XPression

M9 4RU Maintenance Guide

VERSION 01

ROSS

Thank You for Choosing Ross

You've made a great choice. We expect you will be very happy with your purchase of Ross Technology.

Our mission is to:

1. Provide a Superior Customer Experience
    - offer the best product quality and support
2. Make Cool Practical Technology
    - develop great products that customers love

Ross has become well known for the Ross Video Code of Ethics. It guides our interactions and empowers our employees. I hope you enjoy reading it below.

If anything at all with your Ross experience does not live up to your expectations be sure to reach out to us at solutions@rossvideo.com.

David Ross

CEO, Ross Video

dross@rossvideo.com

Ross Video Code of Ethics

Any company is the sum total of the people that make things happen. At Ross, our employees are a special group. Our employees truly care about doing a great job and delivering a high quality customer experience every day. This code of ethics hangs on the wall of all Ross Video locations to guide our behavior:

1. We will always act in our customers' best interest.
2. We will do our best to understand our customers' requirements.
3. We will not ship crap.
4. We will be great to work with.
5. We will do something extra for our customers, as an apology, when something big goes wrong and it's our fault.
6. We will keep our promises.
7. We will treat the competition with respect.
8. We will cooperate with and help other friendly companies.
9. We will go above and beyond in times of crisis. *If there's no one to authorize the required action in times of company or customer crisis - do what you know in your heart is right. (You may rent helicopters if necessary.)*

XPression Maintenance Guide

- Ross Part Number: 3509DR-005-01
- Version: 01

The information contained in this guide is subject to change without notice or obligation.

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Patents

Patent numbers US 7,034,886; US 7,508,455; US 7,602,446; US 7,802,802 B2; US 7,834,886; US 7,914,332; US 8,307,284; US 8,407,374 B2; US 8,499,019 B2; US 8,519,949 B2; US 8,743,292 B2; GB 2,419,119 B; GB 2,447,380 B; and other patents pending.

Notice

The material in this manual is furnished for informational use only. It is subject to change without notice and should not be construed as commitment by Ross Video Limited. Ross Video Limited assumes no responsibility or liability for errors or inaccuracies that may appear in this manual.

Warranty and Repair Policy

Ross Video Limited (Ross) warrants its XPression systems to be free from defects under normal use and service for the following time periods from the date of shipment:

- XPression Server — 12 months
- XPression Software Upgrades — 12 months free of charge
- System and Media hard drives — 12 months

If an item becomes defective within the warranty period Ross will repair or replace the defective item, as determined solely by Ross.

Warranty repairs will be conducted at Ross, with all shipping FOB Ross dock. If repairs are conducted at the customer site, reasonable out-of-pocket charges will apply. At the discretion of Ross, and on a temporary loan basis, plug in circuit boards or other replacement parts may be supplied free of charge while defective items undergo repair. Return packing, shipping, and special handling costs are the responsibility of the customer.

This warranty is void if products are subjected to misuse, neglect, accident, improper installation or application, or unauthorized modification.

In no event shall Ross Video Limited be liable for direct, indirect, special, incidental, or consequential damages (including loss of profit). Implied warranties, including that of merchantability and fitness for a particular purpose, are expressly limited to the duration of this warranty.

This warranty is TRANSFERABLE to subsequent owners, subject to Ross’ notification of change of ownership.

Extended Warranty

For customers that require a longer warranty period, Ross offers an extended warranty plan to extend the standard warranty period by one year increments. For more information about an extended warranty for your XPression system, contact your regional sales manager.

Environmental Information

The equipment that you purchased required the extraction and use of natural resources for its production. It may contain hazardous substances that could impact health and the environment.

To avoid the potential release of those substances into the environment and to diminish the need for the extraction of natural resources, Ross Video encourages you to use the appropriate take-back systems. These systems will reuse or recycle most of the materials from your end-of-life equipment in an environmentally friendly and health conscious manner.

The crossed-out wheeled bin symbol invites you to use these systems.

If you need more information on the collection, reuse, and recycling systems, please contact your local or regional waste administration.

You can also contact Ross Video for more information on the environmental performances of our products.

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After Hours Emergency:	(+1) 613 · 349 · 0006
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E-mail for General Information:	solutions@rossvideo.com
Website:	http://www.rossvideo.com

Contents

Introduction

Thank you for choosing a Ross Video XPression system.

Ross Video designed the XPression product line with the needs of live production in mind. XPression is an easy to use, yet powerful, 3D graphics and character generator. There are a range of XPression systems tailored to suit a variety of needs

We appreciate your business and sincerely hope that you have a great experience with your new XPression system. As always, if there is anything we at Ross Video can do to assist you, please do not hesitate to contact us.

About This Guide

This guide covers the installation and maintenance of the XPression system. Refer to this guide and the accompanying *Quick Start Guide* when you first install or need to reconfigure your system.

Please read the accompanying *Important Safety and Regulatory Notices* document (included in the shipping box) for instructions about safe handling of your XPression system and regulatory compliance.

If, at any time, you have questions pertaining to the operation of the XPression system, please contact Ross Video at the numbers listed in the section Getting Help 3. Our technical staff are always available for consultation, training, or service.

Documentation Conventions

Special text formats are used in this guide to identify parts of the user interface, text that a user must enter, or a sequence of menus and sub-menus that must be followed to reach a particular command.

Bold text	Bold text identifies a user interface element such as a dialog box, menu item, or button. For example: In the **Slug** column, type a slug name for the story.
Italic text	Italic text is used to identify the titles of referenced guides, manuals, or documents. For example: For more information, refer to the *DashBoard User Guide.*
`Courier text`	Courier text identifies text that a user must type. For example: In the **Username** box, type `postgres`.
Menu Sequences	Menu arrows are used in procedures to identify a sequence of menu items that you must follow. For example: If a step reads **Server > Save As**, you would select the **Server** menu and then select **Save As**.
Hypertext	Identifies a hyperlink to a related topic.

Getting Help

XPression documentation is available online at Product Documentation and is also accessible on the product USB key and by selecting the **Help** icon in the user interface.

Contacting Technical Support

At Ross Video, we take pride in the quality of our products, but if problems occur, help is as close as the nearest telephone.

Our 24-hour Hot Line service ensures you have access to technical expertise around the clock. After-sales service and technical support is provided directly by Ross Video personnel. During business hours (Eastern Time), technical support personnel are available by telephone. After hours and on weekends, a direct emergency technical support phone line is available. If the technical support person who is on call does not answer this line immediately, a voice message can be left and the call will be returned shortly. This team of highly trained staff is available to react to any problem and to do whatever is necessary to ensure customer satisfaction.

Technical Support:

- 1-844-652-0645 (North America)
- +800 3540 3545 (International)
- After Hours Emergency: (+1) 613-349-0006
- E-mail: techsupport@rossvideo.com
- Website: http://www.rossvideo.com

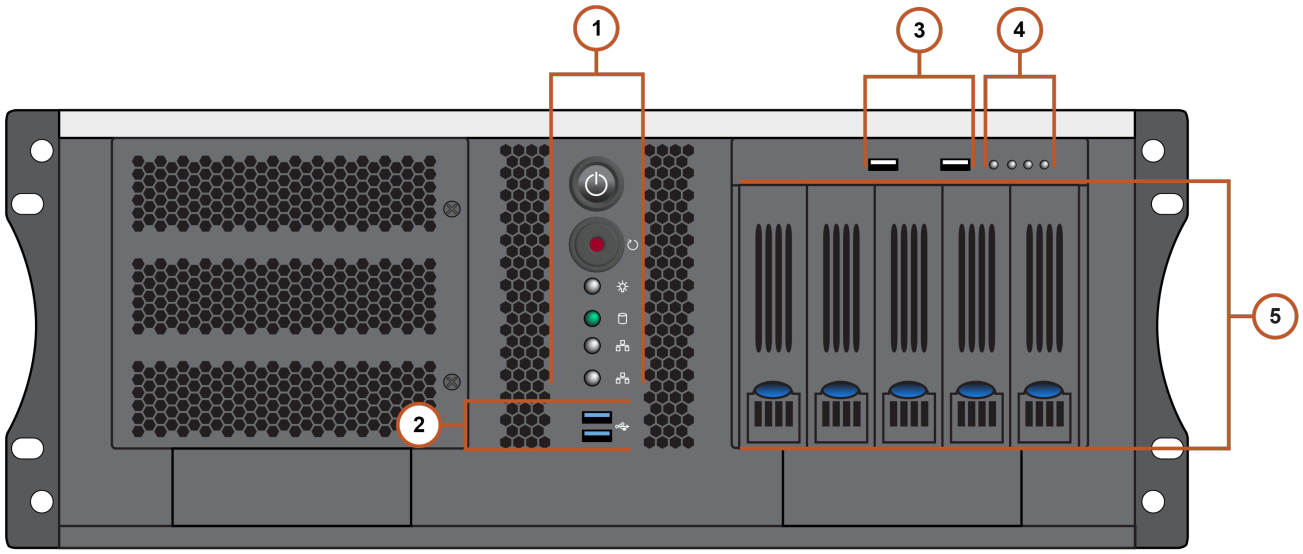
Hardware Overview

This chapter provides a brief overview of the XPression 4RU system hardware.

The topics described in this chapter are:

Front View of the System

The following diagram displays the front of the XPression 4RU system with the door removed. Descriptions of individual components are contained in the legend below the diagram.



Front View of XPression 4RU System

1) **Power LED Area** — This area includes the XPression system **Power** button and LEDs for system components.

   Refer to the section Power LED Area 6 for more information.

2) **USB Ports** — These ports can be used to transfer media to and from USB drives.

3) **HDD USB Ports** — These ports are inactive.

4) **HDD Alarm LED Area** — This area includes the alarm LEDs for the HDD hardware.

   Refer to the section HDD Alarm LED Area 7 for further information.

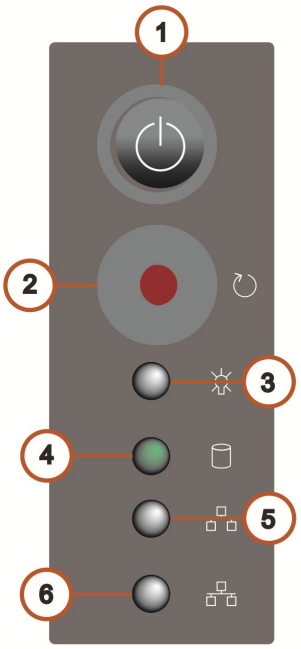
5) **System Drives** — XPression 4RU systems are equipped with five drives in a RAID 1 (system drives) and RAID 5 (media drives) configuration to provide redundancy in case of a drive failure.

   This arrangement allows for a single drive failure without loss of data or performance.

Power LED Area

The Power LED area is located on the front of the XPression 4RU system, in the middle top of the chassis. This area contains the **Power** button for the XPression 4RU system, as well as activity LEDs for system components. Refer to the section Front View of the System 5 to locate the **Power LED Area** on the front of the XPression system.

The following diagram displays the **Power LED** area of the XPression 4RU system. Individual components are described in the legend below the diagram.



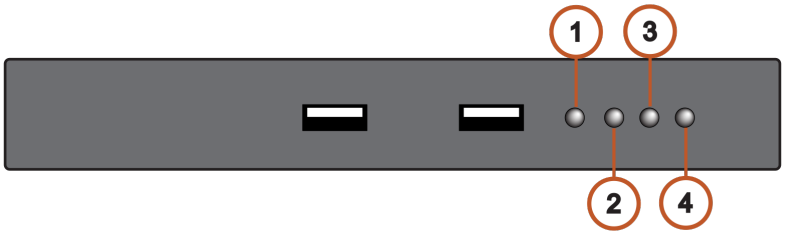
Power LED Area

1) **Power Button** — Press this button to begin the boot procedure. Press and hold the button for five seconds to power down the system after a hardware or software failure. 2) **Reset Button** — Press this button to reset the system after a hardware or software failure. Pressing this button also reboots the system. 3) **Power Active Indicator LED** — This LED is active when the system is powered on.	4) **Hard Disk Activity LED** — This LED activates when there is read/write activity on any system hard disk. 5) **Network 1 Activity LED** — This LED is not active. 6) **Network 2 Activity LED** — This LED is not active.

HDD Alarm LED Area

The HDD Alarm LED area is located on the front of the XPression system, at the top-right of the chassis above the system drives. This area contains the alarm LEDs for the HDD hardware. Refer to the section Front View of the System 5 to locate the HDD Alarm LED area on the front of the XPression 4RU system.

The following diagram displays the HDD Alarm LED Area of the XPression 4RU system. Individual components are described in the legend below the diagram.

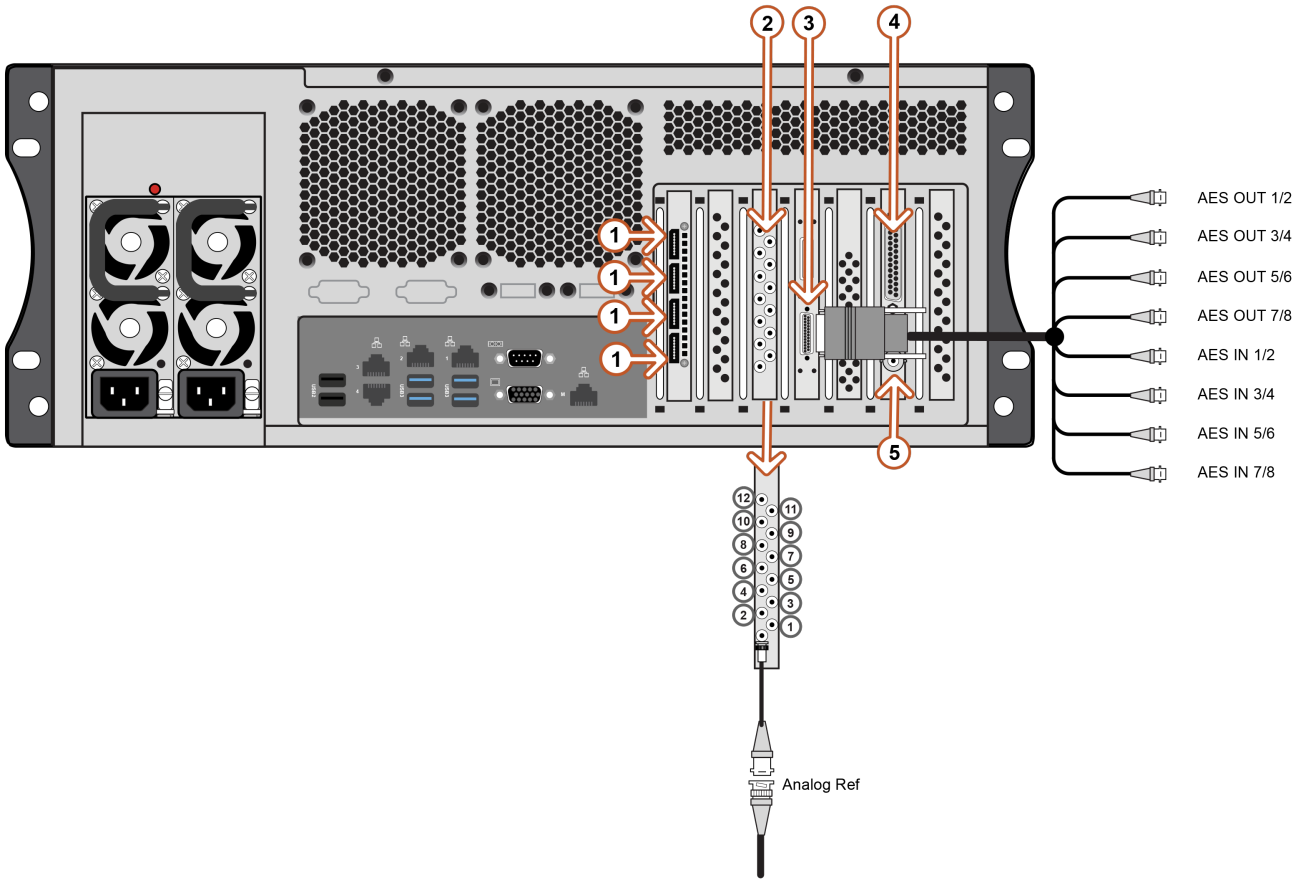


HDD Power and Status LED Area

1) **Alarm Mute Button** — The alarm mute button is not active. 2) **Temperature Alarm LED** — This LED activates when the temperature inside the HDD hardware rises above the recommended operating temperature. This LED is accompanied by an audible alarm. For the operating temperature, refer to Installation Requirements 16.	3) **Fan Failure Alarm LED** — This LED activates when a cooling fan in the HDD hardware has failed and requires replacing. This LED is accompanied by an audible alarm. 4) **HDD Failure Alarm LED** — This LED activates when one or more system drives in the HDD hardware has failed. This LED is accompanied by an audible alarm.

Rear Input/Output Connections (Base)

The following diagram displays the **Input/Output** portion of the XPression 4RU SDI system. Individual components are described in the legend below the diagram.



