

European Regulations

This equipment complies with European Regulations EN 55022 Class A: Limits and Methods of Measurement of Radio Disturbance Characteristics of Information Technology Equipments and EN50082-1: Generic Immunity.

USA Federal Communications Commission (FCC)

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.

1 Safety

- All plug-in modules and blank plates are part of the fire enclosure and must only be removed when a replacement can be immediately added. The system must not be run without all modules in place.
 - Permanently unplug the unit if you think that it has become damaged in any way, and before you move it.
 - The enclosure can weigh up to 32 kg (70 lb.). Do not try to lift it by yourself.
 - Do not lift an enclosure by the power supply module handles, they are not designed to support the weight of the enclosure.
 - In order to comply with applicable safety, emission and thermal requirements no covers should be removed and all bays must be fitted with plug-in modules.
 - The enclosure must only be operated from a power supply input voltage range of AC:100 - 120V or 200-240V AC, or DC: -40 to -60V DC.
 - (DC Only) This product is designed for connection to a DC supply protected by 20A circuit breakers.
- The power cord/cable on the power supply is used as the main disconnect device. Ensure that the socket outlets are located near the equipment and are easily accessible.
 - The equipment is designed to be operated with two power supply modules.
 - To prevent overheating do not operate the enclosure with one power supply removed for more than 30 minutes.
 - Disconnect all supply power for complete isolation.
 - The power connection should always be disconnected prior to removal of the power supply module from the enclosure.
 - A safe electrical earth connection must be provided to the power cords. Check the grounding of the enclosure before applying power.
 - Provide a suitable power source with electrical overload protection to meet the requirements laid down in the technical specification.
 - The wiring installation must provide a disconnect device close to the equipment.

Rack System Precautions

- The following safety requirements must be considered when the unit is mounted in a rack.
- The rack design should incorporate stabilizing features suitable to prevent the rack from tipping or being pushed over during installation or in normal use.
 - When loading a rack with the units, fill the rack from the bottom up and empty from the top down.
 - The rack design should take into consideration the maximum operating ambient temperature for the unit, which is 40°C (104°F).
 - The system must be operated with low pressure rear exhaust installation (back pressure created by rack doors and obstacles not to exceed 5 pascals (0.5mm water gauge)).
 - The rack should have a safe electrical distribution system. It must provide over-current protection for the unit and must not be overloaded by the total number of units installed in the rack. Consideration of the electrical power consumption rating shown on the nameplate should be used when
- addressing these concerns.

 - The electrical distribution system must provide a reliable earth for each unit in the rack.
 - Each power supply in each unit has an earth leakage current of 1.8mA max at 60 Hz, 264V AC per AC PSU. The design of the electrical distribution system must take into consideration the total earth leakage current from all the power supplies in all the units. The rack may require labelling with "HIGH LEAKAGE CURRENT. Earth connection essential before connecting supply."
 - The rack when configured with the units must meet the safety requirements of UL 60950-1 and IEC 60950-1/EN60950-1.
 - Do not slide more than one enclosure out of the rack at one time, to avoid danger of the rack toppling over.
 - Always remove all modules and drives to minimize weight before loading chassis into a rack.

Caution: If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

Battery Safety

Warning: There is a danger of explosion if the battery is disposed of improperly. Dispose of used batteries in accordance with the manufacturer's instructions and national regulations.

ESD Precautions

It is recommended that you fit and check a suitable anti-static wrist or ankle strap and observe all conventional ESD precautions when handling RS-1220 plug-in modules and components. Avoid contact with backplane components and module connectors, etc.

2 Preparation of Site and Host Server

- Before you begin, make sure the site where you intend to set up and use your storage system has the following:
- Standard AC/DC power from an independent source or a rack power distribution unit with a UPS.
 - Host computer with a standard SAS HBA (host bus adapter) with the latest BIOS and drivers. Follow the instructions provided with your host bus adapter. Install the HBA and its driver software, if necessary.
- Note:** The RS-1220 supports most of the widely used operating systems, however, deployment on Microsoft Windows requires the .inf driver file which is found on the CD. (Windows Servers - Insert the Software and Manuals Disc and install the .inf driver file.)

The Accessory Box contains the AC power cord(s) (or DC power cables), and the Software and Manuals Disc. The Accessory Box Insert contains the adjustable rail slides and hardware parts to mount the enclosure.

3 Unpacking the Storage System

The package contents and unpacking procedure is outlined in the illustration below.

