

The Aurora 610 switch installation guide

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Chapter 1. Introduction

This guide is to assist the reader with the most basic form of installation and cable connection to our switches. As there is more than one switch in the Aurora series, the actual port placement might slightly differ, however, the installation and connection logic are the same for all Netberg switches.

Package Contents:

- One Netberg Aurora Switch
- Two AC power cords.
- One console cable.
- One pair of frontal rack-mount ears.



If any of the above mention items was not found inside the package contents of this switch or are damaged in any way, contact your reseller immediately.

Chapter 2. Hardware Installation

2.1. Installation Guidelines

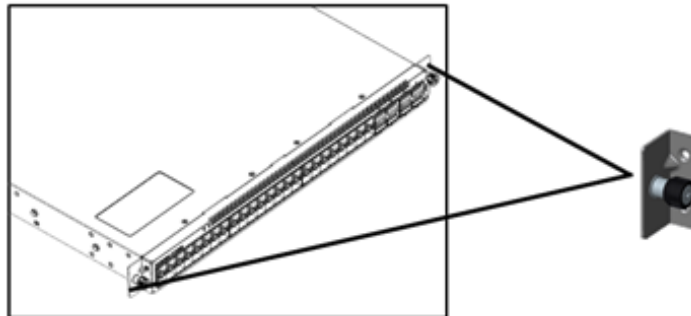
This section will discuss the hardware installation guidelines that administrators must follow in order to properly and safely install this switch into the appropriate environment.

2.2. Installation into a Rack

The switch can be secured in a standard 19"(1U) rack using the provided mounting ears. The following section will explain how to install the rack-mount ears onto the switch and then mount the switch into a standard 1U rack-mount unit.

1. Use the supplied screws to attach a mounting ear to each side of the Switch.
2. Align the holes in the mounting ear with the holes in the rack.
3. Insert and tighten screws through each of the mounting ears.

Figure 2.1. Front ears installation



Two individuals are recommended to install the switch. One individual should position the switch in the rack, while the other secures it using the rack screws.



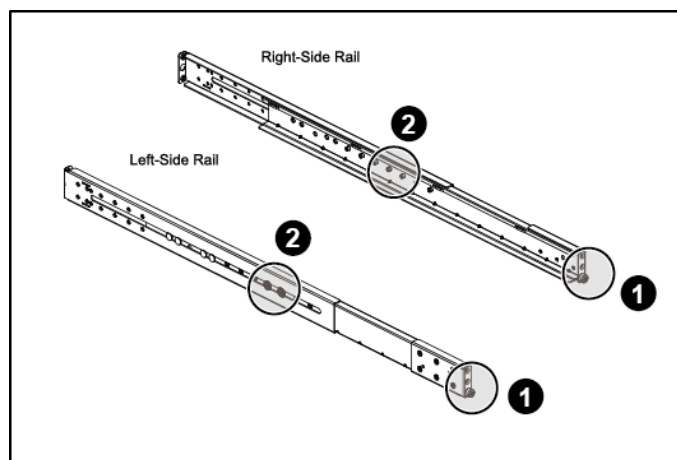
Illustrations are for reference purposes only. Actual cabinet posts may differ.

2.3. Rail Kit Installation

An optional rail kit installation directions.

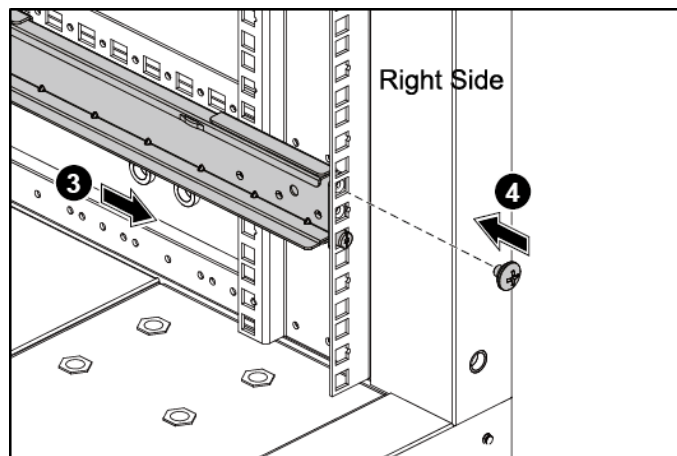
1. The rails are installed with set screws at shipment. Make sure the set screws are installed on the rails before mounting the rails onto the rack.
2. Adjust the locations of the two adjusting screws on each rail to set rail length according to different types of racks.