XPression 4RU Base Rear Input/Output Connections

1) **Display Ports** — Four display ports provide output for computer monitors. Ensure the correct display port to DVI adapters are used (DVI-D or DVI-I).
2) **Matrox Video I/O** — Provides 12 HD-BNC video inputs and outputs, as well as an analog reference point.

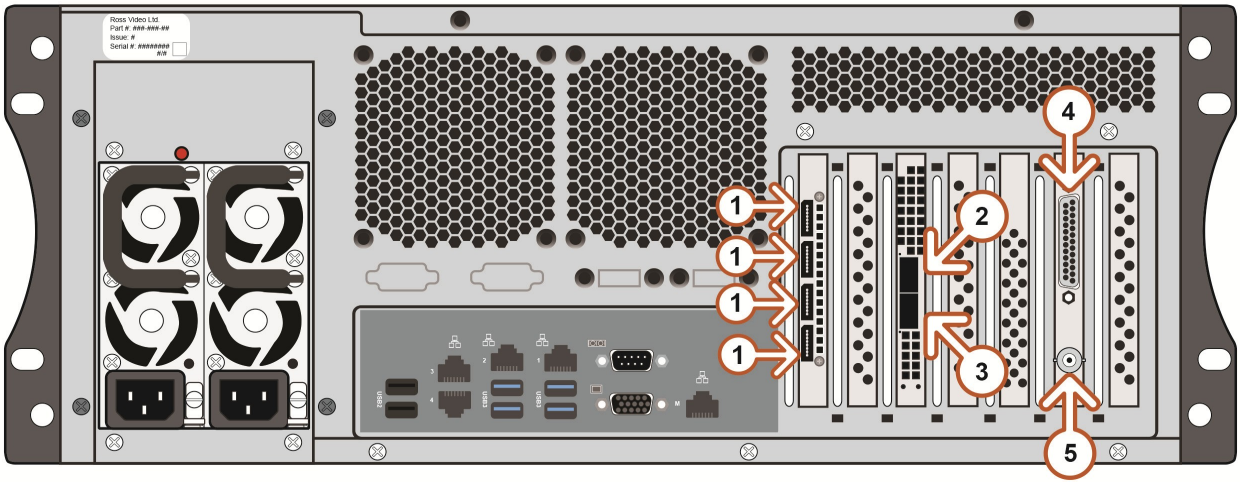
   Refer to Appendix B: Matrox Video Inputs and Outputs 58 for further information.
3) **Matrox Audio Breakout Cables** — Provides 8 AES audio pairs (1/2 to 15/16). You can add a second breakout cable for AES 17/18 to AES 31/32.

   Refer to Appendix B: Matrox Audio Breakout Cable 57 for further information.
4) **GPI Port** — DB25 GPI I/O port supports a total of 12 GPI inputs and 12 GPI outputs.

   Refer to Appendix A: GPI I/O Port Pinouts 53 for further information.
5) **LTC Input BNC** — Used as a Linear Timecode source.

Rear Input/Output Connections (IP)

The following diagram displays the Input/Output portion of the XPression 4RU IP-D25 system. Individual components are described in the legend below the diagram.



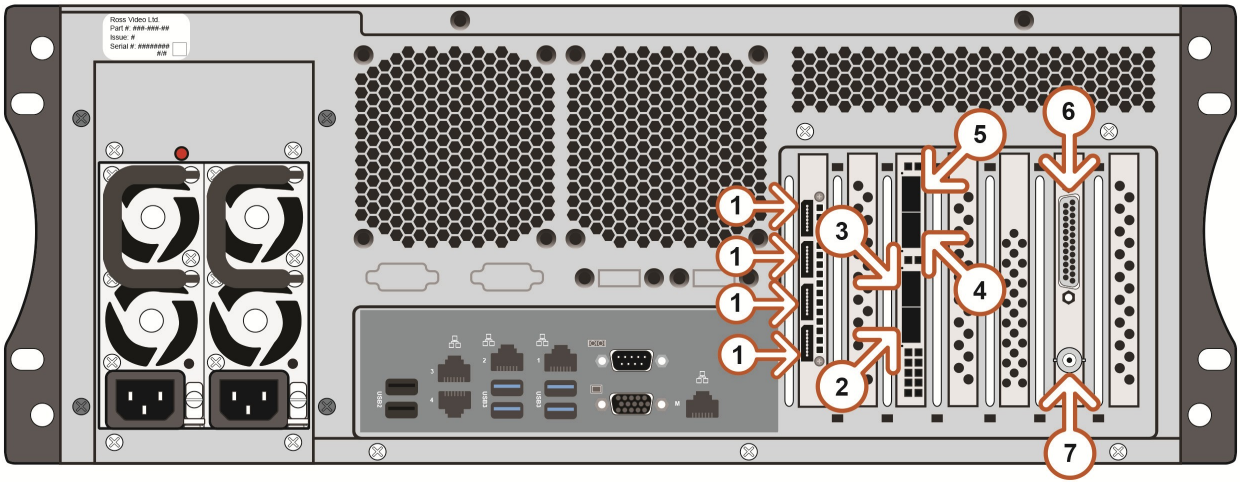
XPression 4RU IP-D25 Rear Input/Output Connections

1) **Display Ports** — Four display ports provide output for computer monitors. Ensure the correct display port to DVI adapters are used (DVI-D or DVI-I).
2) **SFP Cage 1** — Connection for a small form-factor pluggable (SFP) device for attaching a networking cable.
3) **SFP Cage 2** — Connection for a small form-factor pluggable (SFP) device for attaching a networking cable, when using redundancy.
4) **GPI Port** — DB25 GPI I/O port supports a total of 12 GPI inputs and 12 GPI outputs.

   Refer to Appendix A: GPI I/O Port Pinouts 53 for further information.
5) **LTC Input BNC** — Used as a Linear Timecode source.

Rear Input/Output Connections (IP-Q25)

The following diagram displays the Input/Output portion of the XPression 4RU IP-Q25 system. Individual components are described in the legend below the diagram.



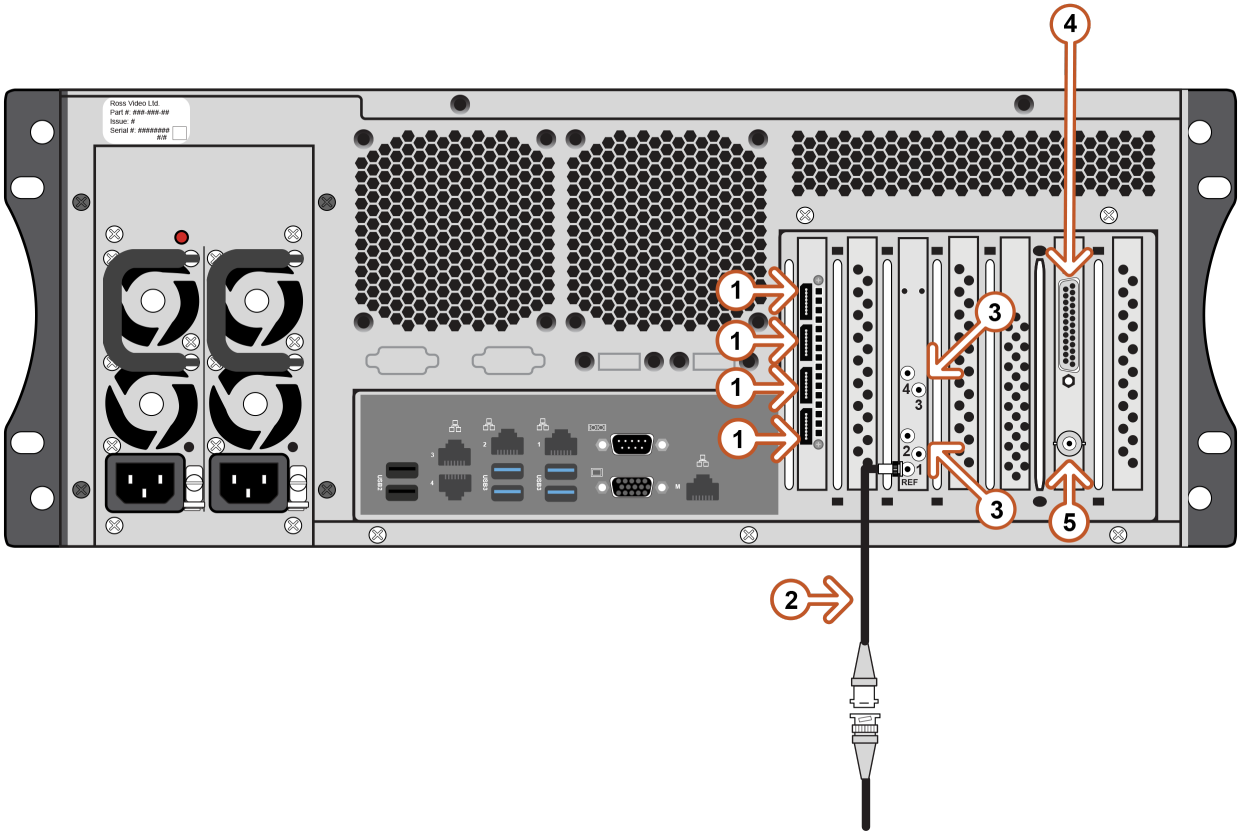
XPression 4RU IP-Q25 Rear Input/Output Connections

1) **Display Ports** — Four display ports provide output for computer monitors. Ensure the correct display port to DVI adapters are used (DVI-D or DVI-I).
2) **SFP Cage 1** — Connection for a small form-factor pluggable (SFP) device for attaching a networking cable.
3) **SFP Cage 2** — Connection for a small form-factor pluggable (SFP) device for attaching a networking cable, when using redundancy.
4) **SFP Cage 3** — Connection for a small form-factor pluggable (SFP) device for attaching a networking cable.
5) **SFP Cage 4** — Connection for a small form-factor pluggable (SFP) device for attaching a networking cable, when using redundancy.
6) **GPI Port** — DB25 GPI I/O port supports a total of 12 GPI inputs and 12 GPI outputs.

   Refer to Appendix A: GPI I/O Port Pinouts 53 for further information.
7) **LTC Input BNC** — Used as a Linear Timecode source.

Rear Input/Output Connections (12G)

The following diagram displays the Input/Output portion of the XPression 4RU 12G system. Individual components are described in the legend below the diagram.



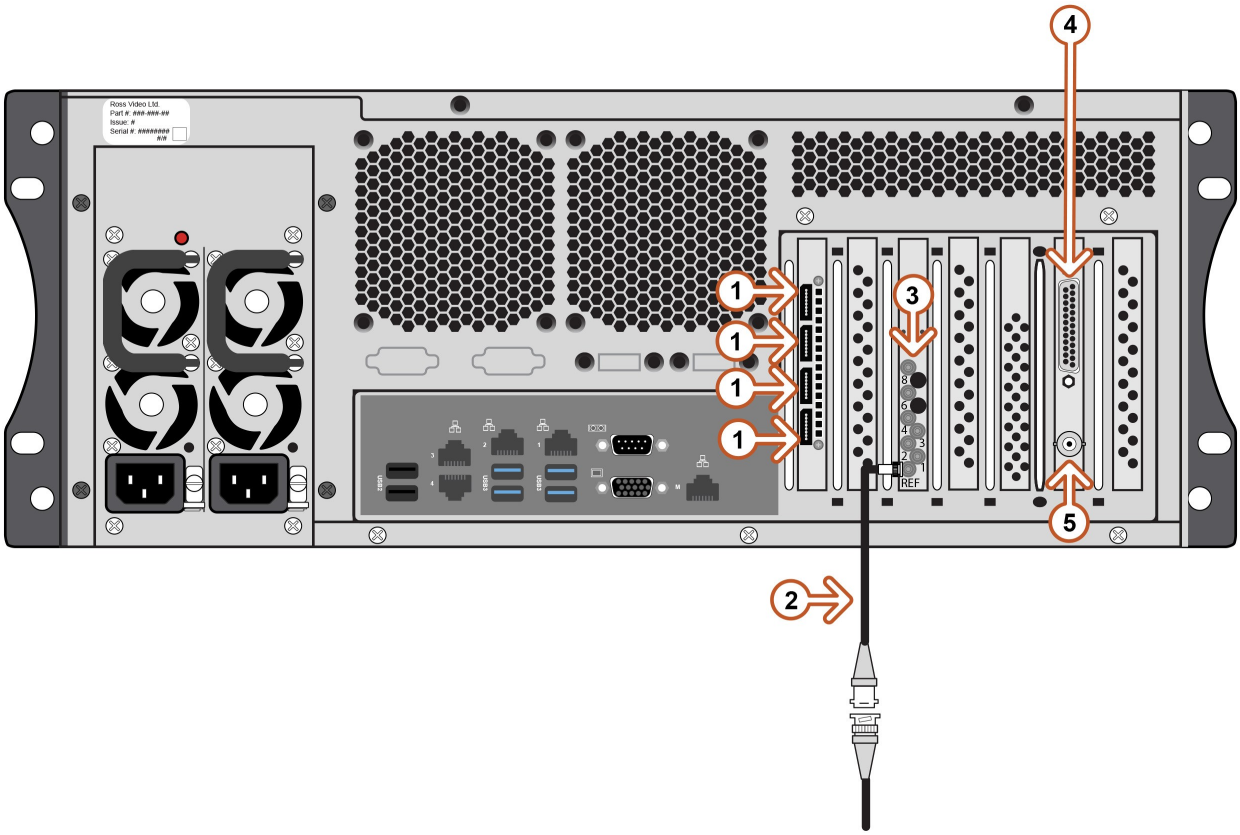
XPression 4RU 12G Rear Input/Output Connections

1) **Display Ports** — Four display ports provide output for computer monitors. Ensure the correct display port to DVI adapters are used (DVI-D or DVI-I)
2) **House Reference Genlock** — Provides an analog reference point.
3) **SDI-HD-BNC Out** — Provides 12G SDI video.
4) **GPI Port** — DB25 GPI I/O port supports a total of 12 GPI inputs and 12 GPI outputs.

   Refer to Appendix A: GPI I/O Port Pinouts 53 for further information.
5) **LTC Input BNC** — Used as a Linear Timecode source.

Rear Input/Output Connections (12G-LL)

The following diagram displays the Input/Output portion of the XPression 4RU 12G Low Latency system. Individual components are described in the legend below the diagram.



XPression 4RU 12G Low latency Rear Input/Output Connections

1) **Display Ports** — Four display ports provide output for computer monitors. Ensure the correct display port to DVI adapters are used (DVI-D or DVI-I) 2) **House Reference Genlock** — Provides an analog reference point. 3) **SDI-HD-BNC Out** — Provides 12G SDI video.	4) **GPI Port** — DB25 GPI I/O port supports a total of 12 GPI inputs and 12 GPI outputs. Refer to Appendix A: GPI I/O Port Pinouts 53 for further information. 5) **LTC Input BNC** — Used as a Linear Timecode source.

Rear Peripheral Connections

The following diagram displays the peripheral connections. Individual components are described in the legend below the diagram.

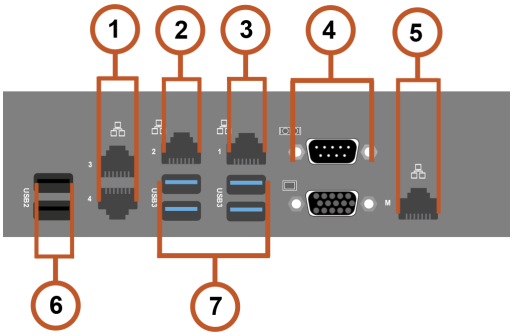


Figure 2.6 *Rear Peripheral Connections*

1) **10 GbE LAN Ports** — Use these ports to connect the XPression system to an internal network. These ports can be used for high-speed file transfer between the XPression system and other computers on the internal network.
2) **2.5 GbE LAN Port** — Use this port to connect the XPression system to an internal network. This port can be used for high-speed file transfer between the XPression system and other computers on the internal network.
3) **1 GbE LAN Port** — Use this port to connect the XPression system to an internal network. This port can be used for high-speed file transfer between the XPression system and other computers on the internal network.
4) **COM Port** — Use this port for GPI and CII command functionality.
5) **IPMI Management LAN Port** — Use this port to allow access to the baseboard management controller (BMC) over a LAN.

   For information on the IPMI LAN Port refer to Appendix C: IPMI Management LAN Port 59.

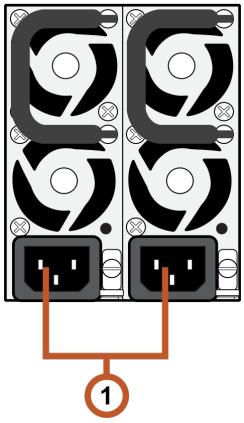
6) **USB 2.0 Ports** — Use these ports to connect peripheral devices such as a keyboard or mouse to the system. These ports can also be used to transfer media to and from USB drives.
7) **USB 3.1 Gen 1 Ports** — Use these ports to connect peripheral devices such as a keyboard or mouse to the system. These ports can also be used to transfer media to and from USB drives.

