

ATTO XstreamCORE®

Installation and Operation Manual

ATTO XstreamCORE FC 7600

32-Gigabit Dual Fibre Channel to 12-Gigabit SAS *intelligent Bridge*



The Power Behind the Storage

155 CrossPoint Parkway
Amherst, NY 14068

P. +1.716.691.1999
atto.com

© 2024 ATTO Technology, Inc. All rights reserved. All brand or product names are trademarks of their respective holders. No part of this manual may be reproduced in any form or by any means without the express written permission of ATTO Technology, Inc.

10/2024

PRMA-0464-000MD

Table of Contents

Table of Contents	2
ATTO XstreamCORE Overview.....	4
ATTO XstreamCORE FC 7600 features, benefits	4
ATTO XstreamCORE FC 7600.....	5
Dimensions.....	5
Cooling and airflow	5
Power	5
Fibre Channel ports.....	5
SAS/SATA ports	5
Management ports.....	5
LED indicators.....	5
Install the XstreamCORE	7
Unpack the packing box	7
Install the XstreamCORE	7
Installation and Removal of Power Supply Modules.....	7
Establishing an SSH connection.....	8
Begin initial configuration	8
Security Certificates	8
Configure the XstreamCORE.....	10
Preliminary steps.....	10
Port configurations.....	10
Modify passwords	10
Map Devices	11
XstreamCORE mapping	11
SAS/SATA device mapping	11
Mapping Devices with SMP.....	12
AutoMap devices	12
Remote Monitoring, Management.....	13
SNMP-based monitoring	14
SNMP Agent Setup	14
SNMP Client Setup	14
Email messages provide error notification.....	16
Update Firmware	17
Using XstreamVIEW™	17

Using SFTP	17
Interface Options	18
Using XstreamVIEW™ System Manager	18
Opening an XstreamVIEW™ session.....	18
Using the serial port	18
Using SSH.....	19
Making an SSH connection.....	19
Appendix A Cabling	20
SAS/SATA connections.....	20
Fibre Channel management connection	20
Ethernet Management Connection	21
Serial port connection	21
Appendix B CLI Provides ASCII-based Interface	22
CLI Error Messages	23
CLI Summary Reference.....	23
Command explanations.....	26
Appendix C Standards and Compliances 7600	35
Regulatory Notices	35
FCC Notices (US only)	35
Compliance with ICES-003.....	35
Compliance with EN Regulations	35
Appendix E Warranty Information	37

ATTO XstreamCORE Overview

The ATTO XstreamCORE 7600 is an intelligent Bridge that connects multiple shelves of SAS and SATA JBOD storage and virtualizes it to a Fibre Channel SAN Connection.

The ATTO XstreamCORE FC 7600 allows IT departments to architect storage systems with the flexibility to use standard interface off-the-shelf storage hardware with increased bandwidth and low latency levels which improve performance and response. As a Data Center building block, the 7600 allows IT managers to architect their storage solution on their terms, avoiding vendor lock-in with

modularity at each layer. The 7600 is used to aggregate and virtualize storage on a SAN (Storage Area Network) and has undergone qualifications with industry leading storage and SAN infrastructure products. The 7600 is easily integrated into IT infrastructures, providing lower operational costs with tools like Drive Map Director™ and XstreamVIEW™.


ATTO XstreamCORE FC 7600 features, benefits

The ATTO XstreamCORE FC 7600 is a 32-Gigabit Quad Fibre Channel to 12-Gigabit SAS intelligent Bridge configured with two independent 32Gb Fibre Channel ports and four 12Gb x4 SAS connectors.

Designed to integrate industry-leading performance and SAN capabilities into the future generation of storage solutions, the XstreamCORE FC 7600 uses a high-performance architecture suited for OEMs looking to incorporate SAS or SATA disk storage devices in their Fibre Channel SAN.

- Two independent 32Gb Fibre Channel ports which auto-negotiate to 8Gb, 16Gb or 32Gb Fibre Channel
- Ability to aggregate up to 2 hosts without an external switch
- SFP+ Fibre Channel modules included
- Dual Power Supply
- Integrated xCORE Acceleration Processor
- Data Mover technology
- Integrated eCORE Offload Processor
- SpeedWrite™ technology improves write performance to tape drives by up to 20% over SAS tape drives connected via SAS HBAs
- Full support for FC-Fs, FCP-3
- Support for direct connect to F-port switches
- Four independent 12Gb SAS/SATA x4 mini-SAS HD connectors which auto-negotiate to 3Gb, 6Gb or 12Gb
- Automatic LUN Mapping
- Patented Drive Map Director™ reduces operating expense by auto-configuring storage
- 6,000 MB/s throughput for 256KB transfers
- 1,100,000 IOPS for 4KB read transfers and 700,000 IOPS for 4KB write transfers
- XstreamVIEW™ integrated management console for remote configuration, management and diagnostic capabilities
- Supports SAS/SATA hard disk drives, SSDs, optical devices (DVD, CD) and Tape
- Supports Host Group Mapping



 **Note** Effective July 31st, 2023, the ATTO XstreamCORE FC 7550, which provides 16-Gigabit Quad Fibre Channel connectivity to 12-Gigabit SAS or SATA storage devices, has officially reached its End-of-Life (EOL) status. No new orders (or) renewals for the 7550's products (or) services will be accepted and ATTO will not be releasing any new features. For existing customers, ATTO will honor any support queries with a valid support contract (or) license through the end of term of such contracts. ATTO XstreamCORE FC 7600 will be the replacement to ensure continued high-performance connectivity and support for your storage environments.

ATTO XstreamCORE FC 7600

The ATTO XstreamCORE FC 7600 is a high-performance intelligent Bridge which adds 32-Gigabit Dual Fibre Channel connectivity to 12-Gigabit SAS or SATA storage devices.

The XstreamCORE FC 7600 is available in an industry-standard 1U form factor for easy integration into racks.

Dimensions

Width: 17 inches

Length: 11 inches

Height: 1.7 inches (1U)


Weight: approximately 10 pounds

Cooling and airflow

Operating temperature: 5-40 °C external

Humidity: 10-90% non-condensing

Air enters from the front and is exhausted out the connector side. Ambient air near the inlets should not exceed 40°C. The unit automatically stops operation if the temperature goes beyond this threshold.

 **CAUTION** *Do not block the enclosure's vents. The XstreamCORE does not allow data transfer if overheating occurs.*

Power

The XstreamCORE FC 7600 features two hot swappable power supplies and can be operated with only a single power supply inserted. Each power supply has a standard IEC320 power receptacle and cooling fan. The power requirements of the ATTO XstreamCORE FC 7600 plus the power draw of other equipment in the rack must not overload the supply circuit and or wiring of this rack.

Input voltage: 100-240; VAC 1A; 50/60Hz.

Fibre Channel ports

The dual independent 32Gb/s Fibre Channel ports connect the XstreamCORE FC 7600 to Fibre Channel hosts using optical SFP+ connectors and multimode fiber optic cable. Make sure all cables are anchored securely at both ends with the proper connectors.

SAS/SATA ports

The four (x4) 12Gb/s SAS/SATA connectors connect storage devices into the Storage Area Network (SAN) using mini-SAS HD cable plug connectors.

Management ports

Management is provided using the dual 100/1000BASE-T Ethernet ports accessible from two right angle RJ-45 connectors, or the RS-232 serial header console port accessible from the serial RJ-45 connector.

LED indicators

LED indicators can be viewed from the connector side and the front side of the XstreamCORE FC 7600.

LEDs on the connector side are:

Power Supplies: One LED for each supply. Blue indicates on and ready, while blinking Red indicates an unplugged or failed supply.

Ready/Alert: On one shared LED a lit green means ready, yellow indicates an alert condition.

Ethernet port connectors: A green LED embedded in each Ethernet port connector indicates Link/Activity, where green solid indicates link, blinking indicates activity and OFF means no link is present. A second green LED embedded in each Ethernet port connector indicates connection speed, where green solid indicates either a 100MbE or 1000MbE connection.

Fibre Channel port: A lit green LED indicates link, and OFF means no link. FC Port LEDs are located next to the SFP connectors.

SAS/SATA device: SAS LEDs are located below the mini-SAS HD connector. A lit green LED indicates a link has been established on at least one PHY, and OFF means there are no links.

LEDs on the faceplate are:

Power Supplies: One LED for each supply. Green indicates on and ready while amber indicates an unplugged or failed supply.



Note *If both power supplies are on and both LEDs are yellow at the same time, this indicates a bad status connection. Status harnesses may not be connected.*

Power: A lit green LED indicates power has been turned ON to the intelligent Bridge.

Ready: A lit green LED indicates ready and OFF to show not ready.

Alert: A lit yellow LED indicates an alert condition.

Fibre Channel Port Activity: A lit green FC port activity LED indicates FC traffic on the port, and OFF indicates no port activity.

Fibre Channel Port Speed: A bi-color FC port speed LED is lit as follows: Yellow = 32Gb/s, Green = 16Gb/s, and OFF = 8Gb/s.

SAS/SATA Device Activity: A lit green LED for each SAS connector indicates port activity on at least one

EXHIBIT 1 7600 CONNECTORS, LEDs AND POWER RECEPTACLE ON THE CONNECTOR SIDE.

