

The Aurora 715 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 RS-232-to-RJ45 console cable.
- One pair of frontal rack-mount brackets.
- Four rubber feet with adhesive patches.
- Eight Phillips-head frontal rack-mount bracket screws.



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

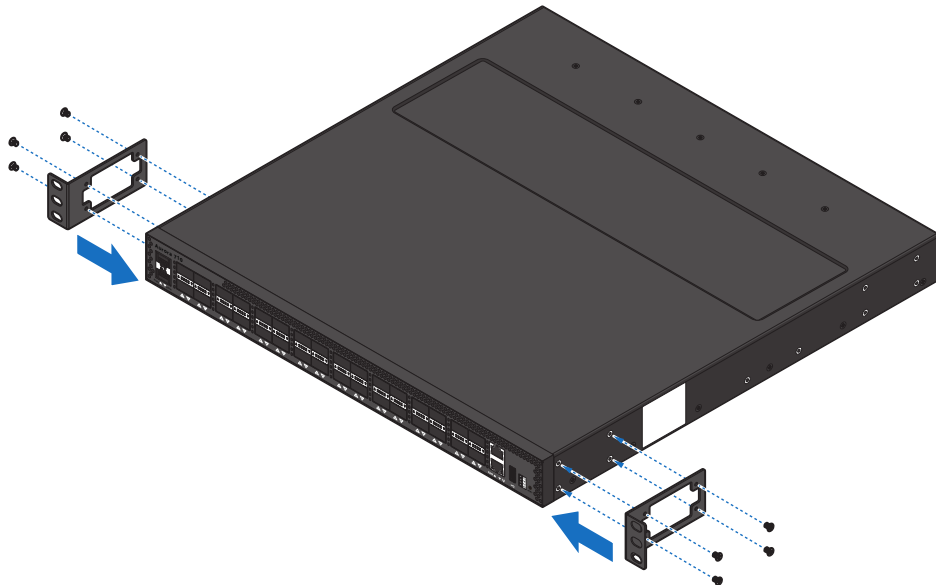
This section will discuss the hardware installation guidelines that administrators must follow in order to properly and safely install this switch into the appropriate environment.

