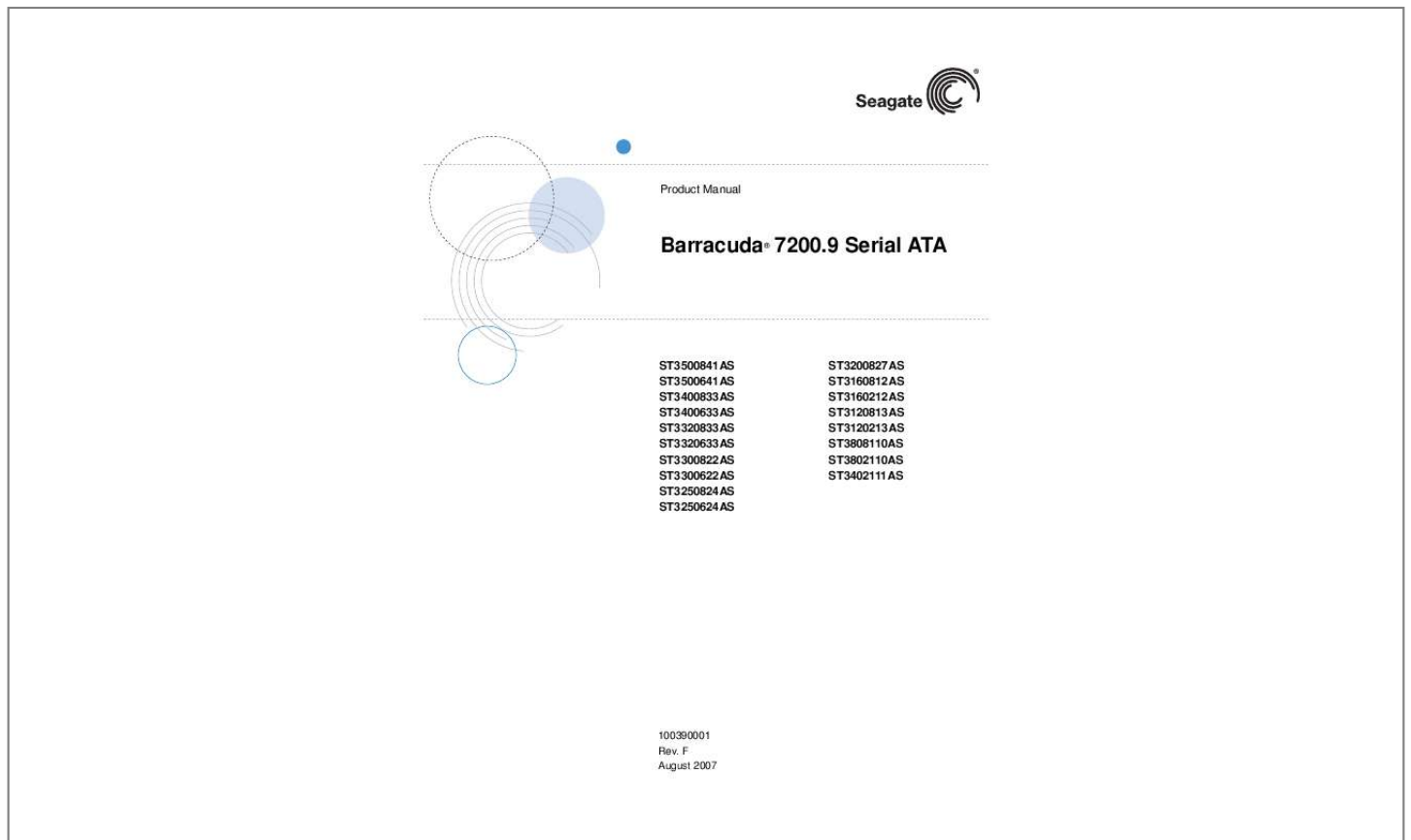




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You can read the recommendations in the user guide, the technical guide or the installation guide for MAXTOR BARRACUDA 7200.9 ATA. You'll find the answers to all your questions on the MAXTOR BARRACUDA 7200.9 ATA in the user manual (information, specifications, safety advice, size, accessories, etc.). Detailed instructions for use are in the User's Guide.

User manual MAXTOR BARRACUDA 7200.9 ATA
User guide MAXTOR BARRACUDA 7200.9 ATA
Operating instructions MAXTOR BARRACUDA 7200.9 ATA
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..... Serial ATA connectors and jumper options .

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Mounting dimensions--top, side and end view

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..... 25 25 34 34 35 Barracuda 7200.9 Serial ATA Product Manual, Rev. F iii 1.0 Introduction This manual describes the functional, mechanical and interface specifications for the following Seagate Barracuda® 7200.9 Serial ATA model drives: ST3500841AS ST3500641AS ST3400833AS ST3400633AS ST3320833AS ST3320633AS ST3300822AS ST3300622AS ST3250824AS ST3250624AS ST3200827AS ST3160812AS ST3160212AS ST3120813AS ST3120213AS ST3802110AS ST3808110AS ST3402111AS These drives provide the following key features: · 7,200 RPM spindle speed.

· High instantaneous (burst) data-transfer rates (up to 300 Mbytes per second). · Tunneling Magnetoresistive (TMR) recording heads provide the drives with increased areal density. · State-of-the-art cache and on-the-fly error-correction algorithms. · Native Command Queueing with command ordering to increase performance in demanding applications. · Full-track multiple-sector transfer capability without local processor intervention.

· Quiet operation. · 350 Gs nonoperating shock. · SeaTools diagnostic software performs a drive self-test that eliminates unnecessary drive returns. · Support for S.M.

A.R.T. drive monitoring and reporting. · Supports latching SATA cables and connectors. Barracuda 7200.9 Serial ATA Product Manual, Rev. F 1 1.1 About the Serial ATA interface The Serial ATA interface provides several advantages over the traditional (parallel) ATA interface. The primary advantages include: · Easy installation and configuration with true plug-and-play connectivity.

It is not necessary to set any jumpers or other configuration options. · Thinner and more flexible cabling for improved enclosure airflow and ease of installation. · Scalability to higher performance levels. In addition, Serial ATA makes the transition from parallel ATA easy by providing legacy software support. Serial ATA was designed to allow you to install a Serial ATA host adapter and Serial ATA disc drive in your current system and expect all of your existing applications to work as normal. The Serial ATA interface connects each disc drive in a point-to-point configuration with the Serial ATA host adapter. There is no master/slave relationship with Serial ATA devices like there is with parallel ATA.



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If two drives are attached on one Serial ATA host adapter, the host operating system views the two devices as if they were both "masters" on two separate ports. This essentially means both drives behave as if they are Device 0 (master) devices. Note.

The host adapter may, optionally, emulate a master/slave environment to host software where two devices on separate Serial ATA ports are represented to host software as a Device 0 (master) and Device 1 (slave) accessed at the same set of host bus addresses. A host adapter that emulates a master/slave environment manages two sets of shadow registers. This is not a typical Serial ATA environment. The Serial ATA host adapter and drive share the function of emulating parallel ATA device behavior to provide backward compatibility with existing host systems and software. The Command and Control Block registers, PIO and DMA data transfers, resets, and interrupts are all emulated.

