S4112–ON Series Installation Guide

May 2018

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.**

Contents

About this guide

This guide provides site preparation recommendations, step-by-step procedures for rack mounting and desk mounting, inserting modules, and connecting to a power source.

⚠ CAUTION: **To avoid electrostatic discharge (ESD) damage, wear grounding wrist straps when handling this equipment.**

⚠ WARNING: **Only trained and qualified personnel can install this equipment. Read this guide before you install and power up this equipment. This equipment contains two power cords. Disconnect both power cords before servicing.**

⚠ WARNING: **This equipment contains optical transceivers, which comply with the limits of Class 1 laser radiation.**


```
CLASS 1
LASER PRODUCT
```

Figure 1. Class 1 laser product tag

⚠ WARNING: **When no cable is connected, visible and invisible laser radiation may be emitted from the aperture of the optical transceiver ports. Avoid exposure to laser radiation. Do not stare into open apertures.**

Regulatory

- Marketing model S4112F-ON is represented by the regulatory model E24W and the regulatory Type E24W001.
- Marketing model S4112T-ON is represented by the regulatory model E24W and the regulatory Type E24W002.

Topics:

- Related documents
- Information symbols

Related documents

For more information about the S4112–ON Series (S4112F-ON and S4112T-ON), see the following documents:

- *OS10 Enterprise Edition Release Notes*
- *OS10 Enterprise Edition User Guide*
- *S4112–ON Series Set-up Guide*
- *S4112-ON Series Release Notes*
- *Open Networking Hardware Diagnostic Guide*

ⓘ NOTE: **For the most recent documentation, see Dell EMC support: www.dell.com/support.**

Information symbols

This book uses the following information symbols:

ⓘ | **NOTE:** The Note icon signals important operational information.

△ | **CAUTION:** The Caution icon signals information about situations that could result in equipment damage or loss of data.

⚠ | **WARNING:** The Warning icon signals information about hardware handling that could result in injury.

⚠ | **WARNING:** The ESD Warning icon requires that you take electrostatic precautions when handling the device.

S4112–ON Series switch

The following sections describe the Dell EMC S4112–ON Series (S4112F-ON and S4112T-ON) switch:

Topics:

Introduction

The S4112–ON Series (S4112F-ON and S4112T-ON) is a one-half rack unit (RU), full-featured fixed form-factor top-of-rack (ToR) 1/10/25/40/50/100GbE switch for 10G servers with small form-factor pluggable plus (SFP+) and quad small form-factor pluggable 28 (QSFP28) ports.

- The S4112F-ON supports 1/10/25/40/50/100GbE with 12 fixed SFP+ ports to implement 1GbE and 10GbE and three fixed QSFP28 ports to implement 4x10, 4x25, 2x50, 40, and 100GbE.
- The S4112T-ON supports 1/10/25/40/50/100GbE with 12 RJ-45 ports to implement 1GbE and 10GbE and three QSFP28 port to implement 4x10, 4x25, 2x50, 40, and 100GbE.

The S4112-ON Series supports the following configurations:

Table 1. S4112-ON Series supported configurations

S4112F-ON	S4112T-ON
12 x 10G + 3 x 100G	12 x 10GBaseT + 3 x 100G
12 x 10G + 12 x 25G	12 x 10GBaseT + 12 x 25G
12 x 10G + 3 x 40G	12 x 10GBaseT + 3 x 40G
24 x 10G	12 x 10GBaseT + 12 x 10G SFP+
12 x 10G + 6 x 50G	12 x 10GBaseT + 6 x 50G
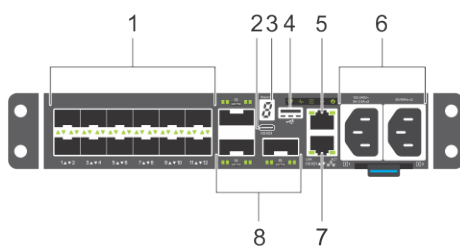
Figure 2. S4112F–ON Series AC I/O-side view

1	Twelve SFP+ ports	2	Micro USB-B console port
3	Stack ID	4	Ethernet management port
5	RS-232 console port	6	AC PSUs
7	RJ-45 management port	8	Three QSFP28 ports
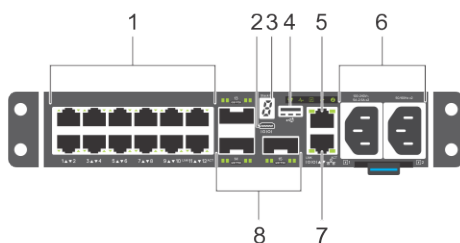
Figure 3. S4112T–ON Series AC I/O-side view

1	Twelve SFP+ ports	2	Micro USB-B console port
3	Stack ID	4	Ethernet management port
5	RS-232 console port	6	AC PSUs
7	RJ-45 management port	8	Three QSFP28 ports
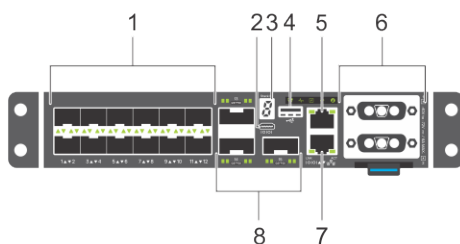
Figure 4. S4112F–ON Series DC I/O-side view

1	Twelve RJ-45 ports	2	Micro USB-B console port
3	Stack ID	4	Ethernet management port
5	RS-232 console port	6	DC PSUs
7	RJ-45 management port	8	Three QSFP28 ports
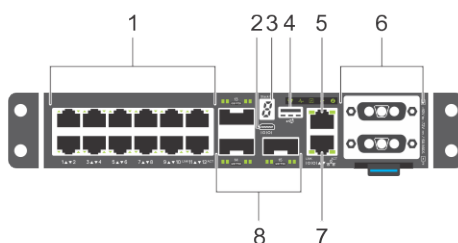
Figure 5. S4112T–ON Series DC I/O-side view

1	Twelve RJ-45 ports	2	Micro USB-B console port
3	Stack ID	4	Ethernet management port
5	RS-232 console port	6	DC PSUs
7	RJ-45 management port	8	Three QSFP28 ports

The S4112–ON Series fan-side of the switch has three integrated fans.

> (i) **NOTE:** The S4112-ON Series has a DC power source rated -40 to -72 VDC, 6A minimum, Tma=40C, and an altitude operation of 3048m. The power cable is 10AWG, 16A minimum, with a 72V minimum rating.
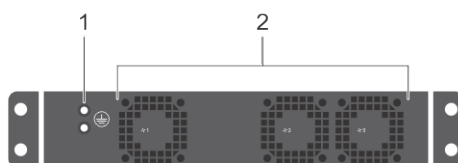
Figure 6. S4112–ON Series AC and DC fan-side view

1	Ground holes	2	Fans

Features

The S4112–ON Series (S4112F-ON and S4112T-ON) offers the following features:

- S4112F-ON: 12 fixed 1/10GbE SFP+ ports and 3 fixed 100GbE QSFP28 ports
- S4112T-ON: 12 fixed 1/10GBASE-T RJ-45 ports and 3 fixed 100GbE QSFP28 ports
- One MicroUSB-B serial console port
- One RJ-45 serial console port
- One universal serial bus (USB) Type-A port for more file storage
- One ESD Jack
- One 2-Core Rangeley C2338 processing unit (CPU), 7.5Watts TDP 1.7 GHz, one memory channel with one 4GB 1600MTS DDR3 SO-DIMM module, and one 16GB mSATA/M.2 SSD module
- Seven-segment stacking indicator
- Two power supply units
- Integrated fan units
- 1/2RU chassis

Physical dimensions

The S4112–ON series (S4112F-ON and S4112T-ON), has the following physical dimensions:

- 209 x 450 x 41.25 mm (W x D x H)
- 8.2 x 17.7 x 1.75 inches (W x D x H)

LED display

The S4112–ON Series (S4112F-ON and S4112T-ON), contains LED displays on the I/O side of the switch. This section describes open networking installation environment (ONIE) LED behaviors. Some LED behaviors may change after you install your software.

