NEXX-5RU
Next Generation Compact SDI Processing Capable Routing Platform
Installation Guide

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IMPORTANT SAFETY INSTRUCTIONS

	The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated “Dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.
	The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (Servicing) instructions in the literature accompanying the product.

- Read this information
- Keep these instructions.
- Heed all warnings.
- Follow all instructions.
- Do not use this apparatus near water
- Clean only with dry cloth.
- Do not block any ventilation openings. Install in accordance with the manufacturer’s instructions.
- Do not install near any heat sources such as radiators, heat registers, or other apparatus (including amplifiers) that produce heat.
- Do not defeat the safety purpose of the polarized or grounding type plug. A polarized plug has two blades, one blade being wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles and the point where they exit from the apparatus.
- Only use attachments/accessories specified by the manufacturer
- Unplug this apparatus during lightning storms or when unused for long periods of time.
- Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way (i.e. liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped).

WARNING TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE.
WARNING DO NOT EXPOSE THIS EQUIPMENT TO DRIPPING OR SPLASHING AND ENSURE THAT NO OBJECTS FILLED WITH LIQUIDS ARE PLACED ON THE EQUIPMENT.
WARNING TO COMPLETELY DISCONNECT THIS EQUIPMENT FROM THE AC MAINS, DISCONNECT THE PLUG FROM THE DUAL POWER SUPPLIES AC RECEPTACLE.
WARNING THE MAINS PLUG OF THE POWER SUPPLY CORD SHALL REMAIN READILY OPERABLE.

INFORMATION TO USERS IN EUROPE

NOTE

This equipment with the CE marking complies with both the EMC Directive (2004/108/EC) and the Low Voltage Directive (2006/95/EC) issued by the Commission of the European Community.

Compliance with these directives implies conformity to the following European standards:

- EN60065 Product Safety
- EN55103-1 Electromagnetic Interference Class A (Emission)
- EN55103-2 Electromagnetic Susceptibility (Immunity)

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to the European Union EMC directive. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to the European Union EMC directive. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CE	EN60065	Safety
	EN55103-1: 1996	Emission
	EN55103-2: 1996	Immunity

	EN504192 2005 Waste electrical products should not be disposed of with household waste. Contact your Local Authority for recycling advice

INFORMATION TO USERS IN THE U.S.A.

NOTE

FCC CLASS A DIGITAL DEVICE OR PERIPHERAL

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 when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

WARNING

Changes or modifications not expressly approved by Evertz Microsystems Ltd. could void the user's authority to operate the equipment. Use of unshielded plugs or cables may cause radiation interference. Properly shielded interface cables with the shield connected to the chassis ground of the device must be used.

Evertz Microsystems Ltd FC For Commercial Use	Tested to comply with FCC Standards	This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: This device may cause harmful interference, and this device must accept any interference received, including interference that may cause undesired operation.

REVISION HISTORY

REVISION	DESCRIPTION	DATE
1.0	Preliminary release	July 2022
1.1	Addition of Power Supply Ejection and Insertion Addition of Powering Down the Nexx Reference Configuration Change	September 2022
1.2	Addition of server lift requirement Added NEXX-5-32x32-PKG1 and NEXX-5-32x32-PKG2	May 2023

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1. OVERVIEW

This guide provides the steps to install, wire, and configure the NEXX 5RU Frame, Crosspoint (XC), and Modules.

