

System Installation Manual for Type Approval Applications

Contents

Document Revision History.....	4
Important Product and Safety information	5
Additional Product Warnings.....	6
System Introduction and Benefits	9
Representative System Diagram.....	10
Q-SYS Product list covered under Type Approval.....	10
Additional Equipment (to be supplied by Installer).....	11
System configuration and installation locations.....	11
Q-SYS Designer Suggestions.....	14
Network Switch Requirements	15
Required for all Real-time Q-SYS Audio and Video Distribution.....	15
1 Gbps Bandwidth.....	15
Recommended for Mixed Media Data Types or Large Amounts of Data.....	15
Quality of Service (QoS)	15
Priority Traffic	15
Egress Queues.....	15
Egress Buffering	15
Performance Requirements.....	16
Layer 3 Networking	16
Reducing Latency, Jitter, and Error Counts.....	17
Network Infrastructure and Traffic.....	17
Layer 2 Functions	17
VLAN Tagging	18
Flow Control & Bandwidth Throttling.....	18
Port Forwarding	18
Energy-Efficient Ethernet (EEE).....	18
Cabling.....	18
Hop Count and Network Diameter	18
Backbone Bandwidth	18
Audio Streams.....	18
Amplifier Maximum Power Levels	19
Core 3100/1100 - Centralized Audio and Control Processor.....	20

Core 6000 CXR (Dell) / PowerEdge XR11 - Centralized Audio and Control Processor.....	30
Power Amplifiers, CX-Q Series	154
Q-SYS Networked Page Stations	180
SOLAS AC FILTER ENHANCEMENT (SAFE)	196
Core 6000 CXR (Dell XR11) - AC Filter Rack Installation.....	200

Document Revision History

Release date	Version	Details
04/11/22	A	Initial Release
04/25/22	B	Added guidance to include external light source for page stations.
10/24/22	C	Adding Instructions to cover alternate Core 6000 CXR (Dell XR11)

Important Product and Safety information

Please check all individual component instruction manuals for the following symbols or similar:

The term **"WARNING!"** indicates instructions regarding personal safety. If the instructions are not followed the result may be bodily injury or death.

The term **"CAUTION!"** indicates instructions regarding possible damage to physical equipment. If these instructions are not followed, it may result in damage to the equipment that may not be covered under the warranty.

The term **"IMPORTANT!"** indicates instructions or information that are vital to the successful completion of the procedure.

The term **"NOTE"** is used to indicate additional useful information.



The intent of the lightning flash with arrowhead symbol in a triangle is to alert the user to the presence of un-insulated "dangerous" voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to humans.



The intent of the exclamation point within an equilateral triangle is to alert the user to the presence of important safety, and operating and maintenance instructions in this manual.



IMPORTANT SAFETY INSTRUCTIONS



WARNING! TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE. Elevated Operating Ambient – If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than room ambient. Consideration should be given to ensure that the maximum operating temperature range -10°C to 50°C (14°F to 122°F) is not exceeded. Reduced Air Flow – Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

Maintenance and Repair



WARNING! Advanced technology, e.g., the use of modern materials and powerful electronics, requires specially adapted maintenance and repair methods. To avoid a danger of subsequent damage to the apparatus, injuries to persons and/or the creation of additional safety hazards, all maintenance or repair work on the apparatus should be performed only by a QSC authorized service station or an authorized QSC International Distributor. QSC is not responsible for any injury, harm or related damages arising from any failure of the customer, owner or user of the apparatus to facilitate those repairs. In the event of malfunction, contact QSC Customer Support for assistance.

Additional Product Warnings

Heed all warnings, specifically:

- Do not block and keep ventilation openings free of dust or other matter
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus that product heat
- To reduce the risk of electrical shock, the power cord of the Amplifiers and Core processors shall be connected to a mains socket outlet with a protective earth connection; For the Page Stations power must be supplied to the unit from an IEEE 802.3af compliant power sourcing equipment (PSE) using data communications cabling having a rating of category 5e or greater (CAT-5e).
- Disconnect all power before any servicing
- Do not defeat the safety purpose of the polarized or grounding-type plug used for the Amplifiers and Core processors. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are 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 cords and other cabling from being walked on or pinched particularly at plugs, convenience receptacles, and the points where they exit from the apparatus
- Only use attachments/accessories specified in the individual component manuals provided with the system
- Refer all servicing to qualified service personnel. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online telephone service and support team. Damage due to servicing that is not authorized is not covered by your warranty.
Servicing is required when the apparatus has been damaged in any way, such as power supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to moisture, does not operate normally, or has been dropped.
- The appliance coupler, or the AC Mains plug, of the Amplifiers and Core processors are considered the AC mains disconnect devices and shall remain readily operable after installation
- Consult a licensed, professional engineer when any doubt or questions arise regarding a physical equipment installation
- Do not use any aerosol spray, (liquid-) cleaner, disinfectant or fumigant on, near or into any of the apparatus. Clean only with a dry cloth
- Do not unplug any of the units by pulling on a cord, use the plugs where applicable
- Dangerous voltage possible on output terminals. Disconnect AC Mains from the Amplifiers and Core processors before connecting or disconnecting

- Specifically for the Core Processors:

LITHIUM BATTERY WARNING

THE EQUIPMENT MAY CONTAIN A NON-RECHARGEABLE LITHIUM BATTERY. LITHIUM IS A CHEMICAL KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER OR BIRTH DEFECTS. THE NON-RECHARGEABLE LITHIUM BATTERY CONTAINED IN THE EQUIPMENT MAY EXPLODE IF IT IS EXPOSED TO FIRE OR EXTREME HEAT. DO NOT SHORT CIRCUIT THE BATTERY. DO NOT ATTEMPT TO RECHARGE THE NON-RECHARGEABLE LITHIUM BATTERY. REPLACE THE BATTERY ONLY WITH THE SAME OR EQUIVALENT TYPE THAT IS RECOMMENDED BY THE MANUFACTURER. DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.

See individual component instruction manuals for more information.

CX-Q Amplifier:

- Follow the steps for installation in the recommended installation order
- After connecting the outputs to the loudspeakers, you may turn the amplifier on; Make sure the output gain settings for all audio-source devices (CD Players, Mixers, Instruments, etc.) are at the lowest output (max attenuation)
- For specifications of circuits please refer to the Amplifier manual

Core 1100/3100 Processor:

- The Processor can be used in or out of an equipment rack. Rack mounting is optional. Rear rack ears are an available accessory if needed.

Rack Mount Instructions

Rack mount the Q-SYS product by supporting it from underneath while aligning the front panel mounting holes (in the rack ears) with the threaded screw holes in the rack rails. Install all four front mounting screws and washers and tighten securely. All Q-SYS products come with rear rack support ears. Ensure that these rear mounting points are securely fastened to rear rack rails or side walls.



WARNING! Reliable Earthing – Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

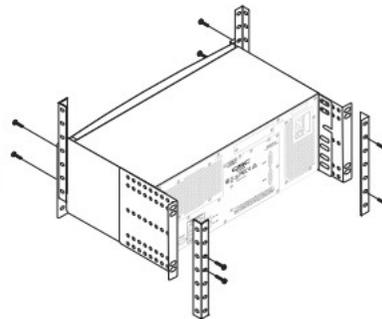
Mechanical Loading – Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven or unstable mechanical loading.



CAUTION! **Elevated Operating Ambient** - If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than room ambient. Consideration should be given to ensure that the maximum operating temperature range (0°C to 50°C (32°F to 122°F)) is not exceeded.

Reduced Air Flow – Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

Circuit Overloading – Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on over-current protection and supply wiring.



– Figure 1 –

- Follow the steps for installation in the recommended installation order (AC Power and Q-Sys Network)

Core 6000 CXR (Dell XR11):

For specific information about the rail solutions compatible with your system, see the Dell EMC Enterprise Systems Rail Sizing and Rack Compatibility Matrix available at https://i.dell.com/sites/csdocuments/Business_solutions_engineering-Docs_Documents/en/rail-rack-matrix.pdf.

The document provides the information that is listed below:

- Specific details about rail types and their functionalities.
- Rail adjustability range for various types of rack mounting flanges.
- Rail depth with and without cable management accessories.
- Types of racks supported for various types of rack mounting flanges.

To ensure proper operation and cooling, all system bays and fans must always be populated with a component or a blank.



IMPORTANT: The Core 6000 CXR ships with an AC Filter Kit (with included rack installation instructions) and a Rugged Kit. Both kits are required for SOLAS installations under DNV Type Approval. Refer to the Dell EMC PowerEdge XR11 Installation and Service Manual at dell.com for server and Rugged Kit installation instructions.

Page Stations:

- Wall-mounting the page station: Q-Sys Page Stations are designed to be mounted on a wall or podium with an appropriate cutout and cavity to allow all cables and power sources to connect to the Page Station rear panel with adequate stress relief. The included Mounting Bracket is designed to mate with a standard triple-gang U.S. electrical box, but does not need one to be mounted. Using an electrical box provides contractors with the option of pre-wiring, then installing the Page Station at a later time; if an electrical box is used, its dimensions should meet the NEMA standards. The Mounting Bracket should be firmly attached to the wall using the electrical box (if installed) for alignment only

System Introduction and Benefits

The Q-SYS system detailed in this document is part of the Q-SYS Ecosystem. This environment is an integrated audio, video and control platform built on standard off-the-shelf IT hardware/network infrastructure, allowing it to easily integrate with other IT platforms.

The flexible software foundation of the Q-SYS Ecosystem scales simply and cost effectively, reducing the need for dedicated hardware and eliminating complex integration workarounds that are common to traditional AV&C solutions.

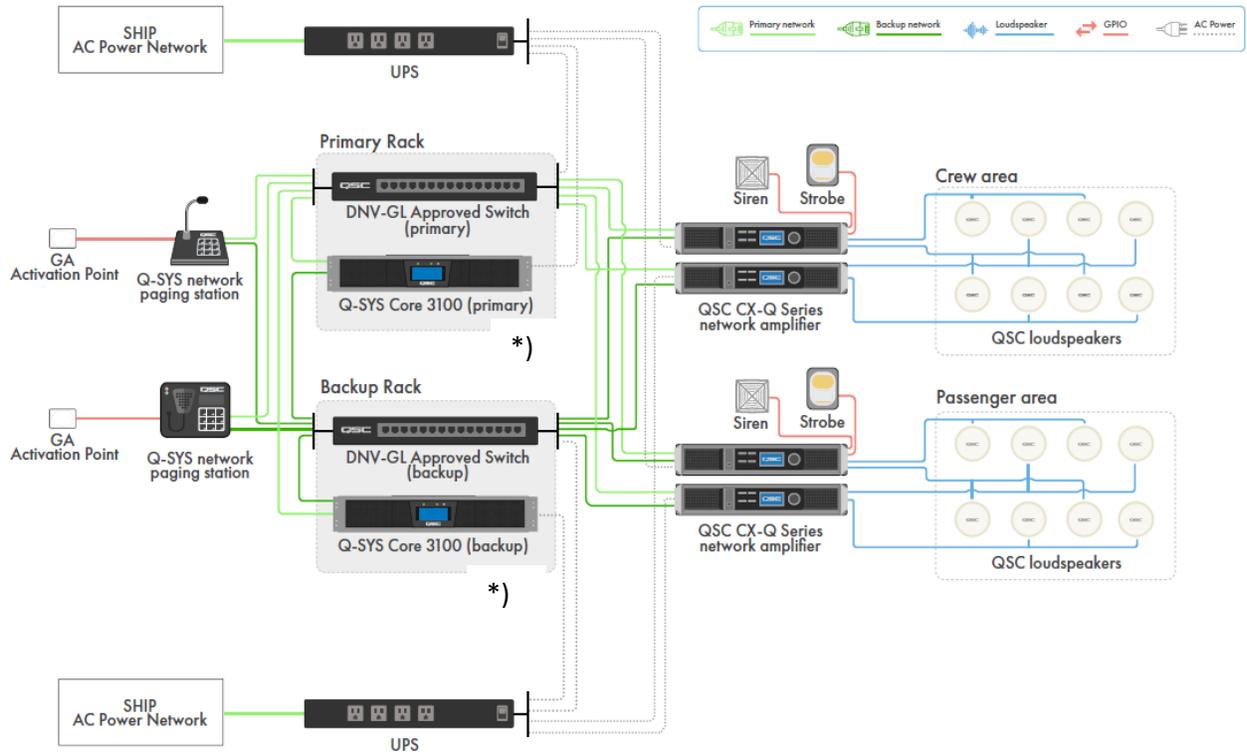
The Q-SYS Ecosystem lets system designers take full advantage of its software-based architecture, native devices and drag-and-drop control programming to enable a smoother, expedited installation process. This also eliminates additional costs and effort required to tie disparate components together. Native Q-SYS Ecosystem components work flawlessly together, which provides tighter integration and reduces possible points of failure.

Q-SYS also offers remote monitoring and management of every native Q-SYS device and connected third-party peripheral. This will equip your AV/IT staff with the tools to diagnose system issues while ultimately increasing AV system uptime.

QSC engineers design components across the signal chain to draw the very best performance from each other, creating a synergy that makes a Q-SYS system far more than the sum of its parts. Said more plainly, when a Q-SYS Core processor and page station are paired with a Q-SYS network amplifier and QSC loudspeaker, the system can deliver a uniquely optimized user experience and more value to the client with easier deployment.

For more information on Q-SYS, please visit: www.qsys.com

Representative System Diagram



*) representative system diagram showing Q-SYS Core 3100 which can be replaced by alternative Q-SYS Cores shown below

Q-SYS Product list covered under Type Approval

Item	Certified Models	Description
Q-SYS Network Paging Stations	PS-1600G	Page station with command keypad and gooseneck microphone
	PS-1600H	Page station with command keypad and handheld microphone
Q-SYS Core	Core 3100*	Q-SYS Core 3100 Enterprise Core processor*
	Core 1100*	Q-SYS Core 1100 Enterprise Core processor*
	Core 6000 CXR (Dell XR11)	Q-SYS Core 6000 Enterprise Core**
Q-SYS CX-Q Amplifiers	CX-Q 8K8	Eight-channel Network Amplifier, max power up to 8000W
	CX-Q 8K4	Four-channel Network Amplifier, max power up to 8000W
	CX-Q 4K8	Eight-channel Network Amplifier, max power up to 4000W
	CX-Q 4K4	Four-channel Network Amplifier, max power up to 4000W
	CX-Q 2K4	Four-channel Network Amplifier, max power up to 2000W
Software	Q-SYS Designer	Must be Q-SYS Designer v9.4.3*** or later (see www.qsys.com)

* Must include SOLAS AC Filter Enhancement (SAFE)

** Must include AC Filter, Dell FM001

*** Core 3100/1100 can use v9.4.1 or later

Additional Equipment (to be supplied by Installer)

- Activation switches with protective cover
- Uninterruptible power supplies
- SOLAS AC Filter Enhancement devices (only if indicated in table above)
- Type Approval-certified network switches
- Sirens (may already be installed on vessel)
- Strobes (may already be installed on vessel)
- Network cabling
- Electrical wiring for activation switches
- PoE injectors if the Ethernet switch(s) do not provide adequate PoE power for the Page Stations or other Q-SYS devices
- Loudspeakers (may already be installed on vessel)
- Equipment racks

System configuration and installation locations

The Q-SYS family of connected appliances is incredibly flexible with almost limitless possible configurations. This includes expansion beyond the PAGA system to create a robust entertainment system in the same environment. However, for Type Approval PAGA applications, installers should be mindful of these key characteristics or aspects of system design to ensure proper operation, system redundancy, and compliance with the Type Approval requirements:

- The Q-SYS equipment specified in this manual is to be installed in protected environments, such as control rooms, accommodations, and vessel bridges. These locations are characterized by a temperature rise of < 5°C. The equipment is not suitable for use in machinery spaces, exposed decks, or other extreme environments.

A Compass Safe Distance for individual system components is indicated as follows:

Item	Certified Models	Minimum distance between component and Compass [millimeters] *)
Q-SYS Network Paging Stations	PS-1600G/H	620
Q-SYS Core	Core 3100* / 1100	> 5000
	Core 6000 CXR (Dell XR11)	465
Q-SYS CX-Q Amplifiers	CX-Q 8K8 / 8K4 / 4K8 / 4K4 / 2K4	> 5000

*) the equipment shall be positioned outside the vicinity of a standard or a steering magnetic compass of > 5000mm if not shown differently.

Core 6000 CXR (Dell XR11) specifics:

- Installation in control rooms, accommodation or bridge, and in space with air conditioner and operational temperature within 5°C to 55°C
- Installation on the bridge only for arrangements in compliance with the following configuration:

Description	Vendor
PCIe cards	
Intel(R) Gigabit 4P I350-t Adapter	Intel
Processors	
Intel Xeon Silver 4314 2.4G, 16C/32T, 10.4GT/s *)	Intel
SSDs	
960GB SSD SATA6	
Memory	
DIMM,64GB,3200,2RX4,16G, DDR4,R	
Power Supply	
1400W 60mm PSU Version 2	Artesyn
Fans	
ASSY, FAN,40MMX56MM, VHPR,XR11	

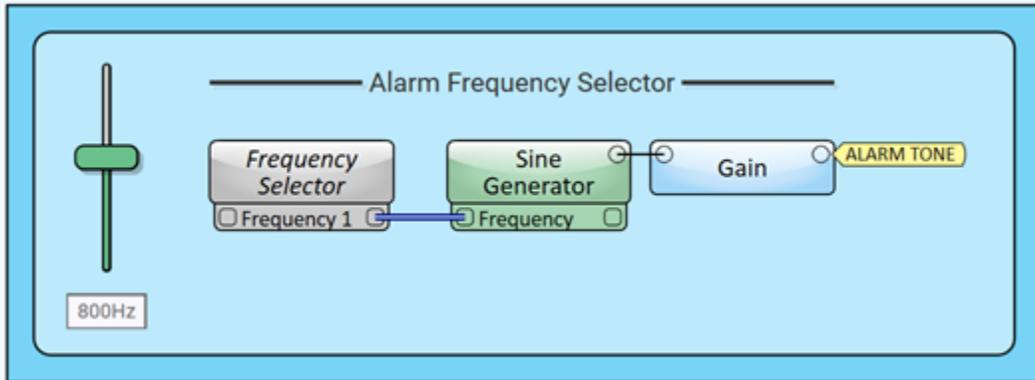
- There should be at least two paging stations, one for each GA activation point in the system, and each must be marked and protected. In order to meet IEC 60945 EMC requirements, page station expanders (QSC PS-X) cannot be included in the system configuration.
- Each page station installation point should include an external illumination source to allow for use in low light conditions.
- At least two physically separate manual GA activation points are installed and each is marked and has a safety cover.
- The network switches selected for the installation must be Type Approval certified. Consult with DNV's Approval Finder tool to verify equipment status. (<https://www.dnv.com/maritime/approval-finder.html>)
- Ensure the network switch is configured correctly. Please refer to the Network Switch Requirements section of this manual for more information.
- Redundant networks are required as seen in the diagram, implemented using primary and backup racks.
- It is recommended that Static IP Address assignments be used on the LAN A and LAN B ports for both the Primary and Backup cores. Depending on the network topology, other methods may work, but the use of Static IP Addresses eliminates potential variability in the configuration.
- The entire system should be supported by the installed uninterruptible power supplies (UPS) appropriate to the equipment ratings and configured in such a way to prevent a single point of

failure. For example, in the above diagram, the primary and backup racks are connected to different UPS's. A common practice is to add the VA of all the equipment and multiply by 1.2.

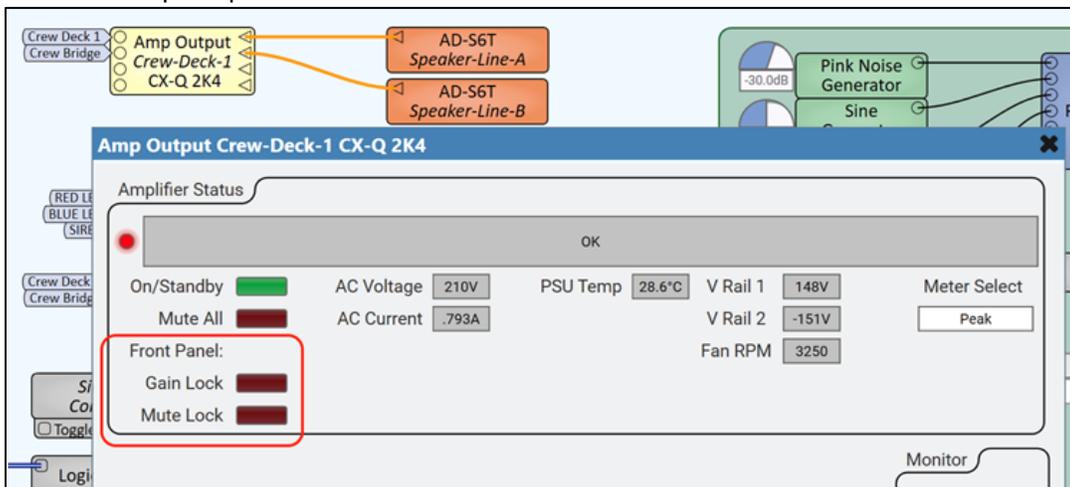
- AC line filters must be used on the input power for Q-SYS Core processors Core 1100 and Core 3100. See the section on SOLAS AC FILTER ENHANCEMENT (SAFE) in this document.
- The Core processor in the backup rack must be set as the redundant backup Core processor in the Q-SYS design file. See the software help file (<https://q-syshelp.qsc.com/>) for more information on configuring for redundancy. Note: When a Core processor is initiated or loses power abruptly, it is normal to hear several beeps from the unit.
- QSC recommends against using the IEEE 1588 PTP clocks generated by the PAGA Core processors to clock the Entertainment Systems on the ship. Instead, it is best practice to convert outgoing pages to analog signals or to use another device with sample rate converters to create a point of demarcation between the two audio systems. Separating the IEEE 1588 PTP clocks allows for the Entertainment Systems to be serviced or upgraded without affecting the working state of the PAGA system.
- Each Core 3100 and Core 6000 CXR is limited to a maximum of 512 end points. Each Core 1100 is limited to a maximum of 256 end points.
- In the representative system diagram above, note that each page station, Core processor, and amplifier is plugged into both network switches.
- Loudspeaker zones shall be wired to ensure no zone ever completely fails should one amplifier fail and are organized into crew zones and passenger zones. In this diagram, every other loudspeaker is connected to one of the two amplifiers in its zone. In this way, at least half of the loudspeakers in a zone should be operational.
- The system must be capable of triggering strobes, particularly in noisy areas, and sirens to signal alarms.
- Although not obvious from the diagram, the strobes are set active low so they should signal in the event of an amplifier failure.
- Installers should follow good equipment separation principles to mitigate the risk of a physical event from taking down the entire network. This is typically done by placing equipment in different fire zones on the vessel.

Q-SYS Designer Suggestions

- The system design can take advantage of Q-SYS's flexibility to generate the required frequency of a siren. In the screenshot below, the slide bar on the left allows for adjustability of the signal frequency, from 200Hz to 2500Hz, for the generated alarm tone.



- GA has the highest priority with regards to other alarms or signals:
 - Ensure PAGA takes priority over entertainment systems when activated. The system designer should provide a means to mute any external entertainment system via Ethernet control or GPIO and to ensure that capability will function when either Core processor or network is active. In the representative system diagram, the activation switch uses GPIO at the paging station to activate the GA and mutes the entertainment system via Ethernet control.
 - Ensure emergency paging takes priority over alarm when used and that the alarm resumes when the emergency paging ends.
 - Ensure the fire alarm mutes when the general alarm sounds.
- Q-SYS design should enable the dynamic notch filter that detects and cuts feedback frequency for the page stations.
- Should the installer wish to disable the Mute and Gain controls on the front panel of each amplifier to prevent unwanted adjustment, this can be done in Q-SYS via the Gain Lockout and Mute Lockout functions accessible in the Amplifier Properties menu or in the Amplifier details when the Amp Output block is double-clicked:



Network Switch Requirements

Observe these requirements when selecting and manually configuring network switches for compatibility with Q-SYS.

Required for all Real-time Q-SYS Audio and Video Distribution

1 Gbps Bandwidth

Must have non-blocking wire-speed Gigabit Ethernet and no dropped packets because of internal bandwidth constraints.

Control-only devices such as the TSC-80-G2 Touch Screen Controller can operate on a 100 Mbps link, but a Gigabit infrastructure is generally recommended.

Recommended for Mixed Media Data Types or Large Amounts of Data

Quality of Service (QoS)

Must support DiffServ (DSCP) packet classification. (Auto-QoS does not result in proper configuration for Q-LAN.)

Priority Traffic

Must be able to recognize and prioritize at least two high-priority traffic classes by their DSCP values or other means, in addition to best-effort traffic.

Egress Queues

Must have at least four egress queues per port.

Egress Buffering

Each switch port carrying audio or video traffic must have at least 40 KB egress buffering memory. This includes any uplink ports which carry Q-LAN traffic.

Egress buffering memory is sometimes referred to as Packet Buffer Memory. In many fixed-port switches, this value is automatically divided evenly across all ports. For example:

- 512 KB Packet Buffer Memory ÷ 24 Ports = 21.33 KB/port, which is < 40 KB/port = Not Acceptable
- 1.5 MB Packet Buffer Memory ÷ 24 Ports = 62.5 KB/port, which is ≥40KB/port = Acceptable

Strict Priority Queuing

Must support Strict Priority queuing (SP). Weighted round-robin (WRR), weighted fair queuing (WFQ), or other selection methods do not guarantee the latency performance required by real-time media systems such as Q-LAN.

Notes:

- Some switch platforms only support a single strict priority queue. Placing both PTPv2 and time-sensitive audio (Q-LAN, AES67) into the same queue may be a consideration with this limitation; however, a proof of concept is recommended to understand if the results are satisfactory for the deployment.
- Installers must enable QoS (not Auto-QoS) on a Q-LAN network to protect against unexpected data traffic from sources that might be added after the system is installed and commissioned. See below for example Q-LAN Class Map for a Cisco switch:

```
class-map match-any IEEE-1588
match ip dscp ef
class-map match-any Q-LAN
match ip dscp af41
class-map match-any Q-Video
match ip dscp af31
policy-map Q-Sys
class IEEE-1588
priority level 1 percent 5
class Q-LAN
priority level 2 percent 90
class Q-Video
bandwidth percent 5
service-policy output Q-Sys
```

Note: Apply the service-policy to all switchports and uplinks that carry clock, audio and video packets.

- Q-SYS PTPv2 is assigned a per-hop behavior (PHB) of EF (46) and must be classified into the highest-priority queue with Strict Priority queuing. Q-LAN audio data has PHB AF41 (34) and must be classified into the queue with the second-highest priority with Strict Priority queuing. Q-SYS video data has AF31 (26) and must be classified into the queue with the third-highest priority (Strict Priority queuing is not required for video data).
- Traffic that is prioritized and queued "equal to" or "greater than" PTPv2 (EF) and/or Q-LAN audio (AF41) may cause problems if it travels through the same switch interface as the Q-SYS traffic, such as on an uplink.

Performance Requirements

These networking features and settings affect performance with Q-SYS.

Layer 3 Networking

On a Layer-3 network, routers (or Layer-3 switches) replace some or all Layer-2 network switches. Therefore, Layer-3 network devices must have the same performance (or better) and minimum features as the Layer-2 switches they replace.

Layer-3 IP networks have advantages in manageability, scalability, security, and convergence over their LAN counterparts. If yours is a large, critical, and shared network, it is likely your application will benefit greatly from layer-3 networking. Layer-3 networks handle QoS and multicast routing in a more engineered manner.

Reducing Latency, Jitter, and Error Counts

- Interfaces carrying Q-SYS traffic must be 1 Gb/s or higher because of the strict network requirements regarding latency and jitter.
- Q-SYS uses IEEE-1588-2008 PTPv2 protocol, which is sensitive to latency, jitter, and packet loss. Q-SYS audio relies on PTPv2 for accurate timing. To prevent timing problems, PTPv2 packet arrival jitter must not exceed $\pm 30 \mu\text{s}$ (microseconds) and PTPv2 latency between end points must not exceed 280 μs (microseconds).
- Error counts in network interfaces must be at or near zero.
- Forwarding Decision Time that exceeds 10 μs could cause late packet arrival and ultimately degrade media performance.

Network Infrastructure and Traffic

- Q-SYS does not support passing real-time traffic (PTPv2, Q-LAN audio or video) through firewalls, MPLS, or WiFi.
- Running Fibre Channel over Ethernet (FCoE) and Q-SYS traffic on the same switch interfaces or backplane queuing resources may cause problems.
- Q-SYS does not allow use of Passive Optical Network (PON/GPON) as well as Fabric Extender Technology (FEX).
- Media converters (copper to fiber) supporting multiple LAN speeds (10/100/1000) are not supported with Q-SYS networks. For compatibility with Q-SYS, a media converter must be a true physical layer (Layer 1) converter.
- If your network scenario requires IGMP snooping/querying or PIM-Sparse Mode (PIM-SM, for forwarding multicast across routers), they must be configured properly to maintain network performance.
- Be careful with single-mode optical fiber runs of less than 1000 ft (305 m) because the received light levels might be too high. Measure the light level and if necessary, use in-line attenuators to reduce the light signal to a usable level.
- It is not strictly necessary to isolate Q-LAN, Dante, and AES67 from any other multicast traffic into their own respective VLANs, but it may reduce problems in complex network environments.

Layer 2 Functions

Configure the following L2 functions for any switch ports that carry Q-SYS traffic:

- Disable jumbo frames or jumbo packets to avoid latency and jitter problems. This is set by individual port on some switches and is set globally on others.
- Disable Spanning Tree Protocol (STP) on interfaces where Q-SYS devices connect. STP may cause PTPv2 clock and/or audio packet problems.
- Enable intelligent Link Layer Discovery Protocol (LLDP) to avoid discovery issues with Q-SYS devices.

VLAN Tagging

Q-SYS can use VLAN tags for Session Initiation Protocol (SIP) connections. Enter the following link into a web browser to configure SIP VLAN tagging on the Core processor: http://<Core IP Address>/qtel_vlan/.

Flow Control & Bandwidth Throttling

- Enabling Flow Control improves Q-SYS TSC touch screen performance and is recommended.
- Do not enable bandwidth throttling (Traffic Shaping / Policing) on ports connected to Q-SYS Core processors, peripherals, or on any uplinks passing Q-LAN traffic.

Port Forwarding

Q-LAN protocols are not compatible with NAT or PAT gateways (a.k.a. Port Forwarding).

Energy-Efficient Ethernet (EEE)

QSC recommends that you disable Energy Efficient Ethernet (IEEE 802.3az) on switches that offer this feature. Some switch manufacturers offer their own version of a power saving mode or energy optimization mode, but the concepts are generally the same as those for the IEEE standard. These mechanisms attempt to reduce the drive current or wake time for a given LAN port by detecting the strength of the link partner, the length of the attached network cable, or the rest or idle periods between packet deliveries and placing the port into sleep or quiescent mode.

Cabling

- 1000Base-T gigabit Ethernet over Category 5e cable
- 8P8C modular connectors (RJ45)
- ANSI/TIA-568-B.2 wiring pin-out

Hop Count and Network Diameter

Three or fewer hop counts are recommended with up to 100 meters between switches. Hop count is defined as how many switches there are between two system nodes. Network diameter is the measurement between the two nodes with the longest physical path in the network. When possible, position the Q-SYS Core processors towards the center of the network to minimize switch hop count.

Note: You can use 10 Gigabit in place of 1 Gigabit while following the 1 Gigabit design rules.

Backbone Bandwidth

Audio Streams

- 1-Gigabit backbone bandwidth for systems
- 1-Gigabit backbone bandwidth on each network for installations using separate networks for redundancy.
- 2-Gigabit backbone bandwidth required for installations using redundant connections to a single audio network.

Amplifier Maximum Power Levels

The following table can be used in CX-Q amplifier selection.

Configuration	Loads	4 Channel Models						8 Channel Models			
		2K4		4K4		8K4		4K		8K	
		Max Power (w/FlexAmp single channel)	Continuous Power								
Independent Channels (SE) A, B, C, D	100V	700	350	1000	550	1250	1150	1000	300	1250	600
	70V	700	400	1000	625	1250	1150	1000	300	1250	600
	16-Ohm	350	200	500	313	625	625	500	150	625	300
	8-Ohm	700	400	1000	625	1250	1250	1000	300	1250	600
	4-Ohm	800	400	1500	625	2400	1250	1000	300	1500	600
	2-Ohm	600	300	800	400	2750	1250	800	300	1000	300
Parallel Channels (x2) AB or CD or EF or GH Doubles Current Best for high power 70V & 100V	100V	1400	700	2000	1150	2400	2000	1500	600	2000	1100
	70V	1400	750	2000	1150	2400	2000	1500	600	2000	1200
	8-Ohm	800	400	1000	625	1250	1250	1000	600	1250	1100
	4-Ohm	1250	750	2000	1250	2400	2250	1250	600	2400	1200
	2-Ohm	1500	650	2500	1250	4000	2100	1500	600	2500	600
Parallel Channels (x3) ABC, DEF Triples Current	8-Ohm	800	400	1000	1000	1250	1250	1000	900	1250	1100
	4-Ohm	1250	800	2000	2000	2400	2400	1500	900	2000	1800
	2-Ohm	1500	1100	3000	2500	4500	3000	1500	900	2500	1800
BTL/Bridged Channels (x2) A+B or C+D or E+F or G+H Doubles Voltage Do NOT use for 70V or 100V	200V	1500	700	2000	1250	2400	2000	1500	600	2000	1200
	140V	1500	700	2000	1250	2400	2000	1500	600	2000	1200
	8-Ohm	1500	700	3000	1250	4000	2250	1500	600	3000	1200
	4-Ohm	1400	600	1700	1150	5000	2500	1400	400	1700	600
	2-Ohm	NR*		NR*		3000	2000	NR*		NR*	
BTL/Bridged & Paralleled Channels (x4) AB+CD, EF+GH Doubles Current and Voltage	8-Ohm	2500	1500	3500	2500	4200	4200	2500	1200	4000	2400
	4-Ohm	3000	1600	4000	2500	7000	4500	3000	1200	5000	2400
	2-Ohm	NR*		NR*		8000	4000	NR*		NR*	
Parallel Channels (x4) ABCD, EFGH Quadruples Current	8-Ohm	800	400	1000	1000	1250	1250	1000	1000	1200	1200
	4-Ohm	1250	800	2000	1600	2500	2400	2000	1200	2400	2200
	2-Ohm	1700	1600	4000	2500	5000	4500	2500	1200	4000	2400
	1-Ohm	2500	1500	4000	2000	7000	4500	3000	1200	4000	2400

NR* = Not Recommended
N/A = Not Available

Note:

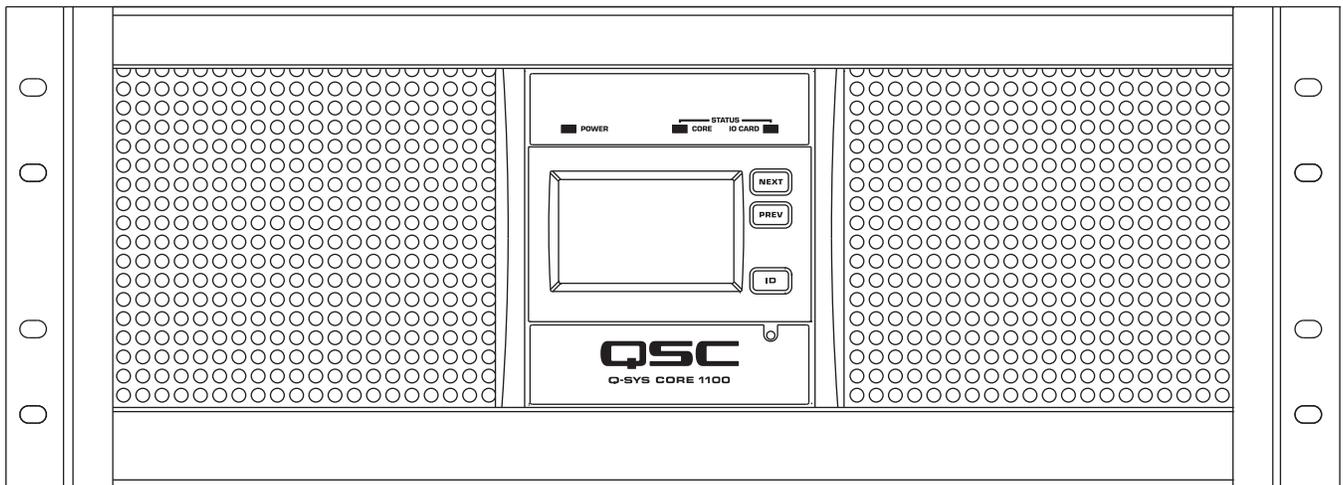
Max Power data is based on the most potential any single amplifier channel can deliver. This data is most useful for asymmetrical loading of amplifier channel and maximizing power utilization of the amplifier. When utilizing FlexAmp™ power requirements, be sure to take into consideration the power capabilities of the channel AND the capabilities of the Power Supply.

Continuous Power indicates amplifier output capabilities with all channels driven with the same load without exceeding the capabilities of the power supply.

Power Spec is based on 1kHz sine wave, 20msec

Core 1100 – Centralized Audio and Control Processor

Core 3100 – Centralized Audio and Control Processor



EXPLANATION OF TERMS AND SYMBOLS

The term "**WARNING!**" indicates instructions regarding personal safety. If the instructions are not followed the result may be bodily injury or death.

The term "**CAUTION!**" indicates instructions regarding possible damage to physical equipment. If these instructions are not followed, it may result in damage to the equipment that may not be covered under the warranty.

The term "**IMPORTANT!**" indicates instructions or information that are vital to the successful completion of the procedure.

The term "**NOTE**" is used to indicate additional useful information.



The intent of the lightning flash with arrowhead symbol in a triangle is to alert the user to the presence of un-insulated "dangerous" voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to humans.



The intent of the exclamation point within an equilateral triangle is to alert the user to the presence of important safety, and operating and maintenance instructions in this manual.



IMPORTANT SAFETY INSTRUCTIONS



WARNING!: TO PREVENT FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.

- Maximum ambient operating temperature is 50°C (122°F).
- Power requirements are: 100 – 240 VAC, 50 – 60 Hz, and the proper IEC power cord.
- Ensure reliable earth grounding is maintained.
- Distribute the units evenly when installing in a rack. Hazardous conditions can be created by uneven weight distribution.

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Do not submerge the apparatus in water or liquids.
7. Do not use any aerosol spray, cleaner, disinfectant or fumigant on, near or into the apparatus.
8. Clean only with a dry cloth.
9. Do not block any ventilation opening. Install in accordance with the manufacturer's instructions.
10. Keep ventilation opening free of dust or other matter.
11. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
12. To reduce the risk of electrical shock, the power cord shall be connected to a mains socket outlet with a protective earthing connection.
13. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
14. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
15. Do not unplug the unit by pulling on the cord, use the plug.
16. Only use attachments/accessories specified by the manufacturer.
17. Unplug this apparatus during lightning storms or when unused for long periods of time.
18. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, 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.
19. The appliance coupler, or the AC Mains plug, is the AC mains disconnect device and shall remain readily operable after installation.
20. Adhere to all applicable, local codes.
21. Consult a licensed, professional engineer when any doubt or questions arise regarding a physical equipment installation.

Maintenance and Repair



WARNING! Advanced technology, e.g., the use of modern materials and powerful electronics, requires specially adapted maintenance and repair methods. To avoid a danger of subsequent damage to the apparatus, injuries to persons and/or the creation of additional safety hazards, all maintenance or repair work on the apparatus should be performed only by a QSC authorized service station or an authorized QSC International Distributor. QSC is not responsible for any injury, harm or related damages arising from any failure of the customer, owner or user of the apparatus to facilitate those repairs.

LITHIUM BATTERY WARNING

THIS EQUIPMENT MAY CONTAIN A NON-RECHARGEABLE LITHIUM BATTERY. LITHIUM IS A CHEMICAL KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER OR BIRTH DEFECTS. THE NON-RECHARGEABLE LITHIUM BATTERY CONTAINED IN THIS EQUIPMENT MAY EXPLODE IF IT IS EXPOSED TO FIRE OR EXTREME HEAT. DO NOT SHORT CIRCUIT THE BATTERY. DO NOT ATTEMPT TO RECHARGE THE NON-RECHARGEABLE LITHIUM BATTERY.

FCC Statement



NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

RoHS STATEMENT

The QSC Core 1100 and Core 3100 are in compliance with European Directive 2011/65/EU – Restriction of Hazardous Substances (RoHS2).

The QSC Core 1100 and Core 3100 are in compliance with “China RoHS” directives. The following chart is provided for product use in China and its territories:

部件名称 (Part Name)	Q-SYS Core 1100 and and Core 3100					
	有害物质 (Hazardous Substances)					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(vi))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
电路板组件 (PCB Assemblies)	X	O	O	O	O	O
机壳装配件 (Chassis Assemblies)	X	O	O	O	O	O

本表格依据 SJ/T 11364 的规定编制。

O: 表示该有害物质在该部件所有均质材料中的含量均在 GB/T 26572 规定的限量要求以下。

X: 表示该有害物质至少在该部件的某一均质材料中的含量超出 GB/T 26572 规定的限量要求。

(目前由于技术或经济的原因暂时无法实现替代或减量化。)

This table is prepared following the requirement of SJ/T 11364.

O: Indicates that the concentration of the substance in all homogeneous materials of the part is below the relevant threshold specified in GB/T 26572.

X: Indicates that the concentration of the substance in at least one of all homogeneous materials of the part is above the relevant threshold specified in GB/T 26572.

(Replacement and reduction of content cannot be achieved currently because of the technical or economic reason.)

Warranty

For a copy of the QSC Limited Warranty, visit the QSC website at www.qsc.com

Unpacking

There are no special unpacking precautions. However, it is recommended that you keep the original packing materials for reuse in the rare event that service is required. If service is required and the original packing material is not available, ensure that the unit is adequately protected for shipment (use a strong box of appropriate size, sufficient packing/padding material to prevent load shifting or impact damage) or call QSC's Technical Services Group for replacement packing material and a carton.

What is included in your Q-SYS™ Core product carton:

- Q-SYS Core 1100 or Core 3100
- Quick Start Guide TD-000470
- QSC Limited Warranty
- IEC power cord
- Connector plug kit (provided with optional Q-SYS Audio I/O Cards requiring the kit.)

Mounting

Q-SYS products can be used in or out of an equipment rack. Rack mounting is optional. Rear rack ears are an available accessory if needed.

Rack Mount Instructions

Rack mount the Q-SYS product by supporting it from underneath while aligning the front panel mounting holes (in the rack ears) with the threaded screw holes in the rack rails. Install all four front mounting screws and washers and tighten securely. All Q-SYS products come with rear rack support ears. Ensure that these rear mounting points are securely fastened to rear rack rails or side walls.



WARNING! Reliable Earthing – Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

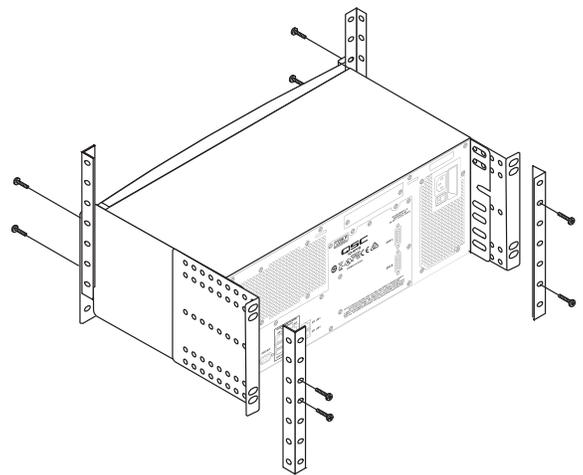
Mechanical Loading – Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven or unstable mechanical loading.



CAUTION! Elevated Operating Ambient - If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than room ambient. Consideration should be given to ensure that the maximum operating temperature range (0°C to 50°C (32°F to 122°F)) is not exceeded.

Reduced Air Flow – Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

Circuit Overloading – Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on over-current protection and supply wiring.



– Figure 1 –

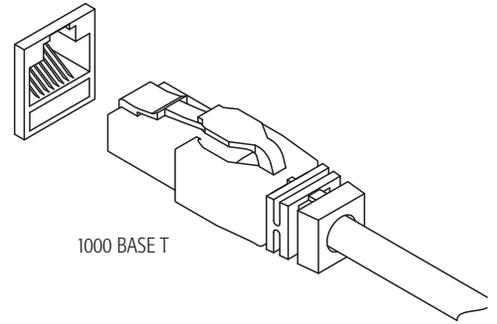
Connections

AC Power Cord

Insert the AC power cord into the AC power inlet on the back of the Q-SYS product. Plug the other end into a 100 – 240V, 50 – 60 Hz AC outlet. If a different type of IEC power cord is required than that supplied with the product, contact QSC's Technical Services Group.

Q-SYS™ Network (Q-LAN)

Connect one end of a data communications cable (CAT-5e rating or better) terminated with an RJ45 plug into the LAN A (and optionally LAN B) receptacle on the rear panel of the Q-SYS Core. Ensure that the lock tab on the cable engages with the RJ45 receptacle. (Figure 2)



– Figure 2 –



IMPORTANT: For detailed information about setting up the Q-LAN Network and Q-SYS Designer, refer to the Q-SYS Designer online help.

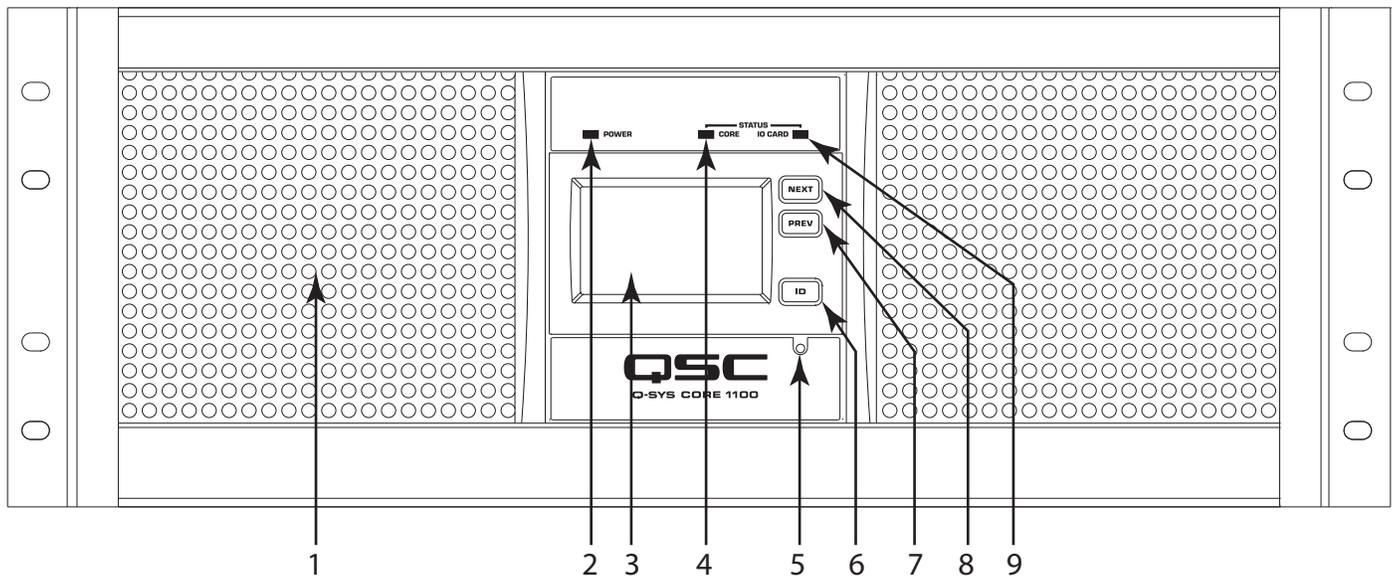
Q-SYS™ Core 1100 | Core 3100 Panel Features

Figure 3 and Figure 4 show the Q-SYS Core front and rear panel features for a product having a simple configuration of one blank I/O Card slot.



NOTE: The Q-SYS hardware products are configured at the QSC factory per your order. At the time of order, you specify the type of Q-SYS Audio I/O Card to be installed in the Audio I/O bay on the Q-SYS Core.

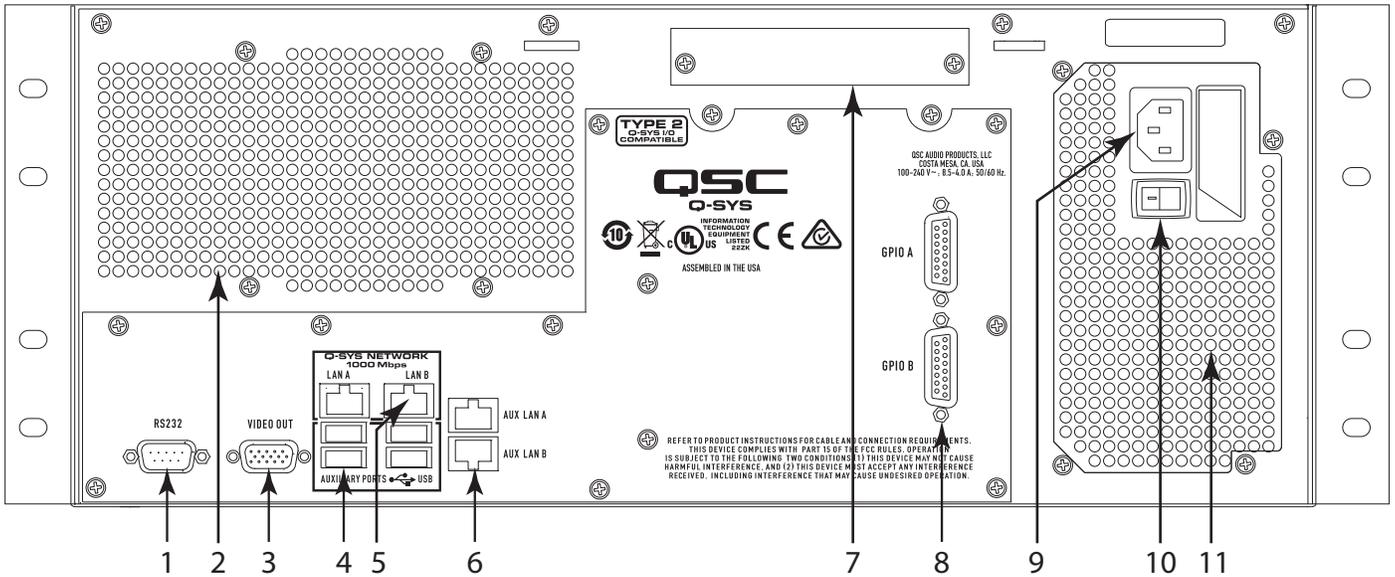
Front Panel



– Figure 3 –

1. Air Intake Vents
2. Power-on LED
3. 480 x 240 Color Graphics LCD
4. Core Status LED
5. Clear Settings Paperclip Button (resets network properties)
6. ID Button (Identifies Core in Q-Sys Designer GUI)
7. LCD Previous Page Navigation Button
8. LCD Next Page Navigation Button
9. I/O Card Status LED

Rear Panel



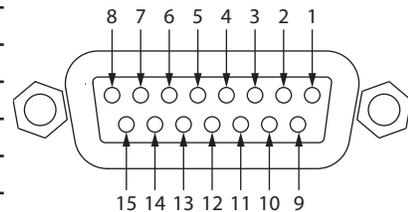
– Figure 4 –

1. RS-232 – DE-9 Male Connector for Serial Communications
2. Core Exhaust Vents
3. Video Out – HD-15 Female Connector Accepts Diagnostic VGA Monitor
4. Auxiliary Port - USB Host Connectors (Type A) x 4
5. Q-Sys Gigabit Network Ports (Q-LAN) - LAN A Primary, LAN B Backup
6. Auxiliary LAN Ports 10/100/1000 Mbps
7. Audio I/O Bay - Accepts Optional Q-Sys Audio I/O Card
8. GPIO A and GPIO B - Female DA15 Connectors for Q-Sys Control I/O
9. AC Mains Inlet - IEC Male Connector
10. Power Switch
11. Power Supply Exhaust Vents

Q-SYS™ GPIO Signal Specifications

GPIO Pin Assignments

DB15 Pin	Signal Name	Signal Type	Description
1	RNO	Relay Contact	Relay - normally open
2	RNC	Relay Contact	Relay - normally closed
3	GPIO1	Normal Current	GPIO pin
4	GPIO3	Normal Current	GPIO pin
5	POWER	Power	+12 V DC
6	GPIO5	High Current	GPIO pin - high current capable
7	GPIO7	High Current	GPIO pin - high current capable
8	GND	Ground	Ground
9	RC	Relay Contact	Relay - common
10	GND	Ground	Ground
11	GPIO2	Normal Current	GPIO pin
12	GPIO4	Normal Current	GPIO pin
13	POWER	Power	+12 V DC
14	GPIO6	High Current	GPIO pin - high current capable
15	GPIO8	High Current	GPIO pin - high current capable



– Figure 5 –

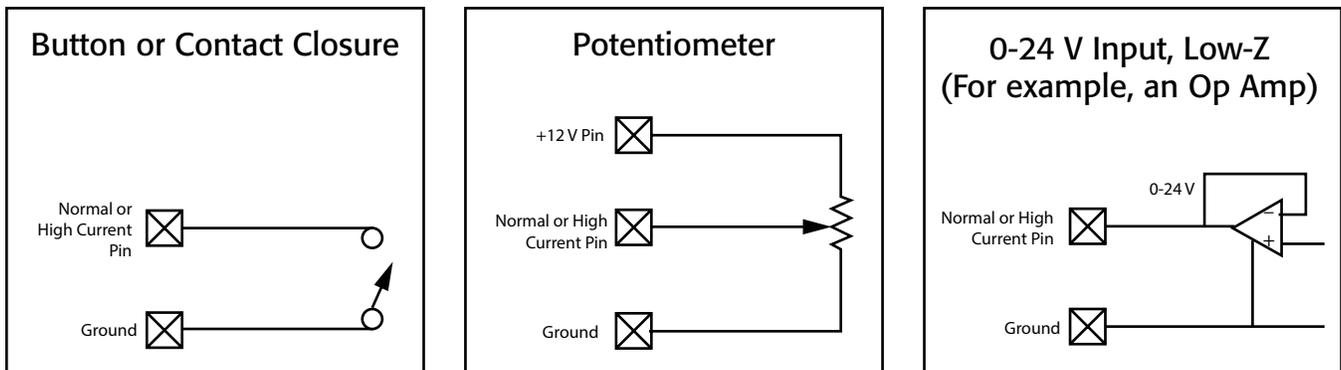
GPIO Specifications

Relay Pins	Maximum Voltage, relative to Ground	30 V
	Maximum Current through Relay	1 Amp
Power Pins	Output Voltage	11 V min, 13 V max
	Maximum Output Current	400 mA
High Current Pins	Maximum Input Range	0 V to 32 V
	Analog Input Range:	0 V to 24 V
	Digital Input, Low	0.8 V maximum
	Digital Input, High	2.0 V minimum
	Digital Output, Low	0.4 V maximum
	Digital Output, High	2.4 V minimum, 3.3 V maximum
	Digital Output Impedance	1 k ohm
	High Current Output, Low	0.4 V maximum
	High Current Output, High	11 V minimum, 13 V maximum
All Power and High Current pins combined	High Current Output, sink or source	280 mA
	Maximum Source Current	400 mA
All GPIO Pins 1 through 8 combined	Maximum Sink Current	1 A using 1 GND pin 2 A using 2 GND pins

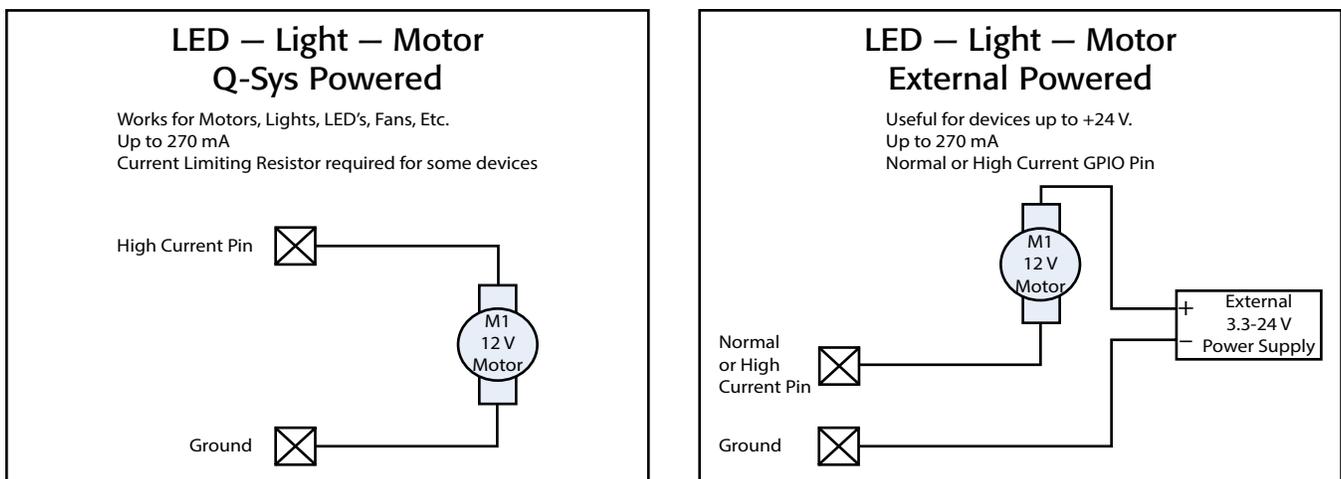


NOTE: The maximum current sourced by one GPIO connector (including both High Current and Power Pins) is 400 mA.

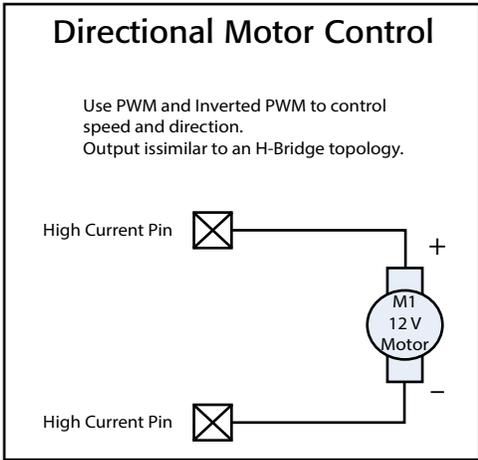
GPIO Examples



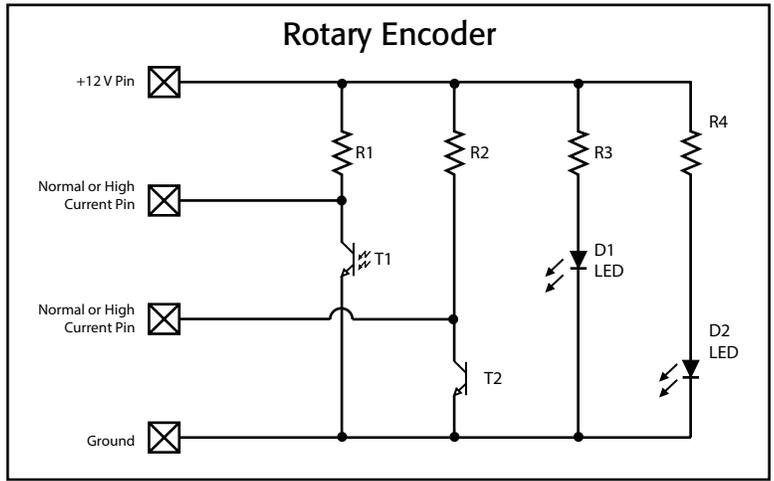
– Figure 6 –



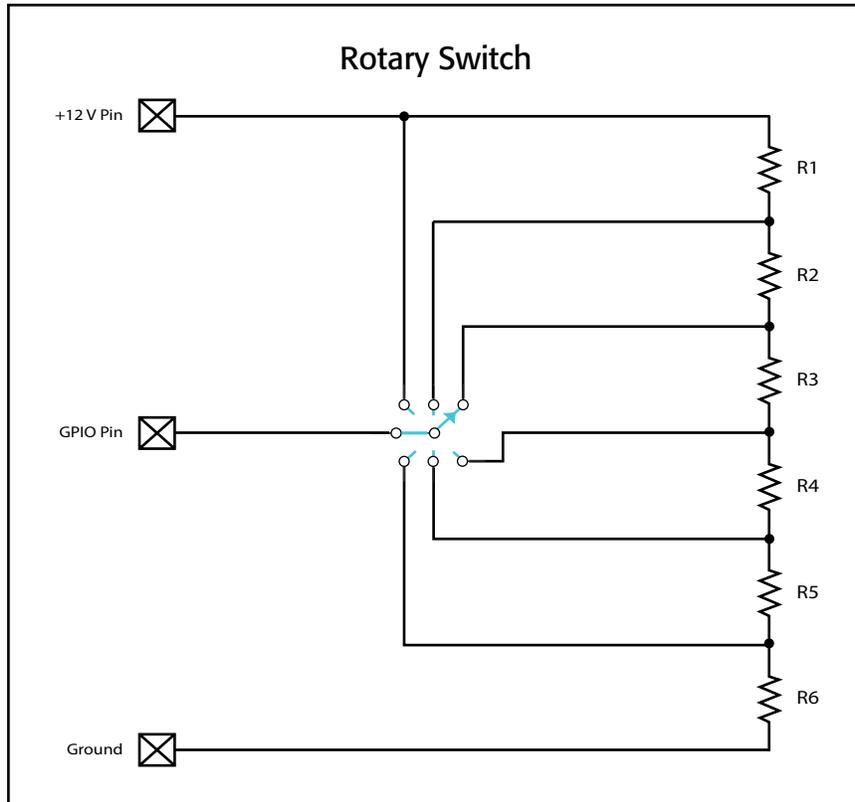
– Figure 7 –



– Figure 8 –



– Figure 9 –



– Figure 10 –

Rotary Switch All resistors should have the same value. The total resistance should be about 10K Ohms. The individual resistor value should be 10,000 divided by the number of resistors. The schematic is an example only, and could easily be modified to have more switch positions or use multiple momentary buttons instead of a rotary switch.

Specifications

	Core 1100	Core 3100
Description	System processor and control engine	
Front Panel Controls	LCD Next and Prev momentary button Unit ID momentary button Clear settings momentary switch (use a paperclip or similar tool)	
Front Panel Indicators	Power On: Green LED Status: Core: Tri-color LED IO Card: Tri-color LED 480 x 240 Color Graphics LCD	
Rear Panel Connectors	RS-232: DE-9 (male 9-pin D shell connector) Video Out: HD-15 (female 15-pin D shell connector) Auxiliary ports AUX LAN A / AUX LAN B: RJ45 10/100/1000 MBps Auxiliary USB host x4 GPIO A / GPIO B: DA-15 (female 15-pin D shell connector) Q-SYS Network LAN A / LAN B: RJ45 1000 Mbps only	
Maximum Ambient Operating Temperature	0°C to 50°C (32°F to 122°F)	0°C to 50°C (32°F to 122°F)
Capacity		
Local I/O ¹	64 x 64	64 x 64
Network Audio Channels In/Out	256 x 256	512 x 512
Network Audio Streams In/Out	256 x 256	256 x 256
AEC (100 ms tail length)	144	288
Core to Core Streaming	256 x 256	512 x 512
End Nodes	256 Destinations 256 Sources	256 Destinations 256 Sources
Thermal – BTU / hour (typical)	1100	1400
Line Voltage Requirements	100 VAC – 240 VAC, 50 – 60 Hz	100 VAC – 240 VAC, 50 – 60 Hz
AC current draw (maximum)	8.5 A @ 100 VAC	8.5 A @ 100 VAC
AC current draw (typical)	3.8 A @ 100 VAC	4.4 A @ 100 VAC
Dimensions (HWD)	7" x 19" x 17.875" (177.8 mm x 482.6 mm x 454 mm)	
Net Weight (including I/O card)	41 lb (18.6 kg)	
Accessories Included	6 ft UL/CSA/IEC line cord • Hardware Information Document • Warranty • Optional audio I/O ship kit	

¹ One I/O-card slot. Depends on I/O card purchased.

² Using maximum fan-out with 16-channel unidirectional I/O Frames.

³ The CAES4 card (AES-3 input/output) doubles the audio channel count of any slot in which it is used.



NOTE: Specifications subject to change without notice.



Mailing Address:

QSC, LLC
1675 MacArthur Boulevard
Costa Mesa, CA 92626-1468 U.S.
Main Number: (714) 754-6175
World Wide Web: www.qsc.com

Sales & Marketing:

Voice: (714) 957-7100 or toll free (U.S. only) (800) 854-4079
FAX: (714) 754-6174
E-mail: info@qscaudio.com

Q-SYS™ Customer Support

Application Engineering and Technical Services

Monday - Friday 7 AM to 5 PM PST (Excludes Holidays)
Tel. 800-772-2834 (U.S. only)
Tel. +1 (714) 957-7150

Q-SYS 24/7 Emergency Support*

Tel: +1-888-252-4836 (U.S./Canada)
Tel: +1-949-791-7722 (non-U.S.)



*Q-SYS 24/7 Support is for Emergency assistance with Q-SYS systems only. 24/7 support guarantees a call back within 30 min after a message is left. Please include, Name, Company, Call Back Number and description of the Q-SYS emergency for prompt call back. If calling during business hours please use the standard support numbers above.

Q-SYS Support Email

qsysupport@qsc.com
(Immediate email response times not guaranteed)

QSC

Technical Services
1675 MacArthur Blvd.
Costa Mesa, CA 92626 U.S.
Tel: 800-772-2834 (U.S. only)
Tel: +1 (714) 957-7150
FAX: +1 (714) 754-6173

© 2014 - 2015 QSC, LLC. All rights reserved. QSC, the QSC logo, and Q-SYS are trademarks of QSC, LLC in the U.S. Patent and Trademark office and other countries. All other trademarks are the property of their respective owners.
<http://patents.qsc.com>.

