



# Your PDF Guides

You can read the recommendations in the user guide, the technical guide or the installation guide for MAXTOR ATLAS 10K V. You'll find the answers to all your questions on the MAXTOR ATLAS 10K V in the user manual (information, specifications, safety advice, size, accessories, etc.). Detailed instructions for use are in the User's Guide.

**User manual MAXTOR ATLAS 10K V**  
**User guide MAXTOR ATLAS 10K V**  
**Operating instructions MAXTOR ATLAS 10K V**  
**Instructions for use MAXTOR ATLAS 10K V**  
**Instruction manual MAXTOR ATLAS 10K V**

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**Maxtor**<sup>®</sup>

**Maxtor Atlas 10K V**  
**Product Manual**

September 6, 2005  
Revision 3  
PN: 00001911



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*B-2 Maxtor Atlas 10K V xix Chapter 1 ABOUT THIS MANUAL This chapter gives an overview of the contents of this manual, including the intended audience, how the manual is organized, terminology and conventions, and references. 1.1 AUDIENCE The Maxtor Atlas 10K V Product Manual is intended for reference by original equipment manufacturers (OEMs) that are integrating the disk drive into a system or subsystem, developers, and disk drive installers. Its primary audience is the OEM technical staff that makes disk drive purchase and configuration decisions, and system integrators that are responsible for the SCSI interface. This manual is not intended for end-users and is not a users manual or an installation guide. The manual provides information about installation, interface command implementation, maintenance, and gives the general specifications of the drive. 1.2 MANUAL ORGANIZATION This manual is organized into the following chapters: · Chapter 1 About This Manual · Chapter 2 General Description · Chapter 3 Installation · Chapter 4 Specifications · Chapter 5 SCSI Description · Chapter 6 Feature Descriptions · Appendix A Quick Reference · Appendix B Negotiated Page Information Page Reference · Glossary · Index Maxtor Atlas 10K V 1-1 1.*



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<http://yourpdfguides.com/dref/2375645>

**3 TERMINOLOGY AND CONVENTIONS** In the Glossary at the back of this manual, you can find definitions for many of the terms used in this manual. In addition, the following abbreviations are used in this manual: · ASIC · Kbps · dB · dBA · ECC · Kfci · Gbit · GB · Hz · KB · LSB · LVDS · mA · MB application-specific integrated circuit thousands of bits per inch decibels decibels, A weighted error correcting code thousands of flux changes per inch gigabit gigabyte hertz kilobytes least significant bit low voltage differential SCSI milliamperes megabytes (1 MB = 1,000,000 bytes when referring to disk transfer rates or storage capacities and 1,048,576 bytes in all other cases) megabits per second megabytes per second megahertz milliseconds most significant bit millivolts nanoseconds Small Computer System Interface tracks per inch microseconds volts · Mbit/s · MB/s · MHz · ms · MSB · mV · ns · SCSI · tpi · ms · V 1-2 Maxtor Atlas 10K V The typographical and naming conventions used in this manual are listed below. Conventions that are unique to a specific table appear in the notes that follow that table. Typographical Conventions: · Names of Bits: Bit names are presented in initial capitals. An example is the Host Software Reset Bit. · Commands: Firmware commands are listed as all capitals. An example is MODE SELECT.

· Parameters: Parameters are given as initial capitals when spelled out, and are given as all capitals when abbreviated. Examples are Prefetch Enable (PE) and Cache Enable (CE). · Hexadecimal Notation: The hexadecimal notation is given in 9-point subscript form. An example is 30H. · Signal Negation: A signal that is non-active or is in its non-asserted state. · Messages: A message that is sent from the drive to the host is listed in all capitals. An example is BUS DEVICE RESET. Naming Conventions: · Host: In general, the system in which the drive resides is referred to as the host. · Computer Voice: This refers to items you type at the computer keyboard. These items are listed in 10-point, all capitals, Courier font.

An example is FORMAT. 1.4 REFERENCES For additional information about the SCSI interface, refer to: · ANSI Small Computer System Interface-2 (SCSI-2) Specification, ANSI X3T9.2/86-109, Revision 10k. · ANSI Small Computer System Interface-3 (SCSI-3) Specification, ANSI X3T10, August 1994. · SPI-3 Specification Revision SPI-4 Spec Revision 10 Maxtor Atlas 10K V 1-3 Chapter 2 GENERAL DESCRIPTION This chapter summarizes the general functions and key features of the Maxtor Atlas 10K V family of hard disk drives, as well as the applicable standards and regulations. 2.1 PRODUCT OVERVIEW Maxtor Atlas 10K V 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. There are currently three models in the Maxtor Atlas 10K V series, with capacities of 73.5, 147,

