ATTO

ATTO Technology, Inc.

Product Release Notes

12Gb SAS/SATA Release v1.51 – Microsoft® Windows®

1. General Release Information

These product release notes define the new features, changes, known issues and release details that apply to the 12Gb SAS/SATA adapters and ThunderLink SH 3128 adapter, version 1.51, that was released on 02/25/2025. This information pertains to Windows 11 and 10 as well as Windows Server 2025, 2022, 2019, and 2016.

2. Changes

- *Version 1.51 (Released 02/25/2025)*
  - **Note:** This release will NOT be supported by pre-2018 flash bundles. It is highly recommended to update your device to the latest firmware.
  - **New Features**
    - Added support for auto rebuilding RAID groups
    - Includes support for displaying virtual port information and device node addresses
  - **Incident Resolutions/Bug Fixes/Changes**
    - Added support for Windows Server 2025
    - Includes fix for SATA discovery issue with devices that support getting sense data
    - Includes fix for maximum PHY mask settings for adapters that have less PHYs than the maximum for the family
    - Added *atdevcfg* to drive installer and support for *atdpm* CLI tool

- *Version 1.50 (Released 07/25/2023)*
  - **It is recommended that firmware version 221213 be utilized with this driver release.**
  - **New Features**
    - Changed the default target execution throttle to 128
  - **Incident Resolutions/Bug Fixes/Changes**
    - Fixed a target mode crash when running out of resources

- *Version 1.49 (Released 01/30/2023)*
  - **It is recommended that firmware version 221213 be utilized with this driver release.**
  - **New Features**
    - Converted driver installer to MSI
    - Increased the VSA RAID limits
    - RAID members can now be removed from a RAID group
    - Added support for the device maintenance mode in the NVRAM setting
    - Added Thunderbolt adapter support
  - **Incident Resolutions/Bug Fixes/Changes**
    - Removed x86 support
    - Fixed an issue with logging cable fault interrupts on certain ports
    - Install atcfg instead of atlocate
    - Fixed logging priority orders for errors and warnings
    - Fixed SMP error eventlog text

- *Version 1.48 (Released 02/08/2022)*
  - **Note:** It is recommended that firmware dated 08/13/2019 be used with this driver release.
  - **New Features, Enhancements and Changes**
    - Added Windows Server 2022 to readme
    - Added Windows 11 to readme
    - Added VPD B6 to supported VPD pages response for zoned SATA disks
    - Fixed a potential crash and/or memory corruption that could occur on Thunderbolt hot plug

- *Version 1.47 (Released 06/23/2021)*
  - **Note:** It is recommended that firmware dated 08/13/2019 be used with this driver release.
  - **New Features, Enhancements and Changes**
    - Remove support for pre-Windows 10/2016
    - Update driver installer to install new signing certificate
    - Update waiting for devices when coming out of power management

- *Version 1.46 (Released 01/12/2021)*
  - **Note:** It is recommended that firmware dated 08/13/2019 be used with this driver release.
  - **New Features, Enhancements and Changes**
    - Improve management of dual path SATA
    - Add feature to allow the user to set a max PHY speed
    - Add feature to blink the SGPIO Error LED during a rebuild if the application requests it through SES commands to the ATTO Virtual SES device
    - Log an event for the reason for a firmware reset
    - Fix issue where I/O in flight may fail when doing power management
    - Update driver installer to use modern installation method
    - Fix a very rare target mode crash caused by task management
    - Add support for Windows firmware download / activate IOCTLs
    - Add support for Windows fast boot
    - Prevent sense data from being removed for T10-DIF errors
    - Add atsascfg to driver package
    - Support SAS drives for Windows firmware download version query
    - Fixed an issue when large amounts of ATAPI devices generate errors at the same time.

- *Version 1.45 (Released 08/28/2019)*
  - **Note:** It is recommended that firmware dated 08/13/2019 be used with this driver release.
  - **New Features, Enhancements and Changes**
    - Fix cases where a dual ported device could be operational with Power Center Pro on one port if the other port encountered an error during discovery
    - Restore SAS target mode
    - Bug fixes and improvements

- *Version 1.44 (Released 04/22/2019)*
  - **Note:** It is recommended that firmware dated 04/12/2019 be used with this driver release.
  - **New Features, Enhancements and Changes**
    - Added support for SAS target mode API version 2. This updated target mode developer's kit is available through your ATTO representative.
    - Changed driver behavior so that, by default, ports operating only in target mode will not enable the SAS link until a target mode application has connected to the driver.
    - Improved logging of out-of-resource errors.
    - Improved the speed of Format Unit commands for SATA devices that support SCT Write Same.
    - Resolved cases of incorrectly reported SCSI Overrun errors
    - Extracted CLI tools to remote system during remote installation

