

# FUJITSU

Quality OEM Products

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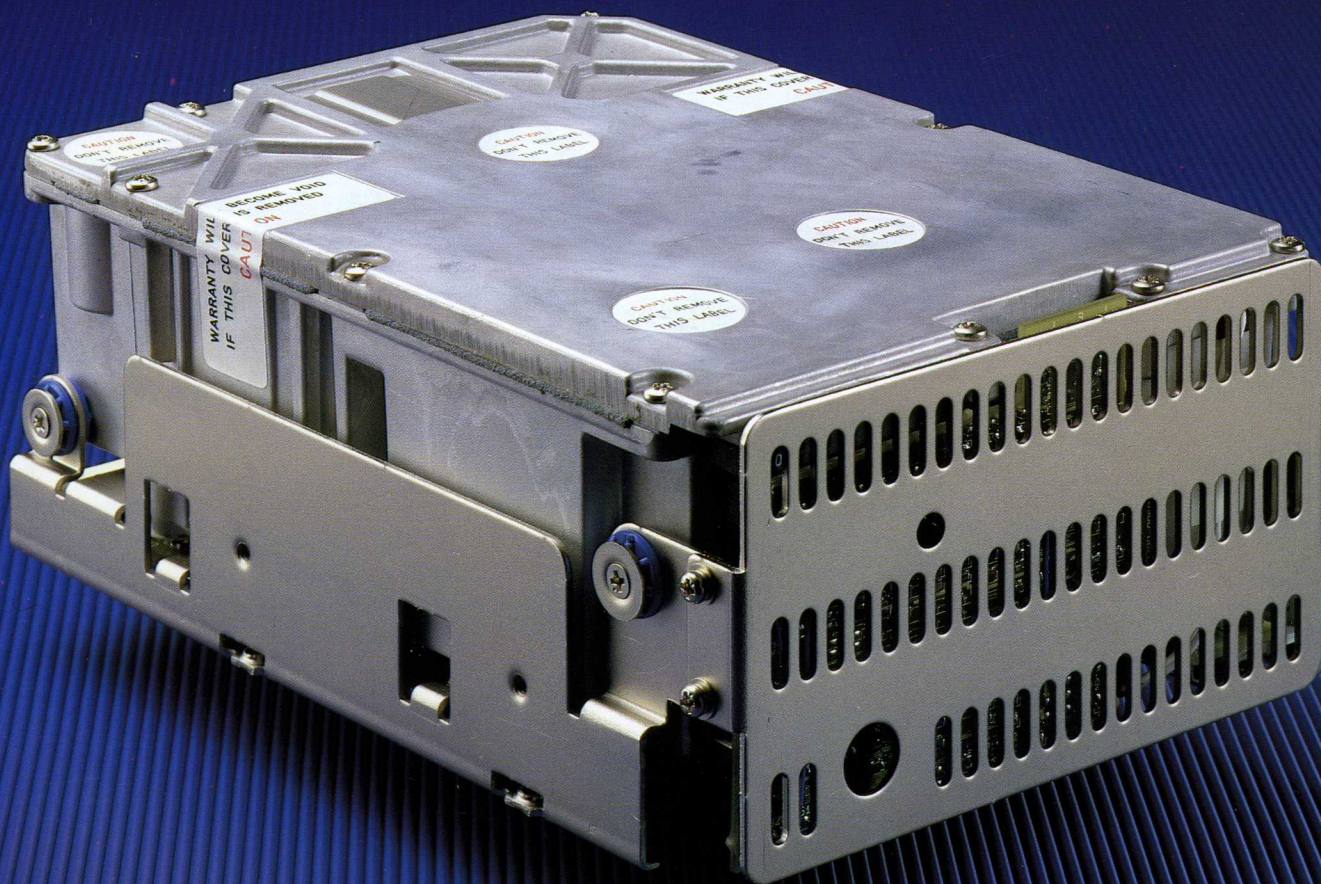
MAR 10 1989

## 5 $\frac{1}{4}$ -inch magnetic disk drives

M2261E/S/SA/SB/H/HA/HB

M2262E/S/SA/SB/H/HA/HB

M2263E/S/SA/SB/H/HA/HB





The M2261, M2262, and M2263 are high-performance 5¼-inch magnetic disk drives with large storage capacities. The M2261, M2262, and M2263 are available in seven types – E, S, SA, SB, H, HA, and HB. The E type has an Enhanced Small Disk Interface (ESDI) and 7 to 96 variable sectors. The S, SA, and SB types each have an embedded single-ended Small Computer System Interface (SCSI) controller, and are formatted with 256B/block, 512B/block, and 1,024B/block, respectively. Users can reformat the drive to suitable block size in the range of 180 to 4,096 bytes per block with even-byte boundary. The H, HA, and HB types have a differential SCSI controller and are preformatted the same as S, SA, and SB types, respectively. Each disk enclosure is completely sealed, integrating eight disks, sixteen Whitney heads, a rotary voice coil motor (VCM), and a DC spindle motor. They are ideal for intelligent office systems which can handle images, voices, and video data.