1, and 300 gigabytes (GB). These hard disk drives use nonremovable, 84 mm diameter hard disks and are available with the following SCSI configurations: · Ultra320 SCSI, Ultra2, Ultra SCSI 68-pin Wide (16-bit) · Ultra320 SCSI, Ultra2, Ultra SCSI 80-pin SCA-2 (16-bit) The Maxtor Atlas 10K V hard disk drives feature an embedded SCSI drive controller and use SCSI 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 Maxtor Atlas 10K V hard disk drives enables Maxtor to produce a family of low-cost, high-reliability drives. 2.2 KEY FEATURES The Maxtor Atlas 10K V hard disk drive includes the following key features: General · Formatted storage capacity of 73.5 GB (1 disk, 2 heads), 147.1 GB (2 disks, 4 heads), and 300 GB (4 disks, 8 heads) · Low profile, 1-inch height · Industry standard 3 1/2-inch form factor · Embedded SCSI controller Maxtor Atlas 10K V 2-1 Performance · Average seek time of 4.0 ms (1D), 4.2 (2D) and 4.

4 (4D) for reads · Average seek time of 4.5 ms (1D), 4.7 (2D), and 4.9 ms (4D) for writes · 10,000 RPM rotational speed · Average rotational latency of 3 ms · 8 MB CACHE (ECC Protected) buffer. Look-ahead DisCache feature with continuous prefetch and WriteCache write-buffering capabilities · Read-on-arrival firmware · Tagged Command Queuing with Reordering · ECC on-the-fly · Highly automated SCSI protocol (including Auto Read/Write) · 1:1 interleave on read/write operations · High performance Ultra320 SCSI interface · SCSI-2, and SCSI-3 supported · Ultra 320 SCSI · Ultra 160 SCSI · Ultra-2 SCSI-3 LVDS transfer rates supported · Fast Ultra and Ultra-2 SCSI transfer rates supported (SCSI-3 compliant) · S.M.A.R.T. 2 (Self-Monitoring, Analysis and Reporting Technology) · SCSI bus active negation drivers · Burst data transfer rate of up to 6.

0 MB/s asynchronous, 40 MB/s Ultra SCSI, 80 MB/s Ultra2 SCSI, 160 MB/s Ultra160 SCSI, and 320 MB/s Ultra320 SCSI. · SCSI bus fairness 2-2 Maxtor Atlas 10K V · MaXAdapt™ ~ Adaptive Active Filter (AAF) ~ Rotational Vibration Compensation (RVC) ~ Adaptive Bias Estimation (ABE) ~ Virtual Cache Line (VCL) · Ultra 320 Performance Enhancements ~ Double Transition (DT) Data Transfer ~ Free Running Clock (FRC) ~ Skew Compensation ~ Cyclic Redundancy Check (CRC) ~ Domain Validation ~ Information Unit (IU) Transfers ~ Transmitter Pre-Compensation with Cutback ~ Quick Arbitration and Selection (QAS) ~ Asynchronous Information Protection (AIP) ~ SCSI Bus Fairness ~ Flow Control Reliability · Automatic retry on read errors · 360-bit, interleaved Reed-Solomon Error Correcting Code (ECC), with cross checking correction up to three separate bursts of 32 bits each totalling up to 96 bits in length · Self-diagnostic firmware · Transparent media defect mapping · High performance, in-line defective sector skipping · Reassignment of defective sectors discovered in the field, without reformatting · Thermal Sensing monitors the drive temperature to ensure on-going drive reliability · Shock Protection System III (SPS III) protects the drive against specific types of handling events that could cause damage to the drive. Maxtor Atlas 10K V 2-3 Versatility · Downloadable firmware · Plug-and-Play SCSI · SCSI-2, Ultra160 SCSI, and Ultra320 SCSI compatibility 2.3 REGULATORY COMPLIANCE STANDARDS Maxtor Corporation's disk drive products meet all domestic and international product safety regulatory compliance requirements.



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Maxtor's disk drive products conform to the following specifically marked Product Safety Standards: · Underwriters Laboratories (UL) Standard 1950 3rd Edition.

This certificate is category UL recognized pertaining to all 3.5 inch series drives. · Canadian Standards Association (CSA) Standard C.22.2 No. 950. This certificate is category c-UL recognized pertaining to all 3.5 inch series drives. · TUV Rheinland Standard EN60950. This certificate is a category certification pertaining to all 3.5 inch series drives. 2-4 Maxtor Atlas 10K V Product EMI/EMC Qualifications: Maxtor Corporation's disk drive products meet all domestic and international electromagnetic emissions and immunity requirements. Maxtor's disk drive products conform to the following EMI/EMC Standards · CE Mark (Europe) is a Self Declaration as per Directive 89/336, EN55022: 1998 (Emissions) and EN55024: 1998 (Immunity). · C-Tick Mark (Australia/New Zealand) is a Self Declaration as per AS/NZS3548: 1998. · BSMI Mark (Taiwan) is a Self Declaration as per CNS 13438:1998.

