Power Mac 7500,7600,8500,9500 Series: SCSI-2 Compliance (2/97)

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TOPIC ---

This article contains the answers to questions about the SCSI (Small Computer Systems Interface) buses in the Power Macintosh 7300, 7500, 7600, 8500, 8600, 9500, and 9600 series computers.

Questions Answered in this Article:
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1) How many SCSI buses do the Power Macintosh 7300, 7500, 7600, 8500, 8600, 9500, and 9600 series computers have?

2) What are the speeds of the SCSI buses?

3) How many SCSI devices can I attach to these computers internally?

4) How many SCSI devices can I attach to these computers externally?

5) Does one SCSI bus have precedence over the other?

6) Is the external SCSI port SCSI-2 or Fast SCSI-2?

7) Is our MESH Fast SCSI controller fully compliant with the SCSI-2 'Fast' specification as defined in the SCSI-2 spec?

8) Since the Power Macintosh 7300, 7500, 7600, 8500, 8600, 9500, and 9600 series computers are SCSI-2 compliant will we see better SCSI performance?

9) Did Apple implement SCSI disconnect/reconnect?

10) Will third-party manufacturers be able to optimize their equipment to take advantage of Fast SCSI-2?

11) If I remove the internal Apple hard drive, is the internal SCSI bus terminated or not?

12) Are the internal hard drives included with the Power Macintosh 7300, 7500, 7600, 8500, 8600, 9500, and 9600 series computers Fast SCSI devices?

13) What is meant by "dual-channel asynchronous SCSI"? How does this affect the internal SCSI termination on these computers?

DISCUSSION ----------

1) Question: How many SCSI buses do the Power Macintosh 7300, 7500, 7600, 8500, 8600, 9500, and 9600 series computers have?

Answer: There are two SCSI buses on the Power Macintosh Power Macintosh 7300, 7500, 7600, 8500, 8600, 9500, and 9600 series computers. There is an internal bus and an external bus.

2) Question: What are the speeds of the SCSI buses?

Answer: The internal bus has a maximum transfer rate of 10 MB/sec. The external bus has a maximum transfer rate of 5 MB/sec.

3) Question: How many SCSI devices can I attach to these computers internally?

Answer: There is a connector for the external bus inside the computer on the logic board, however, it is generally easier to simply hook internal devices to the internal bus.

There are 4 drive bays inside the Power Macintosh 7300, 7500, 7600, 8500, 8600, 9500, and 9600 series computers but one is used by the floppy drive. If your computer has a hard drive and CD-ROM drive you will have room for one more internal SCSI device for a maximum of three (3) on the internal SCSI chain due to physical constraints.

4) Question: How many SCSI devices can I attach to these computers externally?

Answer: The external bus can have up to 7 SCSI devices attached to it. Make sure that you do not exceed the maximum cable length (6 meters or 20 feet) including the cables inside the devices. Additionally all SCSI devices must be powered on when your Macintosh is on.

5) Question: Does one SCSI bus have precedence over the other?

Answer: Because you can have two SCSI devices at the same SCSI address (one on each bus) the internal bus (all addresses) is set up to take precedence over the external bus. For startup drives the setting in the Startup Disk control panel is used.

6) Question: Is the external SCSI port SCSI-2 or Fast SCSI-2?

Answer: The external SCSI channel on the Power Macintosh 7300, 7500, 7600, 8500, 8600, 9500, and 9600 series computers is SCSI-2 compliant but does not support Fast SCSI-2. The external SCSI channel supports the SCSI-2 standard at 5 MB per

second. The internal SCSI channel supports the Fast SCSI-2 standard at 10 MB per second for a hard disk array. Both internal and external buses are 8-bit only, not wide.

7) Question: Is the MESH Fast SCSI controller fully compliant with the SCSI-2 'Fast' specification as defined in the SCSI-2 spec?

Answer: The Fast mode is completely SCSI-2 compliant.

8) Question: Since the Power Macintosh 7300, 7500, 7600, 8500, 8600, 9500, and 9600 series computers are SCSI-2 compliant will we see better SCSI performance?

Answer: By itself, SCSI-2 does not mean added performance, although, generally speaking SCSI-2 products are newer and tend to be faster just because they take advantage of the latest software and hardware advances. Optional SCSI-2 modes like 'FAST' and 'WIDE' offer improved SCSI performance.

9) Question: Did Apple implement SCSI disconnect/reconnect?

Answer: Yes, Apple implemented disconnect/reconnect per the SCSI-2 standard.

10) Question: Will third-party manufacturers be able to optimize their equipment to take advantage of Fast SCSI-2?

Answer: Apple cannot comment on the compatibility of third-party products. Please check with the manufacturer of your third-party products for compatibility with the Fast SCSI-2 standard on the internal SCSI channel of these Power Macintosh computers.

11) Question: If I remove the internal Apple hard drive, is the internal SCSI bus terminated or not?

Answer: The Apple internal drive supplies termination to the internal SCSI bus when it ships from the factory. If the drive is removed and another drive is installed, then that drive should be terminated. If no drive is installed on the internal SCSI bus, then the ribbon cable should be removed from the logic board to prevent problems with termination.

12) Question: Are the internal hard drives included with the Power Macintosh 7300, 7500, 7600, 8500, 8600, 9500, and 9600 series computers Fast SCSI devices?

Answer: Yes, the internal hard disks shipped with the Power Macintosh 7300, 7500, 7600, 8500, 8600, 9500, and 9600 are Fast SCSI devices capable of up to 10 MB per second transfer rates.

14) Question: What is meant by "dual-channel asynchronous SCSI"? How does this affect the internal SCSI termination on these computers?

Answer: Computers with dual-channel asynchronous SCSI have a single SCSI controller which manages SCSI communications across two separate SCSI buses: an internal/external SCSI bus (Bus 1) and an internal SCSI bus (Bus 0).

There are no devices attached internally to Bus 1 in Power Macintosh 7300, 7500, 7600, 8500, 8600, 9500, and 9600 series computers.

Bus 1 has automatic termination, which means that circuitry on the logic board senses whether or not there are any external SCSI devices attached. If there are no external SCSI devices connected, the logic board automatically terminates itself at the 50-pin logic board connector, thus terminating both ends of the SCSI chain.

Once an external SCSI device is connected to the 25-pin external connector, the circuitry senses the device and disables termination at the 50-pin logic board connector. The computer then relies on the external SCSI device to provide the proper termination.

Bus 0 is a completely separate SCSI bus with its own SCSI controller. In Power Macintosh 7300, 7500, 7600, 8500, 8600, 9500, and 9600 series computers, Bus 0 provides Fast SCSI communications up to 10 MB per second.

This bus has a 50-pin flat ribbon cable with two 50-pin connectors on it. Power Macintosh 7300, 7500, 7600, 8500, 8600, 9500, and 9600 series computers ship with the internal hard drive and CD-ROM drive connected to this SCSI bus. The internal hard drive is terminated, which terminates the SCSI bus.

Unlike Bus 1, Bus 0 does not have automatic termination because it is exclusively an internal SCSI bus. If additional devices are added to Bus 0, only the last device should contain termination resistors.

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