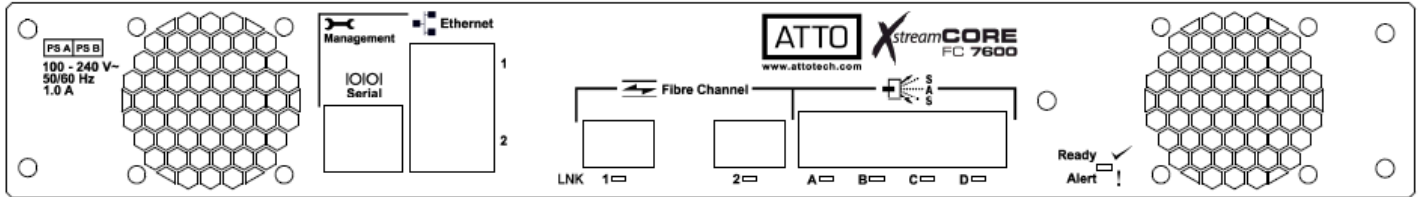


EXHIBIT 2 7600 LEDs ON THE FACEPLATE.




Install the XstreamCORE

If you have not already completed the instructions on the Quick Start page packed with your XstreamCORE, use the following instructions to install the XstreamCORE.

Unpack the packing box

- The XstreamCORE.
 - Record the serial number, default username, and default password located on the bottom of the unit:
S/N: _____
Default Username: _____
Default Password: _____
The username and password are needed to access XstreamVIEW, SSH, and SFTP services via the Ethernet management ports.

 **Note** During the first login to XstreamVIEW or SSH, the XstreamCORE will prompt you to change the unit's default password.

- Power cords
- "L" brackets for mounting in a 19" rack
- Ethernet cable
- RS-232 cable

Install the XstreamCORE

1. Place the XstreamCORE on a stable flat surface or install it into a standard rack.
2. If installing into a rack, attach the brackets to both sides of the XstreamCORE enclosure. Then install the XstreamCORE assembly horizontally within the rack so it does not reduce the air flow within the rack.

EXHIBIT 3 ATTACH RACK MOUNTING BRACKETS TO XSTREAMCORE

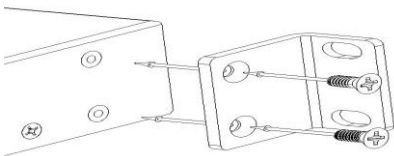
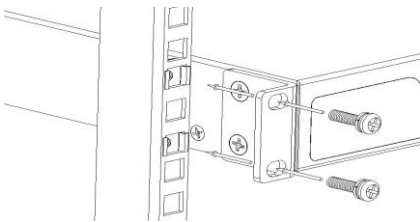




EXHIBIT 4 INSTALL XSTREAMCORE INTO A RACK.



3. Connect the host computer by connecting the cable to FC port 1, 2, 3, or 4.
4. Connect target devices by connecting SAS cables to SAS connector A, B, C or D.

5. Power up the target devices.
6. Connect the Ethernet port to your network.
7. Connect the AC power cords from the XstreamCORE to the proper AC source outlets.

 **Note** Power is automatically supplied to the 7600 when plugged into an AC outlet.

 **CAUTION** The power source must be connected to a protective earth ground and comply with local electrical codes. Improper grounding may result in an electrical shock or damage to the unit. Also, be aware that this unit is powered on once a power source is connected. Make sure the power supply module is fully inserted before applying power. Failure to do so may cause injury or damage the unit.

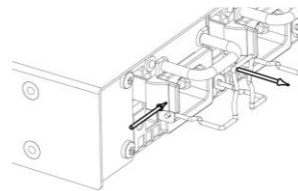
If you are using a rack:

- a. Properly ground the XstreamCORE to the rack equipment. The earth ground connection must be maintained.
- b. The power requirements plus the power draw of the other equipment in the rack must not overload the supply circuit and/or wiring of the rack.

8. Wait for the **XstreamCORE Ready LED** to light, indicating that the XstreamCORE has completed its power-on self-test sequence.

Installation and Removal of Power Supply Modules


1. To remove a power supply module, first remove the power cord.
2. Press the side latch inward and pull out on the handle



3. To install a power module, insert module until you hear the latch click.


 **Note** Handle and latch should be on top.

4. Install power cord.

 **CAUTION** Remove the power source before removing the power supply module. Failure to do so may cause injury or damage the unit.

Establishing an SSH connection

1. Start a SSH client.

 **Note** *There is more than one way to connect to the XstreamCORE using an SSH client. Your SSH client may operate differently than in the following instructions.*


2. In your SSH client, connect to the XstreamCORE. As an example, using OpenSSH, the connection would be made with the following command where username is the username set in [Modify passwords](#), and x.x.x.x is the IP address of the XstreamCORE.
`ssh username@x.x.x.x`
3. Enter your password.

To quit an SSH session, type exitConnect the Ethernet data ports to your network.

Connect to SSH using the default IP addresses


By default, the XstreamCORE 7600 is configured to use a static IP address. These addresses can be connected to using SSH and the default credentials. It is recommended to use the management port for this (MP1/MP2).

- **1GbE Management port, MP1:** 192.168.0.1/24
- **1GbE Management port, MP2:** 192.168.1.1/24

 **Note** *The default subnet mask for both management ports should be 255.255.255.0.*

Begin initial configuration

1. The XstreamVIEW™ interface welcome screen appears. Click on **Enter Here**.
2. Type in the user name and password.

 **Note** *The default user name and password values can be found on the bottom of the unit.*

The user name is case insensitive and the password is case sensitive. It is best practice to change the default user name and password. Refer to [Modify passwords](#).

During the first login to XstreamVIEW or SSH, the XstreamCORE will prompt you to change the unit's default password. After the new password is accepted, the unit will reboot. Wait up to two minutes for the XstreamCORE Ready LED to light indicating the XstreamCORE has completed its power-on self-test sequence. Re-launch your browser and navigate to the correct

IP address. Your browser points to the ATTOXstreamVIEW™ welcome screen. Type in the user name and password.

Security Certificates

Certificate, Keys, and PEM file


The XstreamCORE controller uses a certificate (aka. Public key) that is provided to devices on a network to authenticate the controller to them. The HTTPS, SSH, and SFTP servers in the controller expects to have access to a PEM (Privacy Enhanced Mail) file containing the keypair (certificate and its associated private key) necessary to provide access. The initial keypair PEM file has been generated by the controller. Note that the private key is only seen by the controller.

Keypair regeneration

The PEM file containing the keypair is regenerated by the controller if:

4. It expires. This will be noted in the XstreamCORE event log. Additionally, the approaching expiration of the keypair is logged one month prior to its expiration.
5. The IP configuration of an Ethernet port changes. The certificate used on the controller uses the IP configurations of the Ethernet ports (but not the DNS name of the controller). If an Ethernet port IP configuration changes, the keypair will be regenerated to reflect the change.
6. User-provided certificate attributes change.

In all cases, since it is the controller that generates the keypair, the certificate within will be self-signed. This will result in a client web browser warning advisement when a connection attempt is made to the controller.

 **Note** *Even if an externally signed certificate is present on the XstreamCORE, a self-signed certificate will be generated to replace it if the conditions met above are met.*

Uploading a keypair PEM file

If a self-signed certificate is not desirable, an externally-signed certificate and its associated private key can be uploaded to the controller. The file containing this keypair must meet several requirements:

1. It must be named httpspem.pem.
2. It must be in the PEM format.
3. The contents of the file must include both the certificate and the private key.
4. It must not be encrypted (if generated via OpenSSL's "req" command, specify "-nodes").
5. The private key must be an RSA private key.
6. The certificate must be SHA256 signed.

- The certificate must have the same attributes as the controller displays in the “get HttpsCertParams” command (see below).

The file format should appear as follows (note that the actual contents have been abbreviated):

```
-----BEGIN PRIVATE KEY-----
MIIEvgIBADANBgkqhkiG9w0BAQEFAASCBAKgwggSkAgEAAoIBA
QDaJU8liMAIZREs
... <snip>
uU0m3t4srxOIF5WarwTYQWKE
-----END PRIVATE KEY-----
-----BEGIN CERTIFICATE-----
MIIDljCCAqgAwIBAgIJANYizZ6isr/gMA0GCSqGSIb3DQEBcWUA
MDoxCzAJBgNV
... <snip>
/GAqJDXDoFDpHrHGEXtOi9AP1VKxREo+J/L9eb+CuOE/EPFaHIM
=
-----END CERTIFICATE-----
```

Keypairs may be uploaded via the “Certificate Management” page of the XstreamVIEW interface.

CLI commands available for the user

- HTTPS_CERT_INFO: This command displays certificate information to the console, including IP addresses associated with the keypair PEM file, the expiration date, attributes, and algorithms used. Example output:

Certificate:

Data:
Version: 3 (0x2)
Serial Number:
d6:22:cd:9e:a2:b2:bf:e0
Signature Algorithm: sha256WithRSAEncryption
Issuer: ST = NY, L = Getzville, O = AttoTechnology
Validity
Not Before: Feb 4 18:32:13 2019 GMT
Not After : Feb 4 18:32:13 2020 GMT

Subject: ST = NY, L = Getzville, O = AttoTechnology

X509v3 extensions:

X509v3 Basic Constraints:

CA:FALSE

X509v3 Key Usage:

Digital Signature, Non Repudiation, Key Encipherment

X509v3 Subject Alternative Name:

IP Address:10.40.0.31

-----BEGIN CERTIFICATE-----

MIIDljCCAqgAwIBAgIJANYizZ6isr/gMA0GCSqGSIb3DQEBcWUA

MDoxCzAJBgNV

<snip>

-----END CERTIFICATE-----

- HttpsCertParams: Displays and configures the certificate’s attributes, including State (ST), Locality (L), and Organization (O) attributes (as shown in the example above). These attributes may also be set via the Certificate Management page in the XstreamVIEW web interface.

EXHIBIT 5 CERTIFICATES AND PEM FILE UPLOAD – USEFUL FOR SETTING CERTIFICATE ATTRIBUTES OR UPLOADING A PEM FILE IF A SELF-SIGNED CERTIFICATE IS NOT DESIRABLE.