The Serial ATA host adapter contains a set of registers that shadow the contents of the traditional device registers, referred to as the Shadow Register Block. All Serial ATA devices behave like Device 0 devices. For additional information about how Serial ATA emulates parallel ATA, refer to the "Serial ATA: High Speed Serialized AT Attachment" specification. The specification can be downloaded from www.serialata.org.

2 Barracuda 7200.9 Serial ATA Product Manual, Rev. F 2.0 Drive specifications Unless otherwise noted, all specifications are measured under ambient conditions, at 25°C, and nominal power. For convenience, the phrases the drive and this drive are used throughout this manual to indicate the following drive models: ST3500841AS ST3500641AS ST3400833AS ST3400633AS ST3320833AS ST3320633AS ST3300822AS ST3300622AS ST3250824AS ST3250624AS ST3200827AS ST3160812AS ST3160212AS ST3120813AS ST3120213AS ST3802110AS ST3808110AS ST3402111AS 2.1 Specification summary tables The specifications listed in the following table are for quick reference. For details on specification measurement or definition, see the appropriate section of this manual. Barracuda 7200.9 Serial ATA Product Manual, Rev.

F 3 Table 1: Drive specifications summary for 500 Gbyte models ST3500841AS 500 976,773,168 512 63 16 16,383 790.1 124.5 97.96 7,200 815.2 65 300 PIO modes 04 Multiword DMA modes 02 Ultra DMA modes 06 8 Mbytes 26.1 mm (1.028 inches) 101.6 mm (4.000 inches) +/- 0.010 inches 146.

99 mm (5.787 inches) 710 grams (1.57 lb.) 4.16 13.

0 sec 13.0 sec <0.8 read; <1.0 write <8.2 <9.

0 2.9 amps 5V ± 5% IPI (kbits/in max) Track density, KTPI (ktracks/in avg.) Areal density, (Gbits/in avg) Spindle speed (RPM) Internal data transfer rate (Mbits/sec max) Sustained data transfer rate OD (Mbytes/sec max) I/O data-transfer rate (Mbytes/sec max) ATA data-transfer modes supported 2 Cache buffer Height (mm max) Width (mm max) Length (mm max) Weight (max) Average latency (msec) Power-on to ready (sec max) Standby to ready (sec max) Track-to-track seek time (msec typical) Average seek, read (msec typical) Average seek, write (msec typical) Startup current (typical) 12V (peak) Voltage tolerance (including noise) Ambient temperature Temperature gradient (°C per hour max) Relative humidity Relative humidity gradient Wet bulb temperature (°C max) Altitude, operating Altitude, nonoperating (below mean sea level, max) Operational Shock (Gs max at 2 msec) Non-Operational Shock (Gs max at 2 msec) Vibration, operating 6 Barracuda 7200.9 Serial ATA Product Manual, Rev. F Drive specification Vibration, nonoperating ST3400633AS 522 Hz: 0.25 Gs, Limited displacement 22350 Hz: 5.0 Gs 350500 Hz: 1.0 Gs ST3400833AS Drive acoustics, sound power (bels) Idle** Performance seek Nonrecoverable read errors Annualized Failure Rate (AFR) Warranty 2.8 (typical) 3.0 (max) 3.

7 (typical) 3.9 (max) 1 per 1014 bits read 0.34% 5 years on distribution units. @@@@The system will display the warranty information for your drive. 50,000 Yes Contact start-stop cycles (25°C, 50% rel. humidity) Supports Hotplug operation per SATA II specification *One Gbyte equals one billion bytes when referring to hard drive capacity. Accessible capacity may vary depending on operating environment and formatting. **During periods of drive idle, some offline activity may occur according to the S.M.A.

R.T. specification, which may increase acoustic and power to operational levels. Barracuda 7200.9 Serial ATA Product Manual, Rev.

F 7 Table 3: Drive specifications summary for 320 Gbyte models ST3320833AS 320 625,142,448 512 63 16 16,383 790.1 124.5 97.96 7,200 867.2 76. 6 300 PIO modes 04 Multiword DMA modes 02 Ultra DMA modes 06 8 Mbytes 26.1 mm (1.028 inches) 101.6 mm (4.000 inches) +/- 0.010 inches 146.99 mm (5.787 inches) 655 grams (1.44 lb.) 4.

16 11.0 sec 11.0 sec <0.8 (read), <1.0 (write) <8.0 <9.0 2.8 amps 5V ± 5% 12V ± 10% 0° to 60°C (operating) 40° to 70°C (nonoperating) 20°C (operating) 30°C (nonoperating) 5% to 90% (operating) 5% to 95% (nonoperating) 30% per hour max 37.7 (operating) 40.0 (nonoperating) 60.

96 m to 3,048 m (200 ft. to 10,000+ ft.) 60.96 m to 12,192 m (200 ft. to 40,000+ ft.)

) 63 300 Gs 522 Hz: 0.25 Gs, Limited displacement 22350 Hz: 0.5 Gs 350500 Hz: 0.25 Gs 16 Mbytes ST3320633AS Drive specification Formatted Gbytes (512 bytes/sector)* Guaranteed sectors Bytes per sector Default sectors per track Default read/write heads Default cylinders Recording density, KBPI (kbits/in max) Track density, KTPI (ktracks/in avg.) Areal density, (Gbits/in avg) Spindle speed (RPM) Internal data transfer rate (Mbits/sec max) Sustained data transfer rate OD (Mbytes/sec max) I/O data-transfer rate (Mbytes/sec max) ATA data-transfer modes supported 2 Cache buffer Height (mm max) Width (mm max) Length (mm max) Weight (max) Average latency (msec) Power-on to ready (sec max) Standby to ready (sec max) Track-to-track seek time (msec typical) Average seek, read (msec typical) Average seek, write (msec typical) Startup current (typical) 12V (peak) Voltage tolerance (including noise) Ambient temperature Temperature gradient (°C per hour max) Relative humidity Relative humidity gradient Wet bulb temperature (°C max) Altitude, operating Altitude, nonoperating (below mean sea level, max) Operational Shock (Gs max at 2 msec) Non-Operational Shock (Gs max at 2 msec) Vibration, operating 8 Barracuda 7200.

9 Serial ATA Product Manual, Rev. F Drive specification Vibration, nonoperating ST3320833AS 522 Hz: 0.25 Gs, Limited displacement 22350 Hz: 5.0 Gs 350500 Hz: 1.0 Gs ST3320633AS Drive acoustics, sound power (bels) Idle** Performance seek Nonrecoverable read errors Annualized Failure Rate (AFR) Warranty 2.7 (typical) 2.9 (max) 3.4 (typical) 3.6 (max) 1 per 1014 bits read 0.34% 5 years on distribution units.

@@@The system will display the warranty information for your drive.



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50,000 Yes Contact start-stop cycles (25°C, 50% rel. humidity) Supports Hotplug operation per SATA II specification Barracuda 7200.9 Serial ATA Product Manual, Rev. F 9 Table 4: Drive specifications summary for 300 Gbyte models ST3300822AS 300 586,072,368 512 63 16 16,383 790.1 124.5 97.96 7,200 867.2 76.6 300 PIO modes 04 Multiword DMA modes 02 Ultra DMA modes 06 8 Mbytes 26.

1 mm (1.028 inches) 101.6 mm (4.000 inches) +/- 0.010 inches 146.

