OMNIBUS MAGNETIC TAPE OPTIONS

The OMNIBUS Magnetic Tape Options include:

a. The TD8-EM Dual DECtape Transport Control and TU56 Dual DECtape Transport
b. The TM8-E DECmagtape Transport Control and TU10 DECmagtape transport

DECtapes

The DECtape unit can interface directly with the OMNIBUS via the TD8-E or to the External Bus via the TC08. The configurations are defined in the following table. For information on the TC08 Controller, refer to section 4 of this chapter.

Four basic DECtape configurations are identified in the following table.

SYSTEM DESIGNATION	DECtape	CONTROL	PREREQUISITE	REMARKS
None	TU56 (Dual Drive)	TC08	KA8-E* KD8-E PDP-8/E	Up to 4 Dual TU56's per control. (8 drive units)
None	TU56H (Single Drive)	TC08	KA8-E* KD8-E PDP-8/E	Up to 4 single DECtape drive units.
TD8-EM	TU56-M (Dual Drive)	TD8-E	PDP-8/E	Control plugs into OMNIBUS.
TD8-EH	TU56-MH (Single Drive)	TD8-E	PDP-8/E	Control plugs into OMNIBUS.

TD8-E DECtape Option

The DECtape system is a standard option for the PDP-8/E that serves as an auxiliary magnetic tape data storage facility. The DECtape system stores information at fixed positions on magnetic tape, as in magnetic disk or drum storage devices, rather than at unknown or variable positions, as in conventional magnetic tape systems. This feature allows replacement of blocks of data on tape in a random fashion without disturbing other previously recorded information. In particular, during the writing of information on tape, the system reads format (mark) and timing information from the tape and uses this information to determine the exact position at which to record the information to be written. Similarly, in reading, the same mark and timing information has a number of features to improve its reliability and make it exceptionally useful for program updating and program editing applications. These features are: phase or polarity sensed recording on redundant tracks, bidirectional reading and writing, and a simple mechanical mechanism util-

* Magnetic tape options operated on the external bus of the PDP-8/E require the use of the KA8-E Positive I/O Bus Interface module and the KD8-E Data Break Interface module as prerequisites.

izing hydrodynamically lubricated tape guiding (the tape floats on air over the tape guides while in motion).

Specifications

Tape Characteristics	Capacity—260 feet of ¾ inch, 1 mil Mylar sandwich tape, coated both sides. Reel diameter—3.9 inches Tape Handling—direct drive hubs and specially designed guides float the tape over the head. No capstans or pinch rollers are used. Speed—97 ± 14 ips Density—350 ± 55 bpi Information capacity—2702_8 Blocks with 201_8 12-bit words per block (188,672 12-bit words) Tape Motion—bi-directional
Word Transfer Rate	33,300 3-bit characters per second
Addressing	Mark and timing tracks allow searching for a particular block by number in a forward or backward direction.
Tape Motion Timing	Start Time—150 msec ± 15 msec Stop time—100 msec ± 10 msec Turn around time—200 msec ± 20 msec
Mounting	TU56 Drive mounts in a standard 19 inch equipment rack
Size	10 ½ inches high 19 inches wide 9 ¾ inches deep } TU56 Drive 1 Quad Module } TD8-E Control plugs into OMNIBUS
Cooling	Internally mounted fan provided for TU56
Environmental Conditions	Temperature—40°F to 90°F Note: The magnetic tape manufacturer recommends 40-60% relative humidity and 60° to 80° as an acceptable operating environment for DECtape.

Tape Compatibility

Tapes may be certified, programmed, read, modified, and rewritten interchangeably on either the larger automatic DECtape units (TC08/TC01) or on the TD8-E. DEC provides all the necessary subroutines and MAINDECs for the TD8-E; for example:

- Read/Write Subroutines
- Tape Certification Routine
- MAINDEC Maintenance Programs

- PS/8 Programming System (12K Minimum Configuration)
- A new 4K Keyboard Operating System with Program Directory, Line Editor, and PAL III* Assembler.
- A DECtape Copy Program

* (A Paper Tape Device is required; either ASR-33 or PC8-E, for input and output with PAL-III.)

TD8-E DECTAPE CONTROL

The TD8-E is a low cost interface for the TU56 DECtape units. A TD8-EM consists of a TD8-E and one TU56-M Dual DECtape drive. The TD8-EH consists of a TD8-E and one TU56-MH Single DECtape drive.

The TD8-E is contained on a single quad Flip-Chip module which plugs directly into the OMNIBUS of the PDP-8/E. It is connected to the TU56 by a special interface cable (P.N. 7008447). It uses a standard TU56 with no modifications. The Read/Write Amplifiers (G888) must be plugged into the TU56 drives.

When reading, writing, or searching, the PDP-8/E acts as a controller for the DECtape. That is, all data transfers to and from the 8/E are through the AC in non-interrupt, non-data break mode. The PDP-8/E is completely committed to the tape operation and cannot perform any other functions until the tape operations have been completed.

Up to four TD8-E interfaces can be used with a PDP-8/E. Each TD8-E can drive either a single or dual transport. It is therefore possible to have eight DECtape drives connected to the PDP-8/E through four TD8-E's. When a dual transport is used on the TD8-E's, the first TD8-E will control units 0 and 1; the second TD8-E will control units 2 and 3; the third, units 4 and 5; and the fourth, units 6 and 7.