· MIC Mark (Korea) is a Certificate of registration for SCSI disk drives. · Maxtor'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. · Maxtor drives conform to Canadian EMC Standard ICES-003. 2.4 HARDWARE REQUIREMENTS The Maxtor Atlas 10K V hard disk drive is compatible with host computers and controllers that provide a 68-pin Wide, or 80-pin SCA-2 interface. A 50-pin to 68pin adapter is required to use the 68-pin Wide drive in a 50-pin cabling configuration. Termination is required on the Maxtor Atlas 10K V hard disk drives as they do not support on-board SCSI termination. Maxtor Atlas 10K V 2-5 Chapter 3 INSTALLATION This chapter explains how to unpack, configure, mount, and connect the Maxtor Atlas 10K V hard disk drive prior to operation. It also explains how to start up and operate the drive. 3.

1 3.1.1 SAFETY, HANDLING, & ELECTROSTATIC DISCHARGE PROTECTION Safety Precautions For your safety, follow all safety procedures described here and in other sections of the manual. · Remove power from the computer system (or expansion unit) before installing or removing the drive to prevent the possibility of electrical shock or damage to the drive. Unplug the unit containing the drive to provide an added measure of safety.

· Read, understand, and observe all label warnings. 3.1.2 Handling Damage to the drive can occur as the result of careless handling, vibration, shock, or electrostatic discharge (ESD). Always handle the drive with care to avoid damage to the precision internal components.

CAUTION: A 1/4-inch drop onto a hard surface can damage the drive. Follow these guidelines to avoid damage to the drive: · Always observe prescribed ESD precautions. · Keep the drive in its anti-static bag until ready to install. · Always use a properly fitted wrist strap or other suitable ESD protection when handling the drive. · Hold drive only by its sides. Do not touch any components on the PCBA. Maxtor Atlas 10K V 3-1 · Always handle the drive carefully and gently. A drop of 1/4 inch onto a bench or desktop can damage a drive. · Do not bump, jar, or drop the drive. Use care when transporting the drive.

· Always gently place the drive flat, PCB side down, on an appropriate ESD-protected work surface to avoid the drive being accidentally knocked over. · Do not pack other materials with the drive in its shielded bag. · Place the drive in the anti-static bag before placing in shipping container. · Do not stack objects on the drive. · Never force the drive or the mounting brackets into the drive bay. · Do not expose the drive to moisture. · Do not damage any seals on the drive; doing so may void the warranty. 3.1.3 Electrostatic Discharge (ESD) Protection Various electrical components within the disk drive are sensitive to static electricity and Electrostatic Discharge (ESD).

Even a static buildup or discharge that is too slight to feel can be sufficient to destroy or degrade a component's operation. To minimize the possibility of ESD-related damage to the drive, we strongly recommend using both, a properly installed workstation anti-static mat and a properly installed ESD wrist strap. When correctly installed, these devices reduce the buildup of static electricity which might harm the drive. · Observe the following precautions to avoid ESD-related problems: · Use a properly installed anti-static pad on your work surface. · Always use a properly fitted and grounded wrist strap or other suitable ESD protection when handling the drive and observe proper ESD grounding techniques.

· Hold the drive only by its sides. Do not touch any components on the PCBA. · Leave the drive in its anti-static bag until you are ready to install it in the system. · Place the drive on a properly grounded anti-static work surface pad when it is out of its protective anti-static bag. · Do not use the bag as a substitute for the work surface anti-static pad.

The outside of the bag may not have the same anti-static properties as the inside. It could actually increase the possibility of ESD problems. · Do not use any test equipment to check components on the electronics module. There are no user-serviceable components on the drive. 3-2 Maxtor Atlas 10K V 3.2 SPACE REQUIREMENTS The Maxtor Atlas 10K V hard disk drive is shipped without a faceplate and comes in the following SCSI interface configurations: · 68-pin Wide SCSI · 80-pin SCA-2 SCSI Figure 3-1 Shows The Mechanical Dimensions of the drives. Figure 3-1 Dimensions for the Maxtor Atlas 10K V Hard Disk Drives Maxtor Atlas 10K V 3-3 3.2.1 Shock Feet Maxtor Atlas 10K V hard disk drives are outfitted with plastic shock feet on the bottom edge of the base casting, near the corners, beneath the side mounting holes (translucent), and near the corners of the top cover next to the screws (black). The shock feet give an additional level of isolation to prevent the head and disk damage that occasionally occurs during unpacking, staging, and installation.