LED behavior

The following S4112–ON Series switch LED behavior displays during ONIE operations:
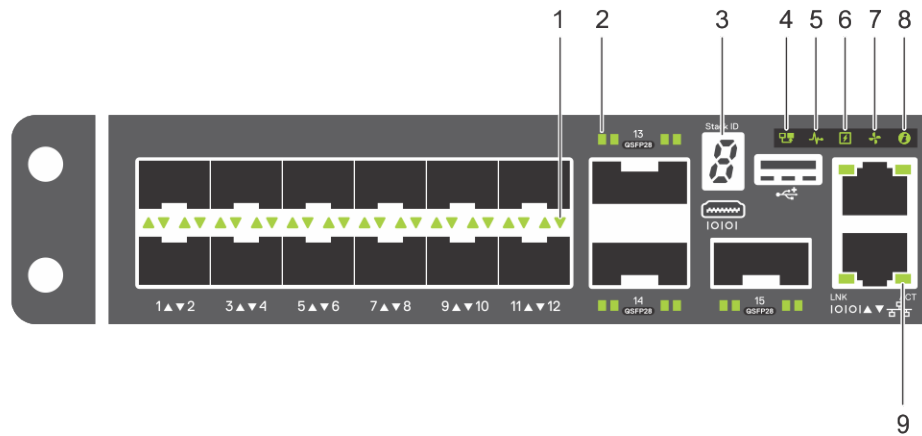
Figure 7. S4112F–ON AC and DC I/O-side LEDs

1	SFP+ port LED	2	QSFP28 port LED
3	Stack ID	4	Master LED
5	System LED	6	Power LED
7	Fan LED	8	Locator LED/System beacon
9	RJ-45/RS-232 LED		

ⓘ NOTE: **Some LED behaviors change after you install your software.**
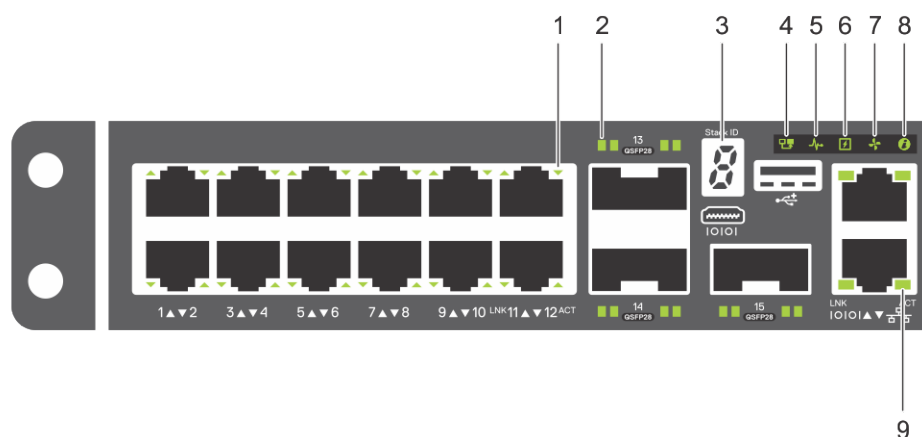
Figure 8. S4112T–ON AC and DC I/O-side LEDs

1	RJ-45 port LED	2	QSFP28 port LED
3	Stack ID	4	Master LED
5	System LED	6	Power LED
7	Fan LED	8	Locator LED/System beacon
9	RJ-45/RS-232 LED		

Table 2. S4112–ON Series LED behavior

LED	Description
System Status/Health LED	• Solid green—Normal Operation • Flashing green—Booting • Solid yellow—Critical system error • Flashing yellow—Noncritical system error, fan failure, or power supply failure
Power LED	• Off—No power • Solid green—Normal • Solid yellow—POST is in process • Flashing yellow—Power Supply failure or loss of power redundancy
FAN LED	• Off—No power • Solid green—Fan powered and running at the expected RPM • Flashing yellow—Fan failed or loss of cooling redundancy
PSU LED	• Off—No power • Solid green—Normal • Flashing yellow—PSU failure • Flashing green—FW update
Locator LED/System Beacon	• Off—Locator function is disabled • Flashing blue—Locator function is enabled

LED	Description
Master LED	• Off—system is the stack slave • Solid green—System is the stack master or a standalone unit
7-segment LED	• Off—No power • Solid green—displays a hex digit representing the stack unit ID

Table 3. System management Ethernet port LEDs

LED	Description
Link LED	• Off—No link • Solid green—Link operating at a maximum speed, autonegotiated/forced or 1G • Solid yellow—Link operating at a lower speed, autonegotiated/forced or 10/100M
Activity LED	• Off—No link • Flashing green—Port activity

Table 4. SFP+ port LEDs

LED	Description
Link LED	• Off—No link • Solid green—Link operating at maximum speed—10G on an SFP+ port • Solid yellow—Link operating at a lower speed—1G on an SFP+ port
Activity LED	• Off—No link • Flashing green—Port activity • Solid blue, 1 second on/off—Port beacon

(i) NOTE: There are four LEDs for each QSFP28 port. For each port, 100GbE or 40GbE uses only one LED, 2x50GbE uses two LEDs, and 4x25GbE or 4x10GbE uses all four LEDs.

Table 5. QSFP28 port LEDs

LED	Description
Link/Activity LED	• Off—No link • Solid green—Port link operating at maximum speed—100G on a QSFP28 port or 40G on a QSFP+ port • Flashing green—Port activity operating at maximum speed—100G on a QSFP28 port • Solid yellow—Port link operating at a lower speed • Flashing yellow, 1 second on/off—Port beacon—Port activity at 100G on a QSFP28 port
Link/Activity LED—4x25G mode or 4x10G mode	• Off—No link

LED	Description
	• Solid green—Port link at 4x25G on a QSFP28 port or 4x10G on a QSFP+ port
	• Flashing green—Port activity at 4x25G on a QSFP28 port
	• Solid yellow—Port link at 4x10G on a QSFP28 port
	• Flashing yellow, 1 second on/off—Port beacon—Port activity at 4x10G on a QSFP28 port
Link/Activity LED—2x50G	• Off—No link
	• Solid yellow—Port link at 2x50G on a QSFP28 port
	• Flashing yellow—Port activity at 2x50G on a QSFP28 port
	• Flashing yellow, 1 second on/off—Port beacon

Prerequisites

ⓘ NOTE: **For detailed installation instructions, see** Site preparations **and** S4112-ON Series installation **sections.**

The following is a list of required and optional components for the S4112–ON Series switch:

• S4112F-ON or S4112T-ON switch
• AC country- and regional-specific cables to connect the AC power source to each of the switches' AC power supplies
• Metal wire clips for AC power cables
• Dual tray or single rails, not included
• Screws for rack installation, not included
• #1 and #2 Phillips screwdrivers, not included
• Torx screwdriver, not included
• Ground cable screws, included
• Copper or fiber cables

Other optional components are:

• AC or DC ground cable for the frame-end of the ground cable
• AC ground lug
• Extra power supply unit

ⓘ NOTE: **The DC ground lug kit ships with the other accessories inside the shipping box.**

S4112–ON Series configurations

The S4112–ON Series (S4112F-ON and S4112T-ON) switch is available in several different configurations.

All S4112–ON Series switches include the following configurations:

• AC power supply with airflow from the I/O side to the PSU side—normal
• AC power supply with airflow from the PSU side to the I/O side—reverse
• DC power supply with airflow from the I/O side to the PSU side—normal
• DC power supply with airflow from the PSU side to the I/O side—reverse

The following table lists each S4112-ON Series switch configuration:

Table 6. S4112–ON Series configurations

S4112–ON Series Switch	Configuration
S4112F-ON AC or DC Normal airflow	12 fixed SFP+ ports, 3 fixed QSFP28 ports, 7-segment stacking indicator, 1 micro-USB-B console port, 1 USB type-A port, 1 RJ-45 10/100/1000 Base-T Ethernet management port, 2 AC or DC PSUs, and 3 integrated fans.
S4112F-ON AC or DC Reverse airflow	12 fixed SFP+ ports, 3 fixed QSFP28 ports, 7-segment stacking indicator, 1 micro-USB-B console port, 1 USB type-A port, 1 RJ-45 10/100/1000 Base-T Ethernet management port, 2 AC or DC PSUs, and 3 integrated fans.
S4112T-ON AC or DC Normal airflow	12 fixed 10GBASE-T ports, 3 fixed QSFP+ ports, 7-segment stacking indicator, 1 micro-USB-B console port, 1 USB type-A port, 1 RJ-45 10/100/1000 Base-T Ethernet management port, 2 AC or DC PSUs, and 3 integrated fans.
S4112T-ON AC or DC Reverse airflow	12 fixed 10GBASE-T ports, 3 fixed QSFP+ ports, 7-segment stacking indicator, 1 micro-USB-B console port, 1 USB type-A port, 1 RJ-45 10/100/1000 Base-T Ethernet management port, 2 AC or DC PSUs, and 3 integrated fans.

Luggage tag

The S4112–ON Series (S4112F-ON and S4112T-ON) switch has a pull-out tag, known as a luggage tag, on the PSU-side of the switch. The front of the luggage tag includes switch ID information. The back of the luggage tag includes a QRL that takes you to a How-To site where you can watch videos about racking the switch, replacing components, configuring port channels, and so on.

