Chapter 2
GENERAL DESCRIPTION

This chapter summarizes the general functions and key features of the Quantum Fireball TM 1.0/1.2/1.7/2.1/2.5/3.2/3.8AT hard disk drives, as well as the applicable standards and regulations.

2.1 PRODUCT OVERVIEW

Quantum's Fireball TM hard disk drives are part of a family of high performance, 1-inch-high hard disk drives manufactured to meet the highest product quality standards.

These hard disk drives use nonremovable, 3 1/2-inch hard disks and are available with either a Small Computer System Interface (SCSI-2, 3) or ATA interface. A Quantum Fireball TM 1.0/1.2/1.7/2.1/2.5/3.2/3.8AT hard disk drive is compatible with systems that provide the IDE interface.

The Quantum Fireball TM series of hard disk drives feature an embedded hard disk drive controller and use ATA commands to optimize system performance. Because the drive manages media defects and error recovery internally, these operations are fully transparent to the user.

The innovative design of the Quantum Fireball TM series of hard disk drives enable Quantum to produce a family of low-cost, high-reliability drives.

2.2 KEY FEATURES

The Quantum Fireball TM series include the following key features:

General

- Formatted storage capacity of 1080 MB and 1280 MB (1 disk, 2 heads); 1700 MB (2 disks, 3 heads); 2110 MB and 2550 MB (2 disks, 4 heads); 3200 MB (3 disks, 5 heads); and 3840 (3 disks, 6 heads).
- Low profile, 1-inch height
- Industry standard 3 1/2-inch form factor
- Emulation of IBM® PC AT® task file register, and all AT fixed disk commands

Performance

- Average seek time of 12.0 ms for 1080 MB and 1280 MB, 10.5 ms for 1700 MB, 2110 MB, 2550 MB, 3200 MB, and 3840 MB
- Average rotational latency of 6.67 ms

- 128K buffer with 76 K dynamic segmentation cache. Look-ahead DisCache feature with continuous prefetch and WriteCache write-buffering capabilities
- AutoTask Register plate, Multi-block AutoRead, and Multi-block AutoWrite features in a custom ASIC
- Read-on-arrival firmware
- Triple burst ECC, and double burst ECC on-the-fly
- 1:1 interleave on read/write operations
- Support of all ATA data transfer modes with PIO mode 4 and DMA mode 2
- Data transfer rate of up to 6.67 MB/s using programmed I/O without IORDY, up to 16.67 MB/s using programmed I/O with IORDY, and up to 16.67 MB/s using multiword DMA

Reliability

- 400,000 hour mean time between failure (MTBF) in the field
- Automatic retry on read errors
- 224-bit, interleaved Reed-Solomon Error Correcting Code (ECC), with cross checking correction up to four separate bursts of 32 bits each totalling up to 96 bits in length
- S.M.A.R.T. Rev. 2 support (Self-Monitoring, Analysis and Reporting Technology)
- Patented Airlock® automatic shipping lock and dedicated landing zone
- Transparent media defect mapping
- High performance, in-line defective sector skipping
- Adaptive cache segmentation
- Reassignment of defective sectors discovered in the field, without reformatting

Versatility

- Power saving modes
- Downloadable firmware
- Cable select feature
- Ability to daisy-chain two drives on the interface

2.3 STANDARDS AND REGULATIONS

The Quantum Fireball TM 1.0/1.2/1.7/2.1/2.5/3.2/3.8AT hard disk drives satisfy the following standards and regulations:

- Underwriters Laboratory (U.L.): Standard 1950. Information technology equipment including business equipment.
- Canadian Standards Association (CSA): Standard C22.2 No. 950-M93. Information technology equipment including business equipment.
- European Standards (TUV): Standard EN 60 950 and IEC 950. Information technology equipment including business equipment.

- Federal Communications Commission (FCC): FCC Rules for Radiated and Conducted Emissions, Part 15, Sub Part J, For Class B Equipment.
- CISPR: CISPR 22 Rules for Radiated and Conducted Emissions, for Class B Equipment.
- Drives comply with European Union (EU) for application of CE mark.

2.4 HARDWARE REQUIREMENTS

The Quantum Fireball TM series of hard disk drives are compatible with the IBM PC AT and other computers that are compatible with the IBM PC AT. It connects to the PC either by means of a third-party IDE-compatible adapter board, or by plugging a cable from the drive directly into a PC motherboard that supplies an IDE interface.