Dell EMC PowerEdge XR11

Installation and Service Manual

Notes, cautions, and warnings

 **NOTE:** A NOTE indicates important information that helps you make better use of your product.

 **CAUTION:** A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

 **WARNING:** A WARNING indicates a potential for property damage, personal injury, or death.

Chapter 1: About this document.....	7
Chapter 2: PowerEdge XR11 system overview.....	8
Front view of the system.....	8
Rear view of the system.....	11
Status LED control panel.....	13
Power button control panel.....	13
Inside the system	15
Locating the Express Service Code and Service Tag.....	16
System information label.....	17
Rail sizing and rack compatibility matrix.....	19
Chapter 3: Initial system setup and configuration.....	21
Setting up the system.....	21
iDRAC configuration.....	21
Options to set up iDRAC IP address.....	21
Options to log in to iDRAC.....	22
Resources to install operating system.....	23
Options to download firmware	23
Options to download and install OS drivers	23
Downloading drivers and firmware.....	24
Chapter 4: Minimum to POST and system management configuration validation.....	25
Minimum configuration to POST	25
Configuration validation.....	25
Error messages.....	26
Chapter 5: Installing and removing system components.....	27
Safety instructions.....	27
Before working inside your system.....	28
After working inside your system.....	28
Recommended tools.....	28
Optional front bezel.....	29
Removing the front bezel.....	29
Installing the front bezel.....	29
Bezel filter.....	30
Removing the bezel filter for Rear Accessed configuration.....	30
Installing the bezel filter for Rear Accessed configuration.....	31
System cover.....	31
Removing the system cover.....	31
Installing the system cover.....	33
Air shrouds.....	35
Removing the air shrouds.....	35
Installing the air shrouds.....	36

Cooling fans.....	38
Removing the cooling fan.....	38
Installing the cooling fan.....	38
Intrusion switch module.....	39
Removing the intrusion switch module.....	39
Installing the intrusion switch module.....	40
Drives.....	41
Removing a drive blank.....	41
Installing the drive blank.....	42
Removing the drive carrier.....	42
Installing the drive carrier.....	43
Removing the drive from the drive carrier.....	44
Installing the drive into the drive carrier.....	45
Drive backplane.....	47
Drive backplane.....	47
Removing the drive backplane.....	47
Installing the drive backplane.....	48
Internal storage configuration matrix for XR11.....	49
Cable routing.....	50
System memory.....	53
System memory guidelines.....	53
General memory module installation guidelines.....	55
Intel Optane PMem 200 Series installation guidelines.....	55
Removing a memory module.....	56
Installing a memory module.....	57
Processor and heat sink module.....	58
Removing the processor and heat sink module.....	58
Removing the processor from the processor heat sink module.....	60
Installing the processor into a processor heat sink module.....	61
Installing the processor and heat sink module.....	65
Expansion cards and expansion card risers.....	67
Expansion card installation guidelines.....	68
Removing the expansion card risers.....	71
Installing the expansion card risers.....	72
Removing an expansion card from the expansion card riser.....	73
Installing an expansion card into the expansion card riser.....	76
Optional BOSS S1 card.....	79
Removing the BOSS S1 card.....	79
Installing the BOSS S1 card.....	80
Removing M.2 SSD module.....	81
Installing M.2 SSD module.....	81
System battery.....	82
Replacing the system battery.....	82
Internal USB memory key.....	84
Removing the internal USB key.....	84
Installing internal USB key.....	84
Power supply unit.....	85
Hot spare feature.....	85
Removing a power supply unit blank.....	85
Installing a power supply unit blank.....	86

Removing a power supply unit.....	87
Installing a power supply unit.....	88
Power interposer board.....	90
Removing power interposer board (PIB).....	90
Installing the power interposer board (PIB).....	91
System board.....	92
Removing the system board.....	92
Installing system board.....	93
Trusted Platform Module.....	95
Upgrading the Trusted Platform Module.....	95
Initializing TPM for users.....	96
Initializing the TPM 1.2 for users.....	96
Initializing the TPM 2.0 for users.....	96
Control panel.....	97
Removing the status LED control panel for Rear Accessed configuration.....	97
Installing the status LED control panel for Rear Accessed configuration	98
Removing the power button control panel for Rear Accessed configuration.....	99
Installing the power button control panel for Rear Accessed configuration.....	101
Removing the status LED control panel for Front Accessed configuration.....	102
Installing the status LED control panel for Front Accessed configuration	103
Removing the power button control panel for Front Accessed configuration.....	104
Installing the power button control panel for Front Accessed configuration.....	105
MIL 901E and MIL 461G rugged kit.....	106
Installing the MIL 901E and MIL 461G rugged kit.....	107

Chapter 6: Upgrade Kits..... 109

Chapter 7: Jumpers and connectors..... 110

System board connectors.....	110
System board jumper settings.....	111
Disabling a forgotten password.....	111

Chapter 8: System diagnostics and indicator codes..... 113

Status LED indicators.....	113
System health and system ID indicator codes.....	114
iDRAC Direct LED indicator codes.....	115
NIC indicator codes.....	115
Power supply unit indicator codes.....	116
Drive indicator codes.....	118
Using system diagnostics.....	119
Dell Embedded System Diagnostics.....	119

Chapter 9: Getting help..... 121

Recycling or End-of-Life service information.....	121
Contacting Dell Technologies.....	121
Accessing system information by using QRL.....	121
Quick Resource Locator for PowerEdge XR11 system.....	122
Receiving automated support with SupportAssist	122

Chapter 10: Documentation resources.....123

About this document

This document provides an overview about the system, information about installing and replacing components, diagnostic tools, and guidelines to be followed while installing certain components.

PowerEdge XR11 system overview

The PowerEdge XR11 system is a 1U server that supports:

- Rear Accessed configuration or Front Accessed configuration
- One 3rd Generation Intel Xeon Scalable processor with up to 36 cores
- Eight DIMM slots
- Two redundant AC or DC power supply units
- Up to 4 x 2.5-inch SAS/SATA/NVMe SSD drives

NOTE: All instances of SAS, SATA and NVMe drives are referred to as drives in this document, unless specified otherwise.

NOTE: The Rear Accessed and Front Accessed configurations cannot be modified into the other configuration.

CAUTION: Do not install GPUs, network cards, or other PCIe devices on your system that are not validated and tested by Dell. Damage caused by unauthorized and invalidated hardware installation will null and void the system warranty.

NOTE: For more information, see the *Dell EMC PowerEdge XR11 Technical Specifications* on the product documentation page.

Topics:

- [Front view of the system](#)
- [Rear view of the system](#)
- [Status LED control panel](#)
- [Power button control panel](#)
- [Inside the system](#)
- [Locating the Express Service Code and Service Tag](#)
- [System information label](#)
- [Rail sizing and rack compatibility matrix](#)

Front view of the system



Figure 1. Front view of Rear Accessed configuration

Table 1. Features available on the front view of Rear Accessed configuration

Item	Ports, panels, and slots	Icon	Description
1	Status LED control panel	N/A	Contains the system health, system ID, status LED. <ul style="list-style-type: none"> • Status LED: Enables you to identify any failed

Table 1. Features available on the front view of Rear Accessed configuration (continued)

Item	Ports, panels, and slots	Icon	Description
			hardware components. There are up to five status LEDs and an overall system health LED (Chassis health and system ID) bar. For more information, see the Status LED indicators section .
2	Drives	N/A	Enables you to install up to 4 x 2.5-inch SAS/SATA/NVMe SSD drives.
3	Power button control panel	N/A	Contains the power button, USB port, iDRAC Direct micro port, and the iDRAC Direct status LED.
4	Information tag	N/A	The Information tag is a slide-out label panel that contains Service Tag, iDRAC MAC address and LOM 1 MAC address.

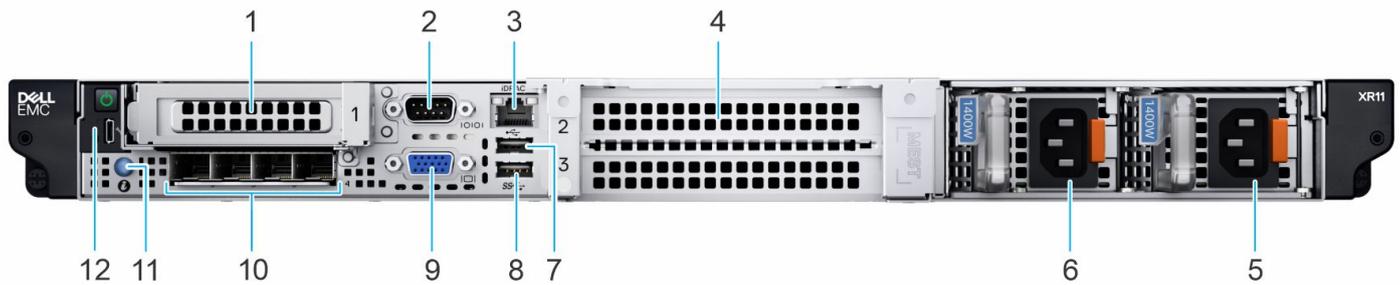


Figure 2. Front view of Front Accessed configuration

Table 2. Features available on the front view of Front Accessed configuration

Item	Ports, panels, or slots	Icon	Description
1	PCIe expansion card riser 1 (slot 1)	N/A	Enables you to connect PCIe expansion card installed on riser 1.
2	Serial port	IOIOI	Enables you to connect a serial device to the system.
3	iDRAC dedicated port	iDRAC	It is an RJ-45 port. Enables you to remotely access iDRAC. For more information, see the iDRAC User's Guide at www.dell.com/poweredgemanuals .
4	PCIe expansion card riser 2 and 3 (slot 2 and 3)	N/A	Enables you to connect PCIe expansion card installed on riser 2 and 3.
5	Power supply unit (PSU2)		Indicates the PSU2 or redundant PSU.

Table 2. Features available on the front view of Front Accessed configuration (continued)

Item	Ports, panels, or slots	Icon	Description
6	Power supply unit (PSU1)		Indicates the PSU1 or primary PSU.
7	USB 2.0 port		This port is USB 2.0-compliant.
8	USB 3.0 port		This port is USB 3.0-compliant.
9	VGA port		Enables you to connect a display device to the system.
10	4 x 25 GbE LOM ports		Provides network connectivity and can also be shared with iDRAC when iDRAC network settings is set to shared mode.
11	System identification button		<p>Press the system ID button:</p> <ul style="list-style-type: none"> • To locate a particular system within a rack. • To turn the system ID on or off. <p>To reset iDRAC, press and hold the button for more than 16 seconds.</p> <p>i NOTE:</p> <ul style="list-style-type: none"> • To reset iDRAC using system ID, ensure that the system ID button is enabled in the iDRAC setup. • If the system stops responding during POST, press and hold the system ID button (for more than 5 seconds) to enter the BIOS progress mode.
12	Power button control panel	N/A	Contains the power button, iDRAC Direct micro port, and the iDRAC Direct status LED.

i NOTE: For more information, see the *Dell EMC PowerEdge XR11 Technical Specifications* on the product documentation page.

Rear view of the system

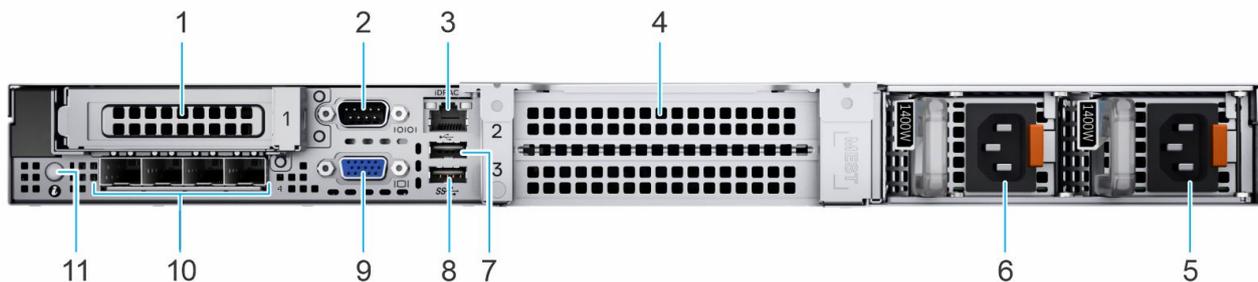


Figure 3. Rear view of Rear Accessed configuration

Table 3. Features available on the rear view of Rear Accessed configuration

Item	Ports, panels, or slots	Icon	Description
1	PCIe expansion card riser 1 (slot 1)	N/A	Enables you to connect PCIe expansion card installed on riser 1 in the system.
2	Serial port		Enables you to connect a serial device to the system.
3	iDRAC dedicated port		Enables you to remotely access iDRAC. For more information, see the iDRAC User's Guide at www.dell.com/poweredgemanuals .
4	PCIe expansion card riser 2 and 3 (slot 2 and 3)	N/A	Enables you to connect PCIe expansion card installed on riser 2 and 3 in the system.
5	Power supply unit (PSU2)		Indicates the PSU2 or redundant PSU.
6	Power supply unit (PSU1)		Indicates the PSU1 or primary PSU.
7	USB 2.0 port		This port is USB 2.0-compliant.
8	USB 3.0 port		This port is USB 3.0-compliant.
9	VGA port		Enables you to connect a display device to the system.
10	4 x 25 GbE LOM ports		Provides network connectivity and can also be shared with iDRAC when iDRAC network settings is set to shared mode.
11	System identification button		<p>Press the system ID button:</p> <ul style="list-style-type: none"> To locate a particular system within a rack. To turn the system ID on or off. <p>To reset iDRAC, press and hold the button for more than 16 seconds.</p>

Table 3. Features available on the rear view of Rear Accessed configuration (continued)

Item	Ports, panels, or slots	Icon	Description
			<p>NOTE:</p> <ul style="list-style-type: none"> To reset iDRAC using system ID, ensure that the system ID button is enabled in the iDRAC setup. If the system stops responding during POST, press and hold the system ID button (for more than 5 seconds) to enter the BIOS progress mode.



Figure 4. Rear view of Front Accessed configuration

Table 4. Features available on the rear view of Front Accessed configuration

Item	Ports, panels, and slots	Icon	Description
1	Status LED control panel	N/A	<p>Contains the system health, system ID, status LED.</p> <ul style="list-style-type: none"> Status LED: Enables you to identify any failed hardware components. There are up to five status LEDs and an overall system health LED (Chassis health and system ID) bar. For more information, see the Status LED indicators section.
2	Drives	N/A	Enables you to install up to 4x 2.5-inch SAS/SATA/NVMe SSD drives.
3	Information tag	N/A	The Information tag is a slide-out label panel that contains Service Tag, iDRAC MAC address and LOM 1 MAC address.

NOTE: For more information, see the *Dell EMC PowerEdge XR11 Technical Specifications* on the product documentation page.

Status LED control panel

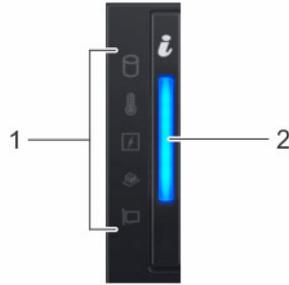


Figure 5. Status LED control panel

Table 5. Status LED control panel

Item	Indicator, button, or connector	Icon	Description
1	Status LED indicators	NA	Indicates the status of the system. For more information, see the Status LED indicators section.
2	System health and system ID indicator	<i>i</i>	Indicates system health. For more information, see the System health and system ID indicator codes section.

NOTE: For more information about the indicator codes, see the [System diagnostics and indicator codes](#) section.

Power button control panel

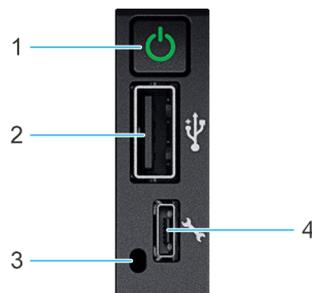


Figure 6. Power button control panel for Front Accessed configuration

Table 6. Power button control panel

Item	Indicator or button	Icon	Description
1	Power button		Indicates if the system is powered on or off. Press the power button to manually power on or off the system. NOTE: Press the power button to gracefully shut down an ACPI-compliant operating system.
2	USB 2.0-compliant port		The USB port is a 2.0-compliant. This port enables you to connect USB devices to the system. NOTE: The USB 2.0 port is not available on Front Accessed configuration.

Table 6. Power button control panel (continued)

Item	Indicator or button	Icon	Description
3	iDRAC Direct LED indicator	N/A	The iDRAC Direct LED indicator lights up to indicate that the iDRAC Direct port is actively connected to a device.
4	iDRAC Direct port (Micro-AB USB)		The iDRAC Direct port (Micro-AB USB) enables you to access the iDRAC direct features. For more information, see the https://www.dell.com/idracmanuals . NOTE: You can configure iDRAC Direct by using a USB to micro USB (type AB) cable, which you can connect to your laptop or tablet. Cable length should not exceed 3 feet (0.91 meters). Performance could be affected by cable quality.

NOTE: For more information, see the *Dell EMC PowerEdge XR11 Technical Specifications* on the product documentation page.

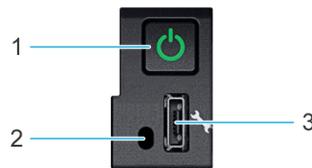


Figure 7. Power button control panel for Rear Accessed configuration

Table 7. Power button control panel

Item	Indicator or button	Icon	Description
1	Power button		Indicates if the system is powered on or off. Press the power button to manually power on or off the system. NOTE: Press the power button to gracefully shut down an ACPI-compliant operating system.
2	iDRAC Direct LED indicator	N/A	The iDRAC Direct LED indicator lights up to indicate that the iDRAC Direct port is actively connected to a device.
3	iDRAC Direct port (Micro-AB USB)		The iDRAC Direct port (Micro-AB USB) enables you to access the iDRAC direct features. For more information, see the https://www.dell.com/idracmanuals . NOTE: You can configure iDRAC Direct by using a USB to micro USB (type AB) cable, which you can connect to your laptop or tablet. Cable length should not exceed 3 feet (0.91 meters). Performance could be affected by cable quality.

NOTE: For more information, see the *Dell EMC PowerEdge XR11 Technical Specifications* on the product documentation page.

Inside the system

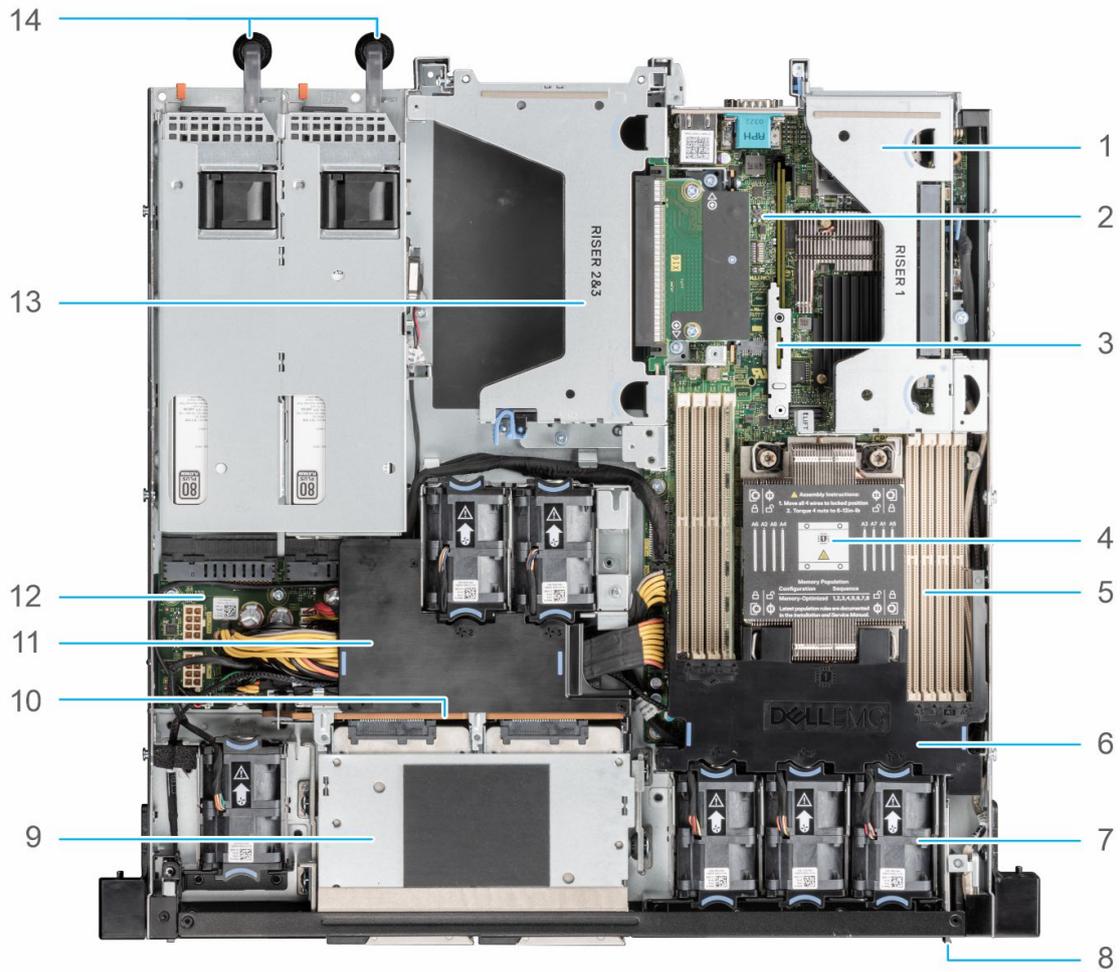


Figure 8. Inside the system - Rear Accessed configuration

- | | |
|----------------------------|-----------------------------------|
| 1. Riser 1 | 2. System board |
| 3. BOSS-S1 card (optional) | 4. Processor and heat sink module |
| 5. Memory module slots (8) | 6. Processor air shroud |
| 7. Cooling fans (6) | 8. Information tag |
| 9. Drive cage | 10. Backplane |
| 11. PCI air shroud | 12. Power Interposer Board (PIB) |
| 13. Riser 2 and 3 | 14. Power supply units |

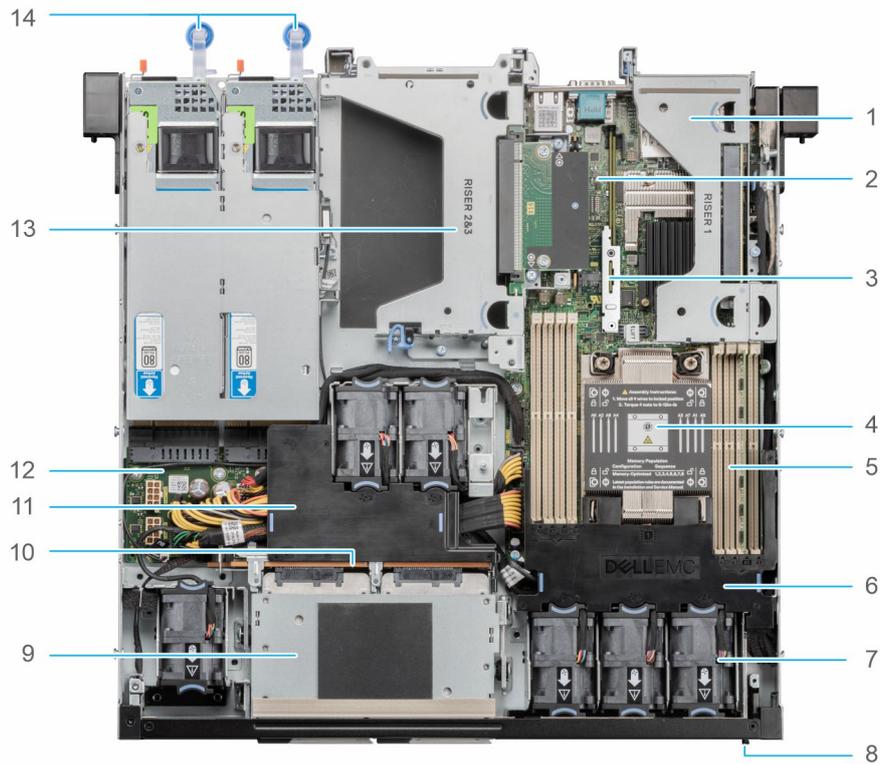


Figure 9. Inside the system - Front Accessed configuration

- | | |
|----------------------------|-----------------------------------|
| 1. Riser 1 | 2. System board |
| 3. BOSS-S1 card (optional) | 4. Processor and heat sink module |
| 5. Memory module slots (8) | 6. Processor air shroud |
| 7. Cooling fans (6) | 8. Information tag |
| 9. Drive cage | 10. Backplane |
| 11. PCI air shroud | 12. Power Interposer Board (PIB) |
| 13. Riser 2 and 3 | 14. Power supply units |

Locating the Express Service Code and Service Tag

The unique Express Service Code and Service Tag are used to identify the system.

The information tag is located on the front of the Rear Accessed configuration and rear of the Front Accessed configuration. The information tag includes system information such as the Service Tag, Express Service Code, Manufacture date, NIC, MAC address, QRL label, and so on.

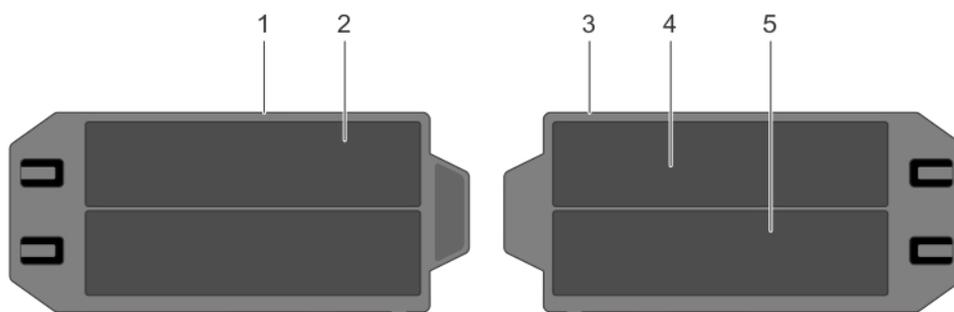


Figure 10. Locating the Service Tag of your system

1. Information tag (front view)
2. Express Service Tag label

3. Information tag (back view)
4. iDRAC MAC address information label
5. Network MAC address information label

The Mini Enterprise Service Tag (MEST) label is located on the rear of the Rear Accessed configuration and on the front of the Front Accessed configurations. The MEST includes the Service Tag (ST), Express Service Code (Exp Svc Code), and Manufacture Date (Mfg. Date). The Exp Svc Code is used by Dell EMC to route support calls to the appropriate personnel.

Alternatively, the Service Tag information is located on a label on the left wall of Rear Accessed configuration and right wall of the Front Accessed configuration.

System information label

The system information label is located on the back of the system cover.

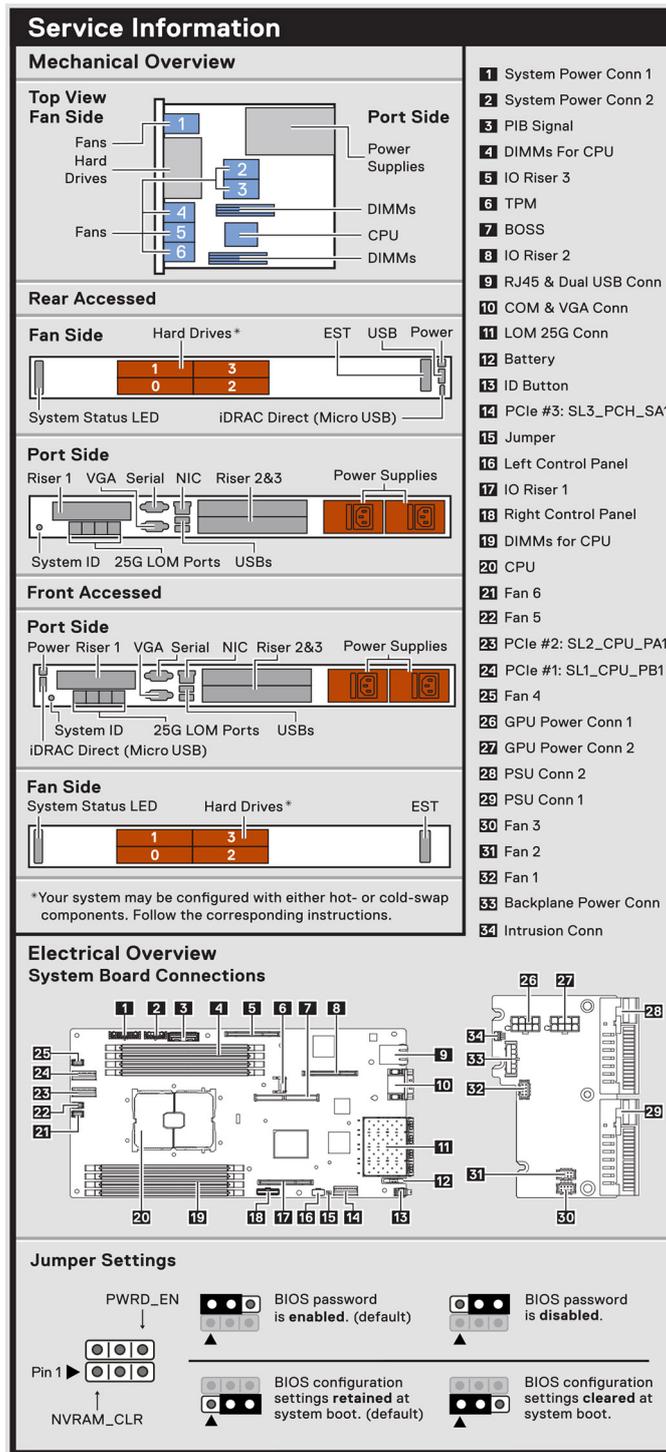


Figure 11. Service information

Service Information

System Touchpoints

- Hot swap touchpoints: Components with terracotta touchpoints can be serviced while the system is running.
- Cold swap touchpoints: Components with blue touchpoints require a full system shutdown before servicing.

Figure 12. Service information (continued)

Caution:
Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow the safety instructions that came with the product.

To learn more about this Dell product or to order additional or replacement parts, go to Dell.com/support
© Copyright 2020 Dell Inc. or its subsidiaries. All Rights Reserved. Rev A00. Label Part No. R4NP6

Figure 13. System tasks

Icon Legend

	Fan		VGA		iDRAC
	CPU		Service		Warning: Fault
	Push		USB		Express Service Tag
	Memory Bank		USB 3.0		Power Switch/Standby
	Serial		USB 2.0 Standard		Device Pointer
	Information		Power Supply		

Figure 14. Icon legend

Rail sizing and rack compatibility matrix

For specific information about the rail solutions compatible with your system, see the *Dell EMC Enterprise Systems Rail Sizing and Rack Compatibility Matrix* available at https://i.dell.com/sites/csdocuments/Business_solutions_engineering-Docs_Documents/en/rail-rack-matrix.pdf.

The document provides the information that is listed below:

- Specific details about rail types and their functionalities.

- Rail adjustability range for various types of rack mounting flanges.
- Rail depth with and without cable management accessories.
- Types of racks supported for various types of rack mounting flanges.

Initial system setup and configuration

This section describes the tasks for initial setup and configuration of the Dell EMC system. The section also provides general steps to set up the system and the reference guides for detailed information.

Topics:

- [Setting up the system](#)
- [iDRAC configuration](#)
- [Resources to install operating system](#)

Setting up the system

Perform the following steps to set up the system:

Steps

1. Unpack the system.
2. Install the system into the rack. For more information, see the rail installation and cable management accessory guides relevant to your rail and cable management solution at www.dell.com/poweredgemanuals.
3. Connect the peripherals to the system and the system to the electrical outlet.
4. Power on the system.

For more information about setting up the system, see the *Getting Started Guide* that is shipped with your system.

NOTE: For information about managing the basic settings and features of the system, see the *Dell EMC PowerEdge XR11 BIOS and UEFI Reference Guide* on the product documentation page.

iDRAC configuration

The Integrated Dell Remote Access Controller (iDRAC) is designed to make you more productive as a system administrator and improve the overall availability of Dell EMC servers. iDRAC alerts you to system issues, helps you to perform remote management, and reduces the need for physical access to the system.

Options to set up iDRAC IP address

To enable communication between your system and iDRAC, you must first configure the network settings based on your network infrastructure. The network settings option is set to **DHCP**, by default.

NOTE: For static IP configuration, you must request for the settings at the time of purchase.

You can set up the iDRAC IP address using one of the interfaces in the table below. For information about setting up iDRAC IP address, see the documentation links provided in the table below.

Table 8. Interfaces to set up iDRAC IP address

Interface	Documentation links
iDRAC Settings utility	<i>Integrated Dell Remote Access Controller User's Guide</i> at https://www.dell.com/idracmanuals or for system specific <i>Integrated Dell Remote Access Controller User's Guide</i> , go to https://www.dell.com/poweredgemanuals > Product Support page of your system > Documentation .

Table 8. Interfaces to set up iDRAC IP address (continued)

Interface	Documentation links
	<p> NOTE: To determine the most recent iDRAC release for your platform and for latest documentation version, see KB article https://www.dell.com/support/article/sln308699.</p>
OpenManage Deployment Toolkit	<p><i>Dell EMC OpenManage Deployment Toolkit User's Guide</i> available at https://www.dell.com/openmanagemanuals > Open Manage Deployment Toolkit.</p>
iDRAC Direct	<p><i>Integrated Dell Remote Access Controller User's Guide</i> at https://www.dell.com/idracmanuals or for system specific <i>Integrated Dell Remote Access Controller User's Guide</i>, go to https://www.dell.com/poweredgemanuals > Product Support page of your system > Documentation.</p> <p> NOTE: To determine the most recent iDRAC release for your platform and for latest documentation version, see KB article https://www.dell.com/support/article/sln308699.</p>
Lifecycle Controller	<p><i>Dell Lifecycle Controller User's Guide</i> at https://www.dell.com/idracmanuals or for system specific <i>Dell Lifecycle Controller User's Guide</i>, go to https://www.dell.com/poweredgemanuals > Product Support page of your system > Documentation.</p> <p> NOTE: To determine the most recent iDRAC release for your platform and for latest documentation version, see KB article https://www.dell.com/support/article/sln308699.</p>

 **NOTE:** To access iDRAC, ensure that you connect the ethernet cable to the iDRAC dedicated network port or use the iDRAC Direct port by using the USB cable. You can also access iDRAC through the shared LOM mode, if you have opted for a system that has the shared LOM mode enabled.

Options to log in to iDRAC

To log in to the iDRAC Web User Interface, open a browser and enter the IP address.

You can log in to iDRAC as:

- iDRAC user
- Microsoft Active Directory user
- Lightweight Directory Access Protocol (LDAP) user

If you opted for legacy password, use the iDRAC legacy username and password - `root` and `calvin`. If you opted for Force Change Password, for the initial log in to iDRAC use the username and password - `root` and `calvin`. Then you will be prompted and required to create a password of your choice before proceeding.

 **NOTE:** Ensure that you change the default username and password after setting up the iDRAC IP address.

For more information about logging in to the iDRAC and iDRAC licenses, see the latest *Integrated Dell Remote Access Controller User's Guide* at www.dell.com/idracmanuals.

 **NOTE:** To determine the most recent iDRAC release for your platform and for latest documentation version, see KB article <https://www.dell.com/support/article/sln308699>.

You can also access iDRAC using command-line protocol - RACADM. For more information, see the *Integrated Dell Remote Access Controller RACADM CLI Guide* available at <https://www.dell.com/idracmanuals>.

You can also access iDRAC using automation tool - Redfish API. For more information, see the *Integrated Dell Remote Access Controller User's Guide Redfish API Guide* available at <https://developer.dell.com>.

Resources to install operating system

If the system is shipped without an operating system, you can install a supported operating system by using one of the resources provided in the table below. For information about how to install the operating system, see the documentation links provided in the table below.

Table 9. Resources to install the operating system

Resource	Documentation links
iDRAC	<i>Integrated Dell Remote Access Controller User's Guide</i> at https://www.dell.com/idracmanuals or for system specific <i>Integrated Dell Remote Access Controller User's Guide</i> , go to https://www.dell.com/poweredgemanuals > Product Support page of your system > Documentation .  NOTE: To determine the most recent iDRAC release for your platform and for latest documentation version, see KB article at https://www.dell.com/support/article/sln308699 .
Lifecycle Controller	<i>Dell Lifecycle Controller User's Guide</i> at https://www.dell.com/idracmanuals or for system specific <i>Dell Lifecycle Controller User's Guide</i> , go to https://www.dell.com/poweredgemanuals > Product Support page of your system > Documentation . Dell recommends using Lifecycle Controller to install the OS, since all required drivers are installed on the system.  NOTE: To determine the most recent iDRAC release for your platform and for latest documentation version, see KB article at https://www.dell.com/support/article/sln308699 .
OpenManage Deployment Toolkit	www.dell.com/openmanagemanuals > OpenManage Deployment Toolkit
Dell certified VMware ESXi	www.dell.com/virtualizationsolutions

 **NOTE:** For more information about installation and how-to videos for operating systems supported on PowerEdge systems, see [Supported Operating Systems for Dell EMC PowerEdge systems](#).

Options to download firmware

You can download firmware from the Dell support site. For information about downloading firmware, see the [Downloading drivers and firmware](#) section.

You can also choose any one of the following options to download the firmware. For information about how to download the firmware, see the documentation links provided in the table below.

Table 10. Options to download firmware

Option	Documentation link
Using Integrated Dell Remote Access Controller Lifecycle Controller (iDRAC with LC)	www.dell.com/idracmanuals
Using Dell Repository Manager (DRM)	www.dell.com/openmanagemanuals > Repository Manager
Using Dell Server Update Utility (SUU)	www.dell.com/openmanagemanuals > Server Update Utility
Using Dell OpenManage Deployment Toolkit (DTK)	www.dell.com/openmanagemanuals > OpenManage Deployment Toolkit
Using iDRAC virtual media	www.dell.com/idracmanuals

Options to download and install OS drivers

You can choose any one of the following options to download and install OS drivers. For information about how to download or install OS drivers, see the documentation links provided in the table below.

Table 11. Options to download and install OS drivers

Option	Documentation
Dell EMC support site	Downloading drivers and firmware section.
iDRAC virtual media	<i>Integrated Dell Remote Access Controller User's Guide</i> at https://www.dell.com/idracmanuals or for system specific <i>Integrated Dell Remote Access Controller User's Guide</i> , go to https://www.dell.com/poweredgemanuals > Product Support page of your system > Documentation .  NOTE: To determine the most recent iDRAC release for your platform and for latest documentation version, see https://www.dell.com/support/article/sln308699 .

Downloading drivers and firmware

It is recommended that you download and install the latest BIOS, drivers, and systems management firmware on the system.

Prerequisites

Ensure that you clear the web browser cache before downloading the drivers and firmware.

Steps

1. Go to www.dell.com/support/drivers.
2. Enter the Service Tag of the system in the **Enter a Dell Service Tag, Dell EMC Product ID or Model** field, and then press Enter.
 **NOTE:** If you do not have the Service Tag, click **Browse all products**, and navigate to your product.
3. On the displayed product page, click **Drivers & Downloads**.
On the **Drivers & Downloads** page, all drivers that are applicable to the system are displayed.
4. Download the drivers to a USB drive, CD, or DVD.

Minimum to POST and system management configuration validation

This section describes the minimum to POST system requirement and system management configuration validation of the Dell EMC system.

Topics:

- [Minimum configuration to POST](#)
- [Configuration validation](#)

Minimum configuration to POST

The components mentioned below are the minimum configuration to POST:

- System board
- Power button control panel and cable
- Power Interposer Board (PIB) and cables
- Processor and heat sink
- One memory module (DIMM) in socket A1
- One power supply unit

Configuration validation

The new generation of PowerEdge systems have added interconnect flexibility and advanced iDRAC management features to collect precise system configuration information and report configuration errors.

When the system is powered on, information about installed cables, risers, backplanes, power supplies and processor is obtained from the CPLD and backplane memory maps is analyzed. This information forms a unique configuration, which is compared with one of the qualified configurations stored in a table maintained by iDRAC.

One or more sensors are assigned to each of the configuration elements. During POST, any configuration validation error is logged in the System Event Log (SEL)/LifeCycle (LC) log. The reported events are categorized in the configuration validation error table.

Table 12. Configuration validation error

Error	Description	Possible cause and recommendations	Example
Config Error	A configuration element within the closest match contains something that is unexpected and does not match any Dell qualified configuration.	Wrong configuration	Config Error: Backplane Cable PLANAR_SL1 and BP_DST_SA1
		The element reported in HWC8010 errors are assembled incorrectly. Verify element (cable, riser, etc) placement in the system.	Config Error : Backplane Cable PLANAR_SL3 and BP_DST_PA1
Config Missing	iDRAC found a configuration element missing within the closest match detected.	Missing element or cable is reported in HWC8010 error logs. Install the missing element (cable, riser, etc).	Config Missing : Backplane Cable PLANAR_SL3 and BP_DST_SA1

Table 12. Configuration validation error (continued)

Error	Description	Possible cause and recommendations	Example
Comm Error	A configuration element is not responding to iDRAC using the management interface while running an inventory check.	System management sideband communication Unplug AC Power, reseal the element and replace the element if the problem persists.	Comm Error: Backplane 0

Error messages

This section describes the error messages displayed on the screen during POST or captured in the system event log (SEL)/ LifeCycle (LC) log.

Table 13. Error message HWC8010

Error code	HWC8010
Message	The System Configuration Check operation resulted in the following issue involving the indicated component type
Arguments	backplane, processor, cable, or other components
Detailed Description	The issue identified in the message is observed in the System Configuration Check operation.
Recommended Response Action	Do the following and retry the operation: <ol style="list-style-type: none"> 1. Disconnect the input power. 2. Check for proper cable connection and component placement. If the issue persists, contact the service provider.
Category	System Health (HWC = Hardware Config)
Severity	Critical
Trap/EventID	2329

Table 14. Error message HWC8011

Error code	HWC8011
Message	The System Configuration Check operation resulted in multiple issues involving the indicated component type
Arguments	backplane, processor, cable, or other components
Detailed Description	Multiple issues are observed in the System Configuration Check operation.
Recommended Response Action	Do the following and retry the operation: <ol style="list-style-type: none"> 1. Disconnect the input power. 2. Check for proper cable connection and component placement. If the issue persists, contact the service provider.
Category	System Health (HWC = Hardware Config)
Severity	Critical

Installing and removing system components

Topics:

- Safety instructions
- Before working inside your system
- After working inside your system
- Recommended tools
- Optional front bezel
- Bezel filter
- System cover
- Air shrouds
- Cooling fans
- Intrusion switch module
- Drives
- Drive backplane
- Internal storage configuration matrix for XR11
- Cable routing
- System memory
- Processor and heat sink module
- Expansion cards and expansion card risers
- Optional BOSS S1 card
- System battery
- Internal USB memory key
- Power supply unit
- Power interposer board
- System board
- Trusted Platform Module
- Control panel
- MIL 901E and MIL 461G rugged kit

Safety instructions

 **NOTE:** Whenever you need to lift the system, get others to assist you. To avoid injury, do not attempt to lift the system by yourself.

 **CAUTION:** Ensure that two or more people lift the system horizontally from the box and place it on a flat surface, rack lift, or into the rails.

 **WARNING:** Opening or removing the system cover while the system is powered on may expose you to a risk of electric shock.

 **WARNING:** Do not operate the system without the cover for a duration exceeding five minutes. Operating the system without the system cover can result in component damage.

 **CAUTION:** Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow the safety instructions that are shipped with your product.

 **NOTE:** It is recommended that you always use an antistatic mat and antistatic strap while working on components inside the system.

CAUTION: To ensure proper operation and cooling, all system bays and fans must always be populated with a component or a blank.

NOTE: While replacing the hot swappable PSU, after next server boot; the new PSU automatically updates to the same firmware and configuration of the replaced one. For updating to the latest firmware and changing the configuration, see the *Lifecycle Controller User's Guide* at <https://www.dell.com/idracmanuals>.

NOTE: While replacing a faulty storage controller or NIC card with the same type of card, after you power on the system; the new card automatically updates to the same firmware and configuration of the faulty one. For more information about the Part replacement configuration, see the *Dell Lifecycle Controller User's Guide* available at <https://www.dell.com/idracmanuals>

NOTE: Only use certified Optical Fiber Transceiver Class I Laser Products.

CAUTION: Do not install GPUs, network cards, or other PCIe devices on your system that are not validated and tested by Dell. Damage caused by unauthorized and invalidated hardware installation will null and void the system warranty.

Before working inside your system

Prerequisites

Follow the safety guidelines listed in the [Safety instructions](#).

Steps

1. Power off the system and all attached peripherals.
2. Disconnect the system from the electrical outlet, and disconnect the peripherals.
3. If applicable, remove the system from the rack.
For more information, see the *Rail Installation Guide* relevant to your rail solutions at www.dell.com/poweredgemanuals.
4. Remove the system cover.

After working inside your system

Prerequisites

Follow the safety guidelines listed in [Safety instructions](#).

Steps

1. Replace the system cover.
2. If applicable, install the system into the rack.
For more information, see the *Rail Installation Guide* relevant to your rail solutions at www.dell.com/poweredgemanuals.
3. Reconnect the peripherals and connect the system to the electrical outlet, and then power on the system.

Recommended tools

You need the following tools to perform the removal and installation procedures:

- Phillips 1 screwdriver
- Phillips 2 screwdriver
- Torx T8 screwdriver
- Torx T30 screwdriver
- 5 mm hex nut screwdriver
- Plastic scribe
- 1/4-inch flat blade screwdriver

- Wrist grounding strap connected to the ground
- ESD mat
- Needle-nose pliers

You need the following tools to assemble the cables for a DC power supply unit:

- AMP 90871-1 hand-crimping tool or equivalent
- Tyco Electronics 58433-3 or equivalent
- Wire-stripper pliers to remove insulation from size 10 AWG solid or stranded, insulated copper wire

i **NOTE:** Use alpha wire part number 3080 or equivalent (65/30 stranding).

Optional front bezel

Removing the front bezel

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in the [Before working inside your system](#).

Steps

1. Remove the screws on both sides of the bezel.
2. Holding the bezel by the edges, remove the front bezel.



Figure 15. Removing the front bezel for Rear Accessed configuration

Next steps

[Replace the front bezel.](#)

Installing the front bezel

Prerequisites

Follow the safety guidelines listed in the [Safety instructions](#).

Steps

1. Align the bezel screws to the holes of the system left and right rack ears.
2. Tighten the screws until the bezel is firmly seated.



Figure 16. Installing the front bezel for Rear Accessed configuration

Bezel filter

Removing the bezel filter for Rear Accessed configuration

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in the [Before working inside your system](#).
3. [Remove the front bezel](#).

Steps

1. Remove the metal filter bracket using the tab marked LIFT on the inside face of the bezel.

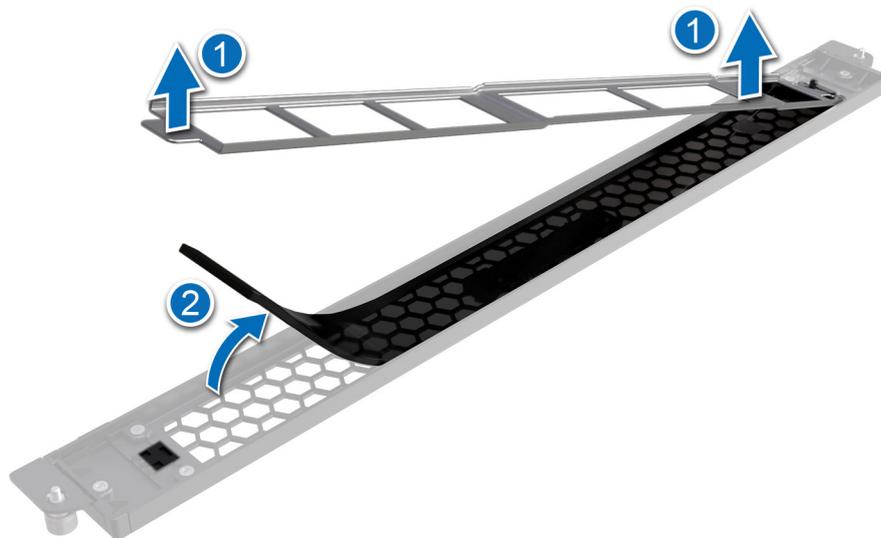


Figure 17. Removing the front bezel filter for Rear Accessed configuration

2. Remove the filter below the metal bracket.

NOTE: To maintain optimal system health, Dell Technologies recommends checking and changing the filter every three months. Filters can be ordered from Dell.

Next steps

Replace the bezel filter.

Installing the bezel filter for Rear Accessed configuration

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. [Remove the front bezel](#).

Steps

1. Place the new filter in the bezel cavity under the filter bracket. Ensure that the filter is smooth and aligned in the allowed slot.
2. Align the filter bracket with painted surface facing the filter and align the bracket to the guides on the bezel.
3. Place the bracket on the bezel for the magnets to secure in place.

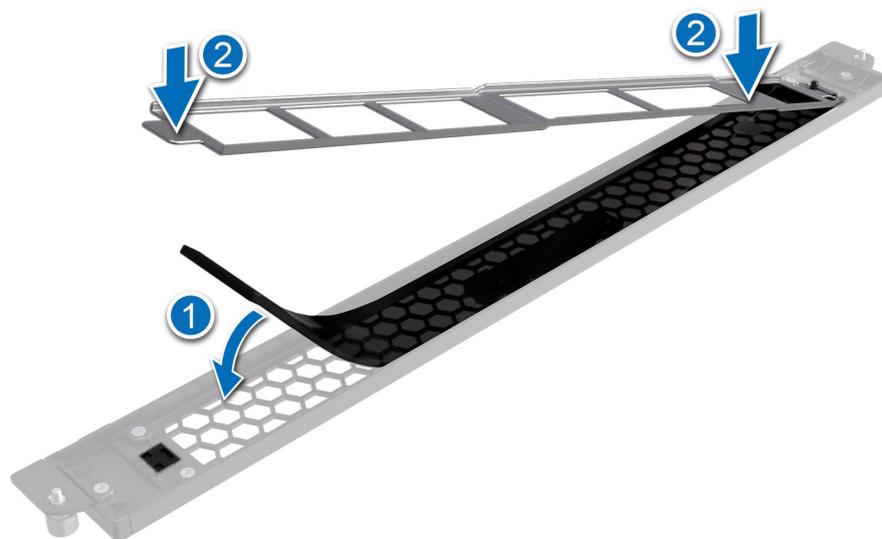


Figure 18. Installing the front bezel filter for Rear Accessed configuration

Next steps

Install the front bezel.

System cover

Removing the system cover

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).

2. Follow the procedure listed in the [Before working inside your system.](#)

Steps

1. Using a 1/4-inch flat head or Phillips 2 screwdriver, rotate the lock counterclockwise to the unlock position.
2. Lift the release latch until the system cover slides back.
3. Lift the cover from the system.



Figure 19. Removing the system cover for Rear Accessed configuration



Figure 20. Removing the system cover for Front Accessed configuration

Next steps

Replace the system cover.

Installing the system cover

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in [Before working inside your system](#).
3. Ensure that all internal cables are connected and routed properly, and no tools or extra parts are left inside the system.

Steps

1. Align the tabs on the system cover with the guide slots on the system.
2. Close the system cover release latch.
3. Using a 1/4-inch flat head or Phillips 2 screwdriver, rotate the lock clockwise to the lock position.



Figure 21. Installing the system cover for Rear Accessed configuration



Figure 22. Installing the system cover for Front Accessed configuration

Next steps

Follow the procedure listed in [After working inside your system.](#)

Air shrouds

Removing the air shrouds

The system supports PCI air shroud and processor air shroud.

Prerequisites

CAUTION: Never operate your system with the air shroud removed. The system may get overheated quickly, resulting in shutdown of the system and loss of data.

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in the [Before working inside your system](#).

NOTE: The procedure to remove the air shrouds is the same for Rear Accessed and Front Accessed configurations.

Steps

Holding the air shroud at both the ends, and lift the air shroud out of the system.

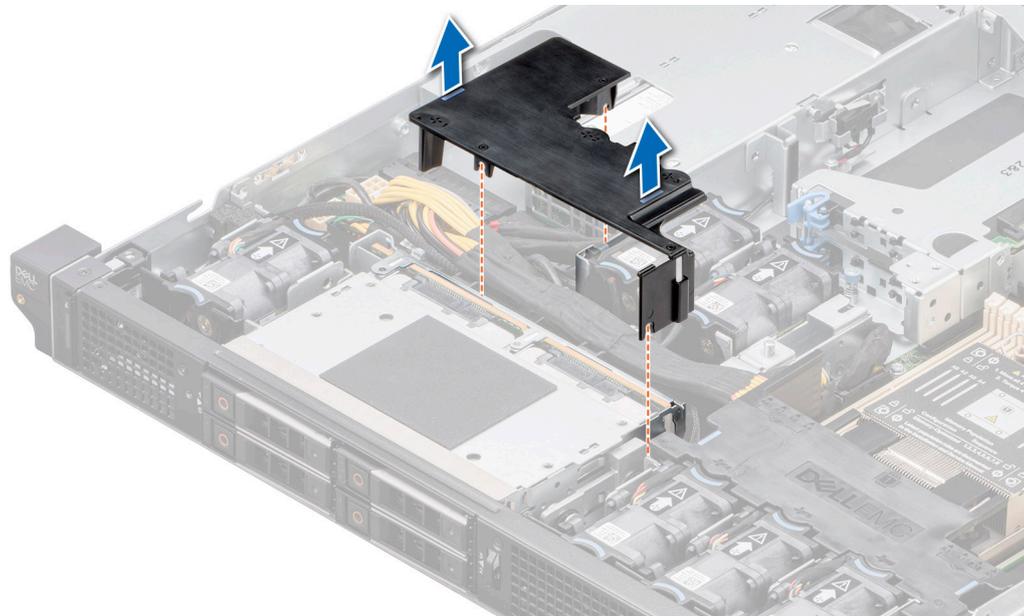


Figure 23. Removing the PCI air shroud

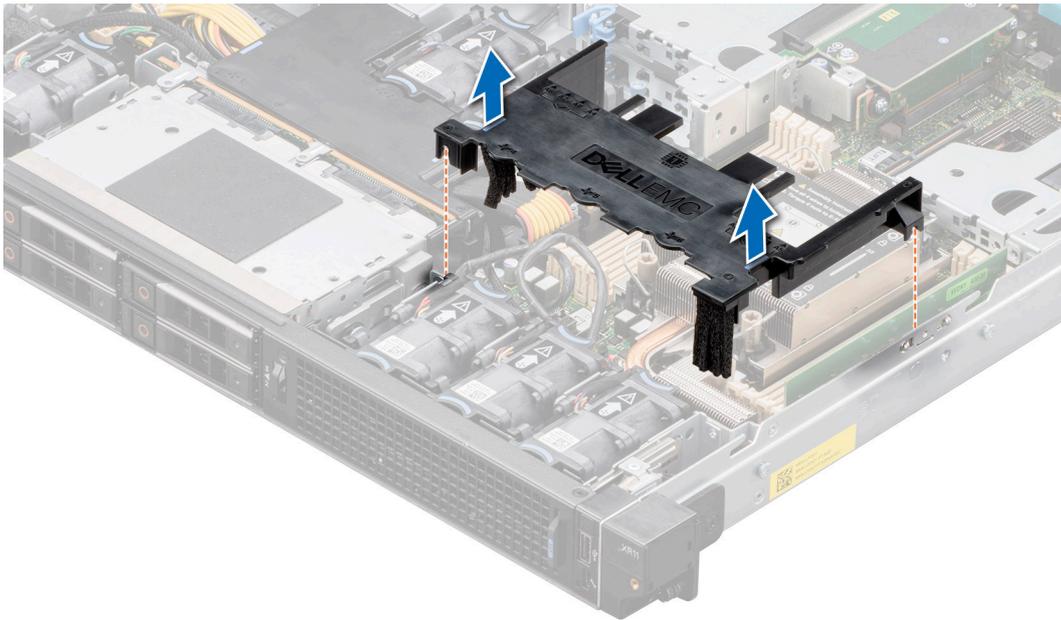


Figure 24. Removing the processor air shroud

Next steps

Replace the air shroud.

Installing the air shrouds

The system supports PCI air shroud and processor air shroud.

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in the [Before working inside your system](#).

i **NOTE:** The procedure to install the air shrouds is the same for Rear Accessed and Front Accessed configurations.

Steps

1. Align the guide pins on the system with guides on the air shroud.
2. Lower the air shroud into the system until it is firmly seated.

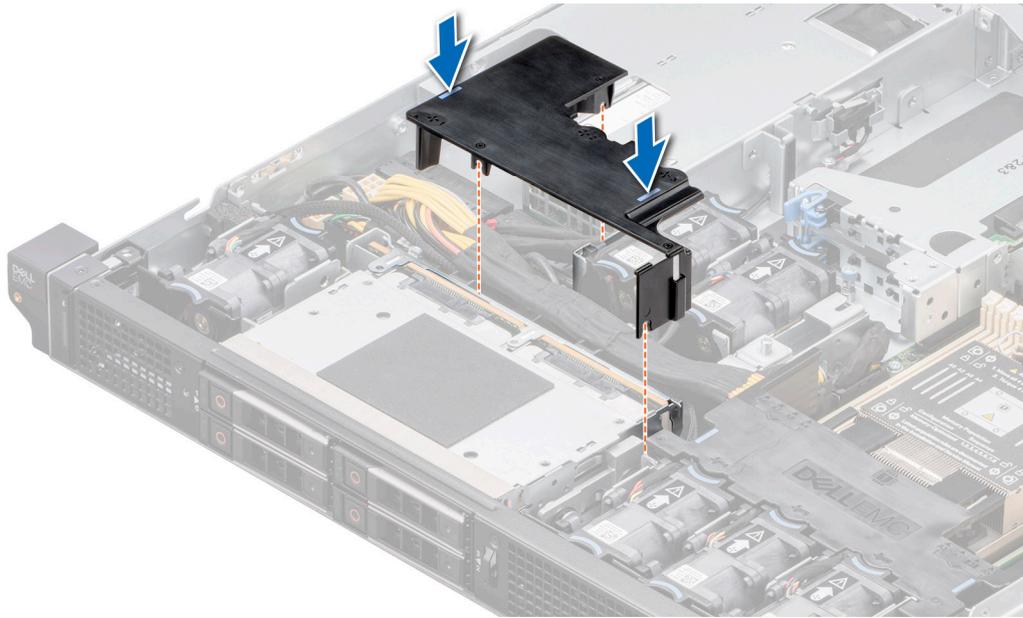


Figure 25. Installing the PCI air shroud

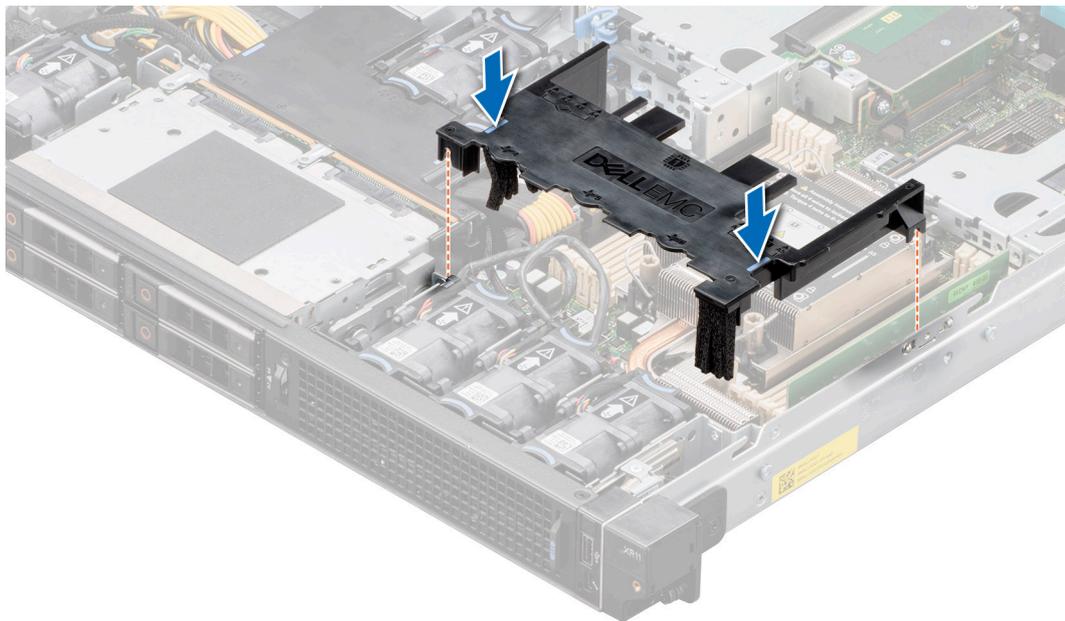


Figure 26. Installing the processor air shroud

Next steps

Follow the procedure listed in [After working inside your system.](#)

Cooling fans

Removing the cooling fan

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in the [Before working inside your system](#).
3. If installed, [remove the air shrouds](#).

i **NOTE:** The procedure to remove the cooling fan is the same for Rear Accessed and Front Accessed configurations.

i **NOTE:** Observe the fan cable routing or make a note on the fan cable routing.

Steps

1. Disconnect the cooling fan cable that is connected to the system board connector.
2. Holding the blue tabs, lift the cooling fan out of the fan cage.

i **NOTE:** To remove the Fan 5 and 6, [remove the processor and heat sink module](#) for system with extended heat sink module.

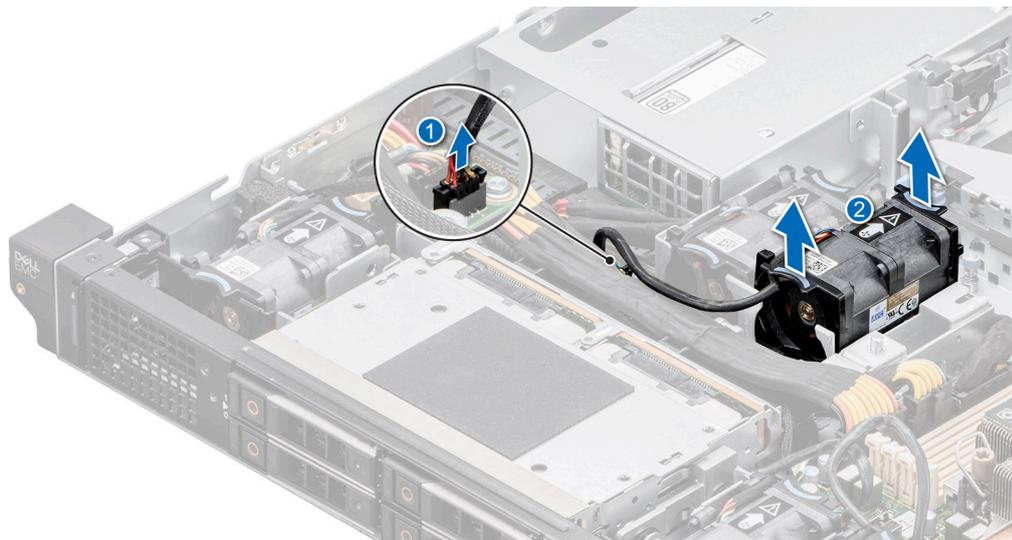


Figure 27. Removing a cooling fan

Next steps

Replace the cooling fan.

Installing the cooling fan

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in the [Before working inside your system](#).

i **NOTE:** The procedure to install the cooling fan is the same for Rear Accessed and Front Accessed configurations.

Steps

1. Lower the cooling fan into the cage until it is seated firmly.

2. Route the cable properly to prevent the cable from being pinched or crimped.
3. Press the release tabs on the fan cable connector and connect the cable to the system board.

NOTE: Ensure to connect the fan cable to the correct fan connector on the system board. Check the SIL label for correct fan header location.

NOTE: To install Fan 5 and 6, [remove the processor and heat sink module](#). After installing the fans [replace the processor and heat sink module](#) for system with extended heat sink module.

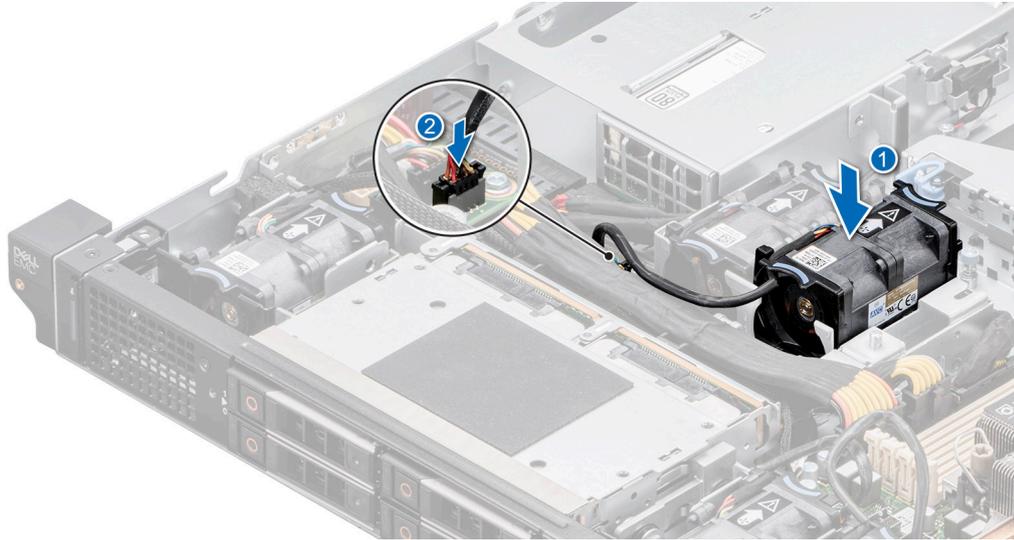


Figure 28. Installing a cooling fan

Next steps

1. [If removed, install the air shrouds.](#)
2. Follow the procedure listed in [After working inside your system.](#)

Intrusion switch module

This is a service technician replaceable part only.

Removing the intrusion switch module

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions.](#)
2. Follow the procedure listed in the [Before working inside your system.](#)

NOTE: The procedure to remove the intrusion switch module is the same for Rear Accessed and Front Accessed configurations.

Steps

1. Disconnect and remove the intrusion switch cable from the connector on the power interposer board (PIB).

NOTE: Observe the routing of the cable as you remove it from the system.

2. Using the Phillips 1 screwdriver, remove the screw securing the intrusion switch module.
3. Lift the intrusion switch module out of the system.

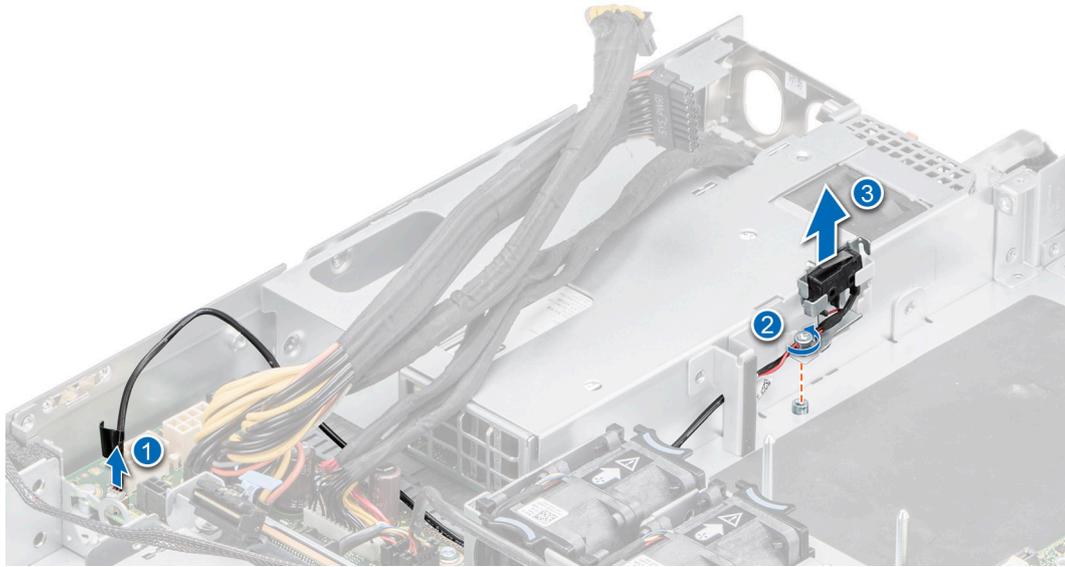


Figure 29. Removing the intrusion switch module

Next steps

Replace the intrusion switch module.

Installing the intrusion switch module

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in [Before working inside your system](#).

NOTE: The procedure to install the intrusion switch module is the same for Rear Accessed and Front Accessed configurations.

NOTE: Ensure that you note the routing of all the cables as you remove them from the system board. Route the intrusion switch cable properly when you replace it to prevent the cable from being pinched or crimped.

Steps

1. Align and insert the intrusion switch module until it is firmly seated in the slot on the system.
2. Using the Phillips 1 screwdriver, tighten the screw securing the intrusion switch module.
3. Connect the intrusion switch cable to the connector on the power interposer board (PIB).

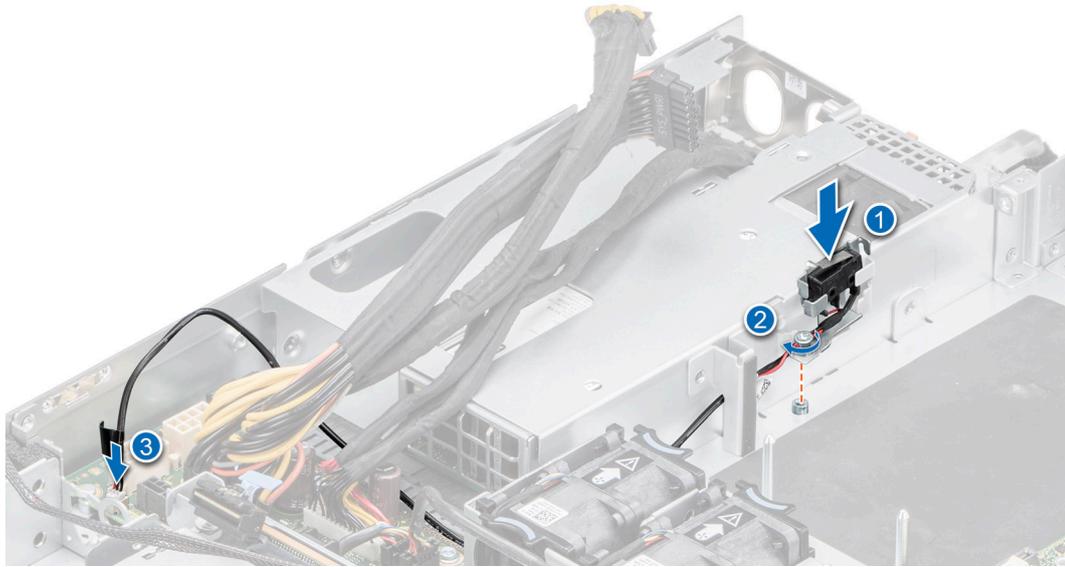


Figure 30. Installing the intrusion switch module

Next steps

1. Reconnect all the cables to the power interposer board (PIB).
2. Follow the procedure listed in [After working inside your system](#).