The shock feet attenuate the short-pulse shocks that occur when placing the drive on a hard surface. If the drive is tested on a hard surface, it should be supported such that the shock feet are not in contact with a hard surface (the drive should be supported in the middle, between the shock feet). Note: To provide optimal protection the shock feet are designed to exceed the form factor when uncompressed. 3.3 UNPACKING INSTRUCTIONS CAUTION: The maximum limits for physical shock can be exceeded if the drive is not handled properly. Special care should be taken not to bump or drop the drive.



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1. Open the shipping container and remove the packing assembly that contains the drive. 2. Remove the drive from the packing assembly.

**CAUTION:** During shipment and handling, the antistatic electrostatic discharge (ESD) bag prevents electronic component damage due to electrostatic discharge. To avoid accidental damage to the drive, do not use a sharp instrument to open the ESD bag. Save the packing materials for possible future use. 3. When you are ready to install the drive, remove it from the ESD bag.

3-4 Maxtor Atlas 10K V Figure 3-2 shows the packing assembly for a single Maxtor Atlas 10K V hard disk drive. Shipping containers for 25-pack are available for multiple drive shipments. Figure 3-2 Drive Packing Assembly Maxtor Atlas 10K V 3-5 3.4 3.4.

1 **HARDWARE OPTIONS Configuration Jumpers and Connections** This section includes setup and configuration information for Maxtor Atlas 10K V drives. These disk drives include · The 16-bit multimode Ultra320 SCSI, wide version with 68-pin SCSI connector, · The 16-bit multimode Ultra320 SCSI, version with SCA-2 80-pin connector. Specific individual settings for each drive type are described in Sections 3.5.1 through 3.5.4. **CAUTION:** Before you begin, review the Safety, ESD, and Handling precautions described at the beginning of this manual to avoid personal injury or damage to equipment. 3.4.

2 **Jumper Options on the 68-Pin Wide PCB** This section describes how to configure the jumpers on Maxtor Atlas 10K V disks with 68-pin SCSI interface connectors. The following features are jumperselectable: · SCSI ID (0), (1), (2), (3) SCSI Bus Device Identification · Delay Spin · Single-Ended, Disable LVD · Busy Out (Remote LED) · Write Protect · Stagger Spin Note: The disk drive does not support on-board SCSI termination. Note: The configuration of a Maxtor Atlas 10K V hard disk drive depends on the host system in which it is to be installed. Figure 3-3 shows the printed circuit board (PCB) assemblies for 68-pin SCSI configurations, indicating the jumpers that control some of these options. 3-6 Maxtor Atlas 10K V 4-Pin Power Connector 12-Pin Option Connector 68-pin SCSI Connector Figure 3-3 Jumper Locations on the 68-Pin Wide SCSI Drive PCB Maxtor Atlas 10K V 3-7 Table 3-1 SCSI ID Selection on Option Connector (68-Pin SCSI Connector Drives) Jumper Location J3 Option Header Pin Pair 7/8 Pin Pair 5/6 Pin Pair 3/4 Pin Pair 1/2 SCSI ID 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 0 0 1 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 0 0 0 0 1 1 1 1 1 1 1 1 1 1 Note: 0 =

No Jumper, 1 = Jumper Installed Configure the drive for remote (external) SCSI ID selection by removing the SCSI ID jumpers (if present) from the referenced SCSI ID pins. Then connect the leads from the external selection switch to the referenced pins. Observe the following guidelines while doing so: · ID bit 0, at Pin 8, is the Least Significant Bit. · SCSI ID bits 0, 1, 2, and 3 (pins 8, 6, 4, and 2, respectively) are active LOW signals. That is, the bit is a 1 if the corresponding remote switch is closed to ground or jumper installed. · Use pins 1, 3, 5 and 7 as the associated ground returns for ID bits 3, 2, 1, and 0, respectively.

3.4.2.1 **Write Protection** To configure Write Protection for the drive, install a jumper across pin pair 11/12 on the J3 Option Header. To disable Write Protection on the drive, remove the jumper.

3-8 Maxtor Atlas 10K V 3.4.2.2 **Delay Spin (DS), Stagger Spin (SS)** Maxtor Atlas 10K V drives have three Spin Up modes: Option 1 (No jumpers installed): Spin up immediately when power is applied. Verify that no jumper is installed across the Delay Spin pin pair of the J3 Option Header.