Configure the XstreamCORE

To configure the ATTO XstreamCORE, use the ATTO XstreamVIEW™ System Manager GUI. Default values are appropriate for most configurations, but may be modified.

The best way to access the XstreamCORE to view and change settings is to use ATTO XstreamVIEW™ System Manager, a browser-based graphical interface. Other methods are also available. Refer to [Interface Options](#).

Help is available from within XstreamVIEW™ by clicking on the text indicating each setting. For more information on any of these parameters, refer to the specific CLI command in [Command explanations](#).

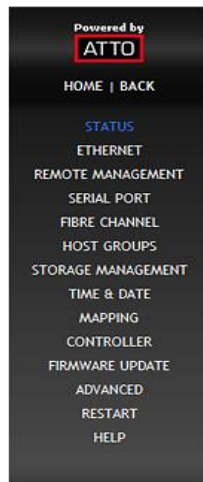
To change mapping, refer to [Map Devices](#).

To use Email notification or SNMP, refer to [Remote Monitoring, Management](#).

You may make changes to several pages before going to the Restart page and restarting the XstreamCORE to save the changes.

Preliminary steps

1. If you are not already in the XstreamVIEW™ interface, type the IP address of your XstreamCORE in a standard browser as found in [Using XstreamVIEW™ System Manager](#), click **Enter Here**, type in your user name and password, and click **OK**.
2. The Status page appears. Check default settings to ensure they are appropriate for your configuration. Use the individual pages listed on the side menu to make setting changes or to configure features.



Port configurations

1. Follow the [Preliminary steps](#).
2. Click on the port you wish to configure on the left hand menu: **Ethernet, Serial Port or Fibre Channel**.
3. Select the parameters you wish to change.
4. Click **Submit**.
5. If you have completed all changes for this session, go to the **Restart** page and restart the intelligent Bridge.

Modify passwords

1. Follow the [Preliminary steps](#).
2. From the side menu select **Controller**. The intelligent Bridge Configuration page is displayed. The Administrator user name that you are currently logged in with and the current read only user name, if present, are displayed in their text boxes.
3. Enter the **Administrator (Admin) password** where indicated.

A screenshot of the "Usernames and Passwords" configuration page in the ATTO XstreamVIEW™ System Manager GUI. The page title is "Usernames and Passwords". Below the title, it says "To change usernames or passwords you must enter the current Admin password :". There are several input fields: "Admin Username" with the value "root", "New Admin Password", "Confirm New Admin Password", "Read Only Username" with the value "user", "New Read Only Password", and "Confirm New Read Only Password". All password fields are masked with dots.

4. Enter appropriate information into the **New Admin Password, Confirm New Admin Password** or **New Read Only Password** and **Confirm New Read Only Password** text boxes.
5. Click **Submit**.
6. If you have completed all changes for this session, go to the **Restart** page and restart the XstreamCORE.

Map Devices

After getting an IP address and logging into the ATTO XstreamVIEW™ System Manager, you have options to map devices so that the XstreamCORE can access the devices in your network.

The ATTO XstreamCORE allows parallel SAS/SATA devices to participate in a Fibre Channel arbitrated loop or on a fabric. Fibre Channel and SAS/SATA use different models to address devices. The XstreamCORE translates between these addressing models.

XstreamCORE mapping

WWN:

To identify each Fibre Channel device while addressing, each Fibre Channel device is assigned a unique World Wide Name (WWN). The 64-bit WWN has the following format:

Field Name	WWN Format		Company ID			Device ID		
Byte	0	1	2	3	4	5	6	7
Value	20	00	00	10	86	xx	xx	xx

SAS/SATA device mapping

SAS/SATA devices connected to the XstreamCORE are viewed as Fibre Channel LUNs to the host computer.

The ATTO XstreamVIEW™ interface displays the current mapping information for SAS/SATA devices. Refer to [Interface Options](#).



Note **SCSI commands sent to offline devices are rejected.**

Drive Map Director™

Drive Map Director uses SMP to provide a predictable mapping structure for devices attached to the XstreamCORE FC 7600. To use this feature, drive enclosures must support SAS expanders with SMP protocol such as the HP StorageWorks SAS JBODs. If SMP supporting expanders are not present in your storage system the XstreamCORE will revert to the AutoMap feature (see [Automap devices](#))

Mapping Devices with SMP

```
routeDisplay fc
19
; FL Device Address LUN VendorID ProductID SerialNumber
;=====
0 Controller
1 5000c5001cb9d6b9 0 HP EG0300FAWHV 3SE19E9X00009023NNJZ
2 5000c5001cb96915 0 HP EG0300FAWHV 3SE1AAG900009023UPVC
3 5000c5001cb3fd45 0 HP EG0300FAWHV 3SE1B6AL00009022K5E8
4 5000c5001cb3b789 0 HP EG0300FAWHV 3SE1B7HC00009022L2YV
5 5000c5001cb38ed5 0 HP EG0300FAWHV 3SE1B8BK00009022KBRX
16 5000c5001cbaf199 0 HP EG0300FAWHV 3SE1ABD500009023TBAX
17 5000c5001cab46c9 0 HP EG0300FAWHV 3SE19GEB00009022KVW
18 5000c5001cba0a81 0 HP EG0300FAWHV 3SE16SGD00009023V6JM
19 5000c5001cb961e5 0 HP EG0300FAWHV 3SE1AX4G00009023M8VU
20 5000c5001cbb2951 0 HP EG0300FAWHV 3SE1BGWX00009023RX5P
21 5000c5001cbae9b1 0 HP EG0300FAWHV 3SE1B7GL00009023TMEE
22 5000c5001cb93fa5 0 HP EG0300FAWHV 3SE1AYA600009023RRL1
23 5000c5001cb91a95 0 HP EG0300FAWHV 3SE1AZBP00009023RS03
24 5000c5001cb993d9 0 HP EG0300FAWHV 3SE1AXLS00009023SYTC
25 5000c5001cb8420d 0 HP EG0300FAWHV 3SE1BFE500009022J7P2
26 50014380052bb03e 0 HP D2700 SAS AJ941A CN8931000N
```

Note gap in LUNs, reserved for drives not currently installed in enclosure

Drive Map Director assigns a Fibre target number to each shelf of storage and a Fibre LUN is reserved for each slot within the enclosure. This numbering scheme is static and will remain with the shelf and slot location whenever a drive or shelf is added or removed. This allows maps to remain the same when shelves or drives need to be swapped out due to failure and remain consistent during power cycles of the XstreamCORE.

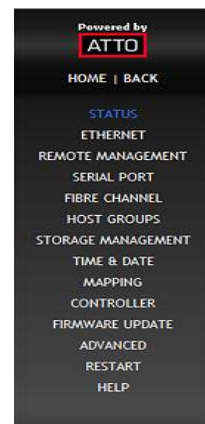
1. If you are not already in the XstreamVIEW™ interface, type the IP address of your XstreamCORE in a standard browser as found in Using XstreamVIEW™ System Manager, click **Enter Here**, type in your user name and password, and click OK.
2. The **Status** page appears.
3. From the XstreamVIEW™ main menu, click on the **Mapping** menu item on the left side of the screen.
4. The **Mapping** page appears. If your storage supports SMP, the XstreamVIEW™ System Manager will display mapping information for your devices.



Note *If your devices do not support SMP you will be able to use the AutoMap feature to map your storage devices.*

AutoMap devices

1. If you are not already in the XstreamVIEW™ interface, type the IP address of your XstreamCORE in a standard browser as found in Using XstreamVIEW™ System, click **Enter Here**, type in your user name and password, and click **OK**.
2. The **Status** page appears.
3. From the XstreamVIEW™ main menu, click on the **Mapping** menu item on the left side of the screen.
4. The **Mapping** page appears. Wait for the automatic scan for devices to complete.
5. Click **AutoMap**.
6. All the commands necessary to enable mapping are performed.



Remote Monitoring, Management

The Ethernet port provides monitoring and management using the XstreamVIEW™ System Manager.

Remote system monitoring may be set up through the **Remote Management** page of the XstreamVIEW™ interface (see [XstreamVIEW System Manager](#)) using the Simple Network Management Protocol (SNMP) or Email features.

Various types of problems may create a notification:

- Device errors such as medium error, aborted command and hard error
- Device transitions from online to offline
- Critical and warning temperature conditions
- Power supply status conditions

Messages may state that a device is not working, a medium has an error, or a command has been stopped.

You may designate which warning level a recipient receives. For example, a recipient with a critical severity level only receives critical messages and not warning or informational messages.

In both monitoring systems, you select the warning levels for each recipient:

- **All:** all warnings, critical events and informational messages
- **Warning:** events which are either warnings or critical events
- **Critical:** only events which are critical
- **None:** no messages are sent

EXHIBIT 6 THE REMOTE MANAGEMENT PAGE IN THE XSTREAMVIEW™ SYSTEM MANAGER

The screenshot displays the Remote Management configuration interface, divided into two main sections: SNMP Configuration and Email Configuration. At the bottom center is a large black button labeled "SUBMIT".

SNMP Configuration:

- SNMP: enabled disabled
- SNMP Traps: enabled disabled
- SNMP Extended Traps: enabled disabled

SNMP Trap Recipient IP Addresses:

IP Address	Warning Level
0.0.0.0	None
0.0.0.0	None
0.0.0.0	None
0.0.0.0	None
0.0.0.0	None
0.0.0.0	None

Email Configuration:

- Email Notification: enabled disabled
- SMTP Server Address (IP or Name): 0.0.0.0
- Username: [Empty text box]
- Password: [Masked text box]
- Sender Address (From): [Empty text box]

Recipient Address (To):

Recipient Address	Warning Level
[Empty text box]	None
[Empty text box]	None
[Empty text box]	None
[Empty text box]	None
[Empty text box]	None

SNMP-based monitoring

The Simple Network Management Protocol (SNMP) facilitates the exchange of management information between network devices.