99 mm (5.787 inches) 655 grams (1.44 lb.) 4.16 11.

0 sec 11.0 sec <0.8 (read), <1.0 (write) <8.0 <9.0 2.8 amps 5V ± 5% 12V ± 10% 0° to 60°C (operating) 40° to 70°C (nonoperating) 20°C (operating) 30°C (nonoperating) 5% to 90% (operating) 5% to 95% (nonoperating) 30% per hour max 37.7 (operating) 40.0 (nonoperating) 60.96 m to 3,048 m (200 ft.

to 10,000+ ft.) 60.96 m to 12,192 m (200 ft. to 40,000+ ft.) 63 300 Gs 522 Hz: 0.25 Gs, Limited displacement 22350 Hz: 0.5 Gs 350500 Hz: 0.25 Gs 16 Mbytes ST3300622AS Drive specification Formatted Gbytes (512 bytes/sector)* Guaranteed sectors Bytes per sector Default sectors per track Default read/write heads Default cylinders Recording density, KBPI (kbits/in max) Track density, KTPI (ktracks/in avg.) Areal density, (Gbits/in avg) Spindle speed (RPM) Internal data transfer rate (Mbits/sec max) Sustained data transfer rate OD (Mbytes/sec max) I/O data-transfer rate (Mbytes/sec max) ATA data-transfer modes supported 2 Cache buffer Height (mm max) Width (mm max) Length (mm max) Weight (max) Average latency (msec) Power-on to ready (sec max) Standby to ready (sec max) Track-to-track seek time (msec typical) Average seek, read (msec typical) Average seek, write (msec typical) Startup current (typical) 12V (peak) Voltage tolerance (including noise) Ambient temperature Temperature gradient (°C per hour max) Relative humidity Relative humidity gradient Wet bulb temperature (°C max) Altitude, operating Altitude, nonoperating (below mean sea level, max) Operational Shock (Gs max at 2 msec) Non-Operational Shock (Gs max at 2 msec) Vibration, operating 10 Barracuda 7200.9 Serial ATA Product Manual, Rev.

F Drive specification Vibration, nonoperating ST3300822AS 522 Hz: 0.25 Gs, Limited displacement 22350 Hz: 5.0 Gs 350500 Hz: 1.0 Gs ST3300622AS Drive acoustics, sound power (bels) Idle** Performance seek Nonrecoverable read errors Annualized Failure Rate (AFR) Warranty 2.7 (typical) 2.

9 (max) 3.4 (typical) 3.6 (max) 1 per 1014 bits read 0.34% 5 years on distribution units. @@@@The system will display the warranty information for your drive.

50,000 Yes Contact start-stop cycles (25°C, 50% rel. humidity) Supports Hotplug operation per SATA II specification *One Gbyte equals one billion bytes when referring to hard drive capacity. Accessible capacity may vary depending on operating environment and formatting. **During periods of drive idle, some offline activity may occur according to the S.M.A.R.T. specification, which may increase acoustic and power to operational levels. Barracuda 7200.

9 Serial ATA Product Manual, Rev. F 11 Table 5: Drive specifications summary for 250 and 200 Gbyte models ST3250624AS 250 488,397,168 512 63 16 16,383 790.1 124.5 97.96 7,200 867.2 76.6 300 PIO modes 04 Multiword DMA modes 02 Ultra DMA modes 06 16 Mbytes 26.1 mm (1.028 inches) 101.6 mm

(4.000 inches) +/- 0.010 inches 146.99 mm (5.787 inches) 580 grams (1.28 lb.

) 4.16 11.0 sec 11.0 sec <0.8 (read), <1.

0 (write) <8.0 <9.0 2.8 amps 5V ± 5% 12V ± 10% 0° to 60°C (operating) 40° to 70°C (nonoperating) 20°C (operating) 30°C (nonoperating) 5% to 90% (operating) 5% to 95% (nonoperating) 30% per hour max 37.7 (operating) 40.0 (nonoperating) 60.96 m to 3,048 m (200 ft. to 10,000+ ft.) 60.96 m to 12,192 m (200 ft.

to 40,000+ ft.) 63 350 Gs 522 Hz: 0.25 Gs, Limited displacement 22350 Hz: 0.5 Gs 350500 Hz: 0.25 Gs 8 Mbytes ST3250824AS ST3200827AS 200 390,721,968 Drive specification Formatted Gbytes (512 bytes/sector)* Guaranteed sectors Bytes per sector Default sectors per track Default read/write heads Default cylinders Recording density, KBPI (kbits/in max) Track density, KTPI (ktracks/in avg.) Areal density, (Gbits/in avg) Spindle speed (RPM) Internal data transfer rate (Mbits/sec max) Sustained data transfer rate OD (Mbytes/sec max) I/O data-transfer rate (Mbytes/sec max) ATA data-transfer modes supported Cache buffer Height (mm max) Width (mm max) Length (mm max) Weight (max) Average latency (msec) Power-on to ready (sec max) Standby to ready (sec max) Track-to-track seek time (msec typical) Average seek, read (msec typical) Average seek, write (msec typical) Startup current (typical) 12V (peak) Voltage tolerance (including noise) Ambient temperature Temperature gradient (°C per hour max) Relative humidity Relative humidity gradient Wet bulb temperature (°C max) Altitude, operating Altitude, nonoperating (below mean sea level, max) Operational Shock (Gs max at 2 msec) Non-Operational Shock (Gs max at 2 msec) Vibration, operating 2 12 Barracuda 7200.9 Serial ATA Product Manual, Rev. F Drive specification Vibration, nonoperating ST3250624AS ST3250824AS ST3200827AS 522 Hz: 0.25 Gs, Limited displacement 22350 Hz: 5.0 Gs 350500 Hz: 1.

0 Gs Drive acoustics, sound power (bels) Idle** Performance seek Nonrecoverable read errors Annualized Failure Rate (AFR) Warranty 2.7 (typical) 2.9 (max) 3.4 (typical) 3.6 (max) 1 per 1014 bits read 0.

34% 5 years on distribution units. @@@@The system will display the warranty information for your drive. 50,000 Yes Contact start-stop cycles (25°C, 50% rel. humidity) Supports Hotplug operation per SATA II specification *One Gbyte equals one billion bytes when referring to hard drive capacity. Accessible capacity may vary depending on operating environment and formatting.

**During periods of drive idle, some offline activity may occur according to the S.M.A.R.T. specification, which may increase acoustic and power to operational levels. Barracuda 7200.9 Serial ATA Product Manual, Rev. F 13 Table 6: Drive specifications summary for 160 Gbyte models ST3160812AS 160 312,581,808 512 63 16 16,383 840.0 141.

5 119.0 7,200 867.2 83 300 PIO modes 04 Multiword DMA modes 02 Ultra DMA modes 06 8 Mbytes 26.1 mm (1.028 inches) 101.6 mm (4.000 inches) +/- 0.010 inches 146.99 mm (5.787 inches) 580 grams (1.

28 lb.) 4.16 <10.0 sec <10.0 sec <0.

8 (read), <1.0 (write) <8.0 (ST3160812AS & ST3160212AS models) <9.9 (& models) <9.0 (ST3160812AS & ST3160212AS models) <10.

