



QUANTUM FIREBALL EX

3.2<sub>AT</sub>/5.1<sub>AT</sub>/6.4<sub>AT</sub>

10.2<sub>AT</sub>/12.7<sub>AT</sub>

QUANTUM FIREBALL EL

2.5<sub>AT</sub>/5.1<sub>AT</sub>/7.6<sub>AT</sub>/10.2<sub>AT</sub>

## Blazing Performance and Rock-Solid Reliability for the Desktop

### The Market

In mass storage for the desktop, Quantum Fireball™ hard disk drives have always set the standard for performance and reliability. With the Fireball EX and Fireball EL drives, the standard is continued with industry-leading performance, expanded capacity, and outstanding reliability. Whether you're working with graphics-intensive desktop publishing, complex CAD/CAM, cutting-edge MMX multimedia and DVD, or the most demanding computation-intensive applications, Fireball is the drive of choice.

### The Newest Addition to the Award-Winning Fireball Family

The Fireball EX and Fireball EL drives provide leading performance and Quantum's exclusive Shock Protection System™ (SPS™) solution. The Quantum Fireball EX drive design leverages the previous generation Fireball EL, resulting in faster qualification for customers and a higher confidence in reliability. Featuring an internal data rate of up to 187 megabits (Mb) per second, the Fireball EX and Fireball EL drives also have a 512 kilobyte (KB) buffer that is twice as large as many competitive drives.

### The Performance and Capacity for Demanding Desktop Needs

With the growth of multimedia applications and communication over the Internet, the need for greater performance and capacity on the desktop has grown exponentially. The Fireball EX and Fireball EL drives meet this demand with a wide range of capacities, from 2.5 to 12.7 gigabytes (GB). The result is an ideal balance of massive storage and blazing performance.

### Advanced Shock Protection System Solution

One of the leading causes of hard drive failure is mistreatment during handling and integration. Unfortunately, weeks or months may pass before problems develop. The Fireball EX and Fireball EL drives combat this problem with a Shock Protection System that covers all critical points of potential failure. For systems integrators, SPS means fewer returns and more satisfied customers. For customers, it means one less thing to worry about.

### Quantum Quality and Reliability

Every Fireball EX or Fireball EL drive also incorporates Quantum's years of real-world experience. That's why we can back these drives confidently with a three-year warranty. When you build a system around a Quantum drive, you're building trust with your customers.

### Key Features and Benefits

- Shock Protection System Solution—Advanced system eliminates potential points of failure during handling and installation
- Wide range of choices—The Fireball EX and Fireball EL family offers optimum capacities for the desktop—up to 12.7 GB in a 3.5-inch form factor
- Highest burst data transfer rates—Quantum-patented Ultra ATA interface
- Fastest data reading—Advanced MR heads and EPRML read channel technology
- Blazing response times—9.5 ms average seek time with a 5,400 RPM rotational speed
- 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® and WriteCache®, AT-Bus Cable Select™
- Dependability—Three-year warranty

Quantum™  
  
FIREBALL™

# SPECIFICATIONS

Quantum	Fireball EL				Fireball EX				
	2.5	5.1	7.6	10.2	3.2	5.1	6.4	10.2	12.7
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)	3.5 inch (low profile)	3.5 inch (low profile)	3.5 inch (low profile)	3.5 inch (low profile)
Interface	Ultra ATA	Ultra ATA	Ultra ATA	Ultra ATA	Ultra ATA	Ultra ATA	Ultra ATA	Ultra ATA	Ultra ATA
Formatted Capacity (MB <sup>1</sup> )	2,564	5,130	7,696	10,262	3,228	5,130	6,448	10,262	12,750
<b>Disk Drive Configuration</b>									
Recording Surfaces	2	4	6	8	2	3	4	6	8
AT Logical									
Cylinders	5,300	10,602	15,907	19,885	6,256	10,602	13,328	19,885	24,704
Heads	15	15	15	16	16	15	15	16	16
Sectors	63	63	63	63	63	63	63	63	63

## Performance Specifications

Typical Seek Times <sup>2</sup> (ms)	
Average	9.5
Track-to-Track	2
Full Stroke	18
Average Rotational Latency (ms)	5.56
Rotational Speed (RPM)	5,400
Internal Data Rate (Mb/sec) (Fireball EX)	Up to 187
Internal Data Rate (Mb/sec) (Fireball EL)	Up to 162
Data Transfer Rates (Buffer-to-Host)	
ATA (MB/sec)	
Ultra DMA/33	33.3
PIO Mode 4	16.6
DMA Mode 2	16.6
Buffer Size (KB)	
Ultra ATA	512
Typical Power On to Drive Ready (sec)	9.5

## Reliability Specifications

Start/Stop Cycles (Ambient) (Fireball EX)	50,000
Start/Stop Cycles (Ambient) (Fireball EL)	40,000
Nonrecoverable Data Errors (per bits read)	<10 per 10 <sup>14</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 (%)	10 to 90
Non-Operating	
Temperature (°C)	-40 to 65
Non-Condensing Humidity (%)	5 to 95
Idle Sound (typ)	
Pressure (dBA)	32
Power (bels)	3.6

## Power Specifications

Nominal Voltage (V)	+5/+12
Voltage Margin (%)	±5/±10
Typical Power Draw (W)	
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.