Figure 2.2. Adjusting Rail Length



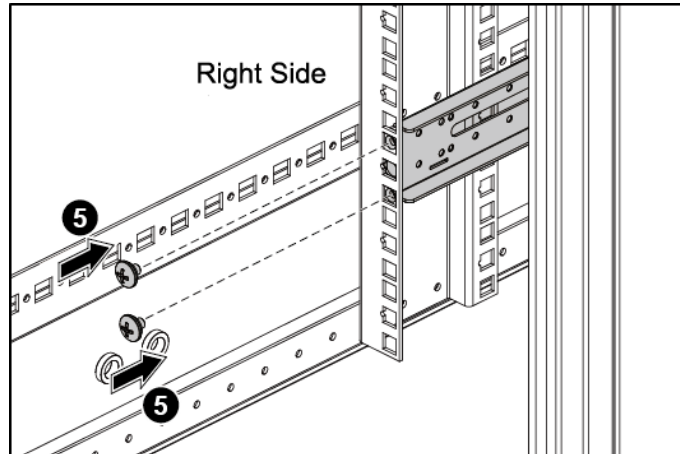
3. Attach right-side rail onto the rack.
4. Install the shoulder screw on front of the right-side rail.

Figure 2.3. Securing Right-side Rail on the Front



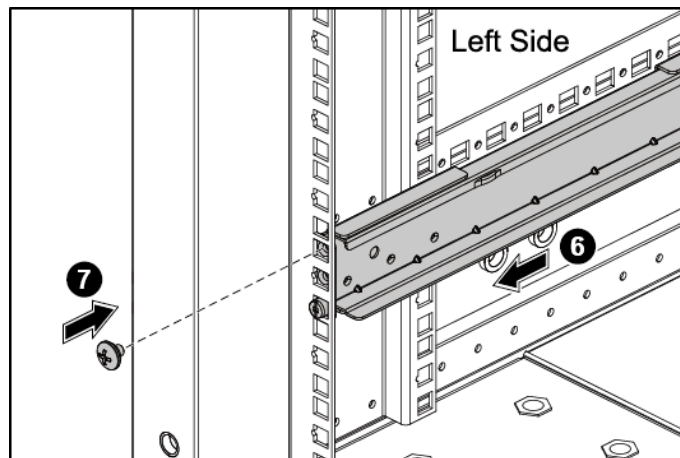
5. Install the shoulder screw on back of the right-side rail.

Figure 2.4. Securing Right-side Rail on the Front



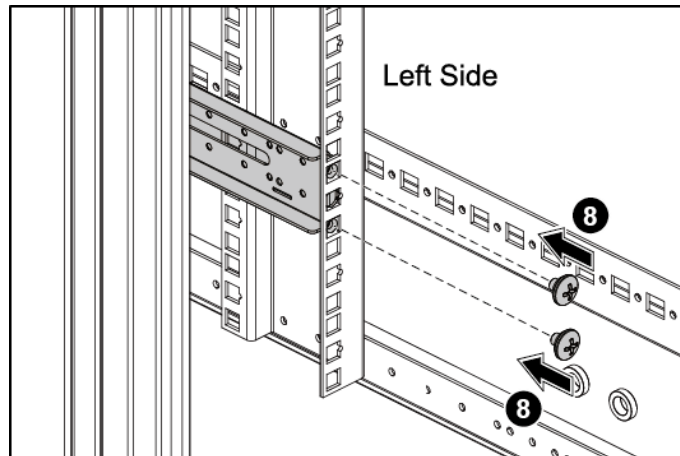
6. Attach left-side rail onto the rack.
7. Install the shoulder screw on front of the left-side rail.

