

SPECTRA LOGIC

Spectra[®] 10K Library Firmware History



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Spectra 10K Library Firmware History

Version 6.00.03

November 2006

Improvements and Repaired Defects

- Added support for Sony SDX-1100 (AIT-5) drives.
- Added support for creating a zero-drive library partition. This removes the extra slots allowed in empty drive bays from the library's inquiry string; the library can then work with software packages that are licensed on a per-slot basis.
- Fixed a display problem (changed text from boolean to Boolean).
- Fixed the returned data buffer for Log Sense Page 33 requests to accommodate additional data for AIT-4/5 drives.

Version 6.00.01

January 2005

Improvements and Repaired Defects

- No longer failures in force-loading library firmware in a Fibre Channel library.

Version 6.00.00

November 2004

Improvements and Repaired Defects

- Added support for SDX 400C and V-series drives.
- Added support for emulation modes for V-Series drives.
- Added support for Sony AIT-4 (SDX 900V) drives.
- Added SDX-700C Emulation Support.
- Removed Temperature Fault Support.
- Emulation settings no longer only take effect on a Save Parameters action.

Version 5.00.23

April 2003

Improvements and Repaired Defects

- Corrected inaccurate reporting of Read/Write test results with AIT-2 Drives.
- Added Sony AIT drive support for Read/Write Confidence Test.

Version 5.00.22

November 2002

Improvements and Repaired Defects

- Reset Encoders Not Regulated no longer comes up during diagnostics tests.
- Library no longer answers good to several LUNs, which was causing multiple libraries to show up to the host.

Version 5.00.21

July 2002

Improvements and Repaired Defects

- Added more information to the drive more page for AIT-2 tape drives.

Version 5.00.20

April 2002

Improvements and Repaired Defects

- Code now displays the second set of 4 digits of AIT 3 firmware.

Version 5.00.19

February 2002

Improvements and Repaired Defects

- Bulk load in split library now scans all bar codes correctly.
- Ejecting queued tapes in a split library now works correctly.

Version 5.00.18

December 2001

Improvements and Repaired Defects

- AIT-3 drive support added.
- Fixed algorithm when tape is in gripper jaws at power up.

Version 5.00.15

June 1999

Improvements Contained in Version 5.00.15

- Integration of AIT-2 drives.
- Split library problems now reset to proper drive.
- Sends not ready response to correct channel.
- Allows SCSI to accept fast repeating commands to library.
- Allows queued unloads in Prevent Media Removal state.
- Race condition no longer hangs between disconnect and command process.
- Issues soft reset on drive that returns check condition on unload.
- Changes emulation error to ALERT instead of FAULT.
- Corrects slot 41 availability error in bulk unload screen.
- No longer fails when library is disconnected from drive.
- Corrects split library mode E/E port problem 5.
- Improves SCSI debugging in ^P trace.
- Corrects split bus problem with same SCSI ID on both sides.

- Corrects front panel move problem.
- Removes load/unload retries and device resets (post drive error on front panel).
- Changes move to drive to wait 60 seconds for drive ready.
- Adds support for AIT-2 inquiry strings.
- Improves menu interface performance for fibre controller.
- Adds switch option 4 to set SDX-300C inquiry string (no switch update).
- Changes copyright to 1999.
- Changes SCSI_size to channel specific.
- Changes EXB-120 emulation to EXB-210.
- No longer hangs if SCSI bus not stable at power-up.
- Now must ship with SCSI bus mode set to 1 (as shown in Figure 1).

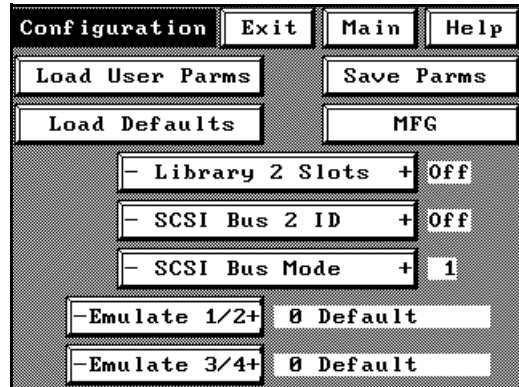


Figure 1 Drive switch configuration screen.

Version 5.00.12

November 1998

Improvements Contained in Version 5.00.12

- Changes all non-media movement SCSI commands to not disconnect.
- Fixes SCSI reset failure (asserted to long).
- Fixes bar code read failure.

