

AMB96-19

May 17, 1996

## New DAT Tape Drives Available

- **8 gigabyte backup on *one tape cartridge* now possible**

Dear Alpha Microsystems VAR:

Hard disk capacities continue to escalate, with industry forecasters predicting a minimum *entry-level* disk size of 2 gigabytes by year end. Bigger disks mean your customers will be pressing for higher-capacity tape backup. We're ready to serve you now with bigger, faster tape units, including one that offers more storage at a lower cost per gigabyte than any prior Alpha Micro product.

This bulletin announces two new 4-millimeter DAT tape drives. One, the AM-649-01, stores up to 8GB on a standard 120-meter DDS-2 data cartridge. The other, the AM-649-00, stores up to 4GB. These units supersede the AM-648, which was limited to 4GB capacity and is no longer offered.

Highlights of the new drives are as follows:

- **Backup capacity**—The AM-649-01 packs 8GB onto a single tape, and that's just for starters. You can install *two* AM-649 drives in the same system and use the Task Manager for sequencing the backup. Write first to one drive and then to the other. Result: up to 16GB of backup, all performed without operator attention.
- **High speed**—Billed by the manufacturer as “the fastest DAT drive in the world,” the AM-649-01 is rated at a recording speed of 1 megabyte per second. Actual performance is system dependent. On an AM-4000, we clocked a sustained backup speed of 640KB per second, or about 2.3GB per hour. For details see “Throughput” on page 3.
- **Versatility**—An AM-649 will work in any AMOS system that supports SCSI-2 devices.
- **Tape compatibility**—An AM-649 can interchange tapes with our present AM-648 4GB DAT drive. The capability is bi-directional. Either drive can read tapes written—via AMOS software—by the other. To be readable by the AM-648, tapes from the AM-649-01 must be written on 60- or 90- meter cartridges (not 120m) and must be recorded in uncompressed format. For details see “Tape Interchange Between Drives” on page 3.
- **Dependability**—Manufactured by Hewlett-Packard, the AM-649-00 and -01 bring HP's renowned standard of product excellence to the Alpha Micro line.
- **Ready to market**—We're ready to fill AM-649 orders now and at attractive pricing. For details see the Reseller Supplement below (omitted from the version of this bulletin on the World Wide Web).

## PRODUCT DESCRIPTION

The AM-649-00 and -01 are high-performance data storage drives that use helical-scan recording technology. The drives implement DDS (Digital Data Storage) formats, a scheme developed by Hewlett-Packard and Sony specifically for data storage. DDS formats are now an industry standard, employed in drives such as our prior DAT models AM-648 (4GB) and AM-647 (2GB).

Our earlier DAT drives accept 60 meter and 90 meter tape cartridges. The AM-649-00 and -01 can also use these cartridges. In addition, the AM-649-01 accepts 120 meter cartridges and is capable of recording in DDS-2 format. That format, which is available only in the AM-649-01 and only on 120m tapes, stores up to 4GB in native (uncompressed) mode and up to 8GB in compressed mode. Our DAT drives default to compressed mode. You can override the default and select uncompressed mode by means of the TMODE utility.

Technical specifications for both AM-649 models appear in the appendix on page 5.

## SYSTEM PLANNING CONSIDERATIONS

**Applicable system models**—An AM-649-00 or -01 will work in any AMOS system that supports SCSI-2 devices and has mounting space for a half-height peripheral. The following are compatible: AM-4000 systems; Eagle systems; Roadrunner-based systems; and AM-3000LC systems with the SCSI-2 AM-540 controller. An AM-649 is also installable in any previously shipped AM-3000M/LC that has been upgraded by adding an AM-540.

**Mounting kits**—No separate mounting kit is required for an AM-4000 or for an Eagle or any other system in the Deskside Mini-chassis. An AM-3000 in the classic pedestal chassis, or any other system that required a mounting kit for any of our prior tape drives, will also require that kit for an AM-649.

**Media**—Like our earlier DAT drives, the AM-649-00 and -01 require DDS-style cartridges, which are available from computer supply stores and mail-order outlets. The following table shows tape formats, cartridge compatibility, and capacity for the two AM-649-xx models

	AM-649-00 4 GB DAT Drive TAPE FORMAT / Tape Capacity		AM-649-01 8 GB DAT Drive TAPE FORMAT / Tape Capacity	
Tape Length	Uncompressed Capacity	Compressed (Default)	Uncompressed Capacity	Compressed (Default)
60 meter	DDS-1 1.3GB	DDS-DC 2.6GB	DDS-1 1.3GB	DDS-DC 2.6GB
90 meter	DDS-1 2.0GB	DDS-DC 4.0GB	DDS-1 2.0GB	DDS-DC 4.0GB
120 meter	120m tapes are not usable in this drive		DDS-2 4.0GB	DDS2-DC 8.0GB

**Tape interchange between drives**—We have tested DAT cartridge interchange between our various 4mm DAT drives. The table below shows results. A *yes* in the table indicates that the drive listed in the left-hand column could read a tape in that format irrespective of which drive originally wrote the tape.

Drive Model	Description	Tape Format Readability			
		DDS-1	DDS-DC	DDS-2	DDS2-DC
AM-647	Archive Python (2GB)	yes	no	no	no
AM-648	Exabyte EXB-4200c (4GB)	yes	yes	no	no
AM-649-00	Hewlett-Packard (4GB)	yes	yes	no	no
AM-649-01	Hewlett-Packard (8GB)	yes	yes	yes	yes

**Throughput**—To test actual throughput in an AMOS environment, we installed an AM-649-01, with 120m cartridge, in an AM-4000. The system was equipped with a Rev E board, a Maxtor 1.2GB disk, and AMOS 2.2C (452)-14. Doing MTUSAV with /SUPPRESS, the drive backed up a sustained 650KB per second, or about 2.3GB per hour.