Option 2 (Delay Spin jumper installed): Spin up on START STOP UNIT command: Install the jumper across pin pair 15/16 (GND/Delay Spin) on the J3 Option Header. 3.4.2.3 **Single-Ended Operation Force SE (Disable LVD)** Install a jumper across pin pair 17/18 (SE) on the J3 Option Header to operate the disk drive as a single-ended device. Remove the SE jumper for LVD operation and monitoring of the DIFFSENS signal. 3.4.2.4 **Remote Busy and Fault** Displays Busy and Fault status of the drive can be monitored remotely by connecting a remote (external) Busy and/or remote Fault display LEDs.

**Remote Fault LED** On the J1 Option Connector, connect the cathode side of the remote Fault LED to pin 2, Fault LED. Connect the anode side of the LED to pin 11, +5V. Maxtor Atlas 10K V 3-9 3.4.3 **SCA-2 80-Pin Connector Versions** This section describes the SCA-2 (Single Connector Attachment) 80-pin connector for Maxtor Atlas 10K V drives with the following features: · SCSI ID · Spin Up · Activity LED displays Use Figure 3-4 to locate the appropriate pins for configuring the drive. Note that Figure 3-4 does not call out each of the 80 pins on the connector, but rather illustrates the layout of the pins. Note: The SCA-2 Connector version of the disk drives does not provide the following jumper configuration: TERMPWR, Active Termination, or Write Protection. 3.4.3.

1 **Termination for the 80-Pin SCA-2 Connector Versions** **CAUTION:** These versions of Maxtor Atlas 10K V disk drives cannot be configured to provide bus termination. Therefore, be sure to properly terminate the SCSI bus on which this drive is installed. Note: Refer to your system or SCSI controller documentation regarding any additional recommendations regarding drive placement on the SCSI bus and SCSI bus termination. 3-10 Maxtor Atlas 10K V 3.4.

3.2 **SCSI ID for SCA-2 Versions** Each SCSI device on the bus must have a unique SCSI ID number assigned to it. The drive can be configured for SCSI ID numbers that range from 0 through 15. Configure the SCSI ID by providing the proper open or ground signal inputs to the referenced pins of the drive's 80-pin new version SCA-2 connector (Figure 3-4). Refer to Table 3-2 for SCSI ID pin assignments.

Note: Refer to your system or SCSI controller documentation for specific recommendations about assigning SCSI ID numbers for your specific system. Figure 3-4 Pin Locations on SCA-2 Connector Maxtor Atlas 10K V 3-11 Table 3-2 SCSI ID Pin Assignments (SCA-2 Connector Versions of the Disk Drive) Location on SCA Connector SCSI ID 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 ID3 - Pin 80 0 0 0 0 0 0 0 0 1 1 1 1 1 1 1 1 ID2 - Pin 40 ID1 - Pin 79 0 0 0 0 1 1 1 1 0 0 0 0 1 1 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 ID0 - Pin 39 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 Note: 0 indicates an open circuit and 1 indicates ground. 3.4.3.3 **Spin Up for the 80-Pin SCA-2 Connector Versions** Maxtor Atlas 10K V drives have three Spin Up modes: Option 1 Spin up occurs immediately when power is applied. Option 2 Drive spin up occurs after a predetermined delay following power on. Set the delay parameters with the MODE SELECT Command, Maxtor (Vendor) Special Function Control Page (39h).



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The delay is equal to a user-specified multiplier multiplied by the numerical SCSI ID of the drive. This will give a staggered spin-up in multiple-drive installations.

Option 3 Drive spin up is controlled by the START STOP UNIT command. Configure the desired spin up option (Table 3-3) by setting the state of the DELAY\_SPIN (Pin 38) and STAGGER\_SPIN (Pin 78) inputs on the 80-pin SCA2 connector (Figure 3-4). The states of these signals are set by using either hardwired connections at the backplane or backplane logic. 3-12 Maxtor Atlas 10K V Table 3-3 Spin Up on Power On Options Option Option 1 Spin Up When Power is Applied Option 2 Spin Up After Delay Option 3 Spin Up on START Command Reserved 3.4.3.4 STAGGER\_SPIN (Pin 78) Open Ground Open Ground DELAY\_SPIN (Pin 38) Open Open Ground Ground Activity LED for SCA-2 Connector Versions The drive provides the output BUSY\_OUT signal to power a user-supplied activity LED. The output indicates the drive is performing a SCSI operation. To use this output, connect a user-supplied LED cathode to the BUSY\_OUT connection, pin 77 on the SCA Connector (Figure 3-4). The LED anode must be attached to the proper +5 VDC supply through an appropriate current-limiting resistor.

Maxtor Atlas 10K V 3-13 3.5 INTERFACE CONNECTOR (J1) The configuration of J1 is different for the 68-pin and 80-pin SCSI variations. Figure 3-5 shows the various connector styles. Figure 3-5 J1 Interface Connector Configurations 3-14 Maxtor Atlas 10K V Maxtor Atlas 10K V 3-15 3.5.

