



ATTO Technology, Inc.

Product Release Notes

ExpressSAS Host Adapter 6Gb v1.32 – Linux

1. General Release Information

These product release notes define the new features, changes, known issues and release details that apply to the ExpressSAS Host adapter products v1.32 that was released on 03/31/10. This information pertains to Linux.

2. Changes

- **Version 1.32 (Released 3/31/10)**
 - **Note:** It is recommended that firmware dated 3/26/10 be utilized with this driver release.
 - The following applies to release v1.32
 - **New Features, Enhancements and Changes**
 - Enhanced interoperability for SuperMicro chassis with expanders.
 - When an IDENTIFY frame timeout occurs on an expander and/or a controller PHY, a link reset is issued to each PHY to attempt link recovery.
 - Improved controller initialization to allow backup firmware built into the driver to load when the firmware in flash is corrupt.
 - The SMP API has been updated to allow access to the SGPIO interfaces on the controller. Firmware version 1.09 is required for SGPIO operation.
 - Task management timeout enhancements.
 - Improved device discovery during initial driver startup.
 - Additional events have been added for SMP command errors.
 - CSMI interface improvements for reporting an unknown SAS port for a PHY whose link is down.
 - Improved performance when the controller has limited resources to transmit frames within an open connection.
 - Descriptor based sense data support added.
 - Command failures due to an invalid link rate are detected with rediscovery and corrected to account for the new link rate.
 - When a valid SAS port does not exist and a hard reset sequence is detected, a PHY restart is implemented.
 - Added PHY restart when a hard reset sequence is detected, when a valid SAS port does not exist.
 - For SATA drives, after a Stop Unit command has spun down the media, access commands are completed with a SCSI check condition for the message "Not Ready, Initializing Command required."
 - Improved recovery for flash data due to a controller fault.
 - Enhanced discovery of topology changes behind an expander.
 - More efficient stack usage for event logging code.

- **Version 1.30 (Released 10/29/2009)**
 - **Note:** It is recommended that firmware dated 10/22/09 be utilized with this driver release.
 - The following applies to release v1.30
 - **New Features, Enhancements and Changes**
 - CSMI support added.
 - Descriptive strings for sense keys to SCSI error event logging added.
 - Failed task management commands which may have been reported to the OS as successful, were corrected
 - Enhanced discovery process after an expander routing failure detection.
 - The Immediate bit in the Start Unit command enhanced for SATA device support.
 - SATA drive enhancement when transferring I/O in multiple segments.
 - Improved device wait count setting when handling power cycle devices.
 - SMP API direct attached target discovery report enhanced.
 - Bus reset processing enables devices for I/O after reset completion.
 - Discovery resource management enhanced for improved expander PHY routing accuracy.
 - Data overruns for expander discovery commands are enhanced to support inaccuracies with expanders sending an invalid response length.
 - Removed “num_ioreq” module parameter
 - Added “io_time_out” module parameter (default value of 30 seconds)

- **Version 1.20 (Released 07/31/2009)**
 - **Note:** It is recommended that firmware dated 07/27/09 be utilized with this driver release.
 - The following applies to release v1.20
 - **New Features, Enhancements and Changes**
 - Enhanced firmware which contributed in an up to 25% increase in throughput.
 - The supported expander chain depth was increased from 8 to 10.
 - Transport layer retries are explicitly enabled on all commands for SAS 2.0 compliant devices instead of being enabled in the device’s mode pages.
 - All command retries are disabled for sequential (e.g. tape) devices.
 - SMP PHY Control command for clearing SATA affiliations improved. Uses the hard reset function instead of the clear affiliation function.
 - Expander enhancements which include discovery process reorganization for clearing SATA affiliations. All devices reported to the OS will have sequential target IDs starting with zero.
 - The heartbeat mechanism has been redesigned to improve I/O resources allocation.
 - Confirmation of I/O completion to the OS prior to reporting a device removal.
 - SCSI check status for data phase errors and other bus events that occur due to signal integrity problems are now retried
 - When a port is reset due to a task management command timeout, the aborted collateral is retried.
 - Enhanced event logging to include retried commands
 - Added support to the SMP API for discovering direct attached devices. A SAS address can be associated with all target IDs.
 - Changed the scatter/gather allocation to improve performance and conserve memory.
 - Improved optimizations and memory allocation to expander discovery process to increase number of drives that can be discovered.
 - Stability fixes in discovery processing when commands timeout or need to be retried due to bus errors.
 - Fixes to SATA NCQ error and head-of-line blocking recovery mechanisms to ensure commands are properly aborted and retried.
 - Task management processing correction for when a discovery is in progress for the same port.
 - When a device rejects an OPEN address, it is infinitely retried to account for devices that stop responding to commands for extended periods of time.
 - Resolved compilation error for kernel 2.6.29 and newer.