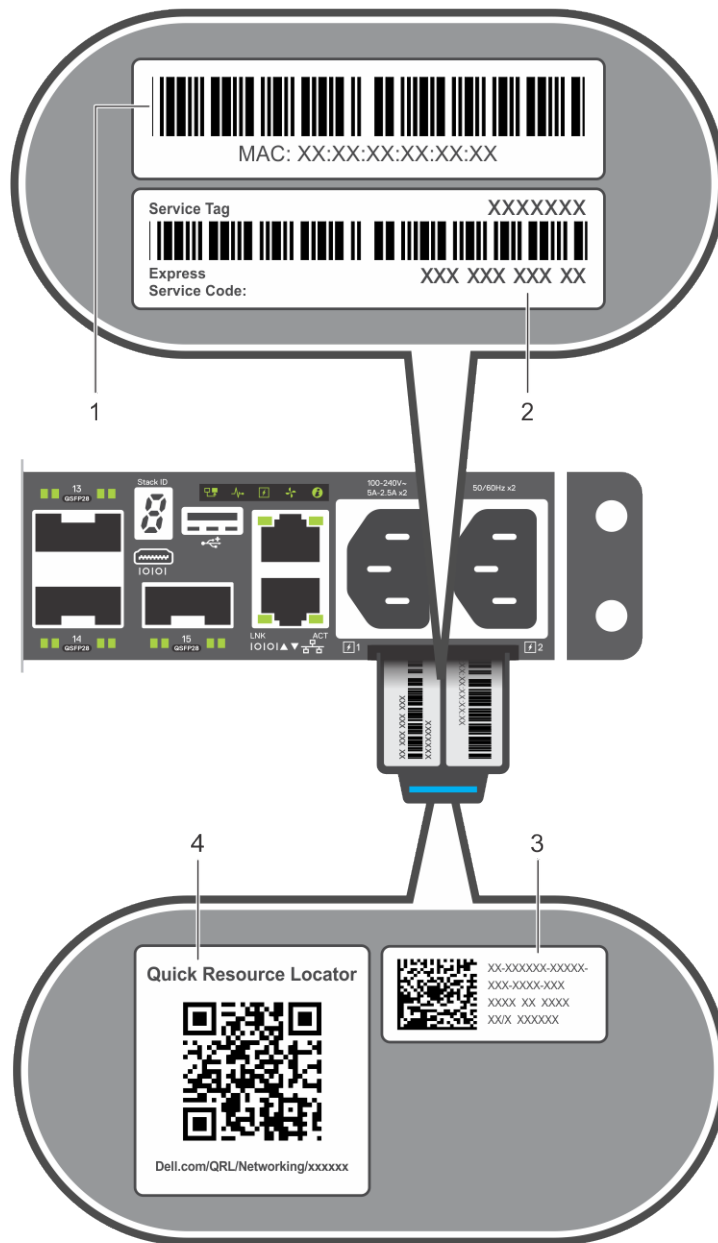**Figure 9. S4112–ON Series AC luggage tag**

1	MAC address	2	Service tag
3	System QRL	4	QRL
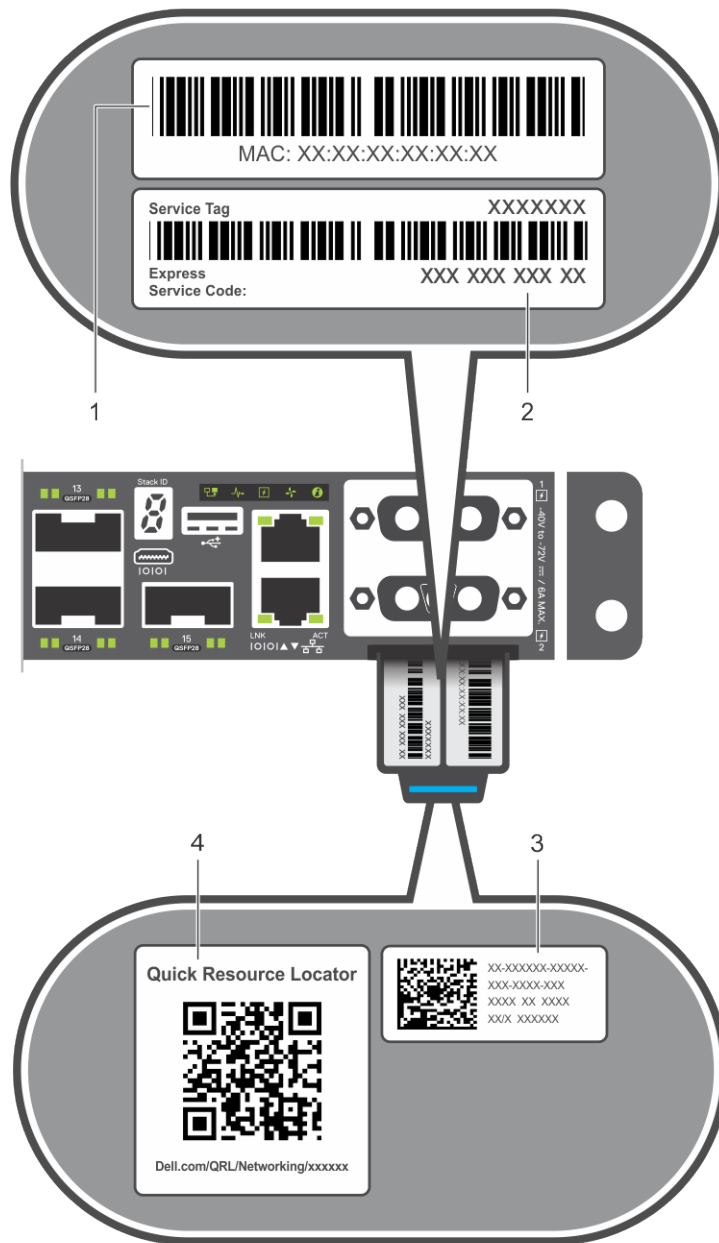
Figure 10. S4112–ON Series DC luggage tag

1	MAC address	2	Service tag
3	System QRL	4	QRL

Site preparations

The S4112–ON Series (S4112F-ON and S4112T-ON) switch is suitable for installation as part of a common bond network (CBN).

You can install the switch in:

- Network telecommunication facilities
- Data centers
- Other locations where the National Electric Code (NEC) applies

For more information about switch specifications, see Specifications.

ⓘ **NOTE: Install the switch into a rack or cabinet before installing any additional components such as cables or optics.**

Topics:

- Site selection
- Cabinet placement
- Rack mounting
- Switch ground
- Fans and airflow
- Power
- Storing components

Site selection

Install Dell EMC equipment in restricted access areas.

A restricted access area is one where service personnel can only gain access using a special tool, lock, key, or other means of security. The authority responsible for the location controls access to the restricted area.

Ensure that the area where you install your S4112–ON Series switch meets the following safety requirements:

- Near an adequate power source. Connect the switch to the appropriate branch circuit protection according to your local electrical codes.
- Environmental, or switch location, temperature range is from (from 5º to 40ºC (50 to 104ºF).
- Operating humidity is from 5 to 85 percent non-condensing.
- In a dry, clean, well-ventilated, and temperature-controlled room, away from heat sources such as hot cooling vents or direct sunlight.
- Away from sources of severe electromagnetic noise.
- Inside the restricted access area, positioned in a rack or cabinet, or on a desktop with adequate space in the front, back, and sides for proper ventilation and access.
- Install the switch in Information Technology Rooms in accordance with Article 645 of the National Electrical Code and NFPA 75.

For more information about switch storage and environmental temperatures, see Specifications.

Cabinet placement

Install the S4112–ON Series switch only in indoor cabinets designed for use in a controlled environment.

Do not install the switch in outside cabinets. For cabinet placement requirements, see Site selection.

The cabinet must meet minimum size requirements. Airflow must be in accordance with the Electronic Industries Alliance (EIA) standard. Ensure that there is a minimum of 5 inches (12.7 cm) between the intake and exhaust vents and the cabinet wall.

Rack mounting

When you prepare your equipment rack, ensure that the rack is grounded.

Ground the equipment rack to the same ground point the power service in your area uses. The ground path must be permanent.

Switch ground

Dell EMC recommends grounding your switch. Use the S4112–ON Series switch in a CBN.

ⓘ **NOTE: For an AC-powered switch, although the third conductor of the AC power cord provides a ground path, Dell EMC recommends grounding your switch with a dedicated ground wire.**

ⓘ **NOTE: For a DC-powered switch, the only way to safely ground your switch is to attach a dedicated ground wire. The ground lug kit ships in a plastic bag placed with the other accessories inside the shipping box. The ground lug bracket screws ship attached to the switch. Before you install the DC switch in the dual-tray, attach the ground lug and bracket to the switch using the included screws and then attach the DC ground wire to the ground lug. The DC-powered switch ships with the DC ground lug, bracket, and screws.**

For more information, see Ground cable.

Fans and airflow

The fans on the S4112–ON Series (S4112F-ON and S4112T-ON) switch support two airflow options: normal and reverse.