2.2. Installation into a Rack

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

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

Figure 2.1. Front brackets installation

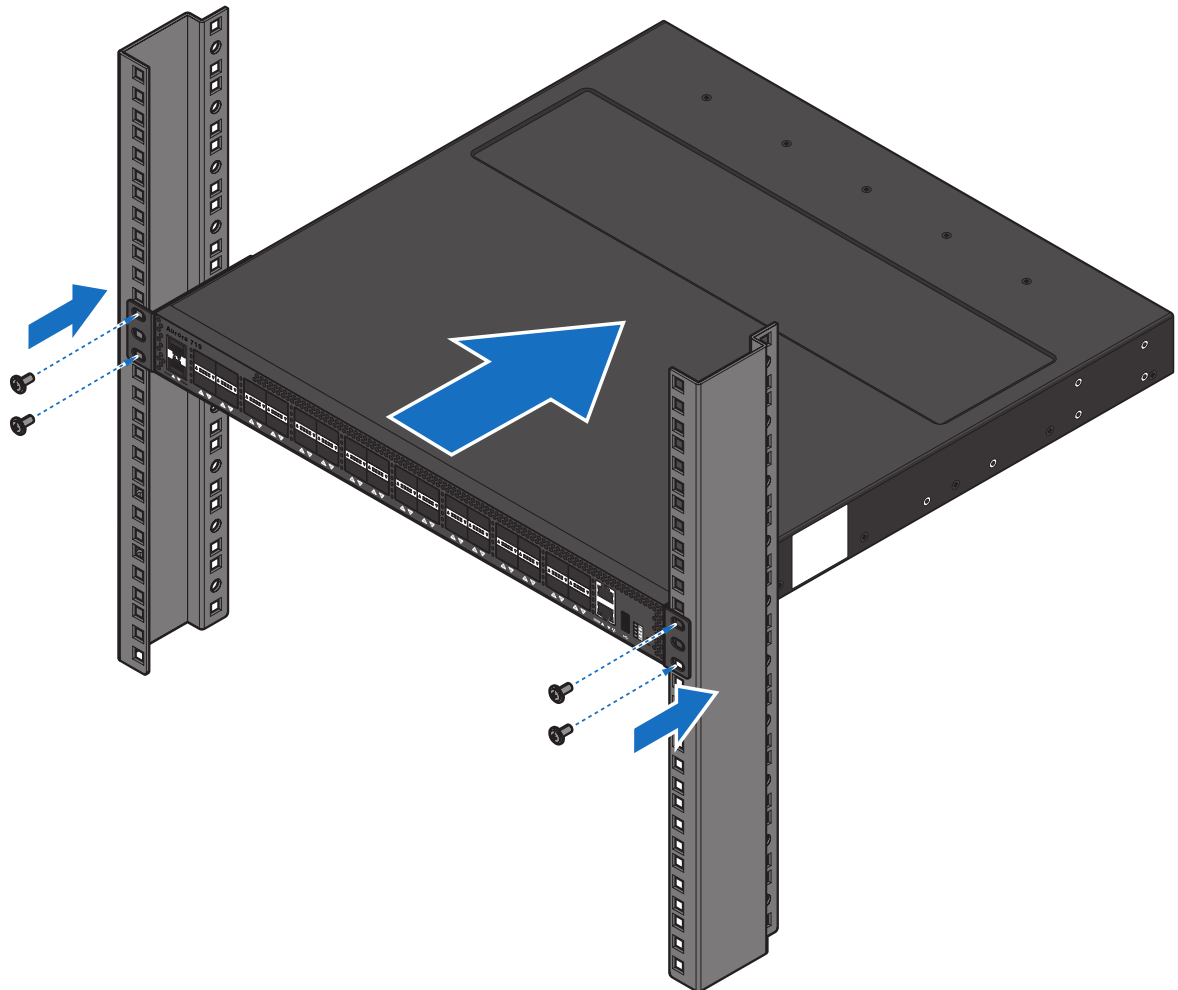


Two individuals are recommended to install the switch. One individual should position the switch in the rack, while the other secures it using the rack screws.

The switch can be installed directly on the rack without the use of the rail.

1. Align the built-in mounting ear to the rack holes.
2. Tighten the screws to secure the switch.

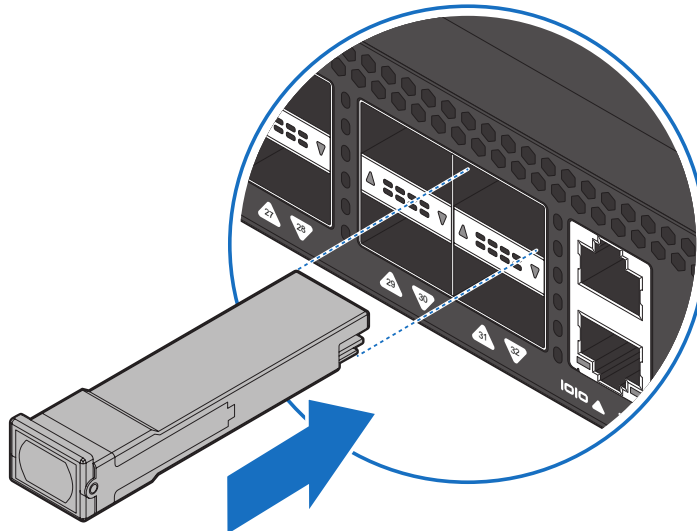
Figure 2.2. Rack installation



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

2.3. Installing Transceivers and cables into the Switch Ports

Figure 2.3. Transceivers and cables



2.3.1. 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.

2.3.2. 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.