Version 5.00.11

October 1998

Improvements Contained in Version 5.00.11

- Fixes split bus emulation detection process.
- Increases SCSI time-out from ten minutes to thirty minutes.
- Adds inquiry page 0xd0.
- Fixes problems with unit hang after SCSI bus time-out.
- Now pulls tape further into gripper.
- Reduces the number of drive loads in burn test.

- Adds move request to remove tape during cleaning sets Clean Alert.
- Corrects problem with cleaning cartridge.
- No longer resets entire library when changing SCSI reset processing.
- Fault now properly set on drive move request.
- Fixes problem with SCSI loop-back detection.
- Adds bullfrog code information page.
- Adds new Opticon scanner identification code.
- Fixes library target multiple initiator problem.
- Improves DDS drive unload.
- Removes Single-Ended/Differential front panel display.
- Changes drive configuration option 3 to IRIX/PC.

Version 5.00.05

April 1998

Improvements Contained in Version 5.00.05

- Fixes problem with FAULT on drives when configuration set to 16 STK drive emulation.
- Fixes problem with running Cheyenne on two separate SCSI busses with no split library emulation.
- Adds retries for Load/Unload that receive 4, 44, 0 error from drive.

Version 5.00.03

February 1998

Improvements Contained in Version 5.00.03

- Corrects problem with handshaking compatibility.

Version 5.00.02

January 1998

Improvements Contained in Version 5.00.02

- Adds support for split logical libraries via second serial SCSI ports (the drive switch configuration screen selection has been separated for Drives 1/2 and 3/4), as shown in Figure 2.
- Adds support for Opticon bar code scanner.
- Adds support for Highground NT media changer.
- Enhances support for 8505 in D4 position.
- Verifies drive emulation modes to help in finding configuration problems.
- Fixes problem with Sun Microsystems probe-SCSI sending identifying messages.
- Corrects drive detection problem when emulating HP DDS-2.
- Corrects split bus drive emulation problem between drives 1/2 and 3/4.
- Now reports initialization failures correctly.
- Verifies drive emulation modes to help find configuration problems.
- Read/Write test now functional with split 2 drive library.
- Fixes problem with PYR-300C disable drive configuration selection.
- Fixes problem with Drive 1 emulation mode displaying incorrect characters.
- Fixes problem with unlabeled cartridge displayed as labeled.
- Corrects problems with front panel functions on split 2 drive library.
- Changes copyright date to 1998.
- Corrects 8505 drive faults due to mismatched configuration selections.
- No longer fails confidence test for 8505 drives.
- Now posts correct error when bus 2 SCSI ID disabled.
- Corrects problem with split bus drive active and loaded, not properly splitting.
- Enables drive more button for Exabyte 8500 drive.

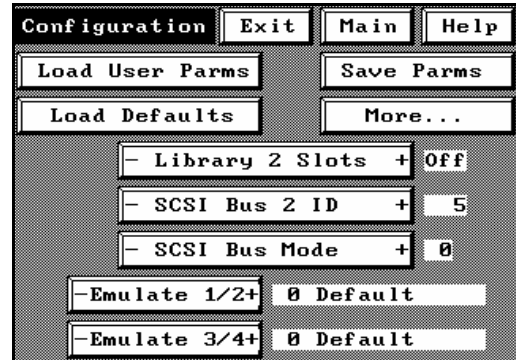


Figure 2 Drive switch configuration screen.

Spectra 9000 Firmware History

Version 3.02.01

July 1998

Improvements Contained in Version 3.02.01

- Adds support for Highground media changer used with NT 5.0.
- Removes clock chip date functionality (no side effects will be caused by missing date).

Version 3.01.10

July 1997

Improvements Contained in Version 3.01.10

- Changes move to drive operation to check CLND bit if cartridge is ejected unexpectedly on load operations.
- Modifies SCSI wide arbitration message 01 02 03 01 to illicit proper response 01 02 03 00 (previously issued message reject for Wide request).
- Modifies ATN assertion at end of MSG IN phase, now switches back to MSG OUT phase (previously erroneously going to CMD phase regardless of ATN).
- Fixes Accepted/Verified DEC Alpha arbitration problem on WIDE SCSI controller.
- Fixes Accepted/Verified 18 pass cleaning cartridge not previously detected during regular menu.