Fan combinations

Fan installation is done as part of the factory install based on SKU type. The S4112–ON Series has stock keeping units (SKUs) that support the following configurations:

- AC PSU and system fans normal airflow
- AC PSU and system fans reverse airflow
- DC PSU and system fans normal airflow
- DC PSU and system fans reverse airflow
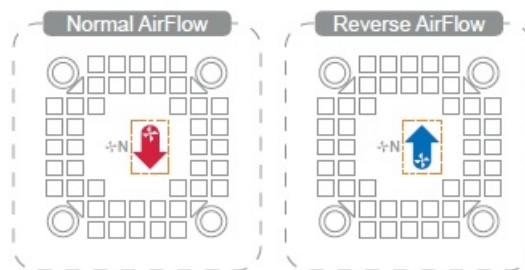
Figure 11. Fan airflow

- Red down arrow shows hot airflow out.
- Blue up arrow shows cold airflow in.

For proper ventilation, position the switch in an equipment rack or cabinet with a minimum of 5 inches (12.7 cm) of clearance around the exhaust vents. When you install two S4112–ON Series switches near each other, to permit proper airflow, position the two switches at least

5 inches (12.7 cm) apart. The fan speed varies based on internal temperature monitoring. The S4112–ON Series never intentionally turns off the fans.

For more information, see Fans.

Power

To connect the switch to the applicable power source, use the appropriate power cable. An AC power cable is included with each PSU.

When installing AC or DC switch, follow the requirements of the National Electrical Code ANSI/NFPA 70, where applicable.

The switch is powered-up when the power cable is connected between the switch and the power source.

After you connect the AC power cable to the switch, attach the metal wire clip. For more information, see Power supplies.

⚠ **CAUTION: Always disconnect the power cable before you service the power supply slots. The switch has multiple power cords. Before servicing, ensure all power cords are disconnected.**

⚠ **CAUTION: On the AC switch, use the power supply cable as the main disconnect device. Ensure that the socket-outlet is located/installed near the equipment and is easily accessible.**

Storing components

If you do not install your S4112–ON Series switch and components immediately, properly store the switch and all optional components following these guidelines:

- Storage location temperature must remain constant. The storage range is from -40° to 65°C (-40° to 149°F).
- Store on a dry surface or floor, away from direct sunlight, heat, and air conditioning ducts.
- Store in a dust-free environment.

ⓘ **NOTE: ESD damage can occur when components are mishandled. Always wear an ESD-preventive wrist or heel ground strap when handling the S4112–ON Series switch and its accessories. After you remove the original packaging, place the S4112–ON Series switch and its components on an anti-static surface.**

4

S4112–ON Series installation

To install the S4112-ON Series (S4112F-ON and S4112T-ON) switch, complete the installation procedures in the order presented in this section.

Always handle the switch and its components with care. Avoid dropping the switch or any field replaceable units (FRUs).

ⓘ **NOTE: ESD damage can occur if components are mishandled. Always wear an ESD-preventive wrist or heel ground strap when handling the S4112–ON Series switch and its components. As with all electrical devices of this type, take all the necessary safety precautions to prevent injury when installing this switch.**

ⓘ **NOTE: For more information, see the *Open Networking Hardware Diagnostic Guide*.**

Topics:

- Unpack
- Ground cable
- Rack or cabinet installation
- Half RU front-rack installation
- Switch installation
- Optics installation
- Switch power-up
- After switch installation
- Switch replacement

Unpack

ⓘ **NOTE: Before unpacking the switch, inspect the container and immediately report any evidence of damage.**

When unpacking the S4112-ON Series switch, make sure that the following items are included:

- One S4112F-ON or S4112T-ON switch
- One RJ-45 to DB-9 female cable
- AC power: two country- and region-specific AC power cables
- Two AC power cable clips
- DC power: two DC connectors
- AC ground lug kit
- DC ground lug kit—included in the accessories box
- *S4112–ON Series Set-up Guide*
- *Safety and Regulatory Information*
- *Warranty and Support Information*

Unpack steps

1   Place the container on a clean, flat surface and cut all straps securing the container.

2   Open the container or remove the container top.

3   Carefully remove the switch from the container and place it on a secure and clean surface.

4   Remove all packing material.

5   Inspect the product and accessories for damage.

Ground cable

ⓘ **NOTE: For an AC-powered switch, although the third conductor of the AC power cord provides a ground path, Dell EMC recommends grounding your switch with a dedicated ground wire.**

ⓘ **NOTE: For a DC-powered switch, the only way to safely ground your switch is to attach a dedicated ground wire. The ground lug kit ships in a plastic bag placed with the other accessories inside the shipping box. The ground lug bracket screws ship attached to the switch. Before you install the DC switch in the dual-tray, attach the ground lug and bracket to the switch using the included screws and then attach the DC ground wire to the ground lug.**

The ground cable is not included. To properly ground the chassis, Dell EMC recommends a one- or two-hole lug, M4 hole size. The ground lugs must be a UL-recognized, crimp-type lug.

⚠ **CAUTION: Grounding conductors *must* be made of copper. Do not use aluminum conductors.**

ⓘ **NOTE: Coat the one-hole lug with an anti-oxidant compound before crimping. Also, bring any unplated mating surfaces to a shiny finish and coat with an anti-oxidant before mating. Plated mating surfaces must be clean and free from contamination.**

Before you install the switch into the dual-tray:

1   Cut the ground cable (not included) to the desired length. The cable length must facilitate proper operation of the fault interrupt circuits. Use the shortest cable route allowable.

2   Unscrew the two attached M4 screws and set aside.

3   Attach the ground lug and bracket to the switch using the M4 screws.

4   Using one of the two M4 threaded holes, attach the ground cable to the lug. Use the M4 screw with a captive internal tooth lock washer. Torque the screw to ±5-6 in-lbs.

5   Attach the other end of the ground cable to a suitable ground point such as the rack or cabinet.

     The rack installation ears are not a suitable grounding point.

Rack or cabinet installation

You may either place the switch on a rack shelf or mount the switch directly into a 19" wide, EIA-310- E-compliant rack. The dual-tray mounting rails ship with the dual tray, not the switch.

⚠ **WARNING: This guide is a condensed reference. Read the safety instructions in your *Safety, Environmental, and Regulatory* information booklet before you begin.**

ⓘ **NOTE: The illustrations in this section are not intended to represent a specific switch.**

ⓘ **NOTE: Do not the use the mounted rails as a shelf or a workplace.**

Rack mount safety considerations

- Rack loading—Overloading or uneven loading of racks may result in shelf or rack failure, possibly damaging the equipment and causing personal injury. Stabilize racks in a permanent location before loading begins. Mount the components starting at the bottom of the rack, then work to the top. Do not exceed your rack's load rating.

- Power considerations—Connect only to the power source specified on the unit. When you install multiple electrical components in a rack, ensure that the total component power ratings do not exceed the circuit capabilities. Overloaded power sources and extension cords present fire and shock hazards.

- Elevated ambient temperature—If you install the switch in a closed rack assembly, the operating temperature of the rack environment may be greater than the room ambient temperature. Use care not to exceed the 45°C (113°F) maximum ambient temperature of the switch.

- Reduced air flow—Do not compromise the amount of airflow required for safe operation of the equipment. Install the equipment in the rack so that the equipment constantly has the correct amount of airflow surrounding it.

- Reliable earthing—Maintain reliable earthing of rack-mounted equipment. Pay particular attention to the supply connections other than the direct connections to the branch circuit, for example: use of power strips.

- Do not mount the equipment with the fan panel facing downward.

Half RU front-rack installation

The dual-tray mounting rails ship with the dual tray, not with the switch. You must supply eight rack-mount screws for this installation.

To install the half-RU switch:

- Attach the rails to the dual tray.
- Install the dual tray in the rack.
- Install the switch in the dual tray.