Figure 2.5. Securing Left-side Rail on the Front



8. Install the shoulder screw on back of the left-side rail.

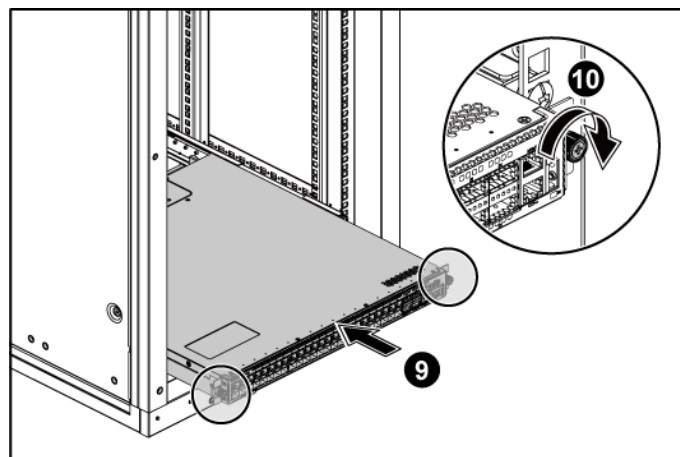
Figure 2.6. Securing Left-side Rail on the Back



9. Attach the switch onto the rack.

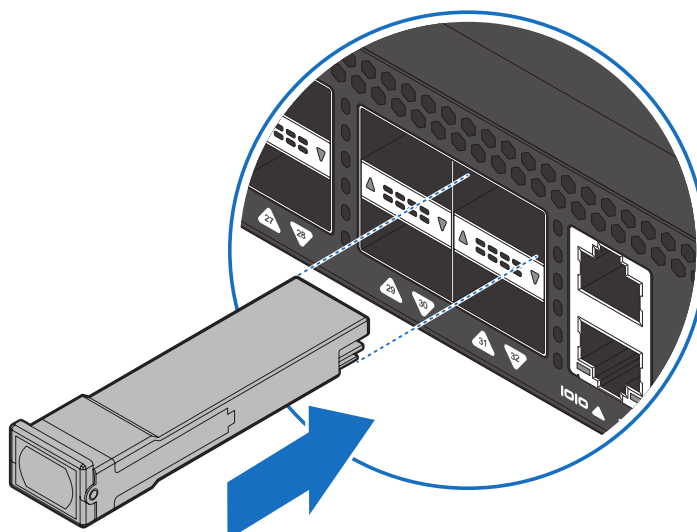
10. Tighten screws on both sides to lock switch on the rack.

Figure 2.7. Installing System onto the Rack



2.4. Installing Transceivers and Cables into the Switch Ports

Figure 2.8. Transceivers and cables



2.4.1. SFP+/SFP28 Port Connection (LC Type Connector)

The Small Form-Factor Pluggable Plus (SFP+) port is the second generation of the SFP interconnect system designed for 10Gb/s data rate. The SFP+ ports support 10-gigabit IEEE 802.3ae Ethernet for fiber mediums.

The Small Form-Factor Pluggable 28 (SFP28) port is the next generation of the SFP interconnect system designed for 25Gb/s data rate. The SFP28 ports enables error-free transmission of 25 Gb/s over 100 meters of OM4 multimode fiber.

The SFP+/SFP28 ports are numbered and have corresponding SFP port LEDs.

To install an SFP module, do the following:

1. Slide the SFP module into an SFP port.



Ensure the SFP module is positioned correctly before installing it into the port.

2. Push completely until the module locks into place.
3. Repeat the above procedures to install additional SFP+ modules.

The SFP port LED lights green when the network link is established.

2.4.2. QSFP+/QSFP28 Port Connection

QSFP+ (Quad SFP) ports which support 40G/per port or fan out to 4x10G by using the fan out DAC cable.

QSFP28 (Quad SFP) ports which support 100G/per port or fan out to 4x25G by using the fan out DAC cable.

1. Slide the QSFP module into a QSFP port.



Ensure the QSFP module is positioned correctly before installing it into the port.

2. Push completely until the module locks into place.
3. Repeat the above procedures to install additional QSFP modules.

The QSFP port LED lights green when the network link is established.