1.1 NEXX FRAME VIEW

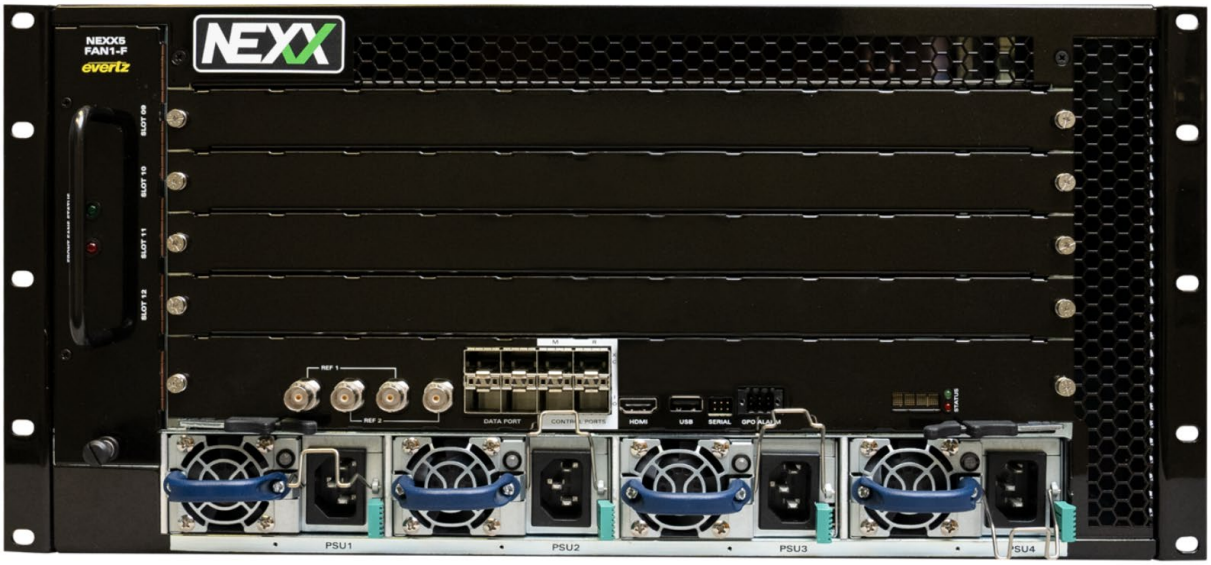


Figure 1-1: Front View of the NEXX 5RU Frame

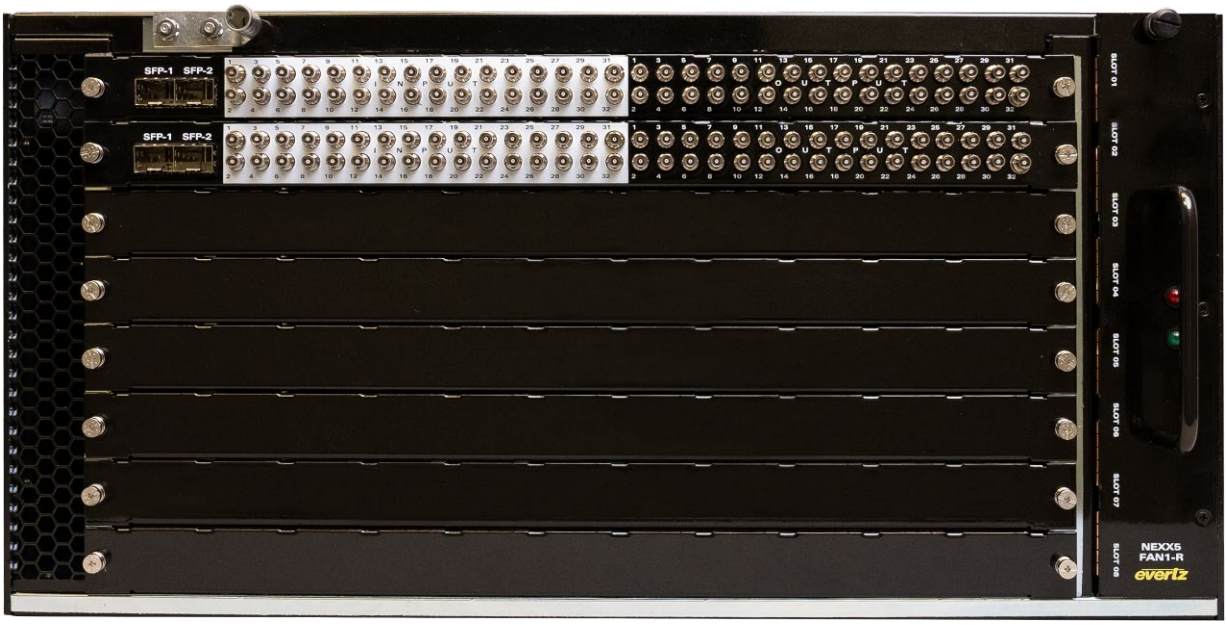


Figure 1-2: Rear View of the NEXX 5RU Frame

1.2 PACKAGES

There are two packages that can be ordered for the NEXX, NEXX-5-32x32-PKG1 and NEXX-5-32x32-PKG2. There is only one difference between the two packages, the frame depth.

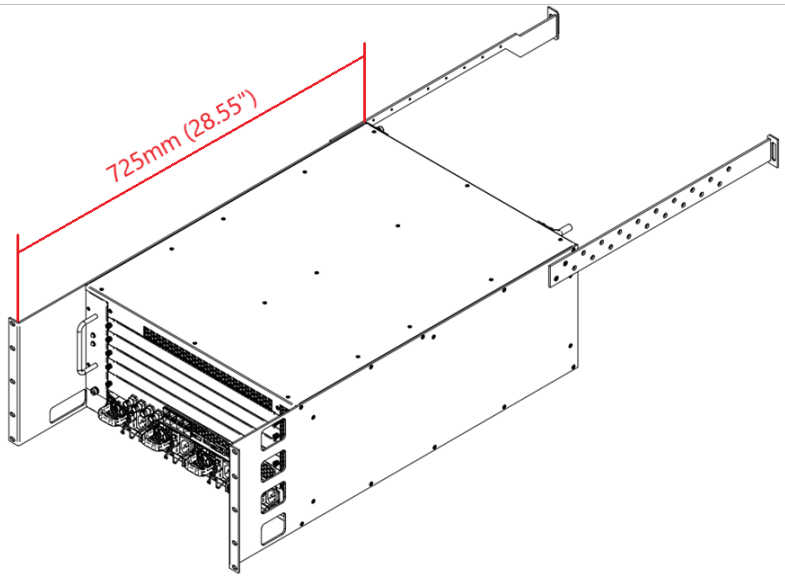
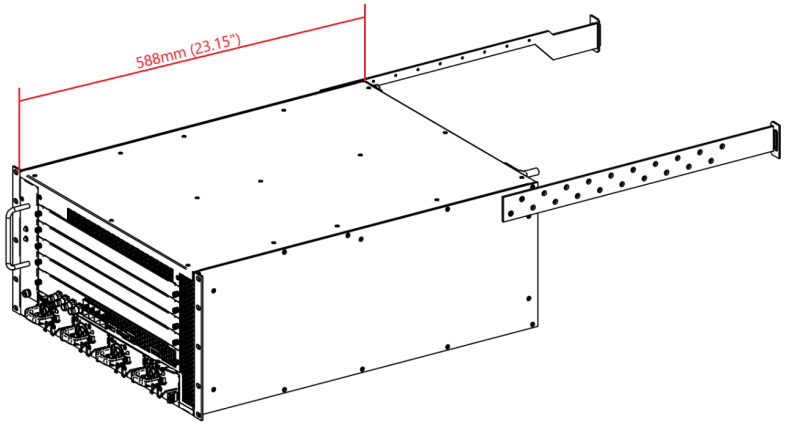
NEXX-5-32x32-PKG1	 **Figure 1-3: Long Depth NEXX-5RU Frame**
NEXX-5-32x32-PKG2	 **Figure 1-4: Short Depth NEXX-5RU Frame**

Table 1-1: NEXX-5RU Package Depth Difference

1.3 INCLUDED IN THE BOX

1. One NEXX 5RU frame, NEXX-FR-5U-BOM, with the following pre-installed:

Part	Shipping Label
One Crosspoint	NEXX-5-32X32-PKG1 (NEXX-XC1)
Number of Power Supplies Ordered	NEXX-PS1
Slot One Module	NEXX-5-32x32-PKG1 (NEXX-IO-C1)
Addition Modules Ordered	NEXX-IO-C1
Front Fan Tray	NEXX5-FAN1-F
Rear Fan Tray	NEXX5-FAN1-R