- Fixed resource leak when aborting commands that can eventually lead to failing commands.
- Return codes from the abort handler repaired
 - The OPEN REJECT RETRY interval is set to 5 μ s.

- **Version 1.10 (Released 03/24/2009)**
 - **Note:** It is recommended that firmware dated 03/20/09 be utilized with this driver release.
 - The following applies to release v1.10
 - **New Features, Enhancements and Changes**
 - Added the Device Name field to the SAS Identify Address Frame (an optional field added in SAS 2.0).
 - Resolved an issue during initial device discovery that could result in a driver crash if the device rejects a discovery command.
 - Resolved issues with discovery processing when a discovery command timed out
 - SATA devices behind expanders are no longer reset during discovery
 - Improved SATA NCQ processing so performance is maintained as the queue depth increases
 - Improved port down cleanup to ensure all I/O is completed before destroying devices when multiple ports are instantiated
 - Resolved an issue with SCSI-to-ATA translation of the WRITE AND VERIFY commands that would allow NCQ commands to be started between the write and verify phases
 - Now support SMP API
 - Added timeout processing for commands issued through the SMP API
 - SATA NCQ is disabled in NVRAM by default

- **Version 1.01 (Released 02/18/2009)**
 - **Note:** It is recommended that firmware dated 01/28/09 be utilized with this driver release.
 - The following applies to release v1.01
 - **New Features, Enhancements and Changes**
 - Resolved issues that may cause the driver to crash or hang if a device rejects a discovery command on initial load.
 - Resolved any unexpected target ID changes after a cable pull and reinsertion, when a SATA device is connected behind an expander..

- **Version 1.00 (Released 12/11/2008)**
 - **Note:** It is recommended that firmware dated 2008_12_05 be utilized with this driver release.
 - The following applies to release v1.00
 - **New Features, Enhancements and Changes**
 - Initial release of ExpressSAS H608 and H680

3. Known Issues/Advisements

- Please refer to the DOS release notes for any known firmware issues.
- SAT exceptions: (SCSI-to-ATA Translation for SATA support). The following SCSI commands are not translated: FORMAT UNIT, REASSIGN BLOCKS, SECURITY PROTOCOL IN, and SECURITY PROTOCOL OUT.

4. Affected Products

Product Name	SKU
ExpressSAS H680 Host Adapter	ESAS-H680-000
ExpressSAS H608 Host Adapter	ESAS-H608-000
ExpressSAS H6F0 Host Adapter	ESAS-H6F0-000
ExpressSAS H60F Host Adapter	ESAS-H60F-000
ExpressSAS H644 Host Adapter	ESAS-H644-000

5. Contacting ATTO Support

ATTO Technology, Inc. is renowned for its technical support services. ATTO's goal is to provide you the quickest response possible for your technical support needs, and is available Monday-Friday, 8:00 AM to 8:00 PM EST (except holidays and plant closings).

ATTO Technical Support can be contacted via phone or email:

- Phone: 716.691.1999 ext. 242
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