An agent residing in the XstreamCORE takes information from the XstreamCORE and translates it into a form compatible with SNMP.



Note *Consult your network administrator for further assistance with SNMP.*

SNMP Agent Setup

1. If you are not already in the XstreamVIEW™ interface, type the IP address of your XstreamCORE in a standard browser as found in [Using XstreamVIEW™ System Manager](#), click **Enter Here**, type in your user name and password, and click **OK**.
2. On the left-hand menu, click **Remote Management**.
3. The **Remote Management** page appears.
4. Click on the enabled radio button next to the SNMP heading.
5. Click on the appropriate radio buttons for SNMP Traps and SNMP Extended Traps.
6. SNMP Traps and SNMP Extended Traps are notifications for SNMP functions such as device transitions and device errors.
7. Enter a **SNMPv3 Username**.



Note *This username and password are separate from the Administrator and Read-Only credentials set in the [Modify Password](#) section of the manual. The SNMPv3 credentials are only used for SNMPv3.*

8. Enter and confirm a **SNMPv3 Password**.
9. Enter the IP addresses of those who should receive messages (SNMP trap recipients) in the text boxes on the left.
10. Select the type of message you wish each recipient to receive from the drop down box next to each address.
11. Click **Submit**.

SNMP Client Setup

The SNMPv3 client configuration method will depend on your client, but the following information will be needed:

1. The username and password entered above in the **Remote Management** page.
2. The SNMPv3 Engine ID from the **Remote Management** page.
3. The XstreamCORE management IP address.
4. The XstreamCORE uses AES as its SNMPv3 privacy protocol, and SHA as its SNMPv3 authentication protocol.



Note *SNMPv3 trap handlers will require the same information as the client.*

EXHIBIT 7 EVENTS TRIGGERING SNMP NOTIFICATION FOR EXTENDED OR STANDARD TRAP GENERATION, SEVERITY LEVEL AND EXPLANATION

Event	Severity Level	Extended Traps disabled	Extended Traps enabled	Explanation
Aborted Command	Warning	No	Yes	A command has been aborted.
Device Transition	Info	No	Yes	A target device has failed, become offline or come online.
Fibre Channel Loop Down	Info	Yes	Yes	A loop down event on a Fibre Channel port has occurred.
Fibre Channel Loop Up	Info	Yes	Yes	A loop up event on a Fibre Channel port has occurred.
Hardware Error	Critical	No	Yes	An unrecoverable target device failure.
Illegal Request	Info	No	Yes	An illegal SCSI request has been attempted.
Medium Error	Warning	No	Yes	A command terminated with an error condition that may have been caused by a flaw in the target device's physical medium or its recorded data.
Power Supply Down	Critical	Yes	Yes	A power supply has powered down or was down after unit power-up.
Temperature	Info	Yes	Yes	The unit's internal temperature has increased or decreased to within standard operating ranges.
Temperature	Warning	Yes	Yes	Unit's internal temperature has increased to at or within the unit's maximum operating temperature less the unit's temperature warning offset or decreased to at or within the unit's minimum operating temperature plus the unit's temperature warning offset.
Temperature	Critical	Yes	Yes	Unit's internal temperature has increased to at or above the maximum operating temperature or decreased to at or below the minimum operating temperature.
Unit Attention	Info	No	Yes	A unit attention condition has occurred.
Unit Power On	Info	Yes	Yes	The unit has been powered up.

Email messages provide error notification

Email notification allows the XstreamCORE to send an Email message to you, a network administrator or other users when certain events occur. Serious error messages are sent immediately, while messages for less serious errors are sent every 15 minutes.

You may send Emails to up to five Email addresses and designate which conditions prompt each Email notification.

When an event that has been designated as requiring Email notification occurs, the XstreamCORE sends the message; it cannot respond to a rejection by a server for an invalid address. Ensure all Email addresses typed in are valid.

Each Email is time stamped when it leaves as part of the SMTP header information as shown in Exhibit 10 below.

EXHIBIT 8 THE EMAIL MESSAGES SENT BY THE XSTREAMCORE FOLLOW THIS FORMAT.

Subject: [The Type of Event that Occurred]

Message Body:

This is a status message from [XstreamCORE name]. Identifying information as well as the most recent entries from the event log appear below.

***** Unit Information *****

Serial Number : [Serial Number]

IP Addresses: [IP Address1]

[IP Address2]

***** Event Log Entries *****

1. If you are not already in the XstreamVIEW™ interface, type the IP address of your XstreamCORE in a standard browser as found in [Using XstreamView™ System Manager](#), click **Enter Here**, type in your user name and password, and click **OK**.
2. On the left-hand menu, click **Remote Management**.
3. The **Remote Management** page appears.
4. Click on the enabled radio button next to the Email Notification heading.
5. Type in the SMTP Server IP address.
6. Type in the user name and password of your SMTP Email account if your server requires it
7. Type in the sender address (Emails show this name in the From field).
8. Type in up to five Email addresses.
9. Choose **All**, **Warning**, or **Critical** for each Email address.
10. When all information is typed in, click **Submit**.

Update Firmware

The ATTO XstreamCORE has several processors which control the flow of data. The firmware to control these processors can be upgraded in the field using the PUT command from an SFTP connection. The preferred method is to use ATTO XstreamVIEW™ System Manager.



Note *The recommended method for updating firmware for the XstreamCORE is the Firmware Update page in the ATTO XstreamVIEW™ interface.*

The XstreamCORE firmware is distributed as a .zbd file from the ATTO Technology web site at www.atto.com. Download the file and note the filename.

Using XstreamVIEW™

1. If you are not already in the XstreamVIEW™ interface, type the IP address of your XstreamCORE in a standard browser as found in [Using XstreamVIEW™ System Manager](#), click **Enter Here**, type in your user name and password, and click **OK**.



Note *The default user name and password values can be found on the bottom of the unit.*

The user name is case insensitive and the password is case sensitive. It is best practice to change the default user name and password. Refer to [Modify passwords](#).

During the first login to XstreamVIEW or SSH, the XstreamCORE will prompt you to change the unit's default password. After the new password is accepted, the unit will reboot. Wait up to two minutes for the XstreamCORE Ready LED to light indicating the XstreamCORE has completed its power-on self-test sequence. Re-launch your browser and navigate to the correct IP address. Your browser points to the ATTO XstreamVIEW™ welcome screen. Type in the user name and password.



Note *You can access XstreamVIEW from the Ethernet management ports.*

2. Click on the **Firmware Update** menu item on the left-hand side of the page.

3. The **Firmware Update** page appears. Click the **Choose File** button to locate the firmware that you downloaded earlier.
4. Select the file.
5. Click **Upload**.
6. Wait until a success message is displayed.
7. Click on the **Restart** button at the bottom of the page.

Using SFTP

1. Establish an SFTP link to the storage controller that is to be flashed.



Note *The storage controller SFTP server is at port 20, not the default port 22.*



Note *The storage controller only supports one session at a time. If your client uses multiple simultaneous sessions to accelerate data transfer, the SFTP link will not work correctly.*

2. As an example, using OpenSSH, the connection would be made with the following command where username is the username set in [Modify passwords](#), and x.x.x.x is the IP address of the XstreamCORE.

```
sftp -P 20 username@x.x.x.x
```
7. Enter your password when prompted.
8. Once logged in, upload the zbd file using the “put” command:

```
Put c:\firmware\xc7600_4_00_265F.zbd
```
9. Once the upload is complete, check the XstreamCORE log to verify successful upload using the **DumpEventLog** command.
10. If the upload and firmware update were logged as successful, cycle power on the XstreamCORE using the **FirmwareRestart** command to apply the new firmware.

Interface Options

Alternative methods to the ATTO XstreamVIEW™ Interface may be used to manage the XstreamCORE. ATTO XstreamVIEW System Manager is the recommended interface. Access XstreamVIEW using standard browsers Google Chrome, Firefox, and Microsoft Edge.

Using XstreamVIEW™ System Manager

Each page in the ATTO XstreamVIEW™ System Manager provides information and/or configuration parameters based on a specific topic.

ATTO XstreamVIEW™ is the recommended management tool for the XstreamCORE. It is a web-based graphical user interface (GUI) that allows you to manage the XstreamCORE by clicking choices and commands in traditional GUI fashion or by entering CLI commands directly.

Opening an XstreamVIEW™ session

1. Point your browser at the IP address of the XstreamCORE. Refer to [Discover the IP address](#).
2. The XstreamVIEW™ home page is displayed. Click **Enter**.
3. Enter the user name and password values. The **Status Page** appears.





Note *The default user name and password values can be found on the bottom of the unit.*

The user name is case insensitive and password is case sensitive. It is best practice to change user names and passwords. Refer to [Modify passwords](#).

Using the serial port

1. Connect a cable from XstreamCORE RS-232 serial port to the serial (COM) port on a personal computer.
2. Turn on the XstreamCORE.
3. Start a terminal emulation program on the personal computer, and use it to connect to the XstreamCORE. For example, if you are using HyperTerminal on a computer running a Windows operating system, type **XstreamCORE** in the New Connection dialog box.
4. Click **OK**.
5. In the Connect To dialog box, for the Connect using field, select the COM port number to which your serial cable is connected.
6. Click **OK**.
7. In the COM Properties dialog box select the following values:
 - Bits per second: 115200
 - Data Bits: 8
 - Parity: None
 - Stop Bits: 1
 - Flow Control: None
 - Terminal type: ASCII
 - Echo: on
8. Click **OK**.
9. After you connect to the XstreamCORE, start-up messages are displayed. These messages are only displayed when the controller is starting up (power is connected to the controller but the Ready LED indicator is not yet lit). If the Ready LED indicator is lit before the user connects the serial cable or starts/sets up the terminal program, you will need to press **Enter** to receive a Ready message prompt.
10. In serial port sessions, there is no prompt on the line below the word Ready. Begin typing commands in the blank line where the cursor is resting. No user name or password is required for serial port access.
11. To verify that you have connected successfully, type **help** after the Ready prompt and press **Enter**.