9 (& models) 2.8 amps 5V ± 5% 12V ± 10% 0° to 60°C (operating) 40° to 70°C (nonoperating) 20°C (operating) 30°C (nonoperating) 5% to 90% (operating) 5% to 95% (nonoperating) 30% per hour max 37.7 (operating) 40.0 (nonoperating) 60.96 m to 3,048 m (200 ft.



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to 10,000+ ft.) 60.96 m to 12,192 m (200 ft. to 40,000+ ft.) 63 350 Gs 2 Mbytes ST3160212AS Drive specification Formatted Gbytes (512 bytes/sector)* Guaranteed sectors Bytes per sector Default sectors per track Default read/write heads Default cylinders Recording density, KBPI (kbits/in max) Track density, KTPI (ktracks/in avg.)

) Areal density, (Gbits/in avg) Spindle speed (RPM) Internal data transfer rate (Mbits/sec max) Sustained data transfer rate OD (Mbytes/sec max) I/O data-transfer rate (Mbytes/sec max) ATA data-transfer modes supported 2 Cache buffer Height (mm max) Width (mm max) Length (mm max) Weight (max) Average latency (msec) Power-on to ready (sec max) Standby to ready (sec max) Track-to-track seek time (msec typical) Average seek, read (msec typical) Average seek, write (msec typical) Startup current (typical) 12V (peak) Voltage tolerance (including noise) Ambient temperature Temperature gradient (°C per hour max) Relative humidity Relative humidity gradient Wet bulb temperature (°C max) Altitude, operating Altitude, nonoperating (below mean sea level, max) Operational Shock (Gs max at 2 msec) Non-Operational Shock (Gs max at 2 msec) 14 Barracuda 7200.9 Serial ATA Product Manual, Rev. F Drive specification Vibration, operating ST3160812AS ST3160212AS 522 Hz: 0.25 Gs, Limited displacement 22350 Hz: 0.5 Gs 350500 Hz: 0.25 Gs 522 Hz: 0.25 Gs, Limited displacement 22350 Hz: 5.0 Gs 350500 Hz: 1.0 Gs Vibration, nonoperating Drive acoustics, sound power (bels) Idle** Performance seek Nonrecoverable read errors Annualized Failure Rate (AFR) Warranty 2.5 (typical) 2.7 (max) 3.3 (typical) 3.5 (max) 1 per 1014 bits read 0.34% 5 years on distribution units. @@@@The system will display the warranty information for your drive.

50,000 Yes 2.5 (typical) 2.7 (max) 3.3 (typical) 3.5 (max) Contact start-stop cycles (25°C, 50% rel.

humidity) Supports Hotplug operation per SATA II specification *One Gbyte equals one billion bytes when referring to hard drive capacity. Accessible capacity may vary depending on operating environment and formatting. **During periods of drive idle, some offline activity may occur according to the S.M.A.R.T. specification, which may increase acoustic and power to operational levels. Barracuda 7200.9 Serial ATA Product Manual, Rev.

F 15 Table 7: Drive specifications summary for 120 Gbyte models ST3120813AS 120 234,441,648 512 63 16 16,383 840.0 141.5 119.0 7,200 867.2 83 300 PIO modes 04 Multiword DMA modes 02 Ultra DMA modes 06 8 Mbytes 26.1 mm (1.028 inches) 101.6 mm (4.000 inches) +/- 0.010 inches 146.99 mm (5.787 inches) 580 grams (1.28 lb.) 4.16 <10.0

0 sec <10.0 sec <0.8 (read), <1.0 (write) <8.0 (ST3120813AS & ST3120213AS models) <9.

9 (& models) <9.0 (ST3120813AS & ST3120213AS models) <10.9 (& models) 2.8 amps 5V ± 5% 12V ± 10% 0° to 60°C (operating) 40° to 70°C (nonoperating) 20°C (operating) 30°C (nonoperating) 5% to 90% (operating) 5% to 95% (nonoperating) 30% per hour max 37.7 (operating) 40.0 (nonoperating) 60.96 m to 3,048 m (200 ft. to 10,000+ ft.) 60.96 m to 12,192 m (200 ft.

to 40,000+ ft.) 63 350 Gs 2 Mbytes ST3120213AS Drive specification Formatted Gbytes (512 bytes/sector)* Guaranteed sectors Bytes per sector Default sectors per track Default read/write heads Default cylinders Recording density, KBPI (kbits/in max) Track density, KTPI (ktracks/in avg.) Areal density, (Gbits/in avg) Spindle speed (RPM) Internal data transfer rate (Mbits/sec max) Sustained data transfer rate OD (Mbytes/sec max) I/O data-transfer rate (Mbytes/sec max) ATA data-transfer modes supported 2 Cache buffer Height (mm max) Width (mm max) Length (mm max) Weight (max) Average latency (msec) Power-on to ready (sec max) Standby to ready (sec max) Track-to-track seek time (msec typical) Average seek, read (msec typical) Average seek, write (msec typical) Startup current (typical) 12V (peak) Voltage tolerance (including noise) Ambient temperature Temperature gradient (°C per hour max) Relative humidity Relative humidity gradient Wet bulb temperature (°C max) Altitude, operating Altitude, nonoperating (below mean sea level, max) Operational Shock (Gs max at 2 msec) Non-Operational Shock (Gs max at 2 msec) 16 Barracuda 7200.9 Serial ATA Product Manual, Rev. F Drive specification Vibration, operating ST3120813AS ST3120213AS 522 Hz: 0.25 Gs, Limited displacement 22350 Hz: 0.5 Gs 350500 Hz: 0.25 Gs 522 Hz: 0.25 Gs, Limited displacement 22350 Hz: 5.0 Gs 350500 Hz: 1.

0 Gs Vibration, nonoperating Drive acoustics, sound power (bels) Idle** Performance seek Nonrecoverable read errors Annualized Failure Rate (AFR) Warranty 2.5 (typical) 2.7 (max) 3.3 (typical) 3.5 (max) 1 per 1014 bits read 0.

34% 5 years on distribution units. @@@@The system will display the warranty information for your drive. 50,000 Yes 2.5 (typical) 2.7 (max) 3.

3 (typical) 3.5 (max) Contact start-stop cycles (25°C, 50% rel. humidity) Supports Hotplug operation per SATA II specification *One Gbyte equals one billion bytes when referring to hard drive capacity. Accessible capacity may vary depending on operating environment and formatting. **During periods of drive idle, some offline activity may occur according to the S.M.A.R.T. specification, which may increase acoustic and power to operational levels.

Barracuda 7200.9 Serial ATA Product Manual, Rev. F 17 Table 8: Drive specifications summary for 80 and 40 Gbyte models ST3808110AS 80 156,301,488 512 63 16 16,383 840.0 141.5 119.0 7,200 867.2 83 300 PIO modes 04 Multiword DMA modes 02 Ultra DMA modes 06 8 Mbytes 26.1 mm (1.028 inches) 101.6 mm (4.

000 inches) +/- 0.010 inches 146.99 mm (5.787 inches) 580 grams (1.28 lb.

) 4.16 <10.0 sec <10.0 sec <0.8 (read), <1.