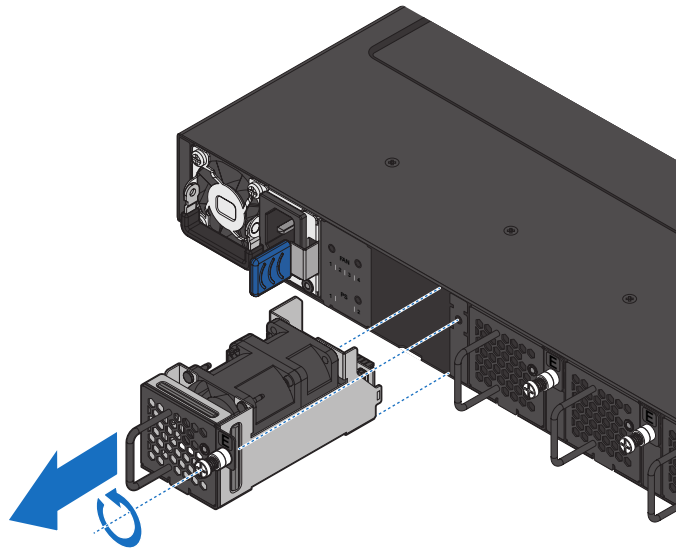
2.4. Fan Modules

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

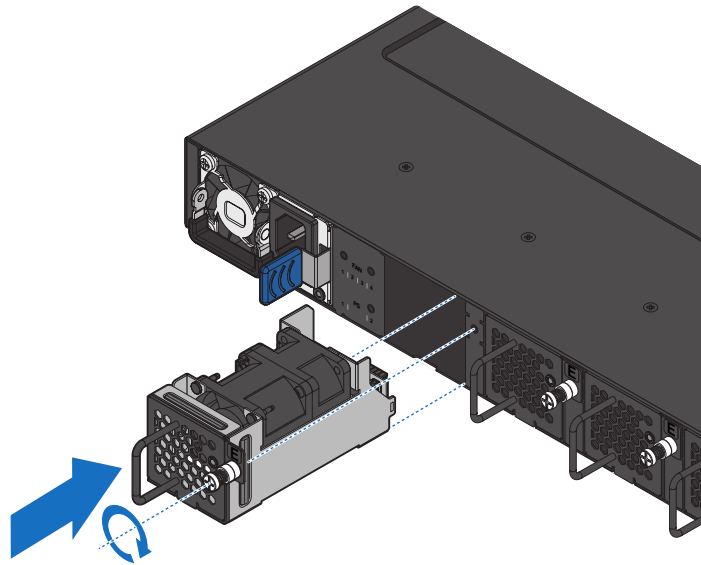
1. Loosen the captive screw securing the fan module.
2. Pull out the fan module.

Figure 2.4. Removing the fan module



3. Align the fan module with the switch bay.
4. Slide the fan module into the switch and push until it is flush with the bay.
5. Secure the captive screw.

Figure 2.5. Inserting the fan module



2.5. 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.

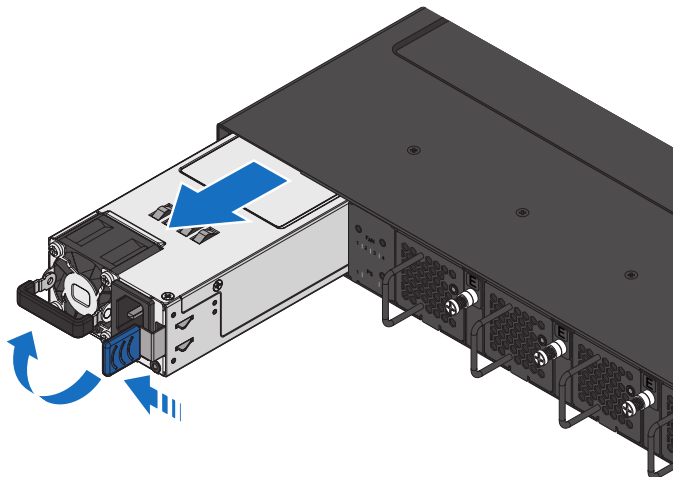


One PSU is enough for a fully loaded chassis.

2.5.1. Replacing a PSU

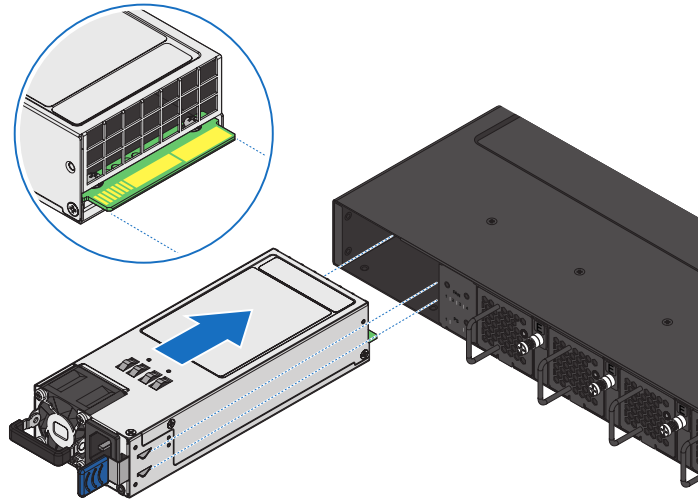
1. Hold the PSU handle and press the release latch to unlock from the switch.
2. Pull the PSU module out of the switch.

Figure 2.6. 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.