 Note *If a list of all available commands does not appear on the screen, review the steps in this section, check the cable, or contact service personnel until the problem is solved.*


 Note *If you have difficulty using the serial port, verify that you have the correct settings and that your serial cable is less than two meters in length.*

Using SSH

Up to three SSH sessions can be conducted simultaneously. A serial port session can use the CLI while SSH sessions are open. Whichever session issues the first **set** CLI command can continue to issue set commands, while the other sessions can only issue **get** commands or display information. Once a connection is established, refer to [CLI provides ASCII-based Interface](#).

Making an SSH connection

1. Start an SSH client.

 Note *There is more than one way to connect to the XstreamCORE using an SSH client. Your SSH client may operate differently than in the following instructions.*

2. In your SSH client, connect to the XstreamCORE. As an example, using OpenSSH, the connection would be made with the following command where username is the username set in [Modify passwords](#), and x.x.x.x is the IP address of the XstreamCORE.

```
ssh username@x.x.x.x
```

3. Enter your password.
4. To quit an SSH session, type exit

Appendix A Cabling

ATTO XstreamCORE SAS connections connect SAS or SATA storage devices into the Ethernet Storage Area Network (SAN). Use an Ethernet connection to use the ATTO XstreamVIEW™ System Manager.

Make sure all cables are anchored securely at both ends with the proper connectors.

SAS/SATA connections

The XstreamCORE supports a wide variety of SAS & SATA storage devices.

 **Note** *The lengths in the table are for passive copper cables*

Each SAS connection is totally independent from the other SAS connections. SAS PHY auto-negotiates the appropriate sync rates with the connected devices. Check the type of cable, cable length limit and number of devices recommended for each port.

Keep cable lengths as short as possible to ensure the highest signal quality and performance. These cable lengths include the wiring inside the devices.

Connectors	Max Cable Length	Max Speed
SFF8644 - SFF8644	6m	12Gb/s
SFF8644 - SFF8088	10m	6Gb/s
SFF8644 - SFF8087	1m	6Gb/s

Fibre Channel management connection

Fibre Channel technology offers a variety of cabling options. The type of cable required varies depending upon the application, environment, distance, and product.

 **Note** *Long wave operation requires long wave SFP+ modules (not supplied).*

Cable Type	32Gb/s	16Gb/s	8Gb/s
62.5 µm OM1	NA	15m	21m
50 µm OM2	NA	35m	50m
50 µm OM3	70m	100m	150m
50 µm OM4	100m	125m	190m
Long wave, Single Mode	10,000m	10,000m	10,000m

Ethernet Management Connection

The 100/1000BASE-T Ethernet ports provide remote monitoring and management using the ATTO XstreamVIEW™ System Manager.

When you connect an Ethernet cable between the XstreamCORE and a 100/1000BASE-T connection, you may

need a crossover cable connecting directly to a computer. The ATTO XstreamCORE auto detects the Ethernet speed by default.



Note

It is recommended to use a good quality Cat 5e or better cable

Serial port connection

The ATTO XstreamCORE supports remote service operations over the RS-232 serial port using standard terminal emulation software available with most systems.

Connect a RJ45 to DB-9 serial cable (null modem) between the ATTO XstreamCORE serial port and one of the computer's serial COM ports.

A gender changer or DB-9 to DB-25 converter may be needed depending on the cables being used.

Appendix B CLI Provides ASCII-based Interface

The command line interface (CLI) provides access, configuration, and monitoring for ATTO XstreamCORE services through a set of ASCII commands. CLI commands may be entered through a serial port connection, active telnet session, or the Advanced page on the XstreamVIEW GUI.

- CLI commands are context sensitive and generally follow a standard format:
[Get|Set] Command [Parameter1|Parameter2] followed by the return or enter key
- CLI commands are case insensitive: you may type all upper or all lower case or a mixture. Upper and lower case in this manual and the help screen are for clarification only.
- Commands generally have three types of operation: get, set and immediate.
- The get form returns the value of a parameter or setting and is an informational command.
- Responses to get commands are followed by Ready.
- The set form is an action that changes the value of a parameter or configuration setting. It may require a SaveConfiguration command and a restart of the system before it is implemented. The restart can be accomplished as part of the SaveConfiguration command or by using a separate FirmwareRestart command. A number of set commands may be issued before the SaveConfiguration command.
- Responses to set commands are either an error message or Ready. *. The asterisk indicates you must use a SaveConfiguration command to finalize the set command. SaveConfiguration asks if you want to restart the system or not.
- Immediate commands are set commands which are executed right away and do not require a Save Configuration command.
- Responses to Immediate commands are either an error message or data results followed by Ready.

Command conventions

Symbol	Indicates
[]	Required entry
< >	Optional entry
	pick one of
...	Ellipses, repetition of preceding item
\n	end of line
-	a range (6 – 9 = 6, 7, 8, 9)
fl	Fibre Channel LUN (0 <= fl <= 4096)
fp	Fibre Channel port number (1 <= fp <= 4 (7550) or 2 (7600))
sasConn	SAS connector name (A, B, C, D)
mp	Ethernet Management port number (1 <= mp <= 2)

EXHIBIT 9 SYMBOLS, TYPEFACES AND ABBREVIATIONS USED TO INDICATE FUNCTIONS AND ELEMENTS OF THE COMMAND LINE INTERFACE USED IN THIS MANUAL.

CLI Error Messages

The following error messages may be returned by the Command line Interface

ERROR. Invalid Command. Type 'Help' for command list.

ERROR. Wrong/Missing Parameters

Usage: <usage string>

ERROR. Command Not Processed

CLI Summary Reference

A summary of the Command Line Interface commands, their defaults, and where you can find the specific command. Commands which have no default values associated with them have a blank entry in that column of the table.

Command	Default	Example
AutoMap		automap
BootFibreDelay	0	set bootfibredelay 15
ClearCLILog		ClearCliLog
ClearEventLog		cleareventlog
ControllerLUN	enabled	get controllerlun
ControllerModel		get controllermodel
ControllerName	“ “	set controllername Omega6
CoreDumpInfo		CoreDumpInfo
DataMoverStats		get DataMoverStats all
Date		set date 03/03/2003
DeleteAllMaps		deleteallmaps
DisplayInitiators		DisplayInitiators
DumpCLILog		DumpCliLog
DumpConfiguration		dumpconfiguration
DumpEventLog		dumpeventlog
EmailFromAddress		get emailfromaddress
EmailNotify	disabled	get emailnotify
EmailNotifyAddress		set emailnotifyaddress 5 bw@abc.com
EmailPassword		set emailpassword
EmailServerAddress	0.0.0.0	get emailserveraddress
EmailUsername		set emailusername beta321

EthernetSpeed	auto	set ethernetspeed 100
EthPortList		EthPortList
Exit		exit
FCCorePresent		FCCorePresent
FCDataRate	auto	get fcdata rate 1
FCLUNName		FCLUNName all
FCPortErrors		get fcporterrors all
FCPortList		fcportlist
FCSCSIBusyStatus	busy	get fcscsibusystatus
FCSFPInfo		get fcsfpinfo all
FCWWName		get fcwwname 1
FirmwareRestart		firmwarerestart
FlashImages		flashimages
Help		help automap
HGAddInitiator		HGAddInitiator TestGroup 2000001086A6C440
HGAddLUN		HGAddLUN TestGroup 5
HGCreate		HGCreate TestGroup
HGDelete		HGDelete all
HGDisplay		HGDisplay all
HGInitiatorName		Get HGInitiatorName TestGroup all
HGMapping	disabled	get HGMapping
HGRemoveInitiator		HGRemoveInitiator TestGroup 2000001086A6C440
HGRemoveLUN		HGRemoveLUN TestGroup 5
HGRename		HGRename TestGroup SuperTestGroup
HttpsCertInfo		HttpsCertInfo
HttpsCertParams	Country (C) = "" State (ST) = "" Locality (L) = "" Organization (O) = ""	get HttpsCertParams

	Organization Unit (OU) = "" Common Name (CN) = ""	
IdentifyController	disabled	set identifycontroller enabled
IdentifyLUN		IdentifyLUN 10
Info		info
IPAddress	10.0.0.1	get ipaddress mp1
IPDHCP	enabled	set ipdhcp mp1 disabled
IPDNSServer		get ipdnsserver
IPGateway	0.0.0.0	set ipgateway mp1 200.10.22.3
IPSubnetMask	255.255.0.0	get ipsubnetmask mp1
IPV6Prefix	128	Set ipv6prefix 64
IsReserved		isreserved
Licenses		Licenses
MaxOpTemp	90	get maxoptemp
MinOpTemp	0	set minoptemp 10
OEMConfigFile		get oemconfigfile
OpTempWarn	10	set optempwarn 15
Password		set password
Performance		get performance
Ping		ping mp1 192.42.155.155
ReadOnlyPassword	P@SSw0rd	set readonlypassword
ReadOnlyUsername	admin	get readonlyusername
Reserve		reserve
ResetFCPortErrors		resetfcporterrors 1
RestoreConfiguration		restoreconfiguration default
RouteDisplay		routedisplay fc
SASConnectorInfo		get sasconnectorinfo all
SASEnclosures		sasenclosures 1
SASMapByTopology	enabled	setsasmapbytopology enabled
SASPortList		sasportlist

SASTargets		sastargets
SaveConfiguration		saveconfiguration restart
SerialNumber		get serialnumber
SerialPortBaudRate	115200	set serialportbaudrate 19200
SerialPortEcho	enabled	get serialportecho
SNMP	disabled	set SNMP enabled
SNMPDumpEngineID		SNMPDumpEngineID
SNMPDumpMIB		snmpdumpmib
SNMPExtendedTraps	disabled	get snmpextendedtraps
SNMPTrapAddress	0.0.0.0 none	set snmptrapaddress 6 192.42.155.155 all
SNMPTraps	disabled	set snmptraps enabled
SNMPUsername		Set SNMPUsername bob
SNTP	enabled	get sntp
SNTPServer	129.6.15.30	set sntpserver 129.6.15.30
StopIdentifyLUN		StopIdentifyLUN all
Temperature		get temperature
Time		set time 03:32:30
TimeZone	EST	set timezone pst
Uptime		get uptime
Username	admin	set username Barbara
VerboseMode	enabled	set verbosemode disabled

Command explanations

AutoMap (Supported In-Band)

Automatically maps a subset of target devices visible to the firmware to a set of Fibre Channel LUNs. All previous maps will be deleted.