Drives

Removing a drive blank

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. If installed, [remove the front bezel](#).

CAUTION: To maintain proper system cooling, drive blanks must be installed in all empty drive slots.

NOTE: The procedure to remove the drive blank is the same for Rear Accessed and Front Accessed configurations.

Steps

Press the release button, and slide the drive blank out of the drive slot.

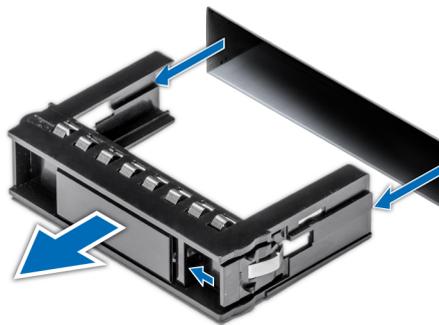


Figure 31. Removing a drive blank

Next steps

Replace the drive or replace the drive blank.

Installing the drive blank

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. If installed, [remove the front bezel](#).

NOTE: The procedure to install the drive blank is the same for Rear Accessed and Front Accessed configurations.

Steps

Insert the drive blank into the drive slot until the release button clicks into place.

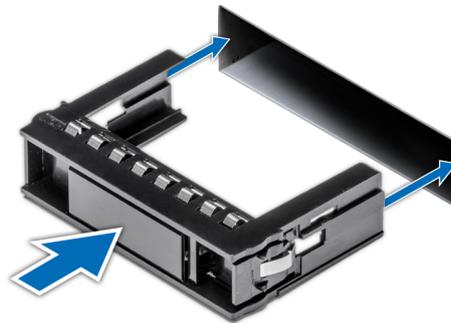


Figure 32. Installing a drive blank

Next steps

If removed, [replace the front bezel](#).

Removing the drive carrier

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. If installed, [remove the front bezel](#).
3. Using the management software, prepare the drive for removal.

If the drive is online, the green activity or fault indicator blinks while the drive is powering off. When the drive indicators are off, the drive is ready for removal. For more information, see the Storage controller documentation. <https://www.dell.com/storagecontrollermanuals>

CAUTION: Before attempting to remove or install a drive while the system is running, see the documentation for the storage controller card to ensure that the host adapter is configured correctly to support drive removal and insertion.

CAUTION: To prevent data loss, ensure that your operating system supports drive installation. See the documentation supplied with your operating system.

Steps

1. Press the release button to open the drive carrier release handle.
2. Holding the drive carrier release handle, slide the drive carrier out of the drive slot.



Figure 33. Removing a drive carrier

Next steps

Replace the drive carrier or drive blank.

Installing the drive carrier

Prerequisites

- CAUTION:** Before removing or installing a drive while the system is running, see the documentation for the storage controller card to ensure that the host adapter is configured correctly to support drive removal and insertion.
- CAUTION:** Combining SAS and SATA drives in the same RAID volume is not supported.
- CAUTION:** When installing a drive, ensure that the adjacent drives are fully installed. Inserting a drive carrier and attempting to lock its handle next to a partially installed carrier can damage the partially installed carrier's shield spring and make it unusable.
- CAUTION:** To prevent data loss, ensure that your operating system supports hot-swap drive installation. See the documentation supplied with your operating system.
- CAUTION:** When a replacement hot swappable drive is installed and the system is powered on, the drive automatically begins to rebuild. Ensure that the replacement drive is blank or contains data that you wish to overwrite. Any data on the replacement drive is immediately lost after the drive is installed.

NOTE: Ensure that the drive carrier's release handle is in the open position before inserting the carrier into the slot.

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. If installed, [remove the front bezel](#).
3. Remove the drive carrier or remove the drive blank when you want to assemble the drives in to the system.

Steps

1. Slide the drive carrier into the drive slot.
2. Close the drive carrier release handle to lock the drive in place.



Figure 34. Installing a drive carrier

Next steps

If removed, [install the front bezel](#).

Removing the drive from the drive carrier

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).

Steps

1. Using a Phillips 1 screwdriver, remove the screws from the slide rails on the drive carrier.

NOTE: If the drive carrier has Torx screw , use Torx 6 (for 2.5-inch drive).

2. Lift the drive out of the drive carrier.



Figure 35. Removing the drive from the drive carrier

Next steps

Replace the drive into the drive carrier.

Installing the drive into the drive carrier

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).

NOTE: When installing a drive into the drive carrier, ensure that the screws are torqued to 4 in-lbs.

Steps

1. Insert the drive into the drive carrier with the drive connector facing towards the rear of the carrier.
2. Align the screw holes on the drive with the screws holes on the drive carrier.
3. Using a Phillips 1 screwdriver, secure the drive to the drive carrier with the screws.

NOTE: If the drive carrier has Torx screw , use Torx 6 (for 2.5-inch drive).



Figure 36. Installing a drive into the drive carrier

Next steps

1. [Replace the drive carrier.](#)

Drive backplane

This is a service technician replaceable part only.

Drive backplane

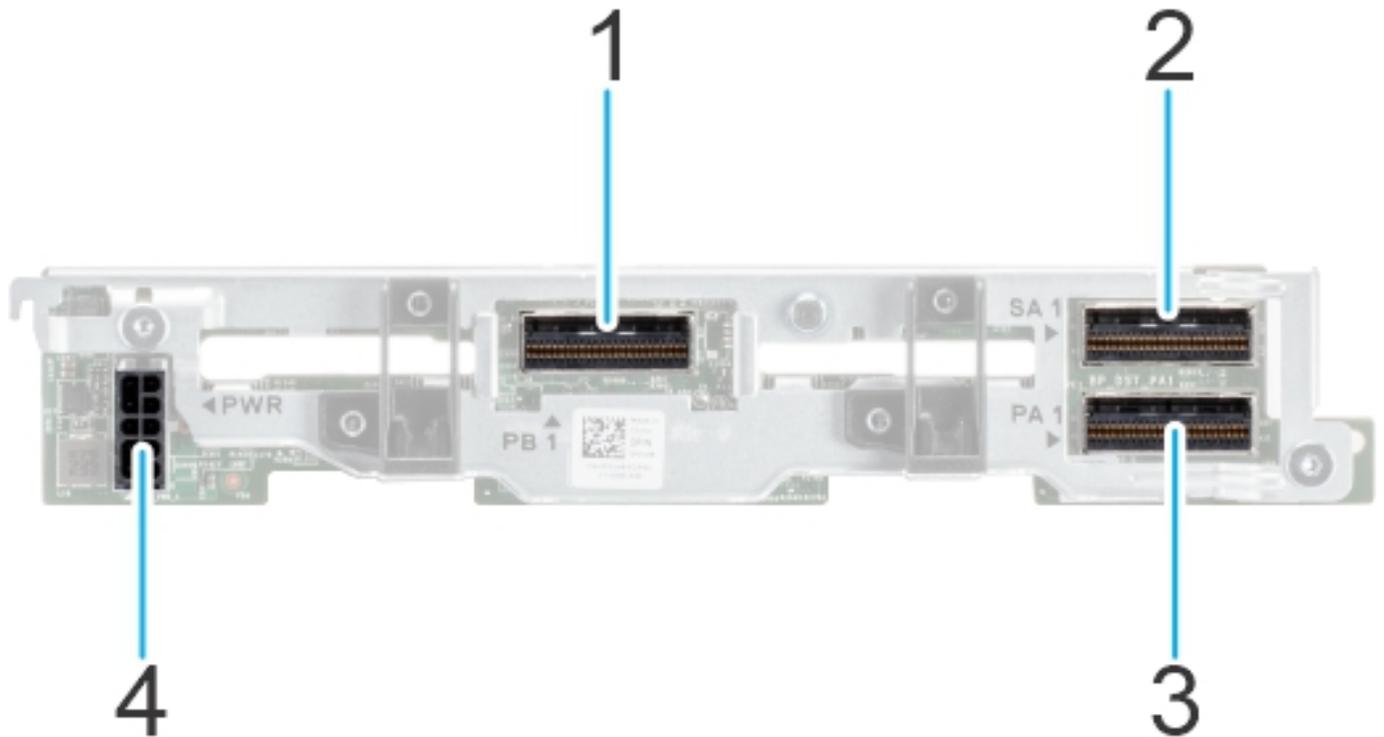


Figure 37. 4 x 2.5-inch universal backplane

1. PB1 (NVMe signal connector)
2. SA1 (SAS/SATA signal connector)
3. PA1 (NVMe signal connector)
4. PWR (backplane power cable connector)

Removing the drive backplane

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in the [Before working inside your system](#).
3. [Remove all the drives](#).
4. [Remove the PCI air shroud](#).
5. Disconnect the drive backplane cables from the connectors on backplane.

i **NOTE:** The procedure to remove the drive backplane is the same for Rear Accessed and Front Accessed configurations.

⚠ CAUTION: To prevent damage to the drives and backplane, remove the drives from the system before removing the backplane.

⚠ CAUTION: Note the number of each drive and temporarily label them before you remove the drive so that you can reinstall them in the same location.

Steps

1. Holding the drive backplane by the edges lift it upwards to disengage the backplane from the guide pins.
2. Lift the drive backplane out of the system.

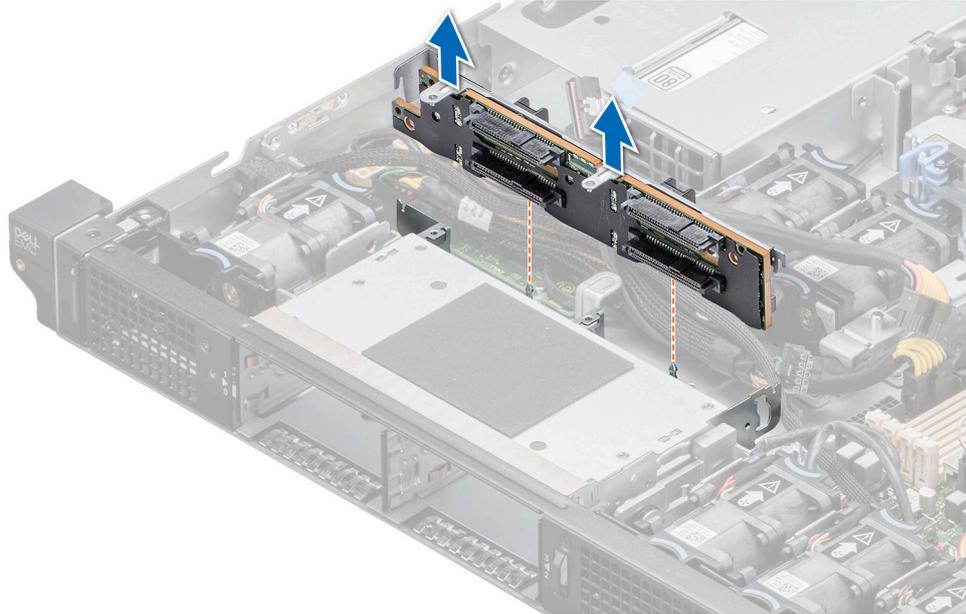


Figure 38. Removing the drive backplane

Next steps

Replace the drive backplane.

Installing the drive backplane

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in the [Before working inside your system](#).
3. [Remove the PCI air shroud](#).
4. Disconnect the drive backplane cables from the connectors on the system board.

NOTE: Route the cables properly when you replace them to prevent the cables from being pinched or crimped.

NOTE: The procedure to install the drive backplane is the same for Rear Accessed and Front Accessed configurations.

Steps

1. Align the guide pins on the backplane with the guides on the system.
2. Insert the backplane into the guides and lower the backplane firmly until it is fully seated.
3. Verify that the backplane connector pins are not bent and then connect the cables to the backplane.

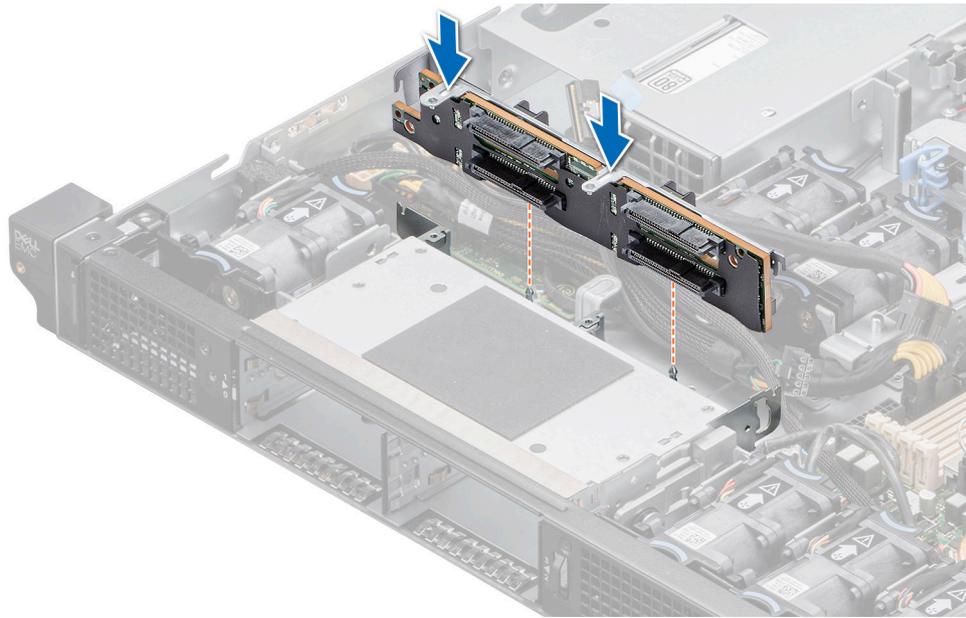


Figure 39. Installing the drive backplane

Next steps

1. Connect the cables to the backplane and then verify that both power and signal cable connections are fully seated to the backplane and system board.
2. [Install all the drives.](#)
3. [Install the PCI air shroud.](#)
4. Follow the procedure listed in [After working inside your system.](#)

Internal storage configuration matrix for XR11

Table 15. Internal storage configuration matrix

Configuration	Chassis orientation	Base configuration description	Backplane description	Storage controller(s)	Controller form factor	BOSS enabled	Riser configuration
1	Front Accessed	ASSY, CHAS, RAF, 4HD, 3PCI, 1U, XR11	4 x 2.5-inch NVMe (only)	H755	Adapter	Y	C0/1: R1B+R2+R3
2	Front Accessed	ASSY, CHAS, RAF, 4HD, 3PCI, 1U, XR11	4 x 2.5-inch NVMe (only)	S150	Direct Attach (SL)	Y	C0/1: R1B+R2+R3
3	Front Accessed	ASSY, CHAS, RAF, 4HD, 3PCI, 1U, XR11	4 x 2.5-inch SAS/SATA	H345	Adapter	Y	C0/1: R1B+R2+R3
4	Front Accessed	ASSY, CHAS, RAF, 4HD, 3PCI, 1U, XR11	4 x 2.5-inch SAS/SATA	H755	Adapter	Y	C0/1: R1B+R2+R3
5	Front Accessed	ASSY, CHAS, RAF, 4HD, 3PCI, 1U, XR11	4 x 2.5-inch SAS/SATA	HBA355i	Adapter	Y	C0/1: R1B+R2+R3
6	Front Accessed	ASSY, CHAS, RAF, 4HD, 3PCI, 1U, XR11	4 x 2.5-inch SATA (only)	Onboard SATA	Onboard SATA	Y	C0/1: R1B+R2+R3
7	Rear Accessed	ASSY, CHAS, NAF, 4HD, 3PCI, 1U, XR11	4 x 2.5-inch NVMe (only)	H755	Adapter	Y	C0/1: R1B+R2+R3
8	Rear Accessed	ASSY, CHAS, NAF, 4HD, 3PCI, 1U, XR11	4 x 2.5-inch NVMe (only)	S150	Direct attach (SL)	Y	C0/1: R1B+R2+R3

Table 15. Internal storage configuration matrix (continued)

Configuration	Chassis orientation	Base configuration description	Backplane description	Storage controller(s)	Controller form factor	BOSS enabled	Riser configuration
9	Rear Accessed	ASSY, CHAS, NAF, 4HD, 3PCI, 1U, XR11	4 x 2.5-inch SAS/SATA	H345	Adapter	Y	C0/1: R1B+R2+R3
10	Rear Accessed	ASSY, CHAS, NAF, 4HD, 3PCI, 1U, XR11	4 x 2.5-inch SAS/SATA	H755	Adapter	Y	C0/1: R1B+R2+R3
11	Rear Accessed	ASSY, CHAS, NAF, 4HD, 3PCI, 1U, XR11	4 x 2.5-inch SAS/SATA	HBA355i	Adapter	Y	C0/1: R1B+R2+R3
12	Rear Accessed	ASSY, CHAS, NAF, 4HD, 3PCI, 1U, XR11	4 x 2.5-inch SATA (only)	Onboard SATA	Onboard SATA	Y	C0/1: R1B+R2+R3

For cable routing information on the different configurations, please refer to the [cable routing](#) topic.

Cable routing

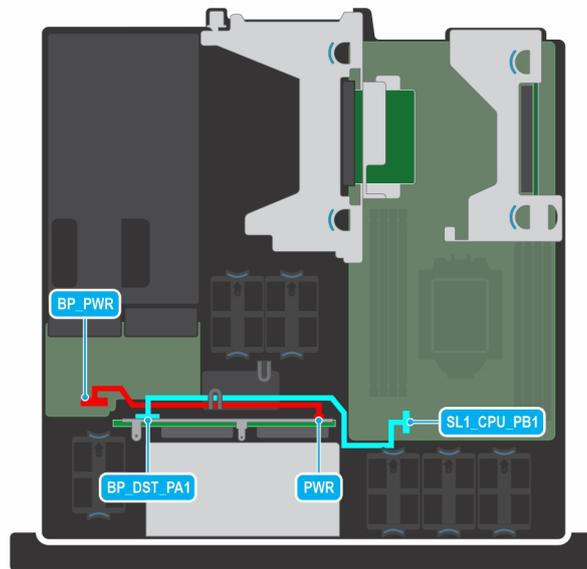


Figure 40. Cable routing - SL1 NVMe cable from system board to 4 x 2.5-inch drive backplane

Table 16. SL1 NVMe cable from system board to 4 x 2.5-inch drive backplane

From	To
BP_PWR (Power connector on PIB)	PWR (Power connector on backplane)
SL1_CPU_PB1 (NVMe signal connector on system board)	BP_DST_PA1 (NVMe signal connector on backplane)

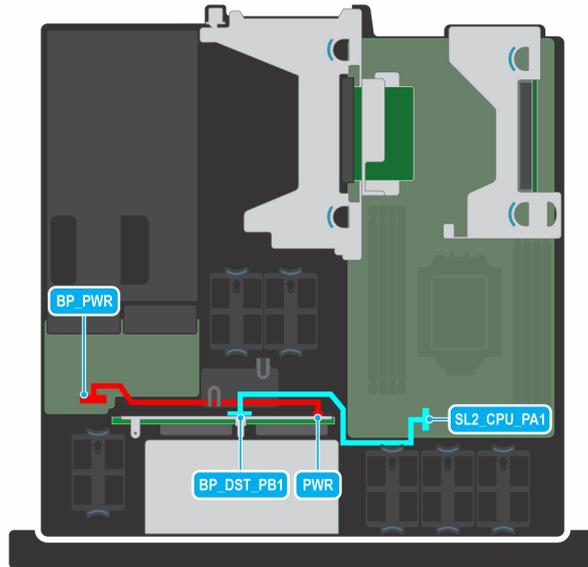


Figure 41. Cable routing - SL2 NVMe cable from system board to 4 x 2.5-inch drive backplane

Table 17. SL2 NVMe cable from system board to 4 x 2.5-inch drive backplane

From	To
BP_PWR (Power connector on PIB)	PWR (Power connector on backplane)
SL2_CPU_PA1 (NVMe signal connector on system board)	BP_DST_PB1 (NVMe signal connector on backplane)

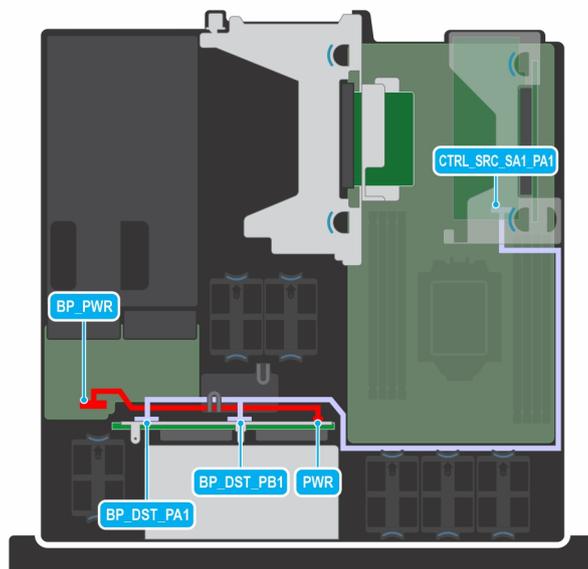


Figure 42. Cable routing- NVMe cable from PERC to 4 x 2.5-inch drive backplane

Table 18. NVMe cable from PERC to 4 x 2.5-inch drive backplane

From	To
BP_PWR (Power connector on PIB)	PWR (Power connector on backplane)

Table 18. NVMe cable from PERC to 4 x 2.5-inch drive backplane (continued)

From	To
CTRL_SRC_SA1_PA1 (NVMe signal connector on PERC adapter)	BP_DST_PA1 (NVMe signal connector on backplane)
	BP_DST_PB1 (NVMe signal connector on backplane)



Figure 43. Cable routing- SAS cable from PERC to 4 x 2.5-inch drive backplane

Table 19. SAS cable from PERC to 4 x 2.5-inch drive backplane

From	To
BP_PWR (Power connector on PIB)	PWR (Power connector on backplane)
CTRL_SRC_SA1_PA1 (SAS signal connector on PERC adapter)	BP_DST_SA1 (SAS signal connector on backplane)

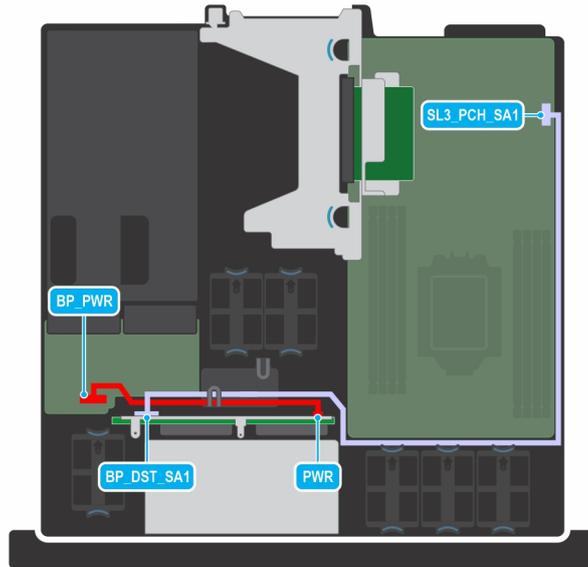


Figure 44. Cable routing- SATA cable from PERC to 4 x 2.5-inch drive backplane

Table 20. SATA cable from PERC to 4 x 2.5-inch drive backplane

From	To
BP_PWR (Power connector on PIB)	PWR (Power connector on backplane)
SL3_PCH_SA1 (SATA signal connector on system board)	BP_DST_SA1 (SATA signal connector on backplane)

System memory

System memory guidelines

The PowerEdge XR11 system supports DDR4 registered DIMMs (RDIMMs), load reduced DIMMs (LRDIMMs) and Intel Optane PMem 200 Series. System memory holds the instructions that are executed by the processor.

Your system contains 8 memory sockets organized into 8 channels to the processor.

Memory channels are organized as follows:

Table 21. Memory channels

Channel A	Channel B	Channel C	Channel D	Channel E	Channel F	Channel G	Channel H
Slots A1	Slots A5	Slots A3	Slots A7	Slots A2	Slots A6	Slots A4	Slots A8

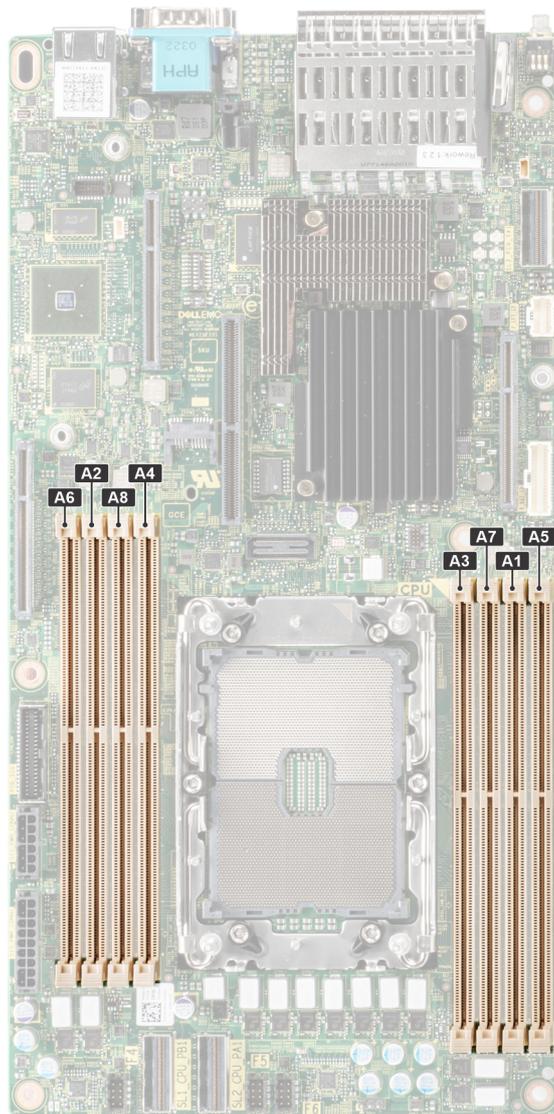


Figure 45. Memory sockets on the system board

The following table shows the memory populations and operating frequencies for the supported configurations:

Table 22. Memory population

DIMM Type	DIMM Ranking	Capacity	DIMM rated voltage and speed	Operating speed for DIMMs per Channel (DPC)
RDIMM	1R	8 GB	DDR4 (1.2V), 3200 MT/s, 2933 MT/s or 2666 MT/s	3200 MT/s
RDIMM	2R	16 GB, 32 GB, 64 GB	DDR4 (1.2V), 3200 MT/s, 2933 MT/s or 2666 MT/s	3200 MT/s
LRDIMM	4R	128 GB	DDR4 (1.2V), 3200 MT/s, 2933 MT/s or 2666 MT/s	3200 MT/s
Intel Optane PMem 200 Series DIMM	1R	128 GB	DDR4 (1.2V), 3200 MT/s, 2933 MT/s or 2666 MT/s	3200 MT/s

General memory module installation guidelines

To ensure optimal performance of your system, observe the following general guidelines when configuring your system memory. If your system's memory configurations fail to observe these guidelines, your system might not boot, stop responding during memory configuration, or operate with reduced memory.

The memory bus may operate at speeds of 3200 MT/s, 2933 MT/s, or 2666 MT/s depending on the following factors:

- System profile selected (for example, Performance Optimized, or Custom [can be run at high speed or lower])
- Maximum supported DIMM speed of the processor
- Maximum supported speed of the DIMMs

NOTE: MT/s indicates DIMM speed in MegaTransfers per second.

The system supports Flexible Memory Configuration, enabling the system to be configured and run in any valid chipset architectural configuration. The following are the recommended guidelines for installing memory modules:

- All DIMMs must be DDR4.
- x4 and x8 DRAM based memory modules can be mixed.
- If memory modules with different speeds are installed, they operate at the speed of the slowest installed memory module(s).
- Populate memory module sockets only if a processor is installed.
- In Optimizer Mode, the DRAM controllers operate independently in the 64-bit mode and provide optimized memory performance.

Table 23. Memory population rules

Processor	Configuration	Memory population	Memory population information
Single processor	Optimizer (Independent channel) population order	A{1}, A{2}, A{3}, A{4}, A{5}, A{6}, A{7}, A{8}	1, 2, 4, 6, 8 DIMMs are allowed.

- Memory modules of different capacities can be mixed provided other memory population rules are followed.

NOTE: For example, 8 GB and 16 GB memory modules can be mixed.

- Mixing of more than two memory module capacities in a system is not supported.
- Unbalanced or odd memory configuration results in a performance loss and system may not identify the memory modules being installed, so always populate memory channels identically with equal DIMMs for best performance.
- Odd memory configuration with 3, 5 or 7 RDIMMs/LRDIMMs is not supported.
- Supported RDIMM / LRDIMM configurations are 1, 2, 4, 6, 8 DIMMs.
- Mixing RDIMM and LRDIMM is not supported.

Intel Optane PMem 200 Series installation guidelines

The following are the recommended guidelines for installing Intel Optane PMem 200 Series memory modules:

- Each system supports maximum of one Intel Optane PMem 200 Series memory module per channel.
- Intel Optane PMem 200 Series can be mixed with RDIMM or LRDIMM.
- Mixing of Intel Optane PMem 200 Series operating modes (App Direct, Memory Mode) is not supported.
- Intel Optane PMem 200 Series cannot be mixed with other Intel Optane PMem 200 Series capacities or NVDIMMs.
- VMware ESXi boot takes a longer time when Intel Optane PMem 200 Series are configured in AppDirect mode. This is expected as background ARS is going on the interleave sets and needs to be completed before the pMem datastore is mounted on ESXi.
- Intel Optane PMem 200 Series in App Direct mode can be populated symmetrically or asymmetrically across sockets.
- In Memory mode symmetry across sockets is required.

For more information about the supported Intel Optane PMem 200 Series configurations, see the *Dell EMC Intel Optane PMem 200 Series User 's Guide* at https://www.dell.com/support/home/products/server_int/server_int_poweredge.

Table 24. Intel Optane PMem 200 Series Configuration 1 - 4 x RDIMMs/ LRDIMMs, 4 x Intel Optane PMem 200 Series

Total No of RDIMMs/ LRDIMMs	Total No of Intel Optane PMem 200 Series DIMMs	1 R/LRDIMM capacity (GB)	1 Intel Optane PMem 200 Series capacity (GB)	Total Standard Memory Capacity	Total PM Capacity	Supported Modes
4	4	16	128	64	512	MM or AD
4	4	32	128	128	512	MM or AD
4	4	64	128	256	512	AD
4	4	128	128	512	512	AD

Table 25. Intel Optane PMem 200 Series Configuration 2 - 6 x RDIMMs/ LRDIMMs, 1 x Intel Optane PMem 200 Series

Total No of RDIMMs/ LRDIMMs	Total No of Intel Optane PMem 200 Series DIMMs	1 R/LRDIMM capacity (GB)	1 Intel Optane PMem 200 Series capacity (GB)	Total Standard Memory Capacity	Total PM Capacity	Supported Modes
6	1	16	128	96	128	AD
6	1	32	128	192	128	AD
6	1	64	128	384	128	AD
6	1	128	128	768	128	AD

Removing a memory module

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in the [Before working inside your system](#).
3. [Remove the processor air shroud](#).

 **NOTE:** The procedure to remove the memory module is the same for Rear Accessed and Front Accessed configurations.

 **WARNING:** The memory modules are hot to touch for some time after the system has been powered off. Allow the memory modules to cool before handling them.

 **CAUTION:** To ensure proper system cooling, memory module blanks must be installed in any memory socket that is not occupied. Remove memory module blanks only if you intend to install memory modules in those sockets.

Steps

1. Locate the appropriate memory module socket.
2. To release the memory module from the socket, simultaneously press the ejectors on both ends of the memory module socket to fully open.

 **CAUTION:** Handle each memory module only by the card edges, ensuring not to touch the middle of the memory module or metallic contacts.

3. Lift the memory module away from the system.

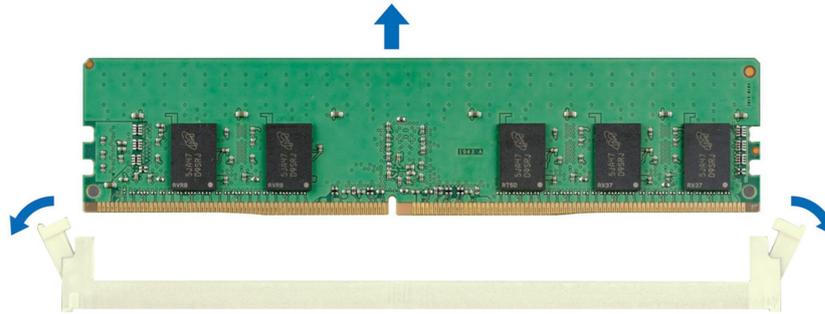


Figure 46. Removing a memory module

Next steps

Replace the memory module.

Installing a memory module

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in the [Before working inside your system](#).
3. [Remove the processor air shroud](#).

i **NOTE:** The procedure to install the memory module is the same for Rear Accessed and Front Accessed configurations.

i **NOTE:** The empty DIMM slots should be installed with memory module blanks and the removal and install procedure for memory module blanks is the same as the removal and install procedure of memory modules.

Δ **CAUTION:** To ensure proper system cooling, memory module blanks must be installed in any memory socket that is not occupied. Remove memory module blanks only if you intend to install memory modules in those sockets.

Steps

1. Locate the appropriate memory module socket.

Δ **CAUTION:** Handle each memory module only by the card edges, ensuring not to touch the middle of the memory module or metallic contacts.

2. If a memory module blank is installed in the socket, remove it.

i **NOTE:** Ensure that the socket ejector latches are fully open, before installing the memory module.

3. Align the edge connector of the memory module with the alignment key of the memory module socket, and insert the memory module in the socket.

Δ **CAUTION:** To prevent damage to the memory module or the memory module socket during installation, do not bend or flex the memory module; insert both ends of the memory module simultaneously.

i **NOTE:** The memory module socket has an alignment key that enables you to install the memory module in the socket in only one orientation.

CAUTION: Do not apply pressure at the center of the memory module; apply pressure at both ends of the memory module evenly.

4. Press the memory module with your thumbs until the ejectors firmly click into place. When the memory module is properly seated in the socket, the levers on the memory module socket align with the levers on the other sockets that have memory modules that are installed.

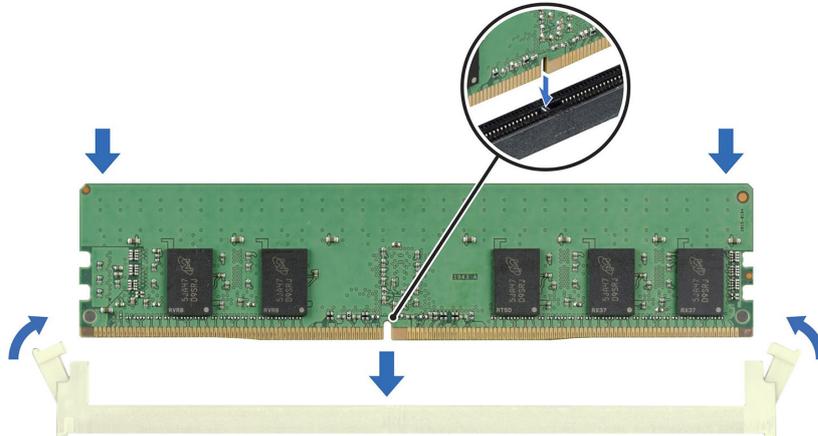


Figure 47. Installing a memory module

Next steps

1. [Install the processor air shroud.](#)
2. Follow the procedure listed in [After working inside your system.](#)
3. To verify if the memory module has been installed properly, press F2 and navigate to **System Setup Main Menu > System BIOS > Memory Settings**. In the **Memory Settings** screen, the System Memory Size must reflect the updated capacity of the installed memory.
4. If the System Memory Size is incorrect, one or more of the memory modules may not be installed properly. Ensure that the memory modules are firmly seated in their sockets.
5. Run the system memory test in system diagnostics.

Processor and heat sink module

This is a service technician replaceable part only.

Removing the processor and heat sink module

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in the [Before working inside your system](#).
3. [Remove the processor air shroud.](#)

NOTE: The procedure to remove the heat sink is the same for Rear Accessed and Front Accessed configurations.

NOTE: The heat sink and processor are hot to touch for some time after the system has been powered down. Allow the heat sink and processor to cool down before handling them.

Steps

1. Ensure all four anti-tilt wires are in the locked position (outward position), and then using a Torx T30 tool, loosen the nuts on the heat sink in the order that is mentioned below:
 - a. Loosen the first nut completely.
 - b. Loosen the nut diagonally opposite to the nut you loosened first.
 - c. Repeat the procedure for the remaining two nut.

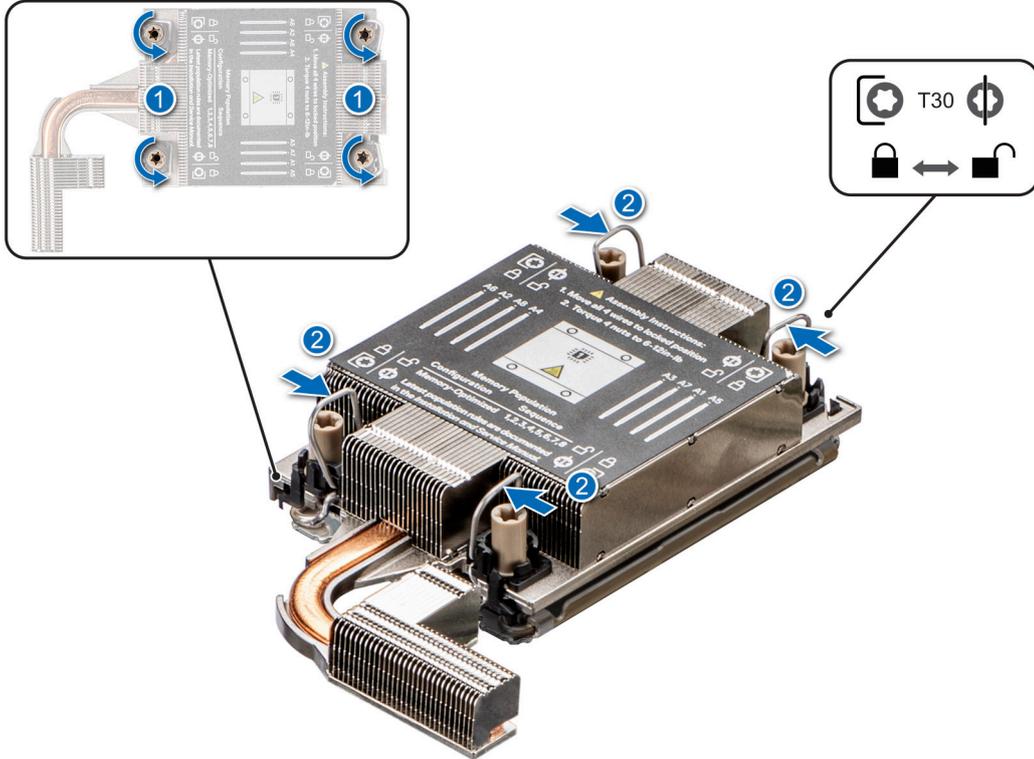


Figure 48. Loosening the nuts and set the anti-tilt wires to the unlocked position

2. Set the anti-tilt wires to the unlocked position (inward position).
3. Lift the processor and heat sink module (PHM) from the system and set the PHM aside with the processor side facing up.

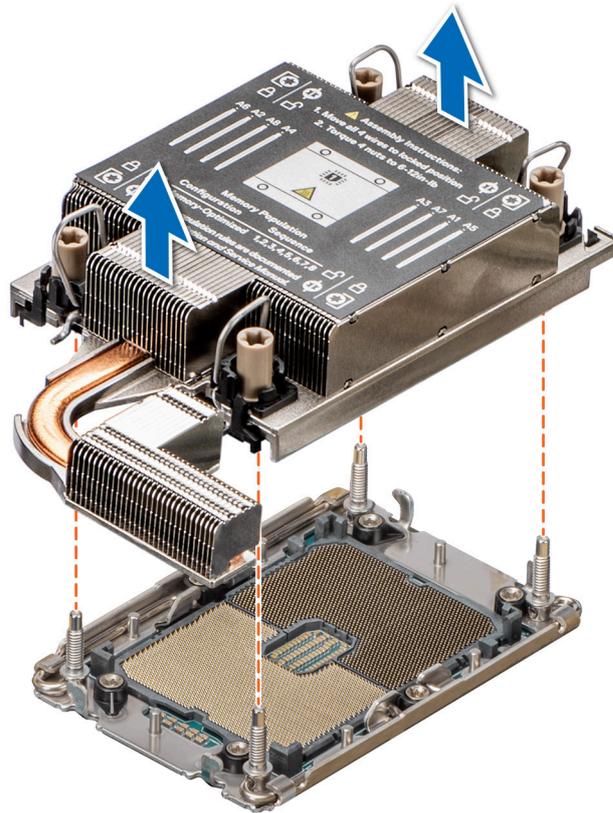


Figure 49. Removing a heat sink

Next steps

If you are removing a faulty heat sink, [replace the heat sink](#), if not, [remove the processor](#).

Removing the processor from the processor heat sink module

Prerequisites

⚠ WARNING: Remove the processor from the processor and heat sink module (PHM) only if you are replacing the processor or heat sink.

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in the [Before working inside your system](#).
3. [Remove the processor air shroud](#).
4. [Remove the heat sink](#).

ℹ NOTE: The procedure to remove the processor is the same for Rear Accessed and Front Accessed configurations.

⚠ CAUTION: You may find the CMOS battery loss or CMOS checksum error that is displayed during the first instance of powering on the system after the processor or system board replacement which is expected. To fix this, simply go to setup option to configure the system settings.

Steps

1. Place the heat sink with the processor side facing up.
2. Using your thumb lift up the Thermal Interface Material (TIM) break lever to release the processor from the TIM and carrier.
3. Holding the processor by the edges, lift the processor away from the carrier.

ℹ NOTE: Ensure to hold the carrier to the heat sink as the TIM break is rotated.

4. Place the processor connector side down on the processor tray. Ensure pin 1 marks are aligned.

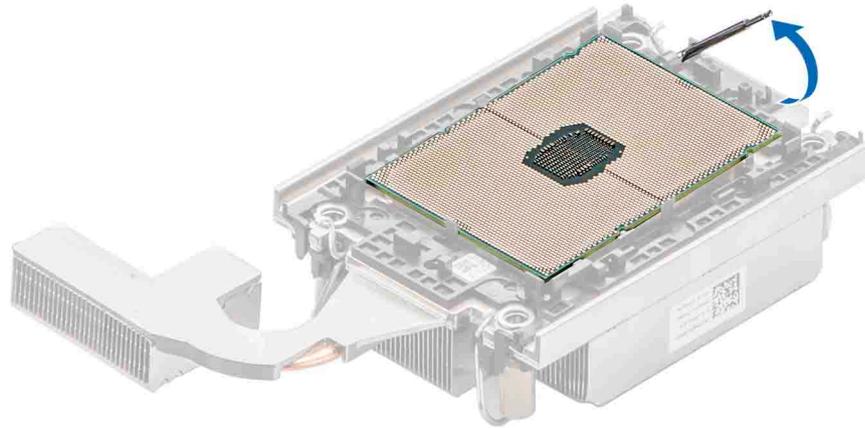


Figure 50. Lift up the TIM break lever

5. Using your thumb and index finger, first hold the carrier release tab at the pin 1 connector, pull out the tip of the carrier release tab, and then lift the carrier partially from the heat sink.
6. Repeat the procedure at the remaining three corners of the carrier.
7. After all the corners are released from the heat sink, lift the carrier from the pin 1 corner of the heat sink.

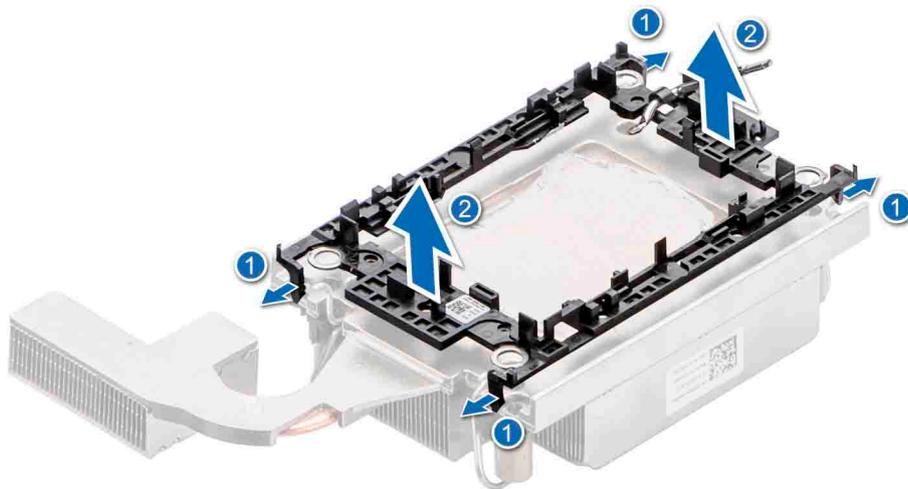


Figure 51. Removing the processor carrier

Next steps

Replace the processor.

Installing the processor into a processor heat sink module

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in [Before working inside your system](#).

NOTE: The procedure to install the processor is the same for Rear Accessed and Front Accessed configurations.

Steps

1. Place the processor in the processor tray.

i **NOTE:** Ensure that the pin 1 indicator on the processor tray is aligned with the pin 1 indicator on the processor.

2. Place the processor carrier on top of the processor that is in the processor tray aligning pin 1 indicator on the processor.

i **NOTE:** Ensure that the pin 1 indicator on the carrier is aligned with the pin 1 indicator on the processor before placing the carrier on the processor.

i **NOTE:** Ensure that the processor and the carrier are placed in the tray before you install the heat sink.

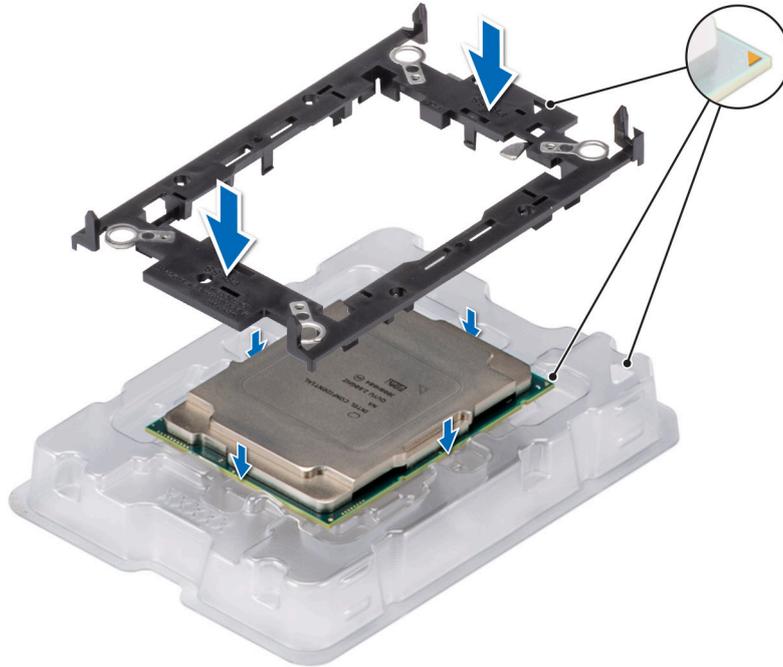


Figure 52. Installing the processor carrier

3. To align the processor tray with the bracket, press down on the bracket with your fingers on all four sides until it clicks into place.

i **NOTE:** Ensure that the processor is securely latched to the processor carrier.

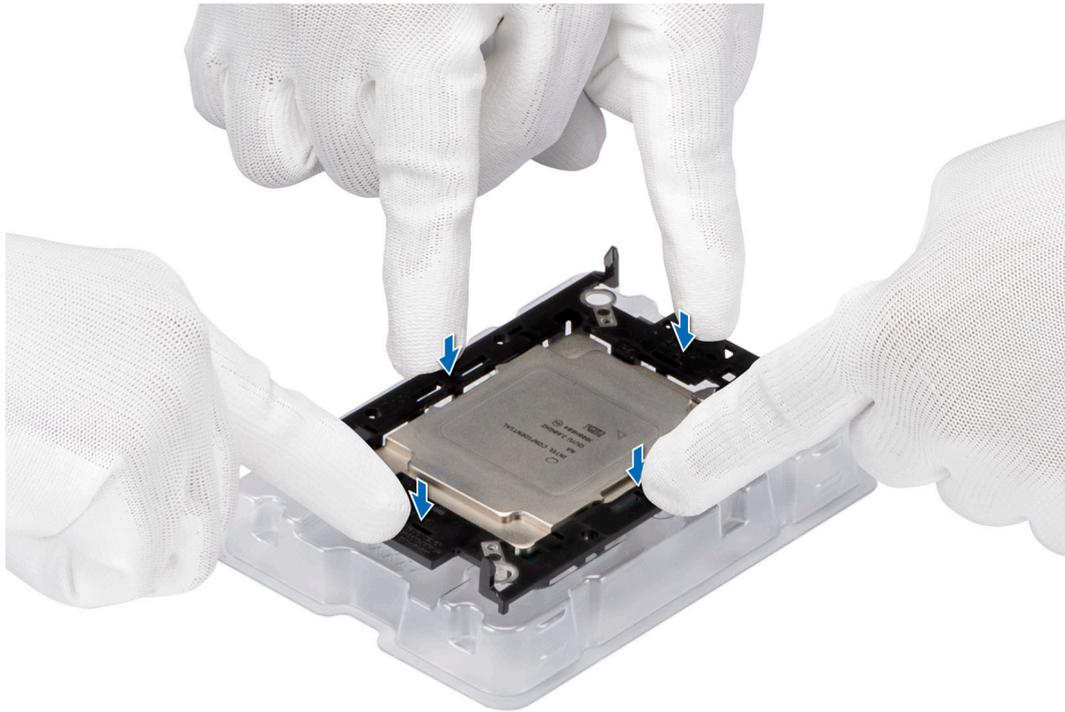


Figure 53. Press the carrier on the four sides

4. If you are using an existing heat sink, remove the thermal grease on the heat sink by using a clean lint-free cloth.
5. Use the thermal grease syringe included with your processor kit to apply the grease in a thin spiral on the bottom of the heat sink.

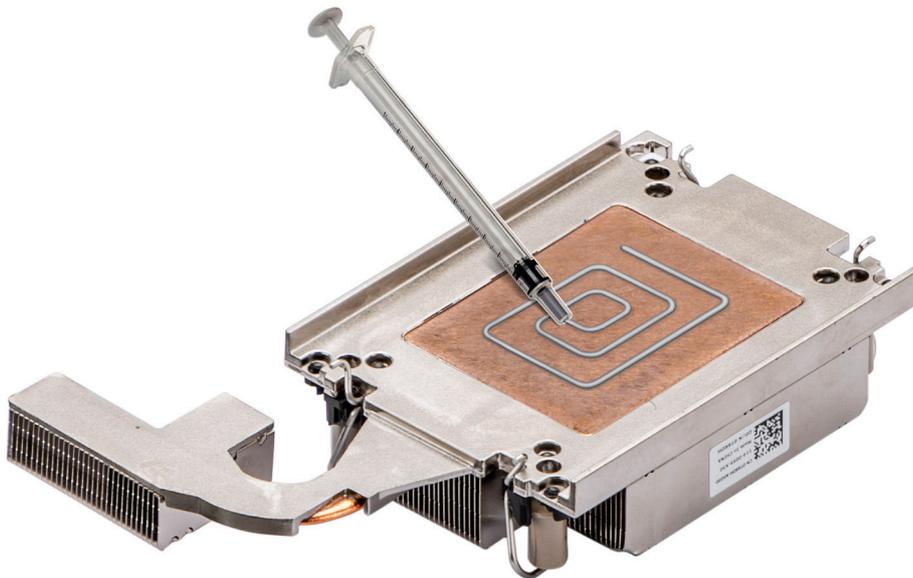


Figure 54. Applying thermal grease on the heat sink

CAUTION: Applying too much thermal grease can result in excess grease coming in contact with and contaminating the processor socket.

NOTE: The thermal grease syringe is intended for single use only. Dispose of the syringe after you use it.

6. For new heat sink, remove the Thermal Interface Material (TIM) protective film from the base of heat sink.

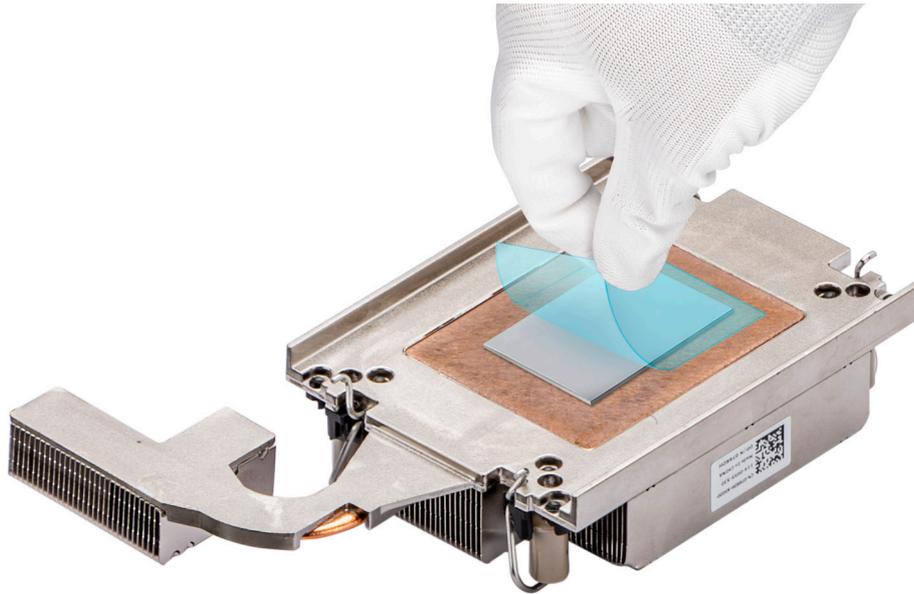


Figure 55. Remove the Thermal Interface Material (TIM) protective film

7. Place the heat sink on the processor and press the heat sink until the carrier locks onto the heat sink at all the four corners.
 - ⚠ **CAUTION:** To avoid damaging the fins on the heat sink, do not press down on the heat sink fins.
 - ℹ **NOTE:** Ensure that the pin 1 indicator on the heat sink is aligned with the pin 1 indicator on the carrier before placing the heat sink onto the processor carrier.
 - ℹ **NOTE:** Ensure latching features on processor carrier and heat sink are aligned during assembly.

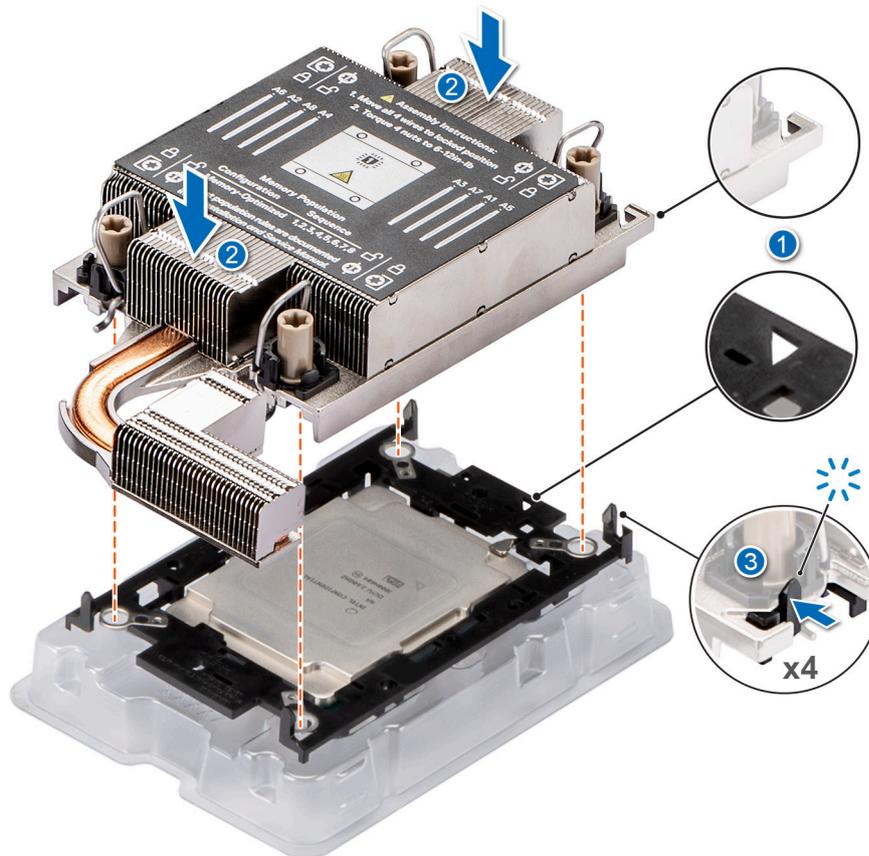


Figure 56. Installing the heat sink onto the processor

Next steps

1. [Replace the heat sink.](#)
2. [Replace the processor air shroud.](#)
3. Follow the procedure listed in [After working inside your system.](#)

Installing the processor and heat sink module

Prerequisites

Never remove the heat sink from a processor unless you intend to replace the processor or system board. The heat sink is necessary to maintain proper thermal conditions.

1. Follow the safety guidelines listed in the [Safety instructions.](#)
2. Follow the procedure listed in the [Before working inside your system.](#)
3. [Remove the processor air shroud.](#)

NOTE: The procedure to install the heat sink is the same for Rear Accessed and Front Accessed configurations.

Steps

1. Set the anti-tilt wires to the unlocked position on the heat sink (inward position).
2. Align the pin 1 indicator of the heat sink to the system board, and then place the processor and heat sink on the processor socket.

CAUTION: To avoid damaging the fins on the heat sink, do not press down on the heat sink fins.

NOTE: Ensure that the processor and heat sink is held parallel to the system board to prevent damaging the components.

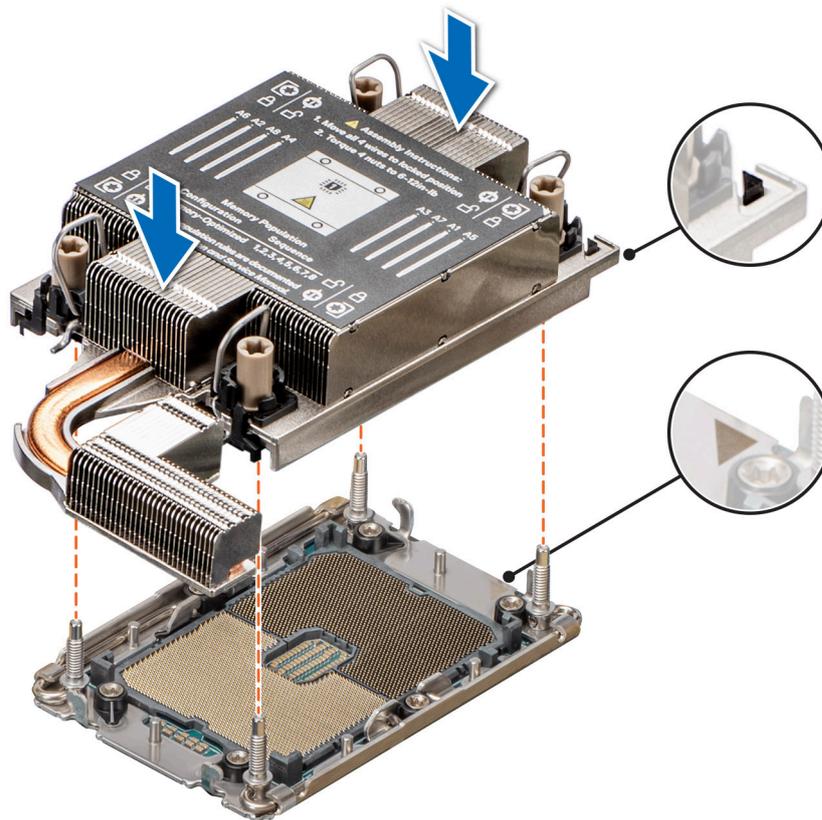


Figure 57. Installing the processor and heat sink (PHM)

3. Set the anti-tilt wires to the locked position (outward position), and then using the Torx T30 tool, tighten the captive nuts (8 in-lbf) on the heat sink in the order below:
 - a. Tighten the first nut completely.
 - b. Tighten the nut diagonally opposite to the nut you tighten first.
 - c. Repeat the procedure for the remaining two nuts.

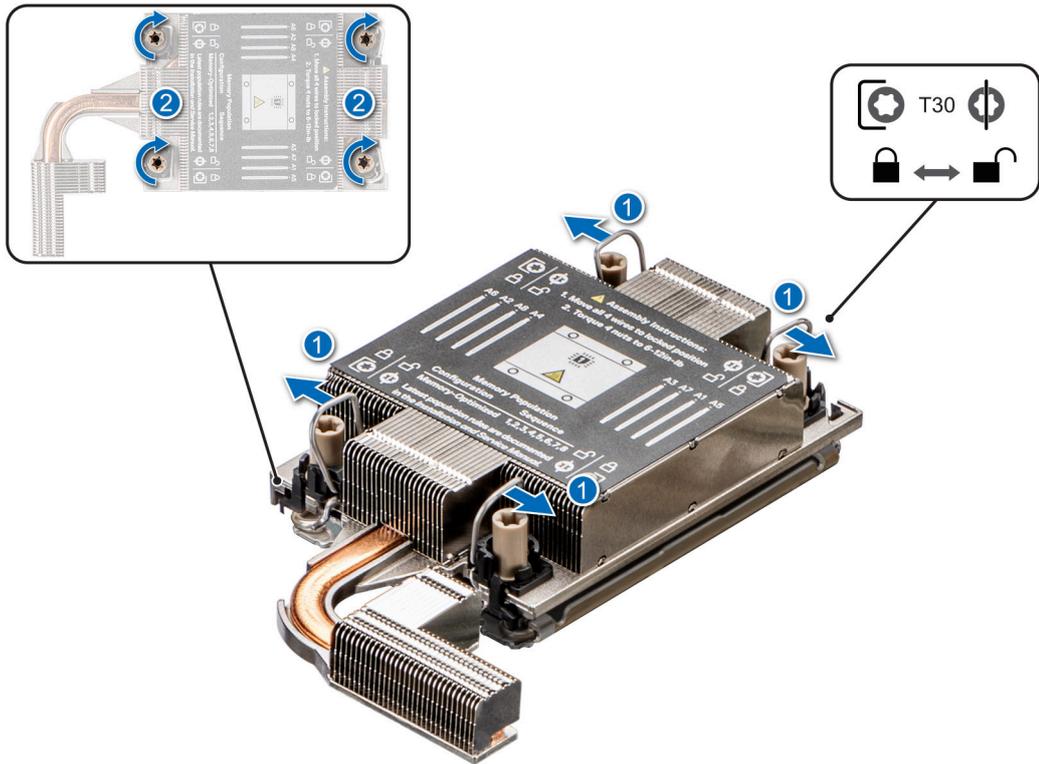


Figure 58. Set the anti-tilt wires to the locked position and tightening the nuts

Next steps

1. [Replace the processor air shroud.](#)
2. Follow the procedure listed in [After working inside your system.](#)

Expansion cards and expansion card risers

NOTE: A system event entry is logged in the iDRAC Lifecycle Controller if an expansion card riser is not supported or missing. It does not prevent your system from turning on. However, if a F1/F2 pause occurs with an error message, see *Troubleshooting expansion cards* section in the *Dell EMC PowerEdge Servers Troubleshooting Guide* at www.dell.com/poweredgemanuals.

Expansion card installation guidelines

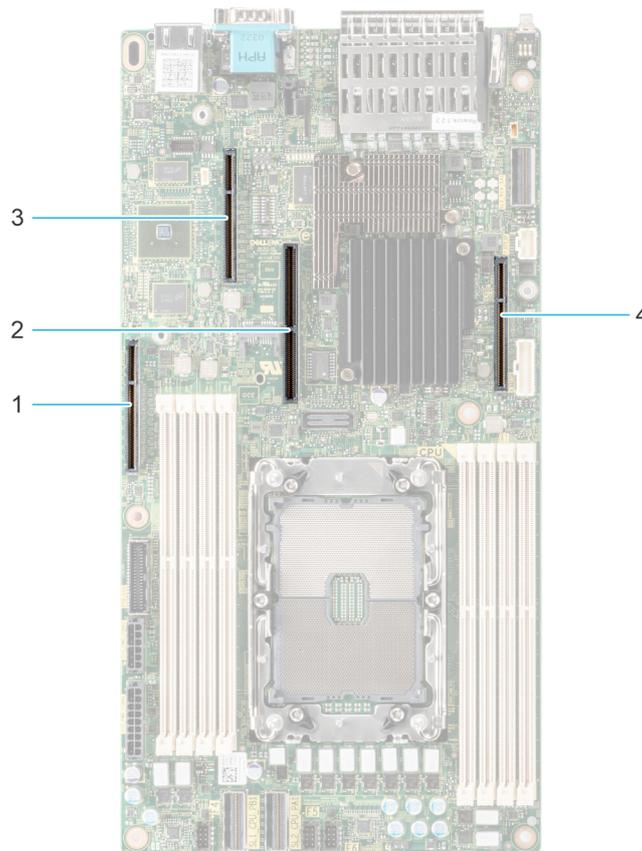


Figure 59. Expansion card slot connectors

1. IO_Riser3 (Riser 3 connector)
2. BOSS S1 card connector
3. IO_Riser2 (Riser 2 connector)
4. IO_Riser1 (Riser 1 connector)

The following table describes the expansion card riser configurations:

Table 26. Expansion card riser configurations

Configurations	Expansion card risers	PCIe Slots	Controlling processor	Height	Length	Slot width
Config0.	R1B+R2+R3 Rear Accessed configuration	1	Processor 1	Low profile	Half length	x8
		2		Full Height	Half length	x16
		3		Full Height	Half length	x16
Config1.	R1B+R2+R3 Front Accessed configuration	1	Processor 1	Low profile	Half length	x8
		2		Low profile	Half length	x16
		3		Full Height	Half length	x16

NOTE: Riser 2 and 3 are combined in one expansion card riser module.

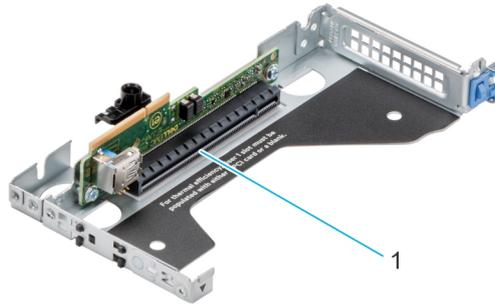


Figure 60. Riser 1

1. Slot 1, x8, LP-HL (Low Profile - Half Length)

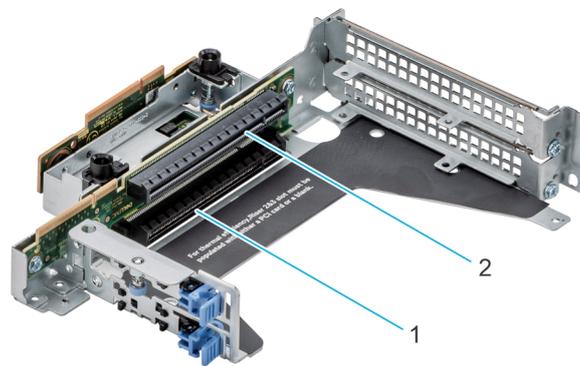


Figure 61. Riser 2 and 3

1. Slot 2, x16, FH-HL (Full Height - Half Length)
2. Slot 3, x16, FH-HL (Full Height - Half Length)

NOTE: The expansion-card slots are not hot-swappable.

The following table provides guidelines for installing expansion cards to ensure proper cooling and mechanical fit. The expansion cards with the highest priority should be installed first using the slot priority indicated. All the other expansion cards should be installed in the card priority and slot priority order.

