

Series M890/M891 CacheTape™ Tape Drive

Start/Stop Operation Via Cache

Start/Stop Performance

Cipher's CacheTape is another generation of 1/2-inch IBM interchange format compatible tape drives. CacheTape combines the advantages of an industry-standard formatted interface and start/stop software capability with the data throughput power of cache memory. All these features are packaged on the same reliable, easy-to-use, field-proven mechanics made famous by Cipher's innovative Microstreamer® 1/2-inch Tape Drive.

CacheTape, the Electronic Tape Drive™ performs all of the traditional tape drive functions today's systems demand ... efficiently and reliably. CacheTape applications include: file-oriented disk backup, image backup, transactional journaling, tape sort/merge, tape interchange, data archiving, data acquisition ... and more.

CacheTape is also completely interface compatible with most existing industry standard tape adapters, including couplers for products from DEC, DG, and TI, couplers for Multibus, S-100 and popular mini- and microcomputers.

Software Transparent

Cipher's CacheTape is designed to be fully compatible with present start/stop operating system software and software utilities. Software transparent operation is a feature of the CacheTape start/stop interface, which employs Cipher's unique Electronic Capstan™ technology, thereby obsoleting mechanical tape buffering systems used on prior tape drives.

CacheTape employs Cipher's unique automatic read and write retry error recovery, which provides the system with a lower reported hard error rate and higher average data throughput. "Error-Free" write is the net result, with a ten-times reduction in reported read errors. The system benefits from an improved read capability, because the host is relieved of burdensome and inefficient error recovery procedures.

File Backup

CacheTape, unlike conventional streaming tape drives, performs high-speed file-oriented disk backup on unmodified system software. This capability offers advantages for on-line multi-user systems, because background

mode transactional backup and individual file backup routines can be employed. These routines do not require the system software to be dedicated to the save/restore operation at the expense of other users.

Versatile Performance

Two CacheTape drives are available, CacheTape M890 and CacheTape M891. CacheTape M890 is the price/performance leader, with switch selectable interface transfer rates from 20 KBS to 120 KBS. This makes CacheTape ideal for new multi-purpose systems where streaming tape drives may not provide enough performance, or as a replacement for tape drives in the 45-75 IPS performance range.

CacheTape M891 offers ultra high performance start/stop capabilities at the interface, with selectable transfer rates from 72 KBS to 384 KBS for all applications which require performance above a 75-IPS start/stop vacuum column tape drive. Standard on the CacheTape M891 is a burst mode capability that significantly reduces channel busy conditions.

The low profile, 8¾-inch high, horizontally-mounted design saves rack space to accommodate the smaller system racks in the new office-oriented systems. The unique Cipher automatic front loading and threading features make CacheTape user-friendly.

The Cache

A state-of-the-art Z8002 microprocessor and DMA controller work together to supervise vital drive and data

management functions of the cache. The cache consists of a 64-Kilobyte Random Access Memory (RAM) logically positioned between the drive interface and the read/write formatter. The cache compensates for most data transfer rate fluctuations seen at the drive interface. These fluctuations often occur during file-oriented backup operations.

High Capacity 3200 BPI

The 3200-BPI option gives nearly twice the reel capacity of 1600 BPI, allowing unformatted data storage of approximately 92 MB on a standard 2400-foot reel. CacheTape M891 also provides fast backup times competitive with 50-IPS start/stop GCR drives, or 75-IPS streaming GCR in certain applications, at half the cost.