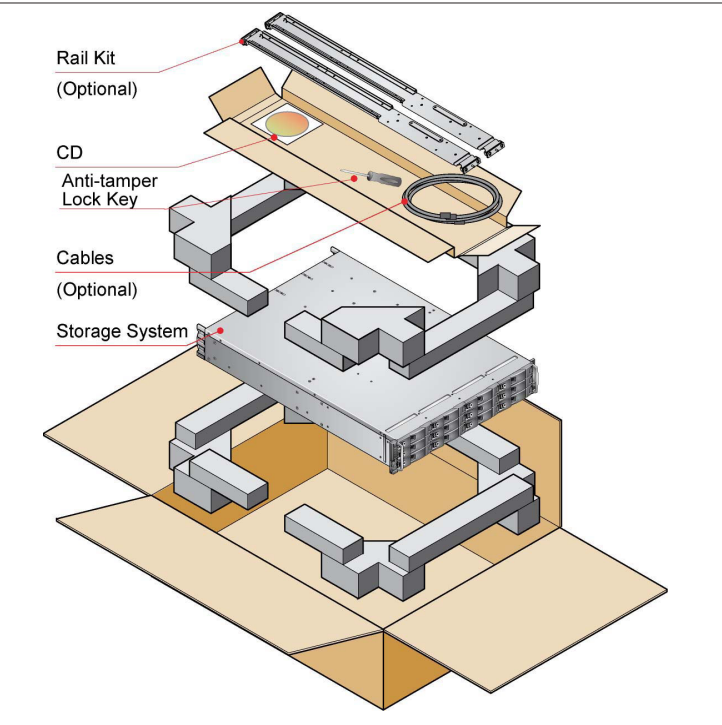


Figure 1: Unpacking the Storage System

4 Mounting the System into a Rack

- Remove the Rack Mounting Rail kit from the accessory kit and check for damage.
- Attach the left and right chassis slides to the enclosure sides using 6 M3 x 4 button head screws. Three screws each side see Figure 2 for locations.
- Assemble the left and right chassis latches using the chassis latch screws. Ensure that the latch is orientated as shown in Figure 2, with the spring arm (small arm portion) located against its stop. On the right hand side the stop is located at the top, and on the left side it is located at the bottom.

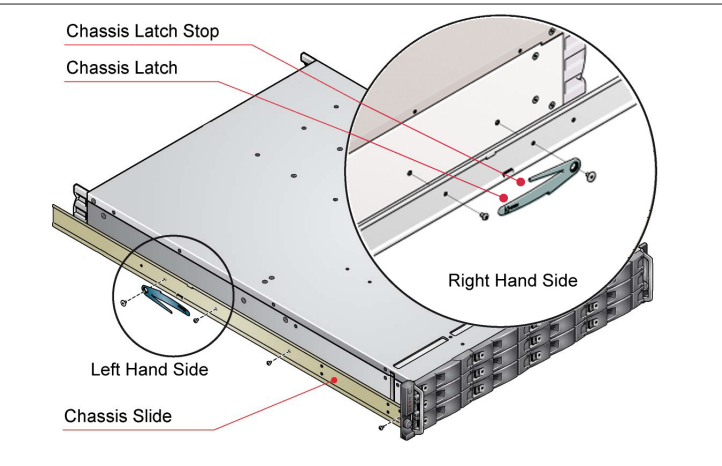


Figure 2: Securing Chassis Slides to Enclosure

- Assemble the rack brackets to the rack posts as follows (see Figure 3). The brackets are universal and will fit either side.
 - Locate the guide pin at the rear of each bracket and insert the pin into a rear rack post hole. Attach the bracket to the rear rack post using the washers and screws supplied. The screws should be left loose.
 - Extend the rail to fit between the rack posts.
 - Attach the bracket to the front rack post using the washers and screws supplied. The screws should be left loose.
 - Tighten the two clamping screws located along the inside of the rear section of the rack bracket. (See Figure 3.)