Table 27. Configuration 0: R1B+R2+R3 for Rear Accessed configuration

Card type	Slot priority	Maximum number of cards
Internal PERC adapter (LP)	1	1
Dell External Adapter (FH)	3, 2	2
GPU (FH)	2, 3	2
Mellanox (NIC: 100Gb) (FH)	2, 3	2
Mellanox (NIC: 25Gb) (FH)	2, 3	2
Broadcom (NIC: 25Gb) (FH)	2, 3	2
Broadcom (NIC: 25Gb) (LP)	1	1
Broadcom (NIC: 10Gb) (FH)	2, 3	2
Broadcom (NIC: 10Gb) (LP)	1	1
Broadcom (NIC: 1Gb) (FH)	3, 2	2
Broadcom (NIC: 1Gb) (LP)	1	1

Table 27. Configuration 0: R1B+R2+R3 for Rear Accessed configuration (continued)

Card type	Slot priority	Maximum number of cards
Intel (NIC: 25Gb) (FH)	2, 3	2
Intel (NIC: 25Gb) (LP)	1	1
Intel (NIC: 10Gb SFP+) (FH)	2	1
Intel (NIC: 10Gb SFP+) (FH)	2	1
Intel (NIC: 10Gb) (FH) (all others including V2 of 4 x10 SFP+ and 2 x10 SFP+ cards)	2, 3	2
Intel (NIC: 10Gb) (LP)	1	1
Intel (NIC: 1Gb) (FH)	3, 2	2
Intel (NIC: 1Gb) (LP)	1	1
Dell BOSS S1 card Module	Integrated slot	1

Table 28. Configuration 1: R1B+R2+R3 for Front Accessed configuration

Card type	Slot priority	Maximum number of cards
Internal PERC adapter (LP)	1	1
Dell External Adapter (FH)	3, 2	2
GPU (FH)	2, 3	2
Mellanox (NIC: 100Gb) (FH)	2, 3	2
Mellanox (NIC: 25Gb) (FH)	2, 3	2
Broadcom (NIC: 25Gb) (FH)	2, 3	2
Broadcom (NIC: 25Gb) (LP)	1	1
Broadcom (NIC: 10Gb) (FH)	2, 3	2
Broadcom (NIC: 10Gb) (LP)	1	1
Broadcom (NIC: 1Gb) (FH)	3, 2	2
Broadcom (NIC: 1Gb) (LP)	1	1
Intel (NIC: 25Gb) (FH)	2, 3	2
Intel (NIC: 25Gb) (LP)	1	1
Intel (NIC: 10Gb SFP+) (FH)	2	1
Intel (NIC: 10Gb SFP+) (FH)	2	1
Intel (NIC: 10Gb) (FH) (all others including V2 of 4 x10 SFP+ and 2 x10 SFP+ cards)	2, 3	2
Intel (NIC: 10Gb) (LP)	1	1
Intel (NIC: 1Gb) (FH)	3, 2	2
Intel (NIC: 1Gb) (LP)	1	1
Dell BOSS S1 card Module	Integrated slot	1

Removing the expansion card risers

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in the [Before working inside your system](#).

i **NOTE:** The procedure to remove the expansion card risers is the same for Rear Accessed and Front Accessed configurations.

Steps

1. For riser 1, using the Phillips 2 screwdriver, loosen the blue thumbscrew.
2. Holding the blue touch points, lift the expansion card riser from the riser connector on the system board.

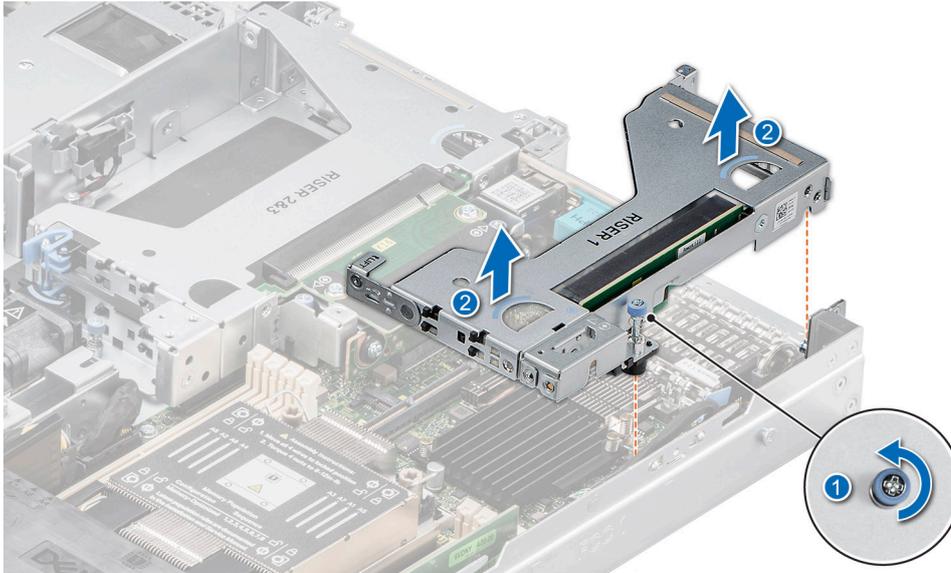


Figure 62. Removing Riser 1

3. For riser 2 and 3, using Phillips 2 loosen the blue thumbscrews. Hold the blue touch points, and lift the expansion card riser from the riser connector on the system board.

i **NOTE:** Riser 2 and 3 are combined in one expansion card riser.

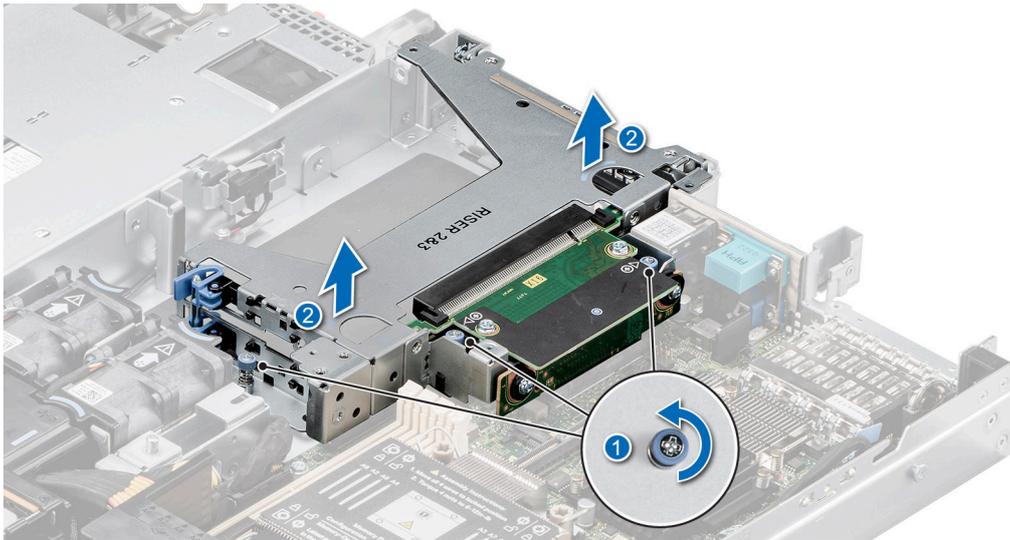


Figure 63. Removing Riser 2 and 3

Next steps

Replace the expansion card riser.

Installing the expansion card risers

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in the [Before working inside your system](#).
3. If removed, install the expansion cards into the expansion card risers and connect all the riser cables.

NOTE: The procedure to install the expansion card risers is the same for Rear Accessed and Front Accessed configurations.

Steps

1. For Riser 1, hold the blue touch points on the riser and align the connector with the connector on system board.

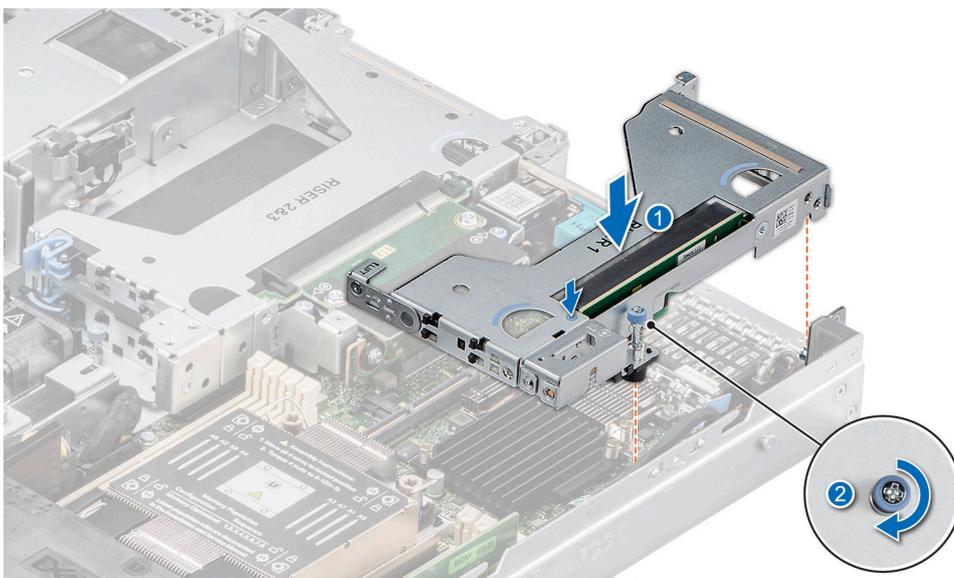


Figure 64. Installing Riser 1

2. Lower the expansion card riser into place and press the blue target push point that is located on the riser until the expansion card riser connector is fully seated in the connector.
3. Using Phillips 2 screwdriver, tighten the blue thumbscrew.
4. For Riser 2 and 3, hold the blue touch points on the riser and align the connector with the connector and guide pins on the system board.

NOTE: Risers 2 and 3 are combined in one expansion card riser.

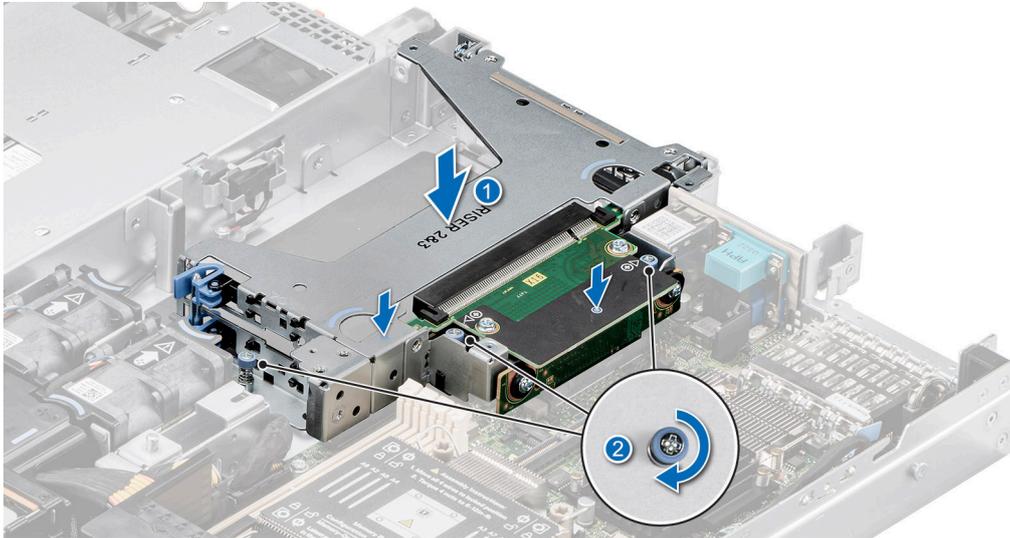


Figure 65. Installing Riser 2 and 3

5. Lower the expansion card riser into place and press the blue push points on the riser until the expansion card riser is fully seated in the connector.
6. Using Phillips 2 screwdriver, tighten the blue thumbscrews.

Next steps

1. Follow the procedure listed in [After working inside your system](#).
2. Install any device drivers required for the card as described in the documentation for the card.

Removing an expansion card from the expansion card riser

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in the [Before working inside your system](#).
3. [Remove the expansion card risers](#).

NOTE: The procedure to remove the GPU card and the expansion card is the same for Rear Accessed and Front Accessed configurations.

Steps

1. Pull and lift the expansion card retention latch lock to open.
2. Hold the expansion card by its edges and pull the card until the card edge connector disengages from the connector on the expansion card riser.

NOTE: The blue retention latch is only used for when a half-length card is installed. If a shorter card is installed the blue retention latch is not applicable.

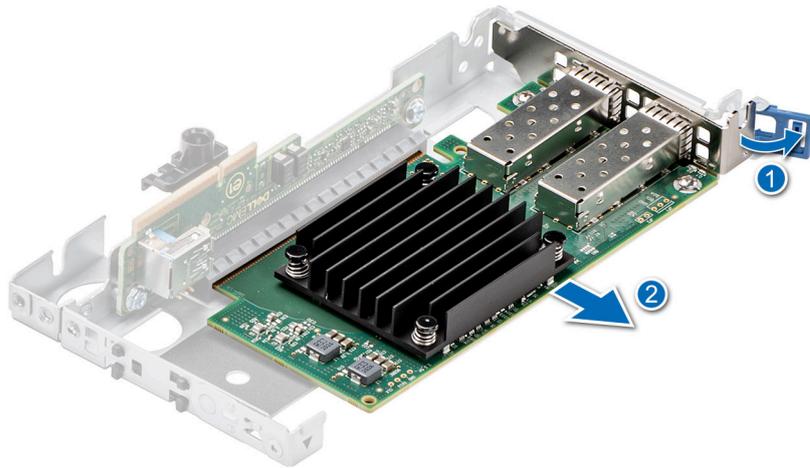


Figure 66. Removing expansion card from Riser 1

NOTE: The blue retention latch is only used when a half-length card is installed. If a shorter card is installed the blue retention latch is not applicable.

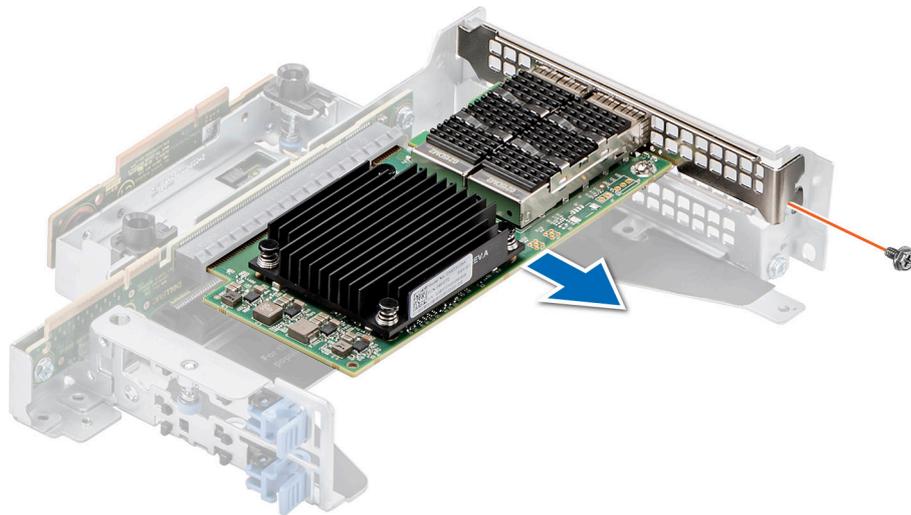


Figure 67. Removing expansion card from Riser 2 and 3

3. For riser 2 and 3, using Phillip 2 screwdriver loosen the screw and pull the card to disconnect from the connector on the expansion card riser.

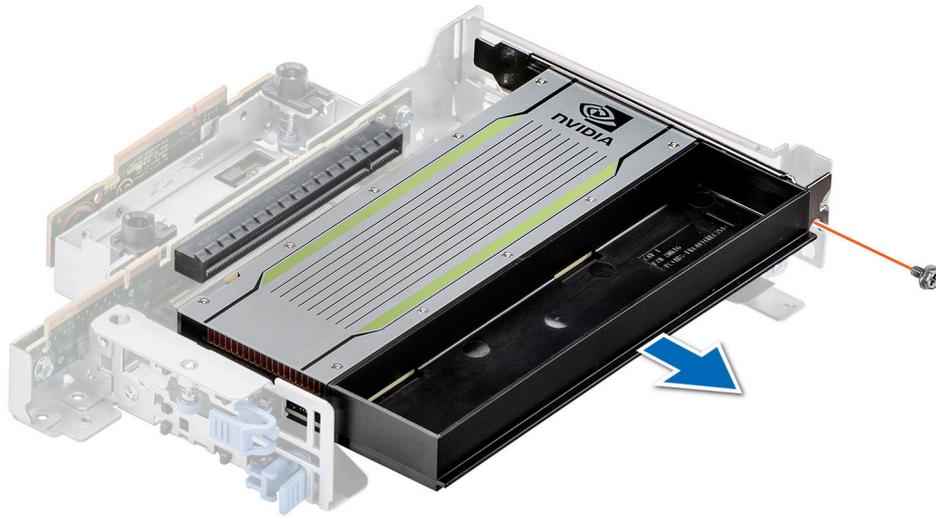


Figure 68. Removing single width GPU card from Riser 2 and 3

4. If the expansion card is not going to be replaced, install a filler bracket and close the card retention latch.

i NOTE: You must install a filler bracket over an empty expansion card slot to maintain Federal Communications Commission (FCC) certification of the system. The brackets also keep dust and dirt out of the system and aid in proper cooling and airflow inside the system.

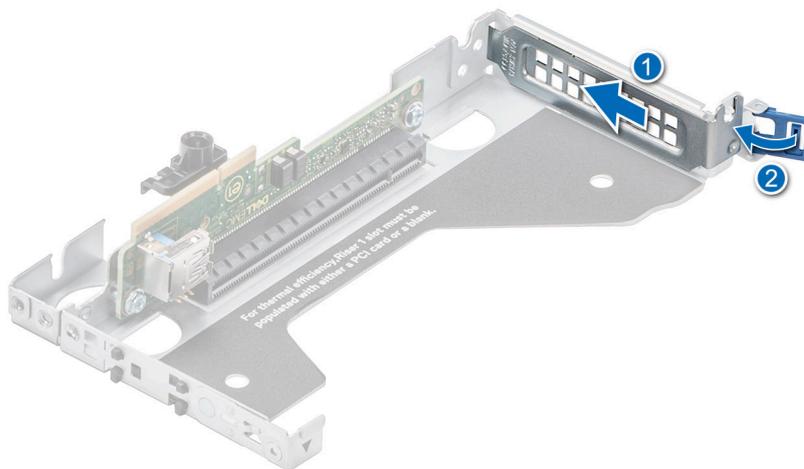


Figure 69. Installing filler bracket in Riser 1

5. For riser 2 and 3, install the filler bracket and tighten the screw using Phillips 2 screwdriver.

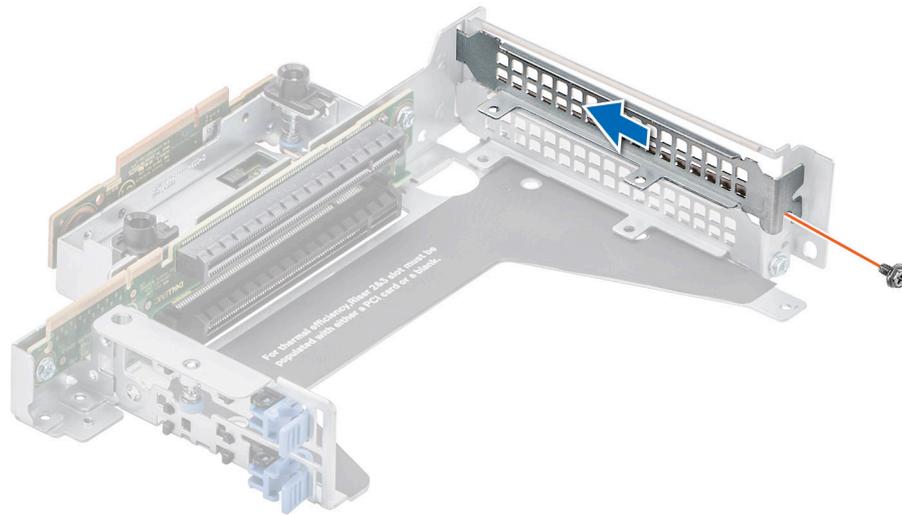


Figure 70. Installing filler bracket in Riser 2 and 3

Next steps

If applicable, install an [expansion card](#) into the expansion card riser.

Installing an expansion card into the expansion card riser

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in the [Before working inside your system](#).
3. If installing a new expansion card, unpack it and prepare the card for installation.

i **NOTE:** For instructions, see the documentation accompanying the card.

i **NOTE:** The procedure to install the T4 GPU card and the expansion card is the same for Rear Accessed and Front Accessed configurations.

Steps

1. Pull and lift the expansion card retention latch lock to open.
2. If installed, remove the filler bracket.

i **NOTE:** Store the filler bracket for future use. Filler brackets must be installed in empty expansion card slots to maintain Federal Communications Commission (FCC) certification of the system. The brackets also keep dust and dirt out of the system and aid in proper cooling and airflow inside the system.

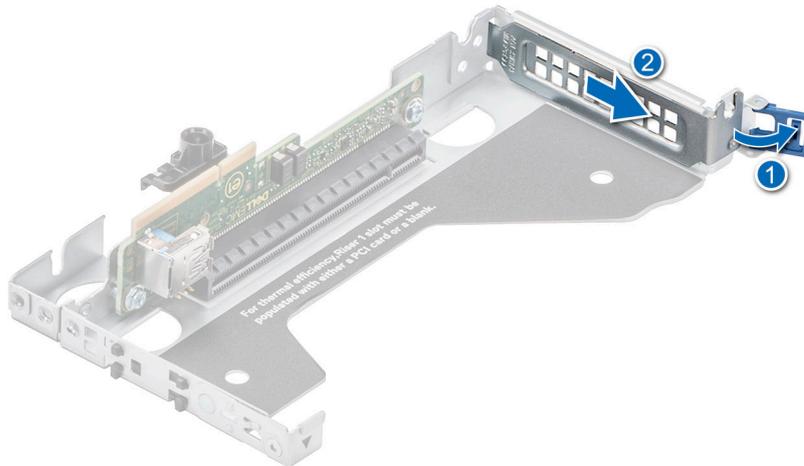


Figure 71. Removing filler bracket from Riser 1

3. Hold the card by the edges, and align the card edge connector with the expansion card connector on the riser.
4. Insert the card edge connector firmly into the expansion card connector until the card is fully seated.
5. Rotate and close the card holder and side card holder.
6. Push the side holder and ensure that the latch hook holds the riser cover.

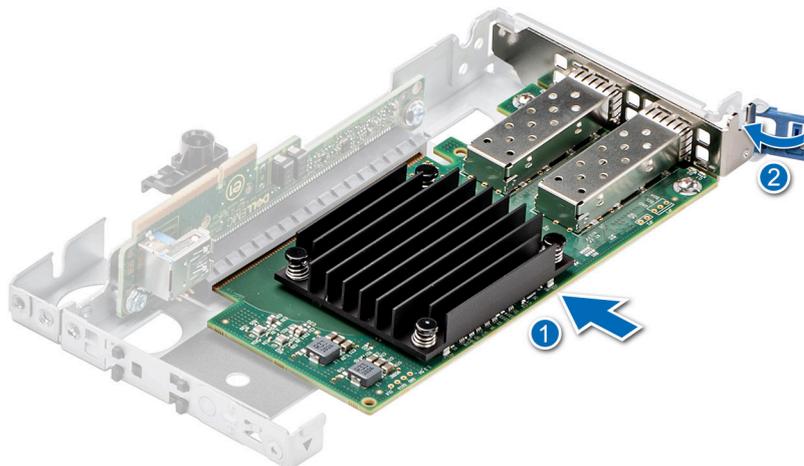


Figure 72. Installing expansion card in Riser 1

NOTE: The blue retention latch is only used when a half-length card is installed. If a shorter card is installed the blue retention latch is not applicable.

7. For Riser 2 and 3, to remove the filler bracket remove the screw using Phillips 2 screwdriver.

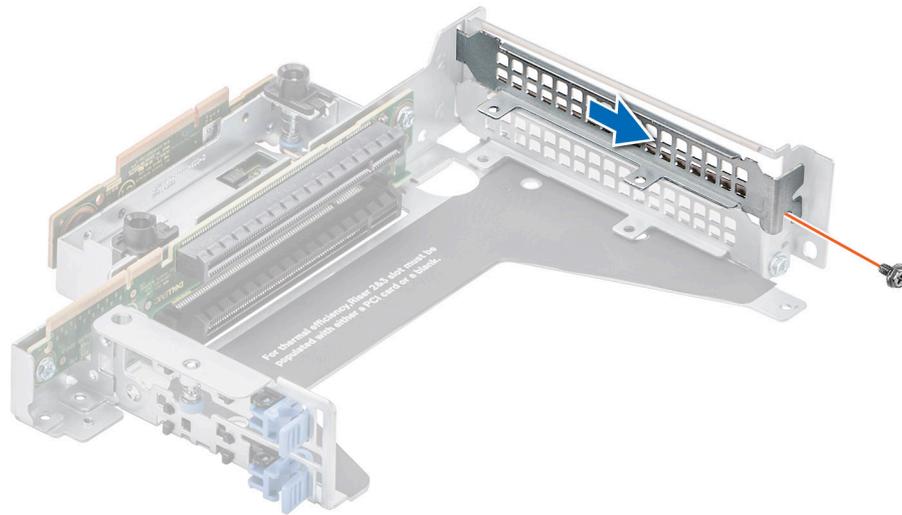


Figure 73. Removing filler bracket from Riser 2 and 3

8. Hold the card by the edges and align the card connector with the connector on the expansion card riser.
9. Insert the card until firmly seated into the connector on the riser.
10. Using Phillips 2 screwdriver tighten the screw on the expansion card riser.

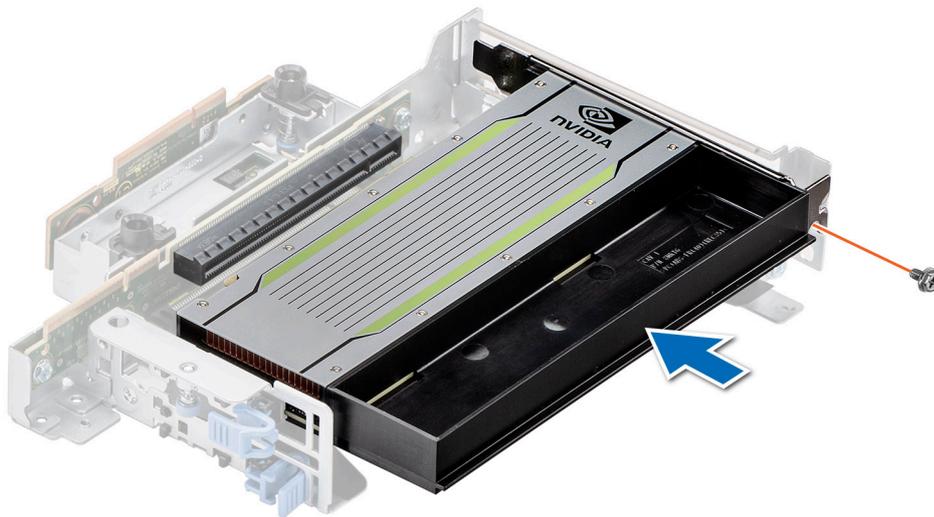


Figure 74. Installing single width GPU in Riser 2 and 3

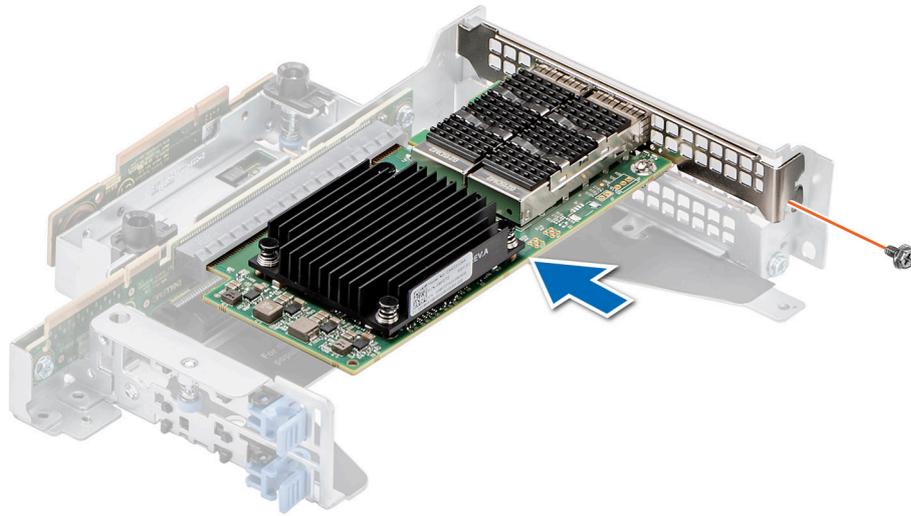


Figure 75. Installing expansion card in Riser 2 and 3

Next steps

1. Follow the procedure listed in [After working inside your system](#).
2. Install any device drivers required for the card as described in the documentation for the card.

i **NOTE:** While replacing faulty storage controller or NIC or the GPU card with the same type of card, after you power on the system, the new card automatically updates to the same firmware and configuration of the faulty one. For more information about the Part replacement configuration, see the *Lifecycle Controller User's Guide* at <https://www.dell.com/idracmanuals>

Optional BOSS S1 card

Removing the BOSS S1 card

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in the [Before working inside your system](#).

i **NOTE:** The procedure to remove the BOSS S1 card is the same for Rear Accessed and Front Accessed configurations.

Steps

Holding the blue tag, pull the BOSS S1 card away from the system board connector.

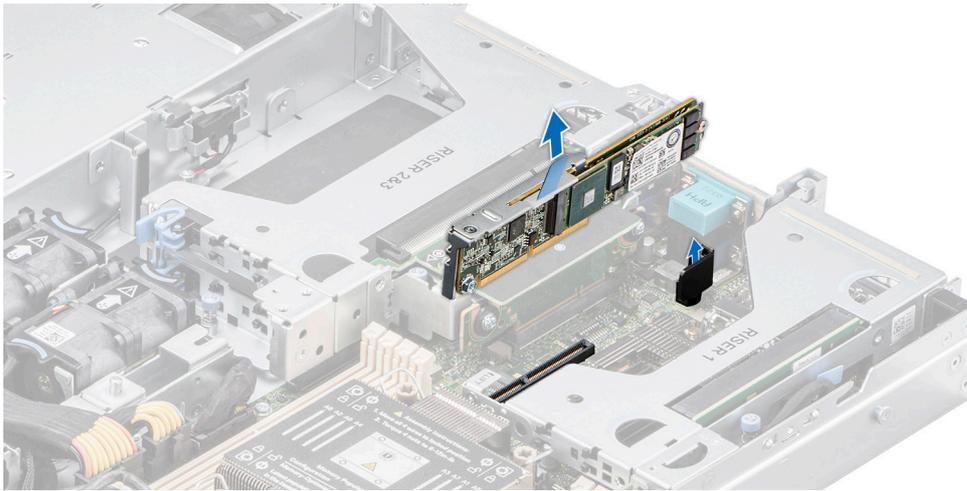


Figure 76. Removing the BOSS S1 card

Next steps

Replace the BOSS S1 card.

Installing the BOSS S1 card

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in [Before working inside your system](#).

NOTE: The procedure to install the BOSS S1 card is the same for Rear Accessed and Front Accessed configurations.

Steps

1. Align and insert the BOSS S1 card connector with the connectors on the system board.
2. Press the BOSS S1 card firmly until it is fully seated.

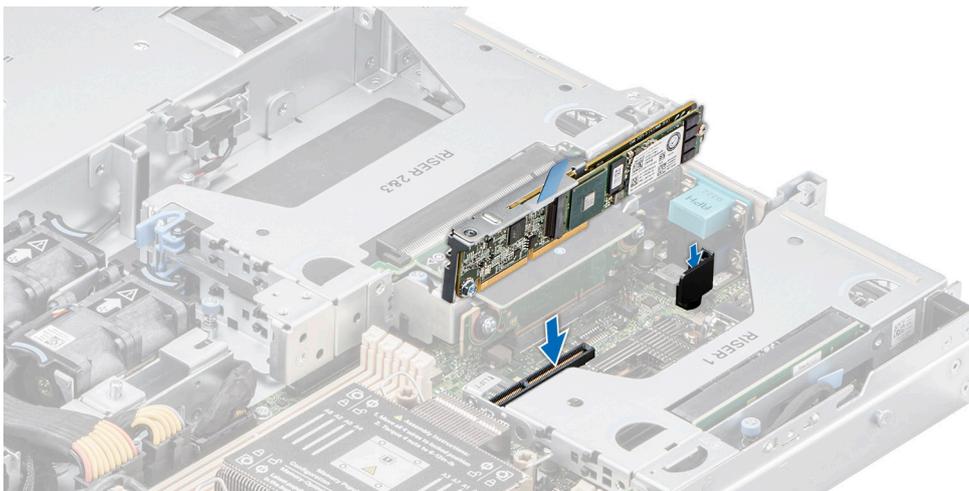


Figure 77. Installing the BOSS S1 card into the system board

Next steps

Follow the procedure listed in [After working inside your system](#).

Removing M.2 SSD module

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in the [Before working inside your system](#).
3. [Remove the BOSS S1 card](#).

i **NOTE:** The procedure to remove the M.2 SSD module is the same for Rear Accessed and Front Accessed configurations.

Steps

1. Using the Phillips 1 screwdriver, remove the screw securing the M.2 SSD module to the BOSS S1 card.
2. Pull the M.2 SSD module to disconnect from the connector on the BOSS S1 card.

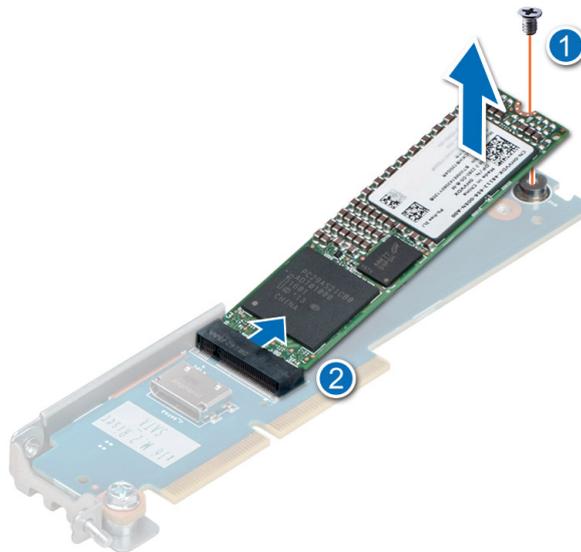


Figure 78. Removing the M.2 SSD module

Next steps

If applicable, [install the M.2 SSD module](#).

Installing M.2 SSD module

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in [Before working inside your system](#).
3. [Remove the BOSS S1 card](#).

i **NOTE:** The procedure to install the M.2 SSD module is the same for Rear Accessed and Front Accessed configurations.

Steps

1. Align the M.2 SSD module at an angle with the connector on the BOSS S1 card.
2. Insert the M.2 SSD module until it is firmly seated in BOSS S1 card connector.
3. Using the Phillips 1 screwdriver, secure the M.2 SSD module on the BOSS S1 card with the screw.

i **NOTE:** The numbers on the image do not depict the exact steps. The numbers are for representation of sequence.

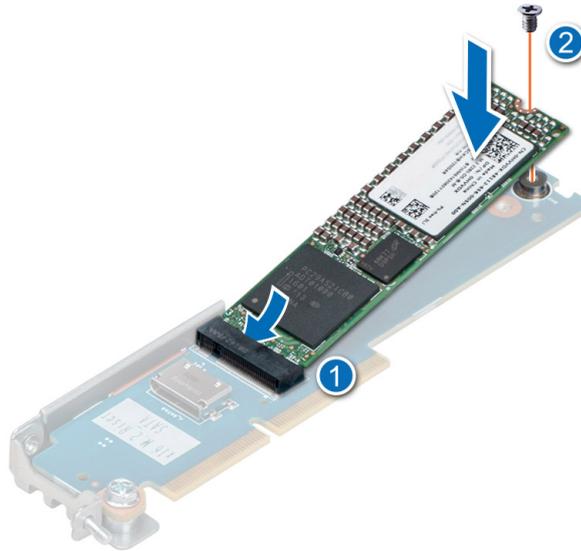


Figure 79. Installing the M.2 SSD module

Next steps

1. If applicable, [replace the BOSS module](#).
2. Follow the procedure listed in the [After working inside your system](#).

System battery

This is a service technician replaceable part only.

Replacing the system battery

Prerequisites

⚠ WARNING: There is a danger of a new battery exploding if it is incorrectly installed. Replace the battery only with the same or equivalent type that is recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions. See the Safety instructions that came with your system for more information.

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in the [Before working inside your system](#).
3. [Remove expansion card Riser 1](#).
4. If applicable, disconnect the power or data cables from the expansion cards.

i NOTE: The procedure to remove the system battery is the same for Rear Accessed and Front Accessed configurations.

Steps

1. To remove the battery:
 - a. Push the battery holder clip away from the battery.

⚠ CAUTION: To avoid damage to the battery holder clip, ensure that you do not bend the battery holder clip while installing or removing a battery.

- b. Pull the battery out of the battery holder.

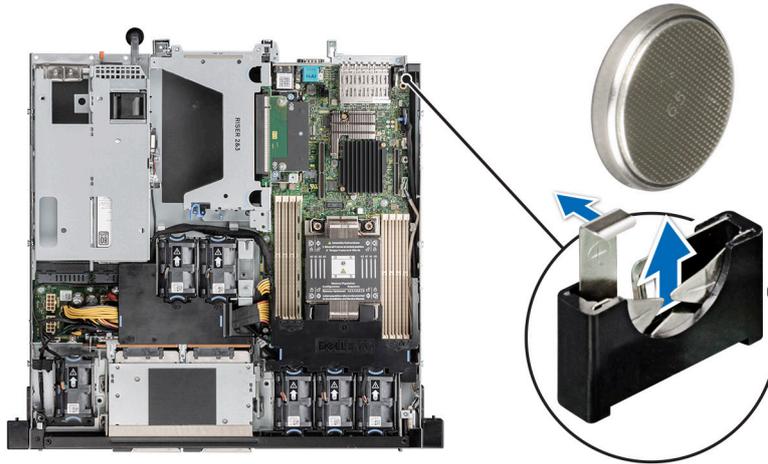


Figure 80. Removing the system battery

CAUTION: To avoid damage to the battery connector, you must firmly support the connector while installing or removing a battery.

2. To install a new system battery:

a. Push the battery holder clip away.

NOTE: Ensure that the + side of the battery is facing the battery holder clip.

b. Insert the battery in the battery holder until the battery holder clip snaps into place.

CAUTION: To avoid damage to the battery holder clip, ensure that you do not bend the battery holder clip while installing or removing a battery.

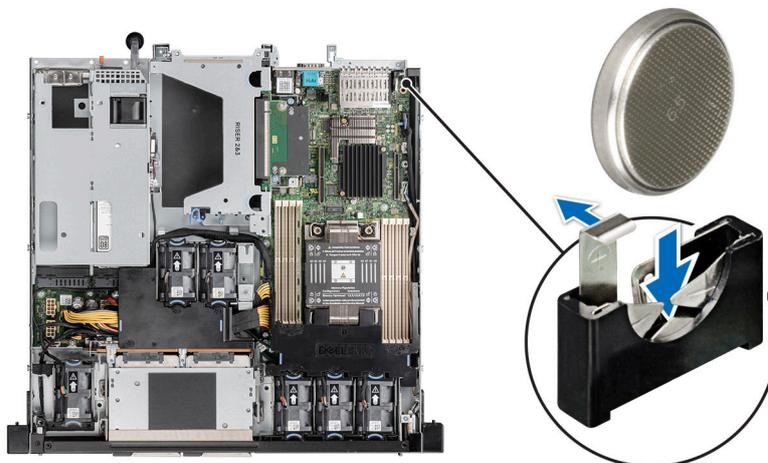


Figure 81. Installing the system battery

Next steps

1. If applicable, [Install an expansion card into expansion card Riser 1](#)
2. [Install the expansion card riser 1.](#)
3. Follow the procedure listed in the [After working inside your system.](#)
4. Confirm that the battery is operating properly, by performing the following steps:
 - a. Enter the System Setup, while booting, by pressing F2.
 - b. Enter the correct time and date in the System Setup **Time** and **Date** fields.
 - c. **Exit** System Setup.
 - d. To test the newly installed battery, remove the system from the enclosure for at least an hour.

- e. Enter System Setup and if the time and date are still incorrect, see [Getting help](#) section.

Internal USB memory key

Removing the internal USB key

Prerequisites

CAUTION: To avoid interference with other components in the server, the maximum permissible dimensions of the USB memory key are 15.9 mm width x 57.15 mm length x 7.9 mm height.

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in the [Before working inside your system](#).
3. [Remove the expansion card Riser 1](#).

NOTE: The procedure to remove the internal USB key is the same for Rear Accessed and Front Accessed configurations.

Steps

Remove USB memory key from the USB port on Riser 1.

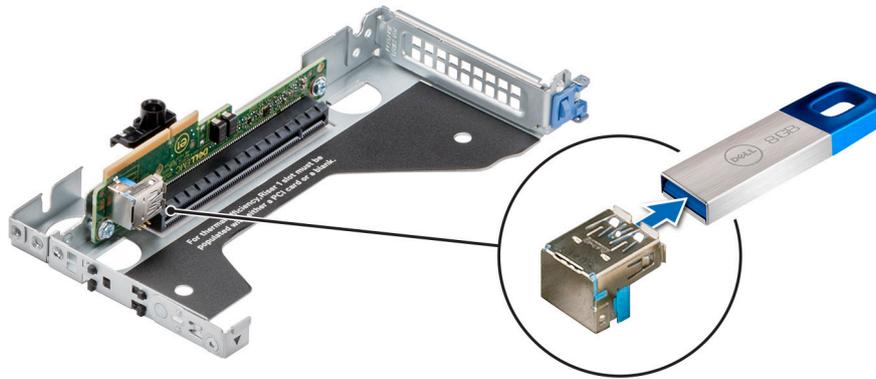


Figure 82. Removing internal USB key

Next steps

[Replace internal USB key](#).

Installing internal USB key

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in the [Before working inside your system](#).
3. [Remove expansion card riser 1](#).

NOTE: The procedure to install the internal USB key is the same for Rear Accessed and Front Accessed configurations.

Steps

1. Connect the USB key to the internal USB port on Riser 1.
2. Align Riser 1 with the connector on the system board and press firmly until the riser is seated.

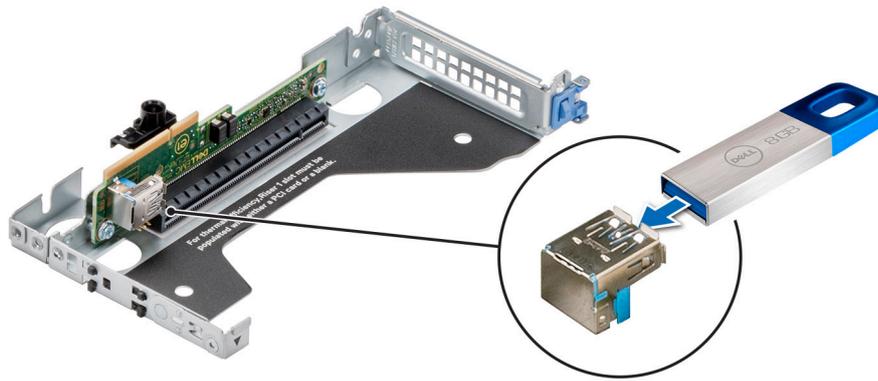


Figure 83. Installing the internal USB key

Next steps

1. Follow the procedure listed in [After working inside your system](#).
2. While booting, press F2 to enter **System Setup** and verify that the system detects the USB memory key.
3. [Install the expansion card riser 1](#).

Power supply unit

NOTE: While replacing the hot swappable PSU, after next server boot; the new PSU automatically updates to the same firmware and configuration of the replaced one. For updating to the latest firmware and changing the configuration, see the *Lifecycle Controller User's Guide* at <https://www.dell.com/idracmanuals>.

NOTE: For information about DC PSU cabling instructions, see the *Cabling instructions for – (48 – 60) V DC power supply* Tech sheet that is shipped with your DC PSU.

Hot spare feature

Your system supports the hot spare feature that significantly reduces the power overhead associated with the power supply unit (PSU) redundancy.

When the hot spare feature is enabled, one of the redundant PSUs is switched to the sleep state. The active PSU supports 100 percent of the system load, thus operating at higher efficiency. The PSU in the sleep state monitors output voltage of the active PSU. If the output voltage of the active PSU drops, the PSU in the sleep state returns to an active output state.

If having both PSUs active is more efficient than having one PSU in the sleep state, the active PSU can also activate the sleeping PSU.

The default PSU settings are as follows:

- If the load on the active PSU is more than 50 percent of PSU rated power wattage, then the redundant PSU is switched to the active state.
- If the load on the active PSU falls below 20 percent of PSU rated power wattage, then the redundant PSU is switched to the sleep state.

You can configure the hot spare feature by using the iDRAC settings. For more information, see the *iDRAC User's Guide* available at www.dell.com/poweredgemanuals.

Removing a power supply unit blank

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in the [Before working inside your system](#).

NOTE: The procedure to remove the power supply unit blank is the same for Rear Accessed and Front Accessed configurations.

Steps

Pull the blank out of the system.

CAUTION: To ensure proper system cooling, the PSU blank must be installed in the second PSU bay in a non-redundant configuration. Remove the PSU blank only if you are installing a second PSU.

NOTE: You must install a power supply blank in a unused slot to maintain Federal Communications Commission (FCC) certification of the system. The blank also keeps dust and dirt out of the system and aids in proper cooling and airflow inside the system.

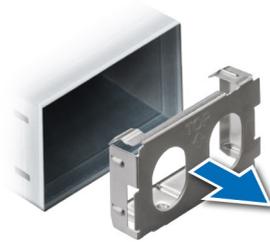


Figure 84. Removing a power supply unit blank

Next steps

Replace the PSU or PSU blank.

Installing a power supply unit blank

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in [Before working inside your system](#).
3. [Remove the PSU](#).

NOTE: The procedure to install the power supply unit (PSU) is the same for Rear Accessed and Front Accessed configurations.

NOTE: Install the power supply unit (PSU) blank only in the second PSU bay.

Steps

Align the PSU blank with the PSU bay and push it into the PSU bay until it clicks into place.

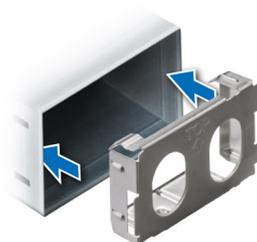


Figure 85. Installing a power supply unit blank

Removing a power supply unit

Prerequisites

CAUTION: The system requires one power supply unit (PSU) for normal operation. On power-redundant systems, remove and replace only one PSU at a time in a system that is powered on.

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Disconnect the power cable from the power outlet and from the Power Supply Unit (PSU) you intend to remove.
3. Remove the cable from the strap on the PSU handle.
4. Unlatch and lift the optional cable management arm if it interferes with the PSU removal.

For information about the cable management arm, see the system's rack documentation at <https://www.dell.com/poweredgemanuals>.

NOTE: The PowerEdge XR11 has two types of Power Supply Units (PSUs). The PSUs with black straps are designed for Rear Accessed configuration while the PSUs with blue straps are designed for Front Accessed configuration.

Steps

Press the orange release latch, and holding the PSU handle slide the PSU out of the PSU bay.



Figure 86. Removing a power supply unit from Rear Accessed configuration



Figure 87. Removing a power supply unit from Front Accessed configuration

Next steps

Replace the PSU or replace the PSU blank.

Installing a power supply unit

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. For systems that support redundant Power Supply Units (PSUs), ensure that both the PSUs are of the same type and have the same maximum output power.

i **NOTE:** The maximum output power (shown in watts) is listed on the PSU label.

3. Remove the PSU blank.

i **NOTE:** The PowerEdge XR11 has two types of Power Supply Units (PSUs). The PSUs with black straps are designed for Rear Accessed configuration while the PSUs with blue straps are designed for Front Accessed configuration.

Steps

Slide the PSU into the PSU bay until the release latch snaps into place.



Figure 88. Installing a power supply unit for Rear Accessed configuration



Figure 89. Installing a power supply unit for Front Accessed configuration

Next steps

1. If you have unlatched the cable management arm, relatch it. For information about the cable management arm, see the system's rack documentation at <https://www.dell.com/poweredgedmanuals>.
2. Connect the power cable to the PSU, and plug the cable into a power outlet.

CAUTION: When connecting the power cable to the PSU, secure the cable to the PSU with the strap.

NOTE: When installing, hot swapping, or hot adding a new PSU, wait for 15 seconds for the system to recognize the PSU and determine its status. The PSU redundancy may not occur until discovery is complete. The PSU status indicator turns green to indicate that the PSU is functioning properly.

NOTE: For certain premium configurations with high power consumption, system PSU might stay with 2+0 mode only, 1+1 redundant mode is not available.

NOTE: While replacing the hot swappable PSU, after next server boot; the new PSU automatically updates to the same firmware and configuration of the replaced one. For more information about the Part replacement configuration, see the *Lifecycle Controller User's Guide* at <https://www.dell.com/idracmanuals>

Power interposer board

This is a service technician replaceable part only.

Removing power interposer board (PIB)

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in the [Before working inside your system](#).
3. [Remove the PCI air shroud](#).
4. Remove both [PSUs](#).
5. Disconnect all the cables that are connected to the system board, intrusion switch, Fan1, Fan 2 and Fan 3 from the power interposer board (PIB).

NOTE: The procedure to remove the power interposer board (PIB) is the same for Rear Accessed and Front Accessed configurations.

Steps

1. Using a Phillips 2 screwdriver, remove the screws securing the power interposer board to the system.

NOTE: Observe the routing of the cables as you remove them from the system.

2. Lift the PIB away from the system.

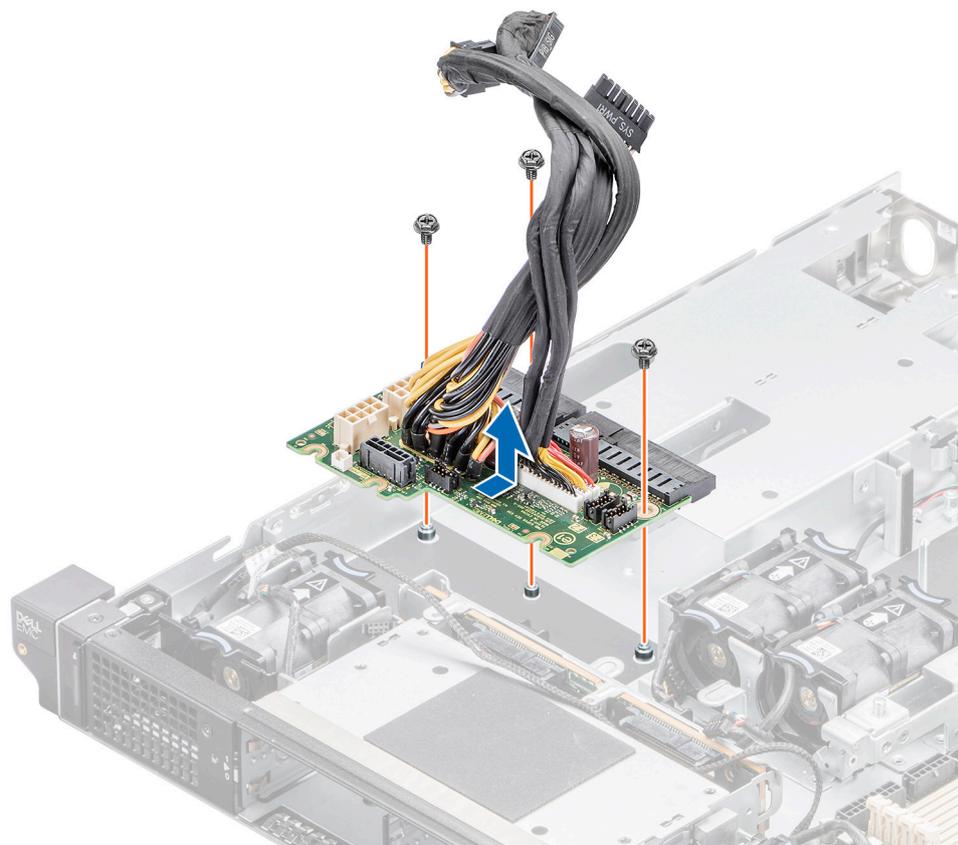


Figure 90. Removing the power interposer board

Next steps

Replace the power interposer board.

Installing the power interposer board (PIB)

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in the [Before working inside your system](#).

NOTE: The procedure to install the power interposer board (PIB) is the same for Rear Accessed and Front Accessed configurations.

Steps

1. Align the slots on the PIB with the hook on the system and slide it into place.
2. Using Phillips 2 screwdriver, tighten the screws to secure the PIB to the system.

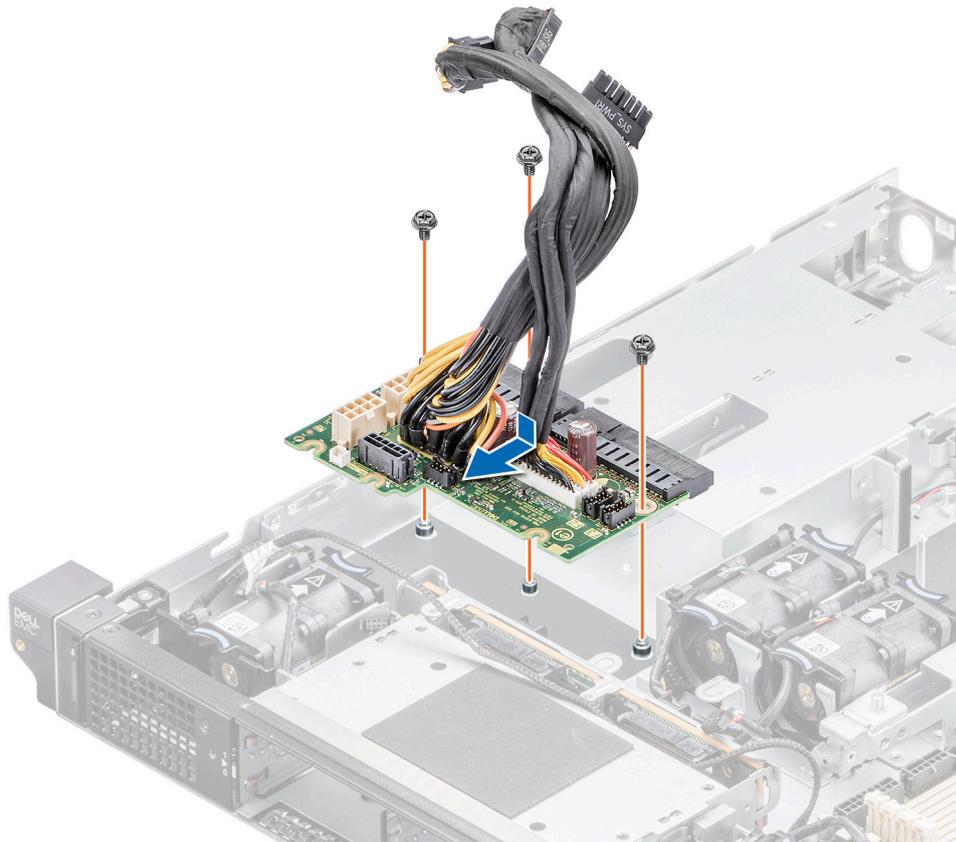


Figure 91. Installing the power interposer board

3. Reconnect all the required cables.

Next steps

1. [Install the PSU](#).
2. [Install the PCI air shroud](#).
3. Follow the procedure listed in [After working inside your system](#).

System board

This is a service technician replaceable part only.

Removing the system board

Prerequisites

CAUTION: If you are using the Trusted Platform Module (TPM) with an encryption key, you may be prompted to create a recovery key during program or System Setup. Be sure to create and safely store this recovery key. If you replace this system board, you must supply the recovery key when you restart your system or program before you can access the encrypted data on your drives.

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in the [Before working inside your system](#).
3. Remove the following components:
 - a. [System cover](#)
 - b. [Expansion card risers](#)
 - c. [Air shrouds](#)
 - d. [Memory modules](#)
 - e. [Processor and heat sink module](#)
 - f. [Internal USB memory key \(if installed\)](#)
 - g. [BOSS S1 card](#)
 - h. Disconnect all cables from the system board.

CAUTION: Take care not to damage the system identification button while removing the system board from the system.

NOTE: The procedure to remove the system board is the same for Rear Accessed and Front Accessed configurations.

Steps

1. Using a Phillips 2 screwdriver, remove the screws that secure the system board to the system.
2. Hold the system board by the edges and slide it towards the fan modules. Lift the system board out of the system.

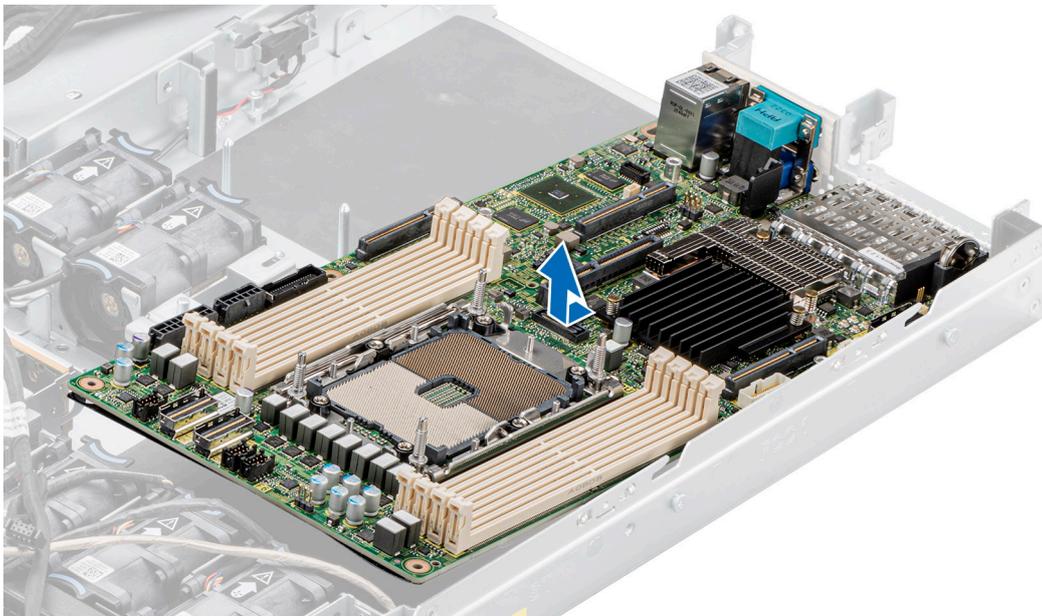


Figure 92. Removing the system board

Next steps

Install the system board.

Installing system board

Prerequisites

i **NOTE:** Before replacing the system board, replace the old iDRAC MAC address label in the Information tag with the iDRAC MAC address label of the replacement system board.

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in [Before working inside your system](#).
3. If you are replacing the system board, remove all the components that are listed in the [removing the system board](#) section.

i **NOTE:** The procedure to install the system board is the same for Rear Accessed and Front Accessed configurations.

Steps

1. Unpack the new system board assembly.

⚠ CAUTION: Do not lift the system board by holding a memory module, processor, or other components.

⚠ CAUTION: Take care not to damage the system identification button while placing the system board into the chassis.

i **NOTE:** Do not remove the processor socket cover until the system board is assembled in the system and ready for installation of the processor and heat sink module.

2. Holding the system board by the edges, lower the system board it into the system.
3. Align the connectors on the system board with the slots on the rear of the system until the connectors are firmly seated in the slots.

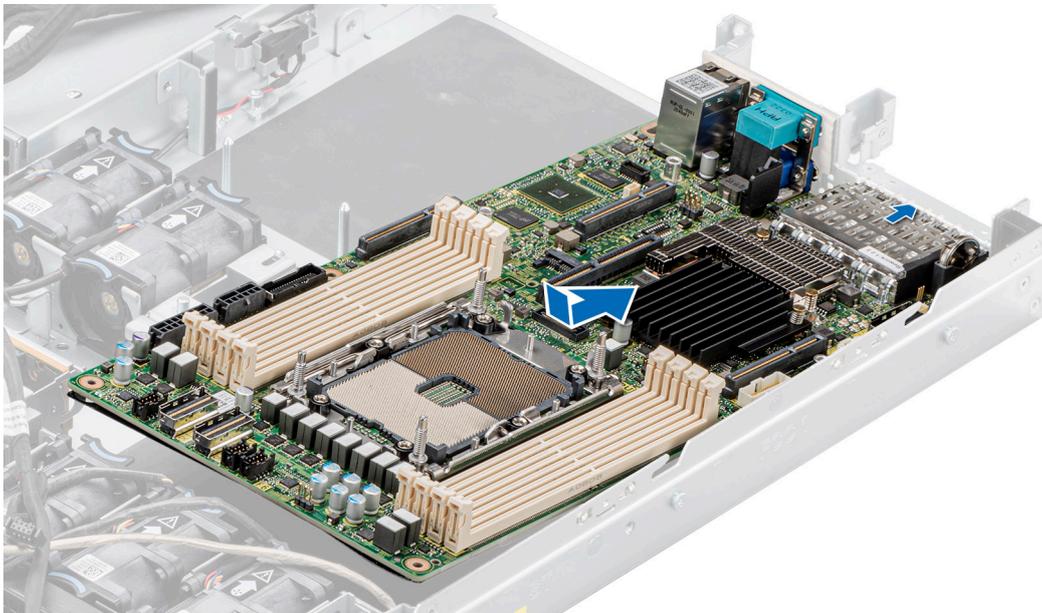


Figure 93. Installing the system board

4. Using a Phillips 2 screwdriver, tighten the screws sequentially and secure the system board to the chassis.

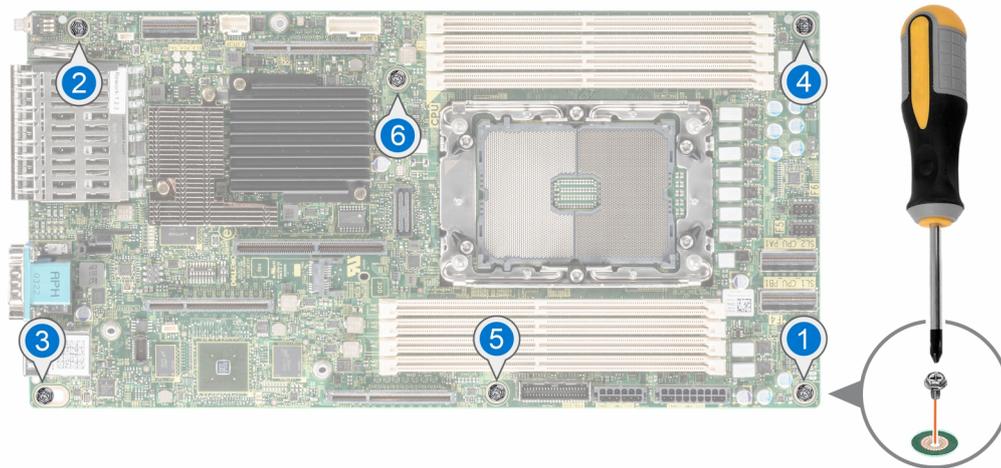


Figure 94. System board screw fastening sequence

Next steps

1. Reconnect all cables to the system board.
 - i** **NOTE:** Ensure that the cables inside the system are routed along the chassis wall and secured using the cable securing brackets.
2. Replace the following components:
 - a. [Trusted Platform Module \(TPM\)](#)
 - i** **NOTE:** The TPM Module must be replaced only while installing a new system board.
 - b. [Internal USB memory key \(if installed\)](#)
 - c. [Processor and heat sink module](#)
 - d. [BOSS S1 card](#)
 - e. [Memory modules](#)
 - f. Reconnect all cables to the system board.
 - i** **NOTE:** Ensure that the cables inside the system are routed along the chassis wall and secured using the cable securing brackets.
 - g. [Expansion card risers](#)
 - h. [Air shrouds](#)
 - i. [System cover](#)
3. Ensure that you perform the following steps:
 - a. Use the Easy Restore feature to restore the Service Tag. See the [Restoring the system by using the Easy Restore feature](#) section.
 - b. If the service tag is not backed up in the backup flash device, enter the system service tag manually. See the [Manually update the Service Tag using System Setup](#) section.
 - c. Update the BIOS and iDRAC versions.
 - Re-enable the Trusted Platform Module (TPM). See the [Upgrading the Trusted Platform Module](#) section.
4. If you are not using Easy Restore, import your new or existing iDRAC Enterprise license. For more information, see the *Integrated Dell Remote Access Controller User's Guide* available at <https://www.dell.com/idracmanuals>.
5. Follow the procedure listed in [After working inside your system](#).

Restoring the system using Easy Restore

The Easy Restore feature enables you to restore your service tag, license, UEFI configuration, and the system configuration data after replacing the system board. All data is backed up in a backup flash device automatically. If BIOS detects a new system board, and the service tag in the backup flash device, BIOS prompts the user to restore the backup information.

About this task

Below is a list of options/steps available:

- Restore the service tag, license, and diagnostics information, press **Y**
- Navigate to the Lifecycle Controller based restore options, press **N**
- Restore data from a previously created **Hardware Server Profile**, press **F10**
-  **NOTE:** When the restore process is complete, BIOS prompts to restore the system configuration data.
- Restore data from a previously created **Hardware Server Profile**, press **F10**
- To restore the system configuration data, press **Y**
- To use the default configuration settings, press **N**
-  **NOTE:** After the restore process is complete, system reboots.

Manually update the Service Tag

After replacing a system board, if Easy Restore fails, follow this process to manually enter the Service Tag, using **System Setup**.

About this task

If you know the system service tag, use the **System Setup** menu to enter the service tag.

Steps

1. Power on the system.
2. To enter the **System Setup**, press **F2**.
3. Click **Service Tag Settings**.
4. Enter the service tag.
-  **NOTE:** You can enter the service tag only when the **Service Tag** field is empty. Ensure that you enter the correct service tag. Once the service tag is entered, it cannot be updated or changed.
5. Click **OK**.

Trusted Platform Module

This is a service technician replaceable part only.

Upgrading the Trusted Platform Module

Removing the TPM

Prerequisites

-  **NOTE:**
 - Ensure the operating system is compatible with the TPM version you are installing.
 - Ensure that you download and install the latest BIOS firmware on your system.
 - Ensure that the BIOS is configured to enable UEFI boot mode.

 **CAUTION:** The TPM plug-in module is cryptographically bound to that particular system board after it is installed. When the system is powered on, any attempt to remove an installed TPM plug-in module breaks the cryptographic binding, and the removed TPM cannot be installed on another system board. Ensure any keys you have stored on the TPM have been securely transferred.

Steps

1. Locate the TPM connector on the system board. For more information, see [System board connectors](#).
2. Press to hold the module down and remove the screw using the security Torx 8-bit shipped with the TPM module.
3. Slide the TPM module out from its connector.

4. Push the plastic rivet away from the TPM connector and rotate it 90° counterclockwise to release it from the system board.
5. Pull the plastic rivet out of its slot on the system board.

Installing the TPM

Steps

1. To install the TPM, align the edge connectors on the TPM with the slot on the TPM connector.
2. Insert the TPM into the TPM connector such that the plastic rivet aligns with the slot on the system board.
3. Press the plastic rivet until the rivet snaps into place.
4. Replace the screw that secures the TPM to the system board.

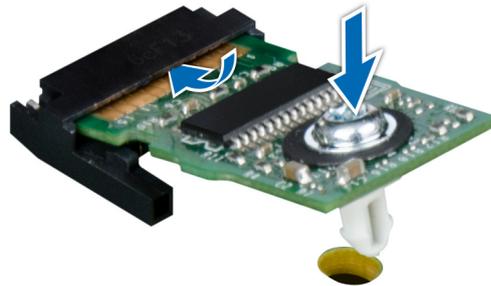


Figure 95. Installing the TPM

Initializing TPM for users

Steps

1. Initialize the TPM.
For more information, see [Initializing the TPM for users](#).
2. The **TPM Status** changes to **Enabled, Activated**.

Initializing the TPM 1.2 for users

Steps

1. While booting your system, press F2 to enter System Setup.
2. On the **System Setup Main Menu** screen, click **System BIOS > System Security Settings**.
3. From the **TPM Security** option, select **On with Preboot Measurements**.
4. From the **TPM Command** option, select **Activate**.
5. Save the settings.
6. Restart your system.

Initializing the TPM 2.0 for users

Steps

1. While booting your system, press F2 to enter System Setup.
2. On the **System Setup Main Menu** screen, click **System BIOS > System Security Settings**.
3. From the **TPM Security** option, select **On**.
4. Save the settings.

5. Restart your system.

Control panel

This is a service technician replaceable part only.