ⓘ **NOTE: Dell EMC does not recommend installing the dual tray in a 2-post rack. However, it is possible. If you must install the dual tray in a 2-post rack, contact Dell EMC Technical Support.**

1   Remove the dual tray and the rails from the shipping packaging and place them on a clean antistatic surface.
2   Line up the three holes on the inner switch rail with the dual-tray mounting heads.
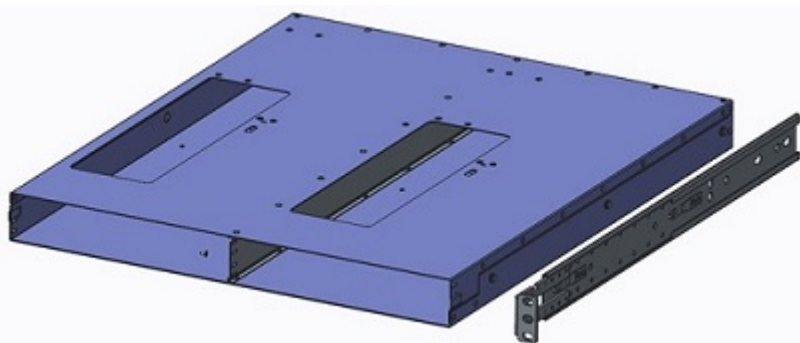
Figure 12. Dual-tray and rack mounting rail

3   Attach the rail to the dual tray. Slide the rail back until it locks into place.
4   Repeat with the other side.
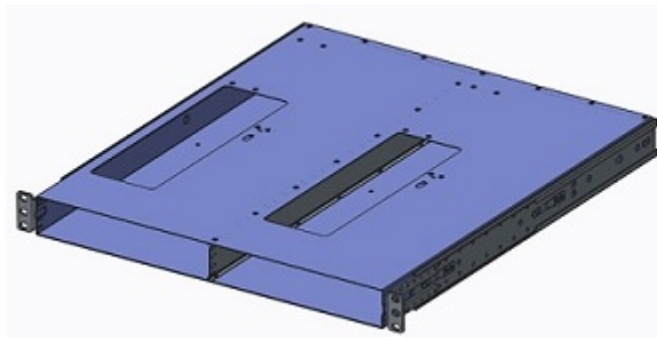
Figure 13. Attach dual-tray and rack mounting rails

5   Install the dual tray inside the 4-post rack. Rack mount screws are not included.

6   Attach the front dual-tray switch rails to the 4-post rack from the front. Secure the dual tray to the rack using two user-supplied screws for each rack post.
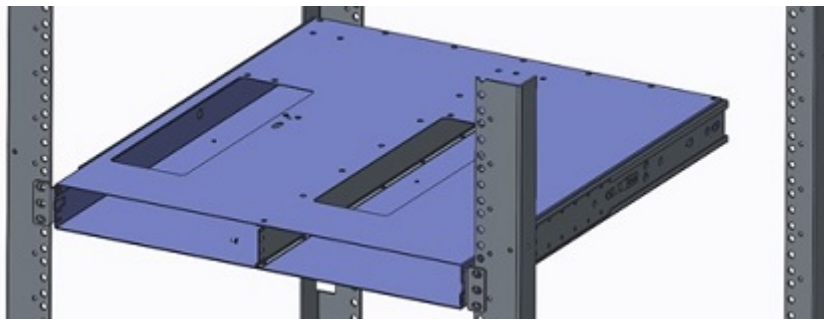
Figure 14. Attach the dual-tray front to the 4-post rack front

7   Attach the rear dual-tray switch rails to the 4-post rack from the rear. Secure the dual tray to the rack using two user-supplied screws for each rack post.
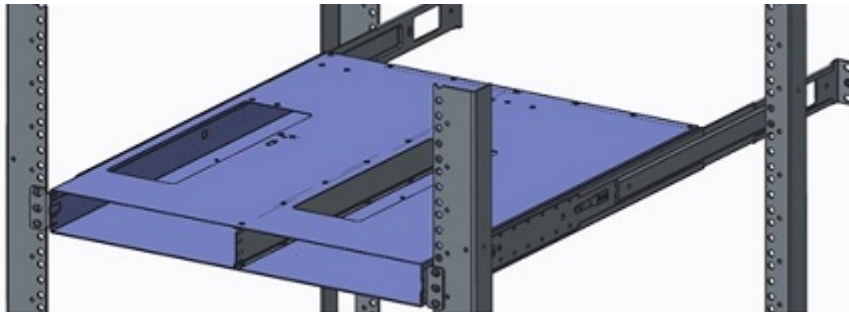
Figure 15. Attach the dual-tray rear to the 4-post rack rear

8   Tighten all mounting screws to securely mount the dual tray into the 4-post rack.
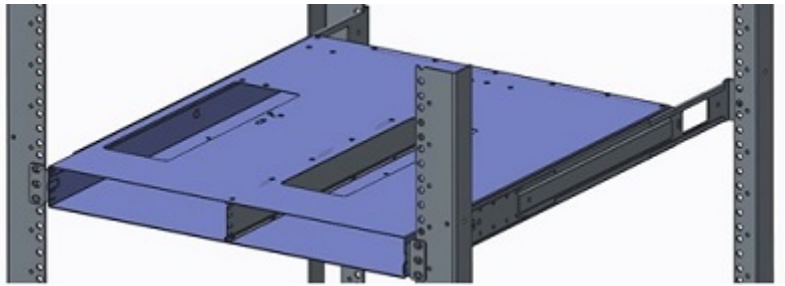
Figure 16. Secure the dual-tray in the 4-post rack

Switch installation

Install one or two half-RU switches in the four-post rack-mounted dual tray.

1   Install one switch into either dual-tray slot from the front.
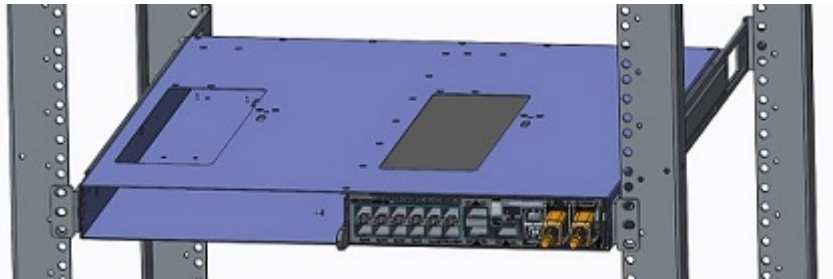
Figure 17. Install an S4112-ON Series switch

The switch is fully inserted when it hits the stop feature on the dual tray. The front switch latch snaps the switch into place.
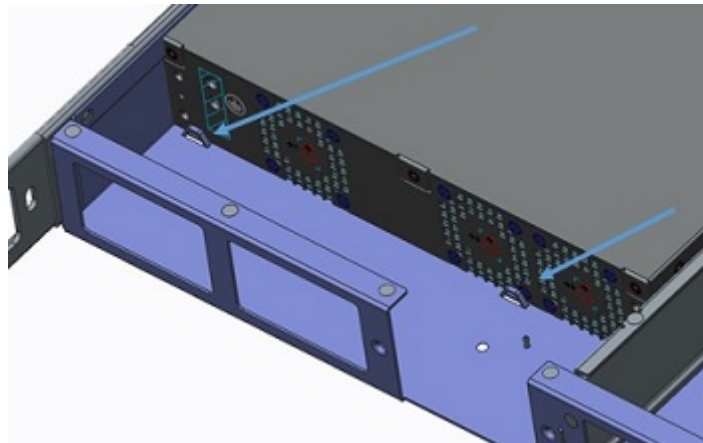
Figure 18. Dual-tray stop feature

2   If you are installing two switches, insert the second switch in the open dual-tray slot.

Switch removal

Remove the switch from the dual tray from the front of the four-post rack.

Push in the front switch latches according to the latch arrows and pull out the switch.
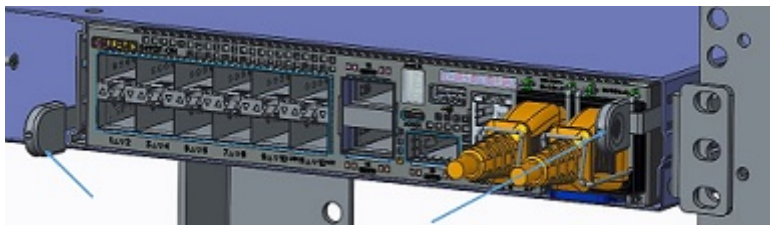
Figure 19. S4112-ON Series release latches
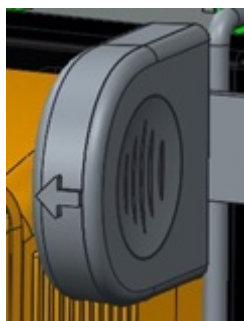
Figure 20. S4112-ON Series release arrow

Optics installation

The S4112-ON Series (S4112F-ON adn S4112T-ON) switch has the following optic configurations:

Table 7. S4112-ON Series optic configurations

Platform	Description
S4112F-ON	• 12 fixed 1/10GbE SFP+ optical ports • 3 fixed 1/100GbE QSFP28 optical ports
S4112T-ON	• 3 fixed 1/100GbE QSFP28 optical ports

For a list of supported optics, see the S4112–ON Series data sheet at www.dell.com/support or contact your Dell EMC sales representative.

⚠ **CAUTION: ESD damage can occur if components are mishandled. Always wear an ESD-preventive wrist or heel ground strap when handling the S4112–ON Series and its components.**

⚠ **WARNING: When working with optical fibers, follow all warning labels and always wear eye protection. Never look directly into the end of a terminated or unterminated fiber or connector as it may cause eye damage.**

1   Position the optic so it is in the correct position.

The optic has a key that prevents it from being inserted incorrectly.