Figure 2.7. Inserting the PSU module

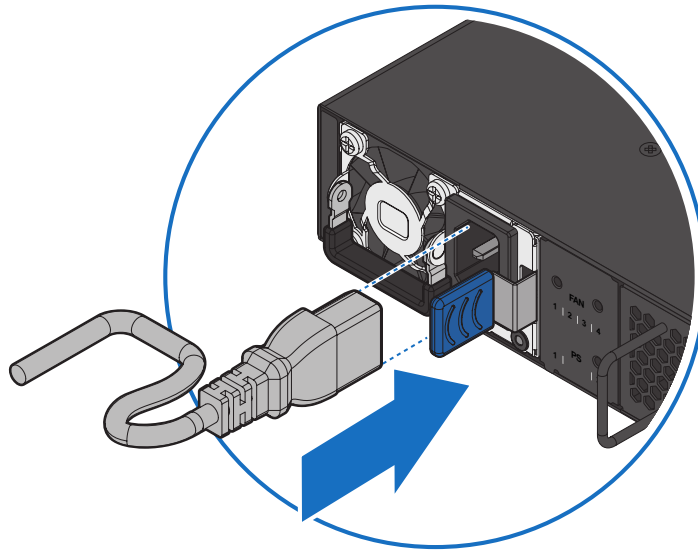


The AC power connector is a standard three-pronged connector. The switch automatically adjusts its power setting to any supply voltage in the range from 100-240 VAC at 50-60 Hz.

2.6. 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.



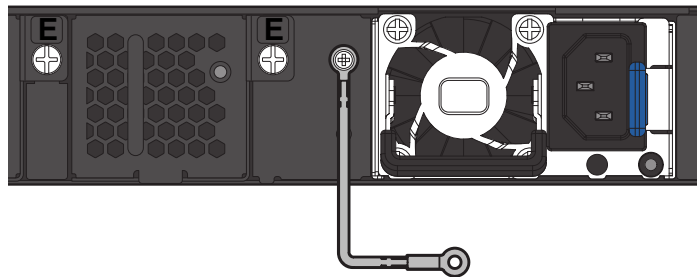
2.7. Grounding the Switch

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. Remove the grounding screw from the switch.
3. Connect the screw to an 18 AWG minimum grounding wire (not provided), and connect it to the grounding screw on the switch.
4. Connect the other end of the wire to rack ground.



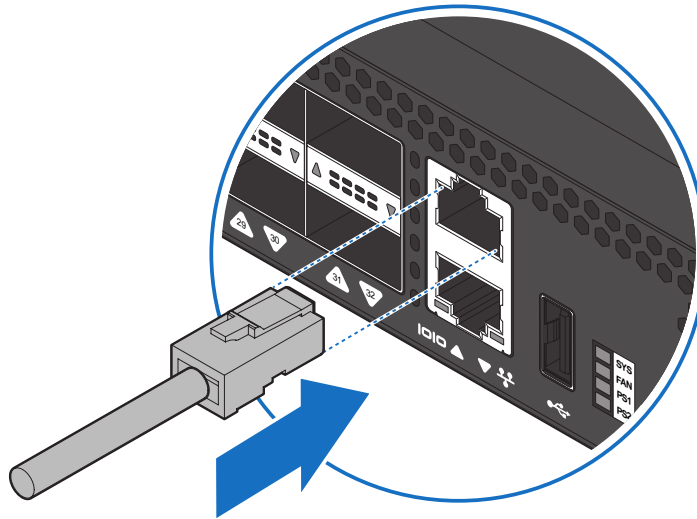
2.8. Rack-mount Safety Precautions

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.**

2.9. 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

2.10. Accessing the BMC

The BMC (Baseboard Management Processor) has a default IP address 192.168.0.100 and user name/password set as root/root.

An example of how to get the SEL records:

```
ipmitool -I lanplus -H 192.168.100.107 -U root -P root sel list
```

Chapter 3. Netberg Aurora 715 switch

The switch chassis is equipped with the following ports:

- 32x 100G QSFP28 ports supporting an optical transceiver, active optical cables, or direct-attached cable to connect the QSFP28 port to the hosts (uplink connections)
- 2 10G SFP+ ports from the CPU board
- 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 715 front view