Removing the status LED control panel for Rear Accessed configuration

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in the [Before working inside your system](#).
3. [Remove the air shrouds](#).
4. [Remove the processor and heat sink module](#).
5. [Remove the expansion card riser 1](#).

i **NOTE:** If necessary, please remove the backplane signal and power cables.

Steps

1. Using the Phillips 2 screwdriver, remove the screws that secure the left ear handle.

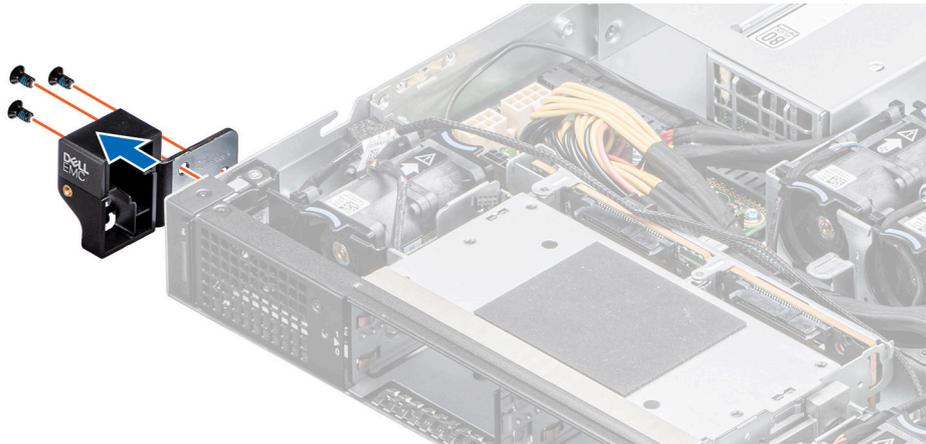


Figure 96. Removing the left ear handle for Rear Accessed configuration

2. Disconnect the status LED control panel cable from the system board connector.

i **NOTE:** Observe the routing of the cable as you remove it from the system.

3. Using the Torx 8 screwdriver, remove the screws that secure the left control panel assembly to the system.
4. Hold the status LED control panel assembly and remove the control panel along with the cable from the system.

i **NOTE:** The numbers on the image do not depict the exact steps. The numbers are for representation of sequence.

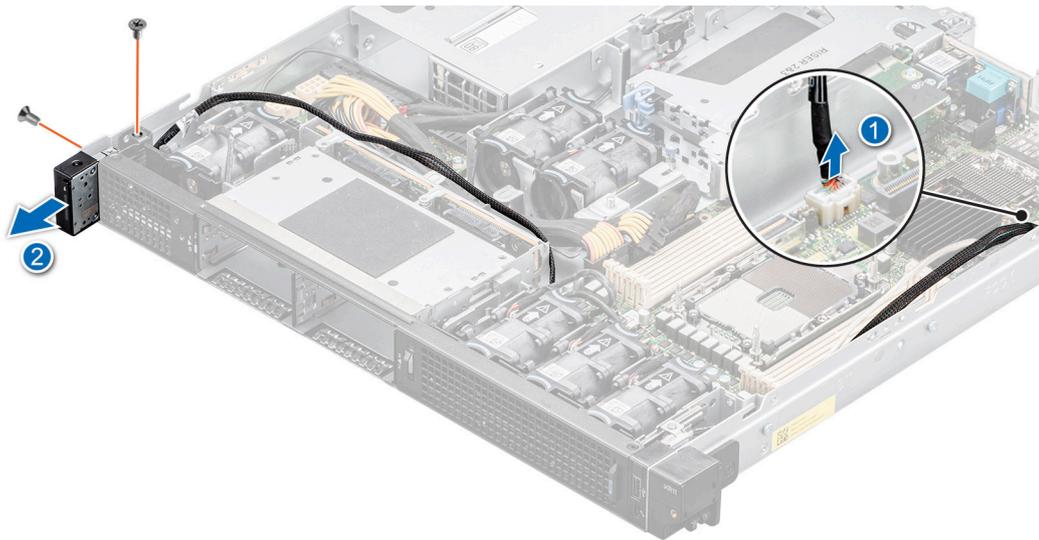


Figure 97. Removing the status LED control panel for Rear Accessed configuration

Next steps

Replace the status LED control panel for Rear Accessed configuration.

Installing the status LED control panel for Rear Accessed configuration

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in the [Before working inside your system](#).
3. [Remove the air shrouds](#).
4. [Remove the processor and heat sink module](#).
5. [Remove the expansion card riser 1](#).

i **NOTE:** If necessary, please remove the backplane signal and power cables.

Steps

1. Align and insert the status LED control panel assembly in the slot on the system.
2. Route the status LED control panel cable through the guide slots in the system and connector on system board.

i **NOTE:** Route the cable properly to prevent the cable from being pinched or crimped.

3. Using the Torx 8 screwdriver, tighten the screws that secure the left control panel assembly to the system.

i **NOTE:** The numbers on the image do not depict the exact steps. The numbers are for representation of sequence.

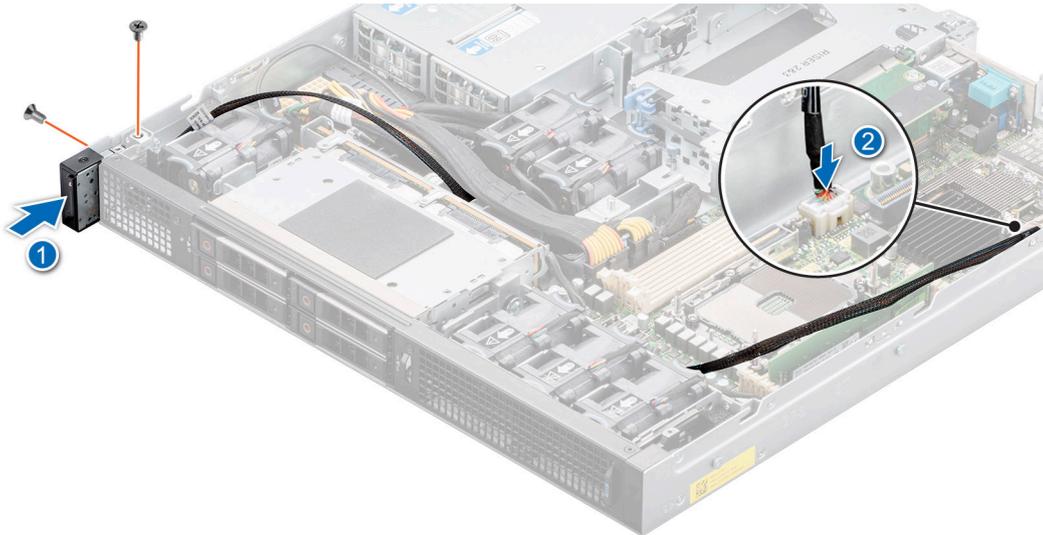


Figure 98. Installing the status LED control panel for Rear Accessed configuration

4. Align and insert the left ear handle in the slot on the system and tighten the screws using Torx 8 screwdriver.

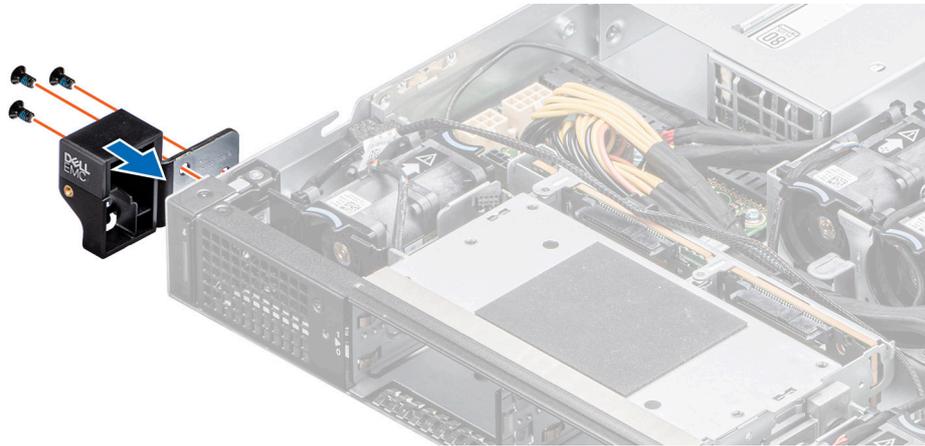


Figure 99. Installing the left ear handle for Rear Accessed configuration

Next steps

1. Install the expansion card riser 1.
2. Install the processor and heat sink module.
3. Install the air shrouds.
4. Follow the procedure listed in the [After working inside your system](#).

Removing the power button control panel for Rear Accessed configuration

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in the [Before working inside your system](#).
3. [Remove the processor air shroud](#).
4. [Remove the expansion card riser 1](#).

Steps

1. Using the Phillips 2 screwdriver, remove the screws that secure the right ear handle.

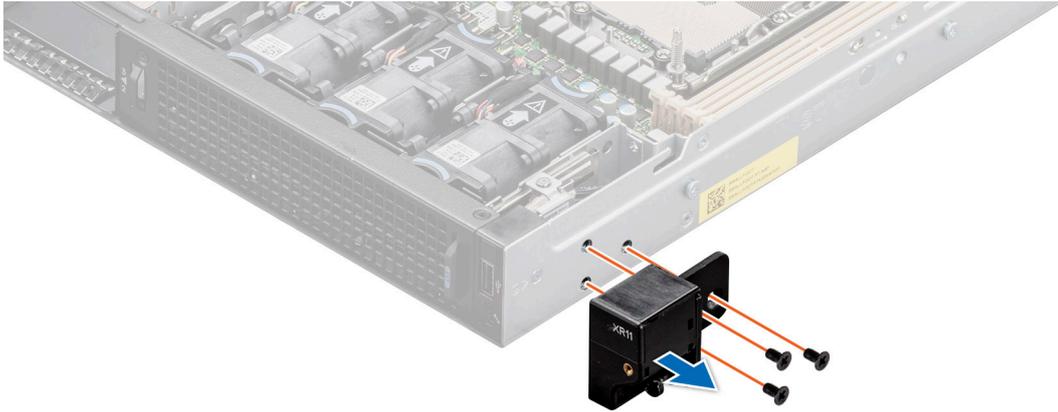


Figure 100. Removing the right ear handle for Rear Accessed configuration

2. Disconnect the power button control panel cable from the system board connector and remove the cable from cable clip.

i **NOTE:** Observe the routing of the cable as you remove it from the system.

3. Using the Torx 8 screwdriver, remove the screws that secure the right control panel assembly.

4. Hold the power button control panel assembly and remove the control panel along with the cable from the system.

i **NOTE:** The numbers on the image do not depict the exact steps. The numbers are for representation of sequence.

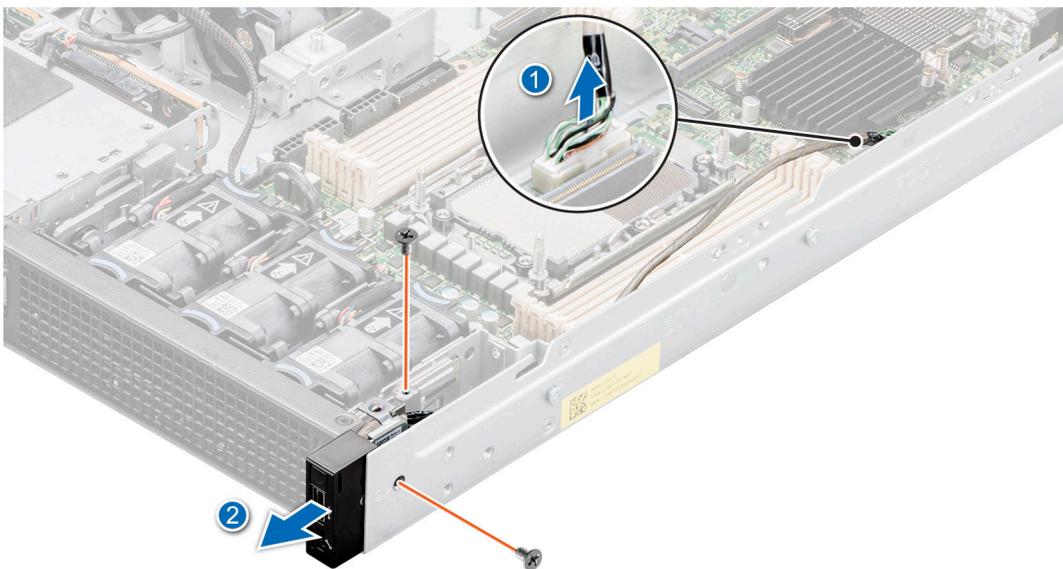


Figure 101. Removing the power button control panel for Rear Accessed configuration

Next steps

Replace the power button control panel.

Installing the power button control panel for Rear Accessed configuration

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in the [Before working inside your system](#).
3. [Remove the air shrouds](#).
4. [Remove the expansion card riser 1](#).

Steps

1. Route the power button control panel cable through the side wall of the system.

i **NOTE:** Route the cable properly to prevent the cable from being pinched or crimped.

2. Align and insert the right control panel in the slot on the system.
3. Connect the power button control panel cable to the connector on the system board.
4. Using the Torx 8 screwdriver, tighten the screws that secure the right control panel to the system.

i **NOTE:** The numbers on the image do not depict the exact steps. The numbers are for representation of sequence.

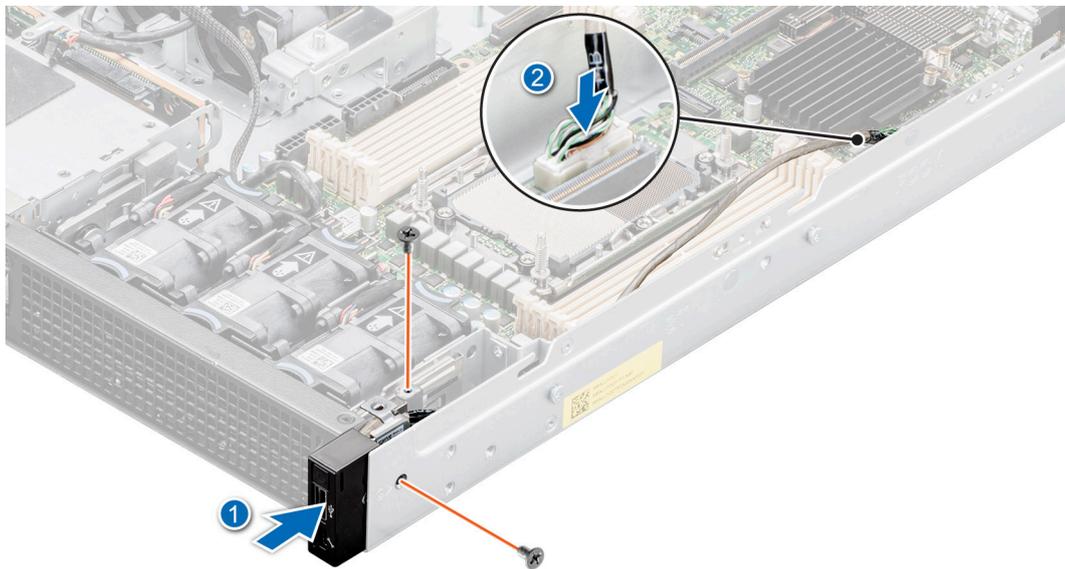


Figure 102. Installing the power button control panel for Rear Accessed configuration

5. Using the Phillips 2 screwdriver, tighten the screws that secure the right ear handle to the system.

i **NOTE:** The numbers on the image do not depict the exact steps. The numbers are for representation of sequence.

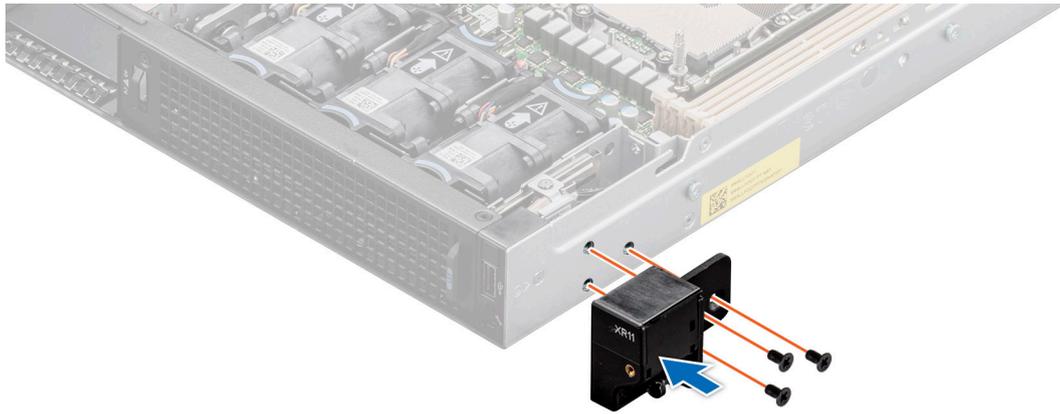


Figure 103. Installing the right ear handle for Rear Accessed configuration

Next steps

1. [Install the expansion card riser 1.](#)
2. [Install the air shrouds.](#)
3. Follow the procedure listed in the [After working inside your system.](#)

Removing the status LED control panel for Front Accessed configuration

Prerequisites

NOTE: For Front Accessed configuration, the status LED control panel is on the rear of the system.

1. Follow the safety guidelines listed in the [Safety instructions.](#)
2. Follow the procedure listed in the [Before working inside your system.](#)
3. [Remove the air shrouds.](#)
4. [Remove the processor and heat sink module.](#)
5. [Remove the expansion card riser 1.](#)

NOTE: If required, remove the backplane power and signal cables.

Steps

1. Disconnect the status LED control panel cable from the system board connector.

NOTE: Observe the routing of the cable as you remove it from the system.

2. Using the Torx 8 screwdriver, remove the screws that secure the status LED control panel assembly to the system.
3. Hold the left status LED control panel assembly and remove the control panel along with the cable from the system.

NOTE: The numbers on the image do not depict the exact steps. The numbers are for representation of sequence.

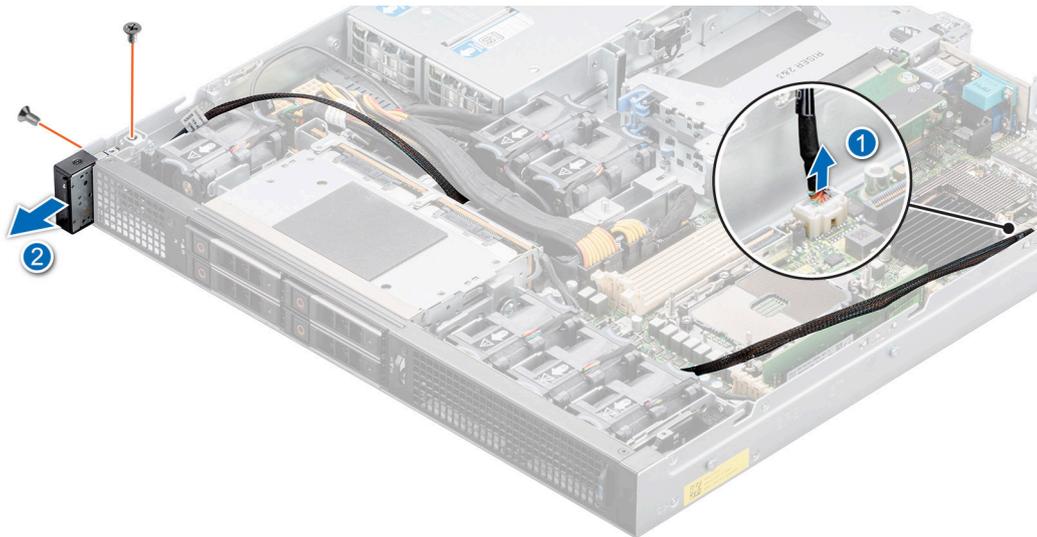


Figure 104. Removing the status LED control panel for Front Accessed configuration

Next steps

Replace the status LED control panel for Front Accessed configuration.

Installing the status LED control panel for Front Accessed configuration

Prerequisites

i **NOTE:** For Front Accessed configuration, the status LED control panel is on the rear of the system.

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in the [Before working inside your system](#).
3. [Remove the air shrouds](#).
4. [Remove the processor heat sink module](#).
5. [Remove the expansion card riser 1](#).

i **NOTE:** If required, remove the backplane power and signal cables.

Steps

1. Align and insert the status LED control panel assembly in the slot on the system.
2. Route the status LED control panel cable through the guide slots in the system and connector on system board.

i **NOTE:** Route the cable properly to prevent the cable from being pinched or crimped.

3. Using the Phillips 1 screwdriver, tighten the screws that secure the status LED control panel assembly to the system.

i **NOTE:** The numbers on the image do not depict the exact steps. The numbers are for representation of sequence.

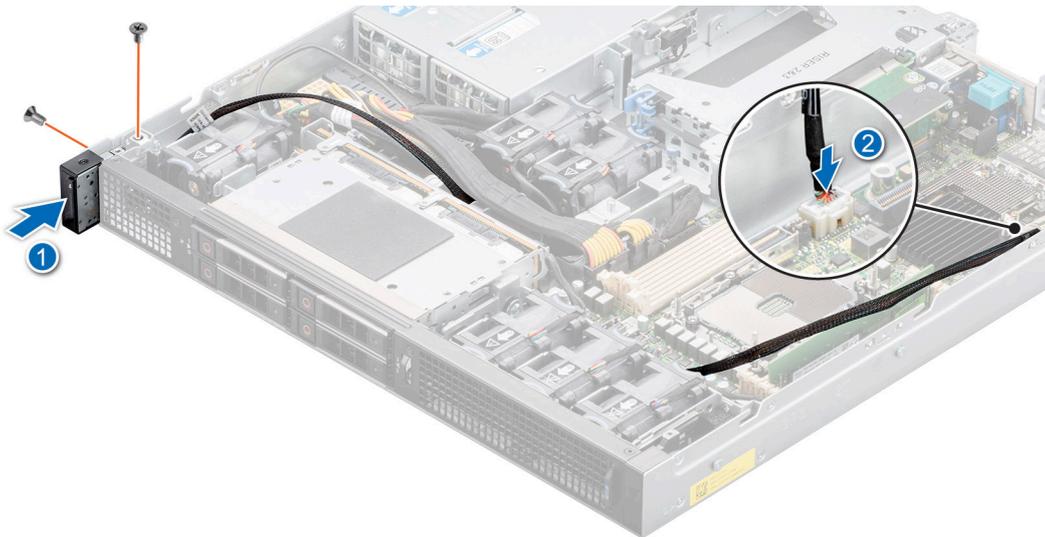


Figure 105. Installing the status LED control panel assembly for Front Accessed configuration

Next steps

1. Install the expansion card riser 1.
2. Install the processor heat sink module.
3. Install the air shrouds.
4. Follow the procedure listed in the [After working inside your system](#).

Removing the power button control panel for Front Accessed configuration

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in the [Before working inside your system](#).
3. [Remove the Riser 1](#).

Steps

1. Loosen the three screws to remove the left ear for the Front Accessed configuration.
2. Disconnect the power button control panel cable from the system board connector and remove the cable from cable clip.

i **NOTE:** Observe the routing of the cable as you remove it from the system.

3. Using the Phillips 2 screwdriver, remove the screws that secure the left rack ear.
4. Using the Torx 8 screwdriver, remove the screws that secure the power button control panel assembly.
5. Hold the power button control panel assembly and remove the control panel along with the cable from the system.

i **NOTE:** The numbers on the image do not depict the exact steps. The numbers are for representation of sequence.

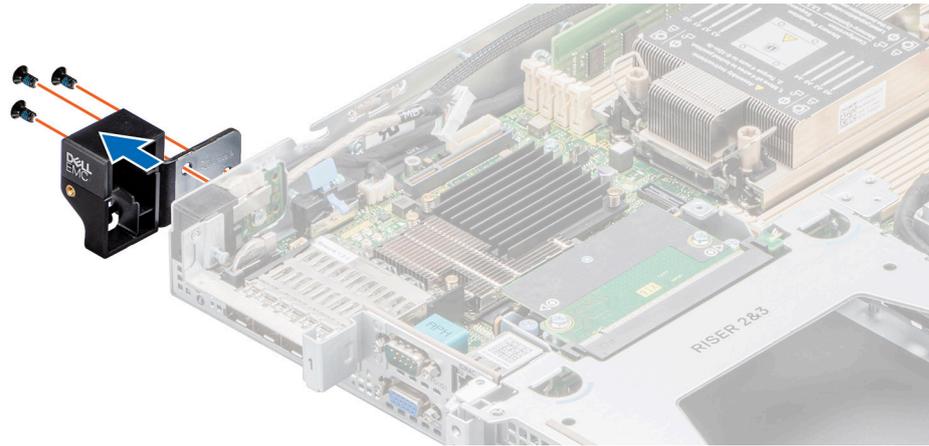


Figure 106. Removing the left ear for the Front Accessed configuration

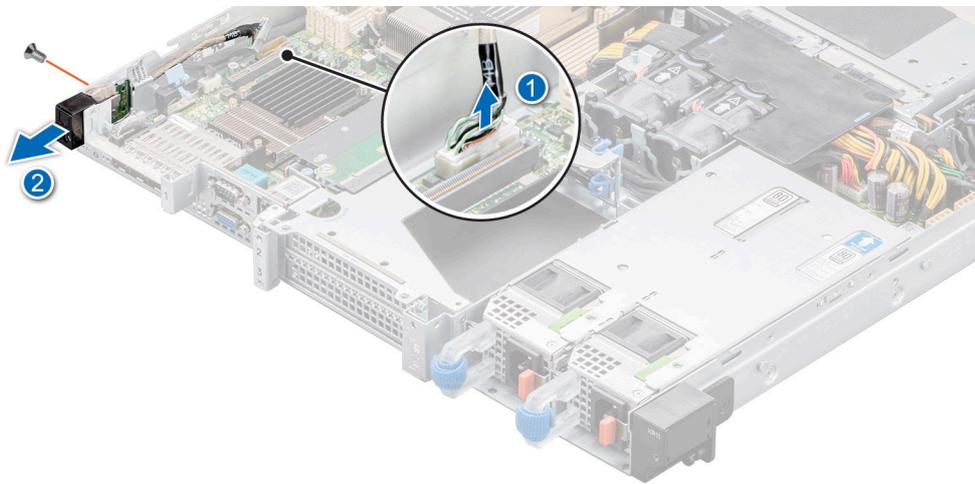


Figure 107. Removing the power button control panel for Front Accessed configuration

Next steps

Replace the power button control panel for Front Accessed configuration.

Installing the power button control panel for Front Accessed configuration

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in the [Before working inside your system](#).
3. [Remove the expansion card riser 1](#).

Steps

1. Align and insert the power button control panel in the slot on the system.
2. Route the power button control panel cable through the side wall of the system.

NOTE: Route the cable properly to prevent the cable from being pinched or crimped.

3. Connect the power button control panel cable to the connector on the system board.
4. Using the Torx 8 screwdriver, tighten the screws that secure the power button control panel to the system.

NOTE: The numbers on the image do not depict the exact steps. The numbers are for representation of sequence.

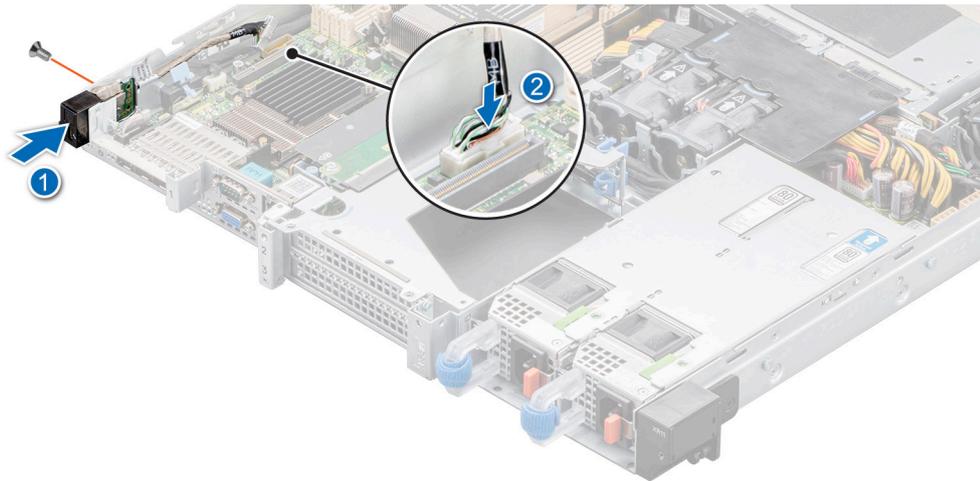


Figure 108. Installing the power button control panel for Front Accessed configuration

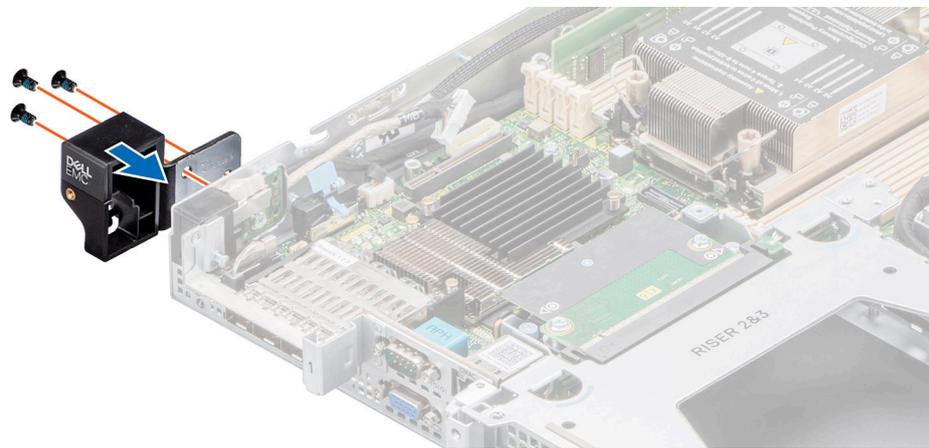


Figure 109. Installing the left ear for the Front Accessed configuration

5. Using the Phillips 2 screwdriver, tighten the screws and secure the rack left ear.

Next steps

1. [Install the expansion card riser 1.](#)
2. Follow the procedure listed in the [After working inside your system.](#)

MIL 901E and MIL 461G rugged kit

The MIL 901E and MIL 461G rugged kit provides rugged protection for the PowerEdge XR11 server. The MIL 901E and MIL 461G rugged kit consists of the components mentioned below:

- Power supply rugged bracket
- Drive rugged bracket
- Nine countersunk screws

Installing the MIL 901E and MIL 461G rugged kit

Prerequisites

NOTE: The MIL 901E and MIL 461G rugged kits are ordered separately from Dell.

1. Follow the safety guidelines listed in [Safety instructions](#).
2. Unpack the 901E and MIL 461G rugged brackets.
3. [Remove the front bezel](#) for Rear Accessed configuration.
4. [Remove the system cover](#).

Steps

1. Using a Phillips 2 screwdriver, secure the power supply rugged bracket.

NOTE: The kit consists of screws. Use three screws on the bottom side of the chassis and remaining three screws above the bracket.

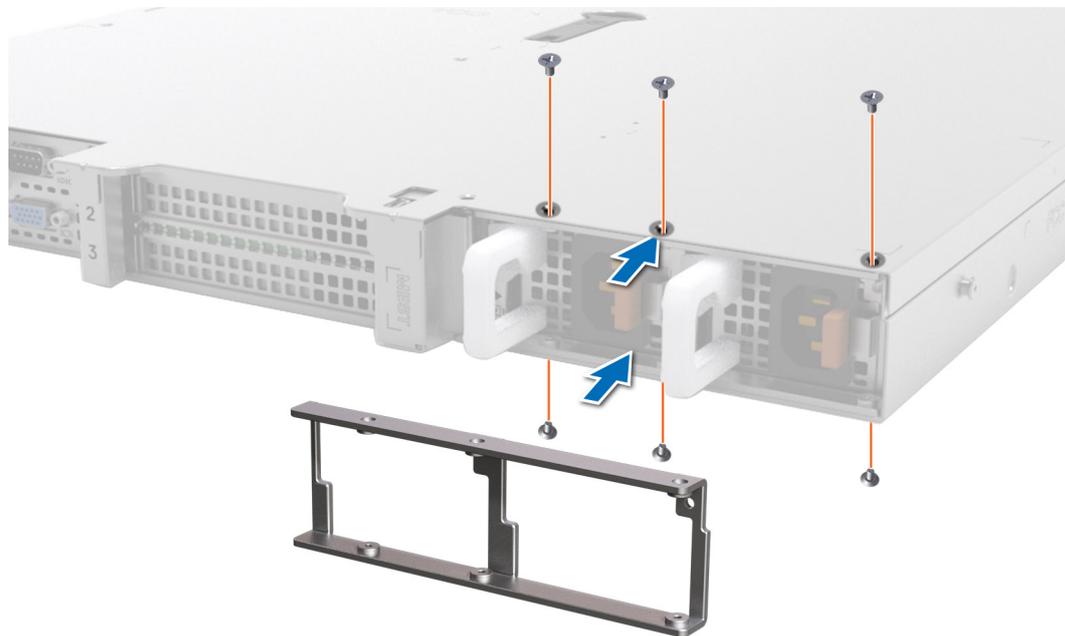


Figure 110. Installing the 901E and MIL 461G power supply rugged bracket

2. Align the left edge of the drive retention bracket to the guide slots on the left side of the drive module. Using a Phillips 2 screwdriver, secure the 901E and MIL 461G drive rugged bracket.

NOTE: To secure the 901E and MIL 461G drive rugged bracket, ensure to use the black screws that are shipped with the 901E and MIL 461G kit.

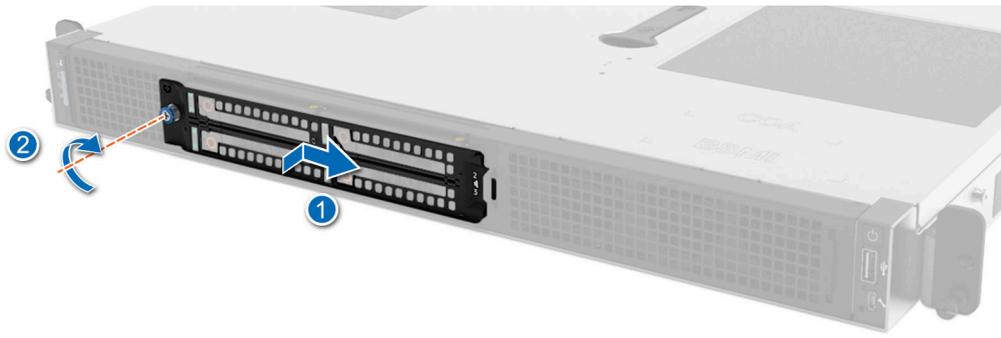


Figure 111. Installing the 901E and MIL 461G drive rugged bracket

3. Rotate the bracket closed against the chassis and slide the latch to left and then right until seated firmly.
4. [Install the front bezel](#) for Rear Accessed configuration.
5. Using a Phillips 2 screwdriver, tighten one screw to the system cover.

Next steps

Follow the procedure listed in [After working inside your system](#).

Upgrade Kits

The table lists the available After Point Of Sale [APOS] kits.

Table 29. Upgrade kits

Kits	Related links to service instructions
Memory modules	See Installing the memory module
SSDs	See Installing the SSDs
Processors	See Installing the processor
Heat sink	See Installing the heat sink
Storage controller cards	See Installing the expansion card into the expansion card riser
HBA/CNA (3rd party card)	
Network cards	
Power supplies	See Installing the power supply units
Cables	N/A
Rail Kits	N/A
Bezel	See Installing the bezel
Risers	See Installing an expansion card riser
Power cords	N/A

Jumpers and connectors

This section provides essential and specific information about jumpers and switches. It also describes the connectors on the various boards in the system. Jumpers on the system board help to disable the system and reset the passwords. To install components and cables correctly, you must be able to identify the connectors on the system board.

Topics:

- [System board connectors](#)
- [System board jumper settings](#)
- [Disabling a forgotten password](#)

System board connectors

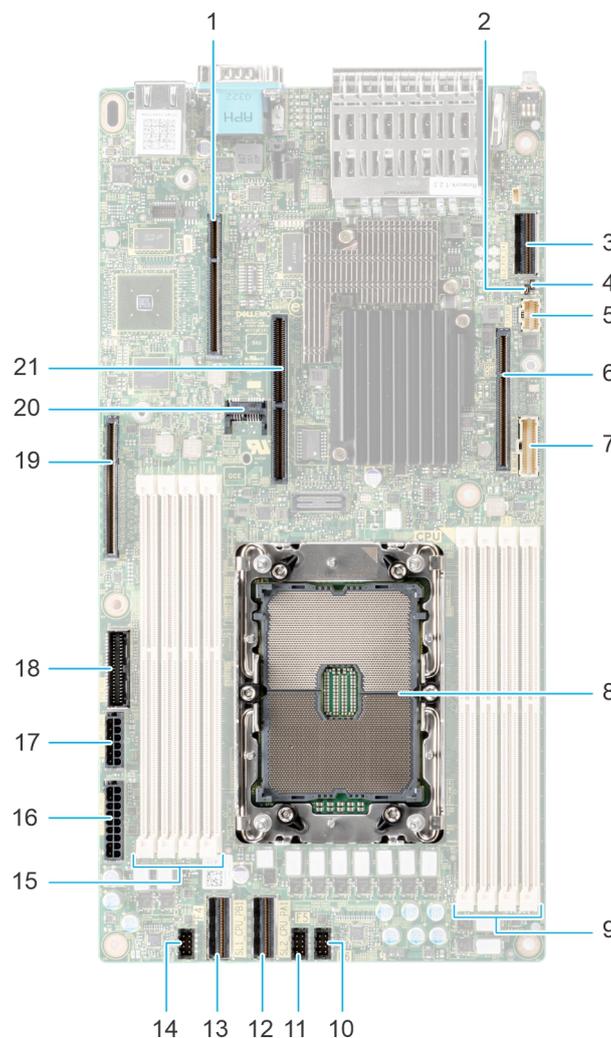


Figure 112. System board jumpers and connectors

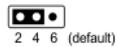
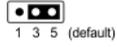
1. IO_Riser2 (Riser 1 connector)
2. PWRD_EN (BIOS password jumper)

3. SL3_PCH_SA1 (Signal cable connector for backplane)
4. NVRAM_CLR (NVRAM jumper)
5. Left control panel
6. IO_RISER1 (Riser 1 connector)
7. Right control panel
8. Processor socket
9. DIMM slots (A3, A7, A1, A5)
10. Fan 6 slot
11. Fan 5 slot
12. SL2_CPU2_PA1 (PCIe cable connector)
13. SL1_CPU1_PB1 (PCIe cable connector)
14. Fan 4 slot
15. DIMM slots (A6, A2, A8, A4)
16. SYS_PWR_CONN1 (System power connection 1)
17. SYS_PWR_CONN2 (System power connection 2)
18. PIB_SIG (Power interposer board signal connector)
19. IO_Riser3 (Riser 3 connector)
20. TPM
21. BOSS S1 card slot

System board jumper settings

For information about resetting the password jumper to disable a password, see the [Disabling a forgotten password](#) section.

Table 30. System board jumper settings

Jumper	Setting	Description
PWRD_EN	 2 4 6 (default)	The BIOS password feature is enabled.
	 2 4 6	The BIOS password feature is disabled. The BIOS password is now disabled and you are not allowed to set a new password.
NVRAM_CLR	 1 3 5 (default)	The BIOS configuration settings are retained at system boot.
	 1 3 5	The BIOS configuration settings are cleared at system boot.

CAUTION: Be careful when changing the BIOS settings. The BIOS interface is designed for advanced users. Any change in the setting could prevent your system from starting correctly and you might have potential loss of data.

Disabling a forgotten password

The software security features of the system include a system password and a setup password. The password jumper enables or disables password features and clears any password(s) currently in use.

Prerequisites

CAUTION: Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow the safety instructions that are shipped with your product.

Steps

1. Power off the system and all attached peripherals. Disconnect the system from the electrical outlet, and disconnect the peripherals.
2. Remove the system cover.
3. Move the jumper on the system board from pins 2 and 4 to pins 4 and 6.
4. Replace the system cover.
 - i** **NOTE:** The existing passwords are not disabled (erased) until the system boots with the jumper on pins 4 and 6. However, before you assign a new system and/or setup password, you must move the jumper back to pins 2 and 4.
 - i** **NOTE:** If you assign a new system and/or setup password with the jumper on pins 4 and 6, the system disables the new password(s) the next time it boots.
5. Reconnect the peripherals and connect the system to the electrical outlet, and then power on the system.
6. Power off the system.
7. Remove the system cover.
8. Move the jumper on the system board from pins 4 and 6 to pins 2 and 4.
9. Replace the system cover.
10. Reconnect the peripherals and connect the system to the electrical outlet, and then power on the system.
11. Assign a new system and/or setup password.

System diagnostics and indicator codes

This section describes the diagnostic indicators on the system front panel that displays the system status during system startup.

Topics:

- Status LED indicators
- System health and system ID indicator codes
- iDRAC Direct LED indicator codes
- NIC indicator codes
- Power supply unit indicator codes
- Drive indicator codes
- Using system diagnostics

Status LED indicators

 **NOTE:** The indicators display solid amber if any error occurs.



Figure 113. Status LED indicators

Table 31. Status LED indicators and descriptions

Icon	Description	Condition	Corrective action
	Drive indicator	The indicator turns solid amber if there is a drive error.	<ul style="list-style-type: none"> • Check the System Event Log to determine if the drive has an error. • Run the appropriate Online Diagnostics test. Restart the system and run embedded diagnostics (ePSA). • If the drives are configured in a RAID array, restart the system, and enter the host adapter configuration utility program.
	Temperature indicator	The indicator turns solid amber if the system experiences a thermal error (for example, the ambient temperature is out of range or there is a fan failure).	<p>Ensure that none of the following conditions exist:</p> <ul style="list-style-type: none"> • A cooling fan has been removed or has failed. • System cover, air shrouds, or back filler bracket has been removed. • Ambient temperature is too high. • External airflow is obstructed. <p>If the problem persists, see the Getting help section.</p>
	Electrical indicator	The indicator turns solid amber if the system experiences an electrical error (for example,	Check the System Event Log or system messages for the specific issue. If it is due to a problem with

Table 31. Status LED indicators and descriptions (continued)

Icon	Description	Condition	Corrective action
	Memory indicator	voltage out of range, or a failed power supply unit (PSU) or voltage regulator). The indicator turns solid amber if a memory error occurs.	the PSU, check the LED on the PSU. Reseat the PSU. If the problem persists, see the Getting help section.
	PCIe indicator	The indicator turns solid amber if a PCIe card experiences an error.	Restart the system. Update any required drivers for the PCIe card. Reinstall the card. If the problem persists, see the Getting help section. NOTE: For more information about the supported PCIe cards, see the Expansion card installation guidelines section.

System health and system ID indicator codes

The system health and system ID indicator is located towards the left control panel of the system for Rear Accessed configuration and towards the right control panel of the system for Front Accessed configuration.



Figure 114. System health and system ID indicator

Table 32. System health and system ID indicator codes

System health and system ID indicator code	Condition
Solid blue	Indicates that the system is powered on, is healthy, and system ID mode is not active. Press the system health and system ID button to switch to system ID mode.
Blinking blue	Indicates that the system ID mode is active. Press the system health and system ID button to switch to system health mode.
Solid amber	Indicates that the system is in fail-safe mode. If the problem persists, see the Getting help section.
Blinking amber	Indicates that the system is experiencing a fault. Check the System Event Log for specific error messages. For information about the event and error messages generated by the system firmware and agents that monitor system components, go to qrl.dell.com > Look Up > Error Code , type the error code, and then click Look it up .

iDRAC Direct LED indicator codes

The iDRAC Direct LED indicator lights up to indicate that the port is connected and is being used as a part of the iDRAC subsystem.

You can configure iDRAC Direct by using a USB to micro USB (type AB) cable, which you can connect to your laptop or tablet. Cable length should not exceed 3 feet (0.91 meters). Performance could be affected by cable quality. The following table describes iDRAC Direct activity when the iDRAC Direct port is active:

Table 33. iDRAC Direct LED indicator codes

iDRAC Direct LED indicator code	Condition
Solid green for two seconds	Indicates that the laptop or tablet is connected.
Blinking green (on for two seconds and off for two seconds)	Indicates that the laptop or tablet connected is recognized.
LED Indicator off	Indicates that the laptop or tablet is unplugged.

NIC indicator codes

Each NIC on the back of the system has indicators that provide information about the activity and link status. The activity LED indicator indicates if data is flowing through the NIC, and the link LED indicator indicates the speed of the connected network.

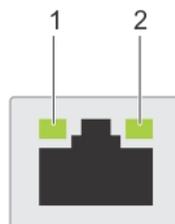


Figure 115. NIC indicator codes

1. Link LED indicator
2. Activity LED indicator

Table 34. NIC indicator codes

NIC indicator codes	Condition
Link and activity indicators are off.	Indicates that the NIC is not connected to the network.

Table 34. NIC indicator codes (continued)

NIC indicator codes	Condition
Link indicator is green, and activity indicator is blinking green.	Indicates that the NIC is connected to a valid network at its maximum port speed, and data is being sent or received.
Link indicator is amber, and activity indicator is blinking green.	Indicates that the NIC is connected to a valid network at less than its maximum port speed, and data is being sent or received.
Link indicator is green, and activity indicator is off.	Indicates that the NIC is connected to a valid network at its maximum port speed, and data is not being sent or received.
Link indicator is amber, and activity indicator is off.	Indicates that the NIC is connected to a valid network at less than its maximum port speed, and data is not being sent or received.
Link indicator is blinking green, and activity is off.	Indicates that the NIC identity is enabled through the NIC configuration utility.

Power supply unit indicator codes

AC and DC power supply units (PSUs) have an illuminated translucent handle that serves as an indicator. The indicator shows if power is present or if a power fault has occurred.

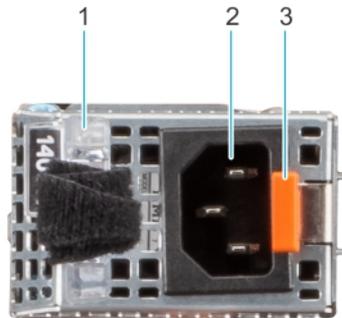


Figure 116. Rear Accessed configuration - AC PSU status indicator

1. AC PSU handle
2. Socket
3. Release latch

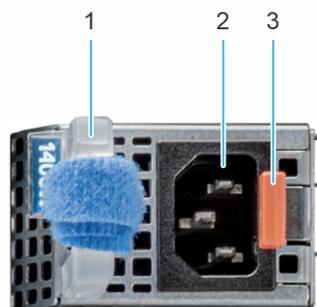


Figure 117. Front Accessed configuration - AC PSU status indicator

1. AC PSU handle
2. Socket
3. Release latch

Table 35. AC PSU status indicator codes

Power indicator codes	Condition
Green	Indicates that a valid power source is connected to the PSU and the PSU is operational.
Blinking amber	Indicates an issue with the PSU.
Not powered on	Indicates that the power is not connected to the PSU.
Blinking green	Indicates that the firmware of the PSU is being updated. ⚠ CAUTION: Do not disconnect the power cord or unplug the PSU when updating firmware. If firmware update is interrupted, the PSUs will not function.
Blinking green and powers off	When hot-plugging a PSU, it blinks green five times at a rate of 4 Hz and powers off. This indicates a PSU mismatch due to efficiency, feature set, health status, or supported voltage. ⚠ CAUTION: If two PSUs are installed, both the PSUs must have the same type of label; for example, Extended Power Performance (EPP) label. Mixing PSUs from previous generations of PowerEdge servers is not supported, even if the PSUs have the same power rating. This results in a PSU mismatch condition or failure to power on the system. ⚠ CAUTION: If two PSUs are used, they must be of the same type and have the same maximum output power. ⚠ CAUTION: When correcting a PSU mismatch, replace the PSU with the blinking indicator. Swapping the PSU to make a matched pair can result in an error condition and an unexpected system shutdown. To change from a high output configuration to a low output configuration or vice versa, you must power off the system. ⚠ CAUTION: AC PSUs support both 240 V and 120 V input voltages with the exception of Titanium PSUs, which support only 240 V. When two identical PSUs receive different input voltages, they can output different wattages, and trigger a mismatch.

Table 36. DC PSU status indicator codes

Power indicator codes	Condition
Green	Indicates that a valid power source is connected to the PSU, and the PSU is operational.
Blinking amber	Indicates an issue with the PSU.
Not powered on	Indicates that the power is not connected to the PSU.
Blinking green	When hot-plugging a PSU, it blinks green five times at a rate of 4 Hz and powers off. This indicates a PSU mismatch due to efficiency, feature set, health status, or supported voltage. ⚠ CAUTION: If two PSUs are installed, both the PSUs must have the same type of label; for example, Extended Power Performance (EPP) label. Mixing PSUs from previous generations of PowerEdge servers is not supported, even if the PSUs have the

Table 36. DC PSU status indicator codes (continued)

Power indicator codes	Condition
	<p>same power rating. This results in a PSU mismatch condition, or failure to power on the system.</p> <p>⚠ CAUTION: If two PSUs are used, they must be of the same type and have the same maximum output power.</p> <p>⚠ CAUTION: When correcting a PSU mismatch, replace the PSU with the blinking indicator. Swapping the PSU to make a matched pair can result in an error condition and an unexpected system shutdown. To change from a High Output configuration to a Low Output configuration or conversely, you must power off the system.</p> <p>⚠ CAUTION: Combining AC and DC PSUs is not supported.</p>

Drive indicator codes

The LEDs on the drive carrier indicate the state of each drive. Each drive carrier has two LEDs: an activity LED (green) and a status LED (bicolor, green/amber). The activity LED blinks whenever the drive is accessed.



Figure 118. Drive indicators

1. Drive activity LED indicator
2. Drive status LED indicator
3. Drive capacity label

NOTE: If the drive is in the Advanced Host Controller Interface (AHCI) mode, the status LED indicator does not power on.

NOTE: Drive status indicator behavior is managed by Storage Spaces Direct. Not all drive status indicators may be used.

Table 37. Drive indicator codes

Drive status indicator code	Condition
Blinks green twice per second	Indicates that the drive is being identified or preparing for removal.
Off	Indicates that the drive is ready for removal. NOTE: The drive status indicator remains off until all drives are initialized after the system is powered on. Drives are not ready for removal during this time.
Blinks green, amber, and then powers off	Indicates that there is an unexpected drive failure.
Blinks amber four times per second	Indicates that the drive has failed.
Blinks green slowly	Indicates that the drive is rebuilding.
Solid green	Indicates that the drive is online.

Table 37. Drive indicator codes (continued)

Drive status indicator code	Condition
Blinks green for three seconds, amber for three seconds, and then powers off after six seconds	Indicates that the rebuild has stopped.

Using system diagnostics

If you experience an issue with the system, run the system diagnostics before contacting Dell for technical assistance. The purpose of running system diagnostics is to test the system hardware without using additional equipment or risking data loss. If you are unable to fix the issue yourself, service and support personnel can use the diagnostics results to help you solve the issue.

Dell Embedded System Diagnostics

NOTE: The Dell Embedded System Diagnostics is also known as Enhanced Pre-boot System Assessment (ePSA) diagnostics.

The Embedded System Diagnostics provide a set of options for particular device groups or devices allowing you to:

- Run tests automatically or in an interactive mode
- Repeat tests
- Display or save test results
- Run thorough tests to introduce additional test options to provide extra information about the failed device(s)
- View status messages that inform you if tests are completed successfully
- View error messages that inform you of issues encountered during testing

Running the Embedded System Diagnostics from the Dell Lifecycle Controller

Steps

1. When the system is booting, press F10.
2. Select **Hardware Diagnostics** → **Run Hardware Diagnostics**.
The **ePSA Pre-boot System Assessment** window is displayed, listing all devices detected in the system. The diagnostics start executing the tests on all the detected devices.

Running the Embedded System Diagnostics from Boot Manager

Run the Embedded System Diagnostics (ePSA) if your system does not boot.

Steps

1. When the system is booting, press F11.
2. Use the up arrow and down arrow keys to select **System Utilities** > **Launch Diagnostics**.
3. Alternatively, when the system is booting, press F10, select **Hardware Diagnostics** > **Run Hardware Diagnostics**.
The **ePSA Pre-boot System Assessment** window is displayed, listing all devices detected in the system. The diagnostics starts executing the tests on all the detected devices.

System diagnostic controls

Table 38. System diagnostic controls

Menu	Description
Configuration	Displays the configuration and status information of all detected devices.

Table 38. System diagnostic controls (continued)

Menu	Description
Results	Displays the results of all tests that are run.
System health	Provides the current overview of the system performance.
Event log	Displays a time-stamped log of the results of all tests run on the system. This is displayed if at least one event description is recorded.

Getting help

Topics:

- [Recycling or End-of-Life service information](#)
- [Contacting Dell Technologies](#)
- [Accessing system information by using QRL](#)
- [Receiving automated support with SupportAssist](#)

Recycling or End-of-Life service information

Take back and recycling services are offered for this product in certain countries. If you want to dispose of system components, visit www.dell.com/recyclingworldwide and select the relevant country.

Contacting Dell Technologies

Dell provides online and telephone based support and service options. If you do not have an active internet connection, you can find Dell contact information on your purchase invoice, packing slip, bill or Dell product catalog. The availability of services varies depending on the country and product, and some services may not be available in your area. To contact Dell for sales, technical assistance, or customer service issues follow these steps:

Steps

1. Go to www.dell.com/support/home.
2. Select your country from the drop-down menu on the lower right corner of the page.
3. For customized support:
 - a. Enter the system Service Tag in the **Enter a Service Tag, Serial Number, Service Request, Model, or Keyword** field.
 - b. Click **Search**.
The support page that lists the various support categories is displayed.
4. For general support:
 - a. Select your product category.
 - b. Select your product segment.
 - c. Select your product.
The support page that lists the various support categories is displayed.
5. For contact details of Dell Global Technical Support:
 - a. Click [Contact Technical Support](#).
 - b. The **Contact Technical Support** page is displayed with details to call, chat, or e-mail the Dell Global Technical Support team.

Accessing system information by using QRL

You can use the Quick Resource Locator (QRL) located on the information tag in the front of the Rear Access configuration and rear of the Front Accessed configuration of the XR11 system, to access information about Dell EMC PowerEdge XR11. There is also another QRL for accessing product information located on the back of the system cover.

Prerequisites

Ensure that your smartphone or tablet has a QR code scanner installed.

The QRL includes the following information about your system:

- How-to videos
- Reference materials, including the Installation and Service Manual, and mechanical overview
- The system service tag to quickly access the specific hardware configuration and warranty information
- A direct link to Dell to contact technical assistance and sales teams

Steps

1. Go to www.dell.com/qrl, and navigate to your specific product or
2. Use your smart phone or tablet to scan the model-specific Quick Resource (QR) code on your system or in the Quick Resource Locator section.

Quick Resource Locator for PowerEdge XR11 system



Figure 119. Quick Resource Locator for PowerEdge XR11 system

Receiving automated support with SupportAssist

Dell EMC SupportAssist is an optional Dell EMC Services offering that automates technical support for your Dell EMC server, storage, and networking devices. By installing and setting up a SupportAssist application in your IT environment, you can receive the following benefits:

- Automated issue detection — SupportAssist monitors your Dell EMC devices and automatically detects hardware issues, both proactively and predictively.
- Automated case creation — When an issue is detected, SupportAssist automatically opens a support case with Dell EMC Technical Support.
- Automated diagnostic collection — SupportAssist automatically collects system state information from your devices and uploads it securely to Dell EMC. This information is used by Dell EMC Technical Support to troubleshoot the issue.
- Proactive contact — A Dell EMC Technical Support agent contacts you about the support case and helps you resolve the issue.

The available benefits vary depending on the Dell EMC Service entitlement purchased for your device. For more information about SupportAssist, go to www.dell.com/supportassist.

Documentation resources

This section provides information about the documentation resources for your system.

To view the document that is listed in the documentation resources table:

- From the Dell EMC support site:
 1. Click the documentation link that is provided in the Location column in the table.
 2. Click the required product or product version.
-  **NOTE:** To locate the model number, see the front of your system.
- 3. On the Product Support page, click **Documentation**.
- Using search engines:
 - Type the name and version of the document in the search box.

Table 39. Additional documentation resources for your system

Task	Document	Location
Setting up your system	<p>For more information about installing and securing the system into a rack, see the Rail Installation Guide included with your rail solution.</p> <p>For information about setting up your system, see the <i>Getting Started Guide</i> document that is shipped with your system.</p>	www.dell.com/poweredgemanuals
Configuring your system	<p>For information about the iDRAC features, configuring and logging in to iDRAC, and managing your system remotely, see the Integrated Dell Remote Access Controller User's Guide.</p> <p>For information about understanding Remote Access Controller Admin (RACADM) subcommands and supported RACADM interfaces, see the RACADM CLI Guide for iDRAC.</p> <p>For information about Redfish and its protocol, supported schema, and Redfish Eventing implemented in iDRAC, see the Redfish API Guide.</p> <p>For information about iDRAC property database group and object descriptions, see the Attribute Registry Guide.</p> <p>For information about Intel QuickAssist Technology, see the Integrated Dell Remote Access Controller User's Guide.</p>	www.dell.com/poweredgemanuals
	<p>For information about earlier versions of the iDRAC documents.</p> <p>To identify the version of iDRAC available on your system, on the iDRAC web interface, click ? > About.</p>	www.dell.com/idracmanuals

Table 39. Additional documentation resources for your system (continued)

Task	Document	Location
	For information about installing the operating system, see the operating system documentation.	www.dell.com/operatingsystemmanuals
	For information about updating drivers and firmware, see the Methods to download firmware and drivers section in this document.	www.dell.com/support/drivers
Managing your system	For information about systems management software offered by Dell, see the Dell OpenManage Systems Management Overview Guide.	www.dell.com/poweredgemanuals
	For information about setting up, using, and troubleshooting OpenManage, see the Dell OpenManage Server Administrator User's Guide.	www.dell.com/openmanagemanuals > OpenManage Server Administrator
	For information about installing and using Dell SupportAssist, see the Dell EMC SupportAssist Enterprise User's Guide.	https://www.dell.com/serviceabilitytools
	For information about partner programs enterprise systems management, see the OpenManage Connections Enterprise Systems Management documents.	www.dell.com/openmanagemanuals
Working with the Dell PowerEdge RAID controllers	For information about understanding the features of the Dell PowerEdge RAID controllers (PERC), Software RAID controllers, or BOSS card and deploying the cards, see the Storage controller documentation.	www.dell.com/storagecontrollermanuals
Understanding event and error messages	For information about the event and error messages generated by the system firmware and agents that monitor system components, go to qrl.dell.com > Look Up > Error Code , type the error code, and then click Look it up .	www.dell.com/qrl
Troubleshooting your system	For information about identifying and troubleshooting the PowerEdge server issues, see the Server Troubleshooting Guide.	www.dell.com/poweredgemanuals

Hardware User Manual

CX-Q Series Network Amplifiers

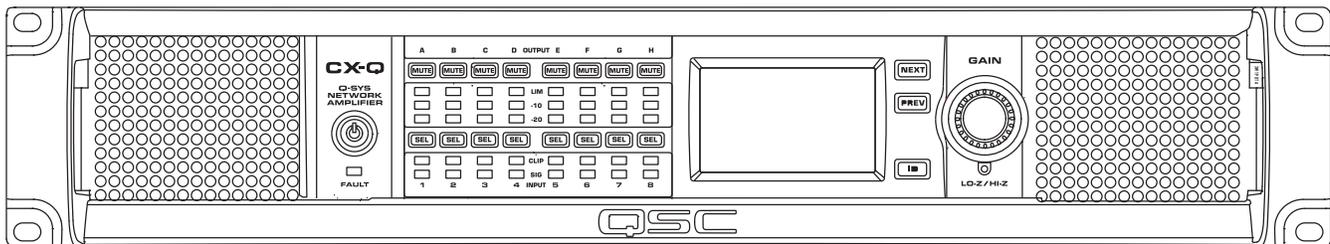
CX-Q 2K4 – 4 Channel, 2000 W Network Amplifier with Mic/Line Inputs

CX-Q 4K4 – 4 Channel, 4000 W Network Amplifier with Mic/Line Inputs

CX-Q 8K4 – 4 Channel, 8000 W Network Amplifier with Mic/Line Inputs

CX-Q 4K8 – 8 Channel, 4000 W Network Amplifier with Mic/Line Inputs

CX-Q 8K8 – 8 Channel, 8000 W Network Amplifier with Mic/Line Inputs



EXPLANATION OF SYMBOLS

The term "**WARNING!**" indicates instructions regarding personal safety. If the instructions are not followed the result may be bodily injury or death.

The term "**CAUTION!**" indicates instructions regarding possible damage to physical equipment. If these instructions are not followed, it may result in damage to the equipment that may not be covered under the warranty.

The term "**IMPORTANT!**" indicates instructions or information that are vital to the successful completion of the procedure.

The term "**NOTE**" is used to indicate additional useful information.



The intent of the lightning flash with arrowhead symbol in a triangle is to alert the user to the presence of un-insulated "dangerous" voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to humans.



The intent of the exclamation point within an equilateral triangle is to alert the user to the presence of important safety, and operating and maintenance instructions in this manual.



IMPORTANT SAFETY INSTRUCTIONS



WARNING! TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE. Elevated Operating Ambient – If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than room ambient. Consideration should be given to ensure that the maximum operating temperature is not exceeded – refer to the Environmental section. Reduced Air Flow – Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block any ventilation opening. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus that produce heat.
9. To reduce the risk of electrical shock, the power cord shall be connected to a mains socket outlet with a protective earthing connection.
10. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
11. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
12. Only use attachments/accessories specified by the manufacturer.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, 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.
15. The appliance coupler, or the AC Mains plug, is the AC mains disconnect device and shall remain readily operable after installation.
16. Adhere to all applicable, local codes.
17. Consult a licensed, professional engineer when any doubt or questions arise regarding a physical equipment installation.
18. Do not use any aerosol spray, cleaner, disinfectant or fumigant on, near or into the apparatus. Clean only with a dry cloth.
19. Do not unplug the unit by pulling on the cord, use the plug.
20. Do not submerge the apparatus in water or liquids.
21. Keep ventilation opening free of dust or other matter.

Maintenance and Repair



WARNING! Advanced technology, e.g., the use of modern materials and powerful electronics, requires specially adapted maintenance and repair methods. To avoid a danger of subsequent damage to the apparatus, injuries to persons and/or the creation of additional safety hazards, all maintenance or repair work on the apparatus should be performed only by a QSC authorized service station or an authorized QSC International Distributor. QSC is not responsible for any injury, harm or related damages arising from any failure of the customer, owner or user of the apparatus to facilitate those repairs. In the event of malfunction, contact QSC Customer Support for assistance.

FCC Statement



NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Environmental

- Life Cycle: 10 years
- Service Life: 10 years
- Storage Conditions: Temperature from -20 ° C to + 70 ° C, humidity 5% - 85% RH.
- Maximum Operating Conditions: -10 ° C to +50 ° C, humidity 5% - 85% RH.



NOTE: Performance may be reduced above 40 ° C.



CAUTION! Environmental Contamination: amplifiers must be installed in an environment where they are provided adequate supply of fresh cooling air that is free from excessive amounts of chemical and/or solid particulate matter contaminants. Excess contamination buildup from environmental factors may cause adverse performance due to high internal voltages experience during operation.

If you wish to discard electronic equipment, please contact your dealer or supplier for further information.

RoHS Statement

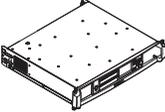
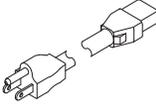
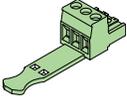
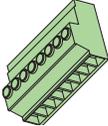
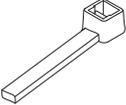
The QSC CX-Q Series Amplifiers are in compliance with "China RoHS" directives. The following chart is provided for product use in China and its territories:

QSC CX-Q Series Amplifiers						
有毒有害物质或元素 (Toxic or hazardous Substances and Elements)						
部件名称 (Part Name)	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(vi))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
电路板组件 (PCB Assemblies)	X	0	0	0	0	0
机壳装配件 (Chassis Assemblies)	X	0	0	0	0	0
0: 表明这些有毒或有害物质在部件使用的同类材料中的含量是在 SJ/T11363_2006 极限的要求之下。 (0: Indicates that this toxic or hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement in SJ/T11363_2006.) X: 表明这些有毒或有害物质在部件使用的同类材料中至少有一种含量是在 SJ/T11363_2006 极限的要求之上。 (X: Indicates that this toxic or hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement in SJ/T11363_2006.)						

海拔和热带条件

	仅适用于海拔2000m 以下地区安全使用	Only suitable for safe use in areas below 2000m above sea level
	仅适用于非热带气候条件下地区安全使用	Only suitable for safe use in non-tropical climates

What's in the Box

 (1x) Amplifier	 (1x) AC Cord	 (8x or 4x) Inputs (3-Pins)	 (2x or 1x) Outputs (8-Pins)	 (1x) GPIO (16-pins)
 (16x or 8x) Cable Tie	 (1x) Warranty	 (1x) Safety Information	 (1x) Quick Start Guide	

Features

Amplifier Front Panel

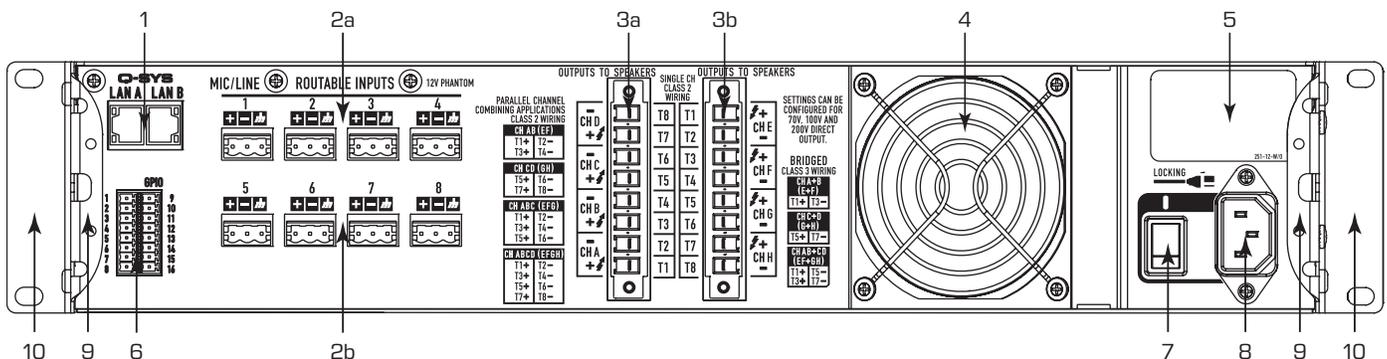
Refer to "Amplifier Controls and Indicators" on page 11.

Amplifier Rear Panel

Refer to Figure 1.



WARNING! Dangerous voltage possible on output terminals. Disconnect AC Mains before connecting or disconnecting output wiring.



— Figure 1 — 8-Channel Model Shown

1. RJ-45 – Q-SYS Q-LAN A / B
2. Analog Inputs – Mic or Line level, 12V Phantom power, 3-pin Euro-style Connectors
 - a. Inputs 1-4 All CX-Q Models
 - b. Inputs 5-8 for 8-Channel Models only
3. Outputs – Loudspeaker Connector, 8-pin Euro-style
 - a. Outputs A–D All Models
 - b. Outputs E–H 8-Channel Models only
4. Cooling fan inlet (do not block)
5. Product information:
 - a. Serial Number with manufacturer date code: Refer to Figure 7
 - b. Country of origin, "Product of China".
6. GPIO Euro-style Connector, 16-pin
7. AC Power Switch
8. Locking IEC Power Connection
9. Rear Rack-mount Brackets
10. Front Rack-mount Brackets

Installation

The following steps are written in the recommended installation order.

Rack-Mount the Amplifier

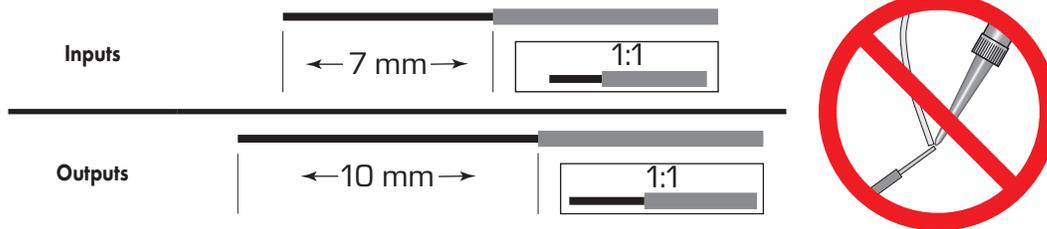
The amplifiers are designed only for mounting in a standard rack-mount unit. Abnormal mounting positions (e.g., vertical, face-up, face-down) are not supported. The amplifiers are 2RU high, and 381 mm (15 in) deep.