   ★Use of USB 3.1 certified cables and devices are required for USB 3.1 super-speed data rates.

Power Supplies

The XPression 4RU system has two identical hot-swappable power supply modules, located at the rear of the system on the left-hand side. Since the system requires a minimum of one power supply module to operate, only one power supply module can be hot-swapped at a time. Each power supply module can be attached to a separate power circuit to provide redundancy in case of power failure.

The diagram displays the parts of the power supply modules for the XPression 4RU system. Individual components are described in the legend below the diagram.



XPression 4RU System Power Supply Module

1) **A/C Power Cord Connection** — Connect the female end of the power cord to this connector, and the male end to a power circuit.

Hardware Installation

This chapter provides installation instructions for the XPression 4RU system hardware.

The topics described in this chapter are:

Unpacking the Unit

Unpack the XPression 4RU system from the shipping container(s), and check the contents against the packing list to ensure all items are included. If any items are missing or damaged, contact your sales representative or Ross Video for assistance.

For safety and regulatory information, refer to the *Important Safety and Regulatory Notices* document that came with the system.

Installation Requirements

Note the following installation requirements:

- **Ambient Temperature** — Install the equipment in an environment compatible with the equipment's ambient temperature (Tma). If installed in a closed or multi-rack assembly, the ambient operating temperature of the rack environment may be greater than that of the room.

  This equipment has an operating temperature range of 0º C (32º F) to 35º C (95º F). The ambient temperature in the rack shall not exceed this temperature range.

- **Reduced Air Flow** — When installing the equipment in a rack, or as a desktop/tower, ensure that there is sufficient airflow to safely operate the equipment.

  A minimum clearance of 0.25 in (6.35 mm) on each side of the equipment must be maintained after installation in the rack.

- **Mechanical Loading** — Equipment must be evenly balanced when loaded into a rack to ensure the stability of the unit. Uneven mechanical loading is hazardous.

- **Circuit Overloading** — Check the nameplate rating of the equipment when connecting to a supply circuit. Overloading the circuits may be hazardous to the overcurrent protection and supply wiring.

- **Reliable Earthing** — Maintain reliable earthing of rack and desktop/tower mounted equipment. Give particular attention to supplementary supply connections (e.g., use of power strips).

Installing the System in an Equipment Rack

The XPression 4RU system is designed to be mounted in a 19 in (48.3 cm) wide equipment rack using the slide rails supplied in the rack mount kit.

- **Rack Units** — 4 RU
- **Width** — 16.9 inches (43.0 cm), 19 inches (48.3 cm) including handles
- **Height** — 6.9 inches (17.8 cm)
- **Depth** — 23.3 inches (59.2 cm), 24.4 inches (62 cm) including handles

The slide rails must be installed onto the XPression 4RU system before it can be mounted in an equipment rack. Instructions for mounting the slide rails onto the XPression 4RU system and equipment rack are included with the rack mount kit in the XPression 4RU system shipping box.

★Failure to install the XPression 4RU system into an equipment rack using the supplied rack mount kit will void the XPression 4RU system warranty.

Attaching the Cables

Follow the instructions below to attach the cables to the XPression 4RU system.

To attach the cables to the XPression 4RU system:

1. On the back of the XPression system, connect the supplied line cords to the 2 power supplies, then plug the line cord(s) into a grounded outlet.

   The power supplies are auto-sensing and can accept line voltages from 100 through 240 VAC. The XPression system is equipped with 2 power supplies in a 1+1 redundant configuration. One power supply is required to run the XPression system.

2. Plug the supplied **USB keyboard** into a **USB port** on the back of the unit.
3. Plug the supplied **USB mouse** into a **USB port** on the back of the unit.
4. Connect a monitor (customer supplied), to a **display port**.

   Ensure the correct display port to DVI adapters are used (DVI-D or DVI-I). A monitor can also be connected to the USB-C port using a USB-C to display port adapter.

   Additional monitors can be connected to either of the other 2 display ports to provide additional space for virtual preview channels, custom applications, web page capture, and more.

   If using analog output, connect a monitor to a display port connector using a display port to VGA converter.

   ★KVM extenders (customer supplied) are required when the XPression system monitor, keyboard, and mouse are located remotely from the rack room.

5. Plug an Ethernet cable from the internal network into one of the **GigE Ethernet** ports.

   XPression systems can run standalone or accept a network connection if required to connect to a production network. XPression systems also use this TCP/IP network connection to support the Smart GPI Feature.

6. Connect the Genlock signal cable to the **REF IN** (reference in) HD-BNC connector (SDI, 12G, and 12G-LL only).

   This connection is required to lock the XPression system to the video timing of the facility. The XPression system supports the following types of Genlock signal:

   - **Analog Blackburst** — a composite color video signal comprised of sync, color burst, and black video. Also called “color black”, “house sync”, or “house black”. Typically used as the house reference synchronization signal.
   - **Tri-Level Sync** — a 3-level pulse synchronization signal used in high definition systems.

7. In the **AUDIO OUT** area, connect the audio output cables to the **AES3id BNCs** (SDI only).

   After the XPression system is up and running, audio outputs can be assigned to each video channel.

   The XPression system provides AES3ed 75 ohm BNC outputs. If AES3 110 ohm connections are required, optional GearLite adapters are available from Ross Video.

   If your facility requires analog outputs, additional outboard digital to analog conversion equipment is available from Ross Video.

8. The video connections are different, depending on the XPression system.

   - For the **XPression SDI** system, connect the **HD-BNC** end of the pigtail cables to HD-BNC connectors **1** to **8** and attach the **SDI** cables to the **BNC** end of the pigtails according to their required destination.

See the *XPression User Guide* or **Help** file for information about configuring the key and fill for the **HD-BNC** connectors. The default configuration is displayed in the table in Appendix B: Matrox Video Inputs and Outputs 58. Not all **HD-BNC** connectors will be active depending on the XPression software edition.

- For the **XPression IP-D25** and **IP-Q25** system, insert **pluggable SFP connectors** into the **SFP** cages and attach the networking cables to the connectors.
- For the **XPression 12G** and **12G Low Latency** system, connect the **HD-BNC** end of the pigtail cables to **HD-BNC** connectors **1** to **4** and attach the **SDI** cables to the **BNC** end of the pigtails according to their required destination. See the *XPression User Guide* or **Help** file for information about configuring the **Key** and **Fill** for the **HD-BNC** connectors.

If your facility requires analog outputs, additional outboard digital to analog conversion equipment is available from Ross Video.

Powering the System Up and Down

This section describes how to power the system up and how to shut it down.

Powering Up the System

Once the cables are attached and the system has been connected to a power source, you can power up the XPression 4RU system.

To power up the system:

1. Open the front door of the XPression 4RU system.
2. Press the **Power** button to begin the boot procedure.
3. Close the front door to protect the system from dust.

Powering Down the System

Whenever the XPression 4RU system needs to be powered down, use the following procedure.

To power down the system:

- From the **Start** menu, select **Power** > **Shut down**.

  The XPression 4RU system shuts down.

Hard Drive Maintenance

XPression utilizes a hardware-based Redundant Array of Independent Drives (RAID) system hosted by a Broadcom Dedicated Raid Card. This setup relies on the Windows operating system and host processor to perform all of the RAID functionality.

Warning — *Always use proper Windows shutdown procedure. NEVER HARD POWER OFF THE UNIT. Hard shutdown may cause failures in the RAID, taking one or more drives offline.*

The topics described in this chapter are:

LSI Storage Authority

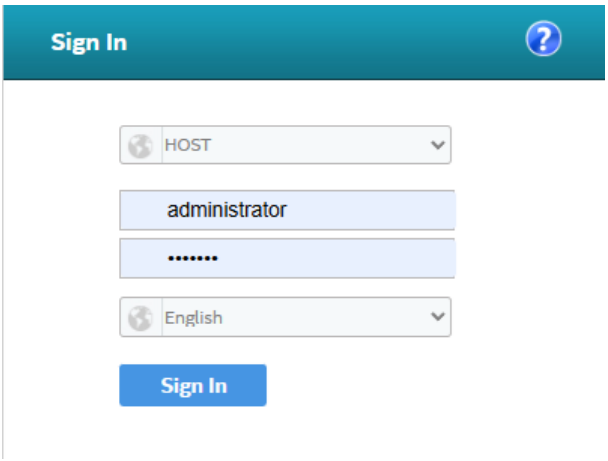
The LSI Storage Authority is used to manage, maintain, and monitor the XPression 4RU server RAID array.

Use the following procedure to open the LSI Storage Authority.

To open the LSI Storage Authority:

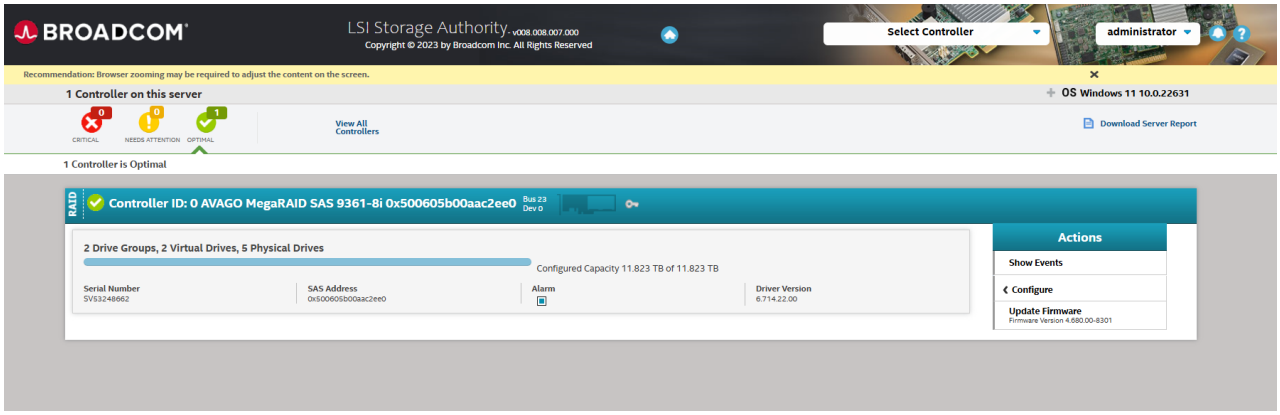
1. In **Windows**, double click the **Launch LSA** () desktop icon.

   The **Login** window opens.



3. Use an administrator account to login.
4. Select **Sign In**.

   The **Main Screen** opens.



RAID Array Drive Replacement

If a single drive fails in the XPression RAID array, the system is protected from data loss. Replace the failed drive as soon as possible and rebuild the data from the failed drive onto a new drive, to restore the system to fault tolerance.

In the **LSI Storage Authority**, failed virtual drives are highlighted by a red bar indicating critical issue(s). The Device/Persistent ID column will indicate "missing".

Rebuilding a drive consumes bandwidth on the XPression server and is ideally done during off hours, or when the server has a low workload.

★To prevent accidental data loss, back up all data before replacing a drive in the XPression RAID array.

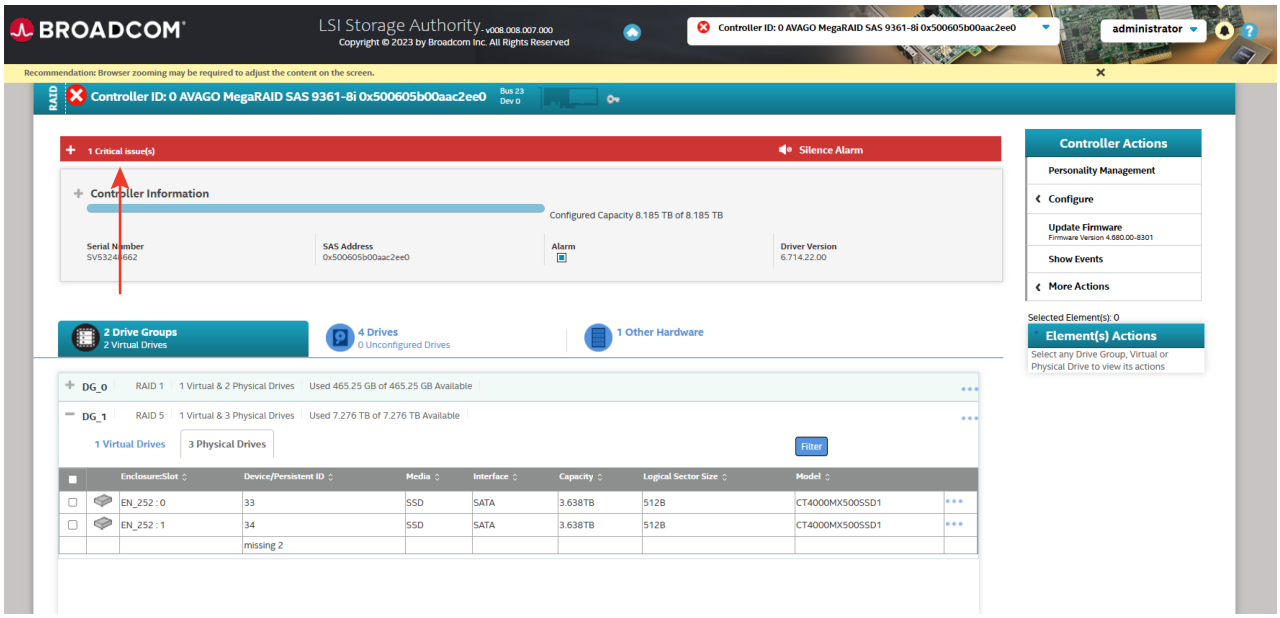
★Depending on the server workload, rebuilding a drive could take up to 3 hours to complete.

To rebuild a failed drive used by a virtual drive:

1. Open the **LSI Storage Authority**.

   For instructions on opening the LSI Storage Authority, refer to the procedure To open the LSI Storage Authority 22.

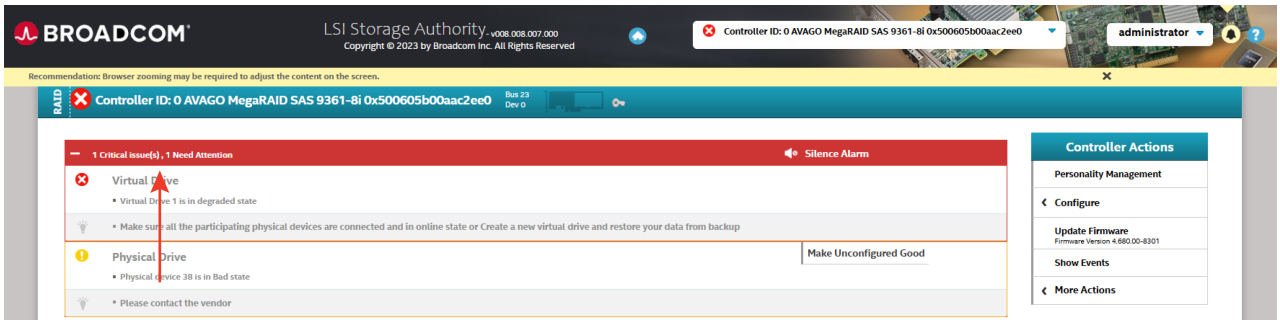
   A failed virtual drive will be indicated by a red bar and a notice of a critical issue or issues.



2. Insert a new drive.

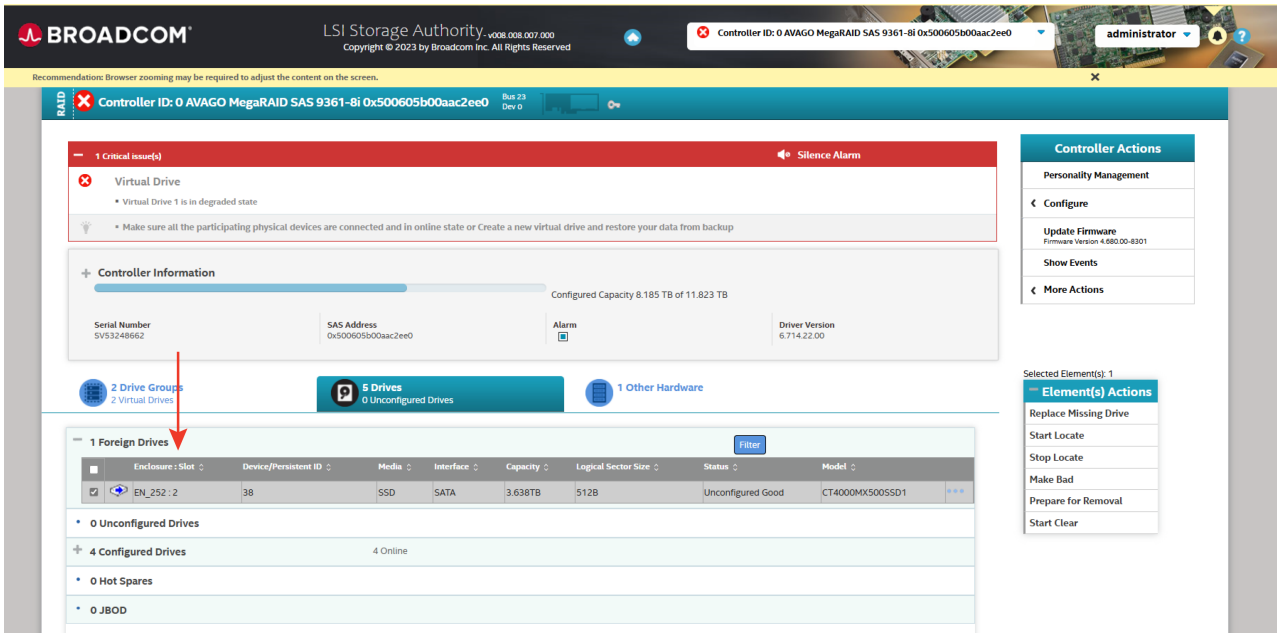
   For instructions on removing and replacing drives, refer to the section Replacing a System Drive 27.

