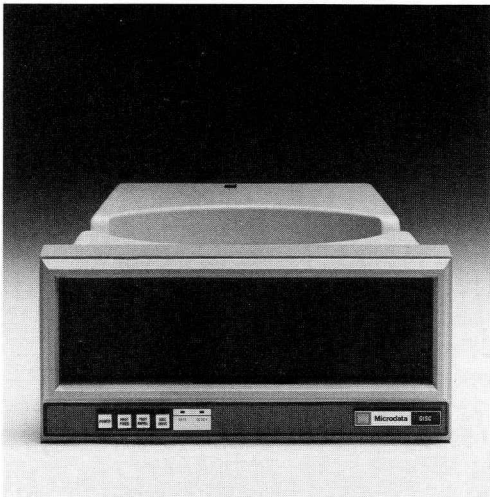


Dependable, cost-effective disc storage for small and medium size computer systems.



Microdata Marathon™ Cartridge Disc Drive

Marathon™ provides 10 million bytes of fast, dependable, random access storage using an IBM 5440 type removable cartridge and a non-removable disc.

- 35 milliseconds average access time
- IBM 5440 or equivalent cartridge with full interchangeability between drives
- 10 megabyte total capacity—5 megabytes removable, 5 megabytes fixed
- Industry standard interface
- Daisychain capability (up to 4 drives per controller)
- .5 hour MTTR
- Modular electronics and few moving parts
- 1500 or 2400 rpm disc rotation
- Positive air filtration (0.3 micron)
- Error rate less than 1 in 10¹²

Configurations

Marathon disc drives are available in dual disc configurations, with recording density of 200 tracks per inch and either 1500 or 2400 rpm disc rotation. Disc units use a removable cartridge, IBM 5440 type, plus a non-removable fixed disc.

Marathon Configurations

Drive Model Number	Number of Discs	Track Spacing	Drive Capacity (bytes)	Date Transfer Rate
7401 (1500 rpm)	2	200 tpi	10m	200K bytes/sec
7402 (2400 rpm)	2	200 tpi	10m	312K bytes/sec

Fast, Precise Head Positioning

Marathon combines a low-mass carriage assembly, high performance linear positioning motor and precision photo-optical system to provide extremely fast head positioning to within 200 microinches of nominal track center. Repeatability and variation between drives is ± 50 microinches.

Fast Data Throughput

At 1500 rpm, Marathon's data transfer rate is 200K bytes per second; average latency time for a particular sector to rotate under the recording heads is 20 milliseconds. The 2400 rpm drives increase data transfer to 320K bytes per second and reduce rotational latency to 12 milliseconds.

Absolute Air Filtration

Marathon employs an absolute air filtration system to remove potentially hazardous airborne particles. All particles greater than 0.3 microns are filtered out as air is drawn into the drive. Clean air is circulated over the recording surfaces, drive mechanisms and electronics to cool and constantly purge the system.

Positive air pressure is maintained within the drive. During cartridge changes, the blower continues to operate, preventing contaminants from entering the drive.

Rotational Drive

Disc rotation is crystal controlled, regulating the speed to within ± 1 percent, independent of motor line voltage or frequency fluctuations.

Modular Electronics

The data, positioning and interface electronics are contained on four printed circuit cards. Each card contains the circuitry for a particular set of drive functions, permitting rapid fault isolation and correction.

Compact Package

Marathon is $8\frac{3}{4}$ inches high, including power supply and all electronics. Available rack mount slides allow the unit to be extended fully from the front of the rack for loading and unloading the cartridge and for easy service.

Data Reliability

Precision head positioning, sound electronics design, effective ground isolation and radiation shielding all contribute to high data reliability. Marathon's non-recoverable data rate is less than 1 in 10^{12} .

Data Protection

Two manual write protect switches on the front panel selectively inhibit the write electronics of the fixed and removable discs to protect stored data from inadvertent erasure.

A comprehensive set of interlocks protect against operational errors which could present a hazard to the stored data, drive mechanism or operator. The disc cannot rotate unless the removable cartridge is correctly installed in the drive. To protect the heads and disc surfaces, a carriage interlock prevents the heads from being extended until the disc has reached the necessary speed for proper head aerodynamics. The same interlock also retracts the heads in event of rotational failure.

Structural Integrity

Marathon disc drives incorporate a minimum of mechanical assemblies. All assemblies mount directly to precision machined surfaces on the aluminum mainframe casting, resulting in precise alignment. All major components are manufactured by Microdata, assuring complete, direct control of critical tolerances.

Inherent in the mechanical design is high resistance to positioning variations caused by changes in temperature. In the drives, thermistors monitor temperatures within the drive and electronically compensate for dimensional changes.

Specifications

Storage Capacity: 10 million bytes

Recording Media: Removable cartridge and fixed disc

All discs are 14 inches in diameter, oxide coated aluminum substrate

Removable cartridge is IBM 5440 or equivalent

Track Spacing: 200 tracks per inch

Cylinders/Tracks per Surface:

408 at 200 tpi

Disc Rotation Speed:

1500 rpm ± 1 percent

2400 rpm ± 2 percent

Data Transfer Rate:

1.562 MHz (200,000 bytes/second) at 1500 rpm

2.5 MHz (312,000 bytes/second) at 2400 rpm

Head Positioning Time: 10 milliseconds track to track

35 milliseconds average (random move)

65 milliseconds maximum (full stroke)

Head Positioning Accuracy: Within 200 microinches of nominal track center

Repeatable within 50 microinches

Rotational Latency:

20 milliseconds average at 1500 rpm

12.5 milliseconds average at 2400 rpm

Mean Time Between Failures (MTBF): 5000 hours

Mean Time to Repair (MTTR): .5 hour maximum

Error Rate:

Recoverable: less than 1 bit in 10^{10}

Nonrecoverable: less than 1 bit in 10^{12}

Air Filtration: 0.3 micron, positive internal pressure

ENVIRONMENTAL

Operating Temperature:

55° to 105° F

12° to 40° C

Operating Humidity: 10% to 80% relative, without condensation

PHYSICAL

Dimensions: 19" wide, 8.75" high, 27" deep

Weight: 120 pounds

ELECTRICAL

Input Power:

115 vac $\pm 10\%$ at 1.5A average

220 vac $\pm 10\%$ at 0.8A average

59.5 to 60.5 Hz or 49.5 to 50.5 Hz

Microdata OEM Peripherals

A Significant Difference

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