2   Insert the optic into the port until it gently snaps into place.

ⓘ **NOTE: When you cable the ports, be sure not to interfere with the airflow from the small vent holes above and below the ports.**

Optics removal

Remove an optic by pushing the tab on the optic and sliding the optic from the port.

When removing optics with direct attach cables (DACs) from the port, pull the release tab firmly and steadily. Before pulling the release tab, you may need to gently push the optic into the port to ensure that it is seated properly. Do not jerk or tug repeatedly on the tab.

Switch power-up

Supply power to the S4112-ON Series (S4112F-ON and S4112T-ON) switch after you mount it in a rack or cabinet.

Dell EMC recommends reinspecting your switch before powering up. Verify the following:

- The equipment is properly secured to the rack. Dell EMC recommends properly grounding the switch.
- The ambient temperature around the unit, which may be higher than the room temperature, is within the limits specified for the S4112–ON Series, see Specifications.
- There is sufficient airflow around the unit.
- The input circuits are correctly sized for the loads and that you use sufficient overcurrent protection devices.
- All protective covers are in place.
- Blank panels are installed if you do not install optional modules.

ⓘ **NOTE: A US AC power cable is included for powering up an AC power supply. You must order all other power cables separately.**

ⓘ **NOTE: ESD damage can occur if components are mishandled. Always wear an ESD-preventive wrist or heel ground strap when handling the S4112–ON Series switch and its components.**

Power up sequence

When the switch powers up, the fans immediately come on at high speed. The fan speed slows as the switch continues to boot up.

After switch installation

After you have securely installed and powered on the S4112-ON Series switch:

- If you are using Dell EMC software, see switch documentation at www.dell.com/support.
- If you need ONIE information, see ONIE documentation at www.onie.org.
- If you are using third-party software, see your third-party documentation.

Switch replacement

The following steps describe removing and replacing a switch. For further assistance when replacing a switch, contact your Dell EMC support representative.

① | **NOTE:** ESD damage can occur when components are mishandled. Always wear an ESD-preventive wrist or heel ground strap when handling the switch and accessories. After you remove the original packaging, place the switch and components on an anti-static surface.

1   Back up the switch configuration to your back-up computer or laptop TFTP server.

    copy running-config tftp://hostip/filepath

    To establish a console connection to the switch CLI, assign an IP address on the switch network.

2   Disconnect the power source.

3   Label and remove all cables.

4   Remove the switch from the dual tray.

    Press the front switch latch according to the arrow and slide the switch forward.

    If you are using the PSUs in the replacement switch, remove them from the switch.

5   Unpack the new switch.

    For more information, see Unpack.

6   Confirm that the software version of the replacement switch is the same as the previously installed switch.

    `show os-version`

    If the software versions do not match, upgrade the replacement switch software using the procedure included with the firmware download.

7   Copy the backed-up switch configuration to the new switch.

    `copy tftp://hostip/filepath running-config`

8   Install the new switch in the dual tray.

    For detailed installation instructions, see S4112-ON Series installation.

    If you are using the PSUs from the removed switch, reinsert them in the replacement switch.

9   Connect all the cables.

10 Power on the switch.

    For more information, see Switch power up.

Power supplies

The S4112–ON Series (S4112F-ON and S4112T-ON) switch ships with two AC or DC power supplies.

The power supplies have two air-flow directions, normal and reverse. Normal is from the I/O-side to the PSU-side. Reverse is from the PSU-side to the I/O-side.

⚠ **CAUTION: To prevent electrical shock, ensure that the S4112-ON Series switch is grounded properly. If you do not ground your equipment correctly, excessive emissions may result. Use a qualified electrician to ensure that the power cables meet your local electrical requirements.**

ⓘ **NOTE: Connect the power supply to the appropriate branch circuit protection as defined by your local electrical codes and verify that the remote power source complies with the switch input power specifications.**

ⓘ **NOTE: ESD damage can occur if components are mishandled. Always wear an ESD-preventive wrist or heel ground strap when handling the S4112–ON Series switch and its components.**

Topics:

- Components
- DC power connections

Components

The AC or DC power supply option is available for the S4112–ON Series (S4112F-ON and S4112T-ON) switch.

Power supply unit 1 (PSU1) is on the inner-right side of the switch; power supply unit 2 (PSU2) is on the outer-right side of the switch.

Figure 21. S4112F–ON AC PSUs

1   AC PSUs

Figure 22. S4112F–ON DC PSUs

1   DC PSUs

Figure 23. S4112T–ON AC PSUs

1   AC PSUs

Figure 24. S4112T–ON DC PSUs

1   DC PSUs

The PSUs have an integrated fan that you cannot replace individually; if the fans integrated in a PSU fail, you must replace the entire PSU. You can replace the fan trays individually. For fan tray replacement procedures, see Fans.

⚠ **WARNING:** Prevent exposure and contact with hazardous voltages. Do not attempt to operate this switch with the safety cover removed.

⚠ **CAUTION:** Remove the power cable from the PSU before removing the PSU. Also, do not connect the power cable before you insert the PSU in the switch.

ⓘ **NOTE:** To comply with the GR-1089 Lightning Criteria for Equipment Interfacing with AC Power Ports, use an external surge protection device (SPD) at the AC input of the router.

AC power cable clips

After you connect the AC power cable to the switch, attach the metal wire clip to the switch over each AC power cable, as shown.
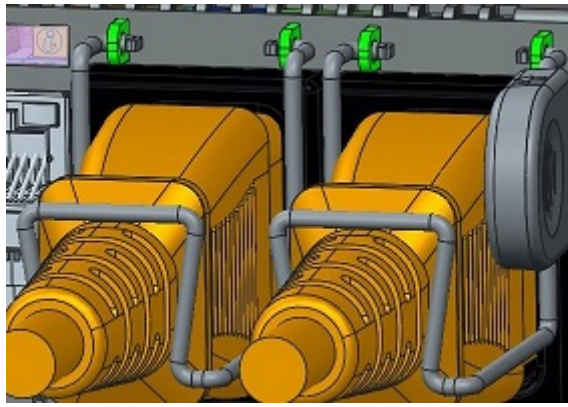
Figure 25. AC power cable clips

PSU LEDs

The single PSU LED is on the I/O-side of the switches.

- Solid green—Input is OK.
- Flashing yellow—There is a fault with the PSU.
- Flashing green—System update.
- Off—PSU is off.

DC power connections

Each DC PSU comes with a connector cable. One cable is provided for each DC PSU.

- 48V

SAFETY GROUND

+ RETURN
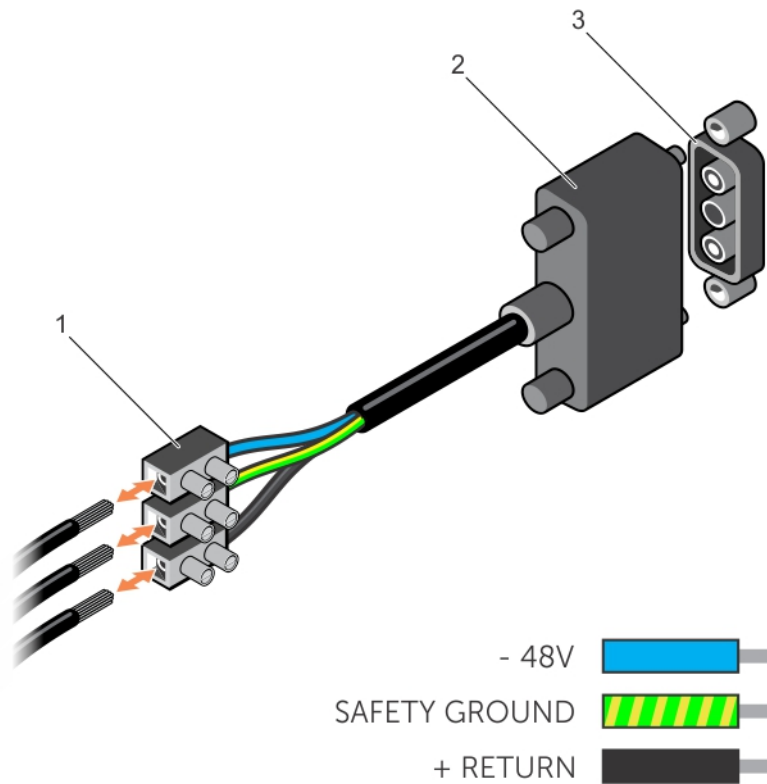
Figure 26. DC power connector and wiring block

1	Wiring block	2	Power connector
3	PSU connector		

1 Strip a 1/2 inch section of insulation from each of the power connector's wires, as shown.

2 Insert each of the power connector's bare wire lengths into the wiring block. The blue wire is -48V, the black wire is the positive return, and the yellow/green wire is the ground wire, as shown.