### **Large storage capacities**

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The M2261, M2262, and M2263 have storage capacities of 415.1 MB, 570.8 MB, and 778.3 MB, respectively.

### **High performance**

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The M2261, M2262, and M2263 achieve fast positioning time – 4 milliseconds track-to-track, 16 milliseconds average, 30 milliseconds maximum, including settling time.

The E type's data transfer rate to the controller is 1.875 MB/s. With the S, SA, SB, H, HA, HB types, which have a large data buffer of 64 KB, the transfer rate to the host computer is 4.0 MB/s (synchronous mode), 1.75 MB/s (asynchronous mode).

### **ESDI Interface (E type)**

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The E type has an ESDI interface.

### **Embedded Single-ended SCSI controller (S, SA, SB types)**

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The S, SA, and SB types each have an embedded single-ended SCSI controller. The controller's commands meet the SCSI CCS (Common Command Set for direct-access device) standard.

### **Embedded Differential SCSI controller (H, HA, HB types)**

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The H, HA, and HB types each have an embedded differential SCSI controller.

### **Microprocessor controlled**

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The voice coil motor is controlled by a microprocessor. As a result, the seek control circuit is greatly simplified and reliability is further increased.

## Reliable, maintenance free

The completely sealed disk enclosure contains a breathing filter and a recirculation filter to provide a contamination-free environment. Whitney heads eliminate moving parts for head loading and unloading. These drives use LSI drive logic, and the Head IC prevents read errors caused by external electric noise. With these features, the drives' mean time between failures (MTBF) is more than 30,000 power-on hours, and their mean time to repair (MTTR) is less than 30 minutes.

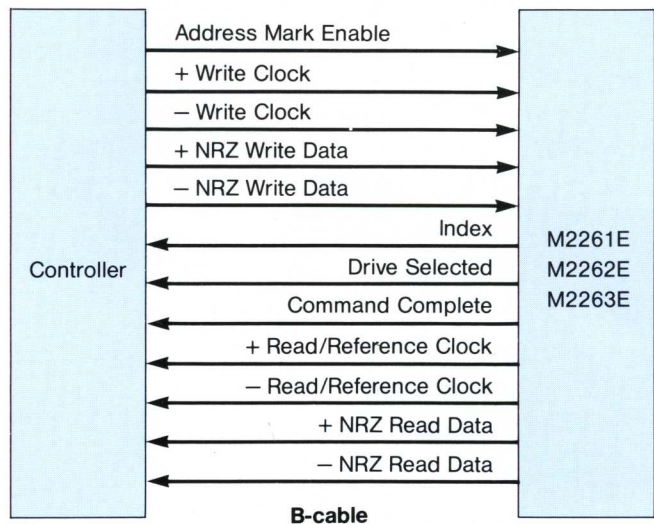
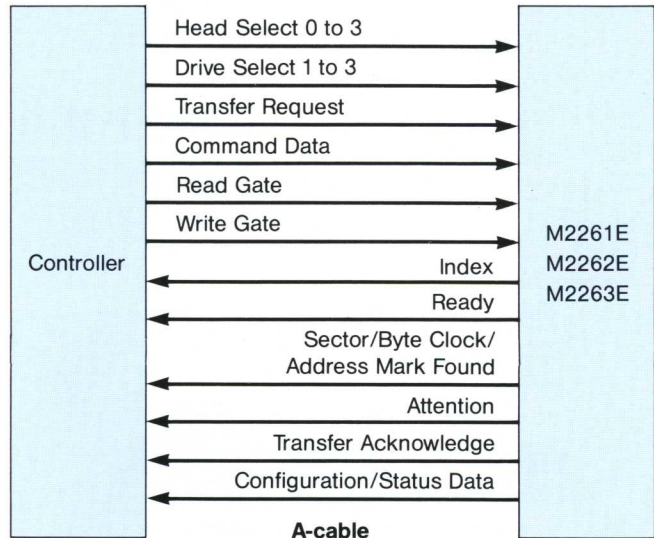
## Compact, economical

These drives' large capacities and high performances have not been achieved at the expense of compactness. Their physical sizes are the same as those of 5¼-inch flexible disk drives, and can be installed in flexible disk drive cabinets to increase storage capacity. They can be mounted horizontally or vertically. These features make the drives ideal for office applications.