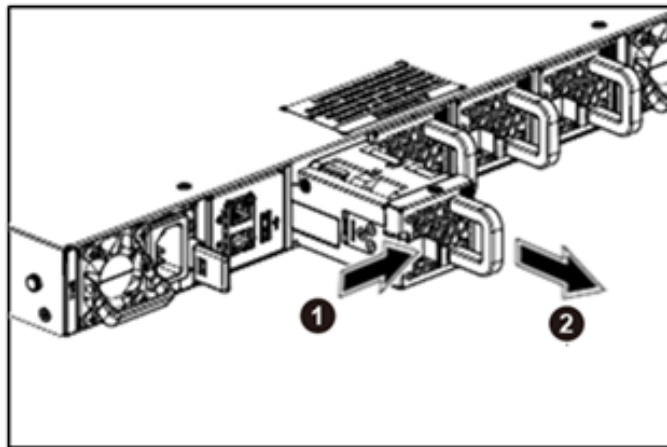
2.5. Fan Modules

The fan module is a field replaceable unit and can be replaced during operations as long as the remaining modules are installed and operating.

Replacing fan modules

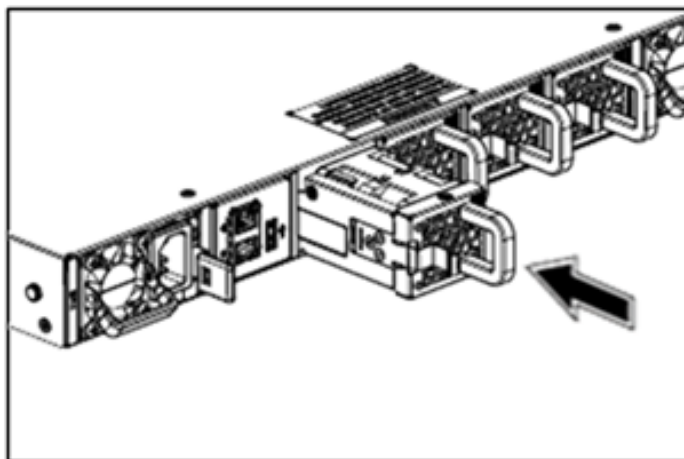
1. Press the retaining tab on the system fan module in the direction as indicated.
2. Remove the system fan module out of the chassis.

Figure 2.9. Removing the fan module



3. Push the system fan module into the system fan module bay until it connects properly with the fan board in the chassis.

Figure 2.10. Inserting the fan module



2.6. Power supply

Equipped with two supply modules, the switch can operate with either one or two power supply modules. If the switch uses two power supply modules, you can hot-swap one of the PSU during the operations. Even if one of the two power supplies has failed, or is not in use, do not pull out the power supply from the chassis. This is to prevent hot air being suck back into the chassis from the empty power supply shelf when the system is in operation. Only pull out the bad power supply when the replacement is ready to be installed.

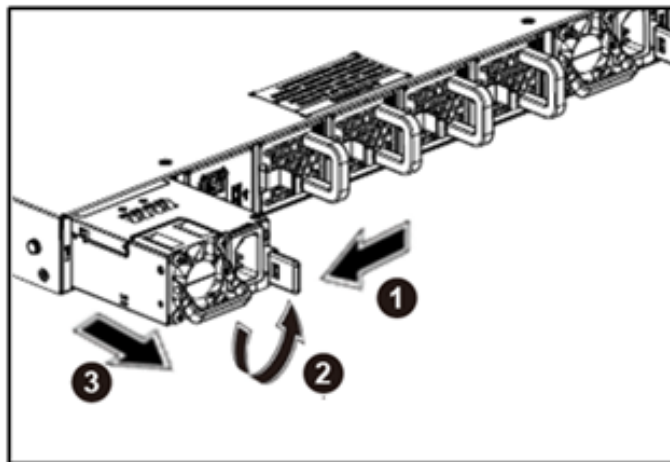


One PSU is enough for a fully loaded chassis.

