



High-Capacity, High-Performance Disk Drives for the Desktop

The Market

When first introduced, the Quantum Fireball™ Series blazed a reputation as the performance leader in PC disk drives. Now the legacy continues. Today the Quantum Fireball ST drives push the envelope further with even higher levels of performance. With technologies advancing on all fronts, including faster microprocessors, advanced operating systems, real-time video, multimedia, and the Internet, the Quantum Fireball ST Series will remain the drives of choice for power users, corporate business users, and users of entry-level PC workstations and servers.

Performance Breakthrough— 33 Megabytes-Per-Second ATA Transfer Rates

The Quantum Fireball ST drives are the first drives to use the Quantum-pioneered Ultra ATA interface, which effectively doubles burst data transfer rates from 16.6 megabytes per second to 33 megabytes per second. The Ultra ATA interface not only delivers the higher performance demanded by newly emerging applications, it also makes ATA competitive with Ultra SCSI performance. With support from major chipset vendors and other hard disk drive manufacturers, the Ultra ATA interface is destined to be the new industry standard.

At the same time, for SCSI-based systems, the Quantum Fireball ST Series is also available with the Ultra SCSI-3 interface, which supports burst data transfer rates of up to 20 megabytes per second. Either way, ATA or SCSI, you get the industry's performance leader with Quantum Fireball ST drives.

The Industry's Most Advanced Design

We tuned every aspect of the Quantum Fireball ST drive series for performance. We gave it the industry's largest capacity per platter in a 3.5-inch form factor—1.6 gigabytes. We used MR (magneto-resistive) heads and an EPRML (Enhanced Partial Response Maximum Likelihood) read channel to easily support the increased disk capacity. We accelerated data transfer by reducing average seek times to less than 10 milliseconds, setting the rotational speed to 5,400 RPM, and pushing internal data rates up to 132 megabits per second. The net result is performance that meets or exceeds the requirements of the most demanding applications.

Quantum's Industry-Leading Quality and Reliability

Performance is nothing without reliability. That's why we engineered the Quantum Fireball ST Series to the highest quality standards. It features an advanced Reed Solomon implementation that detects and corrects double-burst errors on-the-fly and handles triple-burst errors. The Quantum Fireball ST drives also support the S.M.A.R.T. (Self-Monitoring, Analysis, and Reporting Technology) Revision 2 industry-standard data protection firmware. With host computer S.M.A.R.T. support, this feature provides critical disk drive status and overall health information that lets users avoid catastrophic data loss. When you have systems equipped with Quantum Fireball ST drives, your customers stay sold on you—and on Quantum.

QUANTUM FIREBALL ST

1.6_{AT} / 2.1_{AT/S} / 3.2_{AT/S}

4.3_{AT/S} / 6.4_{AT/S}

Key Features and Benefits

- Leading desktop capacities—up to 6.4 gigabytes in a 3.5-inch form factor
- Industry's highest burst data transfer rates—new Quantum-patented Ultra ATA support and Ultra SCSI-3 interface
- Fastest data reading possible—advanced MR heads and EPRML read channel technology
- Faster response—less than 10 ms average seek time and a rotational speed of 5,400 RPM
- Outstanding accuracy—advanced embedded servo positioning system, 224-bit Reed Solomon double-burst ECC on-the-fly, multiple AutoRead™/multiple AutoWrite™ firmware, and AutoTransfer™ support
- Enhanced performance—adaptive segmented buffer, DisCache®, WriteCache®, and tagged command queuing (SCSI)
- Ease of installation—AT-Bus Cable Select™ and Plug-and-Play SCSI, jumper selectable active termination (SCSI)
- Dependability—400,000-hour MTBF, S.M.A.R.T. Revision 2 support

Quantum™

FIREBALL™

SPECIFICATIONS

Quantum Fireball ST	1.6	2.1	3.2	4.3	6.4
Form Factor	3.5 inch (low profile)	3.5 inch (low profile)	3.5 inch (low profile)	3.5 inch (low profile)	3.5 inch (low profile)
Interfaces	Ultra ATA	Ultra ATA Ultra SCSI-3	Ultra ATA Ultra SCSI-3	Ultra ATA Ultra SCSI-3	Ultra ATA Ultra SCSI-3
Formatted Capacity (MB ¹)	1,614	2,151	3,228	4,310	6,448
Disk Drive Configuration					
Recording Surfaces	2	3	4	6	8
AT Logical					
Cylinders	3,128	4,092	6,256	14,848	13,328
Heads	16	16	16	9	15
Sectors	63	63	63	63	63

Performance Specifications

Typical Seek Times ² (ms)	
Average	<10
Track-to-Track	2
Full Stroke	20
Average Rotational Latency (ms)	5.56
Rotational Speed (RPM)	5,400
Internal Data Rate (Mb/sec)	Up to 132
Data Transfer Rates (Buffer-to-Host)	
ATA (MB/sec)	
PIO Mode 4	16.6
DMA Mode 2	16.6
Ultra DMA/33	33.3
Ultra SCSI-3 (MB/sec)	20
Buffer Size (KB)	128
Typical Power On to Drive Ready (sec)	15

Reliability Specifications

Projected Field MTBF (hrs)	400,000
Start/Stop Cycles (ambient)	40,000
Nonrecoverable Data Errors (per bits read)	<10 per 10 ¹⁵
Warranty ³ (years)	3

Physical Specifications

Dimensions—inches (mm)	
Width	4.00 (101.6)
Length	5.75 (146.1)
Height	1.00 (25.4)
Weight—pounds (kg)	<1.2 (<0.55)

¹ Quantum defines a megabyte (MB) as 10⁶ or 1,000,000 bytes.

² Seek times are at nominal conditions and include settling.

³ This warranty is standard when products are purchased directly through authorized Quantum distributors/dealers. Unless otherwise agreed, a one-year warranty is provided to all OEMs purchasing directly from Quantum. End-user warranties provided by computer manufacturers may vary.

⁴ Operating is defined as 40% seeking, 30% reading, 10% writing, and 20% idle.

Environmental Limits

Operating	
Temperature (°C)	5 to 55
Non-Condensing Humidity (%)	5 to 85
Shock (G, 11 ms)	10
Vibration (G, 5 to 400 Hz, peak-to-peak)	1
Altitude (ft.)	-650 to 10,000
Non-Operating	
Temperature (°C)	-40 to 65
Non-Condensing Humidity (%)	5 to 95
Shock (G, 11 ms)	70
Vibration (G, 5 to 500 Hz, peak-to-peak)	2
Altitude (ft.)	-650 to 40,000
Idle Sound (typ)	
(Quantum Fireball ST 6.4)	
Pressure (dBA)	32
Power (bels)	3.8

Power Specifications

Nominal Voltage (V)	+5/+12
Voltage Margin (%)	±5/±10
Typical Power Draw (W)	
(Quantum Fireball ST 6.4)	
Standby/Sleep	1.0
Idle	6.0
Operating ⁴	11.0
Peak Current (mA on +5/+12 V)	700/1,700



For More Information

For more information about Quantum's quality products, call toll-free: 1-800-624-5545 in the U.S.A. and Canada, or visit our World Wide Web site: <http://www.quantum.com>

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Specifications subject to change without notice.

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