0 (write) <9.5 <10.5 2.8 amps 5V ± 5% 12V ± 10% 0° to 60°C (operating) 40° to 70°C (nonoperating) 20°C (operating) 30°C (nonoperating) 5% to 90% (operating) 5% to 95% (nonoperating) 30% per hour max 37.7 (operating) 40.0 (nonoperating) 60.96 m to 3,048 m (200 ft. to 10,000+ ft.) 60.96 m to 12,192 m (200 ft.

to 40,000+ ft.) 63 350 Gs 522 Hz: 0.25 Gs, Limited displacement 22350 Hz: 0.5 Gs 350500 Hz: 0.25 Gs <9.5 <10.5 <14.0 <16.0 2 Mbytes 69.375 611.5 103.9 63.53 ST3802110AS ST3402111AS 40 78,165,360 Drive specification Formatted Gbytes (512 bytes/sector)* Guaranteed sectors Bytes per sector Default sectors per track Default read/write heads Default cylinders Recording density, KBPI (kbits/in max) Track density, KTPI (ktracks/in avg.) Areal density, (Gbits/in avg) Spindle speed (RPM) Internal data transfer rate (Mbits/sec max) Sustained data transfer rate OD (Mbytes/sec max) I/O data-transfer rate (Mbytes/sec max) ATA data-transfer modes supported 2 Cache buffer Height (mm max) Width (mm max) Length (mm max) Weight (max) Average latency (msec) Power-on to ready (sec max) Standby to ready (sec max) Track-to-track seek time (msec typical) Average seek, read (msec typical) Average seek, write (msec typical) Startup current (typical) 12V (peak) Voltage tolerance (including noise) Ambient temperature Temperature gradient (°C per hour max) Relative humidity Relative humidity gradient Wet bulb temperature (°C max) Altitude, operating Altitude, nonoperating (below mean sea level, max) Operational Shock (Gs max at 2 msec) Non-Operational Shock (Gs max at 2 msec) Vibration, operating 18 Barracuda 7200.



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F Drive specification Vibration, nonoperating ST3808110AS ST3802110AS ST3402111AS 522 Hz: 0.25 Gs, Limited displacement 22350 Hz: 5.0 Gs 350500 Hz: 1.0 Gs Drive acoustics, sound power (bels) Idle** Performance seek Nonrecoverable read errors Annualized Failure Rate (AFR) Warranty 2.5 (typical) 2.

7 (max) 3.0 (typical) 3.2 (max) 1 per 1014 bits read 0.34% 5 years on distribution units. @@@@The system will display the warranty information for your drive. 50,000 Yes 2.5 (typical) 2.7 (max) 3.0 (typical) 3.2 (max) 2.

5 (typical) 2.7 (max) N/A N/A Contact start-stop cycles (25°C, 50% rel. humidity) Supports Hotplug operation per SATA II specification *One Gbyte equals one billion bytes when referring to hard drive capacity. Accessible capacity may vary depending on operating environment and formatting. **During periods of drive idle, some offline activity may occur according to the S.M.A.R.T. specification, which may increase acoustic and power to operational levels.

Barracuda 7200.9 Serial ATA Product Manual, Rev. F 19 2.2 Model Formatted capacity Formatted capacity* 500 Gbytes 500 Gbytes 400 Gbytes 400 Gbytes 320 Gbytes 320 Gbytes 300 Gbytes 300 Gbytes 250 Gbytes 250 Gbytes 200 Gbytes 160 Gbytes 160 Gbytes 120 Gbytes 120 Gbytes 80 Gbytes 80 Gbytes 40 Gbytes Guaranteed sectors 976,773,168 976,773,168 781,422,768 781,422,768 625,142,448 625,142,448 586,072,368 586,072,368 488,397,168 488,397,168 390,721,968 312,581,808 312,581,808 234,441,648 234,441,648 156,301,488 156,301,488 78,165,360 Bytes per sector 512 512 512 512 512 512 512 512 512 512 512 512 512 512 512 512 512 512 ST3500641AS ST3500841AS ST3400633AS ST3400833AS ST3320633AS ST3320833AS ST3300622AS ST3300822AS ST3250624AS ST3250824AS ST3200827AS ST3160812AS ST3160212AS ST3120813AS ST3120213AS ST3808110AS ST3802110AS ST3402111AS *One Gbyte equals one billion bytes when referring to hard drive capacity. Accessible capacity may vary depending on operating environment and formatting.

2.2.1 LBA mode When addressing these drives in LBA mode, all blocks (sectors) are consecutively numbered from 0 to n1, where n is the number of guaranteed sectors as defined above. See Section 4.3.

1, "Identify Device command" (words 60-61 and 100-103) for additional information about 48bit addressing support of drives with capacities over 137 Gbytes. 2.3 Cylinders 16,383 Default logical geometry Read/write heads 16 Sectors per track 63 LBA mode When addressing these drives in LBA mode, all blocks (sectors) are consecutively numbered from 0 to n1, where n is the number of guaranteed sectors as defined above. 20 Barracuda 7200.9 Serial ATA Product Manual, Rev. F 2.4 Interface Recording and interface technology Serial ATA (SATA) 16/17 EPRML 790.1 (500, 400, 320, 300, 250, 200GB models) 840.0 (160, 120 and 80GB models) 611.5 (40GB model) 124.

5 (500, 400, 320, 300, 250, 200GB models) 141.5 (160, 120 and 80GB models) 103.9 (40GB model) 97.96 (500, 400, 320, 300, 250, 200GB models) 119.0 (160, 120 and 80GB models) 63.53 (40GB model) 7,200 815.2 (400 and 500GB models) 867.2 (all other models) 65 (400 and 500GB models) 76.6 (320, 300, 250 and 200GB models) 83 (160, 120 and 80GB models) 69.375 (40GB model) 300 1:1 Recording method Recording density KBPI (kbits/inch max) Track density KTPI (ktracks/inch avg) Areal density (Gbits/inch² avg) Spindle speed (RPM) (± 0.

2%) Internal data-transfer rate (Mbits/sec max) Sustained data transfer rate OD (Mbytes/sec max) I/O data-transfer rate (Mbytes/sec max) Interleave Cache buffer ST3500641AS ST3400633AS ST3320633AS ST3300622AS ST3250624AS ST3500841AS ST3400833AS ST3320833AS ST3300822AS ST3250824AS ST3200827AS ST3160812AS ST3120813AS ST3808110AS ST3160212AS ST3120213AS ST3802110AS ST3402111AS 16 Mbytes (16,384 kbytes) 8 Mbytes (8,192 kbytes) 2 Mbytes (2,048 kbytes) Barracuda 7200.9 Serial ATA Product Manual, Rev. F 21 2.5 Physical characteristics Maximum height (mm) (inches) Maximum height (mm) (inches) Maximum width (mm) (inches) Maximum length (mm) (inches) Max weight 40, 60, 80, 120, 200, and 250 GB models 320 and 300GB models 400 and 500GB models 146.99 5.

787 580 grams (1.28 lbs) 655 grams (1.44 lbs) 710 grams (1.57 lbs) 101.6 4.

000 +/- 0.010 26.1 1.028 19.99 0.787 2.6 Seek time Seek measurements are taken with nominal power at 25°C ambient temperature. All times are measured using drive diagnostics. The specifications in the table below are defined as follows: · Track-to-track seek time is an average of all possible single-track seeks in both directions. · Average seek time is a true statistical random average of at least 5,000 measurements of seeks between random tracks, less overhead.