Table 1-2: NEXX 5RU Frame Installed Components with Shipping Label Name

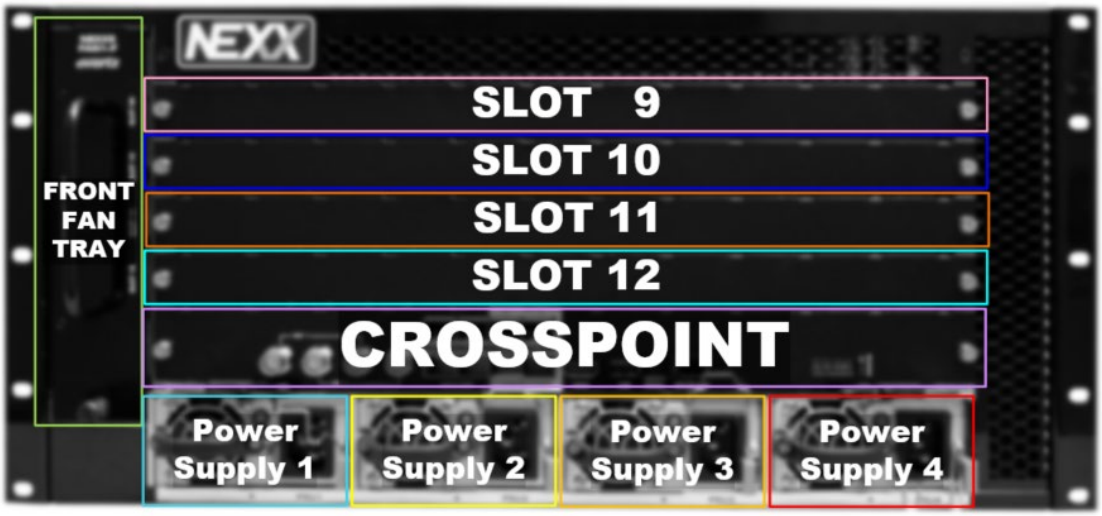


Figure 1-5: Front Breakdown of Components on the NEXX 5RU Frame

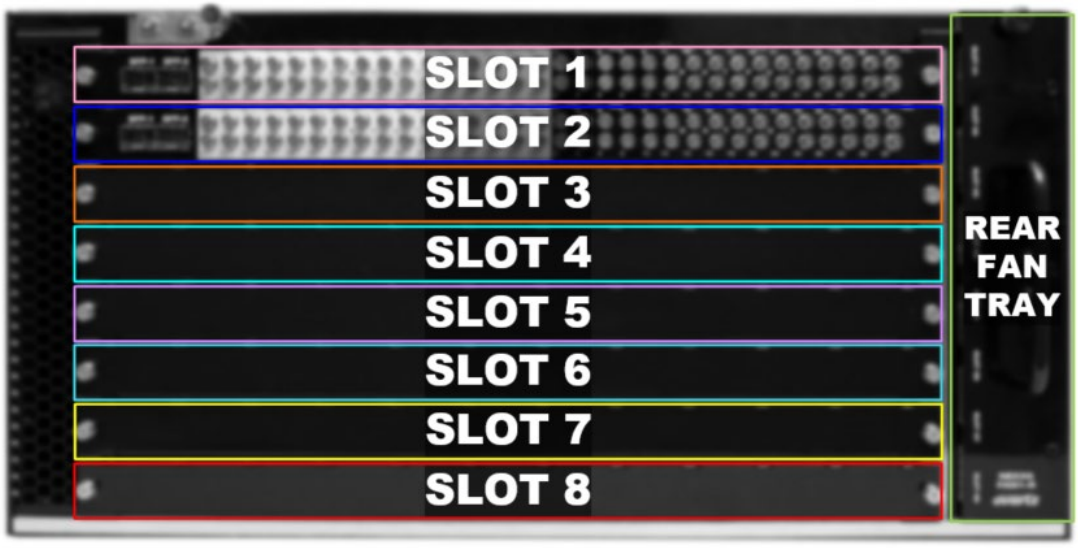


Figure 1-6: Rear Breakdown of the Components on the NEXX 5RU Frame

Modules installed sequentially starting with Slot 1.