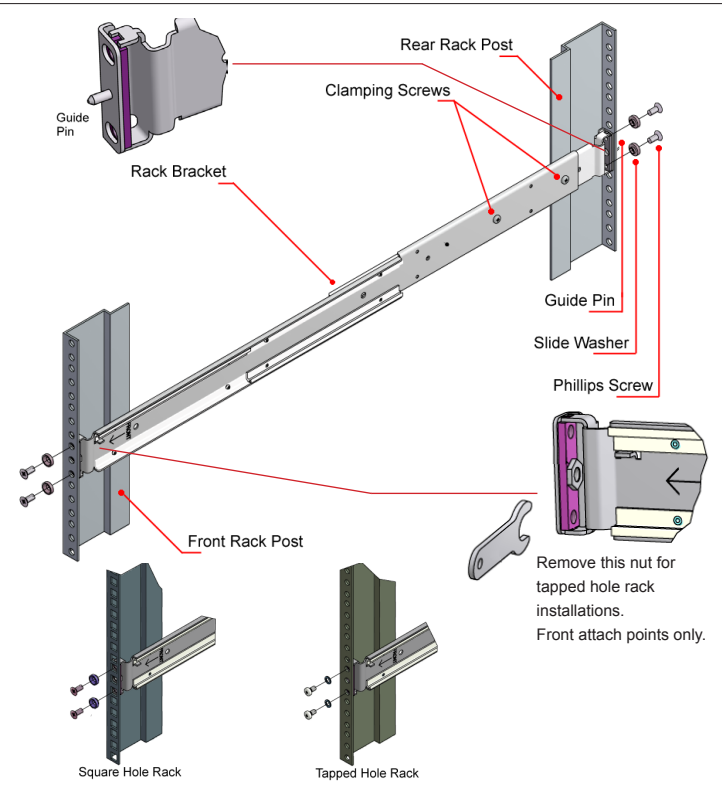


Figure 3: Securing Rack Brackets to Rack Posts

- Mount the enclosure in the rack as follows (refer to Figure 4):
 - Lift the enclosure and align it with the rack rails.
 - Carefully insert the chassis slides into the rack rails and push the enclosure completely into the rack cabinet.
 - Tighten the rear rack bracket mounting screws. (Previously left loose.)
 - Withdraw the enclosure until it reaches the hard stops (approximately 400 mm (15.75 inches)). Tighten the front rack bracket mounting screws. (Again previously left loose.)
 - Push the enclosure completely into the rack cabinet and attach to the front of the rack using the captive fasteners on the front flanges.

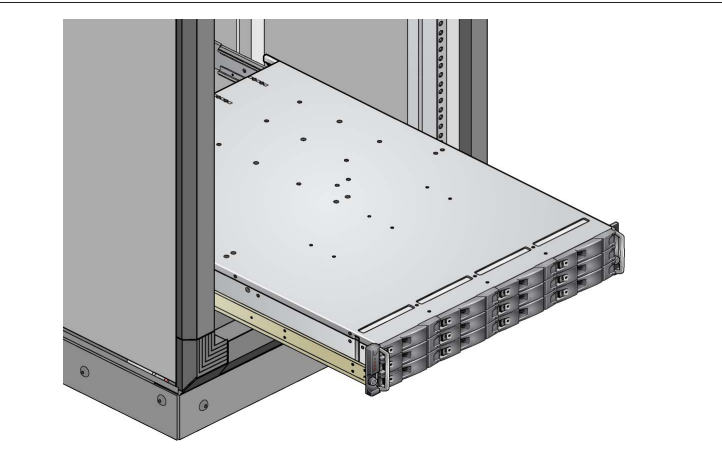


Figure 4: Mounting the Enclosure into a Rack

5 Installing the PSU Modules

AC/DC Power Supply Modules

- Warning:** Do not mix Power Supply modules of different types or makes.

Caution: Handle the module carefully and avoid damaging the connector pins. Do not install the module if any pins appear to be bent.

Important: To prevent overheating do not operate the enclosure with one power supply removed for more than 30 minutes.

- Install PSU Modules in the rear of the enclosure (see Figures 3 & 4):
- Check for damage, especially to the rear connector on the PSU.
 - (DC Only) Remove the terminal block covers and place the switch in STANDBY Mode.
 - Slide the module into the enclosure (Figure 5).
 - Continue to push the module until it fully seats. A click should be heard as the handle latch engages.
 - Connect the power supply cords/cables to the power source AC or DC as required and to the PSU. (DC Only: Secure the terminal block covers and place the switch in the ON position.)
 - (AC Only) Secure the strain relief bales. The bale fits over and onto the cord.

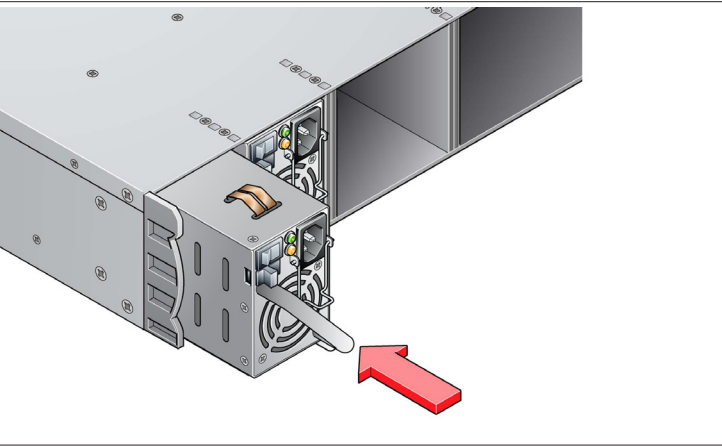


Figure 5: Inserting the Power Supply Module

6 Install Cooling Fan Module

Caution: Handle the module carefully and avoid damaging the connector pins. Do not install the module if any pins appear to be bent.

1. Check for damage, especially to the rear connector on the module.
2. With the latch in the open position, slide the module into the enclosure until the latch engages automatically.