2.6.1. Replacing a PSU

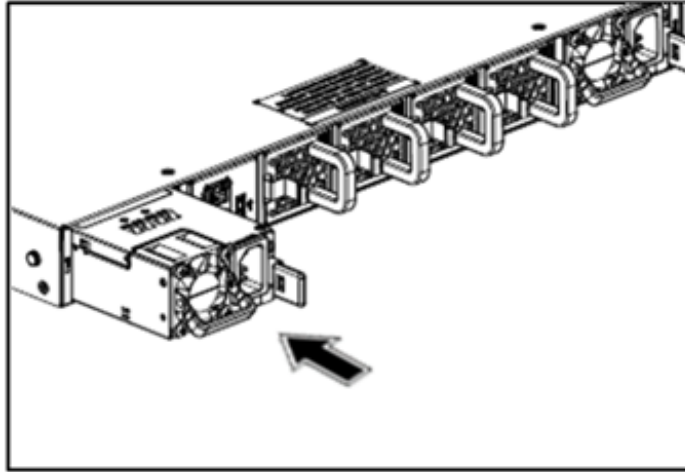
1. Hold the PSU handle and press the release latch to unlock from the switch.
2. Pull the PSU module out of the switch.

Figure 2.11. Removing the PSU module



3. Align the PSU with the switch bay.
4. Slide the PSU into the switch and push until it is flush with the bay. The retaining clip should snap.

Figure 2.12. Inserting the PSU module

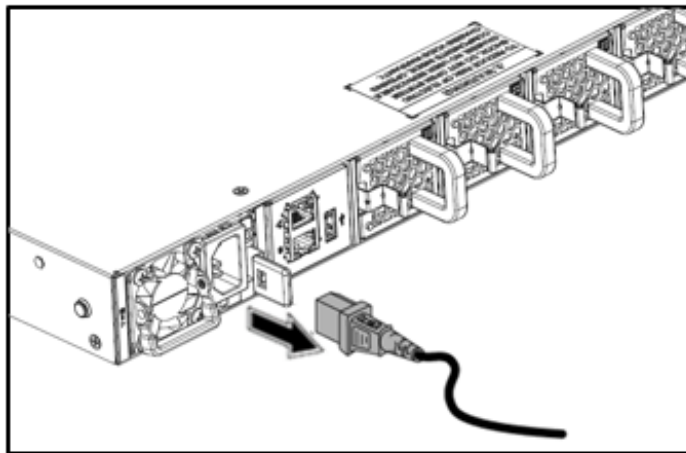


The AC power connector is a standard three-pronged connector. The switch automatically adjusts its power setting to any supply voltage in the range from 100-240 VAC at 50-60 Hz.

2.7. Connect the Power Cable

Connect one end of the AC power cord, included in the package, into the grounded electrical outlet at the site and insert the other end of the AC power cord into the AC power receptacle of the AC power supply module on the back panel of the switch. The switch will automatically adjust the voltage supplied to the voltage needed as this power supply supports any voltage power supply in the range from 100VAC to 240VAC at 50Hz to 60Hz.

The LED indicators on the front panel of the switch should lights green after power-on.



2.8. Grounding the Switch

It is recommended that a compliant system is installed as part of the chassis to reduce or prevent the risk of shock hazards, greatly reduce the risk of equipment damage or reduce the potential of data corruption.



This equipment must be grounded. Do not defeat the ground conductor or operate the equipment without a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available.

1. Ensure the rack is properly grounded and in compliance with local regulatory guidelines. Ensure that a good electrical connection to the grounding point exists. Remove any paint or material that may prevent good contact.
2. This product is equipped with a three-wire power cable and plug for user safety. Use the power cable with a properly grounded electrical outlet to avoid electric shock.