2. Rear Mounts including the Rack to Rear Mount Brackets and the screws to attach the mounts to the NEXX frame.

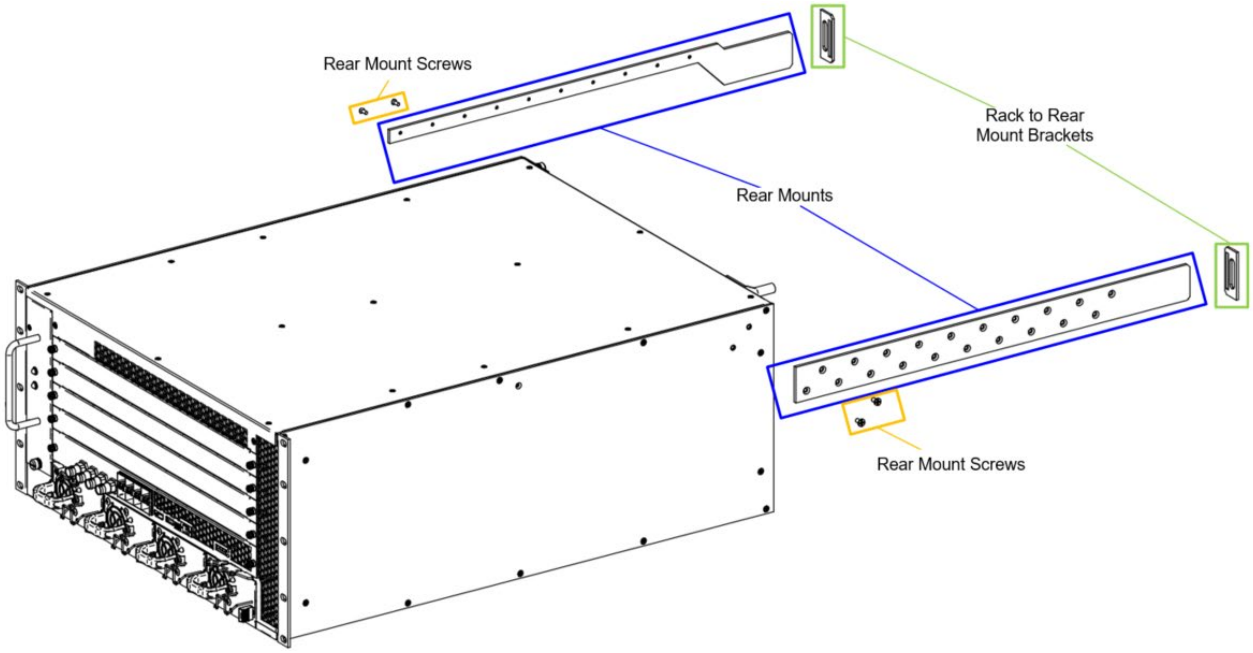


Figure 1-7: Rear Mount Assembly

3. Two RJ45 SFPs (UXP-SFP2-1G-T)

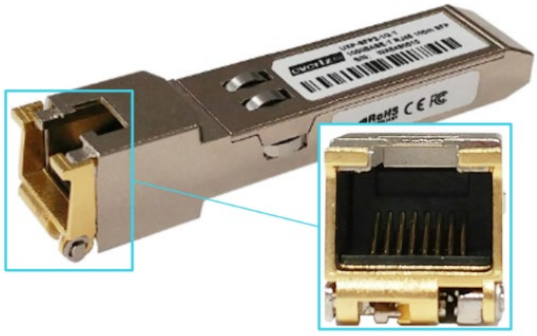


Figure 1-8: RJ45 SFP

Screws and washers to mount the NEXX Frame and the Rack to Rear Mount Brackets are not included. See the respective Server Rack Manual for screw and washer type specifications. A quantity of 14 screws and washers are required for installing the NEXX 5RU Frame.

1.4 RACK MOUNTING

The Rear Mount Assembly comes wrapped in foam, with the Rack to Rear Mount Brackets and the screws attached to it.

The NEXX Long Frame is 72.5 centimeters (28.55”) long. The Rear Mounts provide a minimum of 5.7 centimeters (2.25”) to a maximum of 40 centimeters (15.75”). The entire frame can fit in any server rack with a depth of 78.25 centimeters (30.8”) to 112.5 centimeters (44.3”).

The NEXX Short Frame is 58.8cm centimeters (23.15”) long. The Rear Mounts provide a minimum of 5.7 centimeters (2.25”) to a maximum of 40 centimeters (15.75”). The entire frame can fit in any server rack with a depth of 60 centimeters (24”) to 101 centimeters (39.75”).

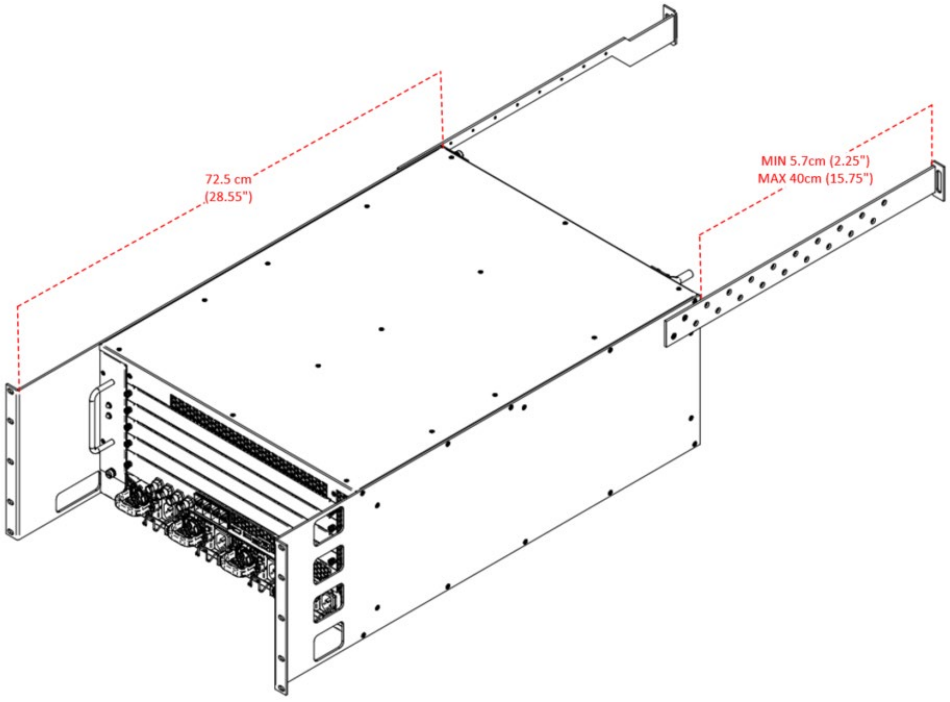


Figure 1-9: Depth of the NEXX 5RU Frame with the Rear Mounts

The cold air intake is on the front of the frame. The exhaust is located on the left of the frame.

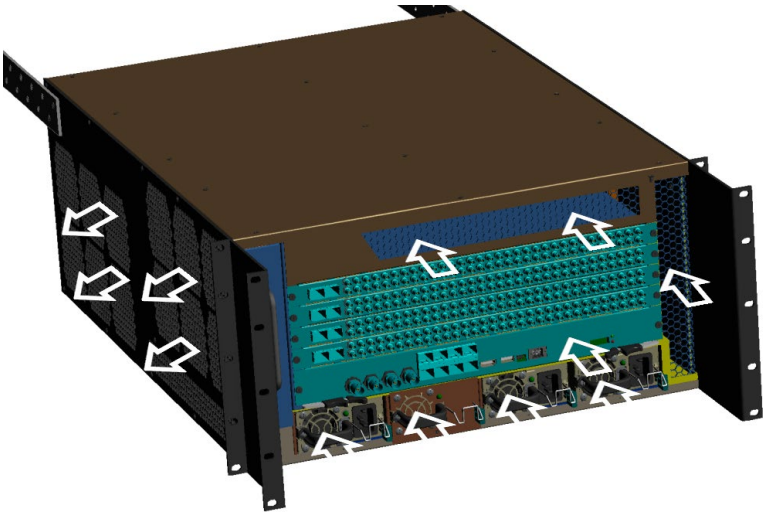


Figure 1-10: Air Intake and Exhaust

1.4.1 How to Mount the NEXX 5RU Frame to a Server Rack

The Rear Mounts attach to the right and left side of the NEXX 5RU frame via two screws on each side. Measure the rack depth that the NEXX will reside and correlate the measurement to the Rear Mounts. The total measurement of the depth of the NEXX frame with the mounts connected should exceed the rack depth measurement. Screw in the Rear Mounts according to the desired distance.

