

AMB99-21

June 25, 1999

SCSI Disk Update — June 1999

Dear Alpha Microsystems VAR:

Here is the latest information on our SCSI disk product line, with news of models and prices. But first, the headlines of the month:

Disk Headlines for June:

- **10000 RPM Disk Drive Makes Debut in AMOS Systems** (*see page 2*)
- **OK to Format an Entire Drive as One Logical, Even if it's 9GB** (*page 4*)
- **Configuration Alert for 4.3GB Disk Drives in AM-4000 Systems** (*page 4*)
- **Our 1.2GB SCSI-2 Drive Works in SASI Systems — If the AM-532-10 Adapter Card is Installed** (*page 5*)

10000 RPM Disk Drive Makes Debut in AMOS Systems

Alpha Micro system performance takes another long step forward with the PDB-00440-07, a new Ultra-2 SCSI drive that's our fastest ever — in two ways:

- The disk spins at 10000 RPM, for an average latency of 2.99 milliseconds. That's 38% faster than our previous top-seeded models, running at 7200 RPM.
- The head positioner generates *average* seek times as low as 5.2 milliseconds, at least a third faster than our previous best.

These improvements in both dimensions — disk latency and head access — can yield a major increase in storage throughput as seen by the system as whole. See Performance, below, for benchmarks.

Compatibility

The PDB-00440-07 will work in any system that provides SCSI-2 support, sometimes called "dispatched SCSI." These include any system with a Roadrunner, any Eagle system, and any AM-4000, AM-6000, or AM-6060 Network Server. Operation in SASI systems is not supported.

The PDB-00440-07 has a Wide SCSI (68-pin) interface. A Wide SCSI Adapter, PDB-00440-90, is required for installation in a system with a narrow (50-pin) SCSI bus.

Specifications

Key specs for the new drive are:

Part number:	PDB-00440-07
Capacity:	8.7GB, formatted AMOS capacity
Systems that support this drive:	The PDB-00440-07 works in systems that offer SCSI-2 support. Those systems are: any system with a Roadrunner; any Eagle system; and any AM-4000, AM-6000, or AM-6060. The drive is not supported in systems equipped with an AM-540 SCSI-2 Controller, or in any SASI-based systems. Call your Order Administrator for details of trade-in offers for systems with an AM-540.
SCSI Interface:	Wide Ultra-2 SCSI, 68-pin. Order a Wide SCSI Adapter, PDB-00440-90, to install the disk in a narrow SCSI system.
Seek, average:	5.2 msec read / 5.8 ms write, typical
Seek, track-to-track:	1.1 msec, typical
Average latency:	2.99 msec
Rotational speed:	10025 RPM
On-disk cache:	512 Kbytes
External transfer rate:	10Mbytes/sec on narrow SCSI; 20Mbytes per second on Wide SCSI
Documentation:	DSS-10509-16, Rev. A03; available online at www.amos-online.com

Note new revision of DSS-10509-16

Performance

Higher RPM and faster seeks in the new PDB-00440-07 translate to faster operation in the system as a whole. To measure this benefit we ran benchmarks that compared the new drive with a 7200 RPM, Wide Ultra-2 disk. Although the 7200 RPM unit was fast — much faster than most disks in our systems today — the 10000 RPM unit still outperformed it by a wide margin. Here's what we found:*

- **Test setup, disk-to-disk copy** — An AM-6000 was set up to copy from disk 0 to a target disk in the same system. In the first pass the target was a 7200 RPM drive. In the second the target was our new 10000 RPM drive. The data to be transferred consisted of 65,276 blocks containing 4,220 files and about 33 million bytes. (This test was another phase of the benchmarking described in bulletin AMB99-20, *Climbing the Power Curve, Part2.*)
- **Test results** —
 - Time to transfer the data to the 7200 RPM drive: 859.6 seconds
 - Time to transfer the data to the PDB-00440-07 (10000 RPM): 658.3 seconds
 - Time saved by using the 10000 RPM drive: 201.3 seconds = 23.4%
 - Performance improvement:
Our new 10000 RPM drive outperformed a (fast) 7200 RPM drive by more than 23%.