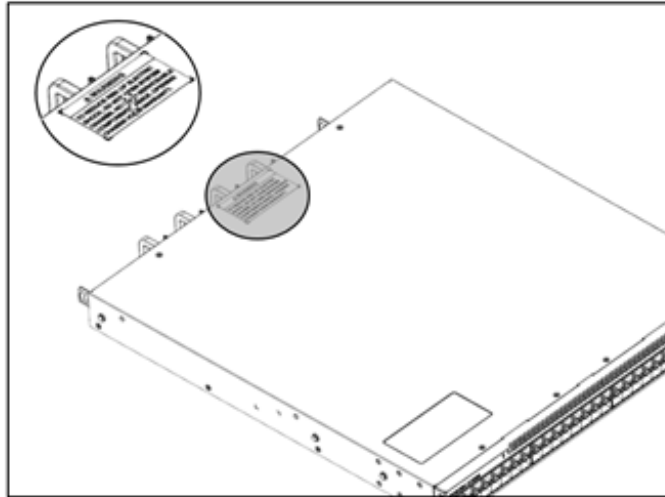
2.9. Rack-mount Safety Precautions

For your protection, observe the following rack-mount safety precautions when setting up your equipment:

- **Elevated Operating Ambient** - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (T_{ma}) specified by the manufacturer.
- **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.
- **Mechanical Loading** - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
- **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 overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
- **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 (for example, use of power strips).
- **For safety, equipment should always be loaded from the bottom up.** That is, install the equipment that will be mounted in the lowest part of the rack first, then the next higher systems, etc.
- **To prevent the rack from tipping during equipment installation, the anti-tilt bar on the rack must be deployed.**
- **The mounting brackets provided must be used to securely mount the device in a rack-mount unit.**

2.10. The Warranty VOID Label

There is a warranty VOID label stuck on the chassis cover. When this label is removed or destroyed, the warranty will be void.



2.11. Console port

The console port is used for setting up and managing the switch via a connection to a console terminal or PC using a terminal emulation program. You can connect the switch to a terminal or PC using the supplied console cable (RJ-45 male to RS-232 female cable) for serial communication.

Below is the console cable wiring specification table:

Table 2.1. Console cable pin definition

RJ-45 Port of Switch	DB9 Female Port of PC	Abbreviation	Description
3	2	RD	Received Data
6	3	TD	Transmit Data
1	8	CTS	Clear To Send
8	7	RTS	Request To Send

Using the console port, you can perform the following:

- Configure, manage and monitor the switch using the CLI commands
- Manage and monitor network activity by Simple Network Management Protocol (SNMP) management
- Upgrade the firmware

To connect to the console, do the following:

1. Connect the RJ-45 connector to the console port (|o|o) of the switch.
2. Connect the RS-232 end to a terminal or PC.
3. Manage the switch using the CLI commands (refer to the CLI User Manual for more information).

The switch uses the following default settings:

- Baud rate: 115200
- Data width: 8 bits
- Parity: None
- Stop bits: 1
- Flow control: None

Chapter 3. Netberg Aurora 610 switch

The switch chassis is equipped with the following ports:

- 48x 25G SFP28 + 8x 100G QSFP28 ports supporting an optical transceiver, active optical cables, or direct-attached cable to connect the QSFP28 port to the hosts (uplink connections)
- 1 Management ports enables you to manage the switch operation using an RJ-45 Ethernet cable
- 1 Console port to perform the initial configuration by connecting to a PC with the RJ-45 to DB-9 serial adapter cable
- 1 USB port to load the configuration files or OS from a USB storage device to the switch's flash/SSD memory