Secure the amplifier in the rack with eight screws (not supplied), four in front, four in back. For complete instructions, refer to TD-000050 "Rear Rack Ears Installation Guide" which can be found on the QSC Website (www.qsc.com).



CAUTION! Be sure that nothing is blocking the front or rear ventilation openings, and that each side has a minimum of 2 cm clearance.

Wire Preparation

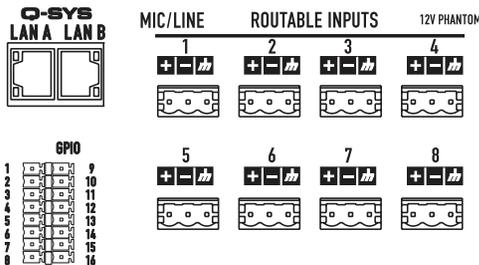


— Figure 2 —

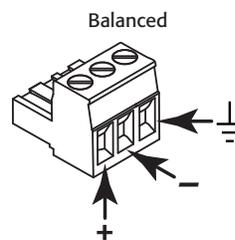
Use an appropriate wire-stripping tool to remove 7 mm of insulation from Input wiring and 10 mm of insulation from the Output wiring. Do not tin the stripped wire ends.

Inputs

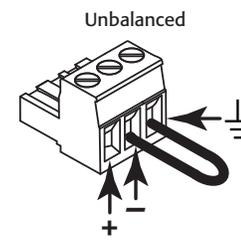
Q-SYS – Connect the amplifier LAN A, and if available, LAN B, to the Q-LAN network (Figure 3). Refer to the [Q-SYS Help](#) for network requirements.



— Figure 3 —



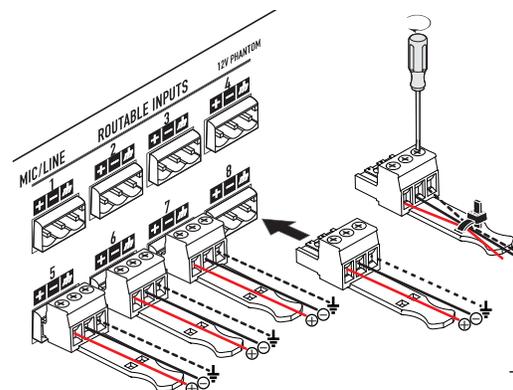
— Figure 4 —



— Figure 5 —

Analog Inputs are converted to digital audio in the amplifiers then routed to the Q-SYS Core over the Q-LAN network. The digital signals show up in Q-SYS Designer at the input component where they can be routed as needed. Refer to the Q-SYS documentation.

1. Make sure your audio source devices are powered off.
2. Wire the audio mic- or line-level source to up to eight (8-Channel amplifiers) or four (4-Channel amplifiers) Euro-style connectors (supplied). You can use either balanced inputs (Figure 4) or unbalanced inputs (Figure 5).
3. Plug the connectors into the appropriate receptacles (Routable Inputs 1, 2, 3, 4, 5, 6, 7, 8) Figure 4 and Figure 6.



— Figure 6 —

GPIO

Refer to ["GPIO" on page 17](#) for details about the GPIO feature.

Outputs and Output Configuration

The amplifiers have one or two sets of four-channel outputs that are configured independently. The configuration of the amplifier is defined in Q-SYS designer software and is "pushed" into the physical amplifier when the Name and Type of amplifier in the design matches the Name and Type of physical amplifier. Flexible Amplifier Summing Technology (FAST) allows users to power a variety of loads through combining amplifier channels in various ways. Amplifier channels can be combined in BTL Bridged mode for higher voltage needs or Parallel Mode for higher current needs. Figure 7 thru Figure 10 are examples of how the 4 channel amplifier blocks can be combined to drive higher power requirements under different loads. Please reference the power output ratings for more information.



NOTE: The output connector is capable of handling up to 8 AWG for stranded wire.

Use the diagrams shown in Figure 7 thru Figure 10 as a reference for planning your loudspeaker configuration. Refer to Figure 11 for how to connect the wiring based on your configuration.

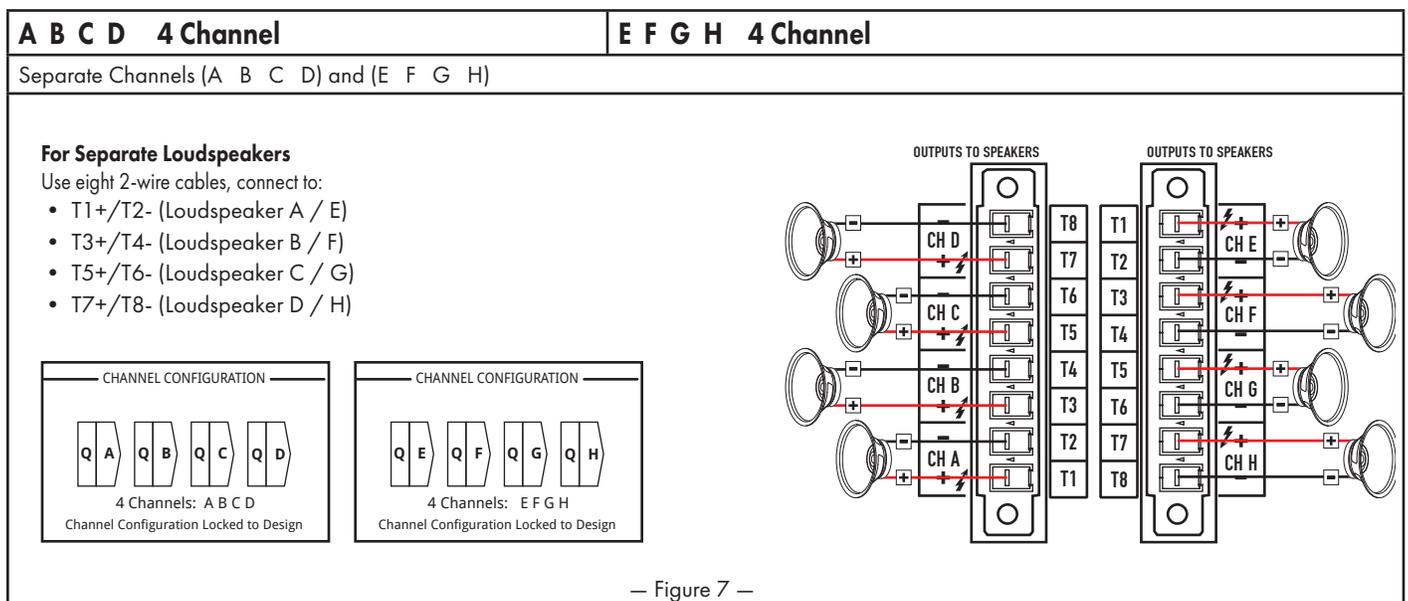


CAUTION! Before turning the amplifier on, double check your output connections to be sure they are connected properly based on the output configuration specified in Q-SYS Designer.

If you change the output configuration of the amplifier you must change the loudspeaker connections before applying power to the amplifier!

After a change of the output configuration, the amplifier re-boots and all outputs are muted. You must press the Mute All button in the Q-SYS Amp Output component, Press The Amplifier Mode Button on the front panel of the amplifier.

Figure 7 through Figure 10 are examples of the three types of output configurations: Separate, Bridged and Parallel. The tables to the right and left of the loudspeaker connections (rear panel of the amplifier) give all the possible configurations and their connections. The following diagrams show the 8-Channel models. 4-Channel models have outputs A through D only.



— Figure 7 —

A+B C D 3 Channel, A B Bridged

E F G H 4 Channel

Bridged (A+B) and Separate (C D) and (E F G H) Channels

For A+B (Bridged) One Loudspeaker

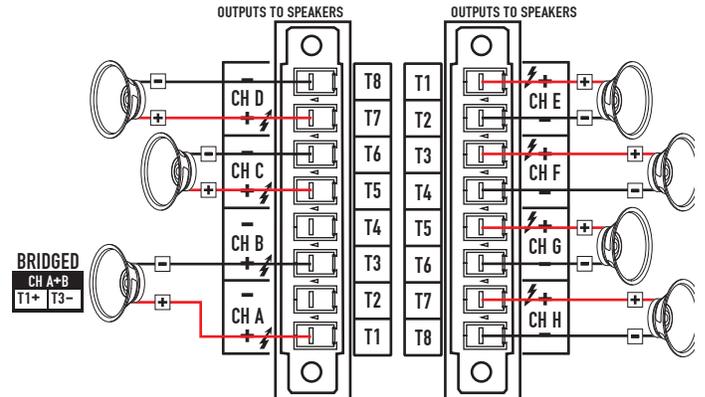
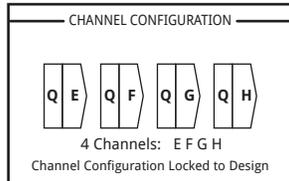
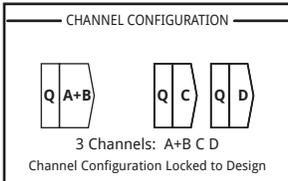
Use one 2-wire cable connect to:

- T1+/T3- (Loudspeaker A+B)

For C D (E F G H) (Separate) Two and Four Loudspeakers

Use six 2-wire cables, connect to:

- T1+/T2- (Loudspeaker E)
- T3+/T4- (Loudspeaker F)
- T5+/T6- (Loudspeaker C / G)
- T7+/T8- (Loudspeaker D / H)



— Figure 8 —

AB CD 2 Channel, AB Parallel CD Parallel

EF + GH 1 Channel, EF Parallel Bridged with GH Parallel

Two Pair of Parallel Channels (AB CD) and two Pair of Parallel Channels Bridged (EF + GH)

AB (Parallel) CD (Parallel) For Two Loudspeakers

Use two 2-wire cables, connect to:

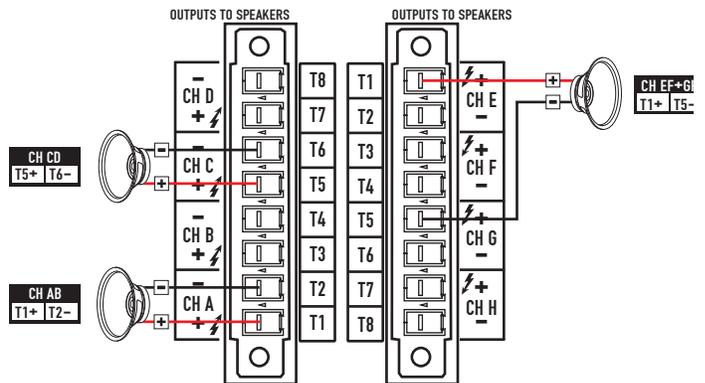
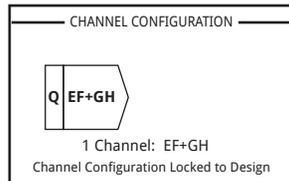
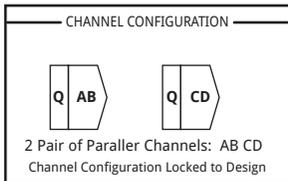
- T1+/T2- (Loudspeaker AB)
- T5+/T6- (Loudspeaker CD)

EF (Parallel) Bridged with GH (Parallel) For One Loudspeaker

Full power to one loudspeaker

Use one 2-wire cable, connect to:

- T1+/T5- (Loudspeaker EF+GH)



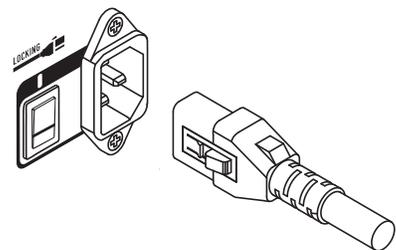
— Figure 9 —

AC Mains



WARNING! When the AC Power is on, there is a potential of having dangerous voltage at the output terminals on the rear of the amplifier. Use caution not to touch these contacts. Turn off the Power switch prior to making any connections.

1. Make sure the Power switch on the rear of the amplifier is off.
2. Connect the IEC power cord to the AC receptacle. (Figure 12)



AC Power On

After connecting the outputs to the loudspeakers, you may turn the amplifier on.

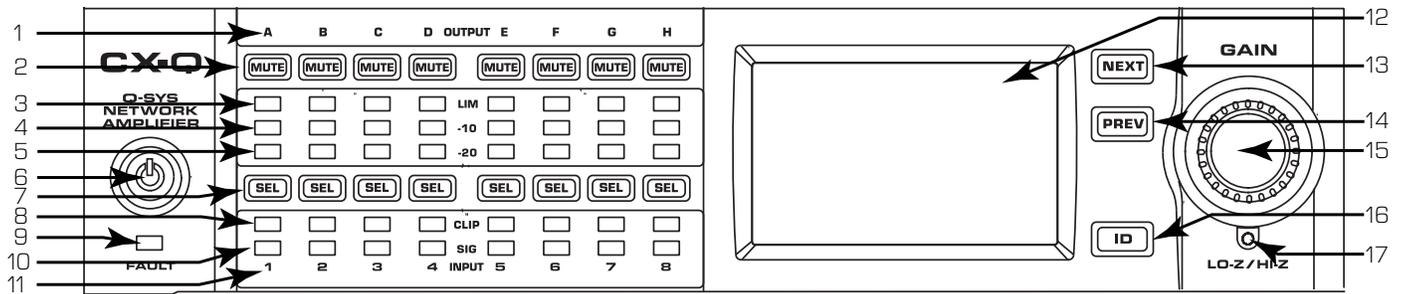
1. Make sure the output gain settings for all audio-source devices (CD Players, Mixers, Instruments, etc.) are at the lowest output (max attenuation).
2. Turn on all audio sources.
3. Turn the power switch, on the back of the amplifier, to ON. The amplifier starts in the state it was in when power was removed. If the amplifier is in Standby or Mute All mode (Amplifier Mode button LED solid red or blinking), press the Amplifier Mode button to change the amplifier to Run mode. Refer to ["Amplifier Modes" on page 11](#) for information on Modes.
4. You can now bring up the outputs of your audio sources.

— Figure 12 —



NOTE: When the amplifier is not connected to the Q-SYS Core processor, it is in a Fault mode and not operational unless previously configured for failover or standalone mode as part of a Q-SYS design.

Amplifier Controls and Indicators



— Figure 13 — CX-Q 8-Channel Shown

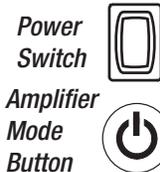
- | | | |
|--|--|-------------------|
| 1. Output Channel labels A to H | 6. Amplifier Mode button (Green/Red) | 13. NEXT button |
| 2. Output Channel Mute buttons / LEDs (Red) | 7. Output Channel Select buttons / LEDs (Blue) | 14. PREV button |
| 3. Output Channel Limiter LEDs (Red) | 8. Input Channel Clip LEDs (Red) | 15. GAIN Knob |
| 4. Output Channel -10 dB below maximum amplifier output (Blue) | 9. FAULT LED (Amber) | 16. ID button |
| 5. Output Channel -20 dB below maximum amplifier output (Blue) | 10. Input Channel Signal-Present LEDs (Blue) | 17. Pinhole Reset |
| | 11. Input Channel labels 1 to 8 | |
| | 12. LCD Graphic Display | |

With the exception of the Power Switch, found on the rear panel, all of the following controls are on the front panel. Refer to Figure 13 for location of front-panel controls.

Amplifier Modes

Off Mode

- Rear-panel power switch is off, the amplifier is not operable.
- The Amplifier Mode button (6) is not illuminated.
- Turn the power switch to ON. The amplifier enters the mode in which it was when power was removed – Run, Mute All, or Standby.



Run Mode

- From Standby or Mute All mode, press and release the Amplifier Mode button on the front panel. The amplifier is in Run Mode.
- The Amplifier Mode button (6) is illuminated green.
- The amplifier is fully operable; audio can pass.



Standby Mode

- From Mute All or Run mode, press and hold the Amplifier Mode button (6) on the front panel for approximately four seconds.
- The Amplifier Mode button illuminates solid red.
- The amplifier is not operable; audio will not pass.



Mute All Mode

- From the Run Mode, quickly press and release the Amplifier Mode button (6).
- The Amplifier Mode button flashes red, all output Mute buttons (2) are red.
- The amplifier output is disabled, but the front panel is fully operable.



Controls

SEL Buttons (7)

- Output Channel gain can be adjusted from the Q-SYS Designer software or from the front panel of the amplifier.
- Use the SEL button to select one or more than one channel to change gain settings. All selected channels will change at the same time.
- If two or more outputs are bridged or in parallel, pressing one button in the group selects all channels in that bridged or parallel group.



NEXT (13) and PREV (14) Buttons

- Navigates forward and backwards through the screens.



GAIN Knob (15)

- Adjusts the Gain for the selected output channel or channels. At least one channel must be selected.
- When one or more channels are selected, turn the Gain knob to jump to the Output Gains screen. After a few seconds with no activity, it returns to the earlier screen.
- If there is more than one channel selected, and the gains for those channels are different, the difference is maintained unless the gain is raised or lowered to the limits for both channels.



ID Button (16)

- Press this button to display a screen with the amplifier's network name. In addition, the ID buttons on the associated Q-SYS Amplifier component and the associated Q-SYS Configurator item flashes. Press again, or click one of the other ID buttons, to stop the flashing and exit the screen.



Pinhole Reset (17)

- Resets the amplifier to its factory default settings.
1. Insert a paper clip or similar tool into the pinhole
 2. Press and hold for 3 seconds.
 3. Press the ID button to confirm and reset the amplifier.



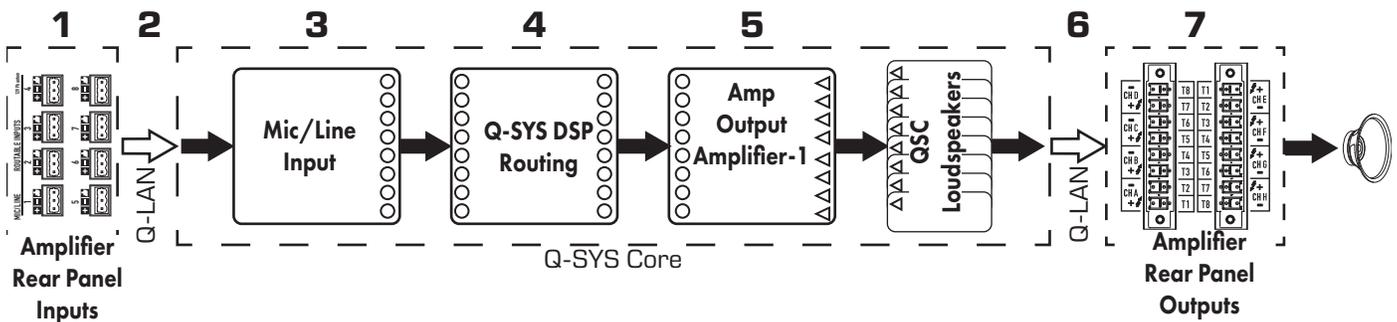
Items reset include:

- Network settings set to Auto,
- Amplifier name set to default,
- Password deleted, and
- Log file deleted.

Input and Output Signal Flow

The amplifier's inputs and outputs are not physically (or electrically) connected in the amplifier giving you the flexibility to use any available source in Q-SYS for the amplified outputs, and to route the inputs to any output. The inputs and outputs can be connected in your Q-SYS design as shown in Figure 14.

1. The analog inputs are converted to digital audio in the amplifier
2. The converted audio is then routed to the Q-SYS Core via Q-LAN (LAN A, LAN B).
3. The digital signals are brought into the design via the amplifier's Mic/Line Input component.
4. From the Mic/Line Input component the signals can be sent for processing and can be sent anywhere within the Q-SYS system.
5. In the Q-SYS Core digital audio signals (not necessarily from the amp's inputs) are sent to the Q-SYS Amp Output component.
6. The digital audio is then sent from the Q-SYS Core via Q-LAN to the amplifier.
7. Digital signals are converted to analog, amplified and sent to outputs of the amplifier.



— Figure 14 — 8-Channel Model Shown

The Q-SYS Amp Output component can have one to eight inputs/outputs depending on the amplifier model and its configuration in Q-SYS Designer Software. The desired configuration is selected in the Q-SYS Designer Properties menu for the amplifier. When the amplifier's configuration is changed, all of the outputs are placed in a "mute all" state. You can un-mute all by clicking the Mute All button in Q-SYS Designer's Amp Output component or press and release the Amplifier Mode button on the amplifier's front panel.

Amplifier Sensitivity

Amplifier sensitivity is set to provide full output voltage swing for the rated power (@8 Ohms), with a 0dBFS PEAK input. This means that MAX DAC Out = MAX AMP Out, with a SINE WAVE (0dBFS = -3dBFS RMS for a sine wave).

- 0dBFS pk Input on 8k4 = Amp Output of 141Vpk/100Vrms = 1250Wrms @ 8 Ohms
- 0dBFS pk Input on a 4k4 = Amp Output of 100Vpk/70Vrms = 625Wrms @ 8 Ohms
- 0dBFS pk Input on a 2k4 = Amp Output of 80Vpk/56Vrms = 400Wrms @ 8 Ohms

For 70V/100Vrms systems, there are required gain adjustments for full output that occur in the High-Z Speaker component. This happens when the Amp Output component is wired to a High-Z Speaker component. In addition, there is an HPF that is automatically applied at 50Hz to avoid transformer saturation. The HPF is user adjustable in the Generic Speaker component.

Limiters

There are several limiters within the CX-Q output:

- **Speaker Component Limiters** – These have controls exposed to the end user. Attack and Release Times in the Peak limiter are hard-coded. All other limiters are set by QSC. Speaker-related limiters are not indicated within the Amp Output block or front panel.
- **Amp Protection Limiters** – These are not adjustable and are meant only to protect the amplifier from unsafe conditions. Amp protection limiters are slow-moving that adjust over longer periods of time. Indicators for this limiter can be found on the individual amplifier channel or the front of the amplifier.
- **DAC Limiters** – These limiters engage approximately 1dB before clipping. It is normal to have some level of DAC clipping during operation. There are no controls over this limiter.

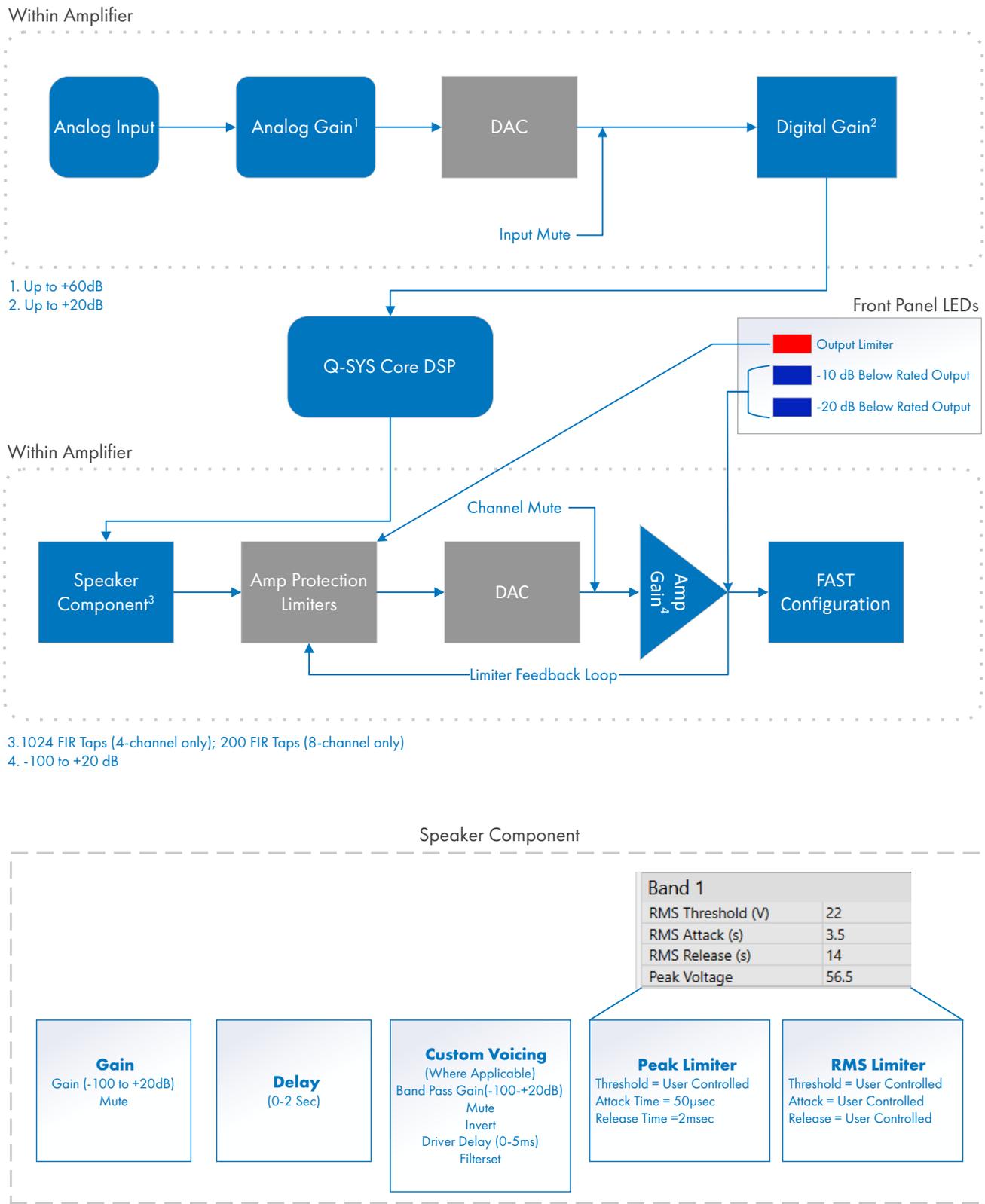
Mutes

- **Channel Output Mutes** are located within each channel strip of the amplifier panel. Activating this button will turn off the output signal of the DAC.
- **Mute All function**, found at the top of the amplifier output panel, will turn off the amplifier switching for all channels.

Gain

There are multiple places within Q-SYS to add gain to your system. Within the amplifier, it is critical to understand that the gain within the Speaker component should typically not be above +10dB. This is due to the dynamic nature of music and the stress that this can put on the output of the amplifier. Speaker component gain above +10dB could trigger the Amp Protection Limiters or DAC Limiters.

Figure 15 shows where gain, muting, and limiting are applied within the signal flow.



— Figure 15 —

Screens

STATUS Screen

Refer to Figure 16

1. **DEVICE** – the hostname (network name) of the amplifier. A default name is given at the factory, similar to the example. You may change the name in the Q-SYS Configurator.
2. **DESIGN** – the name of the Q-SYS design currently running on the amplifier. The amplifier must be contained in a running design to operate.
3. **STATUS** – displays the current status of the amplifier both in text and color. The following is a list of possible status colors, and some example conditions.
 - **OK** – green – amplifier is operating normally.
 - **Compromised** – orange – audio is passing; however, there may be a non-critical problem. Left unresolved, a compromised state could lead to a fault mode. Examples of Compromised can include issues related to network, output load, AC voltage, etc.
 - **Fault** – red – audio is not passing, or hardware is malfunctioning or mis-configured (amplifier power off, audio streams broken, amplifier fault, loudspeaker short circuit, etc.)
 - **Initializing** – blue – In the process of initialization, and design start. Audio cannot pass.
4. **FIRMWARE** – the Q-SYS Designer firmware version installed on the amplifier.

STATUS	
1 → DEVICE:	CX-Q 8CH-1234
2 → DESIGN:	My Design Filename
3 → STATUS:	OK
4 → FIRMWARE:	8.1.0

– Figure 16 –



NOTE: The CX-Q 4- and 8-channel amplifiers require Version 8.1.0 or later of Q-SYS Designer.

To Update the Amplifier Firmware:

- a. Install the version of Q-SYS Designer you want to use on your PC.
- b. The amplifier must be connected to Q-LAN and turned on.
- c. Open the Q-SYS design containing the amplifier in the Designer version you just installed.
- d. Select "Save to Core and Run" from the File menu.
- e. The amplifier and any other Q-SYS peripherals in the design are automatically updated.

LAN A / LAN B Screen

Refer to Figure 17

1. **IP ADDRESS** – the default IP address is set to AUTO at the factory. You can change this and the other parameters in Q-SYS Configurator. LAN A is required, and cannot be turned off.
2. **NETMASK** – must be the same as the Core's Netmask.
3. **GATEWAY** – must be the same as the Core's Gateway.
4. **LAN B** is not required. When connected, the same type of information as LAN A is displayed.

LAN A (AUTO)	
1 → IP ADDRESS:	192.168.xxx.xxx
2 → NETMASK:	255.255.0.0
3 → GATEWAY:	
LAN B (AUTO, NO LINK)	
4 → IP ADDRESS:	
NETMASK:	
GATEWAY:	

– Figure 17 –

HEALTH Screen

Refer to Figure 18

1. **FAN RPM** – varies depending on the temperature.
2. **PSU TEMP** – varies depending on operating conditions. PSU Temp is monitored and can automatically put the amp into limiting or shutdown if safe operating temperatures are exceeded.
3. **AC VOLTAGE** – AC Mains voltage
4. **AC CURRENT** – AC mains current drawn by the amplifier.
5. Voltage Rails
 - **V RAIL 1** = +147VDC +/- 5V typical
 - **V RAIL 2** = -147VDC +/- 5V typical

HEALTH	
1 → FAN RPM:	2443
2 → PSU TEMP:	30.0°C
3 → AC VOLTAGE:	114V
4 → AC CURRENT:	1.58A
5 → V RAIL 1:	149V
5 → V RAIL 2:	-149V

– Figure 18 –

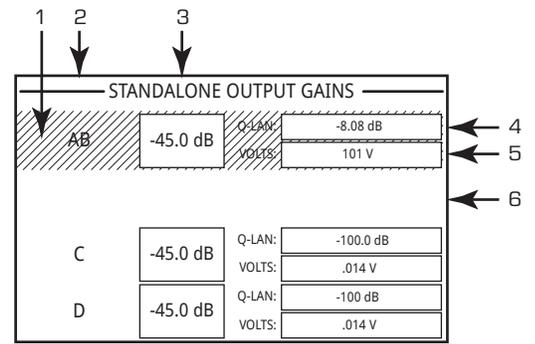
STANDALONE OUTPUT GAINS Screen

Refer to Figure 19

The STANDALONE OUTPUT GAINS screens provide a quick overview of all outputs. In addition, when this screen is displayed, you can make gain adjustments from the amplifier's front panel. There is one screen for channels A–D and one for channels E–H.

Use the NEXT or PREV buttons to access these screens, or press one or more of the SEL buttons to access the screen.

1. The highlighted background indicates that the Channel is selected by the SEL button.
2. **Channel** – the channels display according to the configuration of the amplifier.
3. **Output Gain** – the output gain can be controlled in two places: the GAIN knob on the amplifier front panel and with the Gain control in the amplifier's Output component in the Q-SYS design.
4. **Q-LAN** Input Level – the level of the audio signal applied to the Output component in the Q-SYS design. The CX-Q Output component is the connection to the output section of the amplifier.
5. **VOLTS** – the voltage applied to that output.
6. In the example Output B is combined with Output A – (AB or A+B), the slot for Output B is blank.



– Figure 19 –

To Make Gain Adjustments:

- a. Use the SEL button to select one or more output channels. You can select any or all channels.
- b. Use the GAIN knob to make adjustments to the output gain of the selected channels.



NOTE: If the gains were the same when you select multiple channels the gains remain equal as you adjust them. If the gains are different, they keep their relative separation until one reaches a limit. At this point the other channel(s) continue to change until they reach the limit.



NOTE: If you press one or more of the SEL buttons, and do not make any GAIN adjustments, this screen remains visible for a short time then returns to the previous screen.

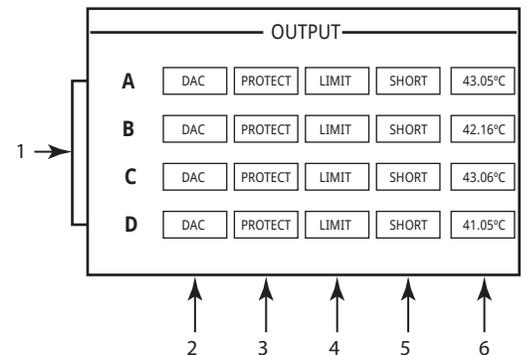
OUTPUT Screens

Each block of four outputs has a dedicated screen. Figure 20 is an example of Outputs A – D.

1. Output channel identifiers **A – D** and **E – H** (not shown).
2. **DAC** – when illuminated, this indicates that the signal to the D to A Converter is larger than can be reproduced and a limiter has been engaged to prevent clipping.
3. **PROTECT** – when illuminated, this indicates that the amplifier is in Protect Mode. Conditions can include over current, excessive long term average power output, impedance too low.
4. **LIMIT** – when illuminated, this indicates the amplifier limiter is active. There are five conditions that could cause the LIMIT condition:
 - Power
 - Current
 - Voltage
 - Temperature
 - Loudspeaker Protection is active.
5. **SHORT** – when illuminated, this indicates the output is shorted.
 - Short circuit detection operates once the desired amplifier output exceeds approximately 30W (varies per mode).
 - If the amplifier detects excessive current versus the target output voltage for sustained periods, a warning is activated.
 - The affected amplifier channel output signal is then muted for a brief period of time.
 - The affected amplifier channel automatically attempts to resume normal operation up to five times in case the short circuit was due to a temporary connection error.
 - If the short circuit remains after five tries, the amplifier mutes that channel until the user manually changes amplifier operational modes (e.g., places the amp into a mute all or standby) or power cycles the amplifier.

NOTE: Loads that result in a "near short circuit" condition may activate low impedance warnings.

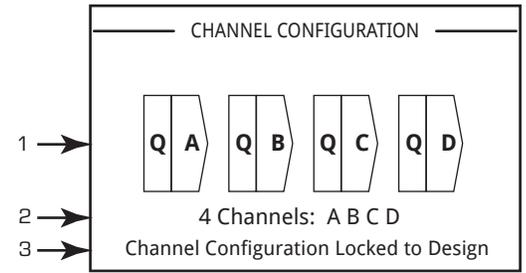
6. Displays the temperature, in Centigrade, of the associated channel.



– Figure 20 –

CHANNEL CONFIGURATION Screens

1. Figure 21 is a graphic representation of the amplifier's output CHANNEL CONFIGURATION. Inputs (Q) are from Q-SYS, outputs A–D (E–H not shown) represent the amplifier output channels and their configuration.
2. Text indicating how many channels, and the output configuration. For possible configurations refer to "[Possible Combinations](#)" on page 9 or, the Q-SYS help for the amplifier components.
3. Status of the amplifier and Q-SYS design indicating the design and amp are in sync.

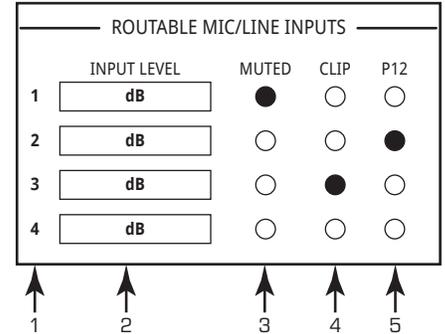


— Figure 21 —

ROUTABLE MIC/LINE INPUTS

Figure 22 shows the Routable MIC/LINE INPUTS screen for channels 1–4, (channels 5–8 not shown) which displays the status of the physical MIC/LINE INPUTS for the Q models.

1. Input channels are identified numerically, 1–4 (and 5–8 not shown)
2. **Input Level** – is the Peak Input Level (dBFS) and is the same as displayed in the Q-SYS Mic/Line Input component.
3. **Muted** – when illuminated indicates that the Input is muted for the associated channel. This is controlled by the Mute button on the Q-SYS Designer Mic/Line Input component. Input channels cannot be muted from the amplifier interface.
4. **Clip** – indicators illuminate when the input to the Mic/Line Input component is too high. Adjust the Preamp Gain on the Mic/Line Input component in Q-SYS Designer.
5. **P12** – phantom power (+12V) is available for microphones (condenser) requiring power. You can turn the phantom power on/off in the Mic/Line Input component in Q-SYS Designer.



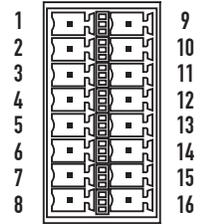
— Figure 22 —

GPIO

There are 16 General Purpose Input Output pins for use in various applications. Figure 23 shows the pin configuration for the connector on the rear of the amplifier. — Table 2 shows the connector pin-out. Figure 24 gives some simple GPIO applications.

— Table 1 —

Connector Pin	GPIO # and Function	Specifications
1	3.3 V	100 mA max (power cycle to reset current limiting)
2	GPIO 1	5mA in/out, 3.3V max, 127Ω resistor in series
3	GPIO 2	5mA in/out, 3.3V max, 127Ω resistor in series
4	GND	Ground
5	GPIO 3	5mA in/out, 3.3V max, 127Ω resistor in series
6	GPIO 4	5mA in/out, 3.3V max, 127Ω resistor in series
7	GND	Ground
8	GPIO 5	18mA in/out max, 3.3V max, 127Ω resistor in series
9	RELAY NO ¹	Relay Normally Open
10	RELAY COM ¹	Relay Common
11	RELAY NC ¹	Relay Normally Closed
12	GND	Ground
13	GPIO 6	18mA in/out max, 3.3V max, 127Ω resistor in series
14	GPIO 7	18mA in/out max, 3.3V max, 127Ω resistor in series
15	GND	Ground
16	GPIO 8	18mA in/out max, 3.3V max, 127Ω resistor in series

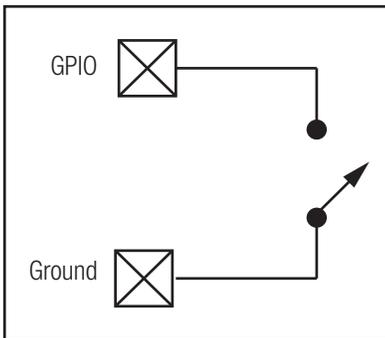


— Figure 23 —

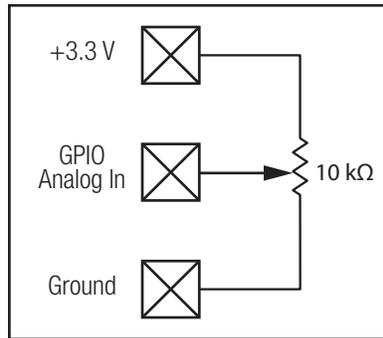
¹ Nominal switching capacity is 30 VDC at 2 A for a total of 60 W maximum. The maximum voltage is 220 VDC if the current is limited to observe the maximum power rating (60 W).

Examples

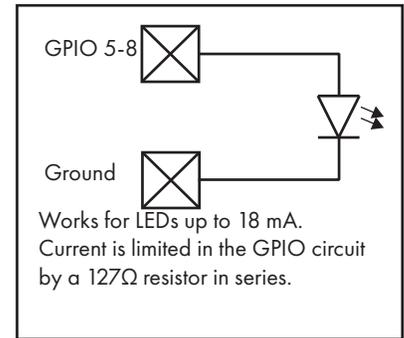
Button or Contact Closure



Potentiometer



Q-SYS-Powered LED



— Figure 24 —

Specifications ¹

Power Specifications – 4-Channel Models

Configuration	Loads	CX-Q 2K4		CX-Q 4K4		CX-Q 8K4	
		Max Power ²	Continuous Power	Max Power ²	Continuous Power	Max Power ²	Continuous Power
Independent Channels (SE) A, B, C, D	100 V	700	350	1000	550	1250	1150
	70 V	700	400	1000	625	1250	1150
	16 Ω	350	200	500	313	625	625
	8 Ω	700	400	1000	625	1250	1250
	4 Ω	800	400	1500	625	2400	1250
	2 Ω	600	300	800	400	2750	1250
2 channels combined in Parallel AB or CD Doubles current Best for high power 70 V & 100 V	100 V	1400	700	2000	1150	2400	2000
	70 V	1400	750	2000	1150	2400	2000
	8 Ω	800	400	1000	625	1250	1250
	4 Ω	1250	750	2000	1250	2400	2250
	2 Ω	1500	650	2500	1250	4000	2100
	3 channels combined in Parallel ABC Triples current	8 Ω	800	400	1000	1000	1250
	4 Ω	1250	800	2000	2000	2400	2400
	2 Ω	1500	1100	3000	2500	4500	3000
2 channels combined in BTL Bridged A+B or C+D Doubles voltage Do NOT use for 70 V or 100 V	200 V	1500	700	2000	1250	2400	2000
	140 V	1500	700	2000	1250	2400	2000
	8 Ω	1500	700	3000	1250	4000	2250
	4 Ω	1400	600	1700	1150	5000	2500
	2 Ω	N/R ³		N/R ³		3000	2000
4 channels combined in Bridged/Parallel AB+CD, Doubles current & voltage	8 Ω	2500	1500	3500	2500	4200	4200
	4 Ω	3000	1600	4000	2500	7000	4500
	2 Ω	N/R ³		N/R ³		8000	4000
4 channels combined in Parallel ABCD Quadruples current	8 Ω	800	400	1000	1000	1250	1250
	4 Ω	1250	800	2000	1600	2500	2400
	2 Ω	1700	1600	4000	2500	5000	4500
	1 Ω	2500	1500	4000	2000	7000	4500

¹ Specifications are subject to change without notice.

² Max Power

» Max Power data is based on the most potential any single amplifier channel can deliver. This data is most useful for asymmetrical loading of amplifier channel and maximizing power utilization of the amplifier. When utilizing FlexAmp™ power requirements, be sure to take into consideration the power capabilities of the channel AND the capabilities of the Power Supply.

» Continuous Power indicates amplifier output capabilities with all channels driven with the same load without exceeding the capabilities of the power supply.

» Power Spec is based on 1 kHz, 20 msec

³ N/R = Not Recommended

Power Specifications ¹ – 8-Channel Models

Configuration	Loads	CX-Q 4K8		CX-Q 8K8	
		Max Power ²	Continuous Power	Max Power ²	Continuous Power
4 or 8 Independent Channels A, B, C, D, E, F, G, H	100 V	1000	300	1250	600
	70 V	1000	300	1250	600
	16 Ω	500	150	625	300
	8 Ω	1000	300	1250	600
	4 Ω	1000	300	1500	600
	2 Ω	800	300	1000	300
Parallel Channels (x2) AB or CD or EF or GH Doubles Current Best for high power 70V & 100V	100 V	1500	600	2000	1100
	70 V	1500	600	2000	1200
	8 Ω	1000	600	1250	1100
	4 Ω	1250	600	2400	1200
	2 Ω	1500	600	2500	600
Parallel Channels (x3) ABC, DEF Triples Current	8 Ω	1000	900	1250	1100
	4 Ω	1500	900	2000	1800
	2 Ω	1500	900	2500	1800
BTL/Bridged Channels (x2) A+B or C+D or E+F or G+H Doubles Voltage Do NOT use for 70V or 100V	200 V	1500	600	2000	1200
	140 V	1500	600	2000	1200
	8 Ω	1500	600	3000	1200
	4 Ω	1400	400	1700	600
	2 Ω	N/R ³		N/R ³	
BTL/Bridged & Paralleled Channels (x4) AB+CD, EF+GH Doubles Current and Voltage	8 Ω	2500	1200	4000	2400
	4 Ω	3000	1200	5000	2400
	2 Ω	N/R ³		N/R ³	
Parallel Channels (x4) ABCD, EFGH Quadruples Current	8 Ω	1000	1000	1200	1200
	4 Ω	2000	1200	2400	2200
	2 Ω	2500	1200	4000	2400
	1 Ω	3000	1200	4000	2400

¹ Specifications are subject to change without notice.

² Max Power

» Max Power data is based on the most potential any single amplifier channel can deliver. This data is most useful for asymmetrical loading of amplifier channel and maximizing power utilization of the amplifier. When utilizing FlexAmp™ power requirements, be sure to take into consideration the power capabilities of the channel AND the capabilities of the Power Supply.

» Continuous Power indicates amplifier output capabilities with all channels driven with the same load without exceeding the capabilities of the power supply.

» Power Spec is based on 1 kHz, 20 msec

³ N/R = Not Recommended

Peak Voltage Specifications – 4-Channel Models

Configuration	Loads	CX-Q 2K4		CX-Q 4K4		CX-Q 8K4	
		Max Peak Voltage	Max Peak Current	Max Peak Voltage	Max Peak Current	Max Peak Voltage	Max Peak Current
Independent Channels (SE) A, B, C, D	16 Ω	N/A	N/A	N/A	N/A	N/A	N/A
	8 Ω	106	13.2	126	15.8	141	17.6
	4 Ω	80	20.0	110	27.4	139	34.6
	2 Ω	49	24.0	57	28.3	105	52.4
Parallel Channels (x2) AB or CD Doubles Current Best for high power 70 V & 100 V	8 Ω	N/A	N/A	N/A	N/A	N/A	N/A
	4 Ω	N/A	N/A	N/A	N/A	N/A	N/A
	2 Ω	N/A	N/A	N/A	N/A	N/A	N/A
BTL/Bridged Channels (x2) A+B or C+D Doubles Voltage Do NOT use for 70 V or 100 V	200 V	N/A	N/A	N/A	N/A	N/A	N/A
	140 V	N/A	N/A	N/A	N/A	N/A	N/A
	8 Ω	155	19.4	179	22.4	253	31.6
	4 Ω	106	26.5	117	29.2	200	50
	2 Ω	N/R		N/R		110	54.8

N/R = Not Recommended

N/A = Not Available

Gray cells = mode or rating n/a

NOTE: Data indicates the maximum voltage and current potential for any amplifier single amplifier channel. The data in the table above has been measured for these specific conditions. N/A indicates data is not available. NR indicates that this configuration is not recommended.

Peak Voltage Specifications – 8-Channel Models

Configuration	Loads	CX-Q 4K8		CX-Q 8K8	
		Max Peak Voltage	Max Peak Current	Max Peak Voltage	Max Peak Current
Independent Channels (SE) A, B, C, D	16 Ω	N/A	N/A	N/A	N/A
	8 Ω	126	11.2	141	12.5
	4 Ω	89	15.8	110	19.4
	2 Ω	57	20	63	22.4
Parallel Channels (x2) AB or CD Doubles Current (Best for high power 70 V & 100 V)	8 Ω	126	11.2	141	12.5
	4 Ω	100	17.7	139	24.5
	2 Ω	77	27.4	100	35.4
BTL/Bridged Channels (x2) A+B or C+D Doubles Voltage (Do NOT use for 70 V or 100 V)	200 V	283	7.5	283	10
	140 V	100	10.6	200	14.1
	8 Ω	155	13.7	219	22.4
	4 Ω	106	18.7	117	20.6
	2 Ω	N/R		N/R	

N/R = Not Recommended

N/A = Not Available

Gray cells = mode or rating n/a

NOTE: Data indicates the maximum voltage and current potential for any amplifier single amplifier channel. The data in the table above has been measured for these specific conditions. N/A indicates data is not available. NR indicates that this configuration is not recommended.

Operating Specifications

	CX-Q 2K4	CX-Q 4K4	CX-Q 8K4	CX-Q 4K8	CX-Q 8K8
Typical Distortion					
8Ω	0.02 - 0.05%	0.02 - 0.05%	0.02 - 0.05%	0.02 - 0.05%	0.02 - 0.05%
4Ω	0.04 - 0.1%	0.04 - 0.1%	0.04 - 0.1%	0.04 - 0.1%	0.04 - 0.1%
Maximum Distortion					
4 Ω - 8 Ω	1.0%	1.0%	1.0%	1.0%	1.0%
Frequency Response (8 Ω)					
	20 Hz - 20 kHz +0.2 dB / -0.7 dB	20 Hz - 20 kHz +0.2 dB / -0.7 dB	20 Hz - 20 kHz +0.2 dB / -0.7 dB	20 Hz - 20 kHz +0.2 dB / -0.7 dB	20 Hz - 20 kHz +0.2 dB / -0.7 dB
Noise					
Unweighted output unmuted	>102 dB	>102 dB	>102 dB	>101 dB	>101 dB
Weighted output muted	>106 dB	>106 dB	>106 dB	>104 dB	>104 dB
Gain (1.2 V setting)					
	33 dB	35 dB	38 dB	35 dB	38 dB
Damping factor					
	>100	>100	>150	>100	>100
Input impedance					
	>8k balanced and >4k unbalanced	>8k balanced and >4k unbalanced	>8k balanced and >4k unbalanced	>8k balanced and >4k unbalanced	>8k balanced and >4k unbalanced
Input Sensitivity					
Continuously variable:					
Vrms	1.23 mV to 17.35 V	1.23 mV to 17.35 V	1.23 mV to 17.35 V	1.23 mV to 17.35 V	1.23 mV to 17.35 V
dBu	-56 to 27	-56 to 27	-56 to 27	-56 to 27	-56 to 27
dBv	-58.2 to 24.8	-58.2 to 24.8	-58.2 to 24.8	-58.2 to 24.8	-58.2 to 24.8
Controls and indicators (front)					
Power Mode • Channel MUTE buttons • Channel SELECT buttons • Channel Input Signal and CLIP LED Indicators Channel Output and LIMIT LED meters • NEXT, PREV, ID buttons • Control knob • Color Display • Fault Indicator • Pinhole Reset					
Controls and indicators (rear)					
AC Power Disconnect (Locking IEC C-14) AC Power Switch					
Input connectors					
3-pin Euro (green) and Q-LAN Network connectivity Q-LAN Network connectivity					
Output connectors					
8-pin Euro (green)					
GPIO					
GPIO 1-8 = configurable digital/analog, input/output Relay max = 30 VDC at 1 A (30W maximum). Max voltage 220 VDC at 136 mA. 3.3 V 100 mA max (power cycle to reset) GPIO 1-4 max = 5 mA in/out, 3.3 V, 127 Ω series resistor GPIO 5-8 max = 18 mA in/out, 3.3V, 127 Ω series resistor					
Cooling					
Type	Forced air cooling, thermally regulated fan speed, side/rear-to-front airflow				
Operating temperature range	Maximum: -10° - 50° C, recommended: 0° - 35° C, performance may be reduced above 40° C				
Amplifier and load protection					
Short circuit, open circuit, over current, over voltage, thermal, RF, DC fault shutdown, active inrush limiting, on/off muting					
AC power input					
Universal power supply 100 - 240 VAC, 50 - 60 Hz with Active PFC					
AC power input (China Only) 交流电源输入 (仅限中国)					
	100 - 240 VAC 50 / 60 Hz		220 - 240 VAC 50 / 60 Hz	100 - 240 VAC 50 / 60 Hz	220 - 240 VAC 50 / 60 Hz
Dimensions (HWD)					
3.5 in x 19 in x 16 in (89 mm x 483 mm x 406 mm)					
Weight,					
Net	23 lb (10.4 kg)	25 lb (11.3 kg)	26 lb (11.8 kg)	25 lb (11.3 kg)	26 lb (11.8 kg)
Shipping	27 lb (12.2 kg)	29 lb (13.2 kg)	30 lb (13.6 kg)	29 lb (13.2 kg)	30 lb (13.6 kg)
Agency approvals					
UL, CE, RoHS/WEEE compliant, FCC Class B (conducted and radiated emissions)					
Carton contents					
IEC power cord (locking), Quick Start Guide, Euro connectors, amplifier					

Heat Loss and Current-Draw Charts

Heat losses are the thermal emissions from an amplifier while it is operating. It comes from dissipated waste power—i.e., real AC power in minus audio power out. Measurements are provided for various loads at idle, 1/8 of average full power, 1/3 of average full power, and full power, with all channels driven simultaneously. For typical usage, use the idle and 1/8 power figures. This data is measured from representative samples; due to production tolerances, actual heat emissions may vary slightly from one unit to another. Bridged into 8 Ω is equivalent to 4 Ω per channel; into 4 Ω is equivalent to 2 Ω per channel.

Idle

Thermal loss at idle or with very low signal level.

1/8 Power

Thermal loss at 1/8 of full power is measured with a pink noise signal. It approximates operating with music or voice with light clipping and represents the amplifier's typical "clean" maximum level, without audible clipping. Use these figures for typical maximum level operation.

1/3 Power

Thermal loss at 1/3 of full power is measured with 1 kHz sine. It approximates operating with music or voice with very heavy clipping and a very compressed dynamic range.

Full Power

Thermal loss at full power is measured with a 1 kHz sine wave. However, it does not represent any real-world operating condition.

Current Draw

The amount of AC current an amplifier demands while it is operating. Measurements are provided for various loads at idle, 1/8 of average full power, 1/3 of average full power, and full power, with all channels driven simultaneously. The data shown in the following tables is listed for 100 VAC, 120 VAC and 230 VAC operation. For typical usage, use the idle and 1/8 power data.

Current Consumption



NOTE: Thermal Dissipation minimally varies between 100 and 240 VAC. This data is based on all operating voltages (100-240 VAC). High power applications will see benefits in efficiency, power output, and reduced power consumption when operated from 208, 230, 240 VAC mains.

CX-Q 2K4

Output Level	Load	100 VAC Current	120 VAC Mains		230 VAC Mains		Thermal Dissipation	
			AC Current (Amps)	Losses (Watts)	AC Current (Amps)	Losses (Watts)	BTU/h	kcal/h
Standby		0.5	0.5	44	0.4	40	150	38
Mute All		0.8	0.7	31	0.5	35	106	27
Idle		1.1	0.9	101	0.6	98	345	87
1/8 Rated Power (Pink Noise)	100 V / Channel	4.1	3.44	181	1.85	182	618	156
	70 V / Channel	4.1	3.41	179	1.81	178	611	154
	8 Ω / Channel	4.1	3.44	180	1.98	170	614	155
	4 Ω / Channel	3.9	3.25	158	1.97	193	539	136
	2 Ω / Channel	4.9	4.09	247	2.27	247	843	212
1/3 Rated Power (1kHz Sine Wave)	100 V / Channel	7.5	6.26	200	3.26	180	683	172
	70 V / Channel	7.6	6.36	225	3.31	205	768	194
	8 Ω / Channel	7.9	6.6	252	3.44	233	860	217
	4 Ω / Channel	8.7	7.24	316	3.75	293	1079	272
	2 Ω / Channel	9.6	7.97	405	4.11	379	1382	348

CX-Q 4K4

Output Level	Load	100 VAC Current	120 VAC Mains		230 VAC Mains		Thermal Dissipation	
			AC Current (Amps)	Losses (Watts)	AC Current (Amps)	Losses (Watts)	BTU/h	kcal/hr
Standby		0.6	0.5	45	0.4	45	154	39
Mute All		0.8	0.7	32	0.5	36	109	28
Idle		1.1	0.9	102	0.6	100	348	88
1/8 Rated Power (Pink Noise)	100 V / Channel	5.2	4.4	196	2.3	217	669	169
	70 V / Channel	5.3	4.4	199	2.4	191	679	171
	8 Ω / Channel	5.3	4.4	199	2.4	191	679	171
	4 Ω / Channel	5.6	4.7	231	2.5	220	788	199
	2 Ω / Channel	6.1	5.1	288	2.7	258	983	248
1/3 Rated Power (1kHz Sine Wave)	100 V / Channel	10.7	9	256	4.6	216	874	220
	70 V / Channel	11.1	9.3	291	4.8	261	993	250
	8 Ω / Channel	11.1	9.3	291	4.8	261	993	250
	4 Ω / Channel	11.7	9.7	350	5	320	1195	301
	2 Ω / Channel	12.8	10.7	473	5.5	443	1614	407

CX-Q 8K4

Output Level	Load	100 VAC Current	120 VAC Mains		230 VAC Mains		Thermal Dissipation	
			AC Current (Amps)	Losses (Watts)	AC Current (Amps)	Losses (Watts)	BTU/h	kcal/hr
Standby		0.8	0.7	79	0.5	83	270	68
Mute All		0.9	0.8	36	0.6	42	123	31
Idle		1.9	1.6	173	0.9	166	590	149
1/8 Rated Power (Pink Noise)	100 V / Channel	10.4	8.7	370	4.6	340	1263	318
	70 V / Channel	10.6	8.9	382	4.8	360	1304	329
	8 Ω / Channel	10.4	8.7	370	4.6	340	1263	318
	4 Ω / Channel	10.6	8.9	382	4.8	360	1304	329
	2 Ω / Channel	11.6	9.7	472	5.3	452	1611	406
1/3 Rated Power (1kHz Sine Wave)	100 V / Channel	21.6	18	533	9.2	453	1819	458
	70 V / Channel	22.9	19.1	623	9.7	553	2126	536
	8 Ω / Channel	21.6	18.0	533	9.2	453	1819	458
	4 Ω / Channel	22.9	19.1	623	9.7	553	2126	536
	2 Ω / Channel	24.8	20.7	828	10.5	738	2826	712

CX-Q 4K8

Output Level	Load	100 VAC Current	120 VAC Mains		230 VAC Mains		Thermal Dissipation	
			AC Current (Amps)	Losses (Watts)	AC Current (Amps)	Losses (Watts)	BTU/h	kcal/h
Standby		1.0	0.8	44	0.5	42	150	38
Mute All		1.1	0.9	45	0.7	49	153	39
Idle		1.9	1.6	182	0.9	184	621	157
1/8 Rated Power (Pink Noise)	100 V / Channel	4.8	4.0	150	2.1	123	512	129
	70 V / Channel	5.0	4.2	172	2.2	138	587	148
	8 Ω / Channel	5.4	4.5	155	2.2	121	529	133
	4 Ω / Channel	6.2	5.2	236	2.5	195	805	203
	2 Ω / Channel	7.4	6.2	354	3.2	253	1208	304
1/3 Rated Power (1kHz Sine Wave)	100 V / Channel	10.9	9.1	244	4.5	188	833	210
	70 V / Channel	11.6	9.7	316	4.8	247	1079	272
	8 Ω / Channel	11.5	9.6	247	4.5	195	843	212
	4 Ω / Channel	12.6	10.5	423	5.0	259	1444	364
	2 Ω / Channel	15.7	13.1	723	6.0	530	2468	622

CX-Q 8K8

		120 VAC Mains			230 VAC Mains		Thermal Dissipation	
Output Level	Load	100 VAC Current	AC Current (Amps)	Losses (Watts)	AC Current (Amps)	Losses (Watts)	BTU/h	kcal/h
Standby		1.0	0.9	46	0.6	45	157	40
Mute All		1.1	1.0	49	0.7	54	166	42
Idle		2.1	1.7	197	1.0	194	672	169
1/8 Rated Power (Pink Noise)	100 V / Channel	10.3	8.6	347	4.5	317	1184	298
	70 V / Channel	10.6	8.8	378	4.6	327	1290	325
	8 Ω / Channel	10.4	8.6	360	4.5	313	1229	310
	4 Ω / Channel	12.8	10.7	536	5.1	395	1829	461
	2 Ω / Channel	7.4	6.2	346	3.2	254	1181	298
1/3 Rated Power (1kHz Sine Wave)	100 V / Channel	21.5	17.9	474	9.2	386	1618	408
	70 V / Channel	21.9	18.2	521	9.2	416	1778	448
	8 Ω / Channel	21.8	18.2	478	9.1	376	1631	411
	4 Ω / Channel	26.9	22.4	858	9.9	498	2928	738
	2 Ω / Channel	16.2	13.5	742	6.5	594	2532	638



QSC Self Help Portal

Read knowledge base articles and discussions, download software and firmware, view product documents and training videos, and create support cases.

<https://qscprod.force.com/selfhelpportal/s/>

Customer Support

Refer to the Contact Us page on the QSC website for Technical Support and Customer Care, including their phone numbers and hours of operation.

<https://www.qsc.com/contact-us/>

Warranty

For a copy of the QSC Limited Warranty, visit the QSC website at www.qsc.com

Q-SYS™ Page Stations

Networked Page Station User Manual

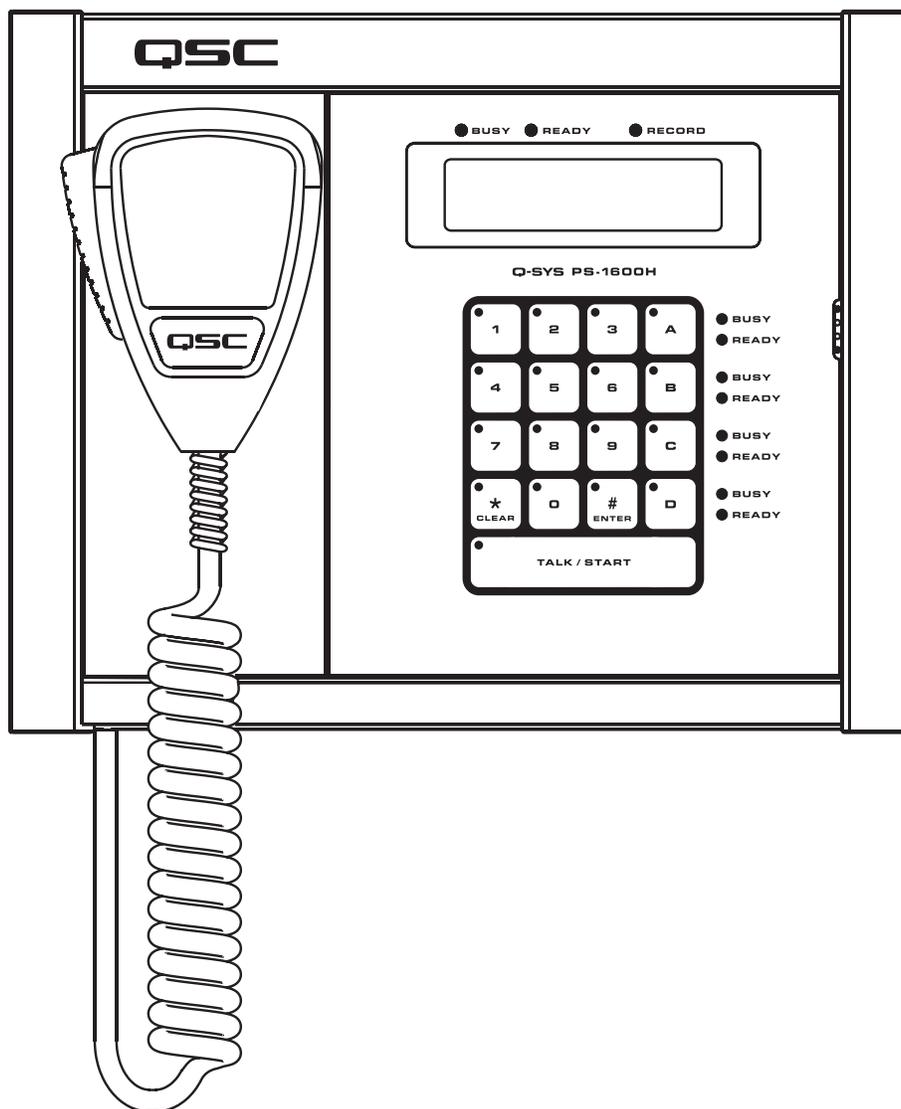


PS-1600(H/G) – Sixteen-Button Page Station

PS-1650(H/G) – Sixteen Command-Button Page Station

PS-800(H/G) – Eight Command-Button Page Station

PS-400(H/G) – Four Command-Button Page Station



TD-000324-00-A



IMPORTANT SAFETY PRECAUTIONS AND EXPLANATION OF SYMBOLS



 **WARNING!** The term "WARNING!" indicates instructions regarding personal safety. If the instructions are not followed the result may be bodily injury or death.

 **CAUTION!** The term "CAUTION!" indicates instructions regarding possible damage to physical equipment. If these instructions are not followed, it may result in damage to the equipment that may not be covered under the warranty.

IMPORTANT! The term "IMPORTANT!" indicates instructions or information that are vital to the successful completion of the procedure.

NOTE: The term NOTE is used to indicate additional useful information.

 The intent of the exclamation point within an equilateral triangle is to alert the user to the presence of important safety, and operating and maintenance instructions in this manual.

 The intent of the lightning flash with arrowhead symbol in a triangle is to alert the user to the presence of un-insulated "dangerous" voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to humans.

EN

Safeguards

Electrical energy can perform many useful functions. This unit has been engineered and manufactured to assure your personal safety. Improper use can result in potential electrical shock or fire hazards. In order not to defeat the safeguards, observe the following instructions for its installation, use and servicing.



1. To reduce the risk of electric shock, do not remove the cover. No user-serviceable parts inside. Refer servicing to qualified service personnel.
2. Disconnect all power before servicing.
3. To prevent fire or electric shock, do not expose this equipment to rain or moisture.
4. Maximum operating ambient temperature is 50°C (122°F).
5. Power must be supplied to the unit from an IEEE 802.3af compliant power sourcing equipment (PSE) using data communications cabling having a rating of category 5e or greater (CAT-5e) or from the optional +24 VDC/500 mA power supply.
6. Do not use any liquid cleaners on the Page Station. Use only static-free electronic cleaning cloths.

RoHS STATEMENT

The Q-Sys Page Station products are in compliance with European Directive 2002/95/EC – Restriction of Hazardous Substances (RoHS).

The Q-Sys Page Station products are in compliance with “China RoHS” directives. The following chart is provided for product use in China and its territories:

Q-Sys Page Station 系列						
部件名称 (Part Name)	有毒有害物质或元素 (Toxic or hazardous Substances and Elements)					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(vi))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
电路板组件 (PCB Assemblies)	X	0	0	0	0	0
机壳装配件 (Chassis Assemblies)	X	0	0	0	0	0

0: 表明这些有毒或有害物质在部件使用的同类材料中的含量是在 SJ/T11363_2006极限的要求之下。
 0: Indicates that this toxic or hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement in SJ/T11363-2006.

X: 表明这些有毒或有害物质在部件使用的同类材料中至少有一种而含量是在SJ/T11363_2006极限的要求之上。
 X: Indicates that this toxic or hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement in SJ/T11363-2006.

EN

Unpacking

Package Contents

1. Q-Sys Page Station
2. Hardware User Manual
3. Connector ship kit
 - a. One 6-pin Euro plug
 - b. Two 3-pin Euro plugs
 - c. One 2-pin Euro plug
 - d. Four gangbox screws
 - e. Microphone strain-relief clamp
 - f. Hand-held microphone (H models)
 - g. Gooseneck microphone (G models)
4. Microphone ship kit "H" Models
 - a. One handheld microphone
 - b. One microphone strain-relief clamp
 - c. one strain-relief clamp screw
5. Microphone ship kit "G" Models
 - a. One gooseneck microphone
6. Warranty card

Introduction

Q-Sys is a platform of software and hardware products providing system designers and operators with the tools necessary to design, configure, and manage medium to large scale audio systems. In addition to the primary signal processing and system management components that make up a Q-Sys audio system, the Q-Sys solution includes peripheral components that offer services such as remote management and paging. This manual addresses the features and specifications related to the hardware components of the Q-Sys networked page station peripherals.

The Q-Sys Page Stations are network devices that provide paging services for a Q-Sys audio system. Like all Q-Sys system components, functionality of the Page Stations are defined and configured by the audio system designer using Q-Sys Designer. Q-Sys Designer is Windows-based software used to design, and manage, a Q-Sys system. (For information about configuring the Page Station, refer to the Q-Sys Designer Online Help.) Once a Q-Sys design file has been created, it is then deployed to a Q-Sys Core over the Q-LAN network. The Q-Sys Core is the centralized processing entity for the Q-Sys system. And as such, the Q-Sys Core pushes all necessary design and configuration information to each end node in the system including Page Station peripherals.

The Page Stations connect to a Q-Sys system by joining the Q-LAN network. Once connected to the network, a Q-Sys Core can automatically discover the Page Station, assimilate it into the Q-Sys system and push the appropriate configuration to the Page Station, as defined in the Q-Sys Designer design file. Once assimilated into the Q-Sys system, the Page Station can be operated entirely via its front panel user interface (UI) and microphone without further need of a design computer in the system.

Page Station Description

The Q-Sys Page Station is a networked page station that connects to a Q-Sys system via Q-LAN. All audio deliveries to and from the Page Station use the Q-LAN network. The Page Station provides two Q-LAN network interfaces for connecting to the Q-Sys system. This allows Page Stations to connect to two switch ports or to be deployed on two separate networks to support a variety of redundant operation modes for mission critical applications.

The Q-Sys Page Station comes in four different models: PS-400, PS-800, PS-1600, and PS-1650. Each of these models has a handheld microphone version (indicated by an "H" in the Model number), and a gooseneck microphone version (indicated by a "G" in the Model number). The differences are indicated in the table below.