On-board, Forced-air Cooling

As a rule, a 10000-RPM drive will dissipate more thermal wattage than a functionally equivalent but slower-spinning unit. We've allowed for that by including forced-air cooling as a standard feature. Our PDB-00440-07 comes equipped with two miniature fans that mount just inside the front panel and immediately in front of the disk drive. A tech-styled, perforated panel replaces the usual solid plastic insert (the drive is only an inch high but with the cooling assembly, requires a 5.25" peripheral bay). The two fans, each equipped with its own filter, draw air in through the perforated front panel and blow straight across the disk drive.

We furnish the cooling assembly as standard with the 10000 RPM drive. The assembly is also available as an optional, field-installable add-in for any peripheral (in a 5.25" slot) that needs extra ventilation. Order part number PDB-00440-93, Dual-Fan Peripheral Cooler. Included in the assembly are special mounting rails that replace the rails normally supplied with a 3.5" peripheral.

* The benchmarks described in this bulletin are offered for general comparison and analysis only. For definitive measurements, VARs and end users should verify actual performance based upon their specific applications and environments. The benchmarks we use give an overall indication of system throughput. It's important to note that the way your application software uses the system may produce results different from those suggested by our benchmarks.

OK to Format an Entire Drive as One Logical, Even if it's 9GB

We introduced 9GB drives for AMOS systems last August. These units provide big storage in a small space (only an inch high) at a low price per megabyte. Originally, however, there was a formatting limitation. The formatting utility, FMTS2, was not capable of creating a single logical of 9GB. Consequently our marketing bulletins carried a notice to the effect that the maximum logical was 4.2GB, and that a 9GB drive should be formatted as two or more smaller logicals.

Effective with the 4/99 AlphaCD, that limitation has been eliminated. (Actually it was eliminated in patches some months earlier.) With the current FMTS2, you can format a logical all the way up to the full size of a 9GB drive.

Configuration Alert for 4.3GB Disk Drives in AM-4000 Systems

Because of firmware issues beyond our control, the AM-4000 does not support certain combinations of disk drive **and** tape drive **and** firmware in that tape drive. The combinations that are **not supported** are

- ➔ An AM-4000...
equipped with...
- ➔ PDB-00440-06 4.3GB Wide SCSI Disk Drive (Seagate Medalist Pro ST34520W)...
and...
- ➔ Any Tandberg tape drive (our part numbers PDB-0062X-XX or PDB-00650-XX)...
if and only if...
- ➔ The tape drive has Tandberg firmware Rev 08 or higher.

Please note that the foregoing limitation affects **only** the AM-4000 and **only** in the configurations shown.

Our 1.2GB SCSI-2 Drive Works in SASI Systems — But ONLY if the AM-532-10 Adapter Card is Installed

Many of our customers still have systems equipped with a SASI bus. Disk manufacturers stopped making SASI-compatible drives years ago, posing a potentially serious problem in sourcing disk upgrades and replacements. Then, early this year, our engineering team stepped up to the problem and produce a compatibility solution.

The solution is a small adapter card, called the AM-532-10, that modifies the SASI bus to allow our PDB-00436-68 1.2GB SCSI-2 disk to work. Availability was announced in Marketing Bulletin AMB99-04, *SCSI Disk Breakthrough for SASI Systems*, Jan. 22, 1999. The AM-532-10 is furnished in a bundle along with the 1.2GB disk. The bundle is a kit designated **B0E-00436-68 1.2GB SCSI-2 DISK w/SCSI Adapter**, and consists of the following:

- **1.2GB SCSI-2 disk drive** — The disk is our standard PDB-00436-68, a 4,500 RPM drive with 12 ms average access and a 128KB on-disk cache. By itself, the drive works in SCSI-2 systems only.
- **AM-532-10 Adapter Board** — This small (3" x 1") printed circuit card plugs into the SASI connector on the CPU board, either directly or via a short cable included in the kit. The board mounts two ICs, connectors, and a few other components.
- **Installation materials** — The kit includes an adapter cable and other components needed to install the adapter board. Installation is simple, requiring no card slots or mounting brackets. Details vary with host system model.

The AM-532-10 Adapter Board is certified for use in the bundled configuration only and is not offered as a separate product. See the Reseller Supplement for prices.

Instructions for installing the AM-532-10 appear on our Web site and on the next page of this bulletin. Please follow the instructions. Failure to install the board in a SASI system can produce hard-to-diagnose problems, including systems hangs.



It's asking for trouble...