AutoMap

BootFibreDelay (OEM Configurable, Supported In-Band)

Sets the delay (in seconds) after startup before enabling the Fibre Channel ports. The value "0" constitutes no delay.

set BootFibreDelay [0-255]

get BootFibreDelay

ClearCLIlog (Supported In-Band)

Clears the contents of the CLI command log.

ClearCLIlog

ClearEventLog

ClearEventLog clears the contents of the event log.

ClearEventLog

ControllerLUN (OEM Configurable, Supported In-Band)

Controls the automatic generation of a controller device at LUN 0. After enabling or disabling the controller LUN, save configuration and run automap to re-map all devices.

set ControllerLUN [enabled | disabled]

get ControllerLUN

ControllerModel (Supported In-Band)

Reports the specific model and firmware information to the CLI.

get ControllerModel

ControllerName (OEM Configurable, Supported In-Band)

Provides a descriptive ASCII name assigned to the unit. This field is used by applications to identify individual units. The specified name can be up to a maximum of 32 characters. If the name contains spaces, it must be enclosed in quotation marks. Unlike other non-immediates, changes to ControllerName take effect immediately.

set ControllerName [name]

get ControllerName

CoreDumpInfo (Supported In-Band)

Displays information concerning a core dump stored by a prior fault.

CoreDumpInfo

DataMoverStats (Supported In-Band)

Displays statistics on aggregate data copied by the Data Mover. Shows the previous hour and minute. Use "all" to display statistics over the entire 24 hour period.

get DataMoverStats [all]

Date (Supported In-Band)

Date sets/displays the current date. The date range is 01/01/2000 to 12/31/2099.

set Date [MM/DD/YYYY]

get Date

DeleteAllMaps (OEM Configurable)

Removes all mapped devices from the map table. Upon the subsequent POST, if no maps are present the default maps will be loaded.

DeleteAllMaps

DisplayInitiators (Supported In-Band)

Displays the FC Port world-wide name of the connected initiators.

DisplayInitiators

DumpCLILog (Supported In-Band)

Dumps the contents of the CLI command log to the current CLI session. The column "EvLog#" is the current Event Log number as seen in DumpEventLog. The keyword "EXCEPT" indicates an exception occurred while processing the command, and the keyword "RESTART" indicates the unit was restarted.

DumpCLILog <NumEntries | all>

DumpConfiguration (Supported In-Band)

Dumps system's configuration.

DumpConfiguration

DumpEventLog

DumpEventLog can be used to dump the contents of the event log to an RS-232 or SSH session. With no parameters, the last 2048 entries will be displayed. The optional parameter "all" specifies all entries will be displayed. An optional numeric parameter specifies the maximum number of entries to display from the end of the log.

DumpEventLog <NumEntries | all>

EmailFromAddress (OEM Configurable, Supported In-Band)

EmailFromAddress configures the email address that this system will use to talk to the email server. Full email address is a fully qualified Internet email address, not more than 128 characters long.

set EmailFromAddress [full email address]

get EmailFromAddress

EmailNotify (OEM Configurable, Supported In-Band)

EmailNotify turns on and off email notification. Default is disabled.

set EmailNotify [enabled | disabled]

get EmailNotify

EmailNotifyAddress (OEM Configurable, Supported In-Band)

EmailNotifyAddress configures notification addresses. Index is a number between 1 and 5, inclusive. Full email address is a fully qualified Internet email address, not more than 128 characters long. The level can be "all", "informational", "warning", "critical" or "none". This is the minimum level of severity in order for the event to trigger an email notification.

set EmailNotifyAddress [index] [full email address]

[warning level]

get EmailNotifyAddress <index | all>

EmailPassword

EmailPassword sets the password used to authenticate the login to the SMTP email server. The password must not be more than 64 characters. A password is not required if the email server does not require authentication.

set EmailPassword

EmailServerAddress (OEM Configurable, Supported In-Band)

EmailServerAddress configures the address of the server that should be contacted in order to send out emails. Either an IP address or a fully qualified domain (e.g. mail.myserver.com) may be specified.

set EmailServerAddress [IP address]

get EmailServerAddress

EmailUsername (OEM Configurable, Supported In-Band)

EmailUsername sets the username used to authenticate the login to the SMTP email server. The username must not be more than 128 characters. A username is not required if the email server does not require authentication.

set EmailUsername [username]

get EmailUsername

EthernetSpeed (OEM Configurable, Supported In-Band)

EthernetSpeed determines the speed of any Ethernet port(s). If Auto is enabled then the Ethernet speed will be negotiated and the value in parentheses returned by the 'get' command indicates the current speed of the Ethernet connection.

set EthernetSpeed [mp[n]] [10 | 100 | 1000 | auto]

get EthernetSpeed [mp[n] | all]

EthPortList (Supported In-Band)

Lists the available Ethernet ports and their current status. Valid status values are: Up or Down

EthPortList

Exit

Exit terminates the current CLI session over SSH. This command has no effect if used during a serial RS-232 session.

Exit

FCCorePresent (Supported In-Band)

Reports whether a Fibre Channel FW diagnostics core is present in onboard memory.

FCCorePresent

FCDataRate (OEM Configurable, Supported In-Band)

FCDataRate specifies the Fibre Channel data rate (7550: 4/8/16Gb; 7600: 8/16/32Gb) or auto-negotiation to the highest speed (auto).

(7550) set FCDataRate [fp | all] [4Gb | 8Gb | 16Gb | auto]

(7600) set FCDataRate [fp | all] [8Gb | 16Gb | 32Gb | auto]

get FCDataRate [fp | all]

FCLUNName (OEM Configurable, Supported In-Band)

Assigns human-readable names to FC LUNs. Names may be up to 32 characters long and may only contain upper and lower case letters, numbers, underscores, dashes, and spaces. If the name contains spaces, it must be enclosed in quotation marks. All LUN names may be cleared with "set" specifying "all" with a blank name (i.e. ""), or by issuing any of the following commands: DeleteAllMaps, RestoreConfiguration (with the "default" option specified), or SASMapByTopology. Note that issuing the command Automap may result in mismatched LUNs and LUN names.

set FCLUNName [LUN | all] [name]

get FCLUNName [LUN | all]

FCPortErrors (Supported In-Band)

FCPortErrors displays the number of Fibre Channel errors that have occurred since the last reboot/power-on or [ResetFCPortErrors](#) command at the Fibre Channel controller level.

get FCPortErrors [fp | all]

FCPortList (Supported In-Band)

FCPortList returns a list of available FC ports and their current status. Valid status values are Up, Down, Failed, Reserved and Disabled.

FCPortList

FCSCSIBusyStatus (OEM Configurable, Supported In-Band)

This option controls reporting of either a 'BUSY' or 'QUEUE FULL' status at a point in time when SCSI commands cannot be accepted.

set FCSCSIBusyStatus [busy | qfull]

get FCSCSIBusyStatus

FCSFPInfo (Supported In-Band)

FCSFPInfo displays information about the specified Fibre Channel SFP.

get FCSFPInfo [fp | all]

FCWWName (Supported In-Band)

FCWWName reports the World Wide Node Name of the Fibre Channel interface referenced.

get FCWWName [fp | all]

FirmwareRestart (Supported In-Band)

FirmwareRestart resets and reinitializes the firmware. Use the 'forced' option to override any CLI reservations held by other sessions.

FirmwareRestart <forced>

FlashImages (Supported In-Band)

Displays the metadata for software images currently stored in the Flash device. The optional parameter "validate" also validates the CRC of the flash images. Note that the CRC

validation causes a multi-second delay. The optional parameter "boot" will display the version of the boot image.

FlashImages <validate | boot>

Help (Supported In-Band)

The Help command issued with no parameters displays a list of available CLI commands. When a CLI Command name is specified, a command usage string and command description is presented on the CLI.

Help [command name]

HGAddInitiator (Supported In-Band)

Adds an initiator to an existing Host Group. WWN specifies the world-wide name of the FC Port to be added to the Host Group; the CLI command "DisplayInitiators" can be used to display connected initiators. An optional human-readable name may be assigned to the initiator. Names may be up to 32 characters long and may only contain upper and lower case letters, numbers, underscores, dashes, and spaces. If the name contains spaces, it must be enclosed in quotation marks.

HGAddInitiator [HostGroupName] [WWN] <name>

HGAddLUN (Supported In-Band)

Adds a LUN to an existing Host Group. The CLI command "RouteDisplay FC" can be used to display attached LUNs.

