devices have automated self-termination.

In-line terminated cables are used in ServiceGuard and High Availability MC certified systems. These cables allow servers to be serviced without inhibiting the remainder of the SCSI bus. For information on in-line terminated cables, see the HP In-Line Terminated Cable datasheet. Check to see if there is in-line terminated cables or the device being ordered has auto termination before adding and external terminator to your order.

For single-ended devices, there is active and passive termination. Active termination is a more stable form of terminating SCSI. Using a voltage regulator in a active terminator controls the impedance at the end of the bus.

HP offers SCSI terminators supporting various speeds and connectors styles. HP supports from SCSI 1 through Ultra SCSI 3 and supports from 50 pin Low Density Bail Locks to 68 pin Very High Density Thumb screw connectors. HP terminators are:

- designed and tested to specifically connect your Hewlett-Packard computing devices, insuring 100% compatibility.
- designed to stringent specifications to insure low insertion loss and return loss.

ordering considerations

There are a couple of items that have to be taken into consideration when ordering a terminator.

Connector style: Check the connector type on the device where you will be placing the terminator. Make sure that the connector style on the terminator and the device match.

Mode of operation: Since its introduction in the 1980's, the speed and amount of data that can be transferred over a SCSI data cable has also evolved. Verify that the Mode of Operation for the device and the terminator match. The most common Modes of operation are listed below. Multimode terminators can operate in either single-ended (SE) or low voltage differential (LVD).

common acronym	bus width	mode of operation	speed	max clock speed	SCSI architecture	max transfer rate	max bus length	max number of devices
NSE	Narrow	SE	Normal	5 MHz	SCSI-1	5 MB/s	6	8
NSE or FSE	Narrow	SE	Fast	10 MHz	SCSI-2	10 MB/s	3	8
FND	Narrow	HVD	Fast	10 MHz	SCSI-2	10 MB/s	25	8
WSE	Wide	SE	Fast	10 MHz	SCSI-2	20 MB/s	3	16
FWD	Wide	HVD	Fast	10 MHz	SCSI-2	20 MB/s	25	16
UWSE	Wide	SE	Ultra	20 MHz	SCSI-2	40 MB/s	1.5/3	8/4
UWD	Wide	HVD	Ultra	20 MHz	SCSI-2	40 MB/s	25	16
U2D	Wide	LVD	Ultra2	20 MHz	SCSI-2	80 MB/s	12	8
U2WD	Wide	LVD	Ultra2	40 MHz	SCSI-2	80 MB/s	12	16
U3	Wide	LVD	Ultra3	80 MHz	SCSI-3	160 MB/s	12	16

Note: SE=single-ended, HVD=high voltage differential, LVD=low voltage differential, NSE=narrow single-ended, FSE=fast single-ended, FND=fast narrow differential, WSE=wide single-ended

quality & compatibility

- HP tests all terminators to meet and exceed industry standards specifications.
- meets ANSI/EIA/TIA standards
- features thumbscrews for secure connections
- multimode terminators have the ability to be used with either SE or LVD devices.
- offer LVD, SE and HVD mode of operation terminators

hp advantage

- guaranteed compatibility with your HP computing equipment
  - reduce down time
- maximize investment by utilizing existing backbone infrastructure
- price performance
  - low cost solutions

guaranteed compatibility, reliability, and performance

products

product number	technology	connector	gender
K2291 SCSI Terminator	SE	LDBL50	M
C2904A SCSI Terminator	SE	HDTS50	M
C2905A SCSI Terminator	HVD	HDTS68	M
C2972A SCSI Terminator	Active SE	HDTS68	M
C2364A SCSI Terminator	SE or LVD	HDTS68	M
C7528A SCSI Terminator	HVD	HDTS68	M
C2370A SCSI Terminator	SE or LVD	VHDTS698	M

Connector style Terms:
LD = low density, HD = high density, VHD = very high density, BL = bail lock, TS = thumb screw, M = male,
F = female, 50 = 50 pin, 68 = 68 pin, SE = single ended, HVD = high voltage differential, LVD = low voltage differential

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