Model	Total Buttons	Command Buttons	Keypad Commands	Security
PS-400	4	Four Buttons	No	No
PS-800	8	Eight Buttons	No	No
PS-1600	16	Four Buttons	Yes	Yes
PS-1650	16	Sixteen Buttons	No	No

- Command Buttons - Assigns Commands to the available buttons.
- Keypad Commands - Has a numeric keypad; you can specify the Commands that can be entered using the keypad.
- Security - Sets Automatic logoff timeout, logon requirements, and restricts Users. A Page Station must have a keypad to have security requirements.

Power

In addition to audio and data deliveries via Q-LAN, the Page Station is designed to receive its power from the Q-LAN network via IEEE 802.3af compliant power sourcing equipment (PSE). This technology is better known as PoE (Power over Ethernet). A PSE node can be an appropriate PoE enabled switch port or a PoE enabled power injecting device. When both Q-LAN ports on the Page Station are connected to PoE enabled sources, the Page Station enters a load sharing mode that balances the power draw from each source to supply the page station. Should a port failure event occur, the page station draws the full power load required from the remaining healthy PoE enabled source. The Page Station can also be operated from a separate +24 VDC power supply in applications where PoE power is unavailable or undesirable.

User Interface

The Q-Sys Page Stations provide a front-panel user interface that includes a 16-, 8-, or 4-button capacitive-touch keypad. The keypad offers visible feedback and tactile cues, yet there are no buttons or membranes to wear out. Paging status, operational detail and alerts are also reported via illuminated status indicators and the station's 240x64 monochrome graphics LCD.

Microphones

For Page Stations with the letter H in the model number, voice input is provided through a push-to-talk, dynamic paging microphone. A unique magnetic docking system and cable strain relief allow flexibility in microphone placement when not in use. The letter G in the model number indicates a dynamic gooseneck microphone.

Inputs and Outputs

The rear panel of the Page Station offers a variety of auxiliary audio I/O interfaces and GPIO for expanding its capability. The auxiliary audio inputs can accommodate accessories such as a secondary microphone or an MP3 audio source. The Page Station auxiliary output can drive an amplifier input, powered loudspeaker or other destination device. And the Page Station GPIO interface can be configured to use external events to affect paging operation or to be the source of events to affect external control systems.

The Q-Sys Q-LAN Network

The Q-Sys solution is designed to be deployed on QSC's high performance Q-LAN network (Figure 1). Q-LAN is a proprietary time-sensitive gigabit Ethernet network implementation that bundles several industry standard protocols into a data transport solution appropriate for live performance multimedia environments.

Q-LAN offers gigabit data rates, device and network redundancy, 32-bit floating point audio data transfers, and low-latency support on local area network deployments. Accurate synchronization of end nodes and high-quality clock distribution are built into the Q-LAN solution using the IEEE-1588 Precision Time Protocol. Discovery of end nodes and auto-configuration of end nodes are all included in the solution using industry standard protocols over a standards-based IP network implementation that utilizes off-the-shelf hardware components.

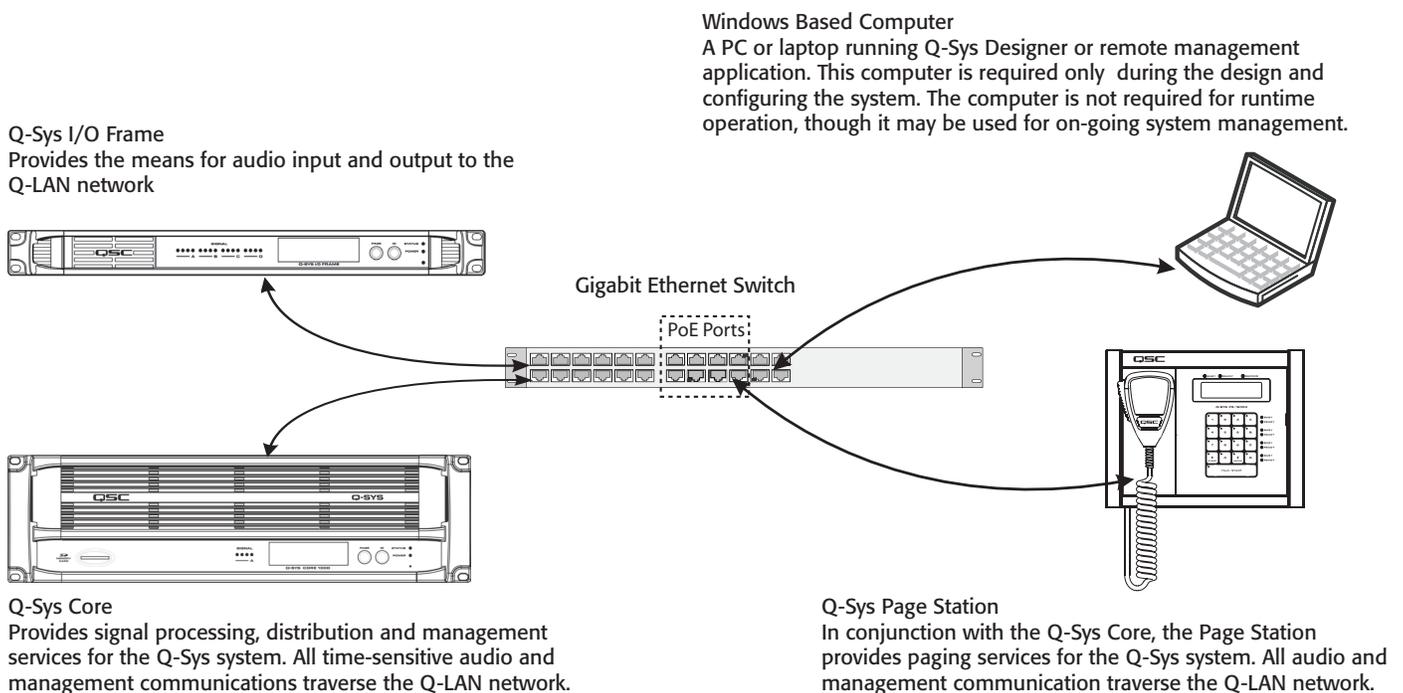
Figure 1 shows a very simple Q-LAN network implementation with a Q-Sys Core, a Q-Sys I/O Frame, Ethernet switch, and a Q-Sys Page Station.

All devices are connected to a managed Gigabit Ethernet switch that includes the appropriate QoS (Quality of Service) suitable for a high-performance gigabit network to support multimedia applications. The network switch is also a PSE device, offering a number of PoE ports to power the Q-Sys Page Station devices.

The Page Stations can be configured via Q-Sys Designer to source page announcements or prerecorded audio streams to the Q-Sys Core. The Q-Sys Core can then redistribute these announcements or audio streams throughout the facility by forwarding them (with or without additional signal processing) to Q-Sys I/O Frames. The Q-Sys I/O Frames can then drive the inputs of QSC amplifiers or powered loudspeakers.

Note that a PC or laptop is only required during initial configuration of the system or when a PC is the preferred means for providing on-going management services to the system designer or operator.

There are no special unpacking precautions. However, it is recommended that you keep the original packing materials for reuse in the rare event that service is required. If service is required and the original packing material is not available, ensure that the unit is adequately protected for shipment (use a strong box of appropriate size, sufficient packing/padding material to prevent load shifting or impact damage) or call QSC's Technical Services Group for replacement packing material and a carton.

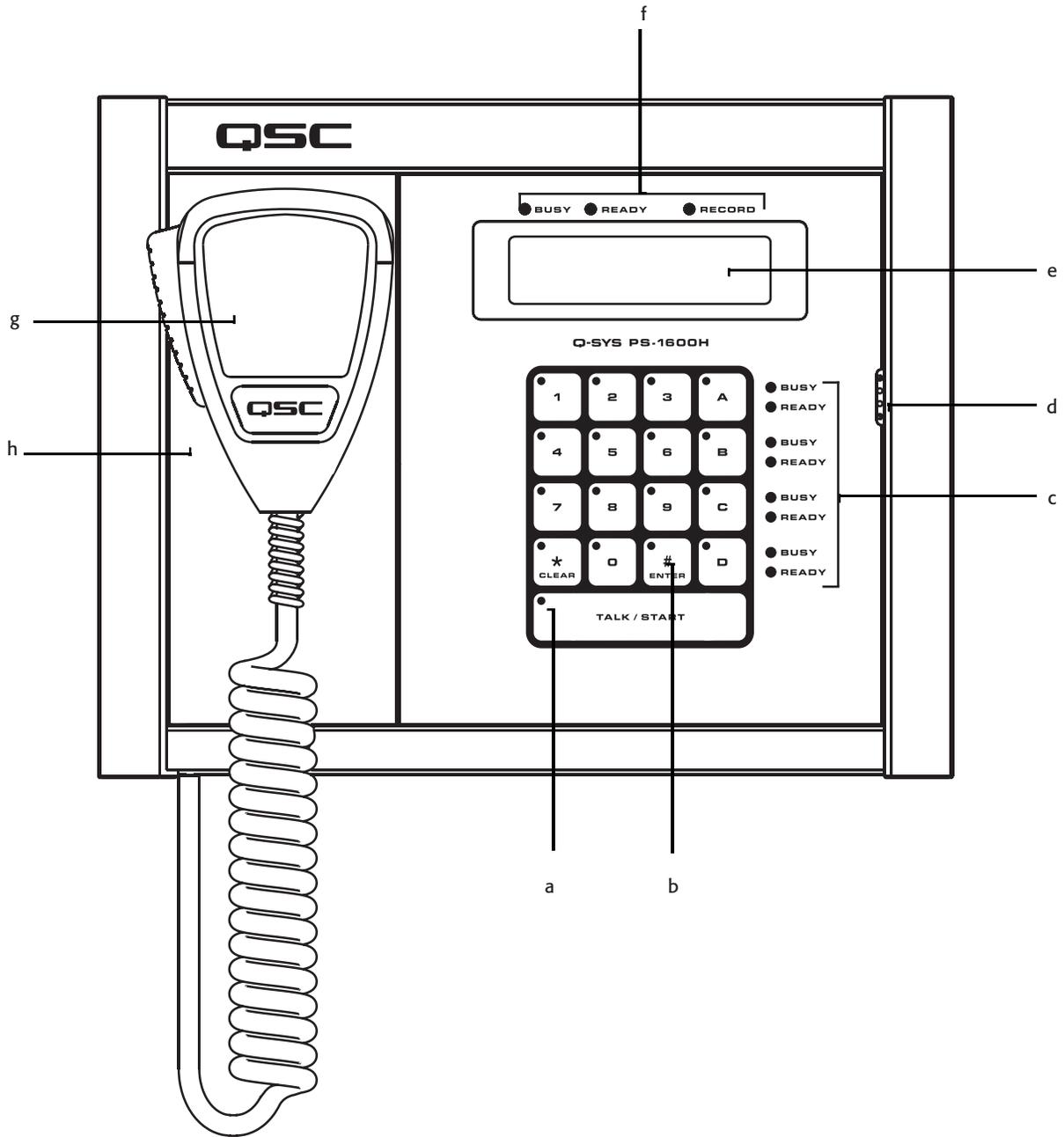


– Figure 1 –

Features

Q-Sys PS-1600H Front Panel

Refer to Figure 2. To see the keypad configurations of Page Station models PS-1650, PS-800, and PS-400 , see page 15.



– Figure 2 –

- a. LED touch indicators
- b. Capacitive Touch Keypad
- c. Busy and Ready Indicators for Command Buttons
- d. Button Monitor Speaker
- e. LCD – 240 x 64 Monochrome Graphics Display
- f. Global Busy, Ready and Record Indicators
- g. Dynamic Push-to-talk Microphone (PS-XX00H only) Gooseneck models use the Talk/Start button to make the page.
- h. Magnetic Microphone Docking Plate (PS-XX00H only)

LED Touch Indicators

When a key is pressed, the LED on that key illuminates to indicate that it was pressed.

Capacitive Touch Keypad

- Command buttons can be assigned one of several different types of Commands using the Q-Sys Designer Administration Interface. Once assigned, you just have to press the appropriate Command button to initiate the action.
- Use the number keys to enter Command Codes to initiate PA System actions (PS-1600 only)
- Use the number keys to enter the User PIN (if the Page Station requires user logon) (PS-1600 only)
- Press Clear (*) to clear keyed-in Codes prior to pressing Enter (#). (PS-1600 only)
- Press Clear (*) twice to log off of the Page Station. (PS-1600 only)
- Press Enter (#) to begin a page once the Code is entered. (PS-1600 only)
- Press Enter (#) to logon once the User PIN is entered. (PS-1600 only)

Talk/Start Button

- Tap the Talk/Start button one time to begin a page (tap-on). Tap the button a second time to end the page (tap-off). If you tap-off during the page, the page is logged as completed successfully. If you tap-off during the preamble, the page is logged as cancelled.
- Press and hold the Talk/Start button to begin a page. Release the button to end the page. If you release the button during the page, the page is logged as completed successfully. If you release the button during the preamble, the page is logged as canceled.
- Double-tap the Talk/Start button to clear an entry. (equal to pressing the Clear (*) button)

Busy and Ready Indicators for Command Buttons

- The red Busy LED indicates that the Command is in use by another Page Station.
- The green Ready LED indicates that you can initiate that Command.

Button Monitor Speaker

Produces a "beep" when a button is pressed.

LCD – 240 x 64 Monochrome Graphics Display

The LCD displays various messages including user instructions, the status of the Page Station, status of pages, and so on. The information displayed varies between models.

Global Busy, Ready, and Record Indicators

- Busy (red) illuminates when the selected Command has a queuing mode of Live, and one or more of the PA Zones associated with the Command is in use by another station.
- Ready (green) illuminates when the selected Command has a queuing mode of Live, and all of the PA Zones associated with your Command are available for use. If the queuing mode of the Command is Automatic, the Ready LED is illuminated at all times because the page is recorded if the zones are not available. In Delayed queuing mode the Ready LED is illuminated at all times because the page is recorded regardless of zone status.
- Record (red) illuminated indicates that the page you are making is being recorded. The Queuing method for your page must be Automatic, and one or more of the PA Zones associated with the page must be in use, or the queuing mode of the Command is Delayed. The message will be played once all associated PA Zones are free.

Microphone

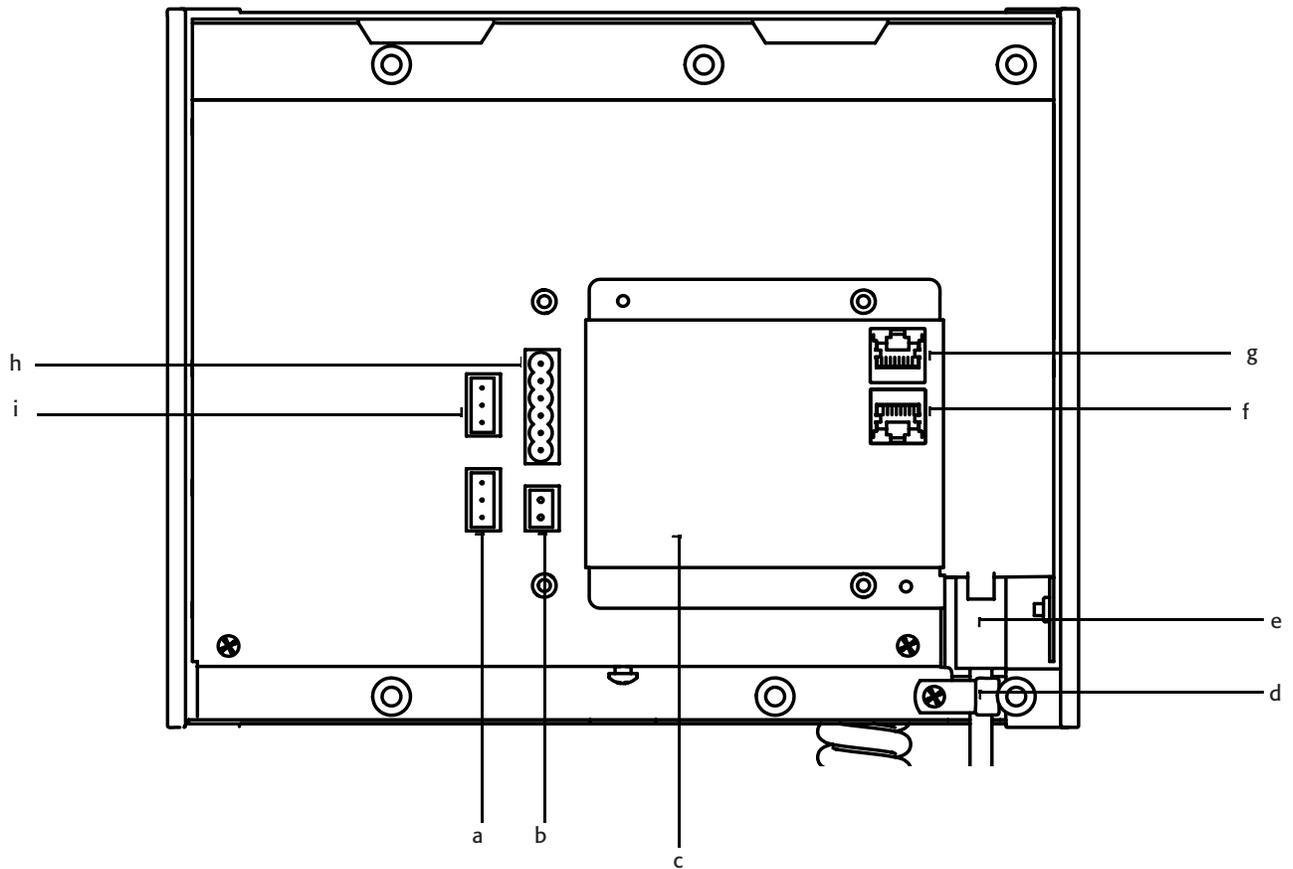
A Dynamic Push-to-Talk microphone is available with handheld model Page Stations only. The handheld models are designated by the letter H in the model number. Gooseneck microphone models must use the TALK/START button to make the page. Gooseneck models are designated by the letter G in the model number.

Magnetic Microphone Docking Plate

The Q-Sys Page Station uses a magnetic docking plate to hold the handheld microphone. Just place the back of the microphone up against the plate and let it go! Available with handheld microphone models only.

Q-Sys Page Station Rear Panel

Refer to Figure 3.



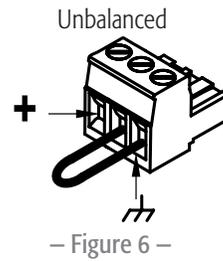
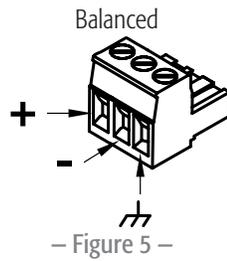
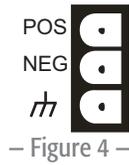
EN

– Figure 3 –

- a. MIC LINE (In) (three-pin Euro connector)
- b. AUX POWER (two-pin Euro connector)
- c. Connector labels
- d. Strain Relief (Handheld only)
- e. Microphone Connector – RJ45 (Handheld only)
- f. Q-Sys LAN B (RJ45 connector)
- g. Q-Sys LAN A (RJ45 connector)
- h. GPIO connector (six-pin Euro connector)
- i. LINE OUT (three-pin Euro connector)

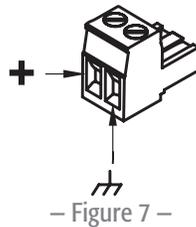
MIC/LINE In

The Page Station rear panel includes an auxiliary MIC/LINE input for support of a secondary microphone or other audio source. The MIC/LINE accepts a Euro style (Phoenix) three-terminal plug, included in the Page Station package. Follow the Page Station rear panel pin-out labels (Figure 4) for wiring. Figure 5 and Figure 6 indicate appropriate termination practices for balanced and unbalanced applications.

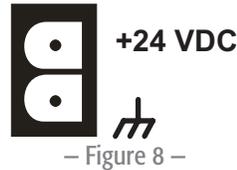


AUX POWER

The Page Station rear panel includes a receptacle for connecting a +24 VDC/500 mA power source. This is an optional supply source to power the Page Station, and can be used as the only power source or as a backup power source should PoE fail. The power receptacle on the rear panel of the Page Station accepts a Euro style (Phoenix) two-terminal plug (Figure 7), included in the Page Station package. Follow the Page Station rear panel pin-out label (Figure 8) when connecting to this receptacle.



AUX POWER



CAUTION! The power supply used to provide 24 VDC power to the unit shall be a UL Listed ITE power supply, marked LPS, or a UL Listed direct plug-in power unit, marked Class 2, with a rated output of 24 VDC/500 mA.

Microphone Connector

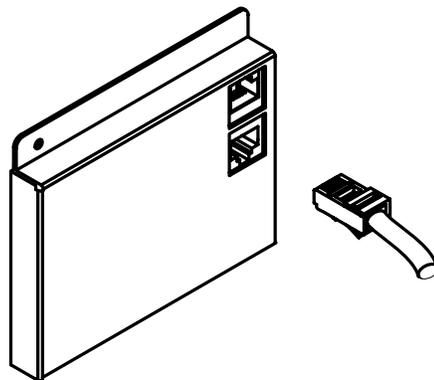
- RJ45 connector for hand-held microphone models.
- XLR connector for gooseneck microphone models.

Strain relief

Secures the cord of the handheld microphones to remove any stress to the RJ45 connector.

Q-LAN Network

Connect one end of a data communications cable (CAT-5e rating or better) terminated with an RJ45 connector into the LAN A (and optionally the LAN B) connector on the rear panel of the Q-Sys Page Station (Figure 9). Ensure that the lock tab on the cable's connector engages with the RJ45 connector on the rear panel. Ensure that the mating network switch port offers IEEE 802.3af compliant power if powering the Page Station via PoE. Refer to the Q-Sys online help for Networking details.

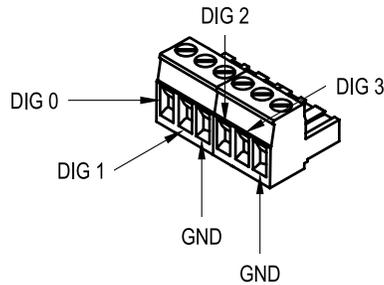


GPIO Connector

The Page Station rear panel includes a six-terminal receptacle (Figure 10, and Figure 12) that provides various GPIO (General Purpose Inputs and Outputs) that allows the Page Station to control or be controlled by a variety of external products. The Page Station GPIO receptacle accepts Euro style (Phoenix) two, three or six-terminal plugs. A six-terminal plug is included in the Page Station ship kit. Follow the Page Station rear panel pin out labels (Table 1) when connecting to the GPIO receptacle. Refer to the Q-Sys online help for GPIO details.



– Figure 10 –



– Figure 11 –

Signal Name	Description
Dig 0	Digital pin
Dig 1	Digital pin
GND	Ground
Dig 2	Digital pin
Dig 3	Digital pin
GND	Ground

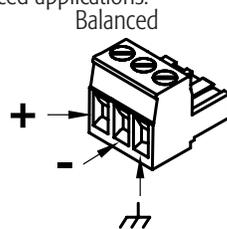
– Table 1 –

LINE OUT

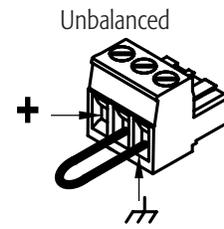
The Page Station rear panel includes an auxiliary Line Output receptacle to drive an amplifier or console input directly. The Line Output may be used for mission critical or alternative event applications. The receptacle accept a Euro style (Phoenix) three-terminal plug, which are included in the Page Station package. Follow the Page Station rear panel pin-out labels (Figure 12) when connecting to the receptacle. Figure 13 and Figure 14 indicate appropriate termination practices for balanced and unbalanced applications.



– Figure 12 –



– Figure 13 –



– Figure 14 –

Page Station Configuration and Setup

Q-Sys Designer is the software application required to configure your paging system. Refer to the Q-Sys Designer online help for details.

This section covers connecting the hardware to the Q-LAN network, powering up, and re-setting the Page Station to the factory defaults.

Optional Connections

The following are optional, and should be connected prior to powering up the Page Station.

- MIC/LINE (3-Pin Euro)
- LINE OUT (3-Pin Euro)
- GPIO
- AUX POWER (If you make this connection and plan to use PoE, do not turn the auxiliary power supply on until you have made the network connection with PoE turned on. See About PoE and AUX POWER, page 11)

Required Connections

- LAN-A – Connect one end of a CAT-5e cable with an RJ45 connector to the LAN-A connector on the Page Station. Connect the other end of the cable to the Q-LAN network.
- Connect LAN-B in the same way if you are going to be using LAN-B.

When power is supplied to the Page Station it may take several minutes to boot fully. The message "Q-Sys not configured" displays. This message remains until the network details are configured for the Page Station and it is included in a valid paging design.

About PoE and AUX POWER

There is no On/Off switch for the Page Station, making the order in which the power is connected important. The following information describes the events when power is lost based on which power is supplied to the Page Station first.

- If AUX POWER is supplied first:
 - The Page Station boots using AUX POWER.
 - If PoE is then connected, it is not used.
 - If AUX POWER fails, power to the Page Station is lost, the Page Station re-boots using PoE.
 - If PoE fails with AUX POWER still available, there is no effect - PoE was not being used.
- If PoE is supplied first:
 - The Page Station boots using PoE.
 - If AUX POWER is then connected, it is not used.
 - If PoE fails, the Page Station switches to AUX POWER. There is no re-boot.
 - If AUX POWER fails with PoE still available, there is no effect AUX POWER was not being used.
 - If PoE returns, the Page Station remains on AUX POWER.

Using the Page Station Menu

To access the menu, when the "Q-Sys not configured" message is displayed, press and hold the Talk/Start button until the first item in the menu is displayed. Press the Talk/Start button to sequence through the menu pages. The following list shows the six pages with factory default settings. The factory settings are slightly different for each Page Station, below is an example.

- Q-Sys Page Station
 - Model PS-1600H
- Name:
 - Page Station 40ab
- LAN A
 - IP Addr 169.254.36.146
 - Netmask 255.255.0.0
- LAN B
 - IP Addr 169.254.55.4
 - Netmask 255.255.0.0
- Firmware Version
 - 2.0.111
- Copyright (C) 2010
 - QSC Audio Products, LLC.

Reset the Page Station to Factory Defaults

1. If the Page Station is part of a running design, do the following:
 - a. In Q-Sys Designer, from the main menu, select **File > Load from Core and Connect**. Select the design containing the Page Station you wish to reset.
 - b. From the main menu, select **Tools > Configurator...**
 - c. Select the Page Station you wish to reset.
 - d. Change the hostname of the Page Station. "Q-Sys not configured" displays on the Page Station LCD.
2. Follow the procedure "Using the Page Station Menu" on page 11 to access the menu.
3. Press the Talk/Start button to access the Name, LAN-A, or LAN-B menu page.

4. Insert a reset tool (a paperclip works) into the small hole on the right side of the Page Station to press the reset button. "Clear settings in 10, 9, ..." displays on the Page Station LCD.
5. Hold the reset button until the count down gets to 0.
6. Release the reset button. The Page Station is reset to factory default settings.

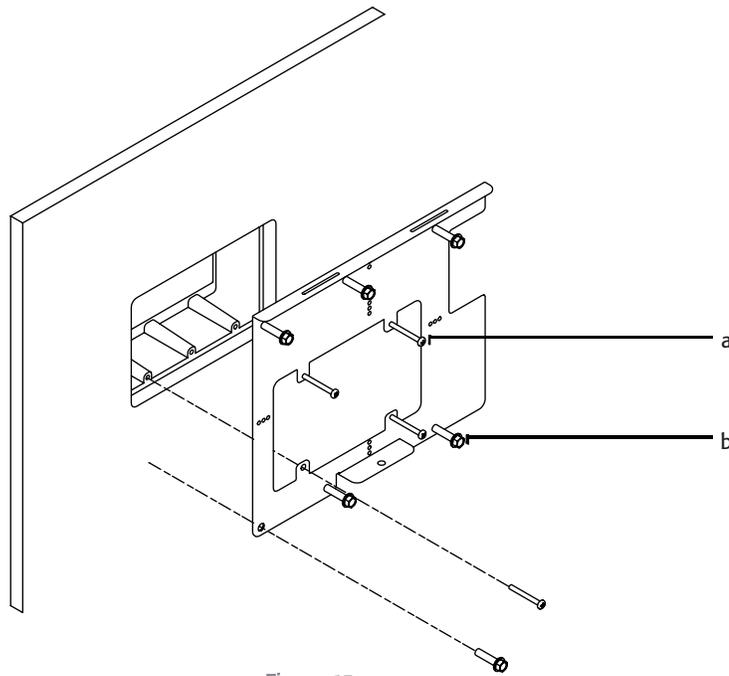
Wall-mounting the Page Station

NOTE: The product shall be installed in accordance with the applicable code requirements.

Q-Sys Page Stations are designed to be mounted on a wall or podium with an appropriate cutout and cavity to allow all cables and power sources to connect to the Page Station rear panel with adequate stress relief. The included Mounting Bracket is designed to mate with a standard triple-gang U.S. electrical box, but does not need one to be mounted. Using an electrical box provides contractors with the option of pre-wiring, then installing the Page Station at a later time; if an electrical box is used, its dimensions should meet the NEMA standards. The Mounting Bracket should be firmly attached to the wall using the electrical box (if installed) for alignment only.

1. Remove the Mounting Bracket from the Page Station. It is secured by one screw on the bottom of the Page Station. Set the screw aside for later use.
2. Route all Page Station wiring and connectors through the center of the Mounting Bracket.

EN



– Figure 15 –

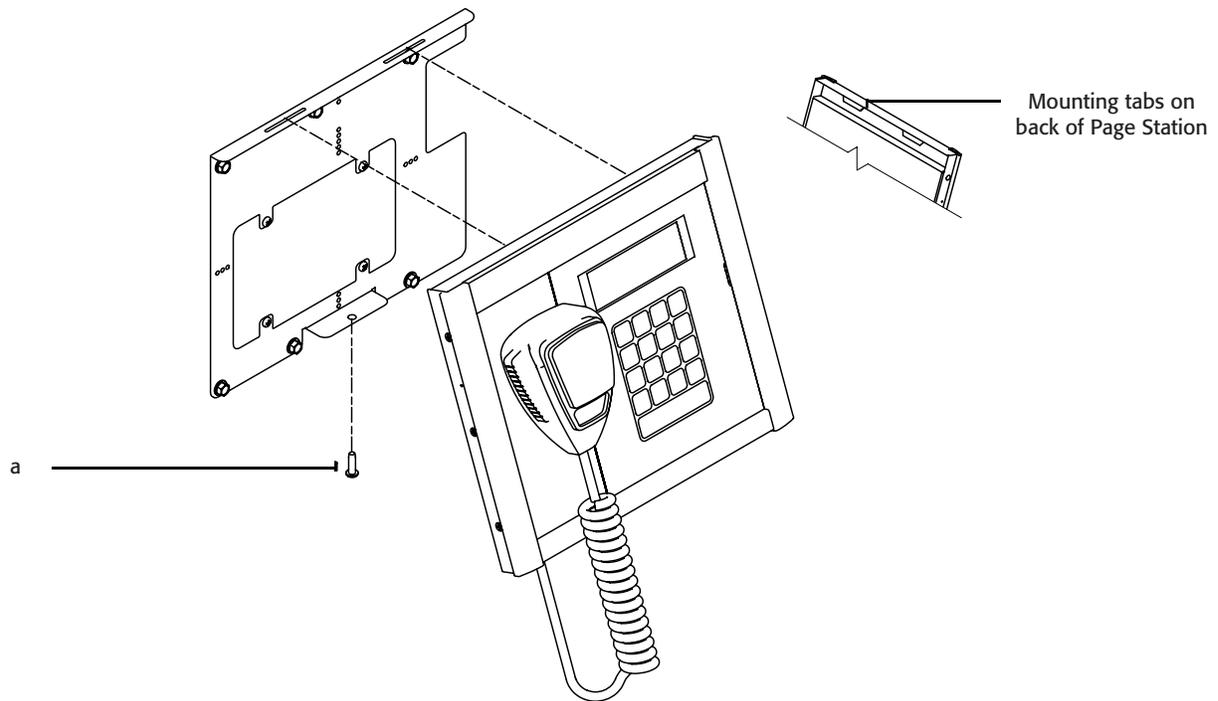
a. Four included screws for aligning the Mounting Bracket to the triple-gang box.

b. Six user-supplied screws, appropriate for mounting surface

3. Use four (included) (Figure 15 a) to align and mount the Mounting Bracket to the triple-gang electrical box if you are using one.
4. Use six screws (not included) (Figure 15 b) to secure the Mounting Bracket to the wall. The six screws shall be appropriate for the surface to which the Page Station is mounted.

IMPORTANT!: These six screws are required, even when using the triple-gang electrical box.

5. Connect all Page Station wiring to the proper connectors on the Page Station. Refer to "Q-Sys Page Station Rear Panel" on page 8.



– Figure 16 –

6. Tilt the top of the Page Station back and install the Page Station onto the Mounting Plate by aligning the two tabs on the Page Station with the two slots on the Mounting Plate. Refer to Figure 16.
7. With the Page Station still tilted, carefully bundle the wiring back into the wall (or triple-gang electrical box).
8. Push the bottom of the Page Station to the wall.
9. Install and tighten the screw (Figure 16a) removed in step 1, through the Mounting Bracket up into the Page Station.

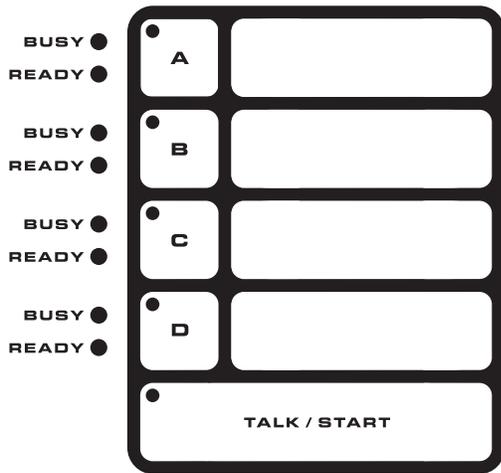
Specifications

Hardware	
Dimensions (H/W/D)	10.37" x 8.3" x 1.5" (263.4 mm x 210.8 mm x 38.1 mm)
Line voltage requirements	IEEE 802.3af power or +24 VDC/500 mA
Accessories included	Hardware User Manual, Accessory ship kit, Warranty card
Audio Channel Capacity	
Line Inputs	2
Line Outputs	1
Front Panel Controls	
Paging keypad	Capacitive touch keypad, PTT momentary button
Microphone	PTT momentary switch (Handheld models only)
Front Panel Connectors	
Gooseneck microphone	XLR (Gooseneck models only)
Front Panel Indicators	
Talk, Ready, Busy	Bi-color LEDs (red/green)
Keypad button activity	Green LEDs
LCD	240x64 monochrome graphics display
Rear Panel Connectors	
Hand-held microphone	RJ45
Q-LAN Network LAN A	RJ45 1000 Mbps only
Q-LAN Network LAN B	RJ45 1000 Mbps only
DC power +24 VDC inlet	2-pin Euro receptacle
Line Input	3-pin Euro receptacle
Line Output	3-pin Euro receptacle
GPIO	6-pin Euro receptacle
Line Input	
Dynamic range	
Unweighted	>115 dB
A-weighted	>118 dB
Distortion (20 Hz – 20 kHz, all sensitivities)	
+4 dBu (max)	<0.009% THD+N
2 dB below clip (max)	<0.009% THD+N
Crosstalk (20 Hz – 20 kHz)	
Inter-channel (max)	>75 dB
Inter-channel (typ)	>90 dB
Intra-channel (max)	>85 dB
Intra-channel (typ)	>100 dB
Frequency response	
20 Hz – 20 kHz (max)	± 0.5 dB
20 Hz – 20 kHz (typ)	± 0.2 dB
Input impedance	
Balanced (nominal)	10k ohms
Unbalanced (nominal)	10k ohms
Common mode rejection:	
20 Hz – 20 kHz (min)	>54 dB
20 Hz – 20 kHz (typ)	>60 dB
Input sensitivities:	
V _{rms}	1.5, 3, 9, 18
dBu	5.7, 11.8, 21.3, 27.3
dBv	3.5, 9.5, 19.1, 25.1
Line Output	
Dynamic range	
Unweighted	>112 dB
A-weighted	>115 dB
Crosstalk (20 Hz – 20 kHz)	
Inter-channel (max)	>75 dB
Inter-channel (typ)	>90 dB
Intra-channel (max)	>85 dB
Intra-channel (typ)	>100 dB
Mute	Infinite attenuation

– Table 2 –

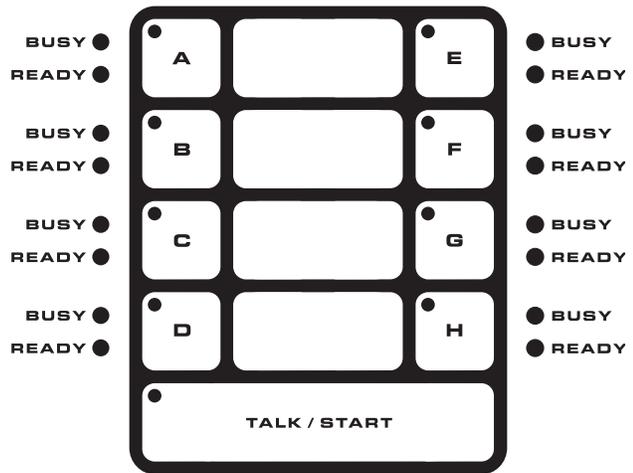
Keypad Configurations

Q-SYS PS-400



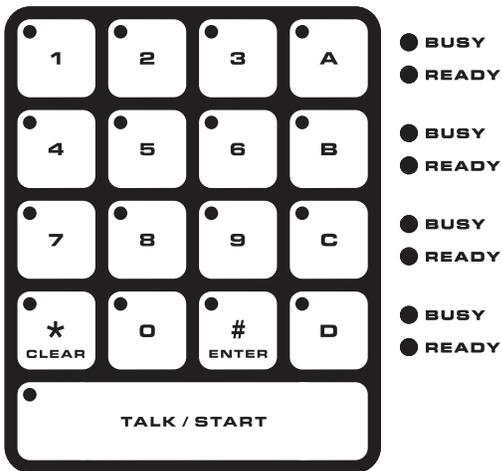
– Figure 17 –

Q-SYS PS-800



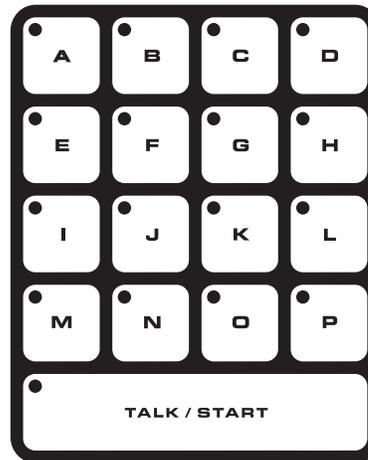
– Figure 18 –

Q-SYS PS-1600H



– Figure 19 –

Q-SYS PS-1650



– Figure 20 –

EN



Mailing Address:

QSC Audio Products, LLC
1675 MacArthur Boulevard
Costa Mesa, CA 92626-1468 USA

Telephone Numbers:

Main Number: (714) 754-6175
Sales & Marketing: (714) 957-7100 or toll free (USA only) (800) 854-4079
Customer Service: (714) 957-7150 or toll free (USA only) (800) 772-2834

Facsimile Numbers:

Sales & Marketing FAX: (714) 754-6174
Customer Service FAX: (714) 754-6173

World Wide Web:

www.qscaudio.com

E-mail:

info@qscaudio.com
service@qscaudio.com

Installation Guide

EXPLANATION OF TERMS AND SYMBOLS

The term "**WARNING!**" indicates instructions regarding personal safety. If the instructions are not followed the result may be bodily injury or death.

The term "**CAUTION!**" indicates instructions regarding possible damage to physical equipment. If these instructions are not followed, it may result in damage to the equipment that may not be covered under the warranty.

The term "**IMPORTANT!**" indicates instructions or information that are vital to the successful completion of the procedure.

The term "**NOTE**" is used to indicate additional useful information.



The intent of the lightning flash with arrowhead symbol in a triangle is to alert the user to the presence of un-insulated "dangerous" voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to humans.



The intent of the exclamation point within an equilateral triangle is to alert the user to the presence of important safety, and operating and maintenance instructions in this manual.

The SOLAS AC FILTER ENHANCEMENT (SAFE) is for use in "Safety of Life at Sea" applications that use QSC CX Amplifiers and Q-Sys Core 1000, 1100, 3000, 3100, and 4000 devices. The SAFE provides a noise filter for the AC input to the QSC Cores and CX Amplifiers.

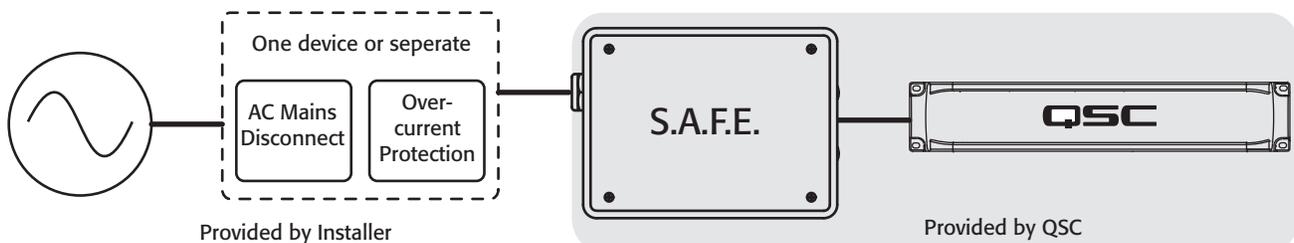
Packing List

Provided by QSC

1. Filter Assembly
2. M4 Ring Terminal, 16-14 AWG (3)
3. 35mm DIN Rail Clip, M4 X 0.7mm (2)
4. M4 Panhead Screw (2)
5. Retainer Clip
6. IEC AC Power Cable

Provided by Installer

1. AC Mains Disconnect device / Over-current Protection device
 - a. 240 V actuated at 8 A
 - b. 120 V actuated at 15 A).
2. Three-conductor cable
 - a. 240 V / minimum cross-sectional area of 1.25 mm² (16 AWG)
 - b. 120 V / minimum cross-sectional area of 1.5 mm² (14 AWG)



– Figure 1 –



Installation



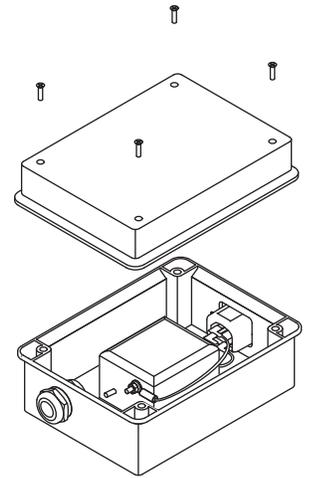
WARNING! Do not connect any of the components to the AC source until installation is complete.

Mount the SAFE Device

You can mount the SAFE device vertically or horizontally, to a DIN rail or other surface. This procedure covers mounting with a DIN rail.

Figure 3 shows the box in the horizontal orientation. If you want to mount the box vertically, you must remove the two Phillips screws (2) and the IEC connector (1) to gain access to one of the holes.

1. Remove the four Phillips screws holding the top on the SAFE device, (Figure 2)
2. Use a punch to open two holes (vertical or horizontal) in the bottom of the box.

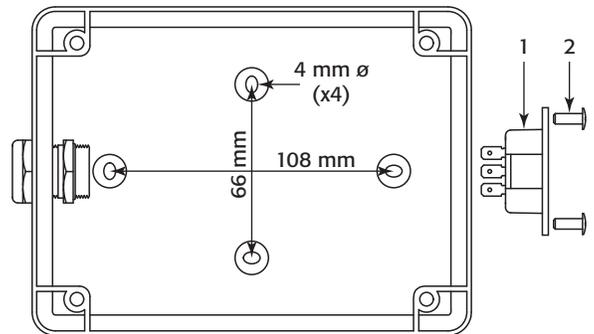


– Figure 2 –



NOTE: The box (2) in Figure 4 is not shown to proportion.

3. Insert one M4 panhead screw (1) through the bottom of the box (2) and into the screw hole of the DIN clip (3). Tighten the screw.
4. Repeat the operation for the second DIN clip. Make sure both clips are oriented the same way.
5. Tilt the box (2) slightly and place one end of the clip (3) onto one side of the DIN rail (4). Make sure both clips are engaged with the DIN rail.
6. Press the box down so that both clips snap into place on the DIN rail.

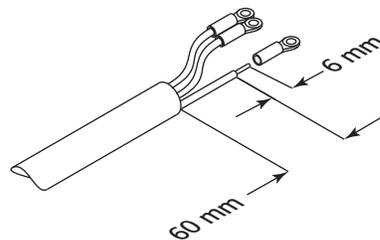


– Figure 3 –

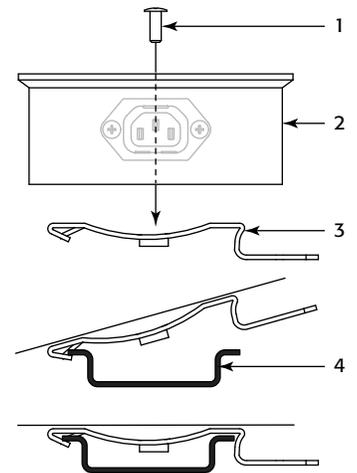
Prepare the Cable

Refer to Figure 5

1. The connecting cables shall be a three-conductor, flexible cable with a minimum cross-sectional area of 1.25 mm² (16 AWG) for 240 VAC, and a minimum cross-sectional area of 1.5 mm² (14 AWG) for 120 AC.
2. Trim the outer insulation of the cable back from the end approximately 60 mm.
3. Trim the individual conductors back from the end approximately 6 mm.
4. Crimp one terminal lug onto each of the three conductor wires. Make sure the crimp is tight.



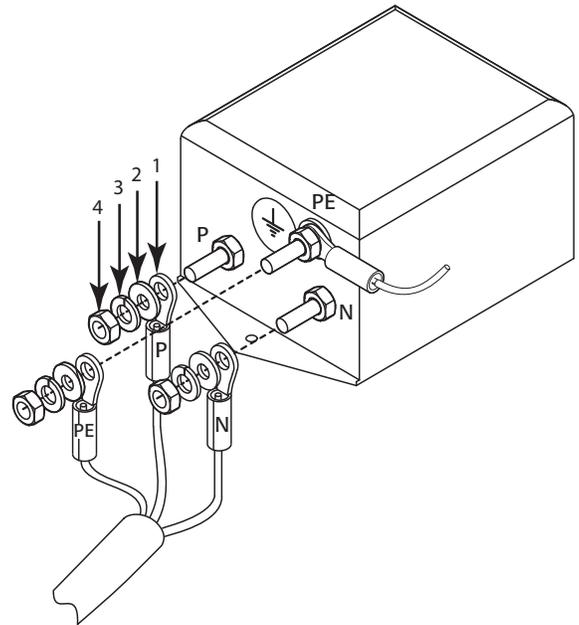
– Figure 5 –



– Figure 4 –

Connect the Cable/Conductors to the SAFE

1. Insert the terminal lugs and the cable through the locking strain-relief so that a small amount of outer insulation is seen inside the box.
2. Tighten the outside strain-relief nut.
3. Install the three terminal lugs (1) onto the studs on the filter. (Figure 6) The studs are labeled on the top of the filter unit.
 - a. P = Line
 - b. N = Neutral
 - c. PE = Earth Ground
4. Install one flat washer (2) onto each stud.
5. Install one lock washer (3) onto each stud.
6. Install one nut (4) onto each stud. Tighten with a 7 mm wrench.
7. If necessary, loosen the outside strain-relief nut and adjust the strain relief so there is no strain on the conductor wires and studs. Retighten the nut.
8. Connect the other end of the three-conductor cable to the AC Mains Disconnect/ Over-current Protection device as required by the device(s).

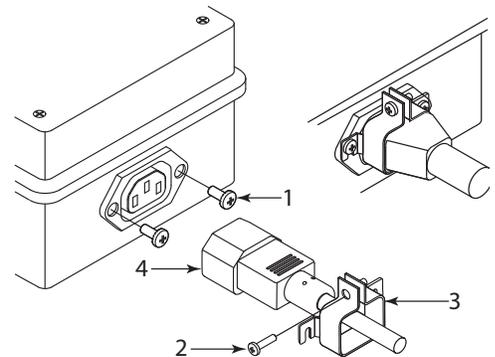


– Figure 6 –

Install Retainer Clip and AC Cord

Refer to Figure 7.

1. Remove the two Phillips screws (1) that secure the AC receptacle to the SAFE box.
2. Remove the Phillips screw (2) on the top of the Retainer Clip (3).
3. Slip the Retainer Clip around the AC Power cord (4) and slide it down the cord to the male IEC connector.
4. Plug the male end of the AC Power cord into the AC receptacle on the the SAFE box.
5. Reinstall and tighten the two Phillips screws (1) that secure the AC receptacle to the SAFE box.
6. Reinstall and tighten the Phillips screw (2) on the top of the Retainer Clip. Make sure the power cord is held securely by the Retainer Clip.



– Figure 7 –

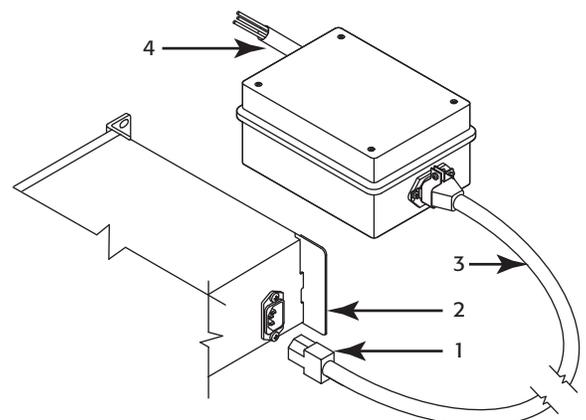
Refer to Figure 8

7. Connect the female end of the AC Power cord (1) to the QSC Core or QSC Amplifier (2).
8. Make sure there is no stress on the AC Power cord (3) or the three-conductor cable going to the Over-current Protection/AC Mains Disconnect device.
9. Secure the cables as needed.

Apply AC Power

The SAFE and Q-Sys Core do not have power switches.

The QSC CX Amplifier has a power switch. Make sure it is turned on.



– Figure 8 –



Mailing Address:

QSC Audio Products, LLC
1675 MacArthur Boulevard
Costa Mesa, CA 92626-1468 USA

Telephone Numbers:

Main Number: (714) 754-6175
Sales & Marketing: (714) 957-7100 or toll free (USA only) (800) 854-4079
Customer Service: (714) 957-7150 or toll free (USA only) (800) 772-2834

Facsimile Numbers:

Sales & Marketing FAX: (714) 754-6174
Customer Service FAX: (714) 754-6173

World Wide Web:

www.qsc.com

E-mail:

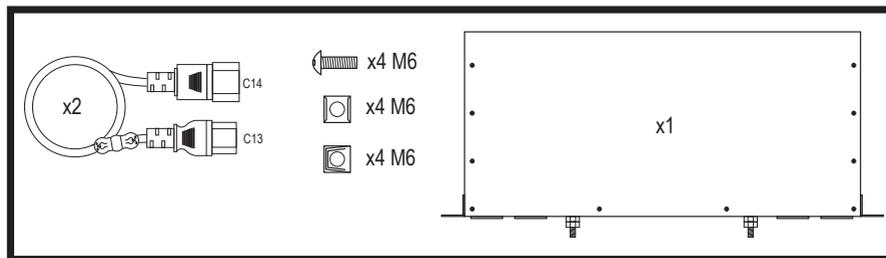
info@qsc.com
service@qsc.com
tech_support@qsc.com

Core 6000 CXR (Dell XR11) - AC Filter Rack Installation

AC FILTER RACK INSTALLATION

⚠ CAUTION: This installation should only be done by a certified service technician.

For information on regulatory and safety guidelines, see the *Enterprise Products Safety, Environmental, and Regulatory Information* manual provided with the system.



The Dell Rugged AC filter is intended for use in restricted access locations, in accordance with Articles 110-5, 110-6, 110-11, 110-14, and 110-17 of the National Electrical Code, American National Standards Institute (ANSI)/ National Fire Protection Association (NFPA) 70.

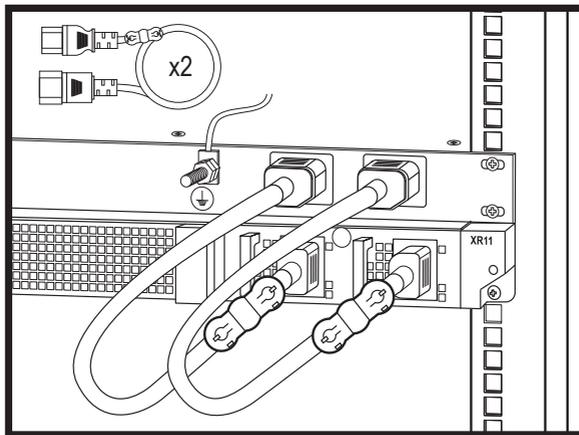
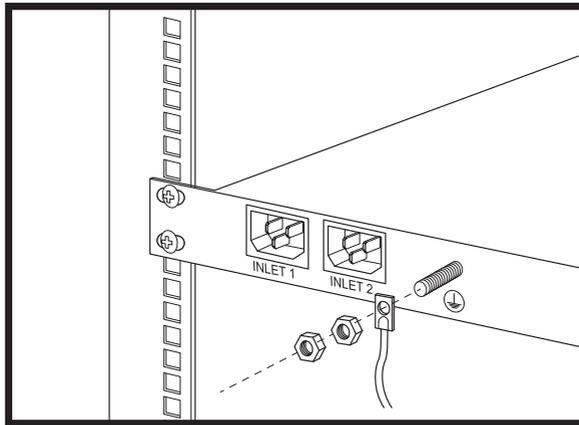
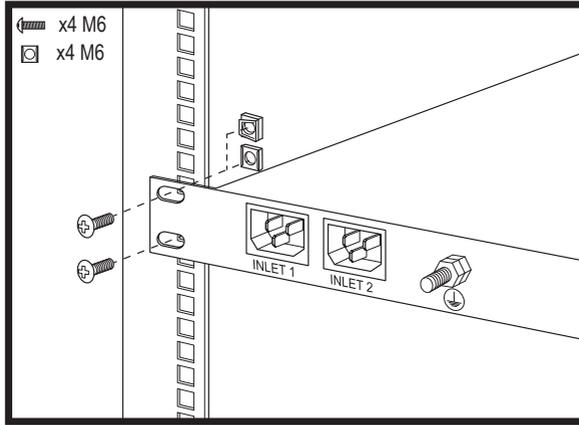
Assembling and connecting the safety ground wire:

1. Remove the insulation from the end green/yellow wire.
2. Use a hand-crimping tool, crimp the ring-tongue terminal that is suitable for insulated copper wire and match it with the M6 Stud to the green/yellow wire.
3. Remove M6 lock washer nut and associated hardware from the grounding post/stud.
4. Connect the safety ground to the grounding post/stud on the filter using the M6 lock washer nut.



CAUTION: The equipment appliance inlet can have hazardous voltages on the appliance inlet, within 5 seconds of removal of the power cord, wait five seconds after switching off before handling this device.





Model: Rugged Power Filter

Regulatory Model: FM001

Input: 100–240 V~50/60 Hz, 12–10 A (X2)

Output: 100–240 V~50/60 Hz, 12–10 A (X2)

Operational Current De-rating: Maximum current rating is reduced by 0.1 A/1.0°C above 50°C (122°F)

Temperature Range: (-5)–55°C (23–131°F) with no direct sunlight on the equipment

Humidity Percentage Range: 8% with -12°C minimum dew point to 90% RH with 24°C (75.2°F) maximum dew point

Operational Altitude De-rating: Maximum temperature is reduced by 1°C/80m (33.8°F/410 Ft) above 900 m (2953 Ft)

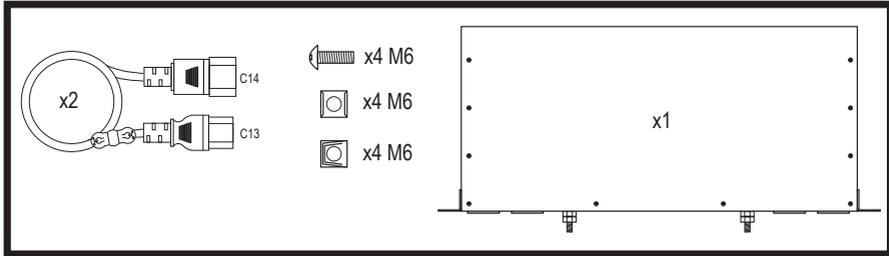
Chassis Dimensions: 272 mm (10.71 inches) x 430 mm (16.93 inches) x 41.5 mm (1.63 inches)

Maximum Weight: 5.7 kg (12.5 lbs.)

交流滤波器机架安装

△ **小心：此安装只能由经认证的维修技术人员完成。**

有关法规和基本原则的信息，请参阅系统提供的**企业产品安全、环境和法规信息手册**。



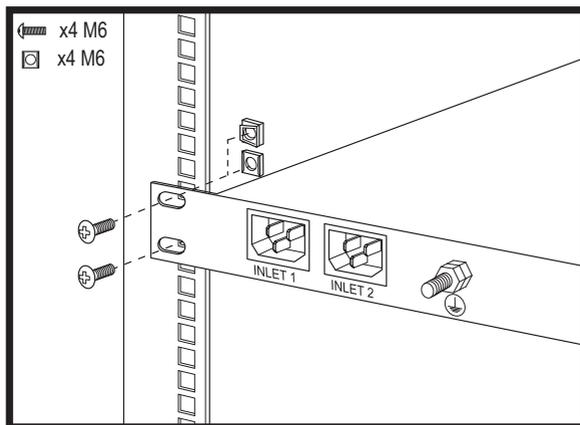
Dell Rugged 交流滤波器适用于符合《国家电气规程》第 110-5、110-6、110-11、110-14 和 110-17 章节以及美国国家标准协会 (ANSI)/国家消防协会 (NFPA) 70 的受限访问位置。

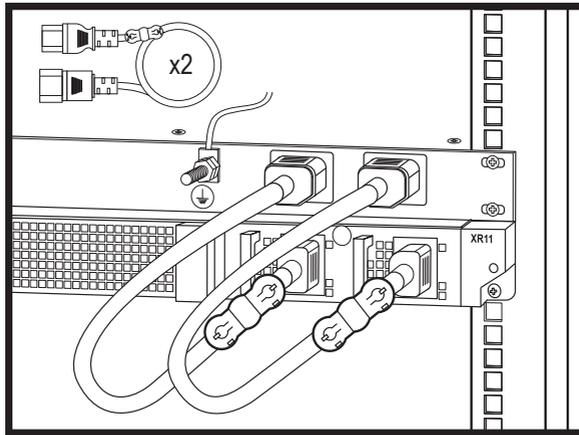
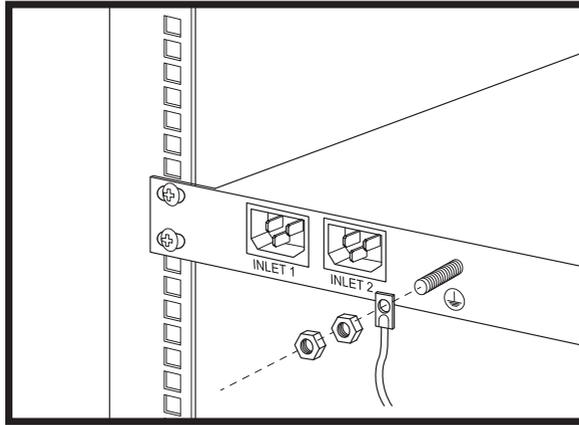
组装和连接安全接地线：

1. 从末端绿色/黄色电线卸下绝缘层。
2. 使用手动压接工具，将环形舌端子卷曲到适合绝缘铜线的程度，并与绿色/黄色线缆的 M6 螺柱匹配。
3. 从接地柱/螺柱卸下 M6 防松垫圈螺母和相关五金器具。
4. 使用 M6 防松垫圈螺母，将安全接地线连接到滤波器上的接地柱/螺柱。



小心：在卸下电源线后 5 秒内设备入口可能具有危险电压，请在切断电源后等待五秒钟，然后再持拿此设备。





型号: Rugged 电源滤波器

管制型号: FM001

输入: 100–240 V~50/60 Hz, 12–10 A (X2)

输出: 100–240 V~50/60 Hz, 12–10 A (X2)

运行时电流降级: 最高电流额定值在 50°C (122°F) 以上时按 0.1 A/1.0°C 降低

温度范围: 在设备无阳光直射的情况下为 (-5)–55°C (23–131°F)

湿度百分比范围: -12°C 最低露点时为 8%, 24°C (75.2°F) 最大露点时为 90% RH

运行时海拔降级: 超过 900 米 (2953 英尺) 时, 最高温度按 1°C/80 米 (33.8°F/410 英尺) 降低

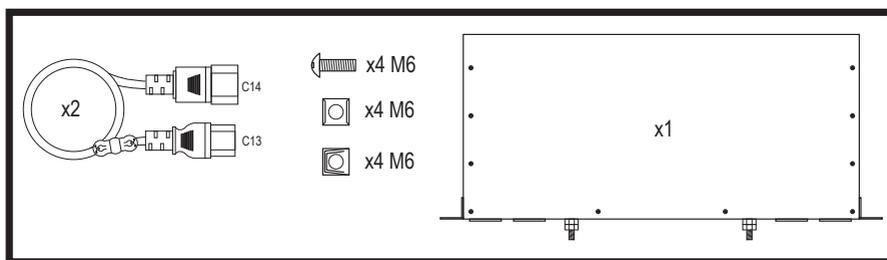
机箱尺寸: 272 毫米 (10.71 英寸) x 430 毫米 (16.93 英寸) x 41.5 毫米 (1.63 英寸)

最大重量: 5.7 千克 (12.5 磅)

INSTALACE RACKOVÉHO FILTRU PRO STŘÍDAVÉ NAPĚTÍ

△ VÝSTRAHA: Tuto instalaci smí provádět pouze certifikovaný servisní technik.

Informace o směrnicích a bezpečnostní pokyny naleznete v příručce k bezpečnosti firemních produktů, ochraně životního prostředí a právním předpisům dodávané se systémem.



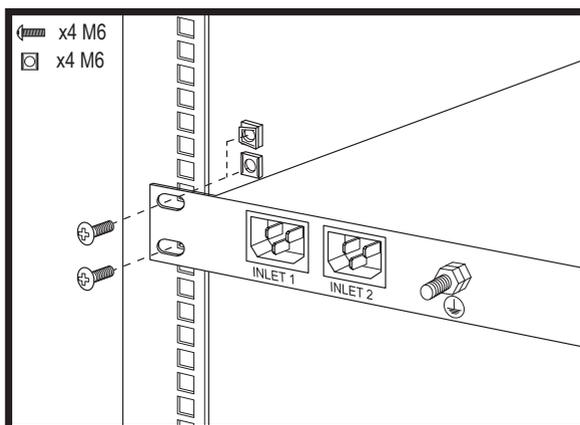
Filtr pro střídavé napětí Dell Rugged je určen do míst s omezeným přístupem v souladu s články 110-5, 110-6, 110-11, 110-14 a 110-17 normy National Electrical Code (Státní elektrická norma), ANSI/NFPA 70.

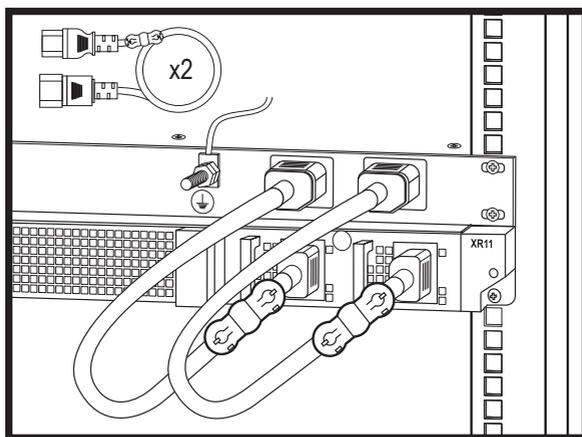
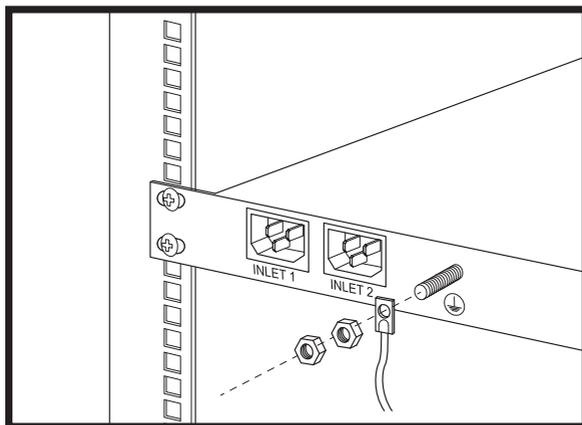
Sestavení a připojení ochranného uzemňovacího vodiče:

1. Odstraňte izolaci z konce zeleného/žlutého vodiče.
2. Pomocí ručních krimpovacích kleští připevněte očko vhodné pro izolovaný měděný vodič, odpovídající šroubu M6 na zeleném/žlutém vodiči.
3. Vyměňte matici podložky M6 a další součásti z uzemňovacího kolíku.
4. Připojte uzemnění k uzemňovacímu kolíku na filtru pomocí pojistné matice a podložky M6.



UPOZORNĚNÍ: Na vstupních svorkách může být po dobu 5 sekund od odpojení napájecího kabelu nebezpečné napětí. Po vypnutí zařízení vyčkejte 5 sekund, než budete se zařízením manipulovat.





Model: Filtr napájení typu Rugged

Směrniceový model: FM001

Vstupní napětí: 100 – 240 V ~ 50/60 Hz, 12–10 A (X2)

Výstupní napětí: 100 – 240 V ~ 50/60 Hz, 12–10 A (X2)

Omezení provozního proudu: Maximální jmenovitý proud je snížen o 0,1 A / 1,0 °C nad 50 °C (122 °F).

Teplotní rozsah: –5 °C – 55 °C (23 °F – 131 °F) bez přímého slunečního světla dopadajícího na zařízení

Procentuální rozsah vlhkosti: relativní vlhkost 8 % s minimálním rosným bodem –12 °C až 90 % s maximálním rosným bodem 24 °C (75,2 °F)

Omezení kvůli nadmořské výšce: Maximální teplota se snižuje o 1 °C / 80 m (33,8 °F / 410 stop). nad 900 m (2 953 stop).

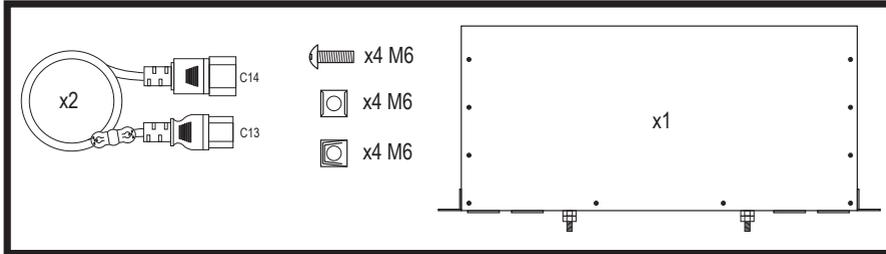
Rozměry šasi: 272 mm (10,71 palce) × 430 mm (16,93 palce) × 41,5 mm (1,63 palce)

Maximální hmotnost: 5,7 kg (12,5 lb)

ΕΓΚΑΤΑΣΤΑΣΗ ΦΙΛΤΡΟΥ ΤΑΣΗΣ AC ΣΕ RACK

⚠ ΠΡΟΣΟΧΗ: Αυτή η εργασία εγκατάστασης πρέπει να εκτελείται μόνο από πιστοποιημένο τεχνικό συντήρησης.

Για πληροφορίες σχετικά με τις κανονιστικές οδηγίες και τις οδηγίες ασφαλείας, ανατρέξτε στο εγχειρίδιο *Πληροφορίες ασφαλείας, περιβαλλοντικές και κανονιστικές πληροφορίες για προϊόντα Enterprise* που παρέχεται μαζί με το σύστημα.