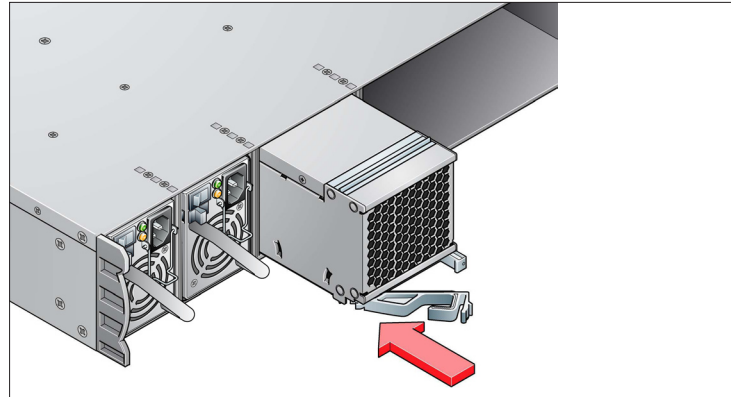


Figure 6: Installing the Cooling Fan Module

3. Secure the module by manually closing the latch. A click should be heard as the module latches engage.

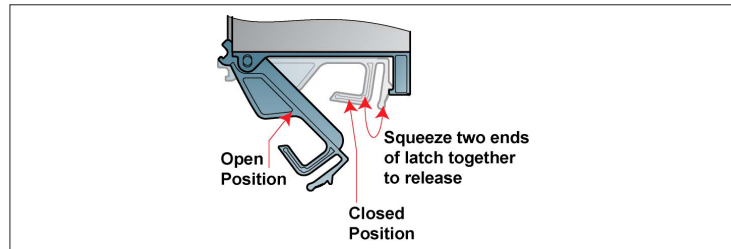


Figure 7: Module Latch Operation

7 Install RAID Controller/Disk I/O Module

1. Check for damage, especially to the interface connector - do not install if the pins are bent.
2. With the latches in the open position (see Figure 8), slide the RAID Controller module into the enclosure until the latches engage automatically (Figure 9).

Note: RAID Controller and Disk I/O modules are installed the same way. Only the RAID Controller is shown, the Disk I/O is similar.

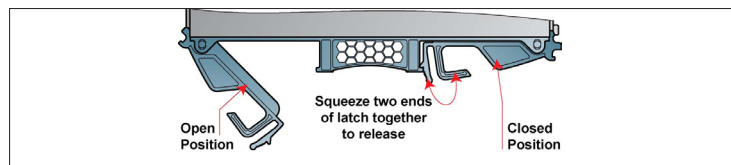


Figure 8: Module Latch Operation

3. Secure the module by manually closing the latches. A click will be heard.

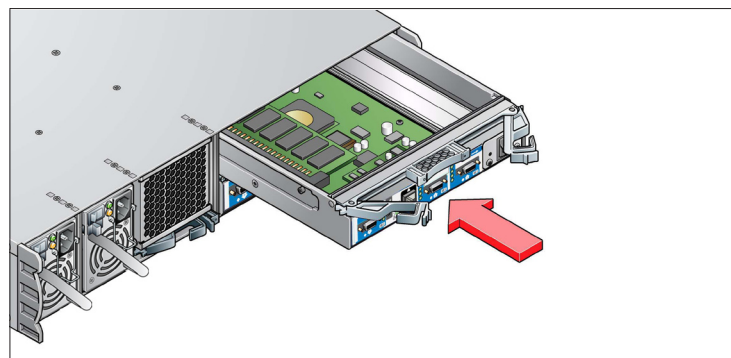
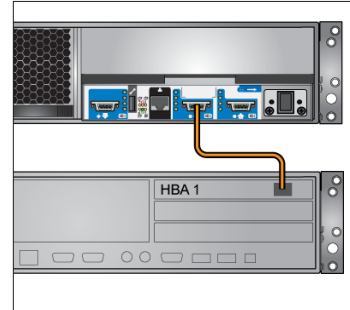


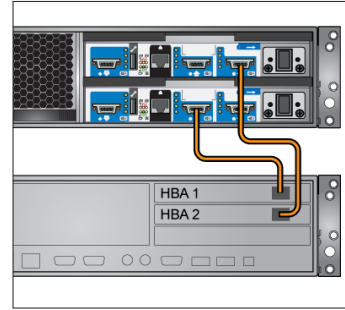
Figure 9: Installing the RAID Controller Module (Disk I/O Similar)

8 Connecting Storage System to Host

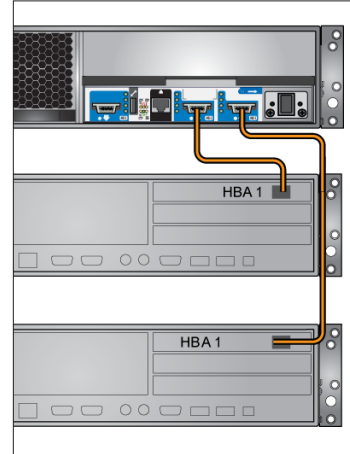
Simplex: Single Host (Single HBA)