Version 3.01.06

December 1997

Improvements Contained in Version 3.01.06

- Enhances confidence test.
- Adds retries on load failures with Maxell media.

- Adds XON/XOFF handshaking software supported.
- Debugs Read Element Status.
- Corrects load drive failures.

Version 3.01.02

July 1996

Improvements Contained in Version 3.01.02

- Adds reporting of scanner revision CBRLMAFB as 306, via DSP Test Table.
- Modifies Spectra 9000 scanner routines to function like Spectra 4000 firmware code.
- Adds SCSI initiator fixes from Spectra 4000 firmware problems; fixes do not directly address any known deficiencies in the Spectra 9000 firmware.
- Modifies the SSCL K command to initiate Read/Write/Interchange Test via serial port (for manufacturing use only).
- Adds tracking of previous source element to Read Element Status Data.

Version 3.01.01

May 1996

Improvements Contained in Version 3.01.01

- Adds 10 retries for moves into slots to combat old slot guides with Maxell tapes.
- Allows move commands subsequent to ECC Fault Error to eject tape from library.
- SSCL return element status "R 2" now returns: Bar Code: Load Count: Drive #: Drive's Clean Request: Read ERR%: Write ERR%, for each element in the inventory; a "?" is returned if this information is unknown.
- SSCL "J" command for Return drive error rate (J 1-4).
- SSCL "K" command for Execute Read/Write test on drive N (K 1-4).
- Tracks and displays error rates for all tapes when they have been loaded into a drive after power-up of library.
- Displays clean and reset buttons in drive status screen.
- Supports SCSI Mode Parameter page (this page is similar to the Exabyte 440 page, it allows SCSI initiators to write to the LCD display).

- Responds to SCSI Inquiry Commands with different data, emulating other libraries.
- Adds library mode parameter to disable library operation as a SCSI initiator on the bus.
- Allows queued unloads to operate for SCSI initiators as well as Serial initiators.
- Will not allow Confidence test (from the Qualifications Test Menu) to start until the minimum qualifications are met.
- Displays error message if minimum qualifications are not met for Confidence test.
- Will not allow clean test to pass if the drive fails to reset the Clean Me request after the command (HP, Conner, and Exabyte drives only).
- No longer fails a normal move with a cleaning cartridge in Spectra 9000 library (Exabyte drives only).
- Enabled serial port hardware handshake no longer causing the library to boot extremely slow if no handshake is asserted.
- Now displays custom company bitmaps on information screen.
- SSCL can be disabled by manufacturing (via serial port or custom bitmap tape).
- Allows SSCL and SCSI Send Diagnostic to accept parameter length >0.
- Allows level 4 diagnostic test to loop for a specific number of loops (once you set the number of loops from the level 4 menu that number will be set for the next Level 4 test to be executed).

Version 2.00.14

November 1995

Improvements Contained in Version 2.00.14

- Retracts linear arm 0.050" less than previously to prevent cartridge from slipping out of carrier due to Gripper solenoid being opened by linear lock.

Version 2.00.13

November 1995

Improvements Contained in Version 2.00.13

- Fixes Dead Zone problem with solenoid jamming on linear lock pin at power-up.
- Enhances load/unload profile for 8505 drives to fix Mylar problems.

Version 2.00.07

October 1995

Improvements Contained in Version 2.00.07

- Adds message reject for wide data transfer.
- Implements quicker reset for SCSI resets to meet specification.

Version 2.00.04

August 1995

Improvements Contained in Version 2.00.04

- No longer runs into slot 40 during initial tape grab at drive.
- Displays correct error message when loading firmware.
- Bump operation to move tape from drive slot into sensor now acceptable.
- No longer leaves tape in drive slot during confidence test.
- Adds bus device reset to burn test unload request from DSP.
- Sets drive faults for units with gaps between installed drives.
- Adds drive faults for No response from SCSI target.
- Discontinues door polling when in diagnostics.
- Corrects improper location of library's 20 slot to 21 slot.
- Corrects improper reading of bar codes on vertical library units.
- Corrects improper tape loading of library.
- Corrects diagnostic command alignment on Push Tape Into Drive.
- No longer crashes on bogus robotics home test failure.
- Now retries incomplete tape ejection of library.
- Adds library Inquiry String toggle button.
- Fixes Drive Align Sns test failures.
- No longer loses tape in drive at start-up of library.
- No longer hits back of door slot of library.
- Corrects gripper off-set on incomplete door rotation.
- Adds more level to the LCD contrast values on front panel display.