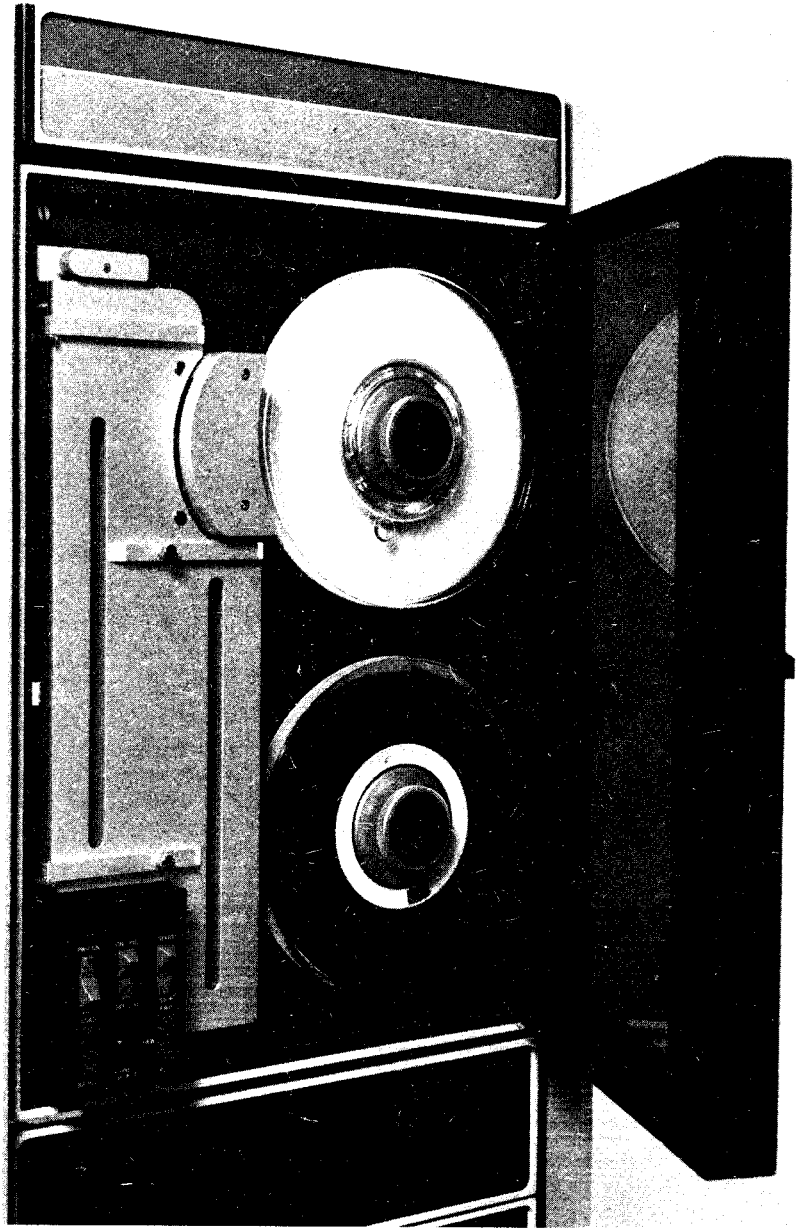
A comprehensive set of diagnostic routines is included with the TD8-E which checks all of its functions. The TD8-E is also supplied with subroutine software which search, read, and write PDP-8 compatible DECtapes. DECtapes written with the TC01 or TC08 control can be read with the TD8-E using this software and vice versa. Because of the close dependency of the hardware with the software, Digital Equipment Corporation will not guarantee operation of the TD8-E with any software other than that which is supplied by Digital Equipment Corporation.

The TD8-E was designed as a low-cost DECtape interface with limited functions. It is not a replacement for the TC08 which makes transfers of data direct to memory concurrent with CP operations. Its primary use is for library storage of programs and blocks of data. The TD8-E will, however, like the TC08, certify DECtapes by writing and verifying the mark and time tracks and block numbers.

Refer to Section 4 of this chapter for a detailed discussion of TU56.

TU10 DECmagnetic Tapes

The DECmagtape can interface directly with the OMNIBUS via the TM8-E, or to the EXTERNAL BUS via the TC58. The configurations of both categories are defined in the following table. For information on the TC58 controller, refer to section 4.



TU10 DECmagtape

DECmagtape Configurations

SYSTEM OPTION	EQUIPMENT	NO. OF CHANNELS	DENSITIES (BPI)	TAPE SPEED (IPS)	OTHER INFORMATION
TM8-EA	TM8-E Control & TU10-EA(master)	9	800	45	Control plugs into OMNIBUS. TU10-EA contains a master and one slave. Up to 7 additional TU10 slaves may be added. 7 and 9 track TU10's can be mixed on the same system. For example, a 7 track master can be operated with a 9 track slave etc. The master consists of logic modules which plug into the TU10 electronics.
TM8-FA	TM8-E Control & TU10-FA(master)	7	800/556/200	45	Same as above.
TC58 *	TC58 Control(master) & TU10-EE(slave)	9	800	45	DW08A I/O conversion panel, KA8-E Positive I/O Bus and KD8-E Data Break Interface are prerequisites. The master is contained with the TC58 controller. Up to 7 additional TU10 slaves may be added. 7 and 9 track TU10's can be mixed on the same system.
TC58 *	TC58 Control(master) & TU10-FE(slave)	7	800/556/200	45	Same as above.

* Refer to Section 4 for TC58 Description