- *Version 1.43 (Released 11/12/2018)*
  - **Note:** It is recommended that firmware dated 11/02/2018 be used with this driver release.
  - **New Features, Enhancements and Changes**

- Added an adaptive device wait NVMRAM setting that extends the device wait time and count until SAS discovery is complete
- Added a boot device wait NVRAM setting that alters the device wait feature to only wait for boot devices configured by Power Center Pro
- Enabled Power Center Pro on externally connected drives
- Added the ability to present the virtual SES device when no devices are attached

- *Version 1.42 (Released 08/22/2018)*
  - **Note:** It is recommended that firmware dated 08/17/2018 be used with this driver release.
  - **New Features, Enhancements and Changes**
    - Fixed an issue with Virtual SES devices not being presented
    - Improved target mode performance

- *Version 1.41 (Released 4/18/2018)*
  - **Note:** It is recommended that firmware dated 12/01/2017 be used with this driver release.
  - **New Features, Enhancements and Changes**
    - Fixed an issue with driver installation via setup.exe on 32-bit Windows
    - Added support for a new flash bundle format that supports smaller download chunks compatible with the maximum transfer size for the driver
    - Increases I/O resources to improve performance with certain I/O workloads

- *Version 1.40 (Released 12/12/2017)*
  - **Note:** It is recommended that firmware dated 12/01/2017 be used with this driver release.
  - **New Features, Enhancements and Changes**
    - Added SMR drive support
    - Added support for displaying SATA device temperature in *atdevinfo*
    - Added support for *atsasinfo* to replace *atsasphy*
    - Added *atdevinfo* and *atsasinfo* CLI tools
    - Fixed PHY state display in *atsasphy* when disabling a PHY with no active link
    - Fixed infinite discovery when a bad SATA drive causes expander BCCs
    - Fixed load balancing of SAS drives in dual path topologies when SATA drives present
    - Fixed a discovery issue that could cause devices to be blocked from the system
    - The tracing driver now enables event logging by default

- *Version 1.35 (Released 06/07/2017)*
  - **Note:** It is recommended that firmware dated 05/30/2017 be used with this driver release.
  - **New Features, Enhancements and Changes**
    - We now include x64 CLI tools in the x64 driver download package
    - Resolved an issue where the driver incorrectly responded to a Check condition for ATA Pass-Through commands
    - Implemented a fix for Write Buffer mode 7 translation for SATA drives
    - The driver will now detect and explicitly disable host managed SMR SATA drives
    - Added an NVRAM setting to enable SEMB SATA devices as disks
    - Updated Power Center Pro RAID group management features for SATA drives
    - Resolved a memory corruption issue with T10-DIF and SAS enclosures
    - Added support for the Windows Powershell Update StorageFirmware command

- *Version 1.30 (Released 12/22/2016)*
  - **Note:** It is recommended that firmware dated 12/21/2016 be used with this driver release.
  - **New Features, Enhancements and Changes**
    - Modified the driver so that the adapter SES device is not created until a device is attached (internal connectors only).
    - Fixed reporting adapter SES device status change when a device is removed (internal connectors only).
    - Resolved a rare issue where newly formatted T10-PI drives are marked as unavailable in *atpcpro*.
    - Fixed an issue where devices with corrupted formatting may be blocked from the system when Power Center Pro is enabled.
    - Allow communication to SATA drives when the minimum link rate of the expander topology does not match the drive rate.

- Changed the I/O timeout policy during expander discovery of a single device to have minimal impact on the overall discovery process.
- Fixed Write Same processing to some non-512 sector size SATA drives.
- Disabled the Extended Power Conditions feature set for SATA drives.
- Fixed a potential hang when a port goes down during discovery.
- Fixed a potential task management and timeout error recovery conflict.
- Fixed a potential crash when the user connects an invalid expander topology.
- Fixed issues with inaccessible devices, due to invalid topologies, are not presented to the OS.
- Fixed a potential hibernation failure for direct attached SAS.
- Fixed WHQL Hypervisor Code Integrity test failure.

- *Version 1.25 (Released 01/08/2016)*
  - **Note:** It is recommended that firmware dated 01/05/2016 be used with this driver release.
  - **New Features, Enhancements and Changes**
    - Fixed Write and Verify support for SATA devices to verify the data when the device supports FUA.
    - Improved discovery of SATA devices that require excessive recovery time from a hard reset.
    - Added workaround for Super Micro expanders that report invalid discovery data for SATA drives.
    - Added faster processing of Write Same commands for SATA devices, if supported.
    - Added support for Extended Inquiry Data VPD page for SATA devices.