   The new physical drive will appear as if in a critical state.



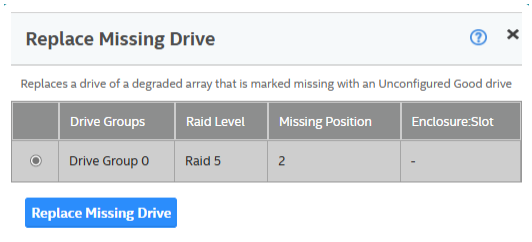
3. Select **Make Unnconfigured Good**.

   The new drive will appear as a foreign drive.



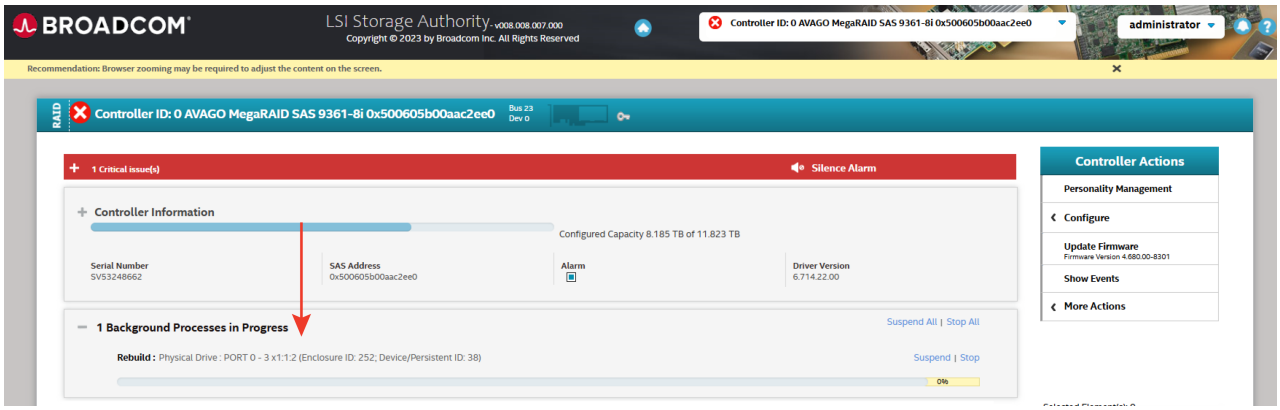
4. Select the checkbox for the drive and in the **Element(s) Actions** select **Start Clear**.
5. Once cleared, in the **Element(s) Actions** select **Replace Missing Drive**.

   The **Replace Missing Drive** window opens.

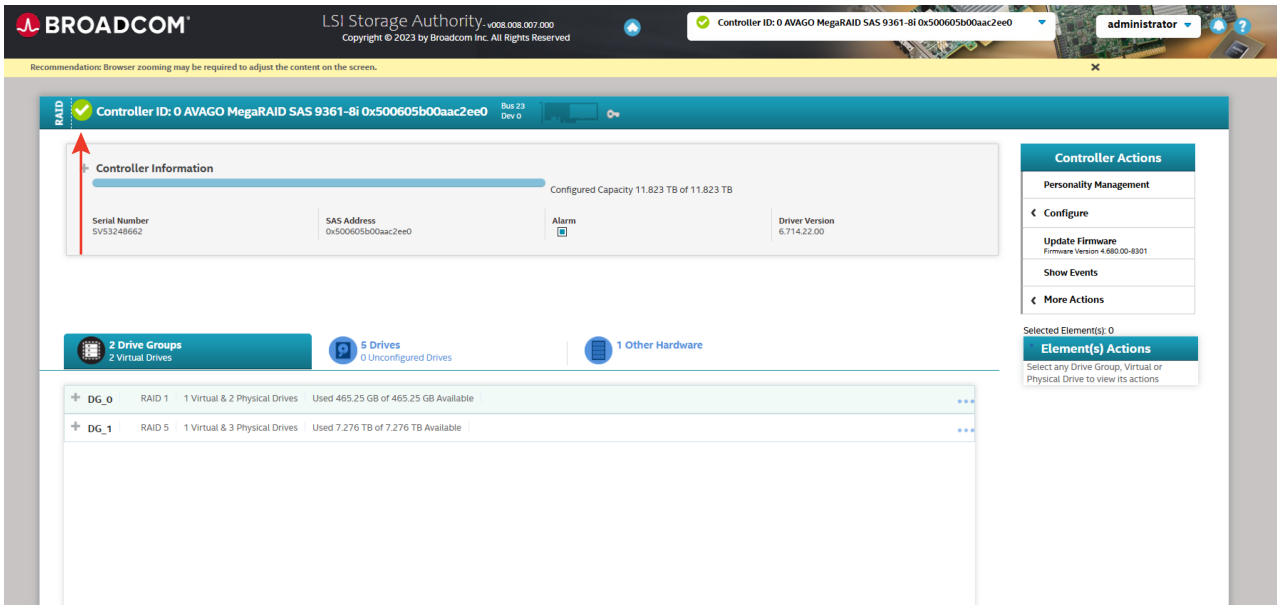


4. Select **Replace Missing Drive**.

   The drive begins to rebuild.



   Once the drive is rebuilt, the drive will indicate that it is in a good state.



For more information on:

- opening the LSI Storage Authority, refer to the procedure To open the LSI Storage Authority 22.

Hardware Maintenance

This chapter provides information on maintaining the XPression base system.

The topics described in this chapter are:

★This section uses images from the XPression 4RU SDI system for demonstrative purposes.

Caution — *Danger of explosion if the system lithium battery is incorrectly replaced. Replace **only** with the same or equivalent type of battery recommended by the manufacturer. A qualified service person must dispose of the used batteries according to the manufacturer's instructions.*

Replacing a System Drive

The XPression system drives are capable of being hot-swapped while the system is running. Keep in mind the following when hot-swapping system drives.

★When hot-swapping system drives, only one system drive can be removed at any time.

Protective Earth — *Static discharge can cause serious damage to sensitive devices. Avoid handling any hard drive in high static environments such as carpeted areas and when synthetic fiber clothing is worn. Touch the chassis to dissipate static charge before removing hard drives from the system, and exercise proper grounding precautions when working around the XPression system.*

This chapter describes how to remove and replace a system drive.

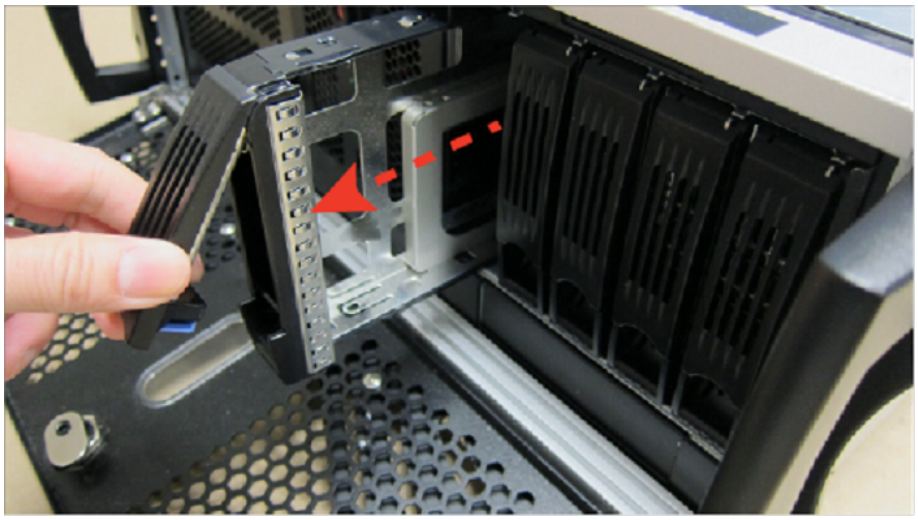
To remove a system drive:

1. Open the front door of the XPression system.
2. On the front of the drive sled, push the blue release button up to release the black handle.

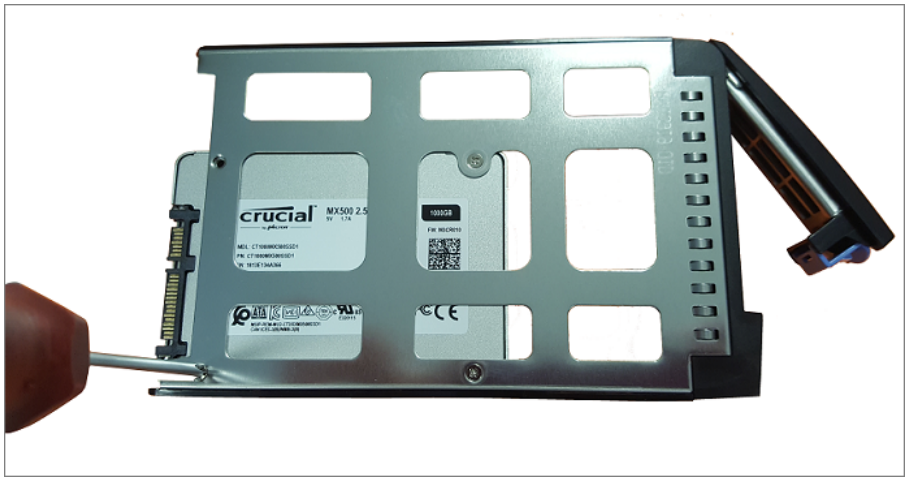
The drive sled is released from the drive bay.

3. Gently pull the drive sled out of the drive bay using the black handle.

   As the drive sled is pulled from the drive bay, place a hand underneath it for support.



4. Using a Phillips head screwdriver, remove the 4 screws from the drive sled.



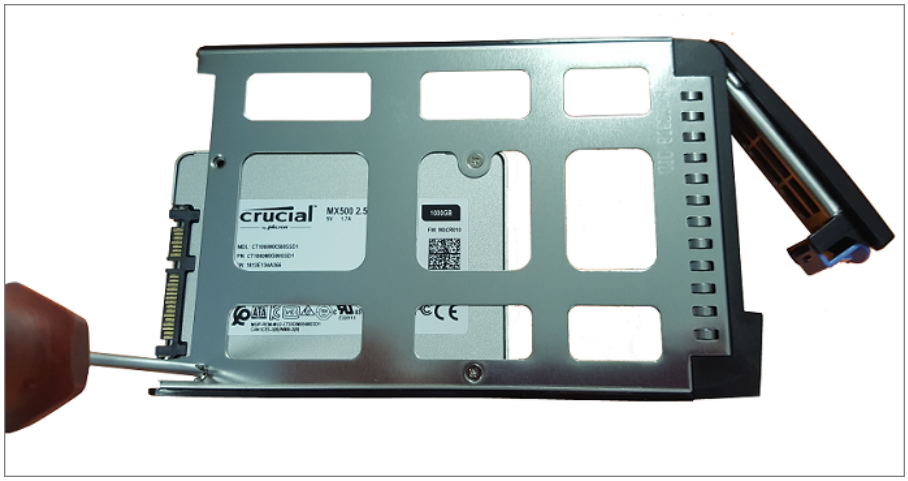
5. Gently remove the drive from the drive sled, placing it to one side on a flat surface.

   The drive sled is now empty and ready for the installation of a new drive.

To replace a system drive:

1. Place the new drive onto the sled with the label facing downwards and the connectors at the open end of the sled.

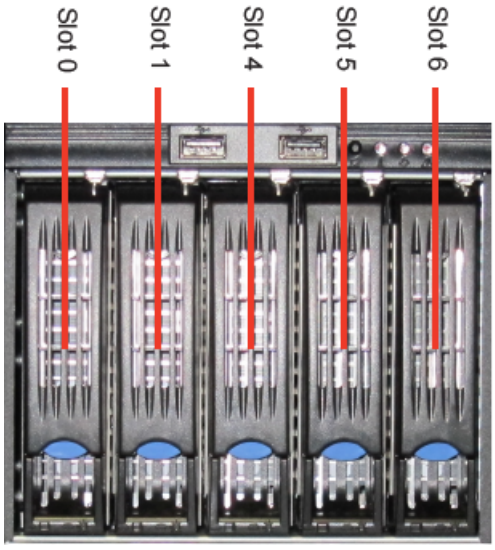
2. Turn the sled over and align the 4 screw holes on the drive with the screw holes on the sides of the sled.
3. Insert the 4 screws into the screw holes, and tighten using a Phillips head screwdriver.



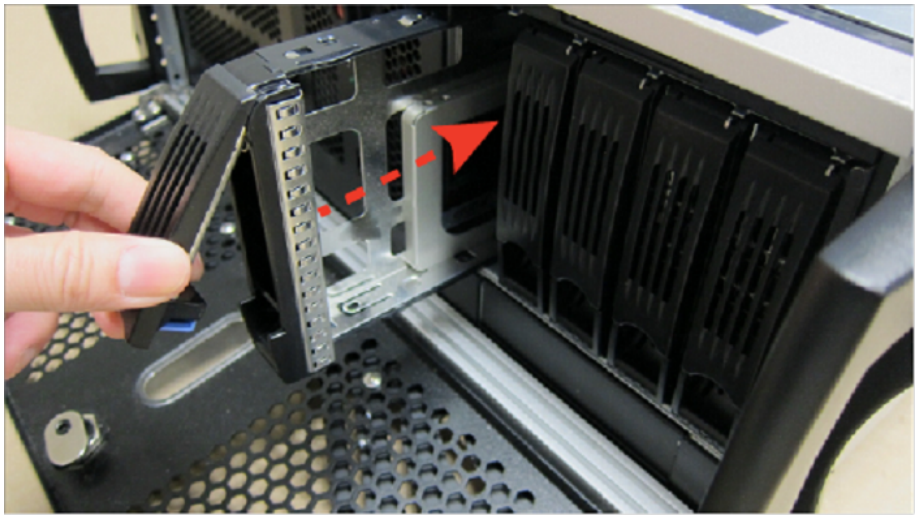
The drive is now ready to be re-inserted into the XPression system.

4. Use the drive bay map below to locate the drive in the XPression system that matches the drive sled being returned to the XPression system.

   Slots 0 and 1 are system drives and slots 4, 5, and 6 are media drives.



5. Align the drive sled so that the rear connector area is at the bottom of the drive sled and facing the correct drive bay for the drive sled.
6. On the front of the drive sled, push the blue release button up to release the black handle.
7. Slide the drive sled into the drive bay.



8. Push the drive sled firmly into place and close the black lever flush to the drive sled face to lock the drive into the drive bay.

The blue LED beneath the drive sled activates to indicate that the drive is connected to the system.

9. Close the front door of the XPression system.

For more information on:

- hard drive replacement, refer to the section: Hard Drive Maintenance 21.

Removing and Reinstalling the Top Panel

The top panel of the XPression system can be removed to gain access to internal components such as fans and cards. This topic describes how to first remove, and then reinstall the top panel of the XPression system.

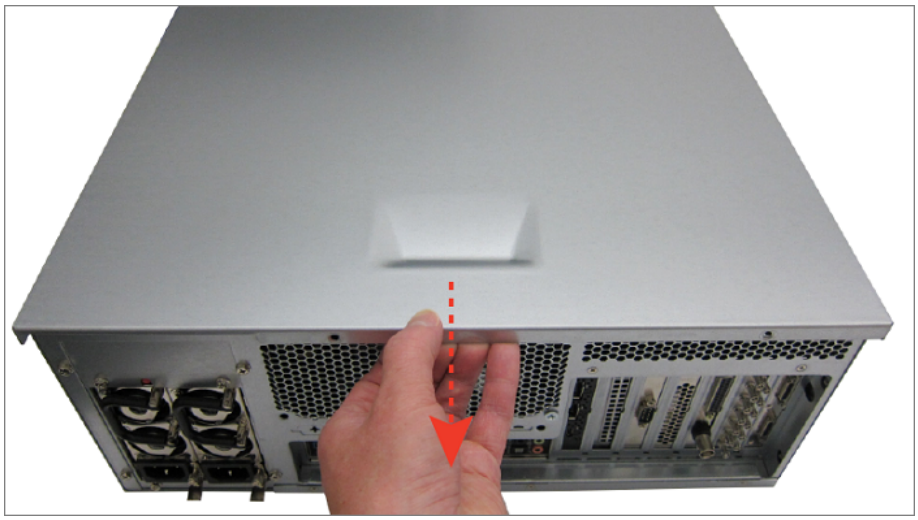
Caution — *Do not operate the XPression 4RU system with the top panel removed.*

To remove the top panel of the XPression 4RU system:

1. Shut down the XPression system, remove all cabling, remove the system from the equipment rack, and place the system on a flat, non-slip surface.
2. Remove the 2 thumbscrews at the back of the XPression system.