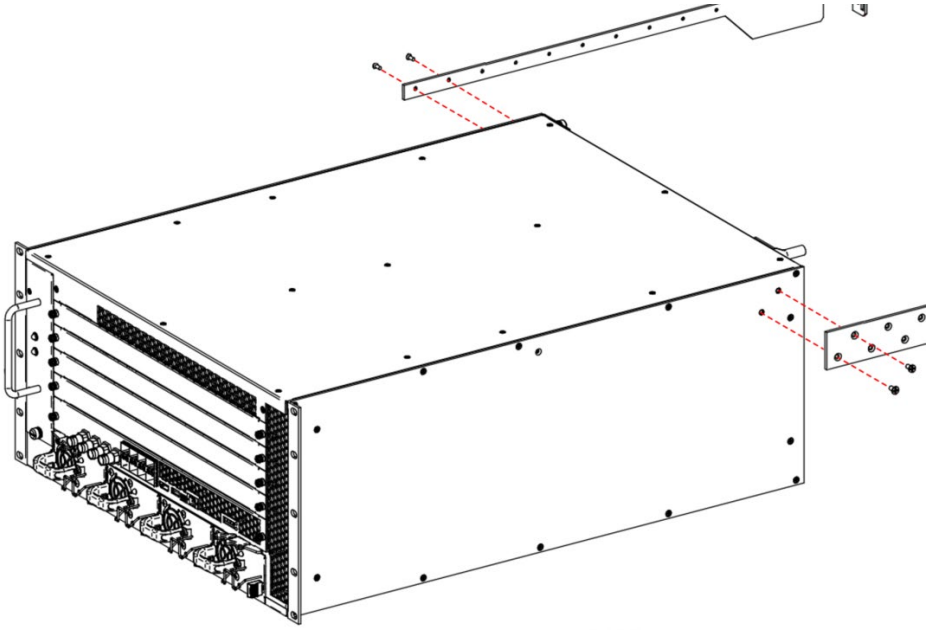
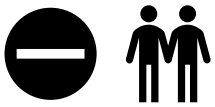


Figure 1-11: Mount Screw Hole Locations on the NEXX 5FU Frame



A server lift and two people are required to lift the NEXX frame safely to slot it into the rack.

The Rear to Rack Mount Brackets connect to the first rack unit of the NEXX. Position the brackets lengthwise with the large rectangular hole on the inside of the server rack. Using four screws screw in the brackets with washers' in-between the bracket and the screws.

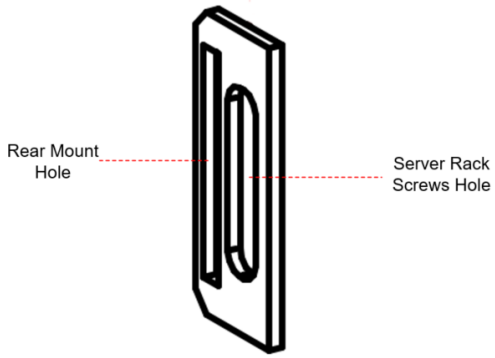


Figure 1-12: Rack to Rear Mount Bracket

Lift the NEXX with the Rear Mounts attached; slide it straight into the frame and into the Rear Mount holes on the Rack to Rear Mount Brackets. Secure the NEXX with 10 screws and washers.

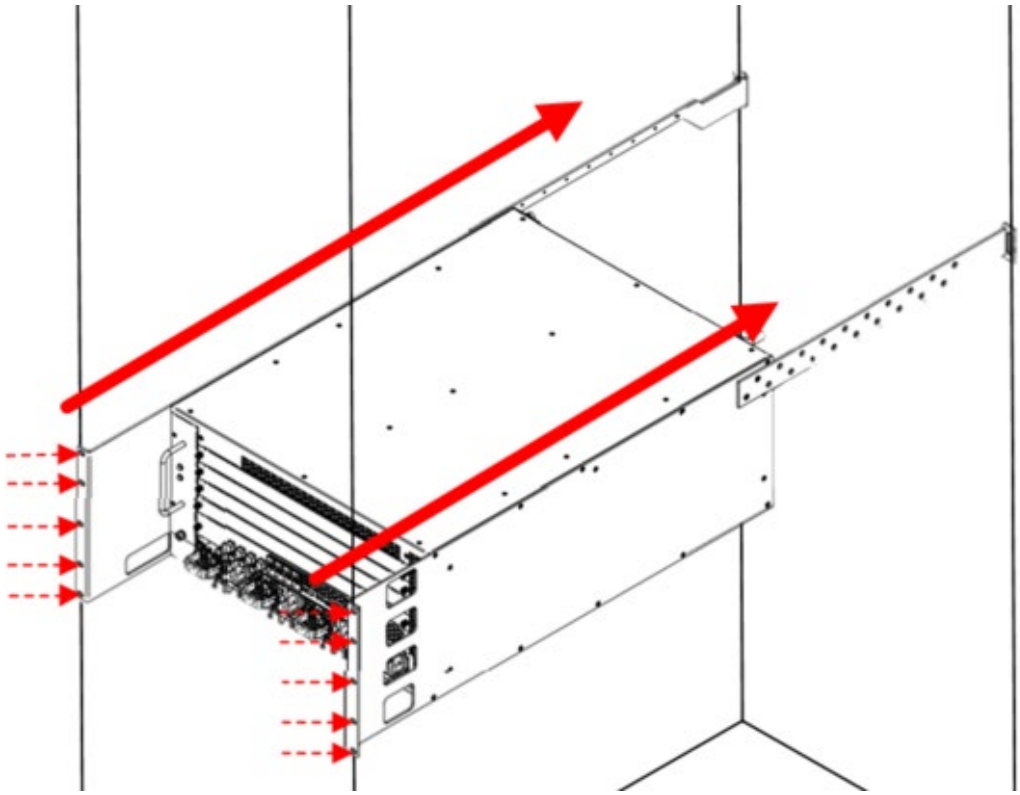


Figure 1-13: NEXX 5RU Frame Installation with Front Screw Locations

1.4.2 Crosspoint Ejection and Insertion

The frame has the crosspoint preinstalled. Installation of the crosspoint is proper when the black plastic hooks connect to the bottom of the crosspoint and the thumbscrews on either side of the crosspoint are flush with the frame. The crosspoint is passive and may be removed or inserted while the frame is on. Secure the frame before moving any component.