- *Version 1.20 (Released 08/26/2015)*
  - **Note:** It is recommended that firmware dated 08/20/15 be used with this driver release.
  - **New Features, Enhancements and Changes**
    - An NVRAM parameter has been added to disable/enable Power Center Pro support.
    - Resolved issue where cable management errors prevented PHY enablement. We now attempt to bring up the PHY using default settings.
    - We added *attrace* firmware core dump capability after a fatal controller error.
    - We added forced event logging of internally generated I/O errors.
    - DMA Auto-Activate has been enabled to improve SATA NCQ performance.
    - The fully qualified driver version is now displayed in the installer.

- *Version 1.15 (Released 05/27/2015)*
  - **Note:** It is recommended that firmware dated 05/21/15 be used with this driver release.
  - **New Features, Enhancements and Changes**
    - Devices in expander topologies with a link rate not applicable to the NVRAM setting are no longer presented to the system.
    - Added logical block provisioning support for SATA devices which includes trim support for SSDs.
    - Fixed SATA discovery error processing to clean up firmware resources that could prevent a future discovery from working correctly.
    - Enabled Storport support for ATA pass through in Windows 8 and later.
    - Add support for spinning up SATA drives that have PUIS enabled.
    - Improved IOPS performance.
    - Stabilized performance on NUMA systems for Windows 8 and later.
    - Coordinate I/O with discovery commands for SATA devices to prevent I/O errors.
    - Fixed a timing window that could cause a 6Gb SATA drive to not be discovered.
    - Fixed SGPIO operation on the H1208.
    - Fixed an issue where a SATA I/O timeout occurred if a protocol error prevented a retry of a command.
    - Fixed rediscovery of a device if it was moved within a topology from an expander to direct attached and a device was present on PHY 0.
    - In target mode, fixed discovery processing to never send task management to an initiator, as well as fixed sense data truncation when the sense data length was 13-20 bytes.

- *Version 1.10 (Released 12/16/2014)*
  - o **Note:** It is recommended that firmware dated 11/13/2014 be used with this driver release.
  - o **New Features, Enhancements and Changes**
    - Added support for the ExpressSAS H1244, H1248 and H1288 host adapters.
    - Fixed several issues with recovering a device if task management fails.
    - Fixed an issue with the driver's device scan where devices would be blocked from the system if they didn't have a valid LUN 0.
    - In target mode, when configured for multiple targets, fixed an issue with task management handling that could abort I/O for targets not applicable to the task management.
    - Fixed an issue that could prevent the OS from seeing devices that swapped positions in the topology.
    - Fixed an issue that could cause devices to not be reinserted into a RAID group correctly. This could occur during power management cycles or during cable pull/replug within the link down timeout period.
    - Fixed an issue that could cause RAID groups to be degraded when resuming from power management.
    - In the presence of multiple logical SAS ports, when the controller is reset or resumes from power management, fixed an issue that could result in the SAS ports not containing the correct PHYs. This could result in improper SAS discovery or detection of read-only ports.
    - Fixed an issue that could cause a RAID group to disappear after a controller reset.
    - Fixed an issue that could cause the adapter to go degraded before initialization is complete.
    - Fixed a port reset issue that could cause newly attached devices to not be discovered.
    - Fixed an issue that could cause discovery to be blocked forever if discovery command timeout recovery required a controller reset.
    - All discovery operations in flight are correctly aborted if a controller reset occurs.
    - I/O connection errors due to incomplete expander routing are now retried.
    - Increased the discovery command timeout to account for slow SATA SSDs.
    - Fixed an issue with aborting timed out discovery requests.

- *Version 1.05 (Released 8/1/2014)*
  - o **Note:** It is recommended that firmware dated 7/30/2014 be used with this driver release.
  - o **New Features, Enhancements and Changes**
    - Fixed custom event codes so they do not conflict with system event codes. This issue existed in all previous driver versions. Events logged with those versions cannot be read with other driver versions installed.
    - Fixed a potential crash when replacing a member of a RAID group.
    - Resolved an issue regarding correct interpretation of descriptor based sense data during the driver's device scan.
    - Fixed the potential for a direct attached wide ported device or expander to not be removed when the link went down.
    - Always log warning or critical RAID messages.
    - Increase the time to wait for devices to become ready from 30 to 60 seconds.

- *Version 1.00 (Released 5/2/2014)*
  - o **Note:** It is recommended that firmware dated 4/23/2014 be used with this driver release.
  - o **New Features, Enhancements and Changes**
    - This is the initial release of the ExpressSAS 12G HBA driver for Windows.

3. Known Issues/Advisements

- None

4. Affected Products

Product Name	SKU

ExpressSAS H1280	ESAH-1280-000
ExpressSAS H1208	ESAH-1208-000
ExpressSAS H120F	ESAH-120F-000
ExpressSAS H12F0	ESAH-12F0-000
ExpressSAS H1244	ESAH-1244-000
ExpressSAS H1248	ESAH-1248-000
ThunderLink SH 3128	TLSH-3128-D00/DE0

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
- E-Mail: techsupport@atto.com