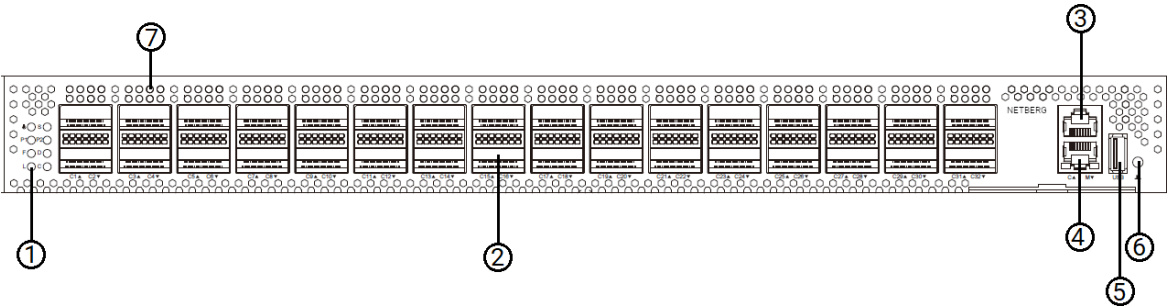


Table 3.1. Front panel features

No	Description	No	Description
1	Status LED group	4	OOB management port
2	32x 100G QSFP28 ports	5	USB port
3	RJ45 console port	6	Reset button
		7	QSFP28 activity LED

Figure 3.2. Aurora 715 rear view

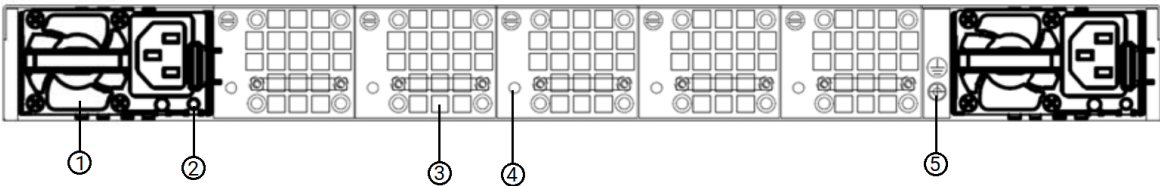


Table 3.2. Rear panel features

No	Description	No	Description
1	2x PSU modules	4	Fan status LED
2	PSU status LED	5	Grounding screw
3	5x fan modules		

Figure 3.3. Aurora 715 side view

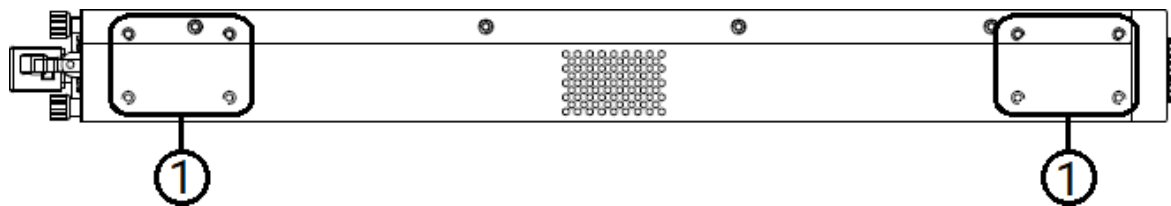


Table 3.3. Side panel features

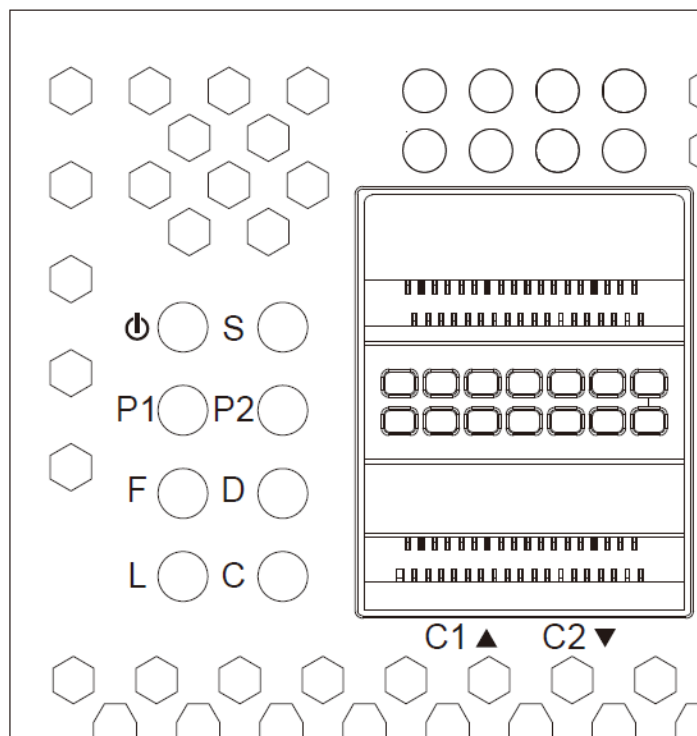
No	Description
1	Mounting holes

3.1. Button and System LED Information

This switch is equipped with QSFP28 port link/activity LEDs (4 per port), one activity LED and one link LED for the management port, and a health/status LED indicators 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 3.4. Aurora 715 system LED