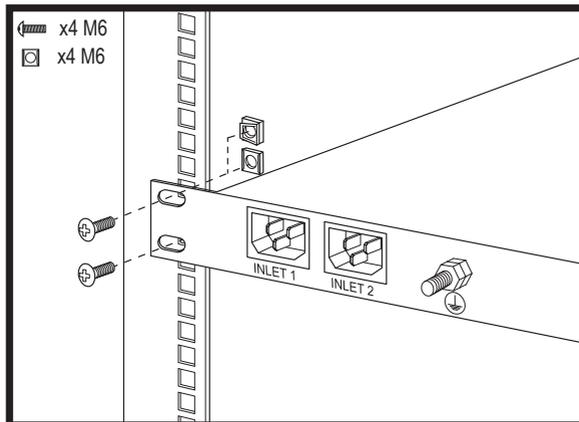
Το φίλτρο τάσης AC Dell Rugged προορίζεται για εγκατάσταση μόνο σε τοποθεσίες περιορισμένης πρόσβασης σύμφωνα με τα άρθρα 110-5, 110-6, 110-11, 110-14 και 110-17 του Εθνικού Ηλεκτρικού Κώδικα των Ηνωμένων Πολιτειών, του Αμερικανικού Εθνικού Ινστιτούτου Προτύπων (ANSI)/Εθνικού Οργανισμού Πυροπροστασίας (NFPA) 70.

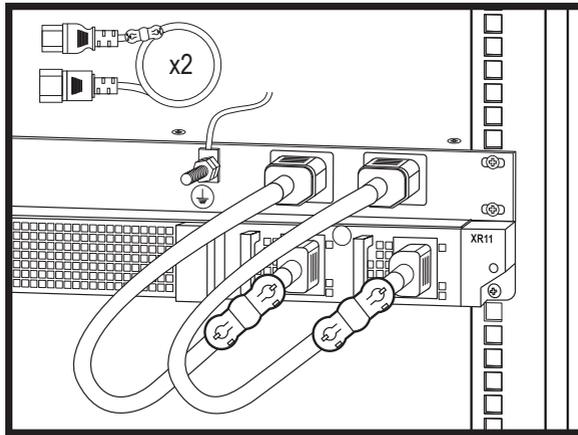
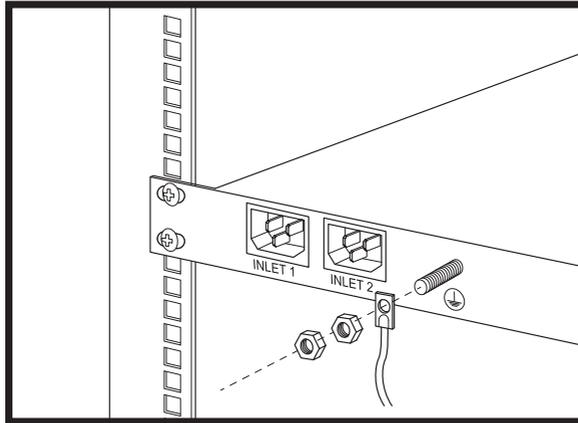
Συναρμολόγηση και σύνδεση του καλωδίου γείωσης ασφαλείας:

1. Αφαιρέστε τη μόνωση από το τερματικό καλώδιο πράσινου/κίτρινου χρώματος.
2. Χρησιμοποιώντας μια πένσα χειρός, πιάστε τον ακροδέκτη οπής που είναι κατάλληλος για τη σύνδεση μονωμένου χάλκινου καλωδίου και ταιριάξτε τον με τον κοχλία M6 στο καλώδιο πράσινου/κίτρινου χρώματος.
3. Αφαιρέστε το φλαντζωτό παξιμάδι ασφαλείας M6 και τα σχετιζόμενα εξαρτήματα από τον ορθοστάτη/κοχλία γείωσης.
4. Συνδέστε τη γείωση ασφαλείας στον ορθοστάτη/κοχλία γείωσης επάνω στο φίλτρο, χρησιμοποιώντας το φλαντζωτό παξιμάδι ασφαλείας M6.



ΠΡΟΣΟΧΗ: Η είσοδος εξοπλισμού της συσκευής μπορεί να προκαλέσει επικίνδυνες τάσεις στην είσοδο της συσκευής, εντός διαστήματος 5 δευτερολέπτων μετά την αφαίρεση του καλωδίου τροφοδοσίας. Περιμένετε πέντε δευτερόλεπτα μετά τη διακοπή της τροφοδοσίας προτού χειριστείτε αυτήν τη συσκευή.





Μοντέλο: Φίλτρο τροφοδοσίας Rugged
Μοντέλο κατά τους κανονιστικούς φορείς: FM001

Είσοδος: 100–240 V~50/60 Hz, 12–10 A (X2)

Έξοδος: 100–240 V~50/60 Hz, 12–10 A (X2)

Μείωση ονομαστικού ρεύματος λειτουργίας: Η μέγιστη ονομαστική τιμή ρεύματος μειώνεται κατά 0,1 A/1.0°C πάνω από τους 50°C (122°F)

Εύρος θερμοκρασιών: (-5) – 55°C (23 –131°F) χωρίς πρόσπτωση απευθείας ηλιακής ακτινοβολίας επί του εξοπλισμού

Εύρος ποσοστού υγρασίας: 8% με ελάχιστο σημείο δρόσου -12°C έως 90% σχετική υγρασία με μέγιστο σημείο δρόσου 24°C (75,2°F)

Μείωση ονομαστικών τιμών βάσει υψομέτρου λειτουργίας: Η μέγιστη θερμοκρασία μειώνεται κατά 1°C/80 m (33,8°F/410 ft) πάνω από τα 900 m (2953 ft)

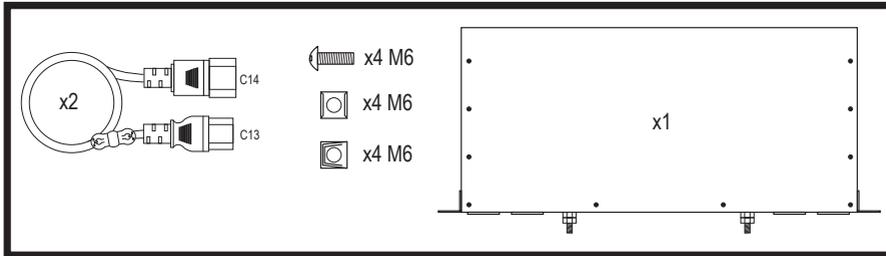
Διαστάσεις περιβλήματος: 272 mm (10,71 ίντσες) x 430 mm (16,93 ίντσες) x 41,5 mm (1,63 ίντσες)

Μέγιστο βάρος: 5,7 kg (12,5 λίβρες)

INSTALACIÓN DE RACK CON FILTRO DE CA

△ ADVERTENCIA: Esta instalación debe ser realizada únicamente por un técnico de servicio certificado.

Para obtener información sobre las pautas normativas y de seguridad, consulte el manual de *Información reglamentaria, ambiental y de seguridad de los productos empresariales* que se proporciona con el sistema.



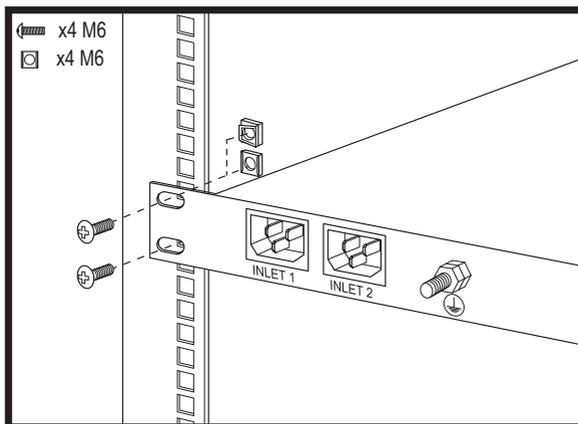
El filtro de CA Dell Rugged está diseñado para su uso en ubicaciones de acceso restringido según los artículos 110-5, 110-6, 110-11, 110-14 y 110-17 del código eléctrico nacional, American National Standards Institute (ANSI)/National Fire Protection Association (NFPA) 70.

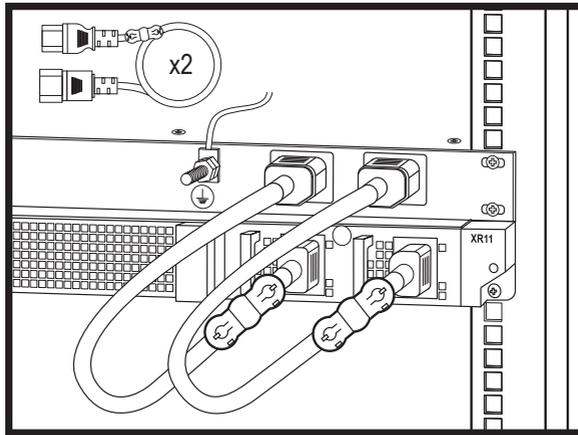
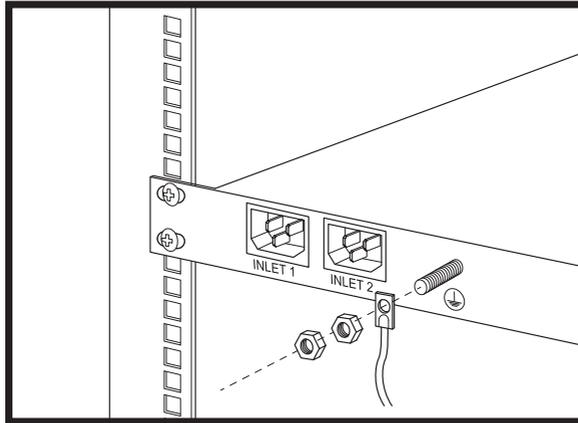
Ensamblaje y conexión del cable de toma de tierra de seguridad:

1. Quite el aislamiento del cable verde/amarillo del extremo.
2. Utilice una herramienta de engaste manual para presionar el terminal con pestaña de tipo anillo adecuado para el cable de cobre aislado y únalo con el perno M6 al cable verde/amarillo.
3. Quite la tuerca arandela de bloqueo M6 y el hardware asociado del poste/perno de conexión a tierra.
4. Conecte la conexión a tierra de seguridad al poste/perno de conexión a tierra en el filtro con la tuerca arandela de bloqueo M6.



ADVERTENCIA: La entrada del dispositivo del equipo puede tener voltajes peligrosos en la entrada del dispositivo en un lapso de 5 segundos a partir de la extracción del cable de alimentación. Espere cinco segundos después del apagado antes de manipular este dispositivo.





Modelo: Filtro de alimentación reforzado

Modelo reglamentario: FM001

Entrada: 100–240 V~50/60 Hz, 12–10 A (X2)

Salida: 100–240 V~50/60 Hz, 12–10 A (X2)

Reducción de valores nominales operacionales de corriente: los valores nominales máximos de la corriente se reducen 0,1 A/1,0 °C por encima de los 50 °C (122 °F).

Rango de temperaturas: de -5 a 55 °C (de 23 a 131 °F) sin que el equipo reciba la luz directa del sol

Intervalo en porcentaje de humedad: de 8 % con un punto de condensación mínimo de -12 °C a 90 % con un punto de condensación máximo de 24 °C (75,2 °F)

Reducción de valores nominales operacionales de altitud: la temperatura máxima se reduce 1 °C/80 m (33,8 °F/410 pies) por encima de los 900 m (2953 pies).

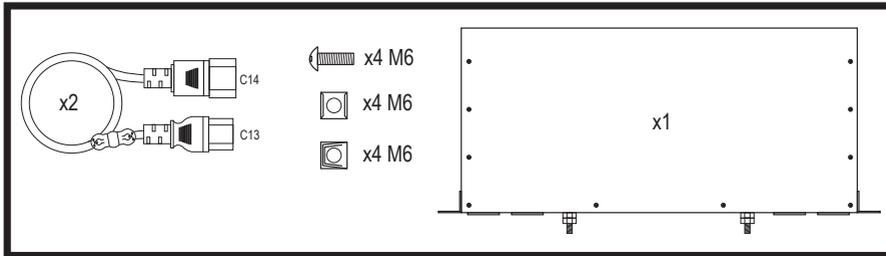
Dimensiones del chasis: 272 mm (10,71 pulgadas) x 430 mm (16,93 pulgadas) x 41,5 mm (1,63 pulgadas)

Peso máximo: 5,7 kg (12,5 lb)

INSTALLATION D'UN RACK AVEC FILTRE CA

⚠ AVERTISSEMENT : L'installation ne doit être réalisée que par un technicien de maintenance agréé.

Pour plus d'informations sur les directives réglementaires et les consignes de sécurité, reportez-vous au manuel d'informations relatives à la sécurité, à l'environnement et à la réglementation des produits d'entreprise fourni avec le système.



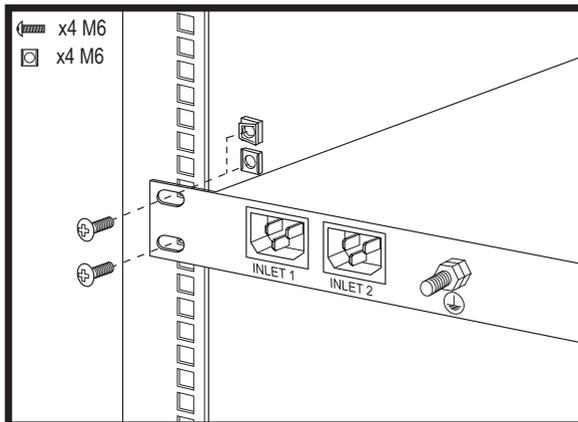
Le filtre CA renforcé Dell est conçu pour une utilisation dans des lieux à accès restreint en accord avec les Articles 110-5, 110-6, 110-11, 110-14 et 110-17 du National Electrical Code (Code électrique national) et de l'American National Standards Institute (ANSI)/National Fire Protection Association (NFPA) 70.

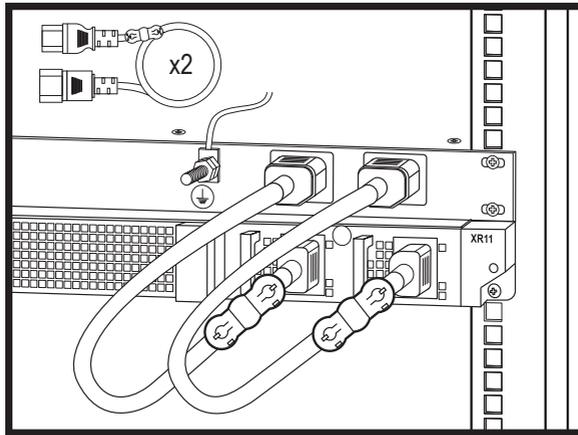
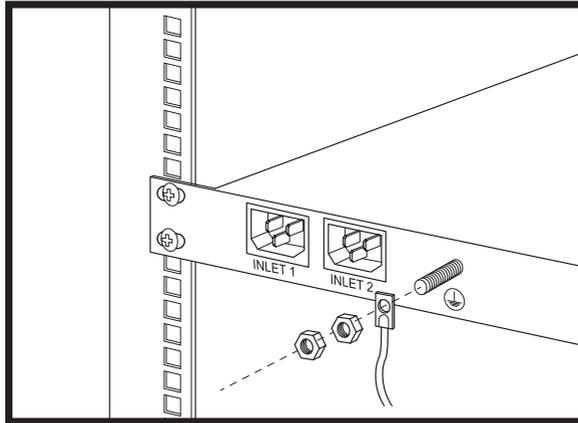
Assemblage et connexion du câble de mise à la terre :

1. Retirez la protection isolante de l'extrémité du fil vert/jaune.
2. À l'aide d'une pince à sertir, pincez la cosse à languette en anneau adaptée au fil de cuivre isolé et associez-la avec le goujon M6 au fil vert/jaune.
3. Retirez l'écrou à rondelle-frein M6 et le matériel associé de la borne/du goujon de mise à la terre.
4. Raccordez le câble de terre de sécurité à la borne/au goujon de mise à la terre sur le filtre à l'aide de l'écrou à rondelle-frein M6.



AVERTISSEMENT : le réceptacle de prise de l'équipement peut présenter des tensions dangereuses dans les 5 secondes suivant le retrait du cordon d'alimentation. Attendez cinq secondes après la mise hors tension avant de manipuler cet appareil.





Modèle : Filtre d'alimentation renforcé

Modèle réglementaire : FM001

Entrée : 100-240 V~50/60 Hz, 12-10 A (X2)

Sortie : 100-240 V~50/60 Hz, 12-10 A (X2)

Réduction du courant d'utilisation : Le courant nominal maximum est réduit de 0,1 A/1,0 °C au-dessus de 50 °C (122 °F)

Plage de températures : (-5)–55 °C (de 23 °F à 131 °F) sans lumière directe du soleil sur l'équipement

Plage de taux d'humidité : de 8 % d'humidité relative, avec un point de condensation minimale de -12 °C, à 90 % d'humidité relative, avec un point de condensation maximale de 24 °C (75,2 °F)

Réduction en fonction de l'altitude de fonctionnement : la température maximale est réduite de 1 °C/80 m (33,8 °F/410 pieds) au-dessus de 900 m (2 953 pieds).

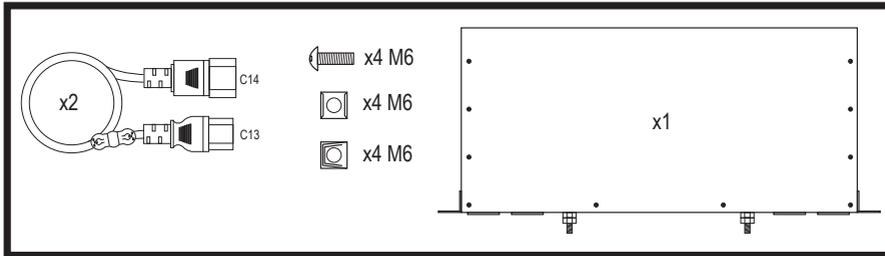
Dimensions du boîtier : 272 mm (10,71 pouces) x 430 mm (16,93 pouces) x 41,5 mm (1,63 pouce)

Poids maximal : 5,7 kg (12,5 lb)

INSTALASI RAK FILTER AC

△ **PERHATIAN:** Instalasi ini hanya boleh dilakukan oleh teknisi servis yang bersertifikat.

Untuk informasi tentang pedoman peraturan dan keselamatan, lihat manual *Informasi Keselamatan, Lingkungan, dan Peraturan Produk Perusahaan* yang disediakan bersama sistem.



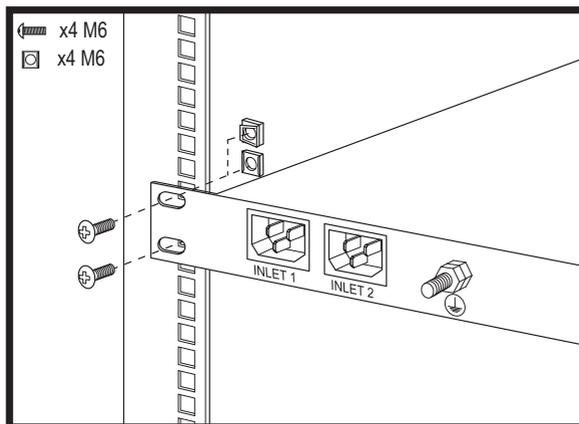
Filter AC Dell Rugged ditujukan untuk penggunaan pada lokasi dengan akses terbatas sesuai dengan Pasal 110-5, 110-6, 110-11, 110-14, and 110-17 Kode Kelistrikan Nasional (National Electrical Code), American National Standards Institute (ANSI)/National Fire Protection Association (NFPA) 70.

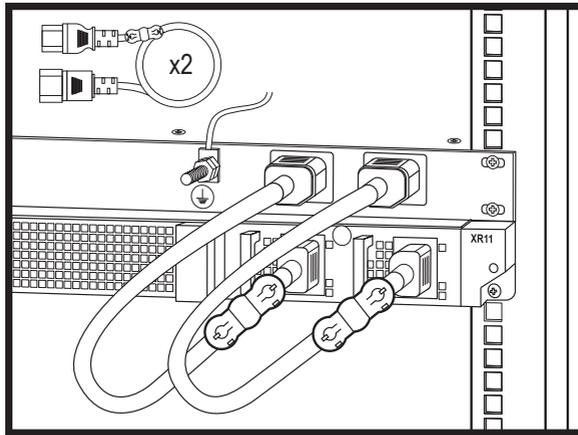
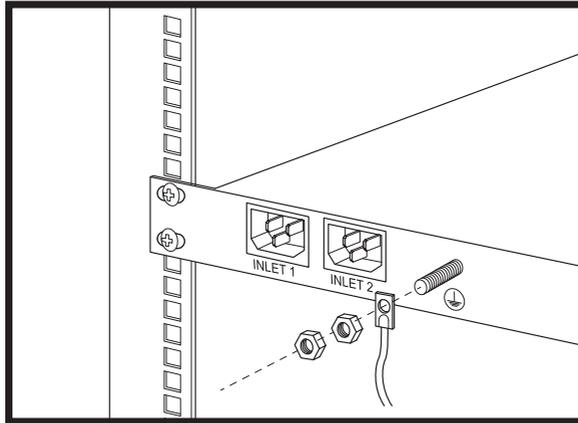
Merakit dan menghubungkan kabel ground pengaman:

1. Lepaskan insulasi dari ujung kawat hijau/kuning.
2. Menggunakan alat crimping tangan, lakukan crimp pada terminal ring-tongue yang cocok untuk kawat tembaga terinsulasi dan cocokkan dengan Stud M6 ke kabel hijau/kuning.
3. Lepaskan mur cincin kunci M6 dan perangkat keras terkait dari tiang/stud grounding.
4. Hubungkan ground pengaman ke tiang/stud grounding pada filter menggunakan mur cincin kunci M6.



PERHATIAN: Saluran masuk (inlet) perlengkapan peralatan dapat memiliki tegangan berbahaya pada saluran masuk perlengkapan, dalam waktu 5 detik setelah pelepasan kabel daya, tunggu lima detik setelah dimatikan sebelum menangani perangkat ini.





Model: Rugged Power Filter

Model Pengaturan: FM001

Masukan: 100–240 V~50/60 Hz, 12–10 A (X2)

Keluaran: 100–240 V~50/60 Hz, 12–10 A (X2)

De-rating Operasional Saat Ini: Peringkat maksimum saat ini berkurang sebesar 0,1 A/1,0°C di atas 50°C (122°F)

Kisaran Suhu: (-5)–55°C (23–131°F) tanpa sinar matahari langsung pada peralatan

Rentang Persentase Kelembaban: 8% dengan titik embun minimum -12 °C hingga 90% RH dengan titik embun maksimum 24 °C (75,2 °F)

Ketinggian Operasional De-rating: Suhu maksimum berkurang 1 °C/80m (33,8°F/410 Ft) di atas 900 m (2953 Ft)

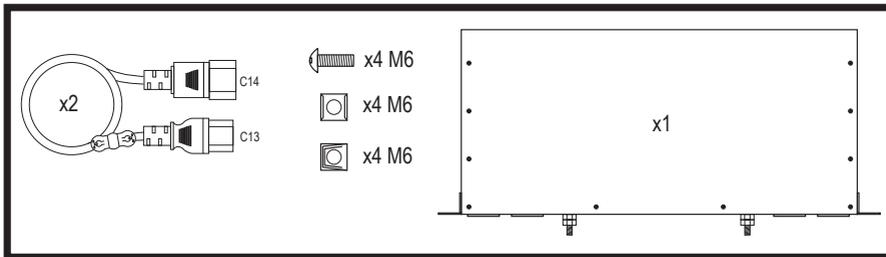
Dimensi Sasis: 272 mm (10,71 inci) x 430 mm (16,93 inci) x 41,5 mm (1,63 inci)

Berat Maksimum: 5,7 kg (12,5 lbs.)

ACフィルター ラックの設置

△ **注意**：この設置は、認定されたサービス技術者のみが行います。

規制および安全ガイドラインの詳細については、システムに付属している『エンタープライズ製品の安全、環境、規制情報マニュアル』を参照してください。



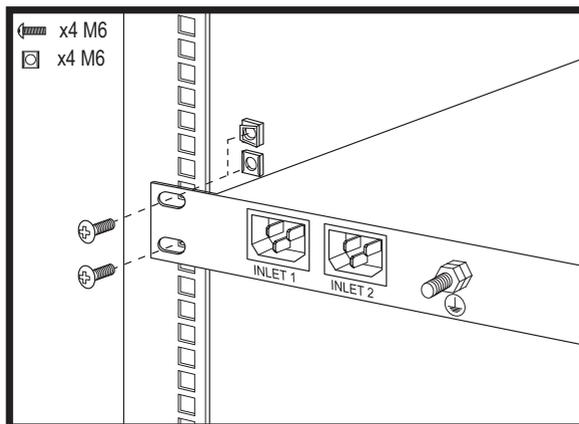
Dell Rugged ACフィルターは、米国電気工事規定の110-5、110-6、110-11、110-14、110-17項、米国規格協会(ANSI) / 全米防火協会(NFPA) 70に基づき、アクセスの制限された場所での利用を意図しています。

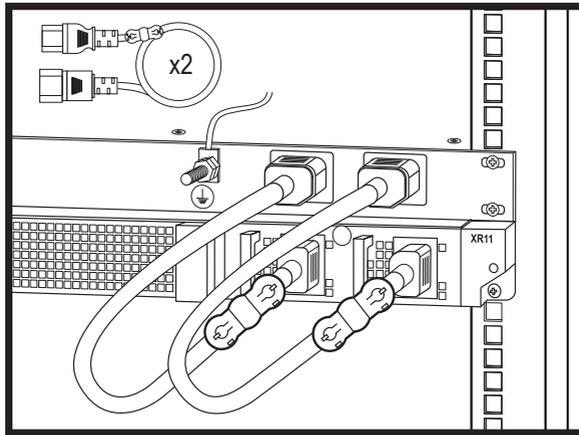
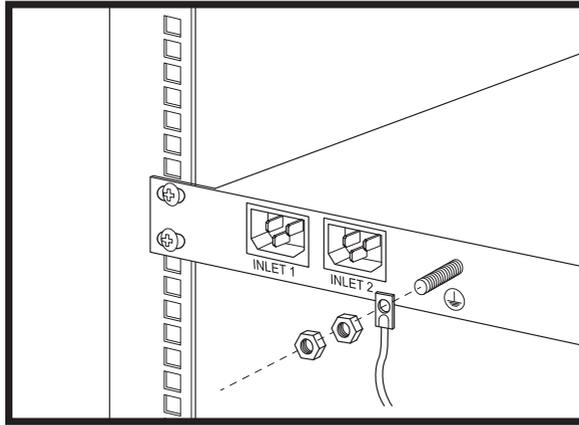
次に示す手順で、安全接地ワイヤの組み立てと接続を行います。

1. 緑色/黄色のワイヤ端子から絶縁体を取り外します。
2. 手動圧着ツールを使用して、絶縁銅線に適したリング トング ターミナルを圧着し、M6スタッドと緑色/黄色のワイヤに整合させるようにします。
3. 接地ポスト/スタッドからM6ロック ワッシャー ナットと関連ハードウェアを取り外します。
4. M6ロック ワッシャー ナットを使用して、安全接地をフィルターの接地ポスト/スタッドに接続します。



注意：機器アプライアンスの吸気口には、電源コードを取り外してから5秒以内に危険な電圧が発生する可能性があります。電源を切って5秒待ってから、このデバイスを取り扱ってください。





モデル: Rugged電源フィルター

法令遵守モデル: FM001

入力: 100~240 V~50/60 Hz, 12~10 A (X2)

出力: 100~240 V~50/60 Hz, 12~10 A (X2)

操作時電流の減定格: 50°C (122°F)を超える場合、最大定格電流は1.0°Cごとに0.1 A低下

温度範囲: (-5)~55°C (23~131°F)、機器への直射日光なし

湿度範囲: 8%で最低露点-12°C~90% RHで最大露点24°C (75.2°F)

操作時高度減定格900 m (2953フィート) を越える高度では、最高温度は80 mごとに1°C (410フィートごとに33.8°F) 低下

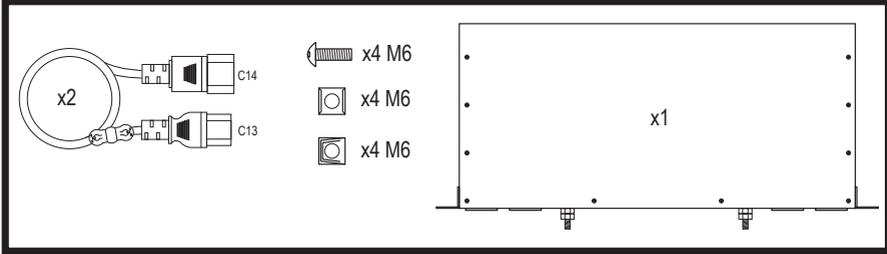
シャーシの寸法: 272 mm (10.71インチ) × 430 mm (16.93インチ) × 41.5 mm (1.63インチ)

最大重量: 5.7 kg (12.5 lb)

AC 필터 랙 설치

△ 주의: 이 설치는 인증받은 서비스 기술 지원 담당자가 수행해야 합니다.

규정 및 안전 지침에 대한 자세한 내용은 시스템과 함께 제공되는 엔터프라이즈 제품 안전, 환경 및 규정 정보 설명서를 참조하십시오.



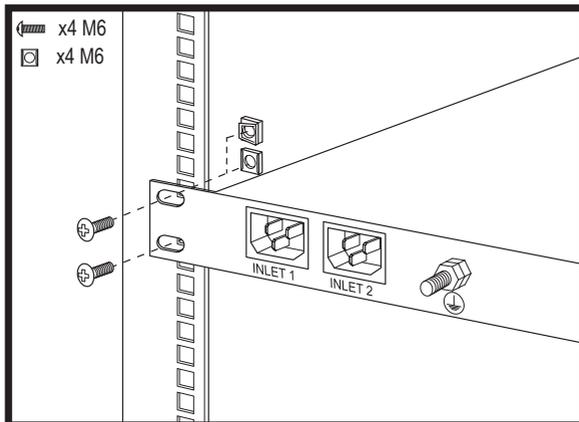
Dell Rugged AC 필터는 국제 전기 코드 110-5, 110-6, 110-11, 110-14 및 110-17 조항과 ANSI/NFPA(American National Standards Institute/National Fire Protection Association) 70에 따라 제한된 사용 위치에서 이용해야 합니다.

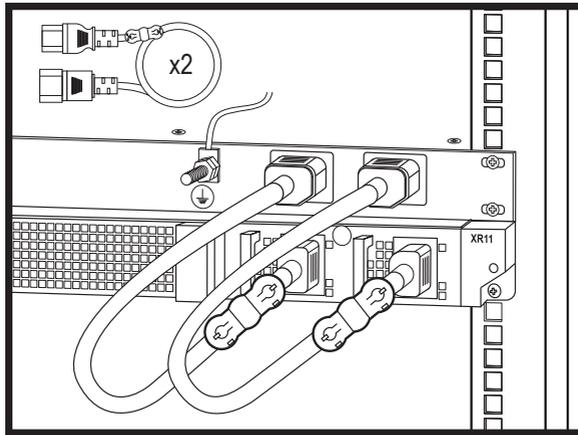
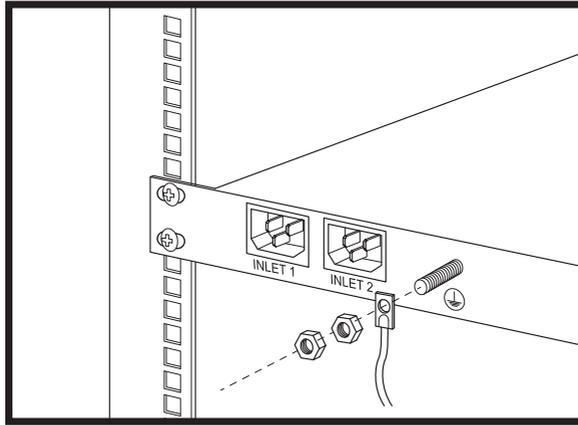
안전 접지 와이어 조립 및 연결:

1. 가장자리의 녹색/노란색 와이어에서 절연체를 제거합니다.
2. 권축기 수공구를 사용하여 절연 구리 와이어에 적합한 원형 터미널을 압착하고, M6 스테드와 녹색/노란색 와이어에 연결합니다.
3. 접지 포스트/스테드에서 M6 잠금 와셔 너트 및 연결 하드웨어를 분리합니다.
4. M6 잠금 와셔 너트를 사용하여 필터의 접지 포스트/스테드에 안전 접지를 연결합니다.



주의: 장비 어플라이언스 입구 부분에 전원 코드를 분리한 후 5초 동안 유해한 전압이 존재할 수 있습니다. 이 장치가 꺼진 후 약 5초간 기다렸다가 다루십시오.





모델: Rugged 전원 필터

규정 모델: FM001

입력: 100-240V~50/60Hz, 12-10 A(X2)

출력: 100-240V~50/60Hz, 12-10 A(X2)

작동 전류 디레이팅: 최대 전류 정격은 50°C(122°F) 이상에서 0.1A/1.0°C만큼 감소합니다.

온도 범위: 장비가 직사광선을 받지 않는 상태에서 -5~55°C(23~131°F)

습도 백분율 범위: -12°C 최소 이슬점의 8%~24°C(75.2°F) 최대 이슬점의 90% RH

작동 고도 디레이팅: 최대 온도는 900m(2,953ft) 초과 시 1°C/80m(33.8°F/410ft)만큼 감소합니다.

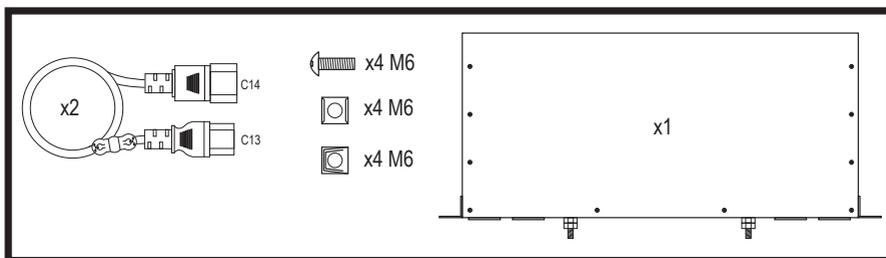
새시 크기: 272mm(10.71인치) x 430mm(16.93인치) x 41.5mm(1.63인치)

최대 중량: 5.7kg(12.5lb)

INSTALACJA FILTRA PRĄDU ZMIENNEGO W SZAFIE SERWEROWEJ

△ PRZESTROGA: Tę instalację może wykonywać tylko przeszkolony technik serwisu.

Informacje na temat przepisów i zasad bezpieczeństwa znajdują się w podręczniku dla przedsiębiorstw dotyczącym *bezpieczeństwa, ochrony środowiska i przepisów* dołączonym do systemu.



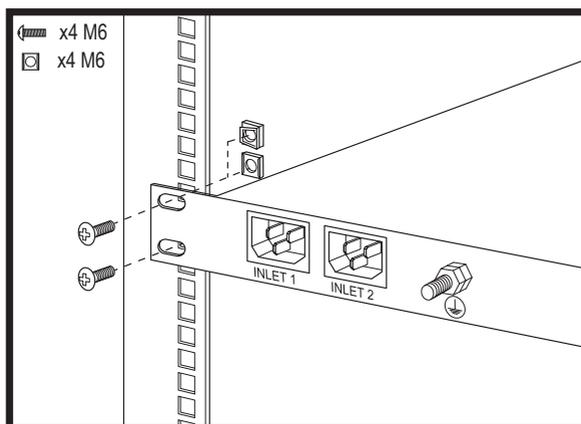
Filtr prądu zmiennego Dell Rugged stosuje się w lokalizacjach o ograniczonym dostępie zgodnie z artykułami 110-5, 110-6, 110-11, 110-14 oraz 110-17 Krajowych Norm Elektrycznych Amerykańskiego Narodowego Instytutu Standardów (American National Standards Institute, ANSI) / Krajowego Stowarzyszenia ds. Ochrony Przeciwpożarowej (National Fire Protection Association, NFPA) 70.

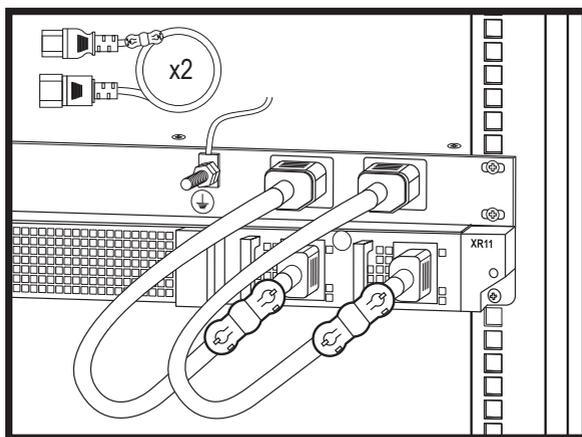
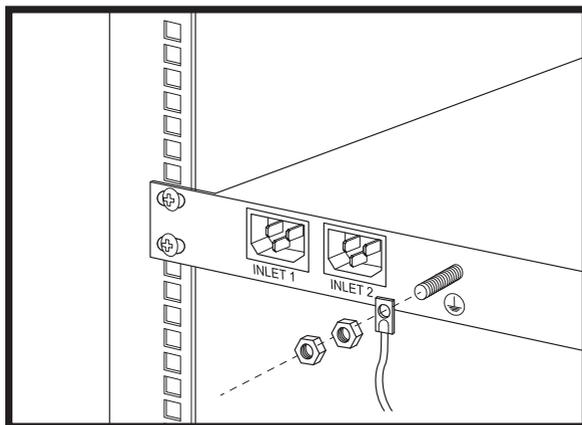
Montaż i podłączenie przewodu uziemienia zabezpieczającego:

1. Zdejmij izolację z końcowego zielonego/żółtego przewodu.
2. Za pomocą ręcznego narzędzia zaciśnij terminal pierścieniowy do izolowanych przewodów miedzianych, a następnie za pomocą śruby dwustronnej M6 połącz z nim zielony/żółty przewód.
3. Zdejmij przeciwnakrętkę M6 i powiązany sprzęt z podkładki uziemiającej/śruby.
4. Podłącz uziemienie do podkładki uziemiającej/śruby na filtrze za pomocą przeciwnakrętki M6.



PRZESTROGA: na wlocie urządzenia może w ciągu 5 sekund od odłączenia przewodu zasilającego występować niebezpieczne napięcie. Przed rozpoczęciem powyższych czynności odczekaj pięć sekund po wyłączeniu urządzenia.





Model: Filtr zasilania Rugged

Formalne oznaczenie modelu: FM001

Wejście: 100–240 V~50/60 Hz, 12–10 A (X2)

Wyjście: 100–240 V~50/60 Hz, 12–10 A (X2)

Obniżenie natężenia znamionowego: Maksymalne natężenie prądu zmniejsza się w temperaturze powyżej 50°C (122°F) o 0,1 A na każdy 1,0°C.

Zakres temperatur: (-5)–55°C (23–131°F) bez narażania urządzenia na bezpośrednie działanie światła słonecznego

Zakres wilgotności: Od 8% wilgotności względnej przy temperaturze minimalnej punktu rosy -12°C do 90% wilgotności względnej przy temperaturze maksymalnej punktu rosy 24°C (75,2°F)

Obniżenie maksymalnej temperatury pracy w zależności od wysokości: Maksymalna temperatura pracy na wysokości powyżej 900 m (2953 stóp) zmniejsza się o 1°C na każde 80 m (33,8°F na każde 410 stóp)

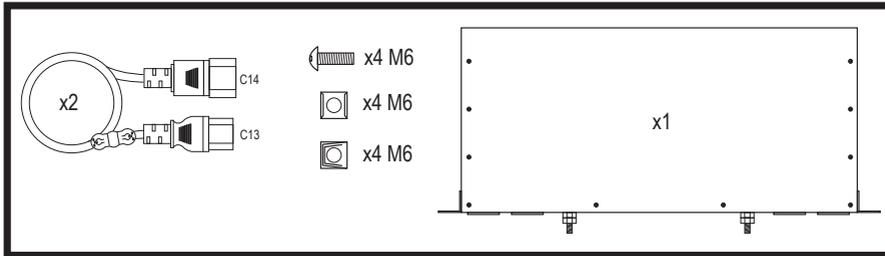
Wymiary obudowy: 272 mm (10,71") x 430 mm (16,93") x 41,5 mm (1,63")

Waga maksymalna: 5,7 kg (12,5 funta)

INSTALAÇÃO DO RACK DO FILTRO CA

△ **AVISO: esta instalação somente deve ser feita por um técnico certificado.**

Para obter informações sobre diretrizes regulamentares e de segurança, consulte o manual de *Informações regulamentares, ambientais e de segurança de produtos empresariais* fornecido com o sistema.



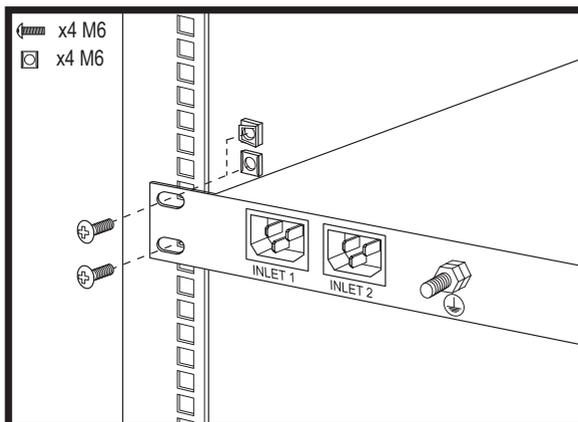
O filtro CA dos produtos Dell Rugged foi projetado para uso em locais com acesso restrito, de acordo com os artigos 110-5, 110-6, 110-11, 110-14 e 110-17 do Código Elétrico Nacional, Instituto Nacional Americano de Padrões (ANSI)/Associação Nacional de Proteção contra Incêndios (NFPA) 70.

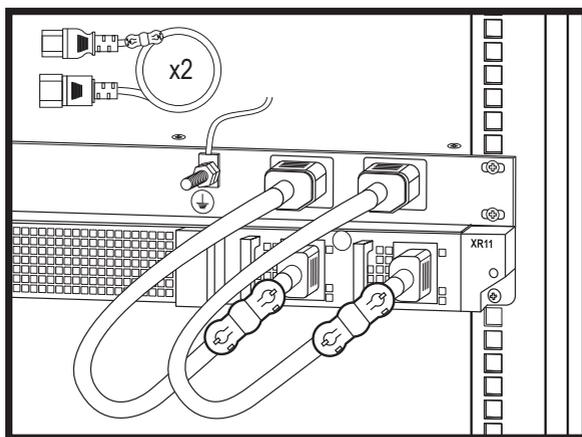
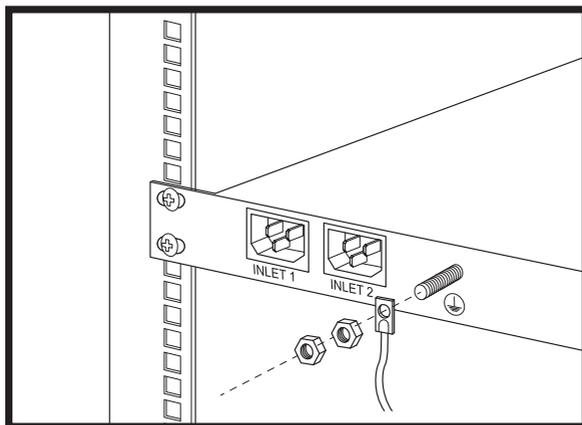
Montagem e conexão do fio terra de segurança:

1. Remova o isolamento do fio verde/amarelo da extremidade.
2. Use uma ferramenta de crimpagem manual, crimpe o terminal olhal que é adequado para fio de cobre isolado e faça a correspondência entre o pino M6 e o fio verde/amarelo.
3. Remova a porca da arruela de trava M6 e o hardware associado do terminal/pino de aterramento.
4. Conecte o aterramento ao terminal/pino de aterramento no filtro usando a porca da arruela de trava M6.



AVISO: a entrada do equipamento pode ter tensões perigosas na entrada do equipamento, dentro de 5 segundos após a remoção do cabo de alimentação, aguarde cinco segundos após desligar antes de manusear esse dispositivo.





Modelo: filtro de energia Rugged

Modelo regulamentar: FM001

Entrada: 100 a 240 V~50/60 Hz, 12 a 10 A (X2)

Saída: 100 a 240 V~50/60 Hz, 12 a 10 A (X2)

Redução de corrente da corrente operacional: a classificação máxima de corrente é reduzida em 0,1 A/1,0 °C acima de 50 °C (122 °F)

Faixa de temperatura: (-5) a 55 °C (23–131°F) sem a incidência de luz solar direta sobre o equipamento

Faixa de percentual de umidade: 8% com ponto de orvalho mínimo de -12 °C a 90% RH com ponto de orvalho máximo de 24 °C (75,2 °F)

Redução de corrente da altitude operacional: a temperatura máxima é reduzida em 1 °C/80 m (33,8 °F/410 pés) acima de 900 m (2.953 pés)

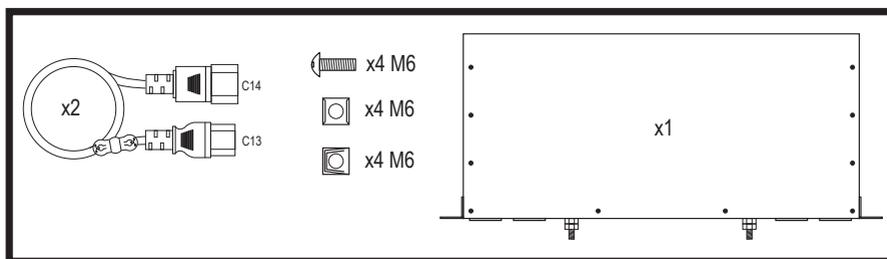
Dimensões do chassi: 272 mm (10,71 polegadas) x 430 mm (16,93 polegadas) x 41,5 mm (1,63 polegadas)

Peso máximo: 5,7 kg (12,5 lb)

УСТАНОВКА ФИЛЬТРА ПЕРЕМЕННОГО ТОКА В СТОЙКУ

⚠ ПРЕДУПРЕЖДЕНИЕ. Эта установка должна выполняться только сертифицированным техническим специалистом.

Информацию о нормах и правилах техники безопасности см. в руководстве по безопасности, экологическим и нормативным требованиям для корпоративных продуктов, прилагаемом к системе.



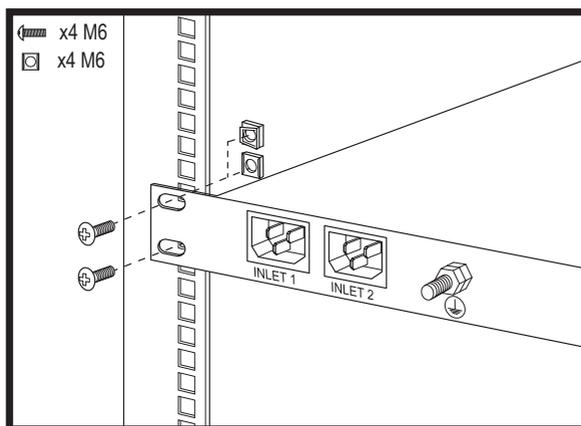
Фильтр переменного тока Dell Rugged предназначен для установки в местах с ограниченным доступом, и соответствует статьям 110-5, 110-6, 110-11, 110-14 и 110-17 Национального электротехнического кодекса (NEC), Американского национального института стандартов (ANSI)/Национальной ассоциации противопожарной защиты (NFPA) 70.

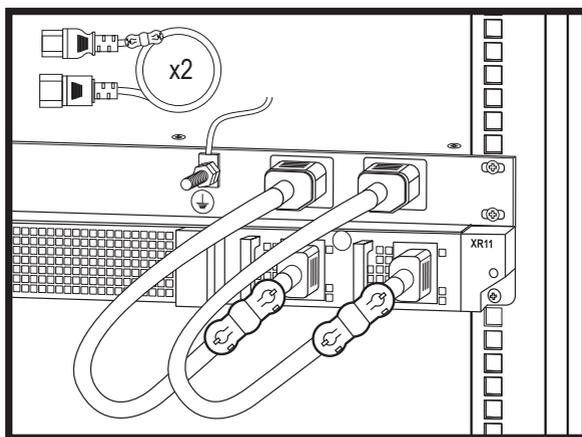
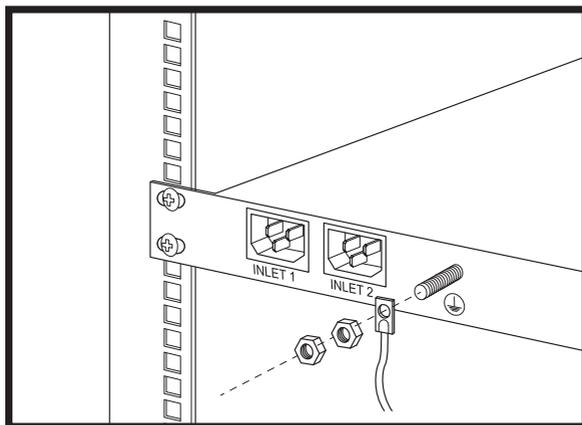
Сборка и подключение провода защитного заземления:

1. Снимите изоляцию с конца зеленого/желтого провода.
2. С помощью ручного обжимного инструмента обожмите кольцевую клемму, которая подходит для изолированных медных проводов, и совместите ее с помощью шпильки М6 с зеленым/желтым проводом.
3. Снимите гайку стопорной шайбы М6 и соответствующее оборудование с заземляющей стойки/шпильки.
4. Подсоедините защитное заземление к заземляющей стойке/шпильке на фильтре с помощью гайки стопорной шайбы М6.



ВНИМАНИЕ! На входе устройства может сохраняться опасное напряжение в течение 5 секунд после отсоединения кабеля питания. Подождите пять секунд после выключения, прежде чем начать работу с устройством.





Модель: защищенный фильтр питания

Нормативная модель: FM001

Вход: 100–240 В ~50/60 Гц, 12–10 А (X2)

Выход: 100–240 В ~50/60 Гц, 12–10 А (X2)

Снижение рабочего тока: максимальный номинальный ток снижается на 0,1 А/1,0 °С при температуре выше 50 °С (122 °F)

Диапазон температур: от –5 до 55 °С (от 23 до 131 °F) при условии, что оборудование не подвергается воздействию прямого солнечного света

Диапазон значений влажности: от 8% относительной влажности с минимальной точкой росы -12 °С до 90% относительной влажности с максимальной точкой росы 24 °С (75,2 °F)

Снижение рабочих параметров в зависимости от высоты: максимальная температура уменьшается со скоростью 1 °С/80 м (33,8 °F/410 футов) на высоте более 900 м (2953 футов) над уровнем моря

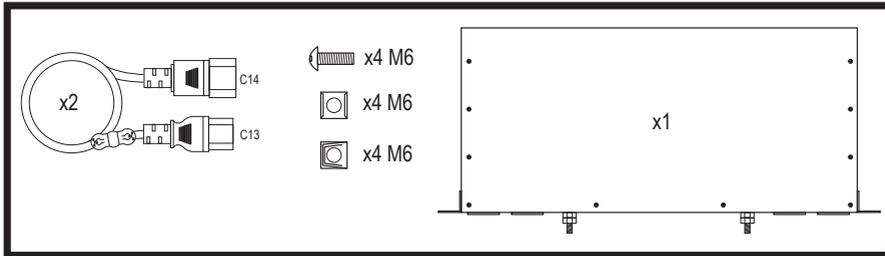
Размеры корпуса: 272 мм (10,71 дюйма) x 430 мм (16,93 дюйма) x 41,5 мм (1,63 дюйма)

Максимальный вес: 5,7 кг (12,5 фунта)

POSTAVLJANJE REKA ZA AC FILTER

△ OPREZ: Ovo postavljanje treba da obavlja samo ovlašćeni serviser.

Za informacije o regulatornim i bezbednosnim smernicama pogledajte priručnik *Informacije o bezbednosti, životnoj sredini i propisima za proizvode preduzeća* koji se dobija uz sistem.



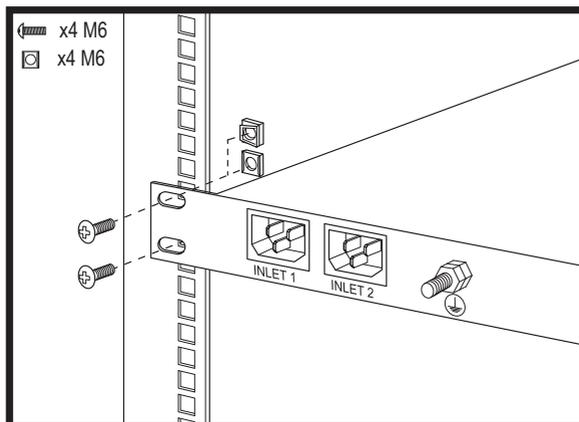
Dell Rugged AC filter je predviđen za mesta sa ograničenim pristupom u skladu s Članovima 110-5, 110-6, 110-11, 110-14 i 110-17 Nacionalnog elektrotehničkog standarda, Američkog instituta za državne standarde (ANSI) i Državnog udruženja za zaštitu od požara (NFPA) 70.

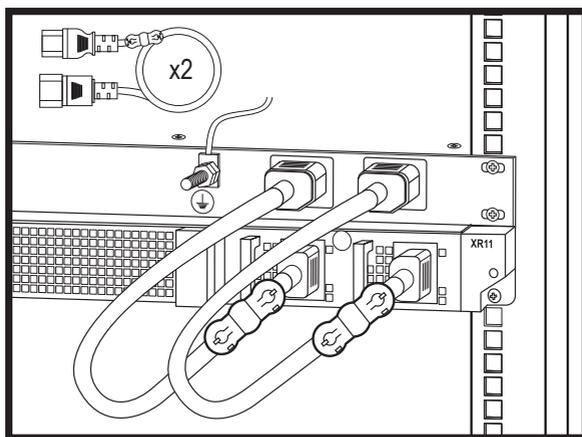
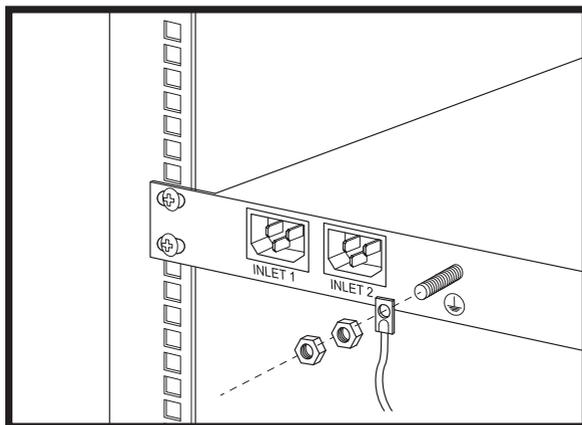
Sastavljanje i povezivanje žice za sigurnosno uzemljenje:

1. Uklonite izolaciju sa krajnje zelene/žute žice.
2. Koristite ručni alat za presovanje, stegnite prstenasti terminal koji je prikladan za izolovanu bakarnu žicu i spojite ga sa M6 klinom za zelenu/žutu žicu.
3. Uklonite maticu za zaključavanje M6 i povezani hardver sa stuba/klina za uzemljenje.
4. Povežite sigurnosno uzemljenje sa stubom/klinom za uzemljenje na filteru pomoću matice za zaključavanje M6.



OPREZ: Ulazni port uređaja može da ima opasan napon, u roku od 5 sekundi od uklanjanja kabla za napajanje, sačekajte pet sekundi nakon isključivanja pre nego što počnete da rukujete ovim uređajem.





Model: Rugged Power Filter

Regulatorni model: FM001

Ulaz: 100–240 V~50/60 Hz, 12–10 A (X2)

Izlaz: 100–240 V~50/60 Hz, 12–10 A (X2)

Specifikacije smanjenja radnog napajanja: Maksimalno radno napajanje se smanjuje za 0,1 A/1,0 °C iznad 50 °C (122 °F)

Opseg temperature: (-5)–55 °C (23–131 °F) bez direktnog sunčevog zračenja na opremi.

Opseg procenta vlažnosti: 8% sa minimalnom tačkom rošenja od -12 °C na 90% RH sa maksimalnom tačkom rošenja od 24 °C (75,2 °F)

Specifikacije smanjenja radne temperature u vezi sa visinom: Maksimalna temperatura se smanjuje za 1° C/80 m (33,8 °F/410 Ft) iznad 900 m (2953 Ft)

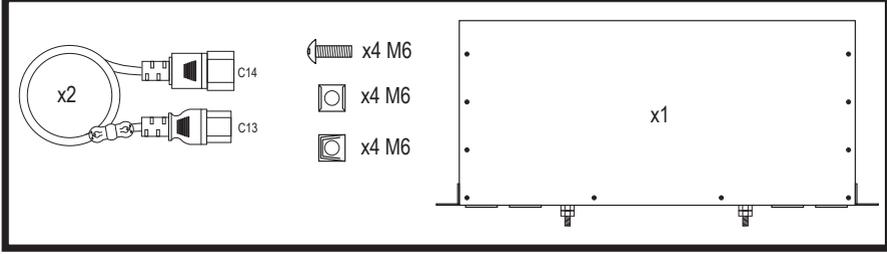
Dimenzije šasije: 272 mm (10,71 inč) x 430 mm (16,93 inča) x 41,5 mm (1,63 inča)

Maksimalna težina: 5,7 kg (12,5 lbs.)

AC FİLTRESİ RAF KURULUMU

⚠ **DİKKAT:** Buradaki kurulum işlemi, yalnızca sertifikalı bir servis teknisyeni tarafından yapılmalıdır.

Mevzuat ve güvenlik yönergeleri hakkında bilgi için sistemle birlikte verilen *Kurumsal Ürünler Güvenlik, Çevre ve Mevzuat Bilgileri* kılavuzuna bakın.



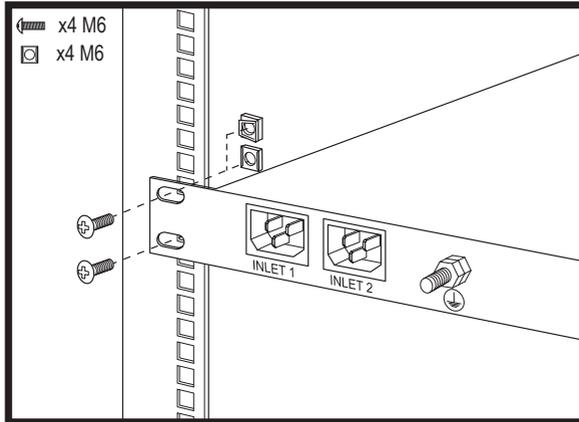
Dell Rugged AC filtresi, Amerikan Ulusal Standartlar Enstitüsü (ANSI)/Ulusal Yangın Önleme Birliği (NFPA) 70, Ulusal Elektrik Yönetmeliği'nin 110-5, 110-6, 110-11, 110-14 ve 110-17 numaralı Maddeleri uyarınca erişimin kısıtlandığı konumlarda kullanılmak üzere tasarlanmıştır.

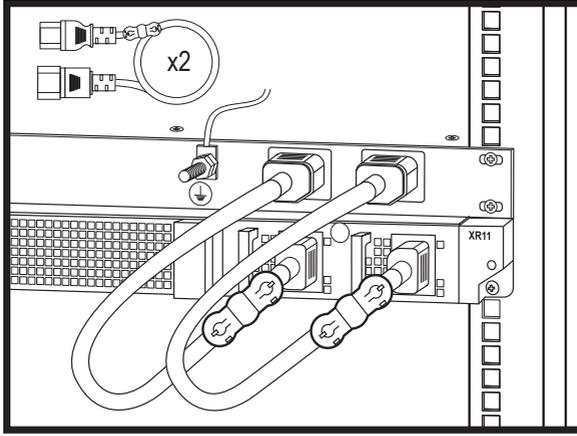
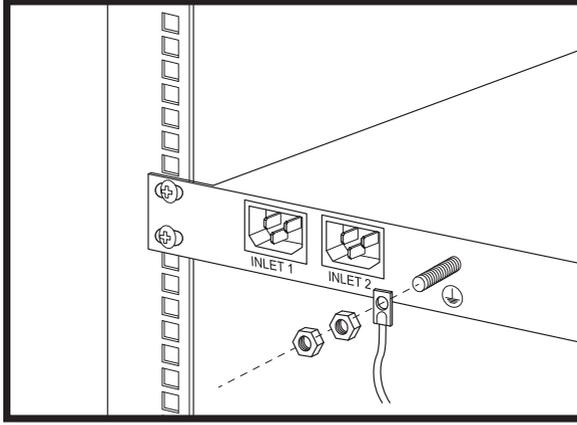
Emniyet topraklama telinin takılması ve bağlanması:

1. Yeşil/sarı kablounun ucundaki yalıtımı çıkarın.
2. Bir sıkıştırma el aleti kullanın, yalıtımlı bakır tel için uygun olan halka dilli terminali kıvrın ve M6 Saplama ile yeşil/sarı kabloyla eşleştirin.
3. M6 kilit pulu somununu ve ilgili donanımı topraklama direğinden/saplamasından çıkarın.
4. M6 kilit pulu somununu kullanarak güvenlik topraklamasını filtre üzerindeki topraklama direğine/saplamasına bağlayın.



DİKKAT: Ekipmanın cihaz girişinde, güç kablosunun çıkarılmasından sonraki 5 saniye içinde cihaz girişinde tehlikeli voltajlar olabilir, bu cihazı tutmadan önce kapattıktan sonra beş saniye bekleyin.





Modeli: Rugged Güç Filtresi

Mevzuat Modeli: FM001

Giriş: 100–240 V~50/60 Hz, 12–10 A (X2)

Çıkış: 100–240 V~50/60 Hz, 12–10 A (X2)

Operasyonel Akım Azaltma: 50 °C'nin (122 °F) üzerinde maksimum akım değeri 0,1 A/1,0 °C azalır

Sıcaklık Aralığı: Ekipman doğrudan güneş ışığına maruz kalmadan (-5)–55 °C (23–131 °F)

Nem Yüzde Aralığı: -12 °C minimum yoğuşma noktasıyla %8 bağıl nem ve 24 °C (75,2 °F) maksimum yoğuşma noktasıyla %90 bağıl nem arası

Operasyonel İrtifa Azaltma: Maksimum sıcaklık 900 m (2953 fit) üzerinde 1 °C/80 m (33,8 °F/410 fit) oranında düşürülür.

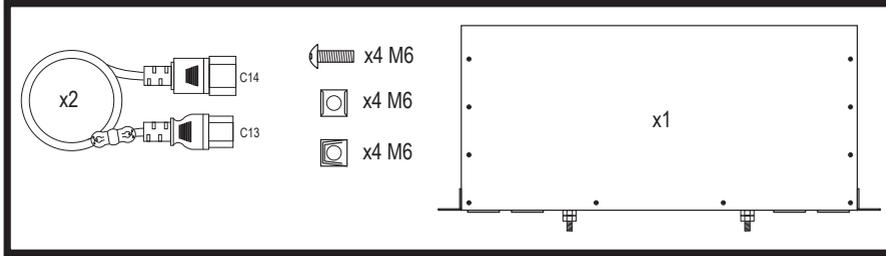
Kasa Boyutları: 272 mm (10,71 inç) x 430 mm (16,93 inç) x 41,5 mm (1,63 inç)

Maksimum Ağırlık: 5,7 kg (12,5 lbs.)

התקנת ארון תקשורת של מסנן AC

△ זהירות: התקנה זו צריכה להתבצע על ידי טכנאי שירות מוסמך בלבד.

לקבלת מידע על הנחיות התקנה והבטיחות, עיין במדריך המידע בנושא בטיחות, סביבה ותקינה למוצרים ארגוניים המסופק עם המערכת.

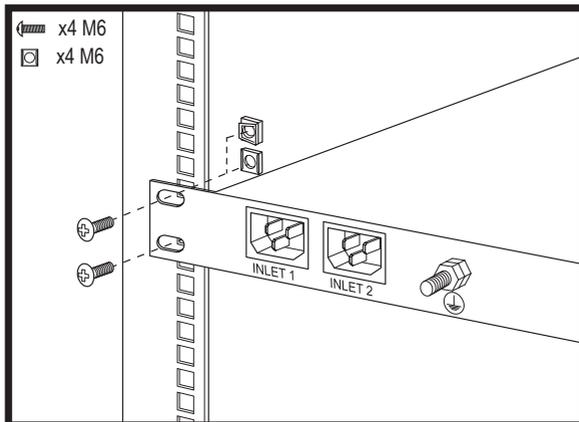


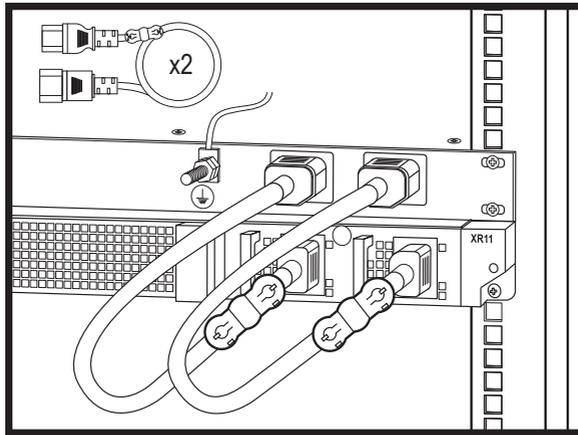
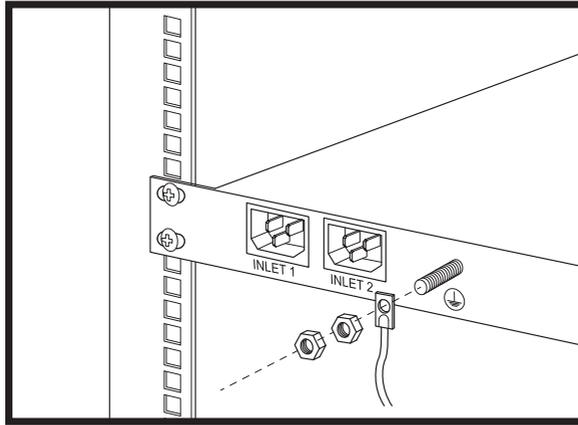
מסנן AC של Dell Rugged מיועד לשימוש במקומות עם גישה מוגבלת בהתאם לסעיפים 110-11, 110-6, 110-5, 110-11, National Electrical Code, American National Standards Institute (ANSI)/National-ה של 110-17 ו-110-14 .Fire Protection Association (NFPA) 70

הרכבה וחיבור של גיד הארקה הבטיחות:

1. הסר את הבידוד מכבל הקצה הירוק/צהוב.
2. באמצעות לוחץ כבלים ידני, לחץ את הדק הלשונית-טבעת שמתאים לחוט נחושת מבודד, והתאם אותו לכלל הירוק/צהוב בעזרת יתד ה-M6.
3. הסר את האום של דסקית הנעילה מסוג M6 ואת החומרה המשיכת מיתד/עמוד ההארקה.
4. חבר את הארקה הבטיחות ליתד/עמוד ההארקה שבמסנן באמצעות האום של דסקית הנעילה מסוג M6.

זהירות: כניסת הכלי של הציוד יכולה לכלול רמות מתח מסוכנות 5 שניות מהסרת כבל החשמל. המתן חמש שניות לאחר הכיבוי לפני הטיפול במכשיר זה.





דגם: מסן חשמל רגולר
דגם תקינה: FM001

קלט: 100–240 V~50/60 Hz, 12–10 A (X2)

פלט: 100–240 V~50/60 Hz, 12–10 A (X2)

הורדת דירוג של זרם תפעולי: דירוג זרם מרבי מופחת ב- $0.1A/1.0^{\circ}C$ מעל $50^{\circ}C$ ($122^{\circ}F$)

טווח טמפרטורות: $55^{\circ}C$ ($131^{\circ}F$)– $5^{\circ}C$ ($23^{\circ}F$) ללא אור שמש ישיר על הציוד

טווח אחוזי לחות: 8% עם נקודת טל מינימלית של $12^{\circ}C$ עד 90% לחות יחסית עם נקודת טל מקסימלית של $24^{\circ}C$ ($75.2^{\circ}F$)

הורדת דירוג של גובה תפעולי: הטמפרטורה המרבית מופחתת ב- $80/1^{\circ}C$ מ' ($410/33.8^{\circ}F$) רגל) מעל 900 מ' (2953 רגל)

מידות המארז: 272 מ"מ (10.71 אינץ') x 430 מ"מ (16.93 אינץ') x 41.5 מ"מ (1.63 אינץ')

משקל מרבי: 5.7 ק"ג (12.5 ליברות)