



ExpressSAS Host Adapter 6Gb Flash Bundle Version 131202

1. General Release Information

These product release notes define the new features, changes, known issues and release details that apply to the ExpressSAS 6Gb Host Adapter flash bundle package, version 131202, which was released on December 6, 2013. This information pertains to the flash bundles and BIOS utility associated with the ExpressSAS 6Gb Host Adapter products.

2. New Features, Enhancements and Changes

- **Version 131202/BIOS v2.20/EFI v1.80 (Released 12/06/13)**
 - [BIOS] Corrected timing issues that could cause the driver to take several minutes to load in certain platforms.
 - [BIOS] Fixed boot hang when using PMM.
 - [BIOS] Corrected the drive capacity and block size reported to the system BIOS.
 - [BIOS Config] Fixed target ID display in the device list.

- **Version 130529/BIOS v2.15/EFI v1.75 (Released 06/04/13)**
 - [EFI] During a command retry, TLR is disabled in the active command when a target does not support it.
 - [EFI] Fixed SCSI-to-ATA translation for the Inquiry command to have the correct length for VPD page B0.
 - [EFI] Attempt to load only one EFI driver image per driver version in the system. Previously multiple images would be loaded if more than one card was present.
 - [BIOS] Fixed a stall after displaying the device list for systems that switch between video modes during the boot process.
 - Added support for the Link Down Timeout NVRAM setting.

- **Version 121214/BIOS v2.10/EFI v1.70 (Released 12/18/12)**
 - [EFI] Corrected several issues with staggered spin-up and hot plugging SAS and SATA drives on the same PHY that could cause unnecessary link resets.
 - [EFI] Corrected timer freq. controlling several operations including command timeout.
 - [EFI] Corrected a rare issue that could cause a command to be completed twice.
 - [BIOS] Don't hook the system timer tick when installing boot devices to work around a problem with a specific Trenton motherboard.
 - [BIOS] Fixed a problem where the system may hang when another BIOS driver allocates memory in the EBDA area after this driver.
 - [BIOS] Several problems regarding chip resets have been resolved.
 - Add an NVRAM setting to set individual PHYs as read-only.
 - Multiple Invalid Frame errors are required before Transport Layer Retries are disabled for a device.
 - [BIOS Config] Update with new features added to the EFI Configuration Utility.
 - Updated SCSI-to-ATA translation for the Test Unit Ready command to be compliant with specification.
 - [BIOS] Added POST memory manager (PMM) support.
 - Corrected an issue with PHY initialization that could cause some Seagate direct attached SAS drives to not be discovered.

- **Version 120521/BIOS v2.07/EFI v1.67 (Released 05/24/12)**
 - [BIOS Config] Fixed an issue where the Configuration Utility would incorrectly warn that NVRAM settings were not saved.
 - [EFI] Added SCSI-to-ATA translation for the FORMAT UNIT command.
 - [EFI] The default number of supported targets has been increased from 256 to 512.
 - [EFI] Discovery completes faster when hot plugging expander topologies.
 - [EFI] Improvements have been made to keep track of system time more precisely.
 - [EFI] Fixed several issues with using CD-ROM type devices.
 - [BIOS, EFI] Corrected issues with detecting when the boot driver is disabled and being able to re-enable it.
 - [EFI] Added a workaround so SATA hot plugging works when staggered spinup is enabled.
 - Fixed support for SATA drives with non-512 byte sector sizes.

- **Version 110927 / BIOS V2.06 (Released 9/29/2011)**
 - Resolved a memory corruption issue when the NVRAM is saved and the configuration utility is exited and re-entered.
 - Corrected an error in expander routing that could cause devices to be routed in the wrong order in complex tree-like topologies. This prevents temporarily invalid routing tables in multi-initiator topologies.
 - Discovery has been enhanced to account for multiple link rates throughout the topology. The lowest link rate in a wide port is used for all connections. If the link rate changes, the new rate will take effect when rediscovery completes. If a path to an expander has a lower link rate than the expander to SATA device link, the SATA device is ignored since a connection cannot be opened.
 - If a SATA device is detected, but the device type is unknown, the signature FIS is assumed to be corrupt and the PHY is reset to recover.
 - Corrected an issue that prevented errors on SATA IDENTIFY DEVICE commands during discovery from being retried.
 - Discovery has been enhanced to gracefully stop if a timeout occurs on a command waiting to be started. Previously, the adapter was reset to recover.
 - SATA device resets during discovery have been replaced by SMP PHY Control hard resets to improve reliability.
 - SGPIO initialization has been updated to prevent the driver from entering degraded mode with 1.11 and later controller firmware.

- **Version 110519 / BIOS V2.05 (Released 6/2/2011)**
 - Corrected an issue in which some devices may not have been reported to the OS if the Device Wait Time expired during the initial discovery.
 - Incorporated SAS controller firmware version 1.16.16.
 - Added LED Control setting to the NVRAM panel in the ATTO Config Tool™.

