CALCOMP

MODEL 235 DISK DRIVE

Consisting of two separate and independent spindles housed in a single cabinet, CalComp's Model 235 Disk Drive provides high performance, large capacity and low-cost-per-byte data storage requiring minimum floor space. With a rotational speed of 3600 rpm, data is transferred at a rate of 6.45 megabits per second. High density recording and reading is achieved by the voice coil actuator and electrical detent coupled with the state of the art servo track positioning. In addition to the servo surface, 19 recording surfaces are used.

The Model 235 Disk Drive is available in 2 density models:

Model	Density	Megabytes per Spindle
235-I	Single	100
235-II	Double	200

CalComp Models 235-I and 235-II feature interchangeable disk packs that are compatible with the equivalent IBM 3336-1 and 3336-11 type packs, respectively. Double absolute filters assure that highly filtered air is continuously supplied to the packs, even when the powered drawers are open. Each spindle is easily accessible from both the front and rear for maintenance.

All active circuits are functionally organized on printed circuit boards to enhance maintenance. The printed circuit boards are easily accessible and located at a work bench level. Major subassemblies are pluggable and are also easily accessible for maintenance. Convenient access to the rear of the read/write heads further enhances ease of maintenance.

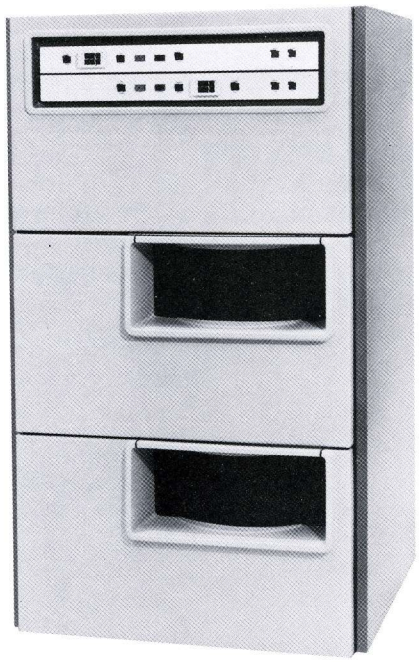
All 2 models can provide the optional capability of dual access which allows totally independent paths from two controllers to any spindle.

High Performance Features

- Fast Access Time
- Up to 200 Megabytes per Spindle
- Power Operated Drawers
- Data Transfer Rate: 6.45 Megabytes/Sec
- Recording Density of 4040 bpi
- Optional Dual Access
- Prerecorded Track Position Sensing

Maintenance and Reliability Features

- Continuously Filtered Air
- Functionally Organized Modules
- Front and Rear Spindle Access
- Work Bench Level Repair
- Two-High Spindles



MODEL 235 DISK DRIVE

235 SPECIFICATIONS AND CHARACTERISTICS

CAPACITY (million 8-bit bytes)

	235-I	235-II
Per Spindle	100	200
Per Unit	200	400

TRANSFER RATE
6.45 Megabits per second

ACCESS TIME
Track-to-Track: 10 msec max.
Average Positioning: 30 msec
Full Stroke: 55 msec max.
Average Latency: 8.4 msec

ROTATIONAL SPEED
3600 rpm (16.7 msec)

PACK START/STOP TIME
Start Time: 20 seconds
Dynamic Braking: 15 seconds

DENSITIES

	235-I	235-II
Track Density	192 TPI	370 TPI
Recording Density	4040 bpi	4040 bpi

DISK PACK CHARACTERISTICS
Disk Pack (IBM 3336-type): 235-I (3336-1); 235-II (3336-11)
Recording Surfaces: 19 + 1 servo surface
Tracks per Surface: 235-I: 411 tps; 235-II: 815 tps

OPERATING METHODS
Recording Code: modified FM
Positioning Method: linear motor; track-following servo
Recording Format: IBM 3330 compatible; fixed or variable length

POWER REQUIREMENTS
208V/230V AC (±10%), Three Phase; 60 ±0.5 Hz
380V/415V AC (±10%); Three Phase; 50 ±0.5 Hz
Start Current: 25 Amps for 12 seconds (per spindle)
Operating Current: 6 Amps rms (per spindle)

HEAT DISSIPATION
6830 BTU/hr (cabinet average)

EXTERNAL DIMENSIONS

32" wide x 60.5" high x 34.5" deep
(813mm wide x 1537mm high x 876mm deep)
Floor Space: 7.7 sq. ft. (0.71 sq. meters)

OPERATING ENVIRONMENT
Temperatue: 60°F (15.6°C) to 90°F (32.2°C)
Temperature Gradient: 15°F (18.3°C) per hour max.
Humidity: 10% to 80% (no condensation)

WEIGHT
Operating: 1150 lbs (521 kg)
Shipping: 1200 lbs (544 kg)

ERROR RATE
Recoverable: 1 error in 10^{10} bits
Non-Recoverable: 1 error in 10^{13} bits
Positioning: 1 error in 10^{6} seeks

RELIABILITY
MTBF: over 2500 hours
MTTR: under 1.5 hours
Service Life: 5 years or 35,000 hours

CONTROLS & INDICATORS
Drawer Open/Close Switch
Start/Stop Switch
Read Only Switch
Ready Indicator
Select Lock Indicator
Logical ID Plug
Channel A Enable } (with dual-access option only)
Channel B Enable }

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