Quantum Atlas™ 10K III 18GB SCSI Hard Disk Drive User's Guide

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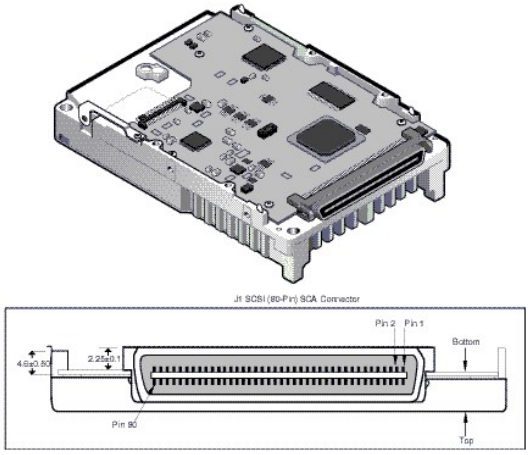
Connectors: Quantum Atlas™ 10K III 18GB SCSI Hard Disk Drive User's Guide

Connecting the Drive to the Computer SCSI Interface

Your Quantum Atlas 10K III SCSI hard disk drive will come pre-installed in the Dell system. Figure 1 below is shown for your reference. If you plan to upgrade your system with an additional drive, please refer to documentation in the customer kit.

Figure 1. Interface connector



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Introduction: Quantum Atlas™ 10K III 18GB SCSI Hard Disk Drive User's Guide

Overview • General Features • Performance • Reliability • Versatility • Drive Diagram

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Overview

Quantum Atlas 10K III SCSI 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. The innovative design of the Quantum Atlas 10K III enables Quantum to produce a family of low-cost, high reliability SCSI hard disk drives. These hard disk drives use non-removable, 3.5-inch hard disks and are available with the following SCSI configurations:

- Ultra160, Ultra2, Ultra SCSI 68-pin Wide (16-bit).
- Ultra160, Ultra2, Ultra SCSI 80-pin SCA-2 (16-bit).

The Quantum Atlas 10K III SCSI hard disk drives feature an embedded SCSI drive controller that automates significant SCSI commands to optimize system performance. The drive also manages media defects and error recovery internally, making these operations fully transparent to the user.

General Features

The Quantum Atlas 10K III 18GB SCSI hard disk drives include the following key features:

- Formatted storage capacity of 18.2GB.
- Low profile, 1-inch height.
- Industry standard 3.5-inch form factor.
- Embedded SCSI controller.
- SCSI-2 and SCSI-3 support.
- SCSI bus active negation drivers.
- SCSI bus fairness.
- Automatic Power Management System with power saving sub-states.
- Embedded servo system for exceptional head positioning accuracy and long life.
- Quiet Drive Technology (QDT) for lower acoustic noise while seeking.

NOTE: The formatted capacity of your hard disk drive may seem smaller than what you ordered because the operating system reports drive capacity assuming that 1 megabyte (MB) equals 1,048,576 (2^{20}) bytes while drive manufacturers consider 1 MB to equal 1,000,000 (10^6) bytes.

Performance

- Average seek time of less than 4.5ms for reads.
- 10,000 RPM rotational speed.
- Average rotational latency of 3.0ms.
- 8MB SDRAM buffer. Look-ahead DisCache feature with continuous prefetch and WriteCache write-buffering capabilities.
- Read-on-arrival firmware.
- Tagged command queuing with reordering (ORCA).
- ECC on-the-fly data correction.
- Highly automated SCSI protocol (including AutoRead and AutoWrite).
- 1:1 interleave on read and write operations.
- High performance Ultra160 SCSI interface.
- Data transfer rates of up to 6.0MB/s asynchronous, 40MB/s Ultra SCSI, 80MB/s Ultra2 SCSI, and 160MB/s Ultra160 SCSI.

Reliability

- 1,100,000 hours Mean Time Between Failure (MTBF).
- 352-bit interleaved Reed-Solomon Error Correction Code (ECC), with cross checking correction of up to three separate bursts of 32 bits each totalling up to 96 bits in length.
- SMART 2 (Self-Monitoring, Analysis and Reporting Technology).
- Self-Diagnostic firmware.
- Patented Airlock automatic shipping lock and dedicated landing zone.
- Transparent media defect mapping.
- Reassignment of defective sectors without reformatting.
- Shock sensor prevents the drive from writing data to disk when the drive is subjected to excessive external shock.

