

Series M990/M991 GCR CacheTape™ Tape Drive

High Quality at a Low Price

Cipher Data Products, Inc. provides the first GCR CacheTape 1/2-inch tape drive. Developed for high performance at a low price, GCR CacheTape offers the full power of cache and the benefits of GCR in a small size package. It provides up to 180 Megabytes of storage per reel to back up large Winchester disk drives, as well as to furnish a wide range of secondary storage functions. Quality and reliability are designed in, so excellence is manufactured into each of GCR CacheTape's two models: M990 and M991. The chart on the reverse side illustrates the differences between the M990 and M991.

The nine major advantages of the Cipher GCR CacheTape are:

1. Industry Standard Recording for data interchange—Provides ANSI/IBM standard 1600 and 6250-BPI recording formats to assure reliable data input and output for software distribution or program load requirements...also provides optional IBM-compatible 3200 BPI for tape library compatibility.

2. Interface Compatibility for simplified integration—Designed with Cipher's standard CacheTape interface to provide compatibility with most off-the-shelf couplers, Cipher's other CacheTape drives, and many systems currently using the Microstreamer® Tape Drive or other industry-standard formatted drives...also, provides selectable transfer rates to match drive performance to host system capabilities, and allows mounting in standard EIA equipment racks.

3. High Performance on Start/Stop Software to eliminate the need for special streaming software—Overcomes inability of most systems to stream in GCR, by providing fast start/stop response to host commands...virtually eliminates the adverse effects of tape repositioning that can limit the efficiency of non-cache streaming GCRs during file sort/merge operations.

4. Fast System Backup to maximize system performance and reduce system downtime during disk backups—Eliminates the peripheral I/O bottleneck by running at high 395—790-KBS transfer rates, and using the rapid cache start/stop response...also increases data throughput with Cipher's unique Downstream Erase feature on the M991 which minimizes repositioning during write error recovery.

5. "Error-Free" Interface for reliable data—Provides automatic rewrite and reread of records with errors, resulting in an "Error-Free" write and no soft read errors...also increases reliability with Cipher's exclusive Enhanced Multitrack Error Recovery technique which improves the recovery rate of read data that would be lost by most other GCR drives...

6. Ease of Operation to minimize operator interaction—Prompts operator with eight-character English language display to provide drive status information...also automatically loads and threads all standard reel sizes.

7. Simplified Maintenance to cut MTTR—Minimizes MTTR with on-board fault isolating diagnostics that locate and identify the problem, using the eight-character display in the test mode.

8. Compact 14" Height to complement modern low profile system designs—Saves rack space and cabinet costs by cutting the unit size. This is done by using compact streaming mechanics, and implementing the extensive GCR error correction code in firmware, rather than in the usual hardware.

9. Large 180-MB Capacity to minimize reel changes and media costs—Does high-density 6250-BPI recording to back up disks with fewer reels and less operator interaction.

- Low price and small package
- ANSI/IBM standard—6250/1600 BPI
- CacheTape interface—Microstreamer compatible
- High Performance—395-790 KBS
- Cache Start/Stop—plus streaming
- Downstream erase (M991)—increases data throughput
- Improved Write—"Error-Free" Interface
- Improved Read—Enhanced Multitrack Error Correction
- Easy to use—auto-load/thread
- Easy to maintain—on-board diagnostics
- 3200 BPI option—IBM compatible
- Accessory battery backup module



Series M990/M991 GCR CacheTape™ Tape Drive Specifications

Reel Size

10.5" (26.67 cm) dia
8.5" (21.59 cm) dia
7.0" (17.78 cm) dia

Recording Mode

Standard

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

Group Code Recording (GCR)
ANSI and IBM compatible
9-track—6250 BPI (159 CPmm)

Optional

Phase Encoded (PE)
IBM compatible
9-track—3200 BPI (126 CPmm)

Error Handling

Automatic Write Retry
Automatic Read Retry
Interface Error Rates
Write: "Error Free"
(with defect-free media)
Read: soft error—"Error Free"
hard error—PE: 1 in 10¹⁰ bytes
—GCR: 1 in 10¹¹ bytes

Error Correction (Read)
GCR—multi-track bi-directional
software error recovery
PE—automatic single-track
error recovery

Tape Media/Handling

Width
0.5 inch (1.27 cm)
Thickness
1.5 mil (0.038 mm) (substrate)
Tension
9.5 oz. nominal (269.3 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
14.0" (35.6 cm)
Width
17.0" (43.2 cm)
Depth
22.0" (55.9 cm)
from mounting surface
24.5" (62.2 cm)
overall w/battery: 26.5" (67.3 cm)
Weight
100 lbs (45.4 Kg)
w/battery: 120 lbs (54.4 Kg)

Electrical Requirements

Electronics
Silicon solid state low power Schottky
TTL and MOS
Power
100, 120, 220, 240 VAC
+ 10-15%/49-61 Hz
250 Watts nominal
400 Watts max. (ramping)
Regulatory Safety
UL approved as a recognized
component
CSA certification
IEC-435 compliance
Meets FCC, Class A, requirements
(with suitable cables)

Unformatted Capacity

2400 ft. tape:
46 Megabytes @ 1600 BPI
92 Megabytes @ 3200 BPI
180 Megabytes @ 6250 BPI

MTBF

5,000 hours of use

GCR CacheTape M990 vs. M991

Specifications	M990	M991
Transfer Rates*		
Average	70-395KBS	75-790 KBS
Peak Burst	450 KBS (max.)	904 KBS (max.)
Downstream Erase	No	Yes
Block Size (max.)	32K	64K

*Transfer rates are user-selectable to match the performance of the GCR CacheTape to host system capabilities.

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