1 68-Pin Wide SCSI Connector - LVD Table 3-4 68-Pin Wide LVD Pin Assignments SIGNAL NAME CONNECTOR CONTACT NUMBER CABLE CONDUCTOR NUMBER CONNECTOR CONTACT NUMBER SIGNAL NAME +DB (12) +DB (13) +DB (14) +DB (15) +DB (P1) +DB (0) +DB (1) +DB (2) +DB (3) +DB (4) +DB (5) +DB (6) +DB (7) +DB (P) GROUND DIFFSENS TERMPWR TERMPWR RESERVED GROUND +ATN GROUND +BSY +ACK +RST +MSG +SEL +C/D +REQ +I/O +DB (8) +DB (9) +DB (10) +DB (11) 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 53 55 57 59 61 63 65 67 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 DB (12) DB (13) DB (14) DB (15) DB (P1) DB (0) DB (1) DB (2) DB (3) DB (4) DB (5) DB (6) DB (7) DB (P) GROUND GROUND TERMPWR TERMPWR RESERVED GROUND ATN GROUND BSY ACK RST MSG SEL C/D REQ I/O DB (8) DB (9) DB (10) DB (11) Note: The conductor number refers to the conductor position when using 0.635 mm (0.025 inch) centerline flat ribbon cable. Other cable types may be used to implement equivalent contact assignments. 3.

5.1.1 68-Pin Wide Mating Connector The cable plug connector that mates with the 68-pin hard disk drive connector is the AMP AMPLIMITE .050 Series III, part number 749925-5. 3-16 Maxtor Atlas 10K V 3.5.2 80-Pin SCA-2 SCSI Connector - LVD Table 3-5 80-Pin SCA-2 LVD Pin Assignments CABLE CONDUCTOR NUMBER 80-PIN CONNECTOR CONTACT AND SIGNAL NAME 80-PIN CONNECTOR CONTACT AND SIGNAL NAME 12V CHARGE 12V 12V 12V OPT 3.3 VOLTS OPT 3.3 VOLTS - DB (11) - DB (10) - DB (9) - DB (8) - I/O - REQ - C/D - SEL - MSG - RST - ACK - BSY - ATN - DB (P0) - DB (7) - DB (6) - DB (5) - DB (4) -DB (3) 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 NOT APPLICABLE 12V GROUND 12V GROUND 12V GROUND MATED 1 OPT 3.3V CHARGE DIFFSENS +DB (11) +DB (10) +DB (9) +DB (8) +I/O +REQ +C/D +SEL +MSG +RST +ACK +BSY +ATN +DB (P0) +DB (7) +DB (6) +DB (5) +DB (4) +DB (3) 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 Maxtor Atlas 10K V 3-17 DB (2) DB (1) DB (0) DB (P1) DB (15) DB (14) DB (13) DB (12) 5V 5V 5V CHARGE SPINDLE SYNC RMT START SCSI ID (0) SCSI ID (2) 3.

5.2.1 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 NOT APPLICABLE +DB (2) +DB (1) +DB (0) +DB (P1) +DB (15) +DB (14) +DB (13) +DB (12) MATED 2 5V GROUND 5V GROUND ACTIVE LED OUT DLYD\_START SCSI ID (1) SCSI ID (3) 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 80-Pin SCA-2 Mating Connectors The compatible 80-pin mating connectors are: · Right-angle receptacle, AMP CHAMP, .050 Series I, part number 787535-1. · Vertical receptacle, AMP CHAMP .050 Series I, part number 787311-2. · Vertical receptacle, BERG part number 71780-001. 3-18 Maxtor Atlas 10K V 3.5.3 68-Pin Wide Single-Ended SCSI Connector Table 3-6 68-Pin Wide Single-Ended Pin Assignments SIGNAL NAME CONNECTOR CONTACT NUMBER CABLE CONDUCTOR NUMBER CONNECTOR CONTACT NUMBER SIGNAL NAME GROUND GROUND GROUND GROUND GROUND GROUND GROUND GROUND GROUND GROUND GROUND GROUND RESERVED GROUND GROUND GROUND GROUND GROUND GROUND GROUND GROUND GROUND GROUND GROUND GROUND GROUND GROUND 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 37 39 41 43 45 47 49 51 53 55 57 59 61 63 65 67 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 DB (12) DB (13) DB (14) DB (15) DB (P1) DB (0) DB (1) DB (2) DB (3) DB (4) DB (5) DB (6) DB (7) DB (P) GROUND GROUND RESERVED GROUND ATN GROUND BSY ACK RST MSG SEL C/D REQ I/O DB (8) DB (9) DB (10) DB (11) Note: 1.