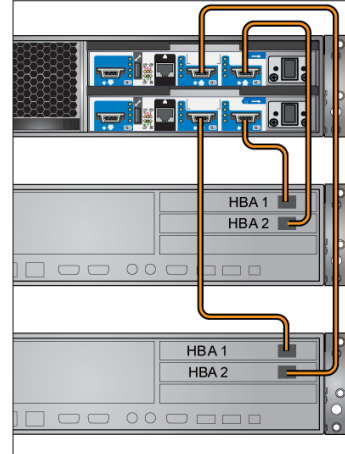
Duplex: Single Host (Dual HBAs)



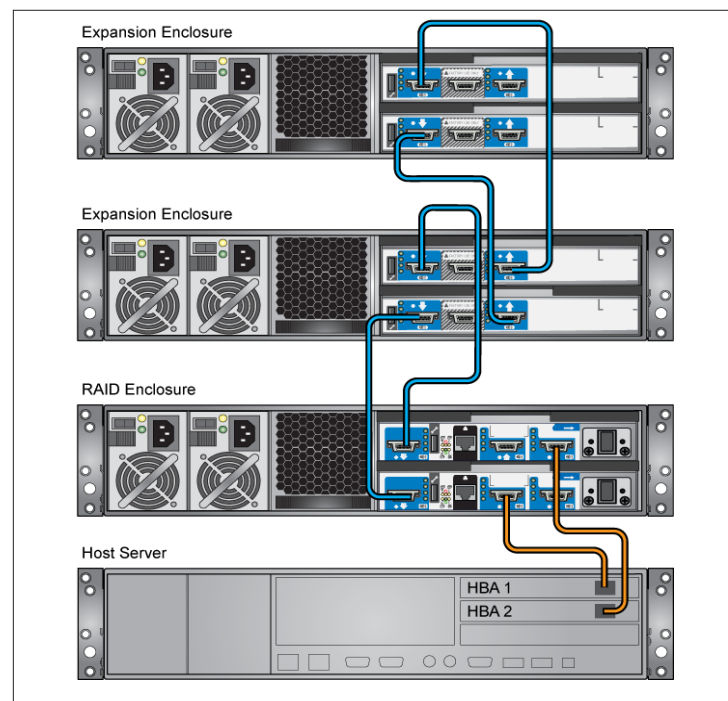
Simplex: Dual Host (Single HBAs)



Duplex: Dual Host (Dual HBAs)



Expansion: Dual Controller Enclosure - Dual EBOD XPN Enclosure



Ethernet Connection

The RJ45 10/100 BaseT Ethernet port provides networking connection. Ensure that the PC is connected either directly or via a switched LAN to the Ethernet.

Important: Only shielded Cat 5 (or better) cables should be used for connection to the Ethernet port for EMC conformance.