3 Use a flat-blade screwdriver to tighten the screws that secures the bare wires into the wiring block.

4 Secure the site's DC power source wires to the other side of the wiring block, see steps 1 and 3.

⚠ **WARNING: Do not cross the wires.**

5 Insert the DC power connector into the power socket of the DC PSU. Ensure that the connector pins firmly seat and you hear the click of the power connector's left and right levered clamps lock into place.

⚠ **WARNING: Never try to force the power connector into or out of the DC PSU power socket.**

ⓘ **NOTE: To remove the power connector from a DC PSU, unscrew the thumb screws and pull the power connector from the DC PSU socket.**

Fans

The S4112–ON Series (S4112F-ON and S4112T-ON) switch comes from the factory with three integrated fans.
The S4112–ON Series switch supports two airflow direction options—normal and reverse.

- Airflow is from the I/O panel to the PSU—normal.
- Airflow is from the PSU to the I/O panel—reverse.

Components

The following are the S4112–ON Series (S4112F-ON and S4112T-ON) fan components:

- S4112–ON Series fan module
- S4112–ON Series fan module—reverse

Integrated fan number 1 is on the left PSU-side, fan number 2 is in the center PSU-side, and fan number 3 is on the right PSU-side.
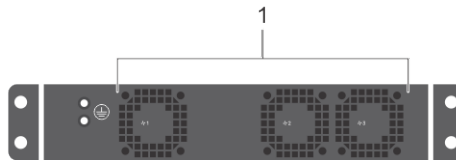
Figure 27. S4112–ON Series AC and DC fan modules

1   AC and DC fan modules

Fan LEDs

- Solid green—fan function is normal.
- Flashing yellow—there is a fan fault.
- Off—fan is off.

Management ports

Besides the 10/100/1000Base-T RJ-45 ports, the S4112-ON Series (S4112F-ON and S4112T-ON) switch provides several ports for management and storage.

ⓘ NOTE: **The output examples in this section are for reference only. Your output may vary.**

Topics:

- RS-232 console port access
- USB-B console port access
- USB storage
- Before you install an OS
- ONIE service discovery

RS-232 console port access

The RS-232 console port is on the I/O-side of the S4112-ON Series (S4112F-ON and S4112T-ON) switch, as shown.

Figure 28. S4112F-ON AC RS-232 console port

1 AC RS-232 console port

Figure 29. S4112T-ON AC RS-232 console port

1 AC RS-232 console port

Figure 30. S4112F-ON DC RS-232 console port

1   DC RS-232 console port

Figure 31. S4112T-ON DC RS-232 console port

1   DC RS-232 console port

⚠ **CAUTION: Ensure that any equipment attached to the serial port can support the required 115200 baud rate.**

ⓘ **NOTE: Before starting this procedure, ensure your PC has a 9-pin serial port. You must have a terminal emulation program already installed and running on your PC.**

ⓘ **NOTE: If your PC's serial port cannot accept a female DB-9 connector, use a DB-9 male-to-male adaptor.**

1   Install the provided RJ-45 connector side of the provided cable into the S4112-ON Series console port.

2   Install the DB-9 female side of the provided copper cable into your PC's serial port. Or install the DB-9 cable into other data terminal equipment (DTE) server hardware that you intend to use.

3   Keep the default terminal settings on the console as follows:

- 115200 baud rate
- No parity
- 8 data bits
- 1 stop bit
- No flow control

USB-B console port access

The USB-B console port is on the I/O side of the S4112-ON Series switch.

The terminal settings are the same for the serial console port and the RS-232/RJ-45 console port:

- 115200 baud rate
- No parity
- 8 data bits
- 1 stop bit
- No flow control

When you connect the USB-B port, it becomes the primary connection and, while connected, all messages are sent to the USB-B port.

> (i) **NOTE:** Before starting this procedure, be sure that you have a terminal emulation program already installed on your PC. Install the appropriate drivers to support the USB-B port. To download Dell EMC drivers, see www.dell.com/support. If your computer requires non-Dell EMC drivers, contact Dell EMC Technical Support for assistance.

1   Power on the PC.

2   Connect the USB-A end of the cable into an available USB port on the PC.

3   Connect the USB-B end of the cable into the USB-B console port on the S4112-ON Series switch.

4   Power on the switch.

5   Install the necessary USB device drivers.

   To download Dell EMC drivers, see www.dell.com/support. If your computer requires non-Dell EMC drivers, contact Dell EMC Technical Support for assistance.

6   Open your terminal software emulation program to access the switch.

7   Confirm that the terminal settings on your terminal software emulation program are as follows:

   · 115200 baud rate

   · No parity

   · 8 data bits

   · 1 stop bit

   · No flow control

USB storage

USB storage does not automatically mount. The supported file system is FAT. To use USB storage, first mount the device using the following steps:

1   Create a mount directory for the USB.

```
ONIE:/ # mkdir /mnt/usb
```

2   View the fixed disks using fdisk.

```
ONIE:/mnt # fdisk -l
```

   For internal storage:

```
Disk /dev/sda: 15.8 GB, 15829303296 bytes
255 heads, 63 sectors/track, 1924 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes

   Device Boot      Start       End      Blocks   Id System
/dev/sda1              1       1925    15458303+ ee EFI GPT
```

   For USB storage:

```
Disk /dev/sdb: 30.9 GB, 30942946304 bytes
64 heads, 32 sectors/track, 29509 cylinders
Units = cylinders of 2048 * 512 = 1048576 bytes

   Device Boot      Start       End      Blocks   Id System
```

3   Mount the device `/dev/sdb` to the `/mnt/usb` directory.

```
ONIE:/ # mount -t vfat /dev/sdb /mnt/usb
```

> (i) **NOTE:** The following message displays if the `/mnt/usb` directory is missing: `mount: mounting /dev/sdb on /mnt/usb failed: No such file or directory.`

> (i) **NOTE:** The following message displays if the USB device is not seen: `mount: mounting /dev/sdb on /mnt/usb failed: No such device or address.`

4   Add a device to the file systems table using the `fstab` command and mount the file systems—recommended.

```
ONIE:/ # vi /etc/fstab


# FSTAB entry for the ONIE-BOOT partition mounted on /boot
LABEL=ONIE-BOOT /mnt/onie-boot ext4  defaults,rw,errors=remount-ro 0  1
/dev/sdb        /mnt/usb       vfat  defaults                      0  1


ONIE:/ # mount -a
```

The `mount -a` command mounts all the file systems as indicated in the **/etc/fstab** file.

Before you install an OS

After powering on the S4112-ON Series (S4112F-ON and S4112T-ON) switch, it goes through a power-on self-test (POST).

POST runs every time the switch is initialized and checks the hardware components to determine if the switch is fully operational before booting. After POST, the switch uses the Grub bootloader.

To select an entry, use the up and down arrow keys. Press **Enter** to select an operating software (OS) or enter e to edit the commands before booting. Enter c for a command line. The selected entry runs automatically in the operating system.

Grub bootloader example

```
GNU GRUB  version 2.02~beta2+e4a1fe391

 +-------------------------------------------------+
 |*ONIE: Install OS                                |
 | ONIE: Rescue                                    |
 | ONIE: Uninstall OS                              |
 | ONIE: Update ONIE                               |
 | ONIE: Embed ONIE                                |
 | EDA-DIAG                                        |
 |                                                 |
 |                                                 |
 |                                                 |
 |                                                 |
 |                                                 |
 |                                                 |
 |                                                 |
 +-------------------------------------------------+
```

Your system comes with ONIE installed.

ⓘ **NOTE: To access ONIE, use the RJ-45 console port.**

ONIE example

```
ONIE: Install OS
    For downloading and installing an OS from a URL
    Starts ONIE with ONIE Discovery Service
    (factory default boot)
ONIE: Rescue
    Starts ONIE without ONIE Discovery Service
    Useful for running Diagnostics manually
ONIE: Uninstall OS
    Restore to factory defaults erases any installed OS
ONIE: Update ONIE
    For downloading and updating ONIE from a URL
ONIE: Embed ONIE
    For downloading and updating ONIE from a URL and erases any installed OS
```

During the initial setup, the switch boots to ONIE Install. ONIE Install boots with ONIE Discovery to the console (`ONIE:`).

ⓘ NOTE: **For more information, see the** *Open Networking Hardware Diagnostic Guide.*

After you have securely installed and powered on the S4112-ON Series switch, to configure your switch, see your third-party ONIE-compatible OS or the Dell EMC OS documentation.

ONIE service discovery

ONIE attempts to locate the installer through several discovery methods, as shown. To download and run an installer, the ONIE Service Discovery feature uses the first successful method found.