- **Version 101119 / BIOS V2.00 (Released 11/30/10)**
 - Enhanced Intelligent Platform Management Interface (IPMI) and Serial Over Lan (SOL) support within BIOS and the configuration utility.
 - Improved interoperability with HP.
 - Improved interoperability with Intel motherboards.

- **Version 100727 / BIOS V1.50 (Released 07/30/10)**
 - Enhanced uptime concerning command retries during chip resets.
 - Improved Parity calculation algorithm.
 - Discovery SATA command timeouts minimized by SATA drive resets while performing expander discoveries.
 - Changes made to improve the consistency of the state of SATA devices and formatting SATA commands during discovery process.
 - Enhanced Discovery Process by delaying certain SATA commands, while discovery is in progress.

- Incorporated 1.10 controller firmware.
- **Version 100326 / BIOS V1.31 (Released 03/31/10)**
 - 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.”
 - Incorporated 1.09 controller firmware.
 - Improved adapter negotiation rates for SAS devices behind expanders.
- **Version 091022 / BIOS V1.30 (Released 10/29/09)**
 - Enhanced discovery process after expander routing failure detection.
 - The Immediate bit in the Start Unit command enhanced for SATA device support.
 - PHY speed setting added.
 - 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.
- **Version 090727 / BIOS V1.20 (Released 07/31/09)**
 - Firmware enhancements for I/O's on large topologies and task management
 - Transport layer retries are enabled on all commands for SAS 2.0 compliant devices.
 - SMP PHY Control command for clearing SATA affiliations programmed to use the hard reset 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.
 - SCSI check status for data phase errors and other bus events that occur due to signal integrity problems are now retried
 - EFI driver and configuration programs have been enhanced for x86 and x64 platforms.
 - Changed all drivers to use interrupt polling instead of hardware interrupts for systems that assign the adapter the wrong IRQ.
 - Fixed a problem that would cause the system to hang before listing devices if more than 3 drives are attached.
 - Stability fixes in discovery processing when commands timeout or need to be retried due to bus errors.
 - SATA NCQ error and head-of-line blocking recovery mechanisms improvements.
 - Drive rejection to an OPEN address.
 - The OPEN REJECT RETRY interval is set to 5 μ s.
- **Version 090320 / BIOS V1.11 (Released 03/24/09)**
 - 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.
 - 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
 - The SMP PHY control command to clear affiliations for SATA devices behind and expander now uses Clear Affiliation function and escalates to the Hard Reset function is necessary
 - SATA NCQ is disabled in NVRAM by default
 - Bus resets will no longer result in resource failures
 - Data under-runs are reported when a SCSI error occurs on the same command
 - Improved Head-of-line blocking detection to expedite SATA error recovery

- **Version 090128 / BIOS V1.01 (Released 02/18/09)**
 - 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 081205 / BIOS V1.00 (Released 12/11/08)**
 - Initial release for the ExpressSAS H680 and H608 host adapter products

3. Known Issues/Advisements

- The HP ML150 BIOS hangs when an H6xx adapter is installed.
- The HP xw6400 and xw8400 BIOS will halt and display “922- Fatal Error on PCI-E Slot <#>. Press F1 to Boot” on a cold boot with an H6xx adapter installed. The system will boot and function normally after pressing F1. This is believed to be a false error message and does not occur on warm boots.
- The Config Tool will not load on Intel S5000 motherboards.
- The firmware will not attempt to open simultaneous connections on multiple PHYs to a wide ported end device. This results in write performance limited to the bandwidth of one PHY and a degradation in read performance. A work around in the drivers was created using narrow ports and virtualizing the wide port at the driver level. Testing has shown that the Infortrend EONStor ES A08S-C2132 array and Areca RAID controllers can not function in this topology. As a result, the virtual wide port feature is disabled for these devices when direct attached.
- In certain applications, disabling NCQ may increase SATA performance.
- Wide ported target mode is not supported. Third party target mode solutions that want to configure the adapter as a wide ported end device can do so, but the target must be connected to a host that will instantiate narrow ports.
- ATAPI devices are not supported (e.g. SATA CD and DVD drives).
- SAS multiplexing is not supported.
- SATA port multipliers and port selectors are not supported.

4. Affected Products

Product Name
ExpressSAS H680 Host Adapter
ExpressSAS H608 Host Adapter
ExpressSAS H6F0 Host Adapter
ExpressSAS H60F Host Adapter
ExpressSAS H644 Host Adapter
ExpressSAS M608 Host Adapter
ExpressSAS M680 Host Adapter
ExpressSAS M644 Host Adapter
ExpressSAS W608 Host Adapter
ExpressSAS W680 Host Adapter
ExpressSAS W644 Host Adapter

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 6:00 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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