   Set the 2 thumbscrews aside, as they will be needed to replace the top panel.

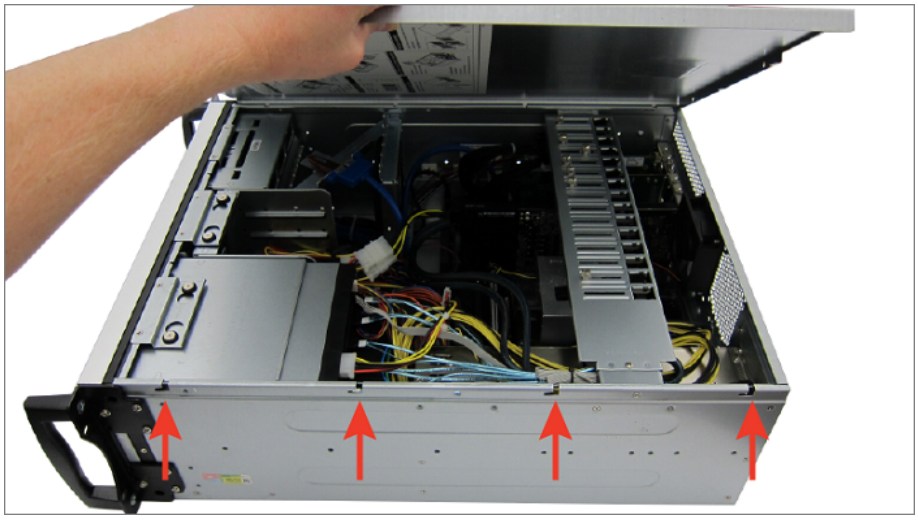
3. Gently pull the top panel back towards the rear of the unit, creating a gap between the top panel of the unit and the front of the chassis.



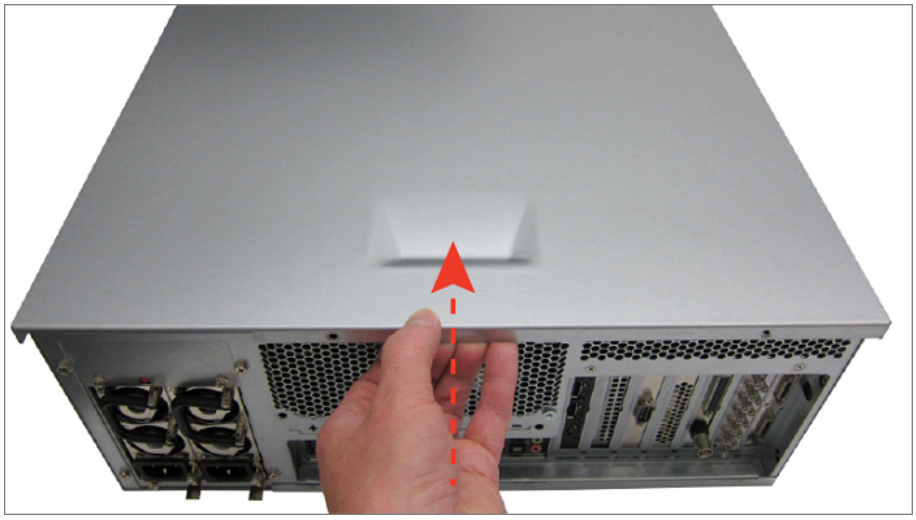
4. Lift the top panel off the chassis.

To reinstall the top panel:

1. Place the top panel onto the top of the XPression system as follows:
   a. Face the sides of the top panel down around the sides of the system.
   b. Line up the 4 nubs on the inside of the sides of the top panel with the L-shaped grooves on the sides of the system.



2. Gently slide the top panel into place, until a clicking noise is heard and the top panel is flush to the front top of the XPression system.



3. Insert and tighten the 2 thumbscrews into the back of the XPression 4RU system.

Replacing Cooling Fans

The XPression system has 5 cooling fans. There are 4 cooling fans in the XPression system that can be replaced if they fail, the front chassis fan, the inside chassis fan, the rear chassis fan and the system drive fan.

See the following topics for further information:

Replacing the Front Chassis Fan 36

Replacing the Inside Chassis Fan 42

Replacing the Rear Chassis Fan 44

Replacing the System Drive Fan 46

There are 2 fans on the CPU cooler. To replace the CPU cooler fan, please contact Ross Video Technical Support for assistance.

★The XPression system must be shut down when replacing the cooling fans.

Protective Earth — *Static discharge can cause serious damage to sensitive devices. Avoid handling any hard drive in high static environments such as carpeted areas and when synthetic fiber clothing is worn. Touch the chassis to dissipate static charge before removing hard drives from the system, and exercise proper grounding precautions when working around the XPression system.*

If a fan fails, the fan failure alarm will trigger. Refer to the section Power LED Area 6 for further information on XPression system hardware alarms.

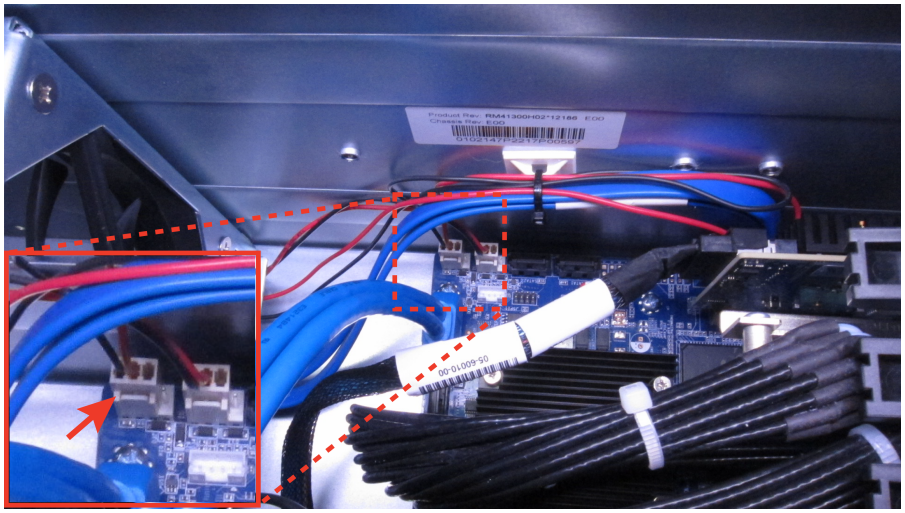
Replacing the Front Chassis Fan

This section describes how to remove and reinstall the front chassis fan.

To remove the front chassis fan:

1. Shut down the XPression system, remove all cabling, remove the system from the equipment rack, and place the system on a flat, non-slip surface.
2. Remove the top panel from the XPression system.

   Refer to the section Removing and Reinstalling the Top Panel 32 for instructions.
3. Disconnect the front chassis fan power supply wire.

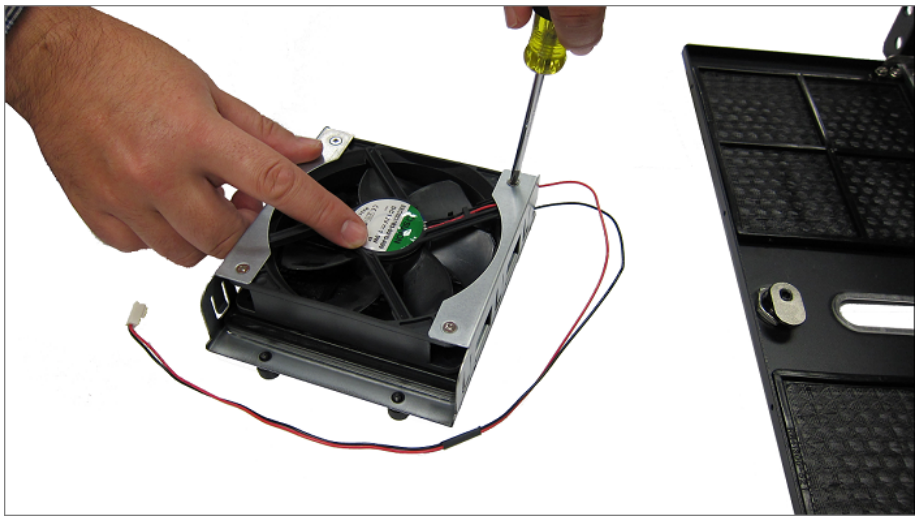


4. Open the front door of the XPression system.

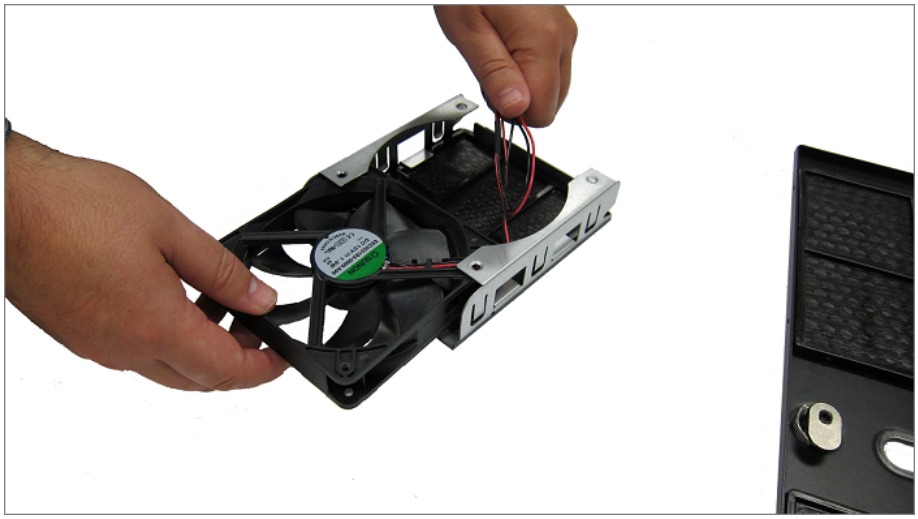
5. Loosen the 2 thumb screws on the front fan cage.

6. Remove the front fan cage from the XPression system.

7. Using a Phillips head screwdriver, remove the 4 screws from the fan cage.

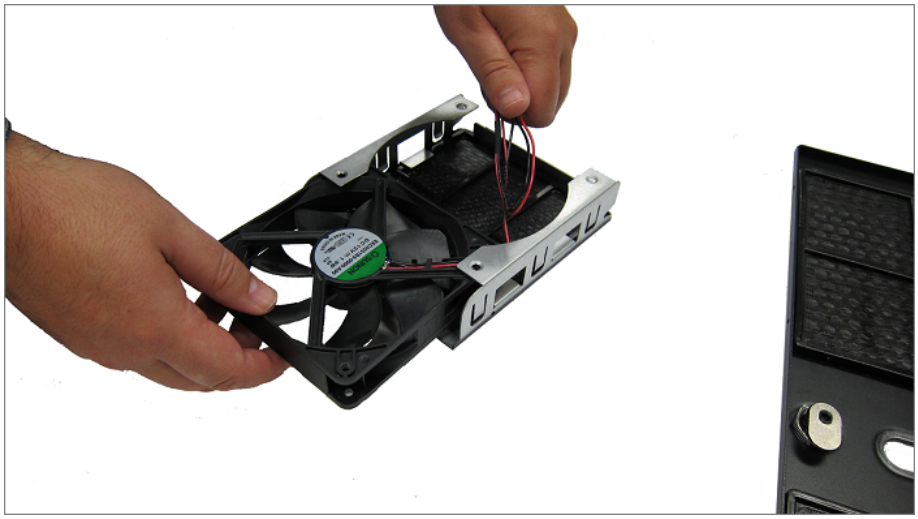


8. Remove the fan from the fan cage.

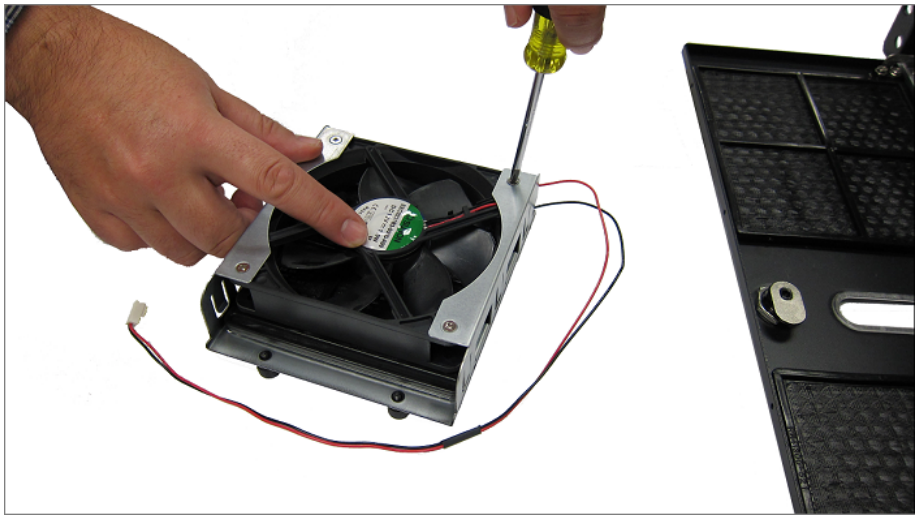


To install the front chassis fan:

1. Insert the new fan into the fan cage.



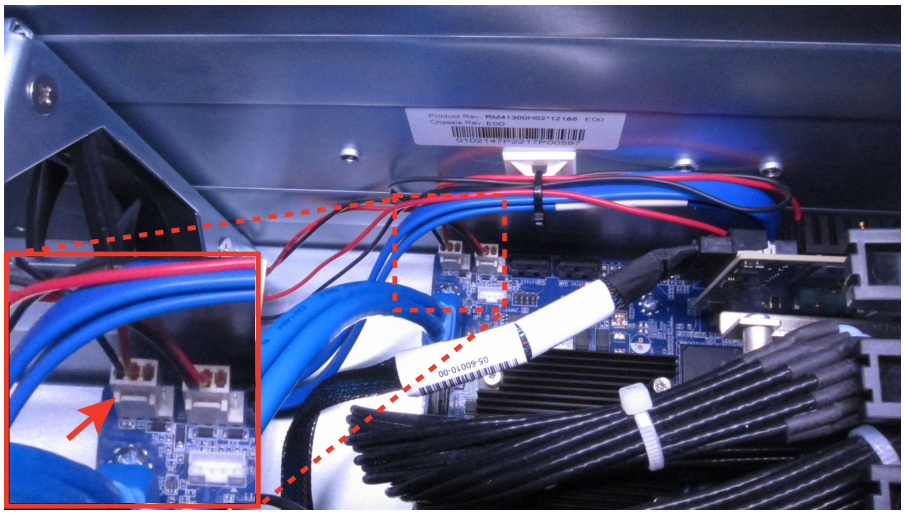
2. Insert and tighten the 4 Phillips head screws into the screw holes.



3. Insert the front fan cage into the XPression system with the fan wire inside the XPression chassis.

4. Tighten the 2 thumb screws on the front fan cage.

5. Close the front door of the XPression system.
6. Connect the front chassis fan power supply wire.



7. Replace the top panel.

   Refer to the section Removing and Reinstalling the Top Panel 32 for instructions.

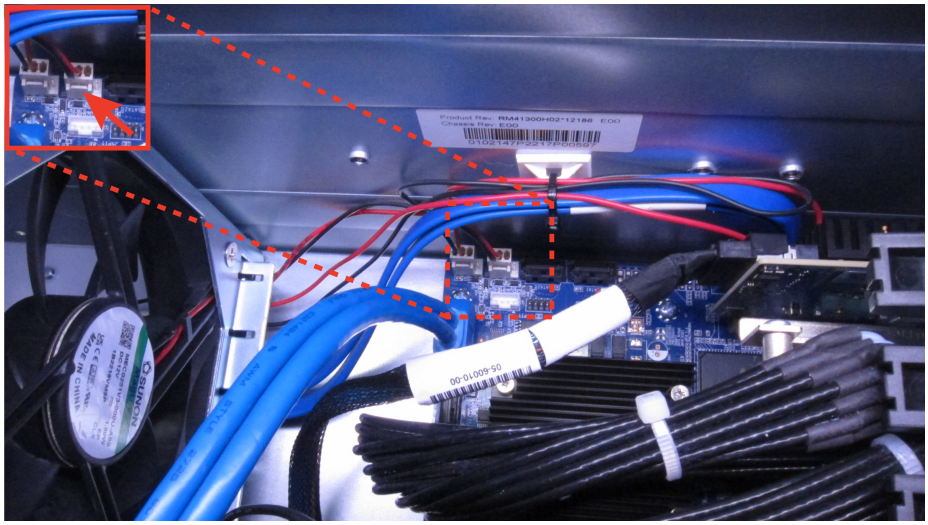
Replacing the Inside Chassis Fan

This section describes how to remove and reinstall the inside chassis fan.