1.4.2.1 Crosspoint Ejection

To remove the crosspoint completely unscrew the thumbscrews on either side. Then, push the thumb tabs towards the black tips (1). This unhooks the crosspoints from the frame. Start removing the crosspoint by pulling the metal handles away from the crosspoint (2). Grab the right and left side of the crosspoint to pull straight outward away from the frame.

Figure 1-14: NEXX-XC1 Ejection

1.4.2.2 Crosspoint Insertion

To insert the crosspoint make sure that the metal handles are pointed perpendicular to the front plate. The crosspoint sits above the four power supplies. Line the PCB to the rails of the frame. Slide the card into the slot. Push the plastic thumb tabs towards the black tip while rotating the metal handles into the crosspoint. Release the thumb tabs on the metal handles so that they are parallel to the front plate of the crosspoint. This will hook the crosspoint into the frame. Screw the thumbscrews on the right and left of the crosspoint until finger-tight.

When hooking the crosspoint into the NEXX frame some resistance may be present.

Failing to hold the thumb tabs while rotating the metal handles will result in damage to the hook mechanism.

1.4.3 Module Ejection and Insertion

The frame has the modules preinstalled. Installation of the modules is proper when the thumbscrews on either side are flush with the frame. The modules are passive and may be removed or inserted while the frame is on. Secure the frame before moving any component.

1.4.3.1 Module Ejection

Unscrew the thumbscrews on both the right and left sides of the module. Pull both thumbscrews to start removing the module until it is protruding by one inch. Using both hands grip the right and left side of the module. Pull straight outwards to remove.

1.4.3.2 Module Insertion

To insert a module, line up the PCB to the rails on the slot. Slowly push the module in while making sure that is it sitting in-between the rails. Once the front plate becomes flush, tighten the thumbscrews on the right and left of the module until finger-tight.

1.4.4 Fan Tray Ejection and Insertion

The frame has both Front and Rear Fan Tray preinstalled. The Fan Trays are passive and may be removed or inserted while the frame is on. Secure the frame before moving any component. To eject the fan trays unscrew the thumbscrews and pull on the handle straight backwards. To insert the fan trays slide them straight into the frame. Secure them by tightening the thumbscrew until finger tight.

1.4.5 Power Supply Ejection and Insertion

The power supplies are hot swappable and may be removed or inserted while the frame is on. The frame ships with them preinstalled. To remove the power supply we recommend pressing the metal of the handle with the blue tab, closet to the power supply, inwards and while pulling on the black handle. If the blue tab is pressed, instead of the metal attached to the handle, the metal may bend and the hook locking the power supply in place may not be pressed. To insert the power supply slide it in the slot until the blue tab clicks into place.

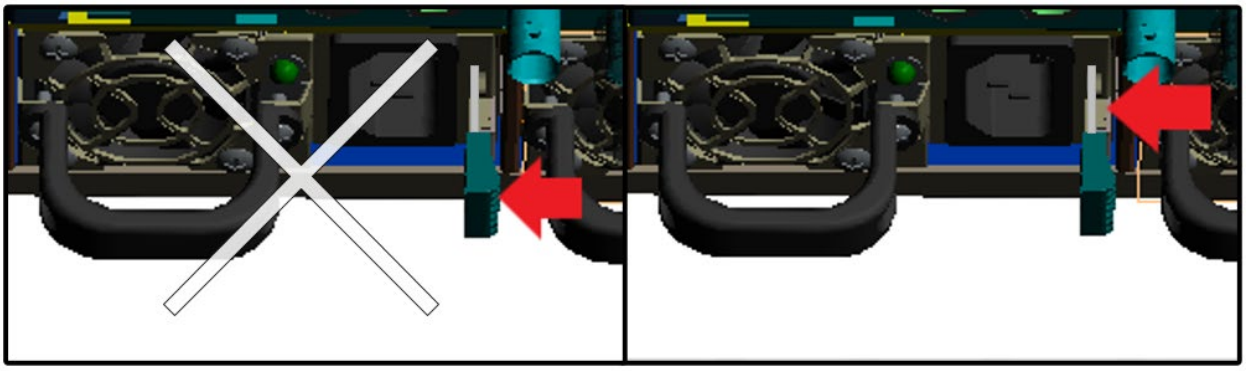


Figure 1-15: Removal of a Power Supply

1.5 SUPPLYING POWER

The NEXX 5RU frame can have up to four power supplies internally connected. Each 12V power supply supplies varying wattage depending on the AC voltage supplied. The AC voltage supplied can be dependent on the country.

Power Supplied (AC)	Wattage
100V	1300W
110/120V	1350W
220/230V	1600W

Table 1-3: Maximum Wattage Supplied Per Power Supply

The power load is disturbed evenly between each power supply. If a power supply fails, the remaining power supplies will pick up the load as long as the total wattage required is less than the maximum wattage supplied. The Power Factor corrected with a nominal value of 9.8.
To supply power connect a female IEC C13 connector to each of the power supplies. Connect each power supply present.

Figure 1-16: Female IEC C13 Connector

When the first cable is connected, the frame will start to boot up. The fans on the frame will power on at 100%. After a few seconds, the fans will reduce speed. The light on the power supply will glow green and the fans built into the power supplies will spin.

It can take up to seven minutes for the NEXX to fully boot and become responsive.

1.6 POWERING DOWN THE NEXX

To power down the Nexx we recommended cutting power to the unit all at once. If connected to a power brick supplying power to all power supplies simply turning off the brick or unplugging is the best way to power down the Nexx.

When powering down a power brick everything plugged into the power brick will lose power. We advise double-checking all the connections before turning the power off.

If powering down an entire power brick is not an option. Simply pull the cables from the power supplies all at the same time. If there are more than two power supplies, we recommended that two people pull the power cables together as to avoid any potential damage to the PSUs or cables.

1.7 CONFIGURING THE ETHERNET PORTS

The XC proxies into all the IO modules present in the frame. Configuring the network on the XC can be done through the serial port on the front of the XC or through a SSH session. The XC comes preconfigured with a redundant IP Address in the 192.168.0.x subnet.
Connect both 1G RJ45 SFPs (UXP-SFP2-1G-T as seen in Figure 1.2.5) to the 'M' and 'R' ports in the XC row on the XC. Using two Cat 5e or faster cables connect the RJ45 SFPs to a 1G-network switch.