## INSTALLATION

**Software levels**—The AM-649 models require a new version of the driver 647DVR.DVR:

```
647DVR.DVR      Hash total 543-647-254-264
```

The driver also supports the AM-648 (Exabyte EXB-4200c) and AM-647 (Archive Python).

New versions of MTUSAV, MTURES, TAPSER, and a new program called TAPLOG are also available for AMOS 2.2 operating systems. Though the new versions are not absolutely necessary to use an AM-649 drive, they do incorporate enhancements such as improved ability to span tapes. For further information consult the Alpha Micro Technical Assistance Center (formerly Tech Support) or TABBS (formerly AMTEC+).

**Boot PROMs**—It's possible to warm boot from the AM-649 using the CPU boards listed below. However, your boot PROMs must meet the minimum revision requirements listed in the table:

AM-140	Rev. F00
AM-190	Rev. E00
AM-172	Rev. K00
AM-137	Rev. K00
AM-174	Rev. H00

**Head cleaning**—The manufacturer's instructions about head cleaning are quoted here verbatim:

The tape heads should be cleaned regularly using the guidelines in the following table. Tape heads should also be cleaned if the **CLEAN/ATTENTION LED** [indicator light on the drive] flashes amber.

<b>Number of DDS cartridges used each day</b>	= < 1	2 - 3	4 +
<b>Cleaning Interval</b>	Weekly	Twice a week	Daily

Clean the heads using a Cleaning Cartridge, HP 92283K\*, as follows:

1. Insert the Cleaning Cartridge into the drive. The drive automatically takes the cartridge, loads it, and cleans the heads.
2. After about 30 seconds, the drive ejects the cartridge.

If the cartridge is ejected after only 14 seconds, this means the cartridge has reached the end of its useful life, and no cleaning has occurred. The Cleaning Needed signal should still be displayed. If this happens, discard the cartridge, and repeat the cleaning operation with a new Cleaning Cartridge.

3. Take the cartridge out of the drive, and write the date on the label on the cartridge. This provides a record of how many times the cartridge has been used. You need to know this, because a Cleaning Cartridge has a life of typically 25 cleaning cycles.

## **BOTTOM LINE**

These Hewlett-Packard tape drives fit the functional requirements of backing up many of today's larger Alpha Micro systems. We believe these drives are also the class of product your customers are seeking: technically up-to-date, superbly manufactured, and integrated for optimum performance in the AMOS environment.

Best regards,

John F.G. Leighton  
Product Manager

---

\* For cartridge specifications and ordering information, see HP web page <http://www.dmo.hp.com/tape/tapeinf.htm>

## Appendix: AM-649-xx DAT Specifications

	AM-649-00 4GB DAT Drive	AM-649-01 8GB DAT Drive
<b>Data Handling</b>		
<b>Drive type</b>	Helical-scan 4mm tape	
<b>Format and capacity:</b>		
<b>60-meter tape</b>	<b>DDS-1 format</b> 1.3GB <b>DDS-DC format</b> 2.6GB	1.3GB 2.6GB
<b>90-meter tape</b>	<b>DDS-1 format</b> 2.0GB <b>DDS-DC format</b> 4.0GB	2.0GB 4.0GB
<b>120-meter tape</b>	<b>DDS-2 format</b> <b>DDS2-DC format</b>	120-meter tapes are not usable in the AM-649-00 drive 4.0GB 8.0GB
<b>Data transfer rate, sustained:</b>		
<b>In compressed mode</b>	366 KBytes/sec typical*	1 MByte/sec typical*
<b>In uncompressed mode (native)</b>	183 KBytes/sec*	510 KBytes/sec*
<b>Error detection/correction</b>	Multi-level, including read-after-write and track checksums	
<b>Error rate</b>	< 1 in 10 <sup>15</sup> bits	
<b>Compression</b>	DCLZ (Data Compression Lempel-Ziv); average 2:1 compression ratio	
<b>Tape search speed (avg. file access)</b>	52 seconds on 90m cartridge	40 seconds on 120m cartridge
<b>Host Interface</b>		
<b>Host interface</b>	SCSI-2	SCSI-2
<b>Buffer size</b>	512 KBytes	1 MByte
<b>Environment</b>		
<b>Temperature</b>	<u>Oper</u> : 41° to 104°F / 5° to 40°C; <u>Non-op</u> : -40° to +158°F / -40° to 70°C	
<b>Humidity</b>	<u>Oper</u> : 20% to 80% (max. wet bulb 26°C); <u>Non-op</u> : 5% to 95% non-cond.	
<b>Reliability and Power</b>		
<b>MTBF</b>	200,000 hours @ 5% duty cycle	200,000 hours @ 12% duty cycle
<b>Power (5V ± 5%; 12V ±10% DC)</b>	5 watts, typical	Less than 8.5 watts, typical
<b>Physical</b>		
<b>Form factor</b>	3.5-inch, half height	
<b>Dimensions</b>	<u>Width</u> : 4.0 in. (102 mm); width of drive only 5.25 in. wide with mounting adapter furnished as standard <u>Height</u> : 1.6 in. (41.3 mm) <u>Depth</u> : 5.9 in. (150 mm)	
<b>Weight</b>	2.2 pounds (1.0 kg)	

\* Manufacturer's specified value; actual rate in Alpha Micro environment is application dependent.