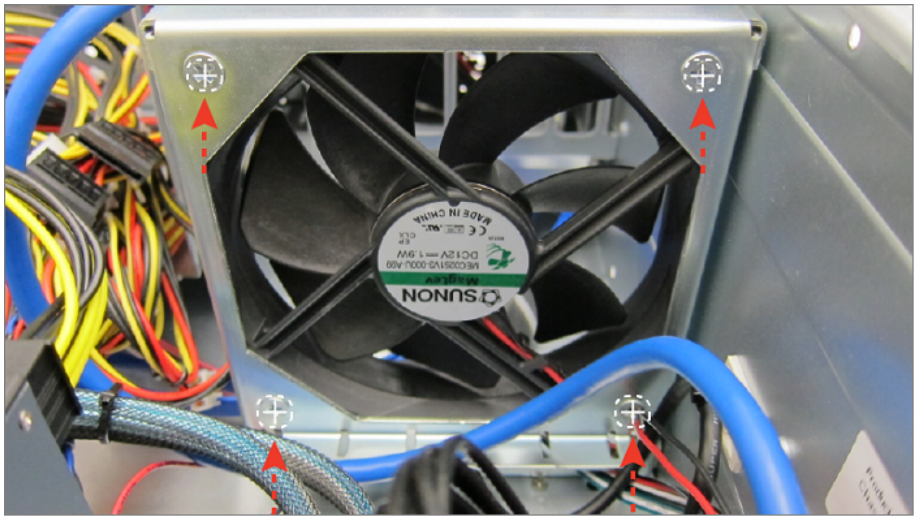
To remove the inside chassis fan:

1. Shut down the XPression 4RU system, remove all cabling, remove the system from the equipment rack, and place the system on a flat, non-slip surface.
2. Remove the top panel from the XPression system.

   Refer to the section Removing and Reinstalling the Top Panel 32 for instructions.
3. Disconnect the inside chassis fan power supply wire.



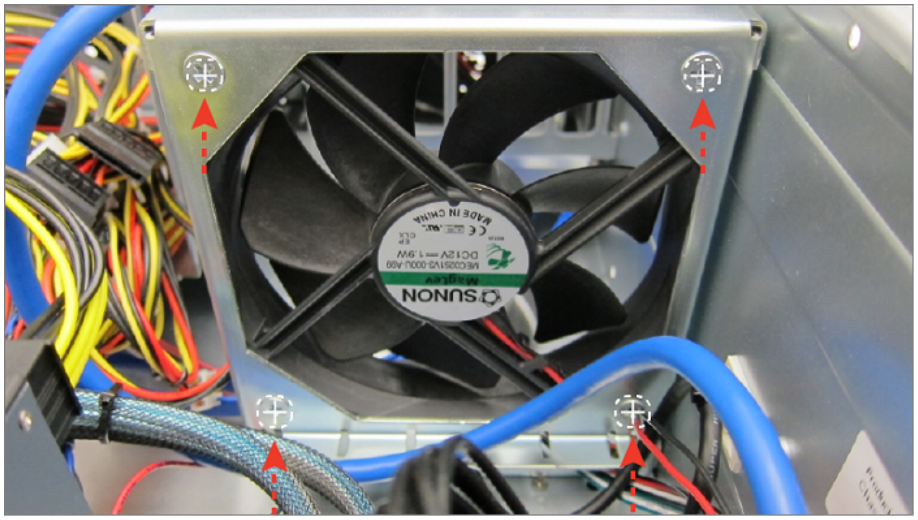
4. Using a Phillips head screwdriver, remove the 4 screws from the fan cage.



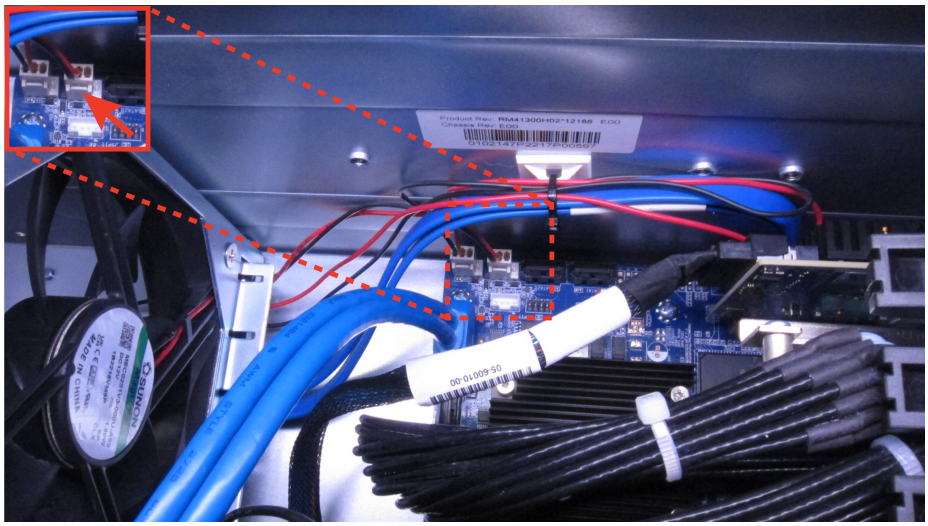
5. Remove the fan from the cage.

To install the inside chassis fan:

1. Insert the fan into the fan cage.
2. Using a Phillips head screwdriver, insert the 4 screws into the fan cage, and tighten.



3. Connect the inside chassis fan power supply wire.



4. Replace the top panel.

   Refer to the section Removing and Reinstalling the Top Panel 32 for instructions.

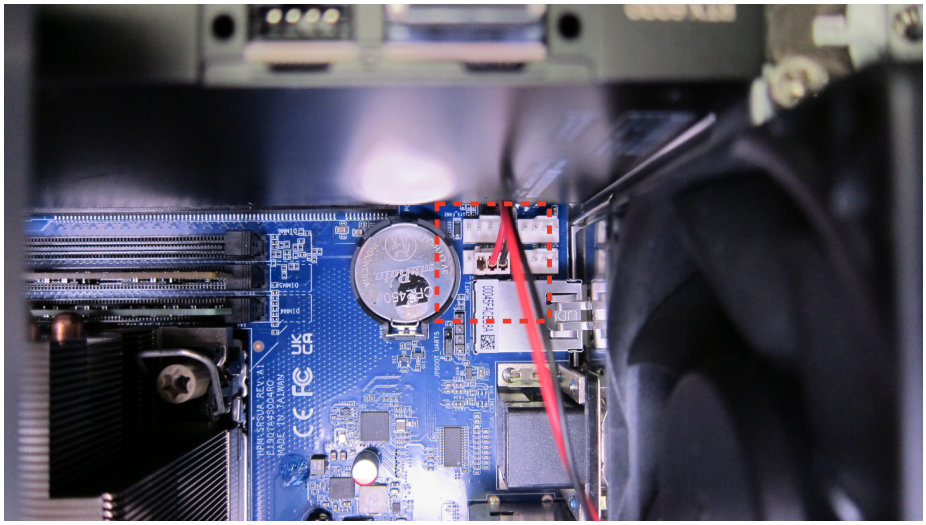
Replacing the Rear Chassis Fan

This section describes how to remove and reinstall the inside chassis fan.

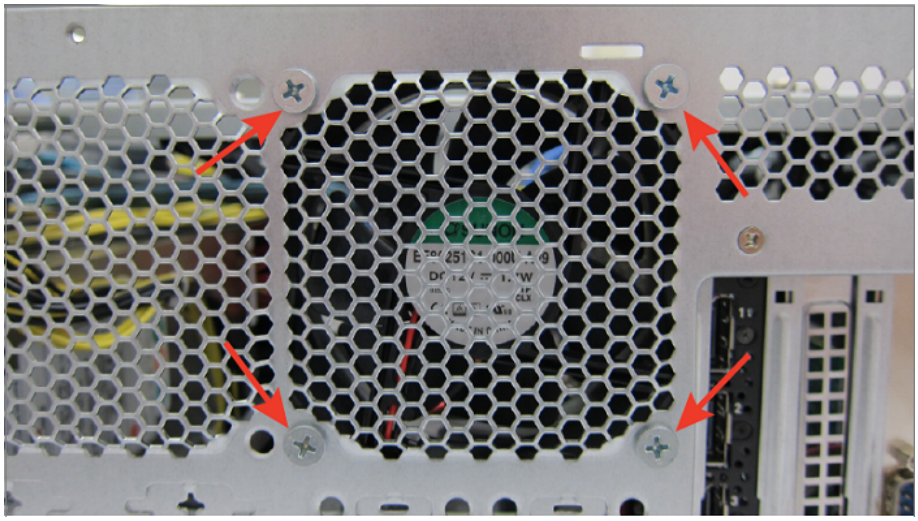
To remove the inside chassis fan:

1. Shut down the XPression 4RU system, remove all cabling, remove the system from the equipment rack, and place the system on a flat, non-slip surface.
2. Remove the top panel from the XPression system.

   Refer to the section Removing and Reinstalling the Top Panel 32 for instructions.
3. Disconnect the rear chassis fan power supply wire.



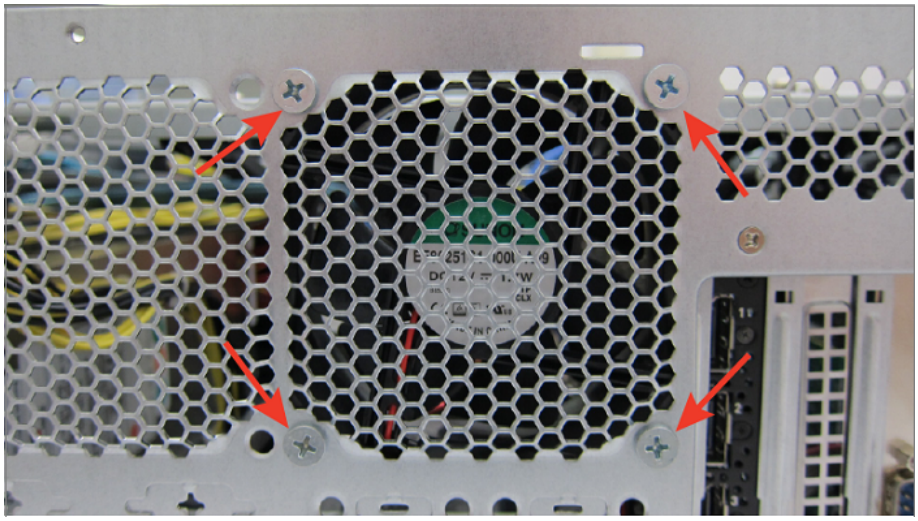
4. At the rear of the chassis, use a Phillips head screwdriver to remove the 4 screws from the fan cage.



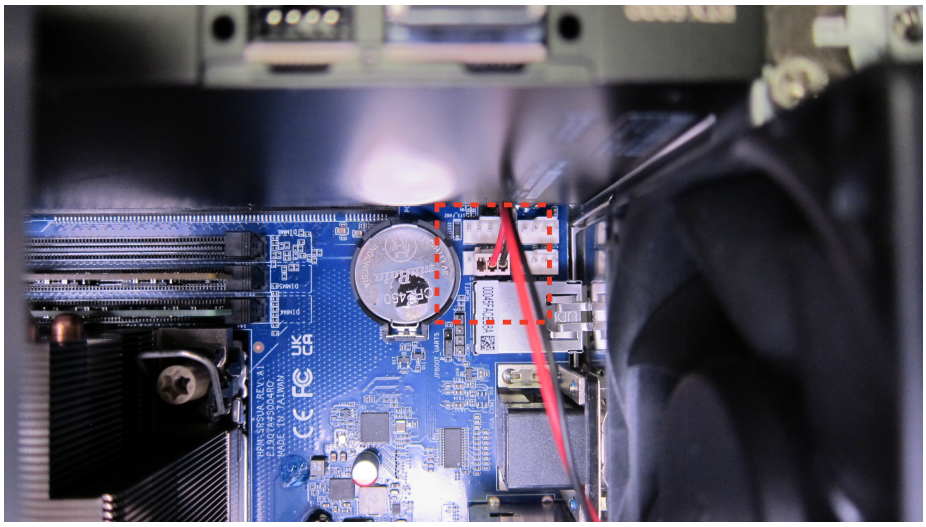
5. Remove the fan.

To install the rear chassis fan:

1. Insert the fan.
2. At the rear of the chassis, use a Phillips head screwdriver to insert and tighten the 4 screws in the fan cage.



3. Connect the rear chassis fan power supply wire.



4. Replace the top panel.

   Refer to Removing and Reinstalling the Top Panel 32 for instructions.

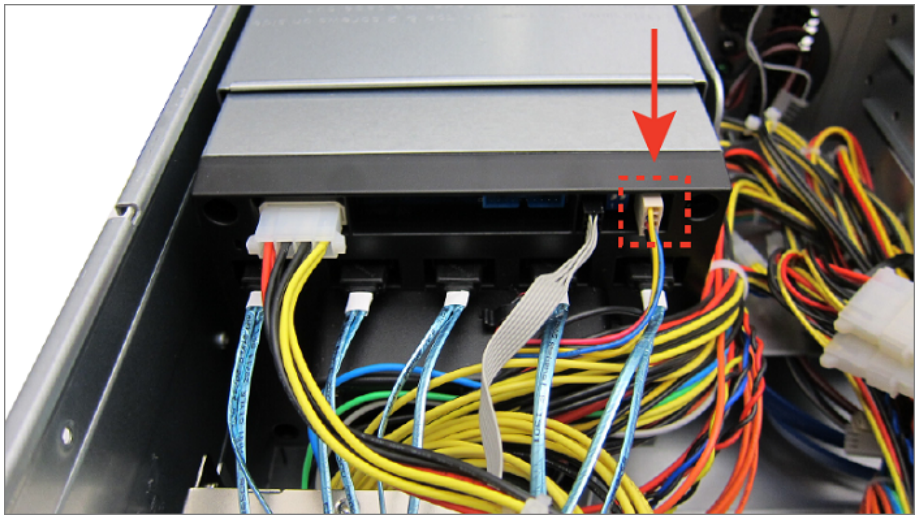
Replacing the System Drive Fan

This section describes how to remove and reinstall the system drive fan.

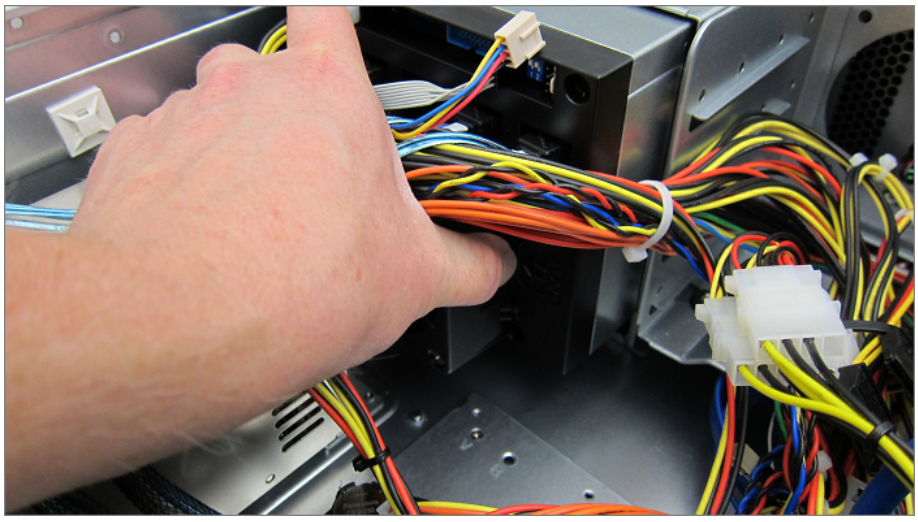
To remove a drive cage fan:

1. Shut down the XPression system, remove all cabling, remove the system from the equipment rack, and place the system on a flat, non-slip surface.
2. Remove the top panel from the XPression system.

