



## Blazing-Fast, High-Capacity Disk Drives for the Desktop

### The Market

In just the last year or so, the desktop computing landscape changed dramatically. The first multimedia microprocessors have come on the scene, bringing incredible graphics, video, animation, and sound. Even more exciting, the Internet grew from being an interesting idea to an absolute necessity. Both these new realities are placing even greater demands on computer performance and storage capacity. As a performance leader in mass storage for the desktop, the new Quantum Fireball™ SE is destined to be the drive of choice for desktop publishing, presentations, CAD/CAM, MMX multimedia, and DVD, as well as standard computation-intensive applications.

### The Leader in Areal Density and Capacity on the Desktop

To handle the huge graphics files associated with multimedia and the Internet, Fireball SE drives pack even more storage onto each platter. Fireball SE drives now have one of the highest PC disk drive areal densities—2.1 gigabytes (GB) per disk—with capacities up to 8.4 GB. Fireball SE drives provide all the capacity you'll need for current and future applications.

### Even Faster Seek Times

Along with increasing the density, we also boosted the performance. We increased the data transfer rate up to 158 megabits per second (Mb/sec) using a new, high-performance read channel

chip. And we lowered the average seek time to 9.5 milliseconds (ms). Now Fireball SE drives achieve a level of performance well beyond the expectations of the most demanding power user.

### Meeting the Need for Speed— Ultra ATA

The Quantum Fireball SE features the Quantum-pioneered, high-performance Ultra ATA interface technology that enables the Ultra DMA/33 protocol supported by virtually all major desktop computer manufacturers. When you design a Fireball SE into your system, you'll be in the best of company. This advanced interface delivers incredibly fast throughput with a data burst transfer rate of 33.3 megabytes per second (MB/sec). It also gives your system lower command turnaround overhead for optimum read/write performance and CPU utilization, longer sequential transfers for high-quality video, faster system booting, and greater data integrity. In addition, the Quantum Fireball SE is available with an Ultra SCSI-3 interface featuring data burst rates up to 20 MB/sec.

### Quality and Reliability that Leads the Industry

As with all Quantum products, Fireball SE drives are engineered and manufactured to the highest standards. That's why we can back every one with a full three-year warranty. With Quantum Fireball SE drives, you can have it all—performance, capacity, and total reliability.

QUANTUM FIREBALL SE  
2.1<sub>AT/S</sub> / 3.2<sub>AT/S</sub> / 4.3<sub>AT/S</sub>  
6.4<sub>AT/S</sub> / 8.4<sub>AT/S</sub>

### Key Features and Benefits

- One of the highest desktop capacities—Up to 8.4 GB in a 3.5-inch form factor
- Highest burst data transfer rates—Quantum-patented Ultra ATA support and Ultra SCSI-3 interface
- Fastest data reading—Advanced MR heads and EPRML read channel technology
- Quicker response times—9.5 ms average seek time and a rotational speed of 5,400 RPM
- Rock-solid reliability—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)
- Easy installation—AT-Bus Cable Select™ and Plug-and-Play SCSI, jumper selectable active termination (SCSI)
- Dependability—Full three-year warranty

Quantum™  
  
FIREBALL™

# SPECIFICATIONS

Quantum Fireball SE	2.1	3.2	4.3	6.4	8.4
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 SCSI-3	Ultra ATA Ultra SCSI-3	Ultra ATA Ultra SCSI-3	Ultra ATA Ultra SCSI-3	Ultra ATA Ultra SCSI-3
Formatted Capacity (MB <sup>1</sup> )	2,111	3,228	4,310	6,448	8,455
<b>Disk Drive Configuration</b>					
Recording Surfaces	2	3	4	6	8
AT Logical					
Cylinders	4,092	6,256	14,848	13,328	16,383
Heads	16	16	9	15	16
Sectors	63	63	63	63	63

## Performance Specifications

Typical Seek Times <sup>2</sup> (ms)	
Average	9.5
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 158
Data Transfer Rates (Buffer-to-Host)	
Ultra ATA/Fast ATA-2 (MB/sec)	
Ultra DMA/33	33.3
PIO Mode 4	16.6
DMA Mode 2	16.6
Ultra SCSI-3 (MB/sec)	20
Buffer Size (KB)	
Ultra ATA	128
Ultra SCSI-3	512
Typical Power On to Drive Ready (sec)	15

## Reliability Specifications

Start/Stop Cycles (ambient)	40,000
Nonrecoverable Data Errors (per bits read)	<10 per 10 <sup>15</sup>
Warranty <sup>3</sup> (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)

## Environmental Limits

Operating	
Temperature (°C)	5 to 55
Non-Condensing Humidity (%)	5 to 85
Non-Operating	
Temperature (°C)	-40 to 65
Non-Condensing Humidity (%)	5 to 95
Idle Sound (typ) (Quantum Fireball SE 8.4)	
Pressure (dBA)	32
Power (bels)	3.7

## Power Specifications

Nominal Voltage (V)	+5/+12
Voltage Margin (%)	±5/±10
Typical Power Draw (W) (Quantum Fireball SE 8.4)	
Idle	6.0
Operating <sup>4</sup>	11.0
Peak Current (mA on +5V/+12V)	700/1,700

<sup>1</sup> Quantum defines a megabyte (MB) as 10<sup>6</sup> or 1,000,000 bytes.

<sup>2</sup> Seek times are at nominal conditions and include settling.

<sup>3</sup> 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.

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



## 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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