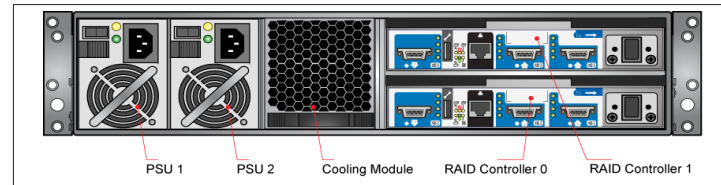


Figure 10: Module Locations - RAID Enclosure Shown

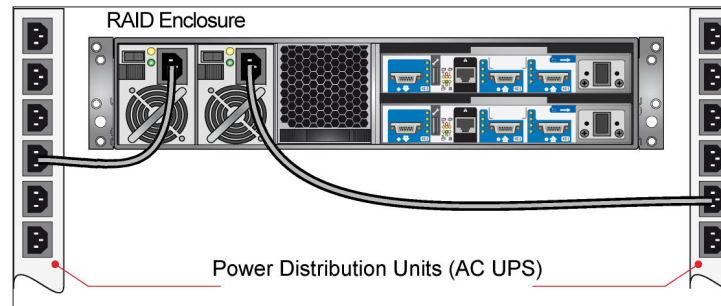


Figure 11: Connecting the AC Power Cords to the PDU

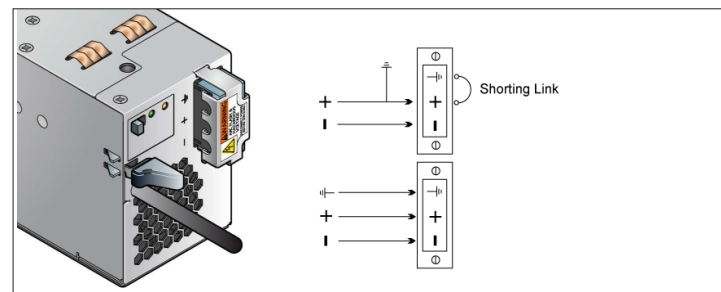


Figure 12: DC Power Cable Connections

9 Enclosure Population/Drive Install

Drive Bay Arrangement

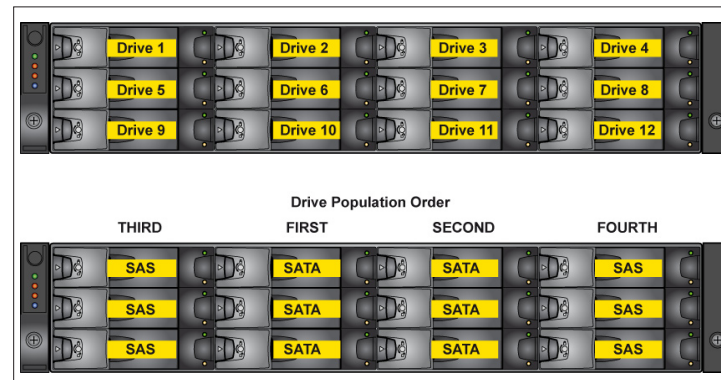


Figure 13: Bay Number Definition and Example Drive Type Location

Important: Drive slots can be populated with either type of disk drive as long as they remain the same in each column. The above example only stipulates the concept of same type in columns.

Drive Location Rules

The RS-1220-E3-5402E/RS-1220-E3-XPN enclosure systems support two different types of disk drives: SAS and SATA. In order to allow optimal configurations to be built, the following rules should be observed.

A. Different drive types cannot be mixed in the same column.

B. To achieve optimum performance, bays should be populated in the following sequence:

1. Column 2 (drives 2, 6, & 10)
2. Column 3 (drives 3, 7, & 11)
3. Column 1 (drives 1, 5, & 9)
4. Column 4 (drives 4, 8, & 12)

C. If a change in drive technology is required, then a new column of drives should be populated (see Figure 13). All members of the column should maintain the same drive type.

Caution: All drive bays must be fitted with either a drive carrier or dummy carrier module. No bays should be left empty.

Drive Installation

Install the Drive Carrier modules:

1. Ensure the anti-tamper locks are disengaged (Figure 14).
2. Release the carrier handle by pressing the latch in the handle towards the right and insert the carrier into the enclosure.



Figure 14: Anti-Tamper Locks

3. Slide the carrier, gently, all the way into the enclosure bay until it is stopped by the camming lever on the right of the carrier.
4. Secure the carrier - the camming foot on the base of the carrier will engage into a slot in the enclosure. Continue to push firmly until the handle fully engages. A click should be heard as the latch engages and holds the handle closed.

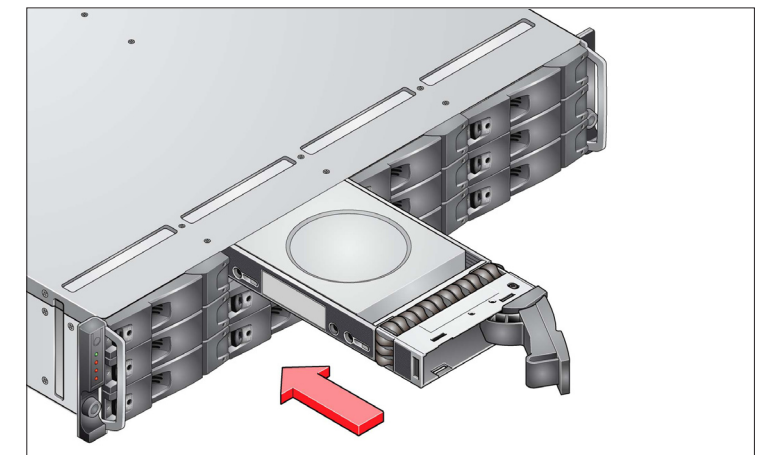


Figure 15: Drive Carrier Installation (1)

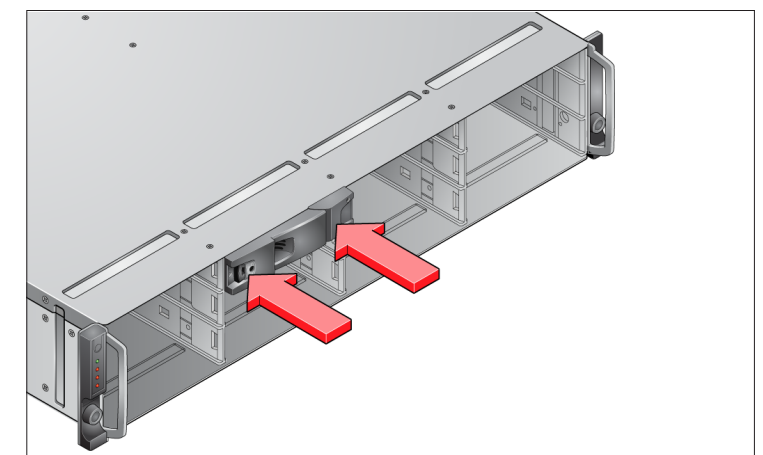


Figure 16: Drive Carrier Installation (2)

5. Carefully insert the anti-tamper lock key provided into the cutout in the handle and rotate the key in a clockwise direction until the "red" indicator is visible in the aperture beside the key. Refer to Figure 14.

