



Hard Drive

**Enterprise
10K Series**
3.5-inch Disk Drives

High-performance hard drives with up to 36.4 GB of formatted capacity.

- Breakthrough Giant Magneto-Resistive Head (GMR) technology
- 10,000 RPM rotational Speed
- 3.0-inch diameter media for reduced power consumption
- Ultra2 SCSI and Fibre Channel interfaces with host transfer rates up to 100 MB/s
- Peak internal transfer rates up to 45 MB/s from disk
- Seek times as low as 5.2 ms
- 1,000,000 Mean-Time-Between-Failure (MTBF)
- Five-year limited warranty, including No Excuses® End User Replacement Program

Mobile

Desktop

Enterprise

Fujitsu's Enterprise 10K series deliver industry leading performance and set uncompromising standards with capacity points up to 36.4GB and seek times as low as 5.2 ms. As a vertically integrated supplier, Fujitsu is able to control every aspect of the product, including initial design, key components, critical processes, final assembly and test. Fujitsu's leading-edge expertise in key components, vertical integration, and strong commitment to excellence work together to produce products that deliver not only outstanding performance and reliability, but also low overall cost of ownership.

Industry-Leading Performance and Capacity

With a signal-to-noise ratio dramatically exceeding that of Magneto-Resistive (MR) heads, Fujitsu's breakthrough Giant Magneto-Resistive (GMR) heads are able to read more closely-packed magnetic bits, resulting in an industry-leading 3.6 GB of storage per 3.0-inch diameter disk. The use of 3.0-inch diameter disk media in the Enterprise 10K drives dramatically reduces power consumption and average seek time.

With a 10,000 RPM rotational speed, Enterprise 10K disk drives provide outstanding storage performance for computing platforms such as workstations, network file servers and enterprise servers. A rotation speed of 10,000 RPM, reduces the average rotational latency to 2.99 ms, a 28% improvement over a 7,200-RPM drive. Minimizing rotational latency and seek time are the most important factors that improve system response time in demanding transaction processing applications such as banking or reservation systems.

Enterprise 10K disk drives achieve an industry-best 45 MB/s peak internal data transfer rate, providing a superior solution for the most demanding digital Audio/Video applications such as non-linear editing and playback systems. Advanced interfaces such as Ultra2 and Fibre Channel, provide up to 100 MB/s external, host data transfer rate. The Enterprise 10K series pack up to 18.2 GB in a 1-inch high form factor, and 36.4 GB in a 1.6-inch high form factor.

Innovative Technology

Through its commitment in research and development, Fujitsu has gained critical insights and expertise on the core components required for next-generation drive technology. In addition to

capacities up to 36.4-GB, up to 45-MB/s peak internal transfer, and average seek times as low as 5ms, the Enterprise 10K Series features a number of innovative features. The enhancements include: an expanded 2-MB data cache (Ultra2 SCSI), 4-MB data cache (FC-AL), reduced acoustic levels, and a high-performance, dual-processor design that greatly improves response time in high-load applications.

No Excuses® End User Replacement Program

Fujitsu products are designed to give our end users the highest performance and reliability with the least amount of hassle. To prove this, we include with our five-year limited warranty on the Enterprise 10K Series, our No Excuses End User Replacement

Program. The No Excuses End User Replacement Program may be the easiest and most comprehensive program in the industry. In the unlikely event of a product defect, we will replace that product within two business days. The No Excuses End User Replacement Program is only available to United States end-users. For complete warranty and program information and restrictions, please call Fujitsu Computer Products of America toll-free at 1-800-626-4686 or visit our web site at <http://www.fcpa.com>.

About Fujitsu Computer Products of America

Fujitsu Computer Products of America is a wholly owned subsidiary of Fujitsu Limited, one of the world's largest computer companies with \$43.3 billion in worldwide revenue in fiscal year 1998. Benefiting from Fujitsu Limited's \$3 billion annual investment in research and development, Fujitsu Computer Products provides innovative solutions for the U.S. marketplace. Current product offerings include: high performance hard disk drives, tape drives, magneto-optical drives, high volume scanners, and printers.

Enterprise 10K Series Disk Drive Specifications			
Description	MAF3364	MAG3182	MAG3091
Functional Specifications			
Storage capacity (formatted)	36.4 GB	18.2 GB	9.1 GB
Disks/heads	10/19	5/10	3/5
Disk media diameter	3.0 in.		
Bytes/sector	512		
Cylinders	10,200	9,866	
Sectors/track	281 to 420 (14 zones)	278 to 420 (14 zones)	
Recording density	282,000 BPI	275,000 BPI	
Track density	13,500 TPI		
Buffer size	Ultra2 SCSI 2048 KB; FC-AL 4096 KB		
Interface	Ultra2 SCSI (LVD) and FC-AL		
Seek time	Track to track Read: 0.7 ms (typ) / Write: 0.9 ms (typ)		
	Average Read: 5.7 ms (typ)/Write: 6.2 ms (typ) Read: 5.2 ms (typ) / Write: 5.8 ms (typ)		
	Full stroke Read: 12.0 ms (typ)/Write: 13.0 ms (typ) Read: 11.0 ms (typ) / Write: 12.0 ms (typ)		
Data transfer rate	To/from media 30.3 to 45.0 MB/s		29.5 to 45.0 MB/s
	To/from host Ultra2 SCSI: up to 80 MB/s; FC-AL: 100 MB/s		
Start time	30 s		
Stop time	30 s		
Rotational speed (RPM)	10,025		
Average latency	2.99 ms		
Physical Specifications			
Power requirements	Idle (ready)	14.5 W (Typ) FC-AL + 2.0 W	10.5 W (Typ) FC-AL + 2.0 W
	Seeking	20 W (Typ) FC-AL + 2.0 W	16 W (Typ) FC-AL + 2.0 W
	Spin-up	12V @ 2.5 A 5V @ 0.6 A	
Dimensions	Height	41.3 mm (1.625 in.)	25.4 mm (1.0 in.)
	Width	101.6 mm (4.0 in.)	
	Depth	146.0 mm (5.7 in.)	
Weight	1.1 kg (2.43 lb.)	0.7 kg (1.54 lb.)	
Drive temperature	Operating	5°C to 55°C	
	Non-operating	-40°C to 60°C	
	Gradient	15°C/H Max	
Relative humidity	Operating	20% to 80%	
	Non-operating	20% to 80% (non-condensing)	
	Max wet bulb	29°C	
Vibration	Operating	1.5 G (5 to 300 Hz)	
	Non-operating	5.0 G (5 to 300 Hz)	
Shock	Operating	20 G (half-sin pulse, 2 ms duration)	
	Non-operating	200 G (half-sin pulse, 2 ms duration)	
Altitude	Operating	-60 to 3,000 m (10,000 ft.) Max	
	Non-operating	12,000 m (40,000 ft.) Max	
Acoustic noise	Idle/Seek	42/47 dBA	40/45 dBA
Reliability Specifications			
MTBF	1,000,000 hours		
MTR	No field repairable parts, return to factory for repair		
Start/stop cycles	20,000 cycles		
Error rates	Seek error	10 per 10 ⁸ seeks	
	Non-recoverable read error	1 per 10 ¹⁴ bits read	
Limited warranty	5 years (from date of purchase) / includes No Excuses End User Replacement Program		
Technologies			
Read head element	Giant MR, Single Spin Valve		
Encoding/decoding	16/17 EPR4ML		
Head positioning method	Rotary VCM with fully embedded digital servo		

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