

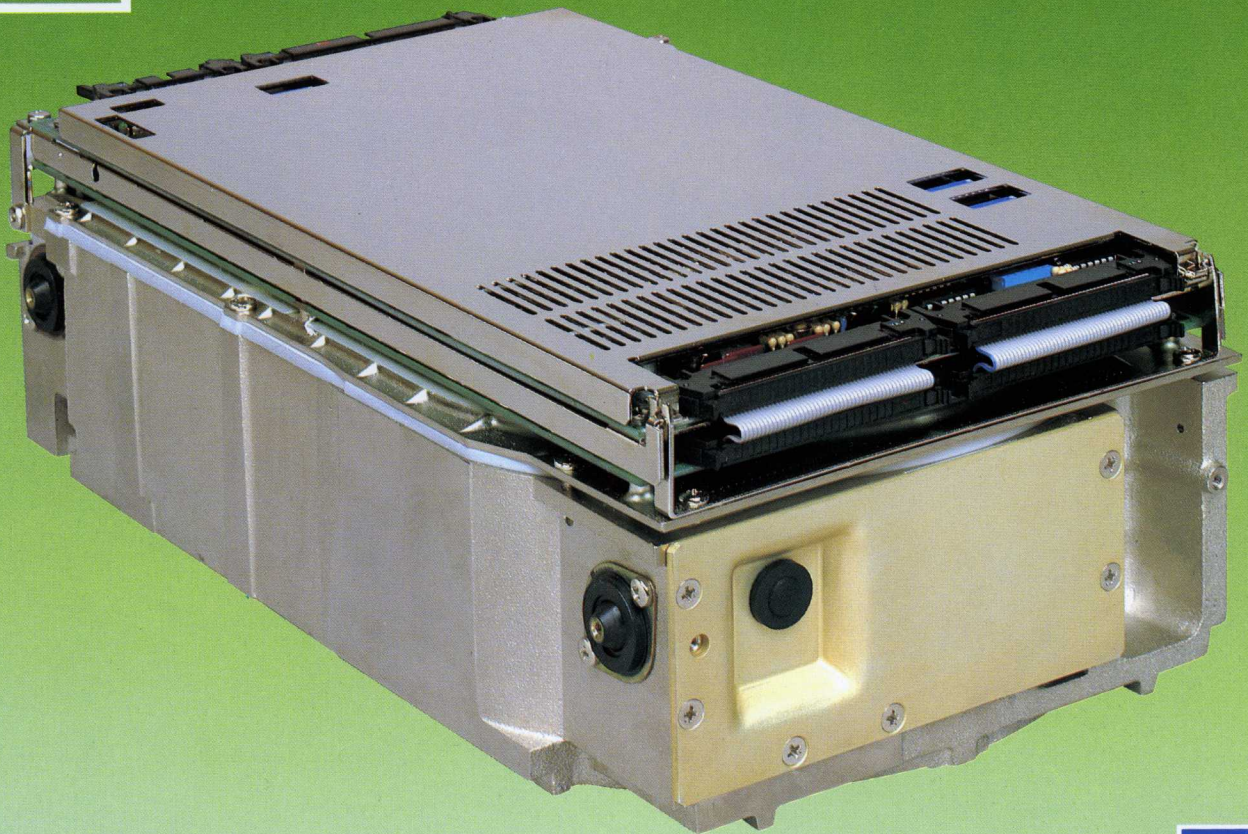
OEM MICRODISK DRIVES

APR

1984

M2321K M2322K

*8-inch Winchester-type fixed disk drives with
84- and 168-megabyte capacities and 20-milli-
second average positioning time.*