The minus sign next to a signal indicates active low. 2. The conductor number refers to the conductor position when using 0.635 mm (0.025 inch) centerline flat ribbon cable.

Other cable types may be used to implement equivalent contact assignments. Maxtor Atlas 10K V 3-19 3.5.4 80-Pin SCA-2 Single-Ended SCSI Connector Table 3-7 80-Pin SCA-2 Single-Ended Pin Assignments CABLE CONDUCTOR NUMBER NOT APPLICABLE 80-PIN CONNECTOR CONTACT AND SIGNAL NAME 12V GROUND 12V GROUND 12V GROUND MATED 1 OPT 3.3V CHARGE GROUND MATED 2 5V GROUND 5V GROUND ACTIVE LED OUT DLYD\_START SCSI ID (1) SCSI ID (3) 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 1 74 75 76 77 78 79 80 80-PIN CONNECTOR CONTACT AND SIGNAL NAME 12V CHARGE 12V 12V 12V OPT 3.3 VOLTS OPT 3.3 VOLTS DB (11) DB (10) DB (9) DB (8) I/O REQ C/D SEL MSG RST ACK BSY ATN DB (P0) DB (7) DB (6) DB (5) DB (4) DB (3) DB (2) - DB (1) DB (0) DB (P1) DB (15) DB (14) DB (13) DB (12) 5V 5V 5V CHARGE SPINDLE SYNC RMT START SCSI ID (0) SCSI ID (2) 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 3-20 Maxtor Atlas 10K V 3.



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**6 DRIVE MOUNTING AND INSTALLATION** Drive mounting orientation, clearance, and ventilation requirements are described in the following subsections.

**3.6.1 Orientation** The mounting holes on the Maxtor Atlas 10K V hard disk drive allow the drive to be mounted in any orientation. Figure 3-6 shows the location of the three mounting holes on each side of the drive. The drives also can be mounted using the four mounting hole locations on the PCB side. All dimensions are in millimeters. For mounting, #6-32 UNC screws are recommended.

**Figure 3-6 Mounting Dimensions Maxtor Atlas 10K V Drives** Maxtor Atlas 10K V 3-21 **3.6.2 Mounting Screw Clearance** The printed-circuit board assembly (PCBA) is very close to the mounting holes. Figure 3-7 specifies the clearance between the screws in the mounting holes and the PCBA. Do not use mounting screws longer than the maximum lengths specified in Figure 3-7. The specified screw length allows full use of the mounting-hole threads, while avoiding damaging or placing unwanted stress on the PCBA. Clearance from the drive to any other surface (except mounting surfaces) must be a minimum of 1.25 mm (0.05 inches). Figure 3-7 **Mounting Screw Clearance for Maxtor Atlas 10K V Drive** CAUTION: The PCB is very close to the mounting holes.

Do not exceed the specified length for the mounting screws. The specified screw length allows full use of the mounting-hole threads, while avoiding damaging or placing unwanted stress on the PCB. Figure 3-7 specifies the minimum clearance between the PCB and the screws in the mounting holes. The maximum torque applied to the screws must not exceed 8.6 inch-pounds.

**3-22 Maxtor Atlas 10K V 3.6.3 Mounting** For the best results during performance benchmark testing, it is highly recommended that the drive be mounted firmly in a system or fixture, rather than sitting unconstrained on a tabletop. If it is necessary to do early testing of the drive while it is unconstrained, the drive should rest on a flat, smooth, semi-cushioned surface (similar to a mousepad). The drive should not be operated on a hard surface--this avoids performance degradations due to the higher incidence of recovered errors.

**3.6.4 Ventilation** The Maxtor Atlas 10K V hard disk drive may operate with or without a cooling fan provided that the maximum HDA temperature as measured on the drives's top cover does not exceed 131°F (60°C). Drive reliability and warranty will be limited if the drive is exposed to temperatures greater than 60°C. Figures 3-8 and 3-9 show airflow recommended for adequate cooling. Clearance from the drive to any other surface above and below the drive must be a minimum of 1.25mm (1/16 inch). Maxtor leaves the design and application of cooling and clearance for the disk drive to the User, but the drive must maintain a case temperature at or below 60°C. Above Unit Below Unit Figure 3-8 Lengthwise Airflow Cooling Maxtor Atlas 10K V 3-23 Above Unit Below Unit Figure 3-9 Crosswise Airflow Cooling 3-24 Maxtor Atlas 10K V Chapter 4 SPECIFICATIONS This chapter gives a detailed description of the physical, electrical, and environmental characteristics of the Maxtor Atlas 10K V hard disk drives. 4.