*...to install the PDB-00436-68 SCSI-2 disk in a SASI system unless you also install the AM-532-10 Adapter.
Buy the disk and adapter as a B0E-00436-68 bundle.
Install the adapter as shown on page 6.*

The following installation instructions are furnished for marketing reference only. When making an actual installation, please consult the released document, PDI-00532-10, available on our website at www.amos-online.com.

INSTALLATION INSTRUCTIONS

AM-532-10 SCSI ADAPTER BOARD / CABLE KIT

These instructions cover the installation of the AM-532-10 board / cable kit into older AMOS based systems containing a SASI bus. The AM-532-10 kit is used to adapt some modern SCSI-2 disk drives to the SASI bus contained in these older systems. Specifically, PDB-00436-68 disk drives, which are NOT compatible with the older SASI bus implementation, may be installed in these older systems if the AM-532-10 kit is installed per the instructions below.

Installation Instructions:

1. Gain access to your main CPU board inside your computer system, following the instructions contained in your system service manual.
2. Unplug the 50-pin SASI cable from the connector on the CPU board.
3. Plug the 50-pin SASI cable, just removed from the CPU board in step 2, into the corresponding connector in the AM-532-10 SCSI adapter board.
4. Depending on the physical layout of your system, you may have enough clearance to be able to plug the AM-532-10 board directly into the SASI port on your CPU board. If so, perform this installation now. If you cannot physically plug the AM-532-10 board into this connector, use the 50 pin cable provided in the AM-532-10 kit to connect the AM-532-10 board to the SASI port on the CPU board. Route the cable/adapter board combination so that the adapter board will not lay against any conductive surface. Use the double sided tape and/or cable ties provided to attach the 50-pin cable to a secure surface to help hold the AM-532-10 adapter board in the desired location.
5. Route the 2-conductor power cable attached to the AM-532-10 board to the closest or most easily accessible disk drive. Unplug the power cable to the disk drive and plug it into one of the connectors attached to the 2-conductor power cable. Plug the other connector into the power connector on the disk drive.
6. Re-install any parts that were removed from your system in step 1 in getting access to the internal components of your system.

This completes the installation of the AM-532-10 adapter board.

Important: The AM-532-10 kit is for use only in older AMOS-based systems, with a SASI bus interface.

Product Line Review: Current SCSI Disk Models

Here are brief descriptions of the SCSI disk drives we offer today. For technical details see page 9.

Narrow SCSI Drive

1.2GB PDB-00436-68 — In this configuration the 1.2GB drive is compatible with SCSI-2 systems only.

1.2GB B0E-00436-68 — Compatible with SASI (non-parity) systems only, this is the same 436-68 disk described above, but bundled with a small (3" x 1") adapter card. The adapter makes the SCSI-2 disk look 'SASI-compatible' to the bus in the host system. See page 5 for technical background.

4.3GB and 9GB Wide SCSI Drives

Our 4.3GB and 9GB drives, with part numbers in the PDB-00440-XX series, carry Ultra SCSI ratings from the manufacturer and work in systems equipped with a Wide SCSI bus. The bus is currently available in the Eagle 450, the AM-6000, the AM-6060 Network Server, and in systems equipped with a Roadrunner 060 upgrade.

With the addition of a PDB-00440-90 Wide SCSI Adapter, a Wide SCSI disk will also operate in a system with our standard 50-pin Narrow SCSI bus. Wide SCSI disks are installable only in SCSI-2 systems. Operation in SASI systems is not supported.

Operation of 9GB Wide SCSI disks under AMOS 1.4E, with the latest patches, has been verified. Our 4.3GB drives have not been tested under AMOS 1.4E.

4.3GB Fast-Wide Ultra SCSI-2, PDB-00440-06 — This 7200 RPM, top-quality, unit is now our entry-level drive for Wide SCSI applications.

9GB Fast-Wide Ultra SCSI-2, 7200 RPM, PDB-00440-04 — Now formattable as a single logical disk; see page 4 for details.

9GB Fast-Wide Ultra SCSI-2, 10000 RPM, PDB-00440-07 — Our first 10000 RPM disk, with faster-than-ever access times, is a real screamer. Includes forced-air cooling. See page 2 for details.

Discontinued Models

2.1GB Narrow SCSI-2 PDB-00436-74 — Discontinued; no longer available.