Version 2.00.00

June 1995

Improvements Contained in Version 2.00.00

- Adds initialization to handle drive problems and library faults.
- Enhances real time door status.
- Allows writing to LCD from host port.
- Enhances drive status screen.
- Adds functional serial port handshake button.
- Checks volume button.
- Enhances library mode parameters.
- Adds front panel error notification.
- Implements queued unloads.
- Implements Bulk loads and unloads.
- Automatically updates parameter blocks after code 1d.
- Adds a function to read parameter block settings from a code tape.
- Configuration menu is now password protected.
- Fixes clock 0,0,0.
- Corrects Cartridge Guide Back stop not broken out problem.
- Implements queue front panel when library is busy.
- Code supports additional FEPROM parameter blocks.
- Fixes Stop screen change when operator enters/changes password or x/y plots.
- Fixes problem with touch isr, timer isr, and foreground updating simultaneously.
- Adds serial number encryption for passwords.
- Enhances support for library.
- Adds 12 or 24 hour time display.
- Halts dsp when lid is open and resets when closed.
- Adds dump trace to diagnostics.
- Plots only tapes reserved for fpan if queued unload mode.
- Improves door button operation for Bulk loads and unloads.
- Adds Bulk move: fix last slot replace bug (out of slots).
- Now changes to move screen if SCSI/SSCL move tape to door.
- Adds time-out for Bulk/queued moves.
- Enhances Makefile.
- Adds EC levels screen.

- Adds lockable front panel.
- Locks out casual users from front panel.
- Displays a blank screen after ten minutes of non-touch.
- Checks for tape half-way into door slot before moving via button.
- Saves configuration parameters and Print Parameters Saved message after parameters are saved.
- Hides bar code button and configure screen if no bar code detected.
- Library fault button changes to into information screen to report fault/remedy.
- Allows for changeable screen locking password.
- Adds dump trace buffer on front panel screen.
- Disables scanner when lid is open.
- Adds minimum number of bar code label characters to be read as complete label.
- Adds bitmap for Spectra Logic Logo to initialization screen.
- Revises boot code.
- Adds drive move to make them immune to Reservation conflicts.
- Enhances SSCL for LUN targets.
- Bar code label screen able to handle bar code labels.
- Adds DSP memory test to library initialization.
- Fixes problem with Main screen not causing a screen change when touch cell 0, 0.
- Starts SSCL interrupts prior to DSP.
- Fixes SCSI hang when attempting a write to LCD command on EXB 120.
- Adds SSCL time command ““T”” to set real time clock.
- Adds support for Exabyte 8505 drives.
- Adds flag to prevent vision sensor polling by 188.
- Adds drive compatibility test.
- Displays Drive Needs Cleaning indication.
- Adds patch level to the standard inquiry page’s vendor unique field.
- Tracks door loaded by user or robot.
- Lengthens time-out for drive loads to five minutes.
- Mode parameter default values now report correct number of drives.
- Improves speed of SCSI Read Element Status command.
- Corrects door load retry.
- Checks for cartridges by stopping at empty drive slots.
- Adds programmable address for OEM’S and VAR’s.
- Flags an upgrade/downgrade of the library.
- Adds inquiry string when the drive is not installed.

- Clean move now reports tape in arm condition.
- Will initialize with cartridge in door slot.
- No longer overwriting LCD.
- Passes initialization on carousel exchange.
- No longer defaults off bar code checksum.

Spectra 10K Library Fibre Firmware History

Version 1.37.1.4

March 2001

Problems Identified in Version 1.37.1.2

- Writes not getting acknowledged when using multiple initiators causing a time out
- Read Element Status command periodically causes library hang
- Read Element Status command serializes drive tapes when not requested

Improvements Contained in Version 1.37.1.4

- Writes are now acknowledged when using multiple initiators
- Read Element Status command no longer hangs library
- Read Element Status command no longer serialized drive tapes until requested

Version 1.37.1.2

March 2000

Problems Identified in Version 1.37.0.0

- Read Element Status overrun needs correcting
- Read Element Status tape drive descriptor not reflecting correct FC loop ID value of the SCSI target or the FC LUN value of the SSCL target
- LCD does not display which hardware is installed on Raptor board
- Serial display does not adequately display failure when performing power on test