**1 SPECIFICATION SUMMARY** Table 4-1 Specifications MAXTOR ATLAS 10K V 73.5 GB 8D073J0 8D073L0 8J073J0 8J073L0 73.5 GB 10,000 1 2 732K 16 102,000 TPI 81,782 624 1114 143,666,191 512 - 524 PRML 678 fci MAXTOR ATLAS 10K V 147.1 GB 8D147J0 8D147L0 8J147J0 8J147L0 147.1 GB 10,000 2 4 732K 16 102,000 TPI 81,782 624 1114 287,332,383 512 - 524 PRML 678 fci MAXTOR ATLAS 10K V 300 GB 8D300J0 8D300L0 8J300J0 8J300L0 300 GB 10,000 4 8 732K 16 102,000 TPI 81,782 624 1114 585,937,500 512 - 524 PRML 678 fci DESCRIPTION Non-RoHS Model Numbers: RoHS

Model Numbers: Formatted Capacity Nominal rotational speed (rpm) Number of Disks Number of R/W heads Data Organization: Maximum BPI Zones per surface Track density User Data Cylinders Sectors per track: Inside zone Outside zone Total User Sectors Bytes per sector Recording technology Maximum linear density Maxtor Atlas 10K V 4-1 DESCRIPTION Maximum effective areal density MAXTOR ATLAS 10K V 73.5 GB 75 Gbits/in<sup>2</sup> MAXTOR ATLAS 10K V 147.1 GB 75 Gbits/in<sup>2</sup> MAXTOR ATLAS 10K V 300 GB 75 Gbits/in<sup>2</sup> Servo Mechanical Timing Specifications: Sequential Head Switch Time<sup>2</sup> Sequential Cylinder Switch Time<sup>3</sup> Random<sup>4</sup> Average Seek (Read) Random<sup>4</sup> Average Seek (Write) 5 0.3 ms read 0.5 ms write 0.3 ms read 0.5 ms write 4.0 ms typical 4.5 ms typical 11.0 ms typical 22 ms typical 25 sec maximum 25 sec typical 89 MB/s maximum 8 MB <10 in 108 <1 in 1015 48 Bytes Reed-Solomon with XCHK 50,000 min. Magnetic Latch 0.

3 ms read 0.5 ms write 0.3 ms read 0.5 ms write 4.2 ms typical 4.7 ms typical 11.0 ms typical 22 ms typical 25 sec maximum 25 sec typical 89 MB/s maximum 8 MB <10 in 108 <1 in 1015 48 Bytes Reed-Solomon with XCHK 50,000 min. Magnetic Latch 0.3 ms read 0.5 ms write 0.3 ms read 0.5 ms write 4.4 ms typical 4.9 ms typical 11.0 ms typical 22 ms typical 25 sec maximum 25 sec typical 89 MB/s maximum 8 MB <10 in 108 <1 in 1015 48 Bytes Reed-Solomon with XCHK 50,000 min.

Magnetic Latch Full Stroke Seek (Read) SCSI 'Hard' Reset Time<sup>6</sup> Power on to Drive Ready<sup>7</sup> Data transfer Rates: Sequential Throughput Read/Write Buffer Size Reliability: Seek error rate<sup>8</sup> Unrecoverable error rate<sup>8</sup> Error correction method (with cross check) Contact Start/Stop Cycles Auto head-park method Note: Seek time is defined as the time required for the actuator to seek to a new position and settle on a track. It is measured by averaging the execution time of a minimum of 1000 operations of the indicated type as shown in Table 4-1. The seek times include head settling time, but do not include command overhead time, time spent reading or writing data, or rotational latency delays. Unless otherwise specified, read/seek command settling criteria is assumed. 4-2 Maxtor Atlas 10K V I. Typical specifications assume 25°C ambient temperature, nominal supply voltages and no applied shock or vibration. Maximum specifications assume worst case extremes of operating temperature, humidity, and supply voltages. 2. Sequential Head Switch time is the time from the conclusion of the last sector of a track to the beginning of the first logical sector on the next track of the same cylinder. It includes sequencer overhead for write setup on head and cylinder switch.

3. Sequential Cylinder Switch time is the time from the conclusion of the last sector of a cylinder to the first logical sector on the next cylinder. It includes sequencer overhead for write setup on head and cylinder switch. 4. Random LBA. 5. Full Stroke seek is defined as a seek from cylinder 0 to maximum cylinder or vice versa. It may include one head switch. 6. SCSI 'Hard' Reset time is the time from Reset to Selection. 7. At power on start-up error algorithms are used. These recovery routines may extend the time to Drive Ready by as much as 30 seconds.

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