M2322K



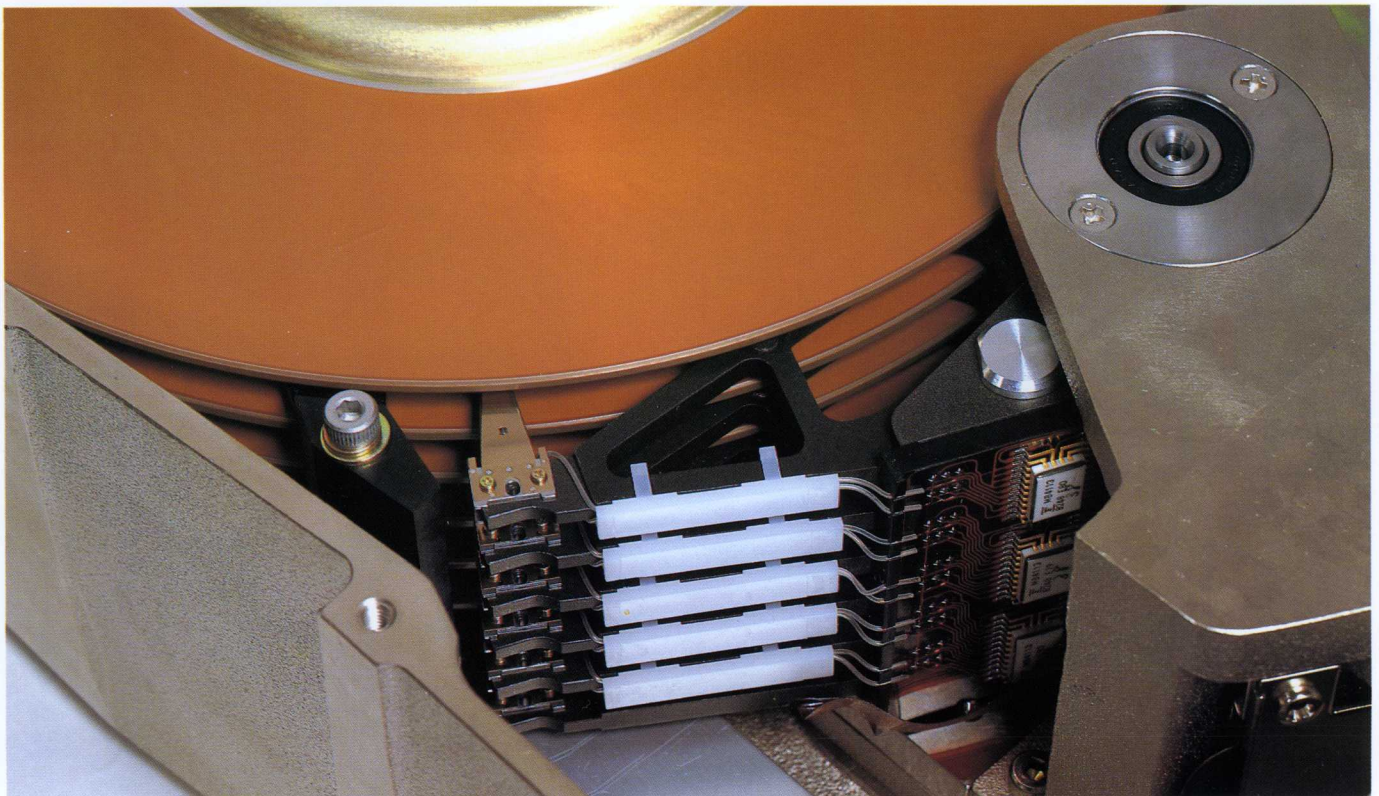
The M2321K and M2322K are Fujitsu's 8-inch Winchester-type fixed disk drives featuring new large storage capacities and a fast positioning time. The M2321K and M2322K each consists mainly of a disk enclosure and three printed circuit boards. The disk enclosure integrates three or six disks, six or eleven contact start/stop heads, a rotary actuator, a DC spindle motor, and IC read preamplifiers, all in a small completely sealed package. The M2321K and M2322K provide superior cost effectiveness, setting a new standard for small computer systems and intelligent terminals across a broad range of applications.

New large capacities and high performance

The M2321K provides 84 megabytes on three disks, and the M2322K provides 168 megabytes on six disks. Average positioning time is 20 milliseconds and the data transfer rate is 1.2 megabytes per second.

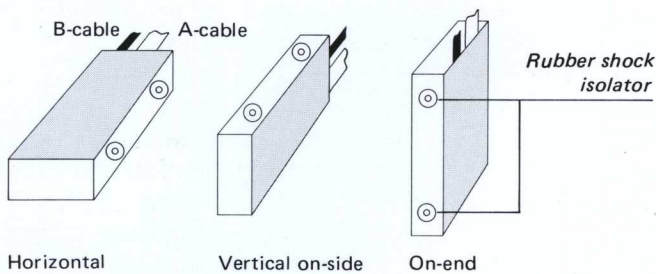
Reliable, maintenance free

High reliability is assured by providing a contamination-free environment through a completely sealed casting frame, a breathing filter, and an absolute recirculation filter. Advanced Winchester technology simplifies the disk mechanism, and the head IC prevents read errors caused by external electrical noise. With these features, the M2321K and M2322K assure a mean-time-between-failures (MTBF) exceeding 10,000 power-on hours. Also no preventive maintenance is required, and mean-time-to-repair (MTTR) is less than 30 minutes.



Compact, economical

The M2321K and M2322K provide large capacity storages in compact modules no larger than those of the M2311K and M2312K, Fujitsu's field-proven Winchester-type 8-inch disk drives with 48- and 84-megabyte capacities. The M2321K and M2322K each consume less than 150 watts. The drives can be mounted horizontally (two, side by side) in a standard 19-inch rack, or independently in any of three directions; horizontally, on-end, or vertically on-side.



SMD interface

The industry standard SMD interface is provided as part of the on-board electronics.

Dual channel option

With the dual channel option, two controllers can access the M2321K and M2322K.