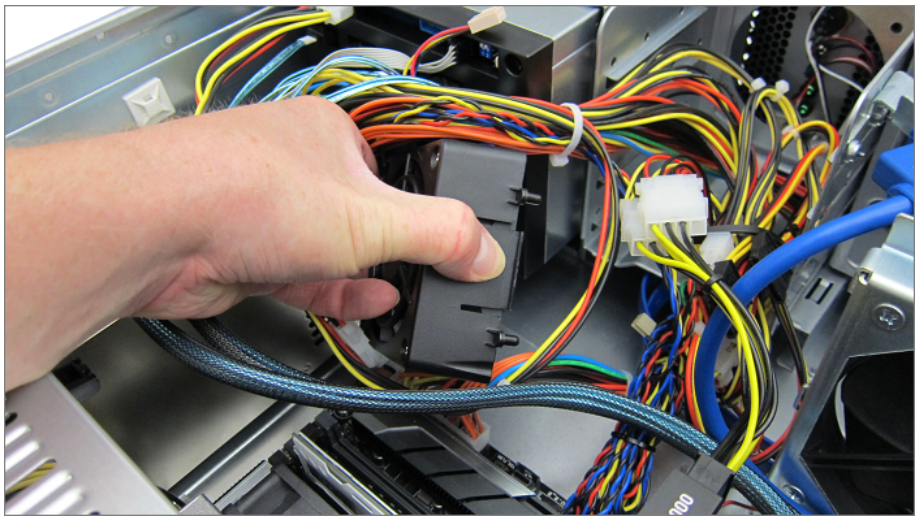
   Refer to the section Removing and Reinstalling the Top Panel 32 for instructions.
3. Disconnect the system drive fan power supply wire.



4. Squeeze the right side of the system drive fan casing.



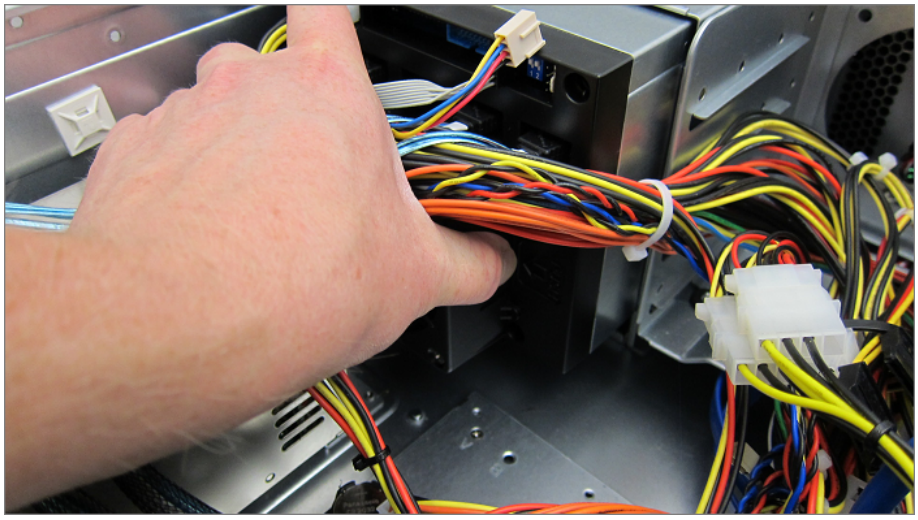
5. Remove the fan by pulling the system drive fan casing away from the system drive cage.



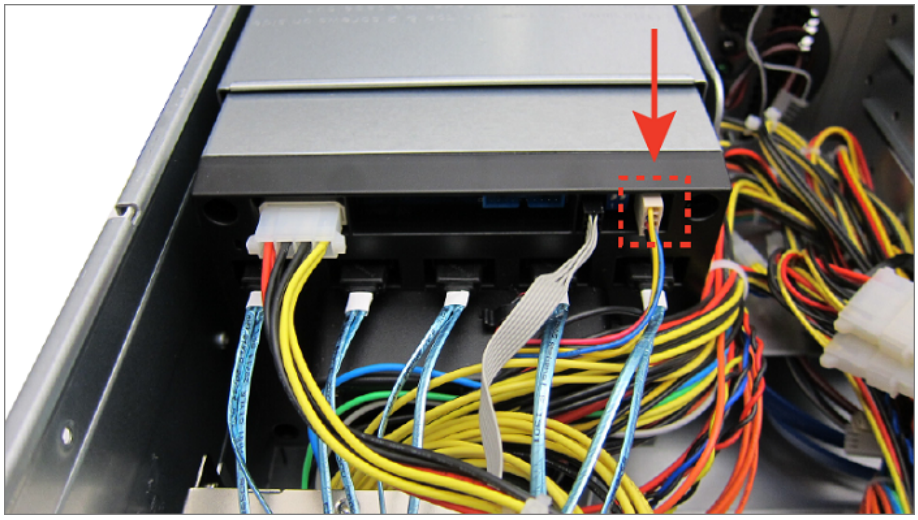
To install the system drive fan:

1. Insert the system drive fan into the system drive cage.

   The fan casing will click when the fan is secured to the system drive cage.



2. Connect the system drive fan power supply wire.



3. Replace the top panel.

   Refer to the section Removing and Reinstalling the Top Panel 32 for instructions.

Replacing Power Supplies

The XPression system has two identical hot-swappable power supply modules, located at the rear of the system on the left-hand side. Since the system requires a minimum of one power supply module to operate, only one power supply module can be hot-swapped at a time.

This section describes how to remove and install a power supply module.

Protective Earth — *Static discharge can cause serious damage to sensitive devices. Touch the chassis to dissipate static charge before removing power supply modules from the system, and exercise proper grounding precautions when working around the XPression 4RU system.*

Keep the following safety information in mind while removing a power supply module from the XPression system:

- Always ground yourself before touching electronic equipment.
- When removing a power supply module, always support the module with both hands to help prevent dropping it.

Warning Hazardous Voltages — *Hazardous voltages capable of delivering electric shock remain within the power supply module for a period of time after removal from the system.*

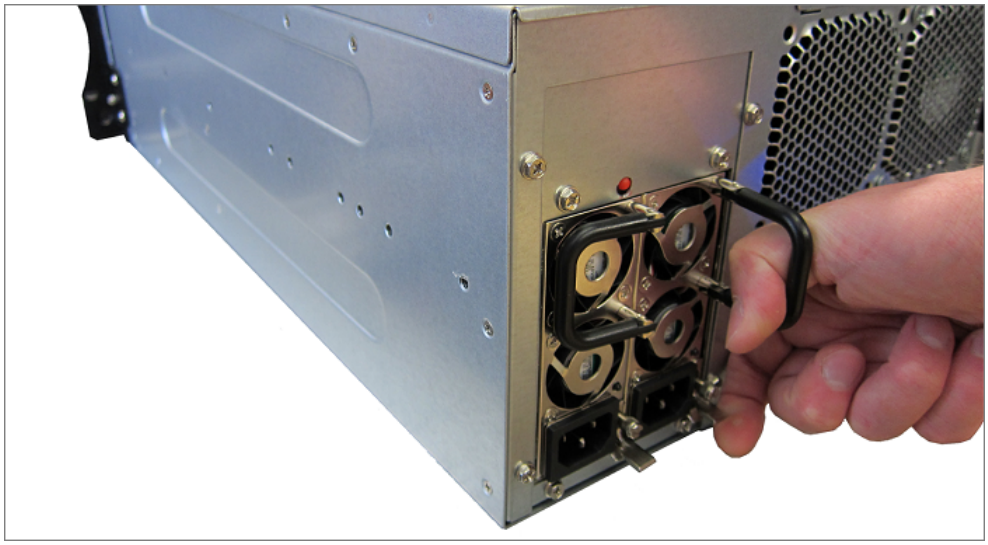
Ross Video power supply modules are intended to be factory serviced by qualified Ross Video service personnel only. Users should only remove and replace the power supply modules. When removing or replacing a power supply module, follow the instructions below:

- *Disconnect the power cord from the power supply module or the power supply from AC mains before removing or replacing a power supply module.*
- *Do not open or try to remove the casing of the power supply module.*

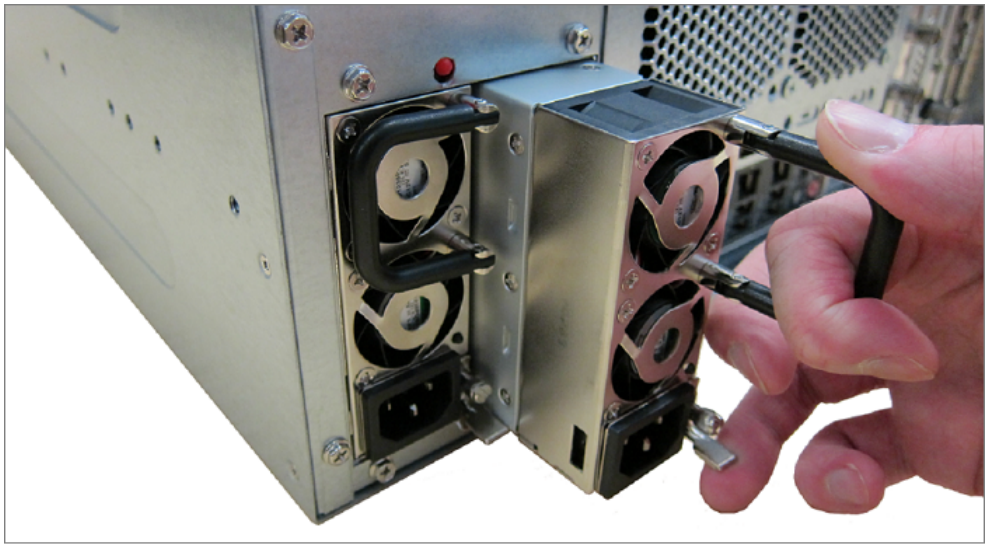
Failure to follow these instructions can result in death or serious injury.

To remove a power supply module:

1. At the back of the XPression system, disconnect the power cord from the power supply module to be removed.
2. Loosen the thumb screw on the bottom-right of the power supply module.
3. Pull up on the silver release lever.



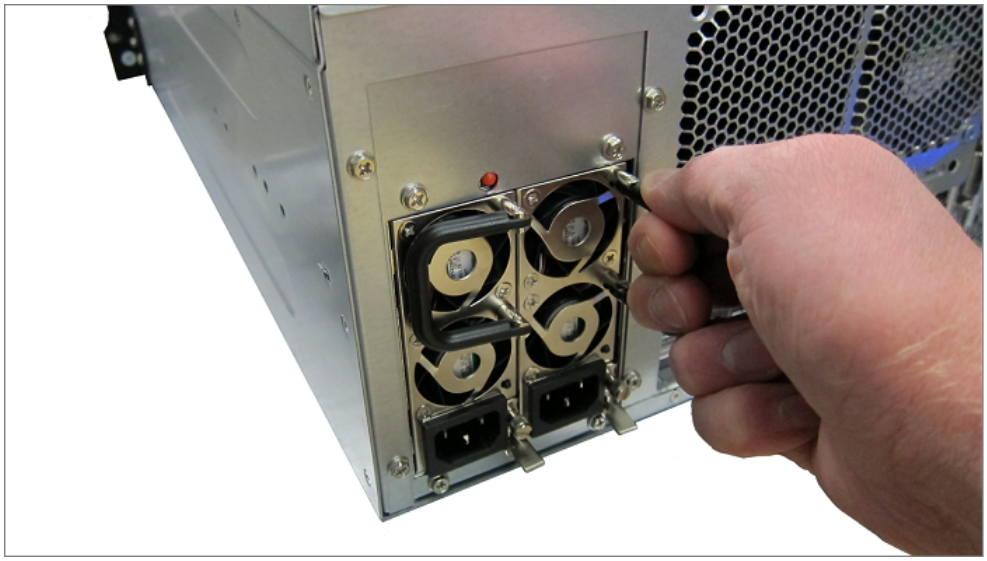
4. While pulling up on the silver release lever, hold the removal handle and gently pull on the power supply module to disengage it from the power supply bay.



5. Support the power supply module with your other hand, and continue pulling until the power supply module is completely removed from the power supply bay.

To install a new power supply module in the XPression system:

1. In front of the open power supply bay, align the power supply module so that the silver release lever is positioned to the right-hand side.
2. Slide the power supply module into the open bay and push it firmly until it snaps into place.



3. Tighten the thumb screw on the bottom-right of the power supply module.
4. Connect the power cord to the new power supply module.

Accessing the USB Security Dongle

You may be required to remove or replace the USB security dongle if instructed to do so by Ross Video Technical Support.

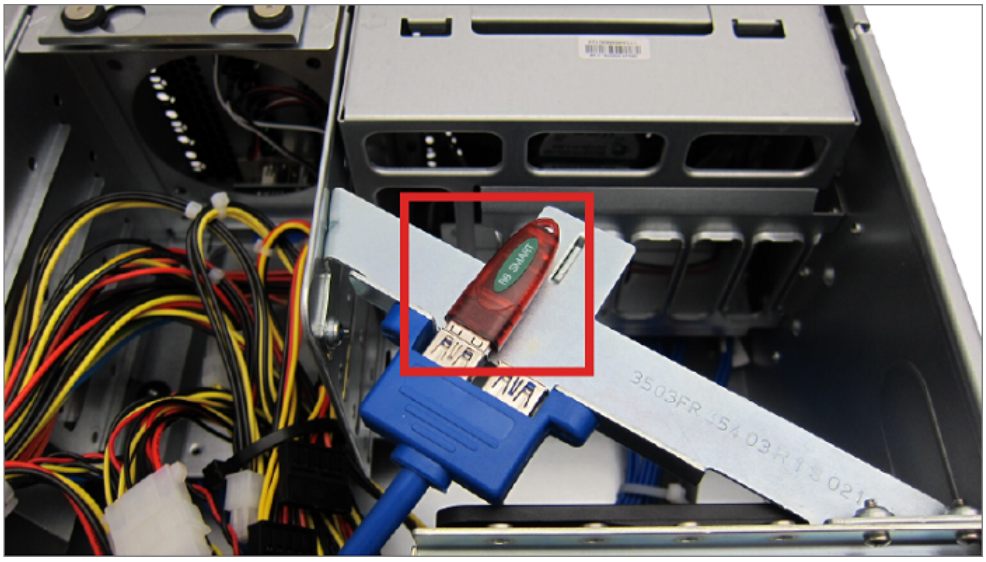
To access the USB security dongle:

1. Remove the top panel from the XPression system:

   Refer to the section Removing and Reinstalling the Top Panel 32 for instructions.

2. Remove and replace the security dongle as instructed by Ross Video Technical Support.

   The USB security dongle is located above the inside chassis fan behind the front chassis fan. The security dongle connects to the XPression system via a USB interface.

   Use the second USB interface to install an additional dongle if necessary.

3. Replace the top panel.

   Refer to the section Removing and Reinstalling the Top Panel 32 for instructions.

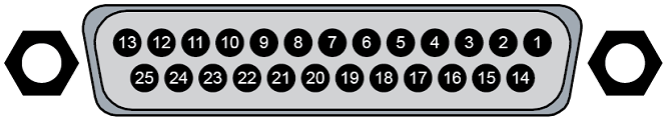
Appendix A: Pinouts

This appendix provides information on the GPI I/O and RS232 port pinouts.

GPI I/O Port Pinouts

The single DB25 GPI I/O port on the back of the frame supports a total of 12 GPI inputs and 12 GPI outputs.

- **GPI Inputs**: Active Drive 5 V TTL-compatible signal
- **GPI Outputs**: 5 V TTL-compatible edge or level trigger



GPI I/O - Female

GPI I/O Port Pinouts

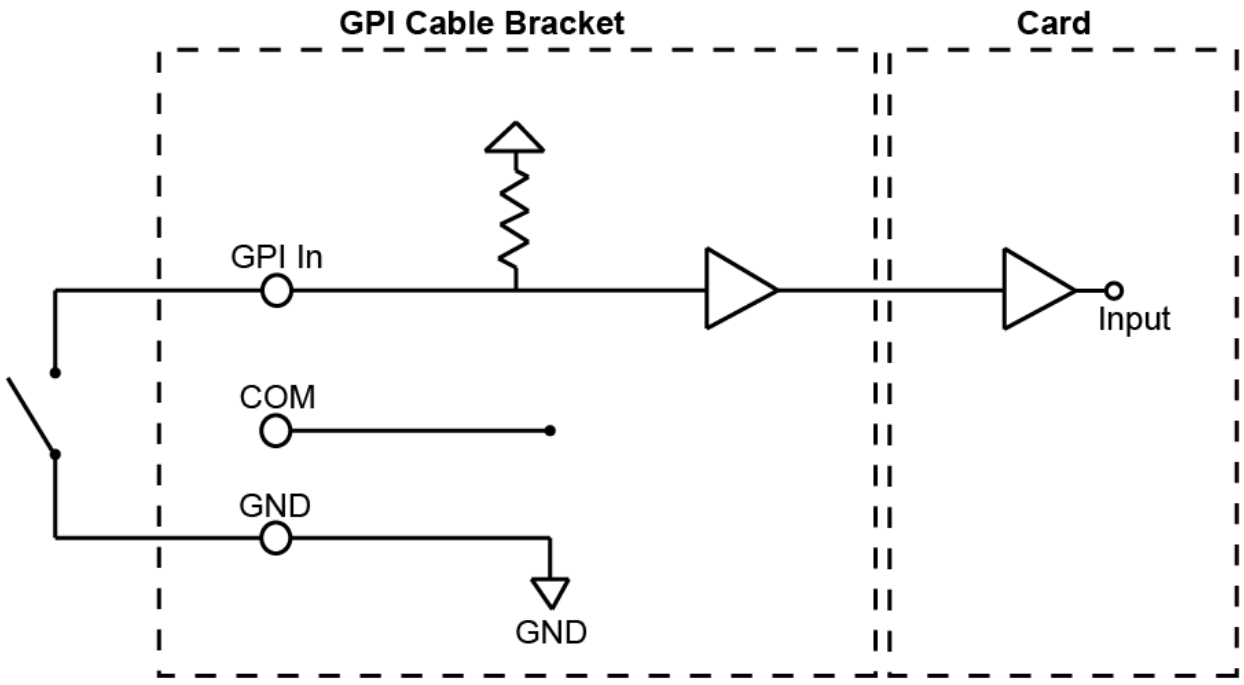
Pin #	Function
1	Ground
2	GPI In 12
3	GPI In 11
4	GPI In 10
5	GPI In 9
6	GPI In 8
7	GPI In 7
8	GPI In 6
9	GPI In 5
10	GPI In 4
11	GPI In 3
12	GPI In 2
13	GPI In 1

Pin #	Signal
14	GPI Out 12
15	GPI Out 11
16	GPI Out 10
17	GPI Out 9
18	GPI Out 8
19	GPI Out 7
20	GPI Out 6
21	GPI Out 5
22	GPI Out 4
23	GPI Out 3
24	GPI Out 2
25	GPI Out 1

Circuit Connection to GPI Cable Bracket

The following diagrams show the circuit connection to the GPI cable bracket.