*Typical seek times (msec) Track-to-track All 400 and 500GB Average All 320, 300, 250, 200, 160 and 120GB All 80GB Average latency: All Models Read <0.8 <8.2 <8.0 <9.5 4.16 Write <1.0 <9.0 <9.0 <10.5 4.

16 *Measured in performance mode unless otherwise noted. Note. These drives are designed to consistently meet the seek times represented in this manual. Physical seeks, regardless of mode (such as track-to-track and average), are expected to meet the noted values. However, due to the manner in which these drives are formatted, benchmark tests that include command overhead or measure logical seeks may produce results that vary from these specifications.

22 Barracuda 7200.9 Serial ATA Product Manual, Rev. F 2.7 Start/stop times 400 and 500GB models 320, 300, 250, 200, 160, 120, 80 and 40GB models 11 (max) 11 (max) 12 (max) Power-on to Ready (sec) Standby to Ready (sec) Ready to spindle stop (sec) 13 (max) 13 (max) 14 (max) 2.8 Power specifications The drive receives DC power (+5V or +12V) through a native SATA power connector.

See Figure 4 on page 34. 2.8.1 Power consumption Power requirements for the drives are listed in the table on page 9. Typical power measurements are based on an average of drives tested, under nominal conditions, using 5.0V and 12.0V input voltage at 25°C ambient temperature. · Spinup power Spinup power is measured from the time of power-on to the time that the drive spindle reaches operating speed. · Seek mode During seek mode, the read/write actuator arm moves toward a specific position on the disc surface and does not execute a read or write operation. Servo electronics are active.

Seek mode power represents the worst-case power consumption, using only random seeks with read or write latency time. This mode is not typical and is provided for worst-case information. · Read/write power and current Read/write power is measured with the heads on track, based on a 16-sector write followed by a 32-msec delay, then a 16-sector read followed by a 32-msec delay. · Operating power and current Operating power is measured using 40 percent random seeks, 40 percent read/write mode (1 write for each 10 reads) and 20 percent drive idle mode.



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30 Barracuda 7200.9 Serial ATA Product Manual, Rev. F 2.13.3 FCC verification These drives are intended to be contained solely within a personal computer or similar enclosure (not attached as an external device). As such, each drive is considered to be a subassembly even when it is individually marketed to the customer.

As a subassembly, no Federal Communications Commission verification or certification of the device is required. Seagate Technology LLC has tested this device in enclosures as described above to ensure that the total assembly (enclosure, disc drive, motherboard, power supply, etc.) does comply with the limits for a Class B computing device, pursuant to Subpart J, Part 15 of the FCC rules. Operation with noncertified assemblies is likely to result in interference to radio and television reception. Radio and television interference.

This equipment generates and uses radio frequency energy and if not installed and used in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. This equipment is designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television, which can be determined by turning the equipment on and off, you are encouraged to try one or more of the following corrective measures:

· Reorient the receiving antenna. · Move the device to one side or the other of the radio or TV.

· Move the device farther away from the radio or TV. · Plug the computer into a different outlet so that the receiver and computer are on different branch outlets. If necessary, you should consult your dealer or an experienced radio/television technician for additional suggestions. You may find helpful the following booklet prepared by the Federal Communications Commission: *How to Identify and Resolve Radio-Television Interference Problems*. This booklet is available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. Refer to publication number 004-000-00345-4.

2.14 Environmental protection Seagate designs its products to meet environmental protection requirements worldwide, including regulations restricting certain chemical substances.

2.14.1 European Union Restriction of Hazardous Substances (RoHS) The European Union Restriction of Hazardous Substances (RoHS) Directive restricts the presence of chemical substances, including Lead (Pb), in electronic products effective July 2006. Although amendments to the European Union's Restriction of Hazardous Substances (RoHS) Directive have not been finalized, to the best of our knowledge the disc drives documented in this publication will comply with the final RoHS Directive requirements. A number of parts and materials in Seagate products are procured from external suppliers. We rely on the representations of our suppliers regarding the presence of RoHS substances in these parts and materials. Our supplier contracts require compliance with our chemical substance restrictions, and our suppliers document their compliance with our requirements by providing material content declarations for all parts and materials for the disc drives documented in this publication. Current supplier declarations include disclosure of the inclusion of any RoHS-regulated substance in such parts or materials. Seagate also has internal systems in place to ensure ongoing compliance with the RoHS Directive and all laws and regulations which restrict chemical content in electronic products. These systems include standard operating procedures that ensure that restricted substances are not utilized in our manufacturing operations, laboratory analytical validation testing, and an internal auditing process to ensure that all standard operating procedures are complied with.

Barracuda 7200.9 Serial ATA Product Manual, Rev. F 31 2.15 Corrosive environment Seagate electronic drive components pass accelerated corrosion testing equivalent to 10 years exposure to light industrial environments containing sulfurous gases, chlorine and nitric oxide, classes G and H per ASTM B845. However, this accelerated testing cannot duplicate every potential application environment.

Users should use caution exposing any electronic components to uncontrolled chemical pollutants and corrosive chemicals as electronic drive component reliability can be affected by the installation environment. The silver, copper, nickel and gold films used in Seagate products are especially sensitive to the presence of sulfide, chloride, and nitrate contaminants. Sulfur is found to be the most damaging. In addition, electronic components should never be exposed to condensing water on the surface of the printed circuit board assembly (PCBA) or exposed to an ambient relative humidity greater than 95%. Materials used in cabinet fabrication, such as vulcanized rubber, that can outgas corrosive compounds should be minimized or eliminated.

The useful life of any electronic equipment may be extended by replacing materials near circuitry with sulfide-free alternatives. 32 Barracuda 7200.9 Serial ATA Product Manual, Rev. F 3.0 Configuring and mounting the drive This section contains the specifications and instructions for configuring and mounting the drive. 3.1 Handling and static-discharge precautions After unpacking, and before installation, the drive may be exposed to potential handling and electrostatic discharge (ESD) hazards. Observe the following standard handling and static-discharge precautions: Caution: · Before handling the drive, put on a grounded wrist strap, or ground yourself frequently by touching the metal chassis of a computer that is plugged into a grounded outlet. Wear a grounded wrist strap throughout the entire installation procedure. · Handle the drive by its edges or frame only.

· The drive is extremely fragile--handle it with care. Do not press down on the drive top cover. · Always rest the drive on a padded, antistatic surface until you mount it in the computer. · Do not touch the connector pins or the printed circuit board. · Do not remove the factory-installed labels from the drive or cover them with additional labels. Removal voids the warranty. Some factory-installed labels contain information needed to service the drive. Other labels are used to seal out dirt and contamination. Barracuda 7200.9 Serial ATA Product Manual, Rev.

F 33 3.2 Configuring the drive Each drive on the Serial ATA interface connects point-to-point with the Serial ATA host adapter. There is no master/slave relationship because each drive is considered a master in a point-to-point relationship. If two drives are attached on one Serial ATA host adapter, the host operating system views the two devices as if they were both "masters" on two separate ports.



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Both drives behave as if they are Device 0 (master) devices.