Figure 3.1. Aurora 610 front view

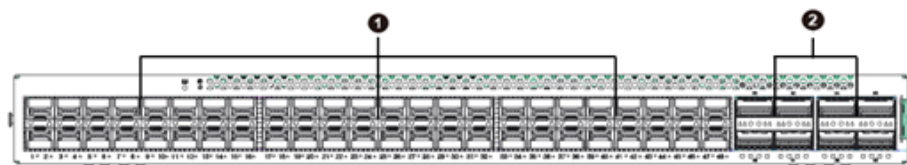


Table 3.1. Front panel features

No	Description
1	48x 25G SFP28 Ports
2	8x 100G QSFP28 Ports

Figure 3.2. Aurora 610 rear view

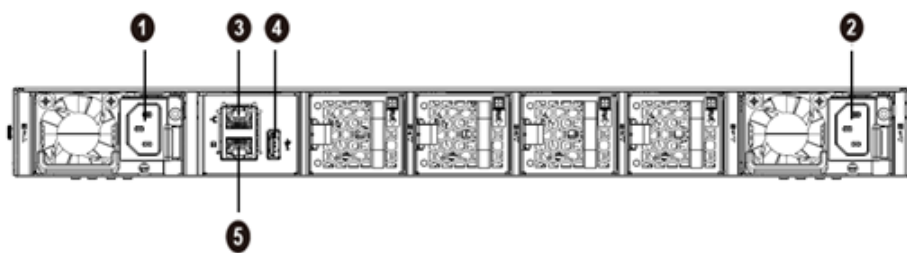


Table 3.2. Rear panel features

No	Description
1	AC Power Socket 2
2	AC Power Socket 1
3	Management Port
4	USB Port
5	Console Port

3.1. Button and System LED Information

This switch is equipped with SFP28 port link/activity LEDs (1 per port), QSFP28 port link/activity LEDs (4 per port), one activity LED and one link LED for the management port, and a health/status LED indicator on the front panel. These LEDs allow constant monitoring of basic system functions while the switch is operating and provide visual indication of system status.

Figure 3.3. Front Panel Button and LED

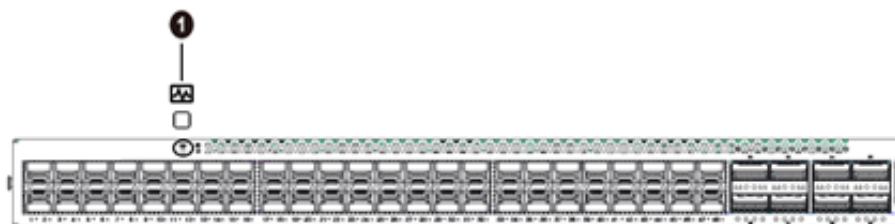


Table 3.3. Front panel features

No	Description
1	Health/Status LED

The back panel of this switch provides the AC power LEDs and fan module LEDs.

Figure 3.4. Rear Panel Button and LED

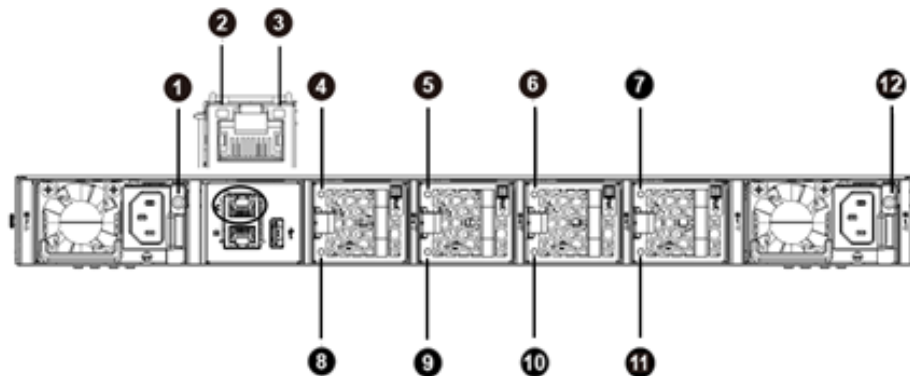


Table 3.4. Rear panel features

No	Description	No	Description
1	AC Power LED 2	7	Fan Module 1 Status LED_Green
2	Management port activity LED	8	Fan Module 4 Status LED_Red
3	Management port connectivity LED	9	Fan Module 3 Status LED_Red
4	Fan Module 4 Status LED_Green	10	Fan Module 2 Status LED_Red
5	Fan Module 3 Status LED_Green	11	Fan Module 1 Status LED_Red
6	Fan Module 2 Status LED_Green	12	AC Power LED 1

The detailed LED information is shown below:

Table 3.5. LED Information

LED Type	Color	Status	Function	
Health/status LED (bi-color)	Green		BIOS/Linux (Before SYSTEM_READY)	NOS/NPB(After SYSTEM_READY)
		On	N/A	Switch ready
		Blinking (0.5Hz)	Bootloader execution	N/A
		Blinking (1Hz)	Linux stage	UID
		Blinking (2Hz)	PSU unpowered	PSU unpowered
		Off	System not powered	System not powered
	Red	On	Power sequence error	Critical event
		Blinking (0.5Hz)	N/A	N/A
		Blinking (1Hz)	FW error	Caution event
		Blinking (2Hz)	Thermal Trip	Thermal Trip
		Off	System not powered	System not powered



The health/status LED function depends on the software installed. The description above is only for reference.