10 Power On

Power on the storage system by connecting the power cords/cables to the power distribution unit (PDU), power on the PDU, move the PSU switches to the ON position, and then power on the host system.

11 RAID Controller, Disk I/O and OPS Panel

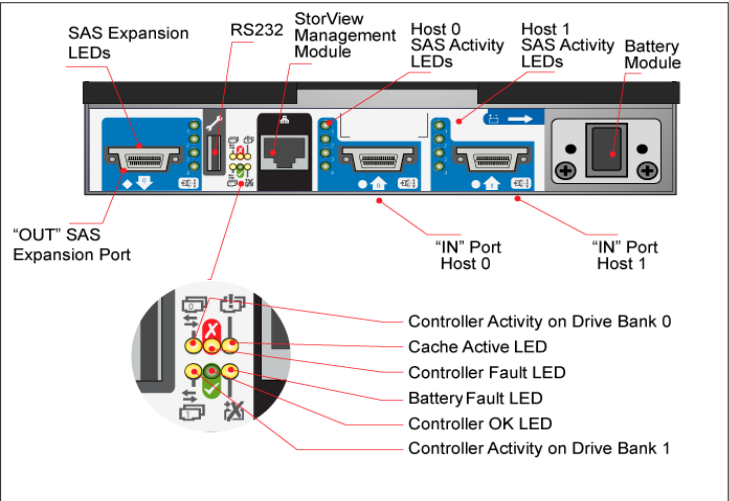


Figure 17: RAID Controller Module Connections and LEDs

LED/Icon	Description
	Battery Fault This LED/icon appears adjacent to the controller's Ethernet and RS232 ports. Illuminated - Backup battery unit is missing, has low voltage, has experienced a timeout on charge indicating a faulty battery, or has experienced a fault in the charging circuitry.
	Cache Active This LED/icon appears adjacent to the controller's Ethernet and RS232 ports. Illuminated - RAID Controller cache has data saved in memory but not written to the disk array.
	Controller Activity on Drive Bank 0 This LED/icon appears between the controller's Ethernet and RS232 ports. Illuminated - RAID Controller has activity on the bank 0 disk drives. (Drives 1, 5, 9, 2, 6, 10)
	Controller Activity on Drive Bank 1 This LED/icon appears between the controller's Ethernet and RS232 ports. Illuminated - RAID Controller has activity on the bank 1 disk drives. (Drives 3, 7, 11, 4, 8, 12)
	Controller OK This LED/icon appears adjacent to the controller's Ethernet and RS232 ports. Illuminated Green - RAID Controller operation is normal.
	Controller Fault This LED/icon appears adjacent to the controller's Ethernet and RS232 ports. Illuminated Red - RAID Controller fault has occurred.
	Ethernet Status This LED/icon appears adjacent to the controller's Ethernet port. Green - Ethernet port has a valid connection. Amber - Ethernet port has activity.
	SAS Activity This LED/icon appears adjacent to the SAS connectors. Illuminated - Indicate I/O activity on the specific port lane. (4x lanes)

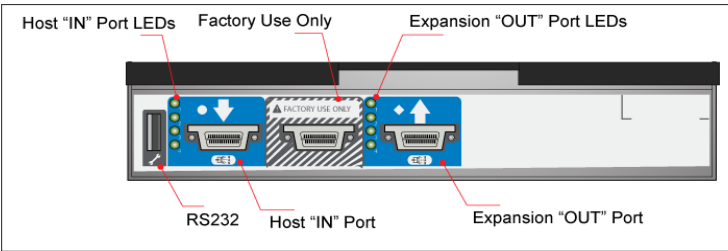


Figure 18: Disk I/O Module Connections and LEDs

Important: Do not mix Disk I/O Modules and RAID Controller modules in the same enclosure. Disk I/O modules are only installed in the expansion enclosure, RAID Controllers are only installed in the RAID enclosure.