Serial ATA drives are designed for easy installation. It is usually not necessary to set any jumpers on the drive for proper operation; however, if you connect the drive and receive a "drive not detected" error, your SATA-equipped motherboard or host adapter may use a chipset that does not support SATA speed autonegotiation. If you have a motherboard or host adapter that does not support autonegotiation: · Configure the jumper block with a jumper as shown in Figure 3 below to limit the data transfer rate to 1.5 Gbits per second (and leave the drive connected to the SATA-equipped motherboard or host adapter that doesn't support autonegotiation) or · Install a SATA host adapter that supports autonegotiation, set the drive jumper block to "3 Gbits per second operation" (see Figure 3 below), and connect the drive to that adapter. This option has the benefit of not limiting the drive to a 1.

5 Gbits/sec transfer rate. 3.0 Gbits per second operation Limit data transfer rate to 1.5 Gbits per second Jumper block SATA power connector SATA interface connector Figure 3. Serial ATA connectors and jumper options 3.3 Serial ATA cables and connectors The Serial ATA interface cable consists of four conductors in two differential pairs, plus three ground connections. The cable size may be 30 to 26 AWG with a maximum length of one meter (39.37 inches). See Table 15 for connector pin definitions. Either end of the SATA signal cable can be attached to the drive or host.

For direct backplane connection, the drive connectors are inserted directly into the host receptacle. The drive and the host receptacle incorporate features that enable the direct connection to be hot pluggable and blind mateable. For installations which require cables, you can connect the drive as illustrated in Figure 4. Signal connector Power connector Signal cable Power cable Figure 4. Attaching SATA cabling Each cable is keyed to ensure correct orientation.

Barracuda 7200.9 Serial ATA drives support latching SATA connectors. 34 Barracuda 7200.9 Serial ATA Product Manual, Rev. F 3.

4 Drive mounting You can mount the drive in any orientation using four screws in the side-mounting holes or four screws in the bottom-mounting holes. See Figure 5 on page 35 for drive mounting dimensions. Follow these important mounting precautions when mounting the drive: · Allow a minimum clearance of 0.030 inches (0.76 mm) around the entire perimeter of the drive for cooling.

· Use only 6-32 UNC mounting screws. · The screws should be inserted no more than 0.150 inch (3.81 mm) into the bottom or side mounting holes. · Do not overtighten the mounting screws (maximum torque: 6 inch-lb).

Recommended case temperature measurement location [1] 5.787 (146.9898) max. 1.122 + .020 (28.499 + .508) [1] 1.638 (41.605) [1] 4.

000 (101.60) [1] 4.000 (101.6) 1.028 max [1] (26.111 max) .814 (20.676) .250 + .015 (6.35 + .381) (3x both sides) .138 (3.505) C of conn. Datum B L 2.

00 (50.80) C of drive L Notes: Dimensions are shown in inches (mm). [1] Dimensions per SFF-8301 specification [1] 2 x 3.750 (2 x 95.25) 2 x 1.625 (2 x 41.28) [1] 2 x 1.750 [1] (2 x 44.45) 4.000 (101.6) [1] Recommended case temperature measurement location Figure 5. Mounting dimensions--top, side and end view Barracuda 7200.9 Serial ATA Product Manual, Rev. F 35 36 Barracuda 7200.9 Serial ATA Product Manual, Rev.

F 4.0 Serial ATA (SATA) interface These drives use the industry-standard Serial ATA interface that supports FIS data transfers. It supports ATA programmed input/output (PIO) modes 04; multiword DMA modes 02, and Ultra DMA modes 06. For detailed information about the Serial ATA interface, refer to the "Serial ATA: High Speed Serialized AT Attachment" specification. 4.1 Hot-Plug compatibility Barracuda 7200.9 Serial ATA drives incorporate connectors which enable you to hot plug these drives in accordance with the Serial ATA II: Extension to Serial ATA 1.0a specification. This specification can be downloaded from www.serialata.org.

Barracuda 7200.9 Serial ATA Product Manual, Rev. F 37 4.2 Serial ATA device plug connector pin definitions Table 15 summarizes the signals on the Serial ATA interface and power connectors.

. Table 15: Segment Serial ATA connector pin definitions Pin S1 S2 S3 S4 S5 S6 Function Ground A+ AGround BB+ Ground 2nd mate Key and spacing separate signal and power segments P1 P2 P3 P4 P5 P6 P7 V33 V33 V33 Ground Ground Ground V5 V5 V5 Ground Ground or LED signal Ground V12 V12 V12 3.3V power 3.3V power 3.3V power, pre-charge, 2nd mate 1st mate 2nd mate 2nd mate 5V power, pre-charge, 2nd mate 5V power 5V power 2nd mate If grounded, drive does not use deferred spin 1st mate.

12V power, pre-charge, 2nd mate 12V power 12V power 2nd mate Differential signal pair B from Phy Definition 2nd mate Differential signal pair A from Phy Signal S7 Power P8 P9 P10 P11 P12 P13 P14 P15 Notes: 1. All pins are in a single row, with a 1.27 mm (0.050") pitch. 2. The comments on the mating sequence apply to the case of backplane blindmate connector only. In this case, the mating sequences are: · the ground pins P4 and P12. · the pre-charge power pins and the other ground pins. · the signal pins and the rest of the power pins. 3.

There are three power pins for each voltage. One pin from each voltage is used for pre-charge when installed in a blind-mate backplane configuration. 4. All used voltage pins (Vx) must be terminated. 38 Barracuda 7200.9 Serial ATA Product Manual, Rev. F 4.3 Supported ATA commands The following table lists Serial ATA standard commands that the drive supports. For a detailed description of the ATA commands, refer to the Serial ATA: High Speed Serialized AT Attachment specification. See "S.

M.A.R.T. commands" on page 46.

for details and subcommands used in the S.M.A.R.T.

implementation. Table 16: Supported ATA commands Command code (in hex) 98H or E5H B1H / C1H B1H / C2H B1H / C0H B1H / C3H 08H 92H 90H E7H EAH 50H ECH 97H or E3H 95H or E1H 91H E4H C8H 25H C9H 2FH C4H 29H F8H 27H 20H 24H 21H 40H 42H 41H 10H F6H F3H Command name Check Power Mode Device Configuration Freeze Lock Device Configuration Identify Device Configuration Restore Device Configuration Set Device Reset Download Microcode Execute Device Diagnostics Flush Cache Flush Cache Extended Format Track Identify Device Idle Idle Immediate Initialize Device Parameters Read Buffer Read DMA Read DMA Extended Read DMA Without Retries Read Log Ext Read Multiple Read Multiple Extended Read Native Max Address Read Native Max Address Extended Read Sectors Read Sectors Extended Read Sectors Without Retries Read Verify Sectors Read Verify Sectors Extended Read Verify Sectors Without Retries Recalibrate Security Disable Password Security Erase Prepare Barracuda 7200.9 Serial ATA Product Manual, Rev.



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F 39 Command name Security Erase Unit Security Freeze Security Set Password Security Unlock Seek Set Features Set Max Address Note: Individual Set Max Address commands are identified by the value placed in the Set Max Features register as defined to the right. Set Max Address Extended Set Multiple Mode Sleep S.M.A.R.T. Disable Operations S.

M.A.R.T. Enable/Disable Autosave S.M.A.R.T. Enable Operations S.

M.A.R.T. Execute Offline S.

M.A.R.T. Read Attribute Thresholds S.

M.A.R.T. Read Data S.M.A.R.T. Read Log Sector S.