- Unequaled price/performance benefits**
- ANSI and IBM interchange compatible**
- "Error-Free" write operation**
- Improved read capability**
- Industry standard formatted interface**
- No streaming software required**
- Fully automatic loading and threading**
- User selectable transfer rates**
- Powerful maintenance diagnostics**
- High capacity 3200-BPI option (for 92 Megabytes per reel, unformatted)**



Series M890/M891 CacheTape™ Tape Drive Specifications

CacheTape — Model M890						M890/M891		
Transfer Rate (20-120 KBS)*	20	40	60	72	120	<input type="checkbox"/> Formatter Industry Standard Interface (TTL low true) <input type="checkbox"/> Error Recovery: automatic write and read retry <input type="checkbox"/> Block Length: variable with 32 KB max Note: Transfer rates are user selectable to match the performance of CacheTape to host system capabilities as well as to allow compatibility with lower performance start/stop drives.		
Access Time (Ramp) in Milliseconds	30	15	10	8.3	5.0			
CacheTape — Model M891								
Transfer Rate (72-384 KBS)*	72	120	160	192	224	272	320	384
Access Time (Ramp) in Milliseconds	8.3	5	3.7	3	2.6	2.2	1.5	1.0
Access Time with Ramps Disabled (user selectable)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

*Maximum burst mode block transfer rates to cache

Reel Size

10.5" (26.67 cm) dia
 8.5" (21.59 cm) dia
 7" (17.78 cm) dia

Recording Mode

Normal

Phase Encoded (PE)
 ANSI and IBM compatible
 9-track — 1600 BPI (63 CPmm)

High Density (optional)

Phase Encoded (PE)
 IBM compatible (submitted for ANSI certification)
 9-track — 3200 BPI (126 CPmm)

Error Handling

Automatic Write Retry
 Automatic Read Retry
 Interface Error Rates
 Write: "Error-Free"
 (using defect-free media)
 Read: soft errors — "Error-Free"
 (automatic soft error recovery)
 hard errors — 1 in 10¹⁰ bytes

Tape Velocity

100 IPS @ 1600 BPI
 50 IPS @ 3200 BPI
 Rewind Speed
 225 IPS nominal
 Instantaneous Speed Variation
 ±2% of long-term variation
 Long-Term Speed Variation
 ±1% of nominal speed

Tape Media/Handling

Width: 0.5 inch (1.27 cm)
 Thickness: 1.5 mil (0.038 mm)
 Tension: 7 oz nominal (198.5 grams)
 Type: Computer grade
 ANSI X 3.40-1976
 Head: 9-track read-after-write long life
 Tape
 Cleaner: Dual precision blades

Environment

Operating Temperature
 +10°C to +40°C
 Relative Humidity
 20-85% non-condensing
 Altitude
 0-10,000 ft (3048 m)

Mechanical Description

Mounting
 Standard EIA rack (RS-310-C)
 Height
 8.75" (22.2 cm)
 Width
 17.0" (43.2 cm)
 Depth, from mounting surface
 22.0" (55.9 cm)
 Depth, overall
 24.5" (62.2 cm)
 Weight
 80 lbs (36.29 Kg)

Electrical Requirements

Electronics
 Silicon solid state low power Schottky
 TTL and MOS
 Power
 100, 120, 220, 240 VAC
 +10, -15%, 49-61 Hz; 270 Watts max.
 Regulatory Safety
 UL approved/CSA certified
 Meets FCC, Class A, requirements
 IEC 435 design compliance
 VDE 0806 compliance (optional)

Capacity — 2400 ft. tape:

46 Megabytes unformatted @ 1600 BPI
 92 Megabytes unformatted @ 3200 BPI

MTBF

5,500 hours of use

Cipher's CacheTape Tape Drive simplifies fault isolation by providing service engineers with built-in power-up diagnostics and a powerful set of front panel keyboard selectable diagnostics. Easy access is provided to any part of the drive without having to remove the CacheTape from the rack, thus simplifying serviceability. CacheTape's single-board circuitry reduces the parts count, and eases assembly and maintenance, giving CacheTape an MTTR (Mean Time To Repair) of 30 minutes.



Optional Cabinet Unit

Physical Size

Height: 10.59" (26.90 cm)
 Width: 19.88" (50.49 cm)
 Depth: 26.94" (68.43 cm)

Weight

15 lbs (6.83 Kg) without streamer
 95 lbs (43.23 Kg) with streamer
 (total weight)

Regulatory Safety

UL listed/CSA certified
 Complies with FCC, Class A, requirements
 with suitable cables
 IEC 435 design compliance
 VDE 0806 compliance (optional)

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