

Fujitsu Quality Storage Products

3.5-inch Magnetic Disk Drives

MAH3091/MAH3182 (9.1/18.2GB)

MAJ3091/MAJ3182/MAJ3364 (9.1/18.2/36.4GB)



Fujitsu introduces two new Enterprise Hard Disk Drive families. The MAJ series include 36GB/18GB/9GB low-profile drives, featuring 7.4Gbp. The drives boast a rotational speed of 10,025rpm, allowing a fast average positioning time of 4.7m/s for read, and average latency time of 2.99m/s.

The MAH series offer 18GB/9GB low-profile drives, 7.2Gbp. The drives boast a rotational speed of 7,200rpm, allowing an average positioning time of 6.7m/s for read, and average latency time of 4.17m/s.

Both series include Ultra 160, the industry's leading interface, and a 4MB buffer, enabling efficient data storage and quick access to information.

The enhanced S.M.A.R.T. detection system and ECC technology reflect Fujitsu's high reliability standards.

Both series are well suited for Enterprise Servers, PC Servers, Workstations and RAID subsystems, which require high performance and reliability.

FEATURES

■ Drive Features

- High capacities of 9.1GB, 18.2GB and 36.4GB, respectively
- Industry's fastest rotational speed of 7,200rpm/10,025rpm
- High reliability of 1,000,000 hours MTBF
- Advanced GMR head
- New design disk enclosure
- Light-weight rotary actuator
- MEERP4ML read channel technology

■ SCSI Features

- Supports FAST/ULTRA-1/ULTRA-2 Wide SCSI/ULTRA 160
- Downloadable firmware
- Read-ahead cache
- Write cache
- Tagged Command Queuing
- 320-bit Reed Solomon ECC with on-the-fly correction
- SCSI Active Negation
- Power Save (IDLE Mode)
- SMART
- ID-Less Format
- SCSI H/W Sequencer
- Staggered Index
- Hot Swap Case-3 (Dynamic Switchover between SE/LVD)
- ANSI X3.131-1986, ANSI X3.131-1994, CCS 4B, X3T9.2-375R Rev. 10K and X3T9.2 855D Rev. 12 compatibility

FUNCTIONAL SPECIFICATIONS

Model		MAH3091MC/MP	MAH3182MC/MP	MAJ3091MC/MP	MAJ3182MC/MP	MAJ3364MC/MP
Storage capacity (formatted)		9.1GB	18.2GB	9.1GB	18.2GB	36.4GB
Disks		1	2	2	3	5
Heads	Data	2	4	3	5	10
Tracks capacity		193,536 to 331,776 bytes (16 zones)		172,032 to 293,888	188,928 to 293,888 bytes (16 zones)	
Tracks per cylinder		2	4	3	5	10
Cylinders		17,686	17,545	13,261	14,808	14,792
Sectors/track (16 zones) ^{*1}		378 to 648		336 to 574	369 to 574	
Seek time	Track to track	Read 0.6ms (typ.)/Write 0.8ms (typ.)		Read 0.6ms (typ.)/Write 0.8ms (typ.)		
	Average	Read 6.7ms (typ.)/Write 7.3ms (typ.)		Read 4.7ms (typ.)/Write 5.2ms (typ.)		
	Maximum	Read 14.0ms (typ.)/Write 15.0ms (typ.)		Read 11.0ms (typ.)/Write 12.0ms (typ.)		
Average latency time		4.17ms		2.99ms		
Rotational speed		7,200rpm		10,025rpm		
Recording density (16 zones)		363,800 to 306,200 bits/in.		304,591 to 313,877 bits/in.	298,910 to 358,581 bits/in.	
Track density		19,000 tracks/in.				
Data transfer rate (max.)		160 MB/s (synchronous mode)				
Recording code		32/34 MEEPRML				
Interface		U160/SCA-2/68-pin Wide				
Head positioning method		Rotary VCM				
Start time		30 sec. (typ.), 60 sec. (max)				
Stop time		30 sec. (typ.)				
Others		-				

PHYSICAL SPECIFICATIONS

Model		MAH3091MC/MP	MAH3182MC/MP	MAJ3091MC/MP	MAJ3182MC/MP	MAJ3364MC/MP
Power requirements	Idle	12V ±5% 0.2A	12V±5% 0.25A	12V±5% 0.45A	12V±5% 0.5A	12V±5% 0.65A
	Startup	5V ±5% 0.70A		5V±5% 0.75A		
		12V ±5% 1.8A(peak) 3.0A (peak< 100μs)		12V ±5% 2.5A(peak) 3.0A (peak< 100μs)		
	Random W/R (at about 80 IOPS)	5V ±5% 0.70A		5V ±5% 0.8A		
		12V ±5% 0.55A		12V ±5% 0.8A	12V ±5% 0.85A	12V ±5% 1.0A
		5V ±5% 0.80A		5V ±5% 1.0A		
Dimensions (HxWxD)		25.4mmx101.6mmx146.0mm				
Weight		0.6 kg		0.75 kg		
Ambient temperature	Operating	5°C to 50°C (DE base 55°C max.)				
	Non-operating	- 10°C to 60°C				
	Shipping with packing	- 40°C to 60°C				
	Gradient	15°C/H (max.)				
Relative humidity	Operating	20% to 80%				
	Non-operating	20% to 80% (non-condensing)				
	Shipping with packing	5% to 90%				
	Max. wet bulb	29°C				
Vibration	Operating	0.3mm (5 to 20Hz)/0.5G (20 to 300Hz)				
	Non-operating	3.1mm (5 to 20Hz)/5.0G (20 to 300Hz)				
	Shipping with packing	3.1mm (5 to 20Hz)/5.0G (20 to 300Hz)				
Shock	Operating	20G max. (2ms)				
	Non-operating	200G max. (2ms)				
Altitude (operation)	Operating	3,000m (max.)				
	Non-operating	12,000m (max.)				
Acoustic Noise		≤4.0 bels (ready)		≤3.9 bels (ready)		

RELIABILITY SPECIFICATIONS

Model		MAH3091MC/MP	MAH3182MC/MP	MAJ3091MC/MP	MAJ3182MC/MP	MAJ3364MC/MP
Mean time between failures (MTBF)		1,000,000 power-on hours				
Mean time to repair (MTTR)		0.5H (max.)				
Component life		5 years power-on hours				
Error rates	Unrecoverable errors	10 per 10 ¹⁵ bits read				
	Seek errors	10 per 10 ⁹ bits seek				

Notes:

*1: Formatted by 512 bytes/sector

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