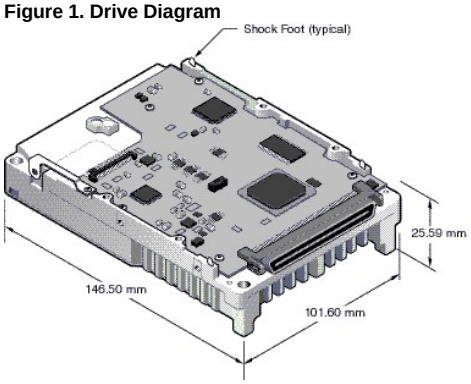
- Thermal sensor monitors the drive temperature to ensure on-going drive reliability.
- Shock Protection System II (SPS II) protects the drive against specific types of handling events that could cause damage to the drive.

Versatility

- Downloadable firmware.
- Plug-and-Play SCSI.

Drive Diagram

Figure 1. Drive Diagram



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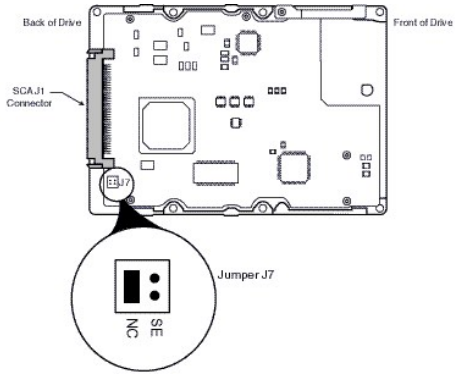
Jumpers: Quantum Atlas™ 10K III 18GB SCSI Hard Disk Drive User's Guide

The Quantum Atlas 10K III SCSI hard disk drive has one jumper connector provided for configuration in a system. The following feature is jumper selectable:

- Force Single Ended

Note: The Atlas 10K III SCSI hard disk drive does not support on-board SCSI termination.

Figure 1. Jumper Location



Force Single Ended

Install a jumper across pin pair SE to operate the disk drive as a single ended device. Remove the jumper for LVD operation and monitoring of the DIFFSENS signal.

No Connection

The Quantum Atlas 10K III SCSI hard disk drive is shipped with a spare jumper installed on pin pair NC. Functionality of the hard disk drive is not affected by installing or removing this jumper.

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Regulatory: Quantum Atlas™ 10K III 18GB SCSI Hard Disk Drive User's Guide

Regulatory • Year 2000 Statement

Regulatory

Quantum Corporation's disk drive products meet all domestic and international product safety regulatory compliance requirements. Quantum's disk drive products conform to the following specifically marked Product Safety Standards:

- Underwriters Laboratory (UL) Standard 1950. This certificate is a category certification pertaining to all 3.5 inch series drive models.
- Canadian Standards Association (CSA) Standard C22.2 No. 950-M93. This certificate is a category certification pertaining to all 3.5 inch series drive models.
- TUV Rheinland Standard EN 60 950. This certificate is a category certification pertaining to all 3.5 inch series drive models.

Product EMI/EMS Qualifications

- CE Mark authorization is granted by TUV Rheinland in compliance with our qualifying under EN 55022:1994 and EN 50082-1:1997.
- C-Tick Mark is an Australian authorization mark noted on Quantum's disk drive products. The mark notes conformity to the regulatory compliance document AS/NZS 3548:1995 and BS EN 55022:1995.
- Quantum's disk drives are designed as a separate subassembly that conforms to the FCC Rules for Radiated and Conducted emissions, Part 15 Subpart J; Class B when installed in a given computer system.

Year 2000 Statement

A Quantum Corporation product, when used in accordance with its associated documentation, is "Year 2000 Capable" when, upon installation, it accurately stores, displays, processes, provides, and/or receives date data from, into, and between the twentieth and twenty-first centuries, including leap year calculations, provided that all other technology used in combination with said product properly exchanges date data with it. See the Quantum Corporation's World Wide Web site at http://www.quantum.com for more information.

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Setup: Quantum Atlas™ 10K III 18GB SCSI Hard Disk Drive User's Guide

Dell Installed Drives • Customer Kits

Dell Installed Drives

Dell performs the installation and setup on SCSI hard disk drives that are shipped as part of a system. The default SCSI ID for a boot hard disk drive installed in a Dell system is SCSI ID 0. After installing the drive, Dell prepares the drive for operation with your operating system. The drive is ready for use when you receive your system.

Customer Kits

Installation Guidelines

Consult the Dell documentation for your system to determine drive requirements, such as number, type, and physical size of drives supported.

SCSI ID of the Drive

Default is SCSI ID 0.
Verify that there are no SCSI ID conflicts with other SCSI devices.

SCSI Interface

The SCSI interface is 80-pin SCA-2.

Termination

The Quantum Atlas 10K III SCSI hard disk drive cannot be configured to provide bus termination. Therefore, be sure to properly terminate the SCSI bus on which this drive is installed.