4.3GB Narrow SCSI-2 PDB-00436-76 — Discontinued; no longer available.

2.1GB Wide SCSI-2 PDB-00440-02 — Discontinued; no longer available.

4.3GB Wide SCSI-2 PDB-00440-05 — Discontinued; no longer available.

Disk Compatibility

AMOS Environments — See the table on page 9 for AMOS compatibility considerations.

Series 90 Environments — We have no reason to believe the 1.2GB drive would not also work in a Pick64+ SCSI system, although no tests have been run. For further information, please submit system configuration details and disk storage requirements.

None of the drives in this bulletin have been tested with RECAP.

Technical Prerequisites — For boot PROM revision levels, formatting utilities, and other software requirements, see the disk drive information sheet (DSS-10509-XX) furnished with each drive. Drive information sheets are available free at www.amos-online.com. Look under “Disk Drives/ Tape Drives” on the Documentation page. Check the Web to make sure you have the latest revision.

Best regards,

John F.G. Leighton
VAR Marketing Manager

The last sheet of this bulletin is a change page for your copy of the AMOS Price List

SCSI Disk Drives — Specifications

Disk Drive Part Number →	B0E-00436-68	PDB-00436-68			PDB-00440-06	PDB-00440-04	PDB-00440-07	
Nominal Capacity	1.2GB	1.2GB			4.3GB	⑥ 9GB	⑥ 9GB	
Drive supported in systems that offer SCSI-2 support (“parity systems”) ①	NO	Yes			Yes (but <i>not</i> with AM-540)	Yes	Yes	
Drive supported in systems that allow SCSI-2 disk on SASI port (“non-parity”) ②	Yes; see ④	NO			NO	NO	NO	
Delivery Status	Available	Available			Available	Available	Available	
Dimensions	3.5-inch form factor 4" wide x 5.75" deep x 1" high							
SCSI Interface <i>Nar</i> = 50-pin; <i>Wide</i> = 68-pin	Narrow SCSI-2	Narrow SCSI-2			Wide Ultra ③	Wide Ultra ③	Wide Ultra ③	
Formatted AMOS Capacity	1.19 GB	1.19 GB			4.34 GB	8.68 GB	8.7 GB	
Seek, average (read/write) ms Seek—track-to-track	12ms 3ms	12ms 3ms			7.1/7.8 0.8/1.5	7.1/7.8 0.8/1.5	5.2/5.8 0.7/1.1	
Average Latency	6.67ms	6.67ms			4.17ms	4.17ms	2.99ms	
Rotational Speed	4500RPM	4500RPM			7200RPM	7200RPM	10000RPM	
On-disk Cache/Buffer Size	128 Kb	128 Kb			512Kb	512Kb	512Kb	
External Transfer Rate	10MB/sec	10MB/sec			20MB/sec	20MB/sec	20MB/sec	
DSS-10509-xx (on Web site)	10509-08	10509-08			10509-17	10509-16	10509-16	

Notes

- ① *Drive supported in systems that offer SCSI-2 support* (“parity systems”)—The word **Yes** in this row means the drive works in systems that provide SCSI-2 support (“dispatched SCSI”). These include any system with a Roadrunner; any Eagle system; any AM-3000M/LC with AM-540 SCSI-2 controller (except where otherwise shown); and any AM-4000, AM-6000, or AM-6060 Network Server. These are sometimes called “parity systems.”
- ② *Drive supported in systems that allow SCSI-2 disk on SASI port* (“non-parity”)—**Yes** means the drive will work in a system that supports SCSI disks on a SASI port. **NO** means we don’t support such usage. General exception: SCSI-2 disk drives are **not** supported as a bootable disk in AM-1500 systems or in S-100 bus-based systems.
- ③ Installing this drive in a system with standard 50-pin SCSI bus requires a **Wide SCSI Adapter**, PDB-00440-90. External transfer rate with standard SCSI bus is 10MB/sec.
- ④ B0E-00436-68 is a bundle consisting of a PDB-00436-68 disk drive and a small adapter card that modifies the SASI bus in the host system. See DSS-10509-08 for installation details.
- ⑤ (Note deleted)
- ⑥ Use FMTS2 utility to format this drive. With FMTS2 as released on the 4/99 AlphaCD or later, the entire drive can be formatted as a single logical, with capacity of approximately 9GB.