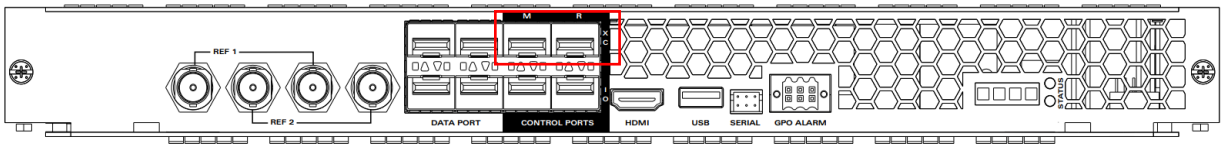


Figure 1-17: Main and Redundant XC ports on the NEXX-XC1

The XC has main and redundant Ethernet Ports that require two different subnets. Attempts to configure the ports on the same subnet will not work resulting in the XC ignoring the network configuration requests.

1.7.1 Serial Connection

Using a Rainbow Serial Cable connect a PC to the serial port on the front of the XC.

Figure 1-18: Rainbow Serial Cable

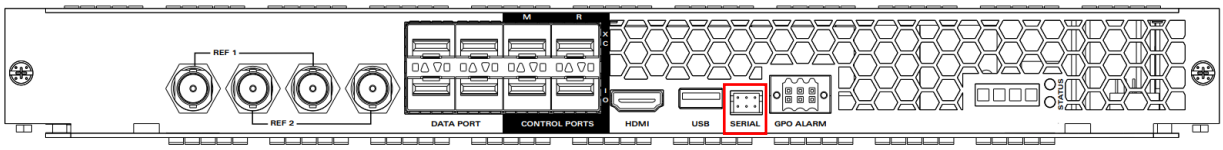


Figure 1-19: Serial Connector Location on the NEXX-XC1

Connect to the COM port via a third party software. Change the baud rate (speed) to 115200. Log into the XC with the user name "root" and the password "evertz".

1.7.2 SSH Session

Alternatively from the Serial Connection a SSH Connection can be made to configure the Ethernet Ports. Using a third party software connect to the SSH port (22). This requires a proper network setup that connects the NEXX XC and a PC. Log into the XC with the user name “root” and the password “evertz”.

1.7.3 How to Configure the Main and Redundant Network on the XC

Configure the Main Ethernet Port with the following command filling in the ‘< >’ with the parameters specific to this system based on the network switch the Main Ethernet is connected to.

ncs_config ctrl_net set ip <ip address> netmask <netmask> gateway <gateway>
Example: ncs_config ctrl_net set ip 172.27.**250**.54 netmask 255.255.255.0 gateway 172.27.**250**.1

Table 1-4: Main Ethernet Port Configuration Command

Configure the Redundant Ethernet Port with the following command filling in the ‘< >’ with the parameters specific to this system based on the network switch the Redundant Ethernet is connected to.

ncs_config ctrl_net_**red** set ip <ip address> netmask <netmask> gateway <gateway>
Example: ncs_config ctrl_net_**red** set ip 172.27.**251**.54 netmask 255.255.255.0 gateway 172.27.**251**.1

Table 1-5: Redundant Ethernet Port Configuration Command

Reboot the XC with the following command.

reboot

Table 1-6: Reboot Command on the XC

It can take up to seven minutes for the NEXX to fully boot and become responsive.

View the current Ethernet configuration with the ifconfig command. Eth0 is the Main Ethernet Port. Eth1 is the Redundant Ethernet Port.

ifconfig | grep -A 6 'eth0|eth1'

Table 1-7: ifconfig Command on the XC

The device is now ping-able on the network and the WebEASY page is accessible via a web browser when the Main or Redundant IP Address is enter in as the URL.

1.8 REFERENCE CONFIGURATION

Reference is required for basic operation of the NEXX. There are two reference BNC ports and there are loopback BNC ports for each, labelled ‘REF 1’ and ‘REF 2’. The reference ports are located on the front on the frame on the XC. Measurement devices require the loopback port. A Terminator is necessary when the loopback ports are not in use.

It is required that either REF 1 and/or REF 2 are connected to genlock.

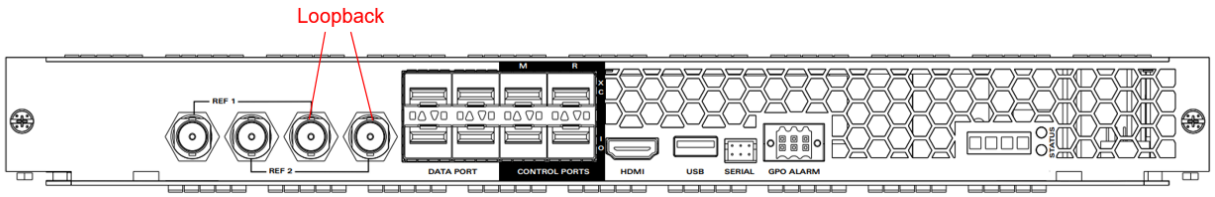


Figure 1-20: Reference Port Locations

1.9 FIRMWARE UPGRADE

During a firmware upgrade, a reboot of the NEXX device is required which will cause Magnum to resync with the device. A maintenance window is recommended.
Only the XC needs to be upgraded as it proxies the rest of the modules in the frame.

1.9.1 How to Upgrade the XC Firmware

A copy of the Trunk Firmware File and access to the WebEASY page is a prerequisite before performing the upgrade.
Log into the NEXX WebEASY page with the root credentials (login: root, password: evertz). From the 'General' page go to the 'Upgrade' page by clicking on the gear icon on the top middle of the web page.