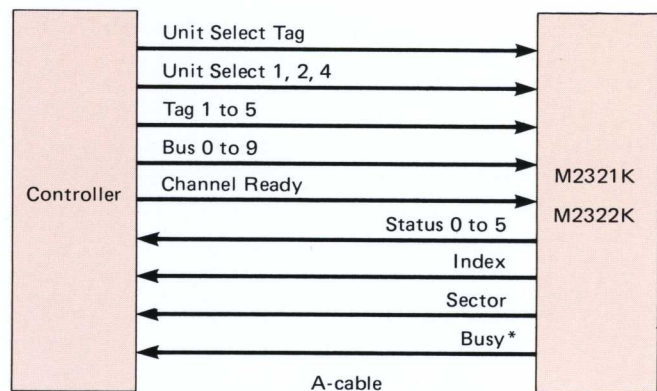
Standard and optional DC power supply

The M2321K and M2322K operate on +24V, +5V, and -12V low voltage DC power, providing flexibility for use anywhere in the world. An optional DC power supply, originally designed for the M2311K and M2312K, for converting input power of 100, 115, 120, 220, or 240 VAC, is also usable. The 100/115/120 voltage or the 220/240 voltage is switchable.

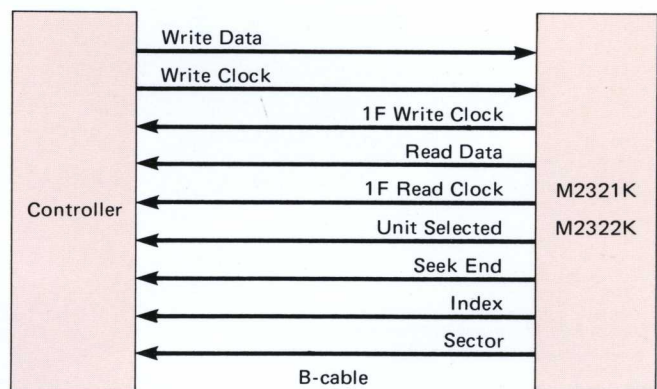
Enhanced serviceability

Each of the M2321K and M2322K has a unique rotary actuator lock with plunger magnet, which locks the rotary actuator when the power is not supplied to the drive, and automatically releases the lock when the power is turned on. With this feature, the customer engineer is freed from manually locking the rotary actuator for drive transportation and releasing the lock at the installation site — operations which were needed with conventional drives.

SMD interface



*Busy signal is used with the dual channel option.



FUNCTIONAL SPECIFICATIONS

		M2321K	M2322K
Storage capacity (unformatted)		84.27 megabytes	168.55 megabytes
Disks (8-inch)		3	6
Heads	Read/write	5	10
	Servo	1	1
Track capacity (unformatted)		20,480 bytes	
Tracks per cylinder		5	10
Cylinders		823	
Sectors	Fixed	2 or more (Max. 128)	
	Variable	Available	
Positioning time	Track-to-track	5 milliseconds	
	Average	20 milliseconds	
	Maximum	40 milliseconds	
Average latency time		8.3 milliseconds	
Rotational speed		3,600 rotations/minute	
Recording density		9,867 bits/inch	
Track density		683 tracks/inch	
Data transfer rate		1.2 megabytes/second	
Recording code		MFM (Modified Frequency Modulation)	
Interface code		NRZ (Non-Return-to-Zero)	
Interface		SMD (Storage Module Drive)	
Head positioning method		Servo-controlled track-following	
Start time		40 seconds (nominal)	
Stop time		Less than 40 seconds	
Options		Dual channel, A-cable, B-cable, DC power supply with AC input, cooling fan, mounting tray for standard 19-inch rack, operator panel	

PHYSICAL SPECIFICATIONS

		M2321K/M2322K
Power requirements		24VDC±10% 3.6A (effective, typical) 7.2A _{O-p} (maximum) 4.6A (power on, effective, typical) 5VDC±5%, 3.5A -12VDC±5%, 3A
Dimensions	Height	127mm (5.0in)
	Width	216mm (8.5in)
	Depth	380mm (15.0in)
Weight		14kg (31 lb)
Ambient temperature	Operating	5°C to 40°C (41°F to 104°F)
	Not operating	-40°C to 60°C (-40°F to 140°F)
	Gradient	Less than 15°C (27°F)/hour
Relative humidity	Operating	20% to 80% (non condensing)
	Not operating	5% to 95% (non condensing)
Vibration and shock resistance	Operating	Max. 0.2G (3Hz to 60Hz) Shock: max. 2G (10ms)
	Not operating	Max. 0.4G (3Hz to 60Hz) Shock: max. 3G (10ms)
	In storage or transport	Shock: max. 5G (30ms)
Altitude	Operating	3,000 m (10,000 ft)
	Not operating	12,000 m (40,000 ft)

RELIABILITY SPECIFICATIONS

		M2321K/M2322K
Mean-time-between-failures (MTBF)		More than 10,000 power-on hours
Mean-time-to-repair (MTTR)		Less than 30 minutes
Component life		5 years
Error rates	Recoverable errors	10 per 10 ¹¹ bits read
	Unrecoverable errors	10 per 10 ¹⁴ bits read
	Seek errors	10 per 10 ⁸ seeks

Specifications are subject to change without notice. For the latest information, contact your local Fujitsu representative.

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