Input

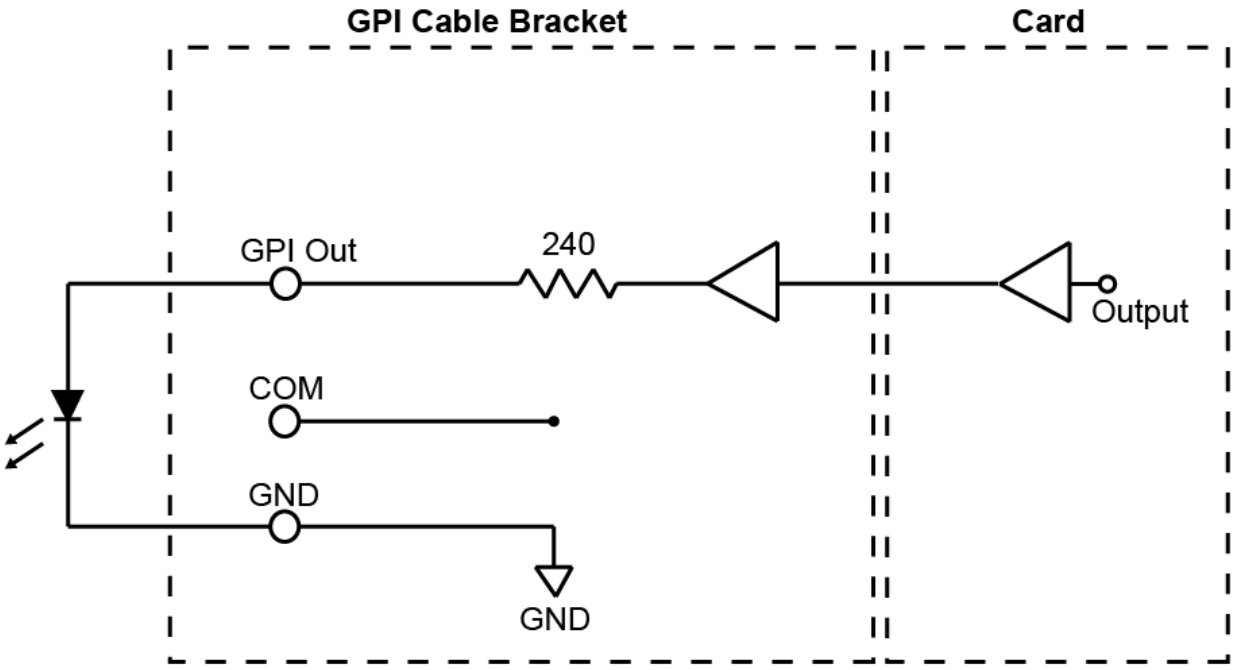


GPI Circuit Connection - Input

Input Information

Characteristics	Symbol	Minimum	Typical	Maximum
Low voltage	V_{IL}	0 V	0 V	1 V
High voltage	V_{IH}	2.5 V	5 V	12 V

Output



GPI Circuit Connection - Output

Output Information

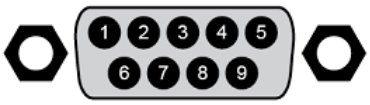
Characteristics	Symbol	Minimum	Typical	Maximum
Low voltage (I_{OUT} = 1 mA)	V_{OL}	—	0.3 V	—
Low voltage (I_{OUT} = 0 mA)	V_{OL}	—	0 V	—
High voltage (I_{OUT} = -5 mA)	V_{OL}	—	3.8 V	—
High voltage (I_{OUT} = -1 mA)	V_{OL}	—	4.8 V	—
Low current	I_{OL}		—	40 mA
High current	I_{OH}		—	-20 mA
Series resistance	R_{OUT}	—	240 O	—

RS232

XPression offers 2 GPI options:

- **GPI 1**: Data Set Ready pin 6 and pin 7
- **GPI 2**: Clear to Send pin 8 and pin 7

The RS232 port can also be used for CII using the XPression CII Gateway option.



RS232 - Male

The following table lists the signals associated with each pin of the RS232 port.

Pin #	Signal
1	Data Carrier Detect
2	Received Data
3	Transmitted Data
4	Data Terminal Ready
5	Signal Ground

Pin #	Signal
6	Data Set Ready
7	Request to Send
8	Clear to Send
9	Ring Indicator

★When creating an RS232 GPI trigger, create a device that short-circuits either pin 8-7 or 6-7 on the nine pin female connector. No additional power can be added to the circuit or it will damage the RS232 port.

Appendix B: Audio and Input/Output Cables

This appendix provides information on the audio and video cable connectors for the XPression base system.

Matrox Cables

This section describes the audio and video cables.

Matrox Audio Breakout Cable

Provides 4 AES audio pairs (1/2 to 7/8). You can add a second breakout cable for AES 9/10 to AES 15/16.

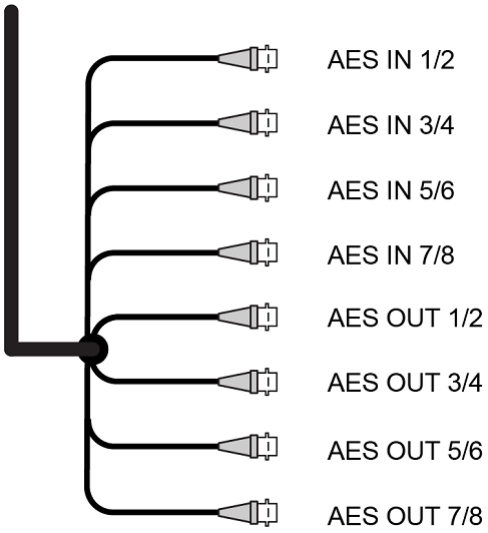


Figure B.1 *Matrox Audio Breakout Cable Connectors*

Matrox Video Inputs and Outputs

Provides HD-BNC video inputs and outputs.

DSX LE4 FH / 8 Channel Configurations

Label	Channel (0 In, 8 Out)	Channel (1 In, 7 Out)	Channel (2 In, 6 Out)	Channel (3 In, 5 Out)	Channel (4 In, 4 Out)
12	OUT 12/Key 10	N/A	N/A	N/A	N/A
11	OUT 11/Key 9	OUT 11/Key 9	OUT 11/Key 9	N/A	N/A
10	OUT 10	OUT 10	N/A	N/A	N/A
9	OUT 9	OUT 9	OUT 9	OUT 9	N/A
8	OUT 8/Key 4	OUT 8/Key 4	OUT 8/Key 4	OUT 8/Key 4	OUT 8/Key 4
7	N/A	N/A	N/A	N/A	IN 7/Key 3
6	OUT 6/Key 2	OUT 6/Key 2	OUT 6/Key 2	OUT 6/Key 2	OUT 6/Key 2
5	N/A	N/A	N/A	IN 5/Key 1	IN 5/Key 1
4	OUT 4	OUT 4	OUT 4	OUT 4	OUT 4
3	N/A	N/A	IN 3	IN 3	IN 3
2	OUT 2	OUT 2	OUT 2	OUT 2	OUT 2
1	N/A	IN 1	IN 1	IN 1	IN 1

Label	Channel (5 In, 3 Out)	Channel (6 In, 2 Out)	Channel (7 In, 1 Out)	Channel (8 In, 0 Out)
12	N/A	N/A	N/A	IN 12/Key 10
11	N/A	IN 11/Key 9	IN 11/Key 9	IN 11/Key 9
10	N/A	N/A	IN 10	IN 10
9	IN 9	IN 9	IN 9	IN 9
8	N/A	N/A	N/A	N/A
7	IN 7/Key 3	IN 7/Key 3	IN 7/Key 3	IN 7/Key 3
6	OUT 6/Key 2	OUT 6/Key 2	N/A	N/A
5	IN 5/Key 1	IN 5/Key 1	IN 5/Key 1	IN 5/Key 1
4	OUT 4	N/A	N/A	N/A
3	IN 3	IN 3	IN 3	IN 3
2	OUT 2	OUT 2	OUT 2	N/A
1	IN 1	IN 1	IN 1	IN 1

★Physical relays are present between HD-BNC 1 & 2, 3 & 4, 5 & 6, and 7 & 8.

Appendix C: IPMI Management LAN Port

This appendix provides information on the IPMI management LAN port for XPression systems.

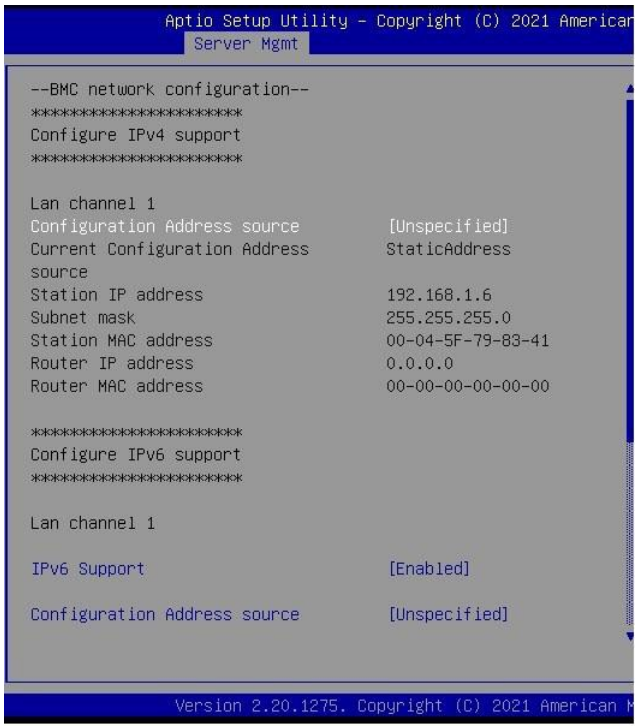
Configure the IPMI Management LAN Port

The following procedure explains how to configure the IPMI management LAN port.

To configure the IPMI management LAN port:

1. Power on the system and press **DELETE** or **ESC** to enter the BIOS.
2. In the BIOS, select **Server Mgmt** > **BMC Network Configuration** > **Configure IPv4 Support**.

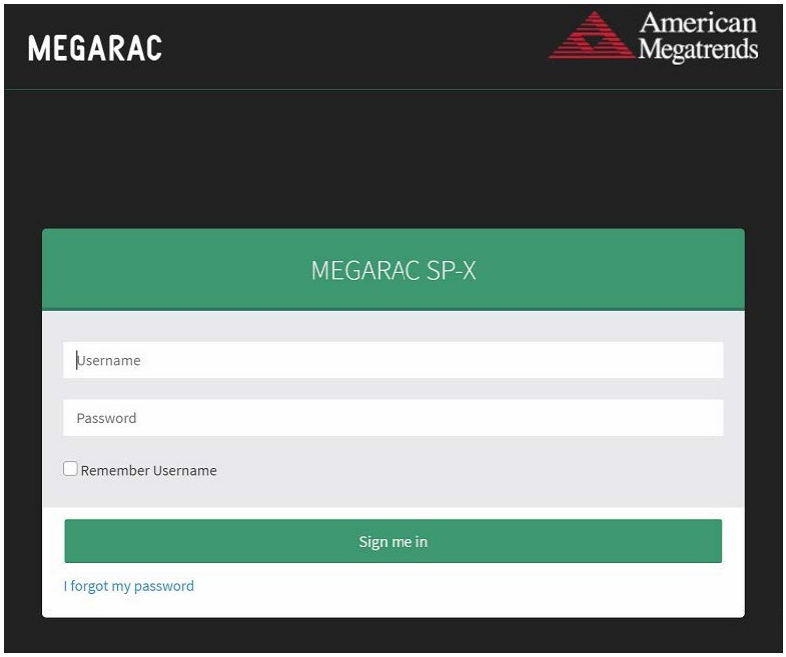
   The **Configure IPv4 Support** section of the **Server Mgmt** opens.



3. In the **Configure IPv4 support** section, select **Configuration Address source**.
4. Select **Static**.
5. Configure the IPv4 network settings to your network.
6. Connect the IPMI management LAN interface to your network.

7. From a web browser that has access to the interface on the network, navigate to the IPMI web interface using the assigned IP address.

   The login page opens.



8. Enter the login credentials (**Username**: admin, **Password:** admin) and select **Sign me in**.

Change the IPMI Interface User and Login

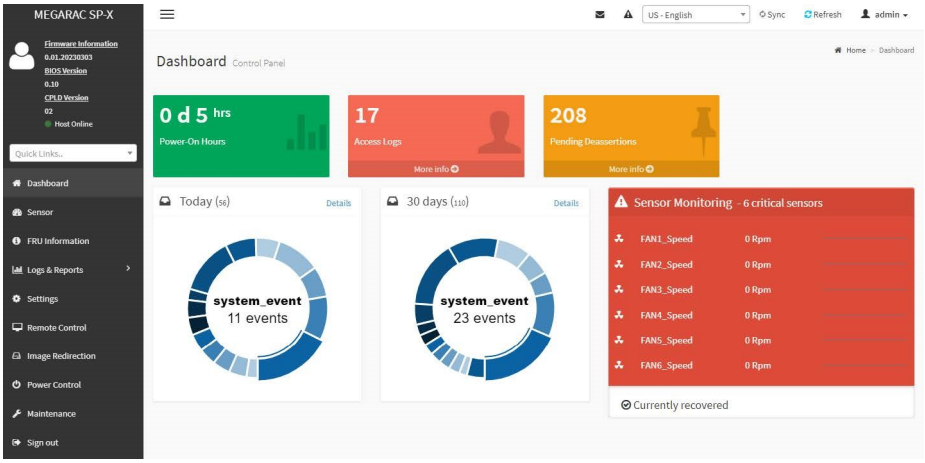
The following procedure explains how to change the IPMI interface user and login.

To change the IPMI interface user and login:

1. In the BIOS, select **Server Mgmt** > **BMC User Settings** > **Change User Settings**.
2. In **Change User Settings**:
   a. Enter a new or existing user name in **User Name**.
   b. Enter a new password in **Change User Password**.

IPMI Dashboard Interface

This section provides an overview of the IPMI dashboard interface.



1) **Firmware Information** — Displays BMC, BIOS, and CPLD firmware version.
2) **Quick Links Menu** — Use this drop-down for the available menu and sub-menu pages.
3) **Menu Bar** — Provides a list of available functions:
   - **Dashboard** — displays the overall status of the system.
   - **Sensor** — displays real-time on-board sensor status.
   - **FRU Information** — displays the system information store in FRU.
   - **Logs & Reports** — displays the IPMI event log/system event log/audit log/video log.
   - **Settings** — displays various settings related BMC.
   - **Remote Control** — Remote control through H5view or Jview.
   - **Image Redirection** — use this to configure the images into BMC for redirection.
   - **Power Control** — use this to power on/reset/shutdown system.
   - **Fan Control** — provides several methods to control fan.
   - **Maintenance** — firmware image maintenance and factory default settings.
   - **Sign Out** — use this to log out from the web UI.
4) **Tool Bar** — Provides tools for items such as notifications, messages, and sync:
   - **Messages icon** — select the icon to view the event log alert messages. Clicking a message will navigate to the Logs and Reports page.
   - **Notification icon** — select the icon to view notifications received.
   - **Sync** — select the icon to synchronize with the latest sensor and event log updates.
   - **Refresh** — select the icon or press **F5** to reload the current page.
   - **Admin** — select this drop-down to view the logged-in user name and privileges. There are five kinds of privileges:
     - **User** — only valid commands are allowed.
     - **Operator** — all BMC commands are allowed, except for the configuration commands that can change the behavior of the out-of-hand interfaces.
     - **Administrator** — all BMC commands are allowed.
     - **No Access** — login access denied.
     - **OEM** — all OEM commands are allowed.

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