Table 3.6. Ports Activity LED Information

LED Type	Color	Status	Function
QSFP28 100G Mode Link/Activity LEDs (bi-color)	Green	On	(100G link) Link is up
		Blinking	100G activity
		Off	Link is down
	Red	On	Port fails
		Off	N/A
QSFP28 25G Mode Link/Activity LEDs	Green	On	25G link is up
		Blinking	25G activity
		Off	Link is down
SFP28 25G Mode Link/Activity LED (Single Color)	Green	On	Link is up
		Blinking	25G activity
		Off	Link is down
SFP28 10G Link/Activity LED	Amber	On	Link is up
		Blinking	10G activity
		Off	Link is down

Table 3.7. Back View LEDs

LED Type	Color	Status	Function
FAN Fault LED	Red	On	Fan fault
		Off	Fan functional
FAN Status LEDs	Green	On	Fan functional
		Off	Fan fault
PSU Status LED	Green	On	PSU full functional(supply P12V standby and P12V)
		Blinking	PSU is in standby mode(only supply the P12V standby)
		Off	AC cable is not plugged-in or broken
	Red	On	PSU fault
		Off	PSU no fault
Management Port GbE Link LED	Green	On	Link is up
		Off	Link is down
Management Port GbE Activity LEDs	Green	Blinking	Data transmitting/receiving
		Off	No traffic

3.2. Specification

System specification

Ports	<ul style="list-style-type: none"> • 48x 10/25GbE SFP28 + 8x 100/40GbE QSFP28 ports in 1 RU • Up to 80x 25/10G SFP28 port via break-out cables • 1x RJ-45 out-of-band (10/100/1000) management • 1x RJ-45 console (RS232) • 1x USB
Front IO	<ul style="list-style-type: none"> • System health/status LED • Reset button
Rear IO	<ul style="list-style-type: none"> • Fan LEDs • PSU1 status LED • PSU2 status LED
Performance	<ul style="list-style-type: none"> • Switching silicon: 2.0Tbps Barefoot Tofino BFN-T10-032D-020 • Intel® Xeon™ Processor D-1257 • 16GB DDR4 ECC • 128GB SSD
Power	<ul style="list-style-type: none"> • 80W 1+1 RPSU 80+ Platinum <ul style="list-style-type: none"> • 100V-240V AC / 50-60Hz • 240V HVDC • 800W 1+1 -40V~-60V DC RPSU (option) • Typical power - 350W • Maximum power - 415W
Cooling	<ul style="list-style-type: none"> • 4 N+1 redundant fans • Front-to-Back airflow
Dimensions (DxWxH)	482 x 440 x 44 mm
Environment	Operating temperature: 0~45°C
Operating humidity	20-95% maximum relative humidity (non-condensing)
Compatible NOS	<ul style="list-style-type: none"> • Open Network Linux • SONiC

3.3. Supported Cables and Transceivers

See the following table for the list of supported cables and transceivers.

Distance	Description	Note
1m	40/100G Direct Attach Copper (DAC) cable	QSFP28 to QSFP28
	40/100G DAC Fan Out cable	QSFP28 to 4 SFP28
3m	40/100G Direct Attach Copper (DAC) cable	QSFP28 to QSFP28
	40/100G DAC Fan Out cable	QSFP28 to 4 SFP28
7-100m	100G Active Optical Cable (AOC)	QSFP28 to QSFP28 850 nm, MMF
	40/100G DAC Fan Out cable	QSFP28 to 4 SFP28
Up to 100m	100GBASE-SR4 QSFP28 Transceiver Optic (MPO)	QSFP28, 850nm, MMF
Up to 10km	100GBASE-LR4 QSFP28 Transceiver Optic (LC)	QSFP28, 1290-1310nm, SMF