M.A.R.T. Return Status S.M.A.R.T. Save Attribute Values S.

M.A.R.T. Write Log Sector Standby Standby Immediate Write Buffer Write DMA Write DMA Extended Write DMA FUA Extended Write DMA Without Retries

Write Log Extended Write Multiple Write Multiple Extended Write Multiple FUA Extended Write Sectors Write Sectors Without Retries Write Sectors Extended Command code (in hex) F4H F5H F1H F2H 70H EFH F9H Address: Password: Lock: Unlock: Freeze Lock: 37H C6H 99H or E6H B0H / D9H B0H / D2H B0H / D8H B0H / D4H B0H / D1H B0H / D0H B0H / D5H B0H / DAH B0H / D3H B0H / D6H 96H or E2H 94H or E0H E8H CAH 35H CDH CBH 3FH C5H 39H CEH 30H 31H 34H 00H 01H 02H 03H 04H 40 Barracuda 7200.

9 Serial ATA Product Manual, Rev. F 4.3.1 Identify Device command The Identify Device command (command code ECH) transfers information about the drive to the host following power up. The data is organized as a single 512-byte block of data, whose contents are shown in Table 16 on page 39.

All reserved bits or words should be set to zero. Parameters listed with an "x" are drive-specific or vary with the state of the drive. See Section 2.0 on page 3 for default parameter settings. The following commands contain drive-specific features that may not be included in the Serial ATA specification. Word

Description Configuration information: · Bit 15: 0 = ATA; 1 = ATAPI · Bit 7: removable media · Bit 6: removable controller · Bit 0: reserved Number of logical cylinders ATA-reserved Number of logical heads Retired Retired Number of logical sectors per logical track: 63 Retired Serial number: (20 ASCII characters, 0000H = none) Retired Retired Obsolete Firmware revision (8 ASCII character string, padded with blanks to end of string) Drive model number: (40 ASCII characters, padded with blanks to end of string) (Bits 70) Maximum sectors per interrupt on Read multiple and Write multiple (16) Reserved Standard Standby timer, IORDY supported and may be disabled ATA-reserved PIO data-transfer cycle timing mode Retired Words 5458, 6470 and 88 are valid Number of current logical cylinders Number of current logical heads Number of current logical sectors per logical track Current capacity in sectors

Number of sectors transferred during a Read Multiple or Write Multiple command 8010H 0000H 2F00H 0000H 0200H 0200H 0007H xxxxH xxxxH xxxxH xxxxH Value 0C5AH 0 1 2 3 4 5 6 79 1019 20 21 22 2326 2746 47 48 49 50 51 52 53 54 55 56 5758 59 16,383 0000H 16 0000H 0000H 003FH 0000H ASCII 0000H 0400H 0000H x.xx Barracuda 7200.9 Serial ATA Product Manual, Rev. F 41 Word 6061 Description Total number of user-addressable LBA sectors available (see Section 2.2 for related information) *Note: The maximum value allowed in this field is: 0FFFFFFFh (268,435,455 sectors, 137 Gbytes).

Drives with capacities over 137 Gbytes will have 0FFFFFFFh in this field and the actual number of user-addressable LBAs specified in words 100-103. This

is required for drives that support the 48-bit addressing feature. Value ST3500641AS = 0FFFFFFFh* ST3500841AS = 0FFFFFFFh* ST3400633AS = 0FFFFFFFh* ST3400833AS = 0FFFFFFFh* ST3320633AS = 0FFFFFFFh* ST3320833AS = 0FFFFFFFh* ST3300622AS = 0FFFFFFFh* ST3300822AS = 0FFFFFFFh* ST3250624AS = 0FFFFFFFh* ST3250824AS = 0FFFFFFFh* ST3200827AS = 0FFFFFFFh* ST3160812AS = 0FFFFFFFh*

ST3160212AS = 0FFFFFFFh* ST3120813AS = 234,441,648 ST3120213AS = 234,441,648 ST3808110AS = 156,301,488 ST3802110AS = 156,301,488 ST3402111AS = 78,165,360 0000H xx07H 0003H 0078H 0078H 00F0H 0078H 62 63 64 65 66 67 68 6974 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90

Retired Multiword DMA active and modes supported (see note following this table) Advanced PIO modes supported (modes 3 and 4 supported) Minimum multiword DMA transfer cycle time per word (120 nsec) Recommended multiword DMA transfer cycle time per word (120 nsec) Minimum PIO cycle time without IORDY flow control (240 nsec) Minimum PIO cycle time with IORDY flow control (120 nsec) ATA-reserved Queue depth Serial ATA capabilities

Reserved for future Serial ATA definition Serial ATA features supported Serial ATA features enabled Major version number Minor version number Command sets supported Command sets supported Command sets support extension Command sets enabled Command sets enabled Command sets enable extension Ultra DMA support and current mode (see note following this table) Security erase time Enhanced security erase time 0000H 0000H xxxxH xxxxH xxxxH xxxxH 003EH 0000H 364BH 7C03H 4003H 30xxH 0001H 4000H xx3FH 0000H 0000H 42 Barracuda 7200.9 Serial ATA Product Manual, Rev. F Word 92 93 9599 100 103 Description Master password revision code Hardware reset value (see description following this table) ATA-reserved Total number of user-addressable LBA sectors available (see Section 2.2 for related information). These words are required for drives that support the 48-bit addressing feature.

Maximum value: 0000FFFFFFFh. Value FFFEh xxxxH 0000H ST3500641AS = 976,773,168 ST3500841AS = 976,773,168 ST3400633AS = 781,422,768 ST3400833AS = 781,422,768 ST3320633AS = 625,142,448 ST3320833AS = 625,142,448 ST3300622AS = 586,072,368 ST3300822AS = 586,072,368 ST3250624AS = 488,397,168 ST3250824AS = 488,397,168 ST3200827AS = 390,721,968 ST3160812AS = 312,581,808 ST3160212AS = 312,581,808 ST3120813AS = 234,441,648 ST3120213AS = 234,441,648 ST3808110AS = 156,301,488 ST3802110AS = 156,301,488 ST3402111AS = 78,165,360 0000H 0001H xxxxH 0000H xxA5H 104 127 128 129 159 160 254 255 ATA-reserved Security status Seagate-reserved ATA-reserved Integrity word Note. Advanced Power Management (APM) and Automatic Acoustic Management (AAM) features are not supported Barracuda 7200.

9 Serial ATA Product Manual, Rev. F 43 Note. See the bit descriptions below for words 63, 88, and 93 of the Identify Drive data. Description (if bit is set to 1)

Bit 0 1 2 8 9 10 Bit 0 1 2 3 4 5 6 8 9 10 11 12 13 14 Word 63 Multiword DMA mode 0 is supported. Multiword DMA mode 1 is supported.

Multiword DMA mode 2 is supported. Multiword DMA mode 0 is currently active. Multiword DMA mode 1 is currently active. Multiword DMA mode 2 is currently active. Word 88 Ultra DMA mode 0 is supported.

Ultra DMA mode 1 is supported. Ultra DMA mode 2 is supported. Ultra DMA mode 3 is supported. Ultra DMA mode 4 is supported. Ultra DMA mode 5 is supported. Ultra DMA mode 6 is supported. Ultra DMA mode 0 is currently active.



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