Operator/Control Panel (OPS)

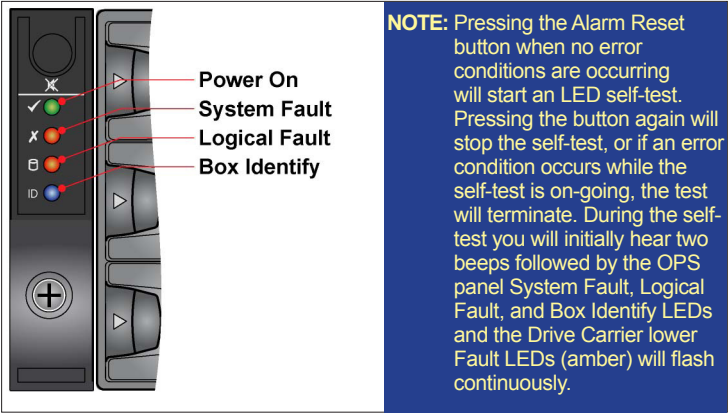


Figure 19: OPS Panel LEDs

OPS Panel LEDs				Other Associated LEDs or Alarms	State Description
Power On (Green)	System Fault (Amber)	Logical Fault (Amber)	Box Identify (Blue)		
ON	ON	ON	ON	Single beep, then two double beeps.	Power On Self Test.
ON	OFF	OFF			Power on, all systems are good.
ON	ON			PSU Fault LED or Cooling Module Fault LED.	Any PSU Fault, Cooling Fan Fault, or Over/Under Temperature Condition.
ON		ON		RAID Controller Fault LED on the specific controller.	A RAID Controller fault.
ON		ON		Array in failed or degraded state.	Drive failure has occurred causing loss of availability or redundancy.
ON		ON		An array is in an impacted state.	Array is performing background function such as a parity check, initialization, or expansion.
			ON		Enclosure identification mode. When illuminated it identifies the specific enclosure.
Note: A blank indicates the LED has no bearing on the specific state and is not applicable.					

12 Embedded StorView Initial Setup

On first startup of the embedded StorView module, you will need to configure the network settings. By default the embedded module will look for a DHCP server to obtain an IP address. If one is not found, it will search to determine if an IP address had been previously assigned.

If an address was not previously assigned, then the system defaults to an IP address of:

- 10.1.1.5 for the lower RAID Controller (Controller 0)
- 10.1.1.6 for the upper RAID Controller (Controller 1)
- 10.1.1.7 if an error is detected
- Subnet Mask is 255.0.0.0

During the process of configuring an embedded module, you will be required to enter a "new" password and confirm that password. The default password is "password".

The embedded module is identified by its MAC and IP address. It may be more helpful during setup to configure one embedded module at a time. You will find the MAC and IP address by accessing the VT-100 RAID Configuration Utility, selecting *Diagnostics* then choosing *StorView Embedded Module Support*. Select *Enter StorView Embedded Module Menu Mode* and selecting *View Network Settings*.

Embedded StorView Module Setup: Windows

- Insert the Software and Manuals Disc into your CD drive. The autorun program will automatically start the navigation menu.
- Click the **Embedded StorView Setup Wizard** link to begin the configuration.
- You are presented with a "Welcome" screen and instructions to proceed. Review the information and click the **Next** button.
- The program will begin searching for embedded StorView modules.
Those embedded modules with their default password intact will be displayed with their MAC address in an Uninitialized list window. If all discovered embedded modules have had their default passwords changed, then you will be taken to the "Initialized" screen.
- From the "Uninitialized" screen, select the MAC address of the embedded module you wish to configure. If you wish to use a DHCP server to assign your IP address, click the check box "Use DHCP".
If you wish to manually configure your network setting, enter the correct information in the appropriate fields.
- Enter a "new" password and confirm the new password. Click the **Configure** button.
- If you have additional uninitialized embedded modules, select the next MAC address and choose the appropriate settings from the previous steps.
Once you have completed configuring all the uninitialized embedded modules and have clicked the **Configure** button, the wizard will display a popup message indicating all systems have been configured. It will then re-scan for uninitialized systems and if none are found, you will be taken to the Initialized screen. If someone plugs in a uninitialized system to the network (same subnet mask) during the time of the rescan or resets a system's password back to the defaults, you will be taken to the Uninitialized screen again.
- Select the MAC address of the embedded module you wish to start and click the **Launch StorView** button. StorView will start up.
- Your web browser will open with a login screen. Enter the login name and "new" password then click **OK**. The StorView Main screen will open.

Embedded StorView Module Setup: Linux

Login as "root".

Insert the Software & Manuals Disc into your CD drive.

Change directories to the software location. Type:

`cd [CDROM mount point path]/software/storview/embedded`

Execute the Setup Tool. From the command prompt, type:

`./esvsetupcl-linux`

Embedded StorView Setup Tool. v1.0

Entering Menu Mode.

Follow the on screen prompts. At the conclusion of the setup you will be instructed on how to proceed. StorView will start within your web browser.

NOTE: Host-based StorView is started by launching your web browser and entering the IP address of the local host followed by ":9292". For more information, refer to the StorView Storage Management Software RAID Module User's Guide.