HGAddLUN [HostGroupName] [LUN]

HGCreate (Supported In-Band)

Creates a new empty Host Group. HostGroupName is an ASCII name for the Host Group comprised of 32 characters or less (only alpha-numeric characters, dashes, and underscores allowed). A Host Group will expose specified LUNs to specified initiators. To add a LUN to a Host Group use the CLI command "HGAddLUN" and to add a host to a Host Group use the CLI command "HGAddInitiator".

HGCreate [HostGroupName]

HGDelete (Supported In-Band)

Deletes an existing Host Group.

HGDelete [HostGroupName | all]

HGDisplay (Supported In-Band)

Displays Host Group status information for the specified Host Group, or for all Host Groups.

HGDisplay [HostGroupName | all]

HGInitiatorName (OEM Configurable, Supported In-Band)

Assigns plaintext names to initiators. Names may be up to 32 characters long and may only contain upper and lower case letters, numbers, underscores, dashes, and spaces. If the name contains spaces, it must be enclosed in quotation marks. Names may be cleared with "set" and specifying a blank name (i.e. "").

set HGInitiatorName [HostGroupName] [WWN | all] [name]

get HGInitiatorName [HostGroupName] [WWN | all]

HGMapping (OEM Configurable, Supported In-Band)

Changes the system's ability to expose specific LUNs to specific initiators or to expose all LUNs to all initiators.

set HGMapping [enabled | disabled]

get HGMapping

HGRemoveInitiator (Supported In-Band)

Deletes an initiator from an existing Host Group. The CLI command "DisplayInitiators" can be used to display connected initiators.

HGRemoveInitiator [HostGroupName] [WWN]

HGRemoveLUN (Supported In-Band)

Removes a LUN from an existing Host Group. The CLI command "RouteDisplay FC" can be used to display attached LUNs.

HGRemoveLUN [HostGroupName] [LUN]

HGRename (Supported In-Band)

Renames an existing Host Group. HostGroupNames must be comprised of 32 characters or less. Only alpha-numeric characters, dashes, and underscores are allowed.

HGRename [PrevHostGroupName] [NewHostGroupName]

HttpsCertInfo (Supported In-Band)

Displays information about the current HTTPS certificate.

HttpsCertInfo

HttpsCertParams (Supported In-Band)

Displays or sets the attributes used to generate the HTTPS certificate. All attributes are optional. C is Country with a fixed length of 2 characters. ST is State with a max length of 128 characters. L is Locality with a max length of 128 characters. O is Organization with a max length of 64 characters. OU is Organization Unit with a max length of 64 characters. CN is Common Name with a max length of 64 characters. If the attribute contains spaces or commas, it must be enclosed in quotation marks. Changes made to the HTTPS attributes will take effect on reboot.

set HttpsCertParams [C | ST | L | O | OU | CN] [nn...nn]

get HttpsCertParams

IdentifyController (Supported In-Band)

IdentifyController causes the 'Alert' LED to blink to enable identification of this system. Disable this option to cancel the blinking.

set IdentifyController [enabled | disabled]

get IdentifyController

IdentifyLUN (Supported In-Band)

Lights the LED(s) of disk drive(s) associated with one or more FC LUNs.

IdentifyLUN [LUN] ...

Info (Supported In-Band)

Info displays version numbers and other product information for key components. Use the optional 'brief' parameter to show a more concise subset of system information.

Info <brief>

IPAddress (OEM Configurable, Supported In-Band)

IPAddress controls the current IP address of any Ethernet port(s). If IPDHCP is enabled, then the 'get' command reports the current IP address assigned by the network DHCP server, followed by the (DHCP) identifier.

set IPAddress [mp[n] | all] [[xxx.xxx.xxx.xxx] | [[IPv6-compatible address] <Prefix length>]]

get IPAddress [mp[n] | all]

IPDHCP(OEM Configurable, Supported In-Band)

IPDHCP allows acquisition of an IP address from a network DHCP server. When this option is disabled, the IP address used will be specified by the IPAddress CLI command.

set IPDHCP [mp[n]] [enabled | disabled]

get IPDHCP [mp[n] | all]

IPDNSServer (OEM Configurable, Supported In-Band)

Controls the current DNS Server address. If [IPDHCP](#) is enabled, then this value is automatically detected. If [IPDHCP](#) is disabled, then this value must be manually set (IPv4 only).

set IPDNSServer [xxx.xxx.xxx.xxx]

get IPDNSServer

IPGateway (OEM Configurable, Supported In-Band)

IPGateway controls the current default gateways used by any Ethernet port(s). If IPDHCP is enabled, the 'get' command reports the current IP gateway assigned by the network DHCP server.

set IPGateway [mp[n]] [xxx.xxx.xxx.xxx]

get IPGateway [mp[n] | all]

IPSubnetMask (OEM Configurable, Supported In-Band)

IPSubnetMask controls the current subnet masks used by any Ethernet port(s). If IPDHCP is enabled, the 'get' command reports the current IP subnet mask assigned by the network DHCP server.

set IPSubnetMask [mp[n]] [xxx.xxx.xxx.xxx]

get IPSubnetMask [mp[n] | all]

IPv6Prefix (OEM Configurable, Supported In-Band)

Controls the current IPv6 prefix (1-128) of any Ethernet port(s).

set IPv6Prefix [mp[n]] [Prefix length]

get IPv6Prefix [mp[n] | all]

IsReserved (Supported In-Band)

IsReserved displays the reservation status of the current services session/interface.

IsReserved

Licenses

Displays the system's collection of relevant open source licenses.

Licenses

MaxOpTemp (OEM Configurable, Supported In-Band)

Regulates/displays the maximum enclosure temperature alarm of the XstreamCORE in degrees Celsius. If the temperature of the XstreamCORE rises above the maximum MaxOpTemp, thermal control event handling occurs.

set MaxOpTemp [75-90]

get MaxOpTemp

MinOpTemp (OEM Configurable, Supported In-Band)

Regulates/displays the minimum enclosure temperature alarm of the XstreamCORE in degrees Celsius.

set MinOpTemp [0-15]

get MinOpTemp

OEMConfigFile (Supported In-Band)

Returns the "name" (the contents of the first record) of the OEM configuration file stored in persistent memory.

get oemconfigfile

OpTempWarn (OEM Configurable, Supported In-Band)

Regulates/displays the number of degrees in Celsius before a warning is sent to the user.

set OpTempWarn [0-15]

get OpTempWarn

Password

Specifies the password used for all sessions: SSH, SFTP and XstreamVIEW. The password must be 8 to 32 characters long, must contain at least one numeric character {0-9}, and may not contain the following: {space,tab,'\\,;}

set Password

Performance (Supported In-Band)

Returns system performance data. Data consists of the average rate (MB/s) and number of I/Os (IO/s) measured over the previous sampling period (approximately one second). Successful SCSI Read (28h, 88h, A8h) and Write (2Ah, 8Ah, AAh) commands are considered I/Os. Factors that may affect reported performance include port availability and saturation, transfer size, target device speeds, and overall system utilization.

get Performance

Ping

Sends an ICMP echo request to the specified host.

Ping [mp[n]] [IP Address]

ReadOnlyPassword

Specifies the password used for all sessions: SSH, SFTP and XstreamVIEW. The password must be 8 to 32 characters long, must contain at least one numeric character {0-9}, and may not contain the following: {space,tab,',\,;}.

set ReadOnlyPassword

ReadOnlyUsername (OEM Configurable, Supported In-Band)

Specifies the username used for all sessions: SSH, SFTP and XstreamVIEW. Username must be all lowercase, 1 to 32 characters long, start with an alphabetical character, and may only contain the following: {a-z,0-9,-,_,.}.

set ReadOnlyUsername

get ReadOnlyUsername

Reserve (Supported In-Band)

Prevents other CLI sessions from modifying the XstreamCORE. When the XstreamCORE services interface is reserved, set commands are unavailable to other sessions, but get commands are available. Executing a SaveConfiguration or RestoreConfiguration command releases the XstreamCORE so that other CLI sessions may make setting changes.

Reserve

ResetFCPortErrors (Supported In-Band)

Resets all FC error counts for the specified port to zero.

ResetFCPortErrors [fp | all]

RestoreConfiguration (Supported In-Band)

Restores configuration to either the default configuration or the configuration last saved into non-volatile memory. The saved option undoes any changes made since the last save.

RestoreConfiguration [Default | Saved]

RouteDisplay (Supported In-Band)

Displays a list of Fibre Channel to SCSI address mappings on the XstreamCORE.

RouteDisplay FC

SASConnectorInfo (Supported In-Band)

SASConnectorInfo displays information about the specified SAS connector. Valid connector names are A through D.

get SASConnectorInfo [sasConn | all]

SASEnclosures (Supported In-Band)

Displays a list of attached enclosures. If no arguments are specified, only the enclosure summary table is displayed. If PHYID is specified, this displays connection details for active PHYs. If SlotMap is specified, device details for enclosure slots are displayed. EnclIdx displays details for the specified enclosure.

SASEnclosures < [PHYID | SlotMap] <EnclIdx> >

SASMapByTopology (OEM Configurable, Supported In-Band)

SASMapByTopology specifies how target devices are mapped to LUNs. When enabled, LUNs are numbered based on the SAS topology, with gaps where there are open slots. When disabled, LUNs are assigned to devices as they are discovered, which may change over time.

set SASMapByTopology [enabled | disabled]

get SASMapByTopology

SASPortList (Supported In-Band)

Lists the status of all available SAS ports.

SASPortList

SASTargets (Supported In-Band)

Lists the physical devices that are connected to all SAS ports.