Improvements Contained in Version 1.37.1.2

- Corrects Read Element Status overrun problem
- Read Element Status now reflects correct FC loop ID for the SCSI target and FC LUN value of the SSCL target, as part of the tape drive serial number reporting
- LCD now displays which hardware (“2100” or “2200”) is installed on Raptor board
- Serial display at PON now displays power on test failure adequately

Version 1.37.0.0

October 1999

Problems Identified in Version 1.35.0.0

- Manufacturing test bug needs fixing
- Serial port diagnostic dump during processor fault needs enhancement

Improvements Contained in Version 1.37.0.0

- Fixes manufacturing test bug
- Enhances serial port diagnostic dump during processor fault

Version 1.35.0.0

October 1999

Problems Identified in Version 1.34.0.0

- Read Element Status data lengths between $2^{16N} - 8$ and 2^{16N} were not handled correctly for $N > 0$
- Read Element Status returned data length needs fixing (too few bytes)
- IOCB event log would corrupt some logged values for CDBs with 10 or 12 byte lengths
- Fibre and SCSI queue displays sometimes show corrupt values due to race condition
- Additional diagnostic information and counters need to be added in case FCP_RSP out of memory condition occurs

Improvements Contained in Version 1.35.0.0

- Read Element Status data lengths between $2^{16N} - 8$ and 2^{16N} now handled correctly for $N > 0$
- Fixes Read Element Status returned data length
- No longer corrupts logged values for CDBs with 10 or 12 byte lengths
- No longer displays corrupt values due to race condition in Fibre and SCSI queues
- Adds diagnostic information and counters in case FCP_RSP out of memory condition occurs

Version 1.34.0.0

September 1999

Problems Identified in Version 1.33.0.0

- Memory leak detected in a Mode Select command due to an erroneous correct response on an incorrect cleanup, causing memory crash

Improvements Contained in Version 1.34.0.0

- Fixes mode select command problem

Version 1.33.0.0

September 1999

Problems Identified in Version 1.28.1.6

- UCM fibre configuration display shows incorrect serial port baud rate
- ASC/ASCQ error codes conflict with Library codes
- Inquiry byte length problem prevents manufacturing tests
- Memory leak problem causing memory crash
- Problems with command ABORT handling
- Various implementation in anticipation of XCOPY

Improvements Contained in Version 1.33.0.0

- Fixes UCM configuration display to show correct serial port baud rate]
- ASC/ASCQ error codes no longer conflict with Library codes
- Fixes Inquiry byte length problem that prevented manufacturing testing
- Fixes memory leak problem
- Fixes problem with command ABORT handling
- Adds Read Element Status tape drive serialization
- Adds full and correct handling of FL_ports on switches
- Adds report of World Wide Number (WWN) through Inquiry page 0x83
- Upgrades ISP2100 code for more robust FC support
- Adds function ctrl+z, pressed three times from serial port, to force reset of the Raptor board
- Adds function ctrl+c, from the serial port, to force the trace level to zero

- Adds error logging (diagnostic command “show errlog”)
- Adds FC and SCSI chip mailbox command logging
- UCM polling no longer washes out error and IOCB logs
- No longer contains crash boot menu on system crash (replaced by error traces)
- FC CRC error rates are available through “show fiber”
- Enhances diagnostic traces and functions
- System buffer management reworked in anticipation of XCOPY support
- Enables TARG/INIT button on UCM fibre configuration age in anticipation of XCOPY support
- Library PON/RST detection after diagnostic test will reset the Raptor board
- Limits FC and SCSI loop-back test modes to two LUNs/board

Version 1.28.1.6

June 1999

Problems Identified in previous Version

- Compatibility problems with NT 4.0 Service Pack 4
- Inquiry not available to host immediately after power on
- Fixed problem with unit not becoming visible to host at PON
- Failure with Initialize Element Status (E7h) command
- Problem seeing tape drives on split bus
- SCSI error code tables need changed, bridge errors reported to host

Improvements Contained in Version 1.28.1.6

- Fixes compatibility problem with NT 4.0 Service Pack 4
- Made Inquiry available to host immediately after power on
- Fixed problem with unit not becoming visible to host at PON
- Fixes failure of Initialize Element Status (E7h) command
- Fixes problem seeing tape drives on split bus
- Changes SCSI error code tables
- Purges and remakes all 10k code tapes