Installing the Drive

The mounting holes on the Quantum Atlas 10K III SCSI hard disk drive allow the drive to be mounted in any orientation. For mounting, #6-32 UNC screws are recommended.

Preparing the Drive for Operation

The Quantum Atlas 10K III SCSI hard disk drive is shipped from the manufacturer low-level formatted in 512-byte sectors. Use the programs provided with the SCSI host adapter card to prepare the drive for operation.

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Specifications: Quantum Atlas™ 10K III 18GB SCSI Hard Disk Drive User's Guide

General • Performance • Internal Characteristics • Reliability • Electrical • Environmental • Power Dissipation • Mechanical Shock • Physical Characteristics

General

Manufacturer: Quantum Corporation

Model number: Atlas 10K III

Interface: SCSI Ultra160

Capacity:

Model	Capacity	Total LBAs
Atlas 10K III 18GB SCSI	18.2 GB	35,566,478

NOTE: The formatted capacity of your hard disk drive may seem smaller than what you ordered because the operating system reports drive capacity assuming that 1 megabyte (MB) equals 1,048,576 (2^{20}) bytes while drive manufacturers consider 1 MB to equal 1,000,000 (10^6) bytes.

Performance

Rotational Speed: 10,000 RPM

Average Rotational Latency: 3.0 ms

Spin-up time to Ready (typical): 20 seconds

Cache (total): 8 MB

Typical Seek time (without command overhead, including settling):

Activity	Specification
Track-to-Track (reads)	0.3 ms
Average Random Read	4.5 ms
Average Random Write	5.0 ms
Full Stroke	11.0 ms

Interface transfer rate (max.): 160 MB/s burst

Interleave Factor: 1:1

Internal Characteristics

Number of disks/heads:

Model	Disks	Heads
Atlas 10K III 18GB SCSI	1	2

Track Density: ~40,000 tracks per inch

Total Sectors: 35,566,478

Bytes per sector: 512

Reliability

Preventative Maintenance: None Required

Non-recoverable read errors: 1 in 10^{14} bits read

SMART compliant: Yes

Electrical

Nominal Voltage:	+5 Vdc / +12 Vdc
Voltage Margin:	+5 Vdc @ +/-5%, +12 Vdc @ +10%/-7%

Environmental

Operating Temperature:	5 to 55 degrees C
Operating Humidity:	5 to 95% RH (non-condensing)
Non-operating Temperature:	-40 to 70 degrees C
Non-operating Humidity:	5 to 95% RH (non-condensing)

Power Dissipation

Operating Mode	Power (Watts)
Startup (peak)	30.9 Watts*
Idle	10.2 Watts
40% Seek (ECMA)	17 Watts
Standby	2.1 Watts
Read/Write on Track	17 Watts

**NOTE: Start up current is the peak (greater than 10 ms) current required during spindle startup. Current measurements do not include power required for SCSI termination.*

EPA Energy Star Compliant: Yes

Mechanical Shock

Operating (no data loss):	63G reading, 20G writing @ 2mS (half-sine)
Non-operating (no data loss):	250G @ 2 mS (half-sine)

Physical Characteristics

Height:	1.000" (25.4 mm)
Width:	4.00" (101.6 mm)
Depth:	5.75" (146.1 mm)
Weight:	1.58 lbs. (720 grams)

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Troubleshooting: Quantum Atlas™ 10K III 18GB SCSI Hard Disk Drive User's Guide

Dell Diagnostics • Additional Help

Dell™ Diagnostics

Running the SCSI Devices test group of the Dell Diagnostics

Consult the Dell documentation for your system for additional information on troubleshooting hard disk drive problems.

If problems persist, contact Dell Computer Corporation for technical assistance (refer to the "Getting Help" chapter of your system*Reference and Troubleshooting Guide*).

Additional Help

Additional tips and troubleshooting instructions are available on the Quantum Corporation web site at: http://www.quantum.com

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Usage: Quantum Atlas™ 10K III 18GB SCSI Hard Disk Drive User's Guide

Running Windows Disk Defragmenter • Backing Up Data Files

Running Windows Disk Defragmenter

Dell recommends that you run Microsoft's Disk Defragmenter at least every other month. This utility reorganizes the contents of your hard disk drive for more efficient file access, increasing the speed of drive operations and extending the life of your drive. Refer to your Windows documentation for instructions on running Disk Defragmenter.

Backing Up Data Files

To avoid data loss, regularly back up the data files on the hard disk drive. Dell recommends that you back up the hard disk drive at least once a week, with a daily backup of those files that have been changed.

NOTE: In case of warranty replacement of your hard disk drive, you receive a blank, formatted drive from Dell. It is your responsibility to reinstall application programs and restore data files.

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