SASTargets

SaveConfiguration (Supported In-Band)

Many commands require a SaveConfiguration command to be executed as indicated by the return Ready. *. When you invoke a SaveConfiguration command, the current configuration is permanently saved in the XstreamCORE and the new configuration becomes the active configuration. If a firmware restart is required to make the requested change permanent, you are asked to confirm the restart. You can override this request by indicating the override value on the command line. You may make several changes through commands before implementing the restart, but once you have restarted the XstreamCORE, all the command changes created before the restart and save are implemented. If you select the restart option, the XstreamCORE executes its complete start up cycle.

SaveConfiguration <Restart | NoRestart>

SerialNumber (Supported In-Band)

Reports the XstreamCORE serial number. The serial number, unique for each XstreamCORE, is a 13-character field. The first seven alphanumeric characters are an abbreviation of the XstreamCORE name while the remaining six numbers are the individual XstreamCORE board's number.

get SerialNumber

SerialPortBaudRate (OEM Configurable, Supported In-Band)

SerialPortBaudRate configures the baud rate for the RS-232 serial port. The number of data bits per character is fixed at 8 with no parity.

set SerialPortBaudRate [9600 | 19200 | 38400 | 57600 | 115200]

get SerialPortBaudRate

SerialPortEcho (OEM Configurable, Supported In-Band)

Control/reports the status of the display of keyboard input. When enabled, all non-control character keyboard input is output to the display. Local ASCII terminal (or terminal emulator) echo settings should be set to disabled while using SerialPortEcho enabled.

set SerialPortEcho [enabled | disabled]

get SerialPortEcho

SNMP (OEM Configurable, Supported In-Band)

Enables or disables SNMP functionality.

set SNMP [enabled | disabled]

get SNMP

SNMPDumpEngineID

Dumps the SNMPv3 EngineID of this device.

SNMPDumpEngineID

SNMPDumpMIB (Supported In-Band)

Dumps the contents of the specified private SNMP MIB to the current CLI session. If no parameter is specified, the Controller private MIB is dumped. For further assistance with SNMP, consult your network administrator.

SNMPDumpMIB <Controller | Product | SMI | TC>

SNMPExtendedTraps (OEM Configurable, Supported In-Band)

Enables and disables Extended (i.e., Device Error) SNMP trap functionality.

set SNMPExtendedTraps [enabled | disabled]

get SNMPExtendedTraps

SNMPTrapAddress (OEM Configurable, Supported In-Band)

Sets and displays IP Trap Addresses and Trap Levels. "Index" is a value from 1 to 6. "IP Address" is the host that wishes to receive traps. "Level" is the severity level required to trigger a trap: "None", "All", "Warning" (all warning and critical traps shall be sent), "Critical" (only Critical events shall trigger a trap).

set SNMPTrapAddress [index] [IP address] [level]

get SNMPTrapAddress <index | All>

SNMPTraps (OEM Configurable, Supported In-Band)

Enables/disables SNMP trap functionality. Consult your network administrator for further assistance with SNMP.

set SNMPTraps [enabled | disabled]

get SNMPTraps

SNMPUsername

Sets the SNMPv3 username and password or displays the SNMPv3 username. The username must be 1 to 32 characters long, and may only contain the following: {a-z,A-Z,0-9}. The password must be 8 to 32 characters long, and may only contain the following: {a-z,A-Z,0-9}. SNMP must be enabled to run this command. This command takes 10-15 seconds to complete.

SNMPUsername

SNTP (OEM Configurable, Supported In-Band)

SNTP controls whether SNTP time server functionality is enabled.

set SNTP [enabled | disabled]

get SNTP

SNTPServer (OEM Configurable, Supported In-Band)

SNTPServer sets/displays the IP addresses used to retrieve the SNTP time. Index range is 1-3 indicating the server slot to set/display. Enter 0.0.0.0 to disable a time server slot.

set SNTPServer [Index] [IP address]

get SNTPServer <Index | All>

StopIdentifyLUN (Supported In-Band)

Stops lighting the LED(s) of disk drive(s) associated with one or more FC LUNs.

StopIdentifyLUN [LUN | all]

Temperature (Supported In-Band)

Displays the current internal temperature of the XstreamCORE in degrees Celsius.

get Temperature

Time (Supported In-Band)

Sets/displays the current time in a 24-hour format. If SNTP is enabled and at least one ethernet port is connected to a reachable SNTP time server, the time is retrieved from one of the configured SNTP time servers, and manual attempts to change the time will have no effect. If SNTP is disabled or SNTP server synchronization is not possible, the system time starts from XstreamCORE's last known system time stamp, and the time may be changed manually.

set Time [HH :MM :SS]

get Time

TimeZone (OEM Configurable, Supported In-Band)

Sets/displays the time zone or an offset from GMT. GMT offset must be in the format +/-HH:MM

set TimeZone [[EST | CST | MST | PST] | [[+|-][HH]:[MM]]]

get TimeZone

Uptime (Supported In-Band)

Returns the time [days hrs:min:sec] since the last reboot.

get Uptime

Username (OEM Configurable, Supported In-Band)

Specifies the username used for all sessions: SSH, SFTP and XstreamVIEW. Username must be all lowercase, 1 to 32 characters long, start with an alphabetical character, and may only contain the following: {a-z,0-9,-,_,.}.

set Username [username]

get Username

VerboseMode (OEM Configurable, Supported In-Band)

Controls the level of feedback returned by the command line interface. Disabling this option removes CLI Help command descriptions and removes CLI command display headers and parameter names from get and immediate commands.

set VerboseMode [enabled | disabled]

get VerboseMode

Appendix C Standards and Compliances 7600

The equipment described in this manual generates and uses radio frequency energy. If this equipment is not used in strict accordance with the manufacturer's instruction, it can and may cause interference with radio and television reception.

Regulatory Notices

FCC Notices (US only)


This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: • Reorient or relocate the receiving antenna. • Increase the separation between the equipment and receiver. • Connect the equipment into an outlet on a circuit different from that to which the receiver is connected. • Consult the dealer or an experienced radio/TV technician for help. Modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment under FCC rules.

Compliance with ICES-003

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Compliance with EN Regulations

Marking by the symbol  indicates compliance of this ATTO device to the EMC Directive and the Low

Voltage Directive of the European Union.



The ATTO XstreamCORE FC 7600 complies with Directive 2011/65/EC on the Restriction of the Use of Hazardous Substances in Electrical and Electronic Equipment RoHS2 (recast) and take the following exemptions:

6(c)- Copper allot containing up to 4% lead by weight.

7(a) -Lead in high melting temperature type solders (i.e. lead based alloys containing 85% by weight or more lead).

7(c)-I -Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectronic devices, or in glass or ceramic matrix compound.

15 - Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit flip chip packages.

UL60950-1/CSA C22.2 No. 60950-1



The product has been certified and bears the Mark, as applicable, of the EMC and Product Safety authorities as indicated below:

Safety: CU 72141224 04, EN 60950-1, CE, CSA 60950-1, UL 60950-1, CB IEC60950-1 (all national deviations)

Emissions/Immunity: FCC Part 15 Class **A**, **ICES-003**, **CE - EN55032**, **EN55024**, **IEC61000-3-2**, **IEC61000-3-3**

Appendix E Warranty Information

ATTO Technology, Inc. limited warranty

ATTO Technology, Inc. ("ATTO") warrants to the original purchaser of this product ("Product") that the Product is free from defects in material and workmanship for the term described for this specific Product on ATTO's website (www.atto.com). ATTO's liability shall be limited to replacing or repairing any defective product at ATTO's option. There is no charge for parts or labor if ATTO determines that this product is defective.

PRODUCTS WHICH HAVE BEEN SUBJECT TO ABUSE, MISUSE, ALTERATION, NEGLIGENCE, OR THOSE PRODUCTS THAT HAVE BEEN SERVICED, REPAIRED OR INSTALLED BY UNAUTHORIZED PERSONNEL WILL NOT BE COVERED UNDER THIS WARRANTY. DAMAGE RESULTING FROM INCORRECT CONNECTION OR AN INAPPROPRIATE APPLICATION OF THIS PRODUCT SHALL NOT BE THE RESPONSIBILITY OF ATTO. LIABILITY UNDER THIS LIMITED WARRANTY IS LIMITED TO ATTO PRODUCT(S). DAMAGE TO OTHER EQUIPMENT CONNECTED TO ATTO PRODUCT(S) IS THE CUSTOMER'S RESPONSIBILITY. THIS LIMITED WARRANTY IS MADE IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED. ATTO DISCLAIMS ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE TO THE EXTENT IMPLIED WARRANTIES CANNOT BE EXCLUDED, SUCH IMPLIED WARRANTIES ARE LIMITED IN DURATION TO THE EXPRESS WARRANTY PERIOD APPLICABLE TO THE PRODUCT. BECAUSE SOME STATES OR JURISDICTIONS DO NOT ALLOW LIMITATIONS ON THE DURATION OF IMPLIED WARRANTIES, THE ABOVE MAY NOT BE APPLICABLE. ATTO'S RESPONSIBILITY TO REPAIR OR REPLACE A DEFECTIVE PRODUCT IS THE SOLE AND EXCLUSIVE REMEDY PROVIDED TO THE CUSTOMER FOR BREACH OF THIS WARRANTY.

ATTO IS NOT RESPONSIBLE FOR DAMAGE TO OR LOSS OF ANY DATA, PROGRAMS OR ANY MEDIA. THE PRODUCTS ARE NOT INTENDED FOR USE IN: (I) MEDICAL DEVICES OR THE MEDICAL FIELD; OR (II) USE IN RUGGED APPLICATIONS.

ATTO IS NOT LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, IRRESPECTIVE OF WHETHER ATTO HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. NO ATTO DEALER, AGENT OR EMPLOYEE IS AUTHORIZED TO MAKE ANY MODIFICATION, EXTENSION OR ADDITION TO THIS WARRANTY.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.