No	Description	No	Description
P	System power LED	S	System status LED
P1	PSU1 status LED	P2	PSU2 status LED
F	Fan status LED	D	Airflow direction LED
L	Location LED	C	Console LED

Table 3.4. System LED Indicator definitions

LED	Color	Status	Description
System PWR	Green	Solid	System power on
	Amber	Solid	System power failure
S: System	Green	Solid	SW control
	Amber	Solid	SW control
P1: PSU1	Green	Solid	Power on

LED	Color	Status	Description
	Amber	Solid	PSU inserted but no power
	Off	Off	No PSU in the system
P2:PSU2	Green	Solid	Power on
	Amber	Solid	PSU inserted but no power
	Off	Off	No PSU in the system
F: FAN Status	Amber	Solid	One or more fans failure
	Green	Solid	Normal
D: Airflow Direction	Green	Solid	The airflow direction "Back to Front"
	Off	Off	The airflow direction "Front to Back"
L: LOC	Green/ Amber	-	SW control
C: Console	Green/ Amber	-	SW control



The SW control function depends on the software installed. The description above is only for reference.

Table 3.5. QSFP28 Per-Port Four LEDs Configuration definitions

Location	Description
LED 1	Per-port x 4 Lan SerDes (40/100G)
LED 1 and 3	Per-port x 2 Lan SerDes (50G)
LED 1 ,2 ,3 ,4	Per-port x 1 Lan SerDes (10/25G)

Table 3.6. Ports Activity LED Information

LED Type	Color	Status	Function
QSFP28 (four per port) Link/ Act/ Speed Mode	Blue	Solid light	When there is a secure connection (or link) to 100Gbps (2x50G and 4x25G) Ethernet device at any of the ports.
		Blinking	When there is reception or transmission of data occurring at 100Gbps (2x50G and 4x25G).
	Magenta	Solid light	When there is a secure connection (or link) to 40Gbps (4x10G) Ethernet device at any of the ports.
		Blinking	When there is reception or transmission of data occurring at 40Gbps (4x10G).
	Yellow (Light Lime)	Solid light	When there is a secure connection (or link) to 25Gbps Ethernet device at any of the ports.
		Blinking	When there is reception or transmission of data occurring at 25Gbps.

LED Type	Color	Status	Function
	Cyan (Aquamarine)	Solid light	When there is a secure connection (or link) to 50Gbps Ethernet device at any of the ports.
		Blinking	When there is reception or transmission of data occurring at 50Gbps.
	Red	Solid light	When there is a secure connection (or link) to 10Gbps Ethernet device at any of the ports.
		Blinking	When there is reception or transmission of data occurring at 10Gbps.

Table 3.7. Management Port LEDs

LED Type	Color	Status	Function
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"> • 32x 100/40GbE QSFP28 ports in 1 RU • Up to 128x 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 power LED • System status LED • PSU1 status LED • PSU2 status LED • Fan status LED • Airflow direction LED • Location LED • Console LED
Performance	<ul style="list-style-type: none"> • Switching silicon: 3.2Tbps Innovium Teralynx IVM 55300 • Intel® Pentium™ Processor D-1508 • 16GB DDR4 ECC • 128GB SSD
BMC	Aspeed 2520, ipmi 2.0
Power	<ul style="list-style-type: none"> • 600W 1+1 RPSU 80+ Platinum <ul style="list-style-type: none"> • 100V-240V AC / 50-60Hz • 800W 1+1 -40V~-60V DC RPSU (option) • Typical power - 300W • Maximum power - 500W (with 5W modules per port)
Cooling	<ul style="list-style-type: none"> • 5 N+1 redundant fans • Front-to-Back/Back-to-Front airflow
Dimensions (DxWxH)	470 x 440 x 44 mm
Environment	Operating temperature: 0~45°C

Netberg Aurora 715 switch

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