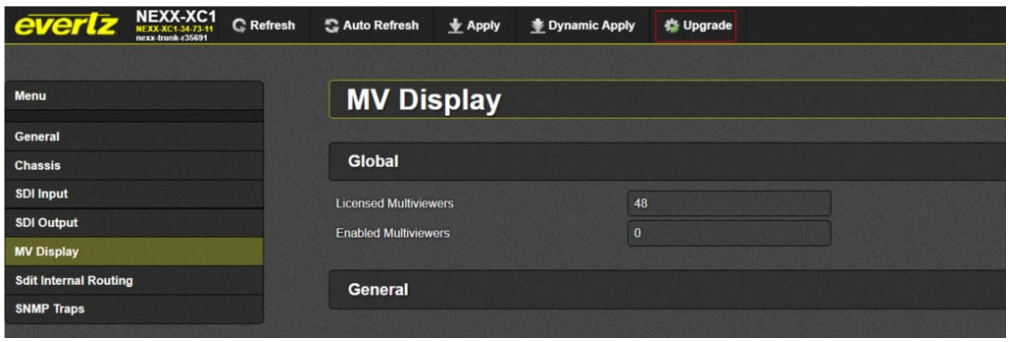


Figure 1-21: WebEASY Upgrade Menu Location

Under 'Image settings' select 'Choose File' and choose the Trunk Firmware File. Once uploaded the version of the firmware you just loaded will be present. In the same row as the firmware version, in the first column, there is an image number. This image number will be used in the next step. If 'Choose File' is absent from the page, then delete an image that is no longer needed (discretion is advised). Under 'Boot image’, change the 'Next boot image' to the Image number.

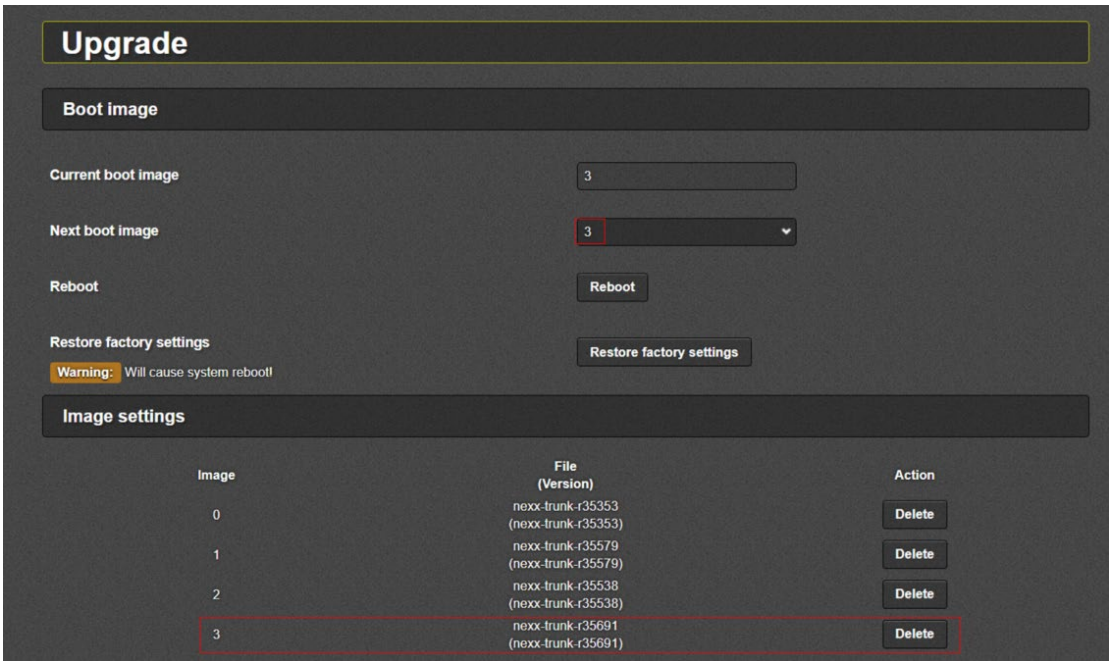


Figure 1-22: Image Settings on Upgrade

Click the 'Reboot' button. You will lose access to the Webpage.

It can take up to seven minutes for the NEXX to fully boot and become responsive.

Return to the 'Upgrade' page on WebEASY to confirm that the 'Current boot image' is equal to the 'Next boot image' and that the image number is equal to the firmware intended.

1.10 WIRING CONFIGURATION

The NEXX 5RU Frame can have up to eight modules plugged into slot 1-8. Each module has different functionality and features.

1.10.1 NEXX-IO-C1

The NEXX-IO-C1 has 32 HDBNC Input Ports (on the left), 32 HDBNC Output Ports (on the right) and two SFPs. ‘SFP-1’ is for MADI and can support 64 Input and Output Channels. The MADI SFP can be Fiber (LM38-A3S-TI-N [multimode]) or DIN (SFPTR-M-DIN). ‘SFP-2’ is for TDM and can support 512 Input and Output Channels. The TDM SFP can be a DIN (SFPTR-M-DIN).

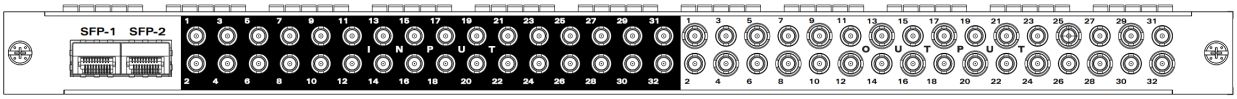


Figure 1-23: NEXX-IO-C1 Module

There are four built in lightweight Multiviewers on each NEXX-IO-C1 module. Each Multiviewer is unlocked with a license on a per Multiviewer basis. Any input in the frame can be routed to a window of a Multiviewer. Similarly, any Multiviewer output can routed to any output port.
Up to 32 3G signals can have Frame Sync applied. UHD (12G) Frame Sync can be activated to 16 of the 32 input ports. Ports 1-4 can have 12G frame sync, 5-8 are bypass, the sequence repeats.

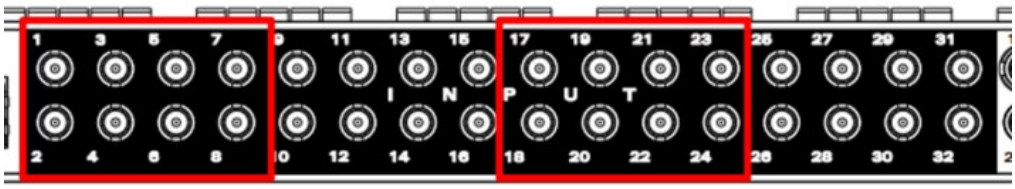


Figure 1-24: 12G Frame Sync Ports Groups Available

Wire the Inputs and Outputs of the NEXX-IO-C1 with HDBNC cables as desired.

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