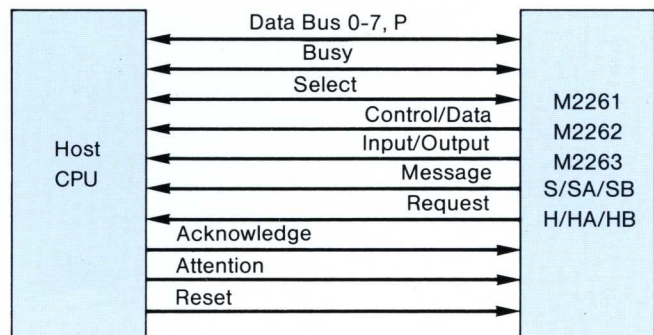
## Internationally compatible

The M2261, M2262, and M2263 use low-voltage DC of +12 V and +5 V, permitting international applications and freedom from the effects of power line fluctuations.

### ESDI interface



### SCSI interface





## FUNCTIONAL SPECIFICATIONS

		M2261E	M2262E	M2263E	M2261 S/SA/SB H/HA/HB	M2262 S/SA/SB H/HA/HB	M2263 S/SA/SB H/HA/HB
Storage capacity	Unformatted	415.1 MB	570.8 MB	778.3 MB	415.1 MB	570.8 MB	778.3 MB
	Formatted	326.0 MB (256B/sectors for 96 sectors)	448.2 MB (256B/sectors for 96 sectors)	611.2 MB (256B/sectors for 96 sectors)	321.1 MB (S/H) 357.1 MB (SA/HA) 374.9 MB (SB/HB)	442.0 MB (S/H) 492.0 MB (SA/HA) 517.5 MB (SB/HB)	603.2 MB (S/H) 761.9 MB (SA/HA) 707.5 MB (SB/HB)
Disks (5¼-inch)		5	6	8	5	6	8
Heads	Read/Write	8	11	15	8	11	15
	Servo	1					
Track capacity (unformatted)		31,296 bytes					
Track per cylinder		8	11	15	8	11	15
Cylinders		1,658					
Sectors		Selectable, 24/27/28/48/51/52/54/96			28/1024B (SB, HB) or 53/512B (SA, HA) or 95/256B (S, H)		
Positioning time	Track-to-track	4 ms					
	Average	16 ms					
	Maximum	30 ms					
Average latency time		8.3 ms					
Rotational speed		3,600 ± 1% rpm					
Data transfer rate		1.875 MB/s			1.75 MB/s (Asynchronous mode) 4.00 MB/s (Synchronous mode)		
Recording code		1/7 (RLL)					
Interface		ESDI			SCSI (Embedded)		
Start time		Less than 20 s					
Stop time		Less than 15 s					

## RELIABILITY SPECIFICATIONS

		M226X E	M226X S/SA/SB/H/HA/HB
MTBF		30,000 power-on hours	
MTTR		30 minutes	
Component life		5 years	
Error rates	Recoverable errors	10 per 10 <sup>11</sup> bits read	
	Unrecoverable errors	10 per 10 <sup>13</sup> bits read	10 per 10 <sup>15</sup> bits read
	Seek errors	10 per 10 <sup>7</sup> seeks	

## PHYSICAL SPECIFICATIONS

		M226X E	M226X S/SA/SB	M226X H/HA/HB
Power requirements	Operating	12VDC±5% 1.8A, 5VDC±5% 1.6A	12VDC ±5%, 5VDC ±5%	
	Start up	12VDC, max. 5.0A		
Dimensions	Height	83mm (3.3 in.)		
	Width	146mm (5.7 in.)		
	Depth	203mm (8.0 in.)	218mm (8.6 in.)	
Weight		3.5kg (7.7 lb.)		
Ambient temperature	Operating	5°C to 45°C (41°F to 113°F)		
	Not operating	-40°C to 60°C (-40°F to 140°F)		
	Gradient	Less than 15°C (27°F)/H		
Relative humidity	Operating	20% to 80% (non condensing)		
	Not operating	5% to 95% (non condensing)		
Vibration	Operating	Max. 0.2G (3Hz to 100Hz) (except resonance point)		
	Not operating	Max. 0.4G (3Hz to 100Hz)		
Shock resistance	Operating	Max. 2G (10ms)		
	Not operating	Max. 20G (10ms)		
Attitude	Operating	3,000m (10,000 ft)		
	Not operating	12,000m (40,000 ft)		

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