1 Pass from the boot loader.
2 Search locally attached storage devices for one of the ONIE default installer filenames—for example, USB.
3 Exact URLs from DHCPv4.
4 Report inexact URLs based on the DHCPv4 responses.
5 Query to the IPv6 link-local neighbors using HTTP for an installer.
6 Start TFTP waterfall—from the DHCPv4 option 66.

Examples of ONIE `ifconfig eth0` commands

If none of the ONIE Service Discovery methods are successful, you can disable this using the `onie-discovery-stop` command.

You can install an operating system manually from HTTP, FTP, or TFTP using the `onie-nos-install <URL>` command.

ⓘ NOTE: **If you have a recovery USB plugged into your switch, remove it before installing the DIAG-OS using the `onie-nos-install` command.**

The ONIE Install environment uses DHCP to assign an IP address to the management interface—`eth0`. If that fails, it uses the default IP address 192.168.3.10/255.255.255.0.

To display the IP address, use the `ifconfig eth0` command, as shown.

```
ONIE:/ # ifconfig eth0
eth0 Link encap:Ethernet HWaddr 90:B1:1C:F4:9C:76
      inet addr:10.11.53.33 Bcast:10.255.255.255 Mask:255.0.0.0
      inet6 addr: fe80::92b1:1cff:fef4:9c76/64 Scope:Link
      UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
      RX packets:18 errors:0 dropped:0 overruns:0 frame:0
      TX packets:24 errors:0 dropped:0 overruns:0 carrier:0 collisions:0 txqueuelen:1000
      RX bytes:1152 (1.1 KiB) TX bytes:6864 (6.7 KiB)
      Interrupt:21 Memory:ff300000-ff320000
```

To assign an IP address to the management interface, `eth0`, and verify network connectivity, use the `ifconfig eth0 <ip address>` command, as shown.

```
ONIE:/ # ifconfig eth0 10.11.53.33/16

Verify the network connection with ping.
ONIE:/ # ping 10.11.8.12
PING 10.11.8.12 (10.11.8.12): 56 data bytes
64 bytes from 10.11.8.12: seq=0 ttl=62 time=1.357 ms
64 bytes from 10.11.8.12: seq=1 ttl=62 time=0.577 ms
^C
```

Specifications

This section lists the S4112–ON Series (S4112F-ON and S4112T-ON) switch specifications.

⚠ **CAUTION: Operate the product at an ambient temperature not higher than 45ºC (113ºF).**

⚠ **CAUTION: Lithium Battery Caution: There is a danger of explosion if the battery is incorrectly replaced. Replace only with same or equivalent type of battery. Dispose of the batteries according to the manufacturer's instructions.**

ⓘ **NOTE: For RoHS information, see Restricted Material Compliance.**

Topics:

- Chassis physical design
- IEEE standards
- Agency compliance
- USA Federal Communications Commission statement
- European Union EMC directive conformance statement
- Japan VCCI compliance for class A equipment
- Korean certification of compliance
- Safety standards and compliance agency certifications
- Electromagnetic compatibility
- Product recycling and disposal

Chassis physical design

Table 8. Chassis physical design

Parameter	Specifications
Height	1.75 inches (41.25 mm)
Width	8.2 inches (209 mm)
Depth	17.7 inches (450 mm)
Chassis weight with factory-installed components	S4112F-ON: 8.30 lbs, 3.76 kg (2 PSUs and 3 fans)
	S4112T-ON: 8.45 lbs, 3.81 kg (2 PSUs and 3 fans)
Rack clearance required	Front: 5 inches (12.7 cm)
	Back: 5 inches (12.7 cm)

Table 9. Environmental parameters

Parameter	Specifications
Operating temperature	5º to 40ºC (50º to 104ºF)

Parameter	Specifications
	-5°C to 45°C (23°F to 113°F) short term
	Short term is </= 1% of operational hours per year.
	ⓘ NOTE: Reduce maximum temperature by 1°C/125 meters (1°F/228 feet) above 950 meters (3,117 feet).
Operating humidity	5% to 85% (RH), non-condensing 5% to 90% (RH), non-condensing, short term
	Short term is </= 1% of operational hours per year.
Storage temperature	−40° to 65°C (−40° to 149°F)
Storage humidity	5% to 95%, non-condensing
Maximum thermal output	S4112F-ON: 180W, 614 BTU/hr
	S4112T-ON: 200W, 682 BTU/hr
Maximum operational altitude	10,000 feet (3,048 meters)
Maximum non-operational altitude	39,370 feet (12,000 meters)
Shock	Dell EMC Spec SV0115

Table 10. AC power requirements

Parameter	Specifications
Power supply	100–240 VAC 50/60 Hz
Maximum current draw per system	2A/1.7A at 100/120V AC 1A/0.8A at 200/240V AC
Maximum power consumption	S4112F-ON: 180W
	S4112T-ON: 200W
Typical power consumption	S4112F-ON: 90W
	S4112T-ON: 120W

Table 11. DC power requirements

Parameter	Specifications
Minimum and maximum input voltage range	−40V, −72V DC, 5A Max
Maximum input current	−40V/5A, −48V/4.2A, −72V/2.8A
Start up VDC	39.0 ± 1.5 V
Start off VDC	37.5 ±1.5 V

IEEE standards

The S4112–ON Series (S4112F-ON and S4112T-ON) switch complies with the following IEEE standards:

- 802.1ab (LLDP)

- 802.1ax (Layer 2)
- 802.1d, 802.1w, 802.1s, 802.1x (Mgmt/Security), 802.3x (Layer 2)
- 802.3 (1000BASE-KX)
- 802.3ba (40GbE and 100GbE ports)

Agency compliance

The S4112–ON Series (S4112F-ON and S4112T-ON) switch complies with the following safety and agency requirements:

USA Federal Communications Commission statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designated to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy. If it is not installed and used in accordance to the instructions, it may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case users will be required to take whatever measures necessary to correct the interference at their own expense.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. Dell EMC is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications in the equipment. Unauthorized changes or modification could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Industry Canada Class A emission compliance statement

This Class A digital apparatus complies with Canadian ICES-003.

Avis de conformité à la réglementation d'Industrie Canada

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Figure 32. Canadian department of communication statement

European Union EMC directive conformance statement

This product is in conformity with the protection requirements of EU Council Directive 2004/30/EC on the approximation of the laws of the Member States relating to electromagnetic compatibility. Dell EMC can not accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of this product, including the fitting of non-Dell EMC option cards.

This product has been tested and found to comply with the limits for Class A Information Technology Equipment according to CISPR 32/CISPR34 and EN55032 / EN55034. The limits for Class A equipment were derived for commercial and industrial environments to provide reasonable protection against interference with licensed communication equipment.

⚠ | **WARNING: This is a Class A product. In a domestic environment, this device may cause radio interference, in which case, you may be required to take adequate measures.**

European Community Contact

Dell EMC, EMEA - Central

Dahlienweg 19

66265 Heusweiler

Germany

Tel: +49 172 6802630

Email: EMEA Central Sales

Japan VCCI compliance for class A equipment

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

Figure 33. Japan: VCCI compliance for class A equipment

This is Class A product based on the standard of the Voluntary Control Council For Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.

⚠ WARNING: Use the AC power cords with Dell Networking equipment only. Do not use Dell EMC AC power cords with any unauthorized hardware.

本製品に同梱いたしております電源コードセットは、本製品専用です。本電源コードセットは、本製品以外の製品ならびに他の用途でご使用いただくことは出来ません。製品本体には同梱された電源コードセットを使用し、他製品の電源コードセットを使用しないで下さい。

Figure 34. Japan: warning label

Korean certification of compliance

A급 기기 (업무용 방송통신기자재)	이 기기는 업무용(A급) 전자파적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의 지역에서 사용하는 것을 목적으로 합니다.

Figure 35. Korean certification of compliance

품명(Product Name)	Ethernet Switch
모델명(Model)	[model number]
신청인(Applicant)	Dell Technologies
제조자(Manufacturer)	
제조년월(Manufacturing Date)	[date]
제조국(Country of Origin)	China

Figure 36. Korean package label

Safety standards and compliance agency certifications

- CUS UL 60950-1, 2nd Edition
    - Meets or exceeds Hi Pot and Ground Continuity testing per UL 60950-1.
- AS/NZS 60950
- CSA 60950-1-03, 2nd Edition
- EN 60950-1, 2nd Edition
- EN 60825-1, 1st Edition
- EN 60825-1 Safety of Laser Products—Part 1: Equipment Classification Requirements and User's Guide
- EN 60825-2 Safety of Laser Products—Part 2: Safety of Optical Fibre Communication Systems
- FDA Regulation 21CFR 1040.10 and 1040.11
- IEC 60950-1, 2nd Ed, including all National Deviations and Group Differences
- IEC 62368-1

Electromagnetic compatibility

Emissions

- International: CISPR 32: Class A
- Australia/New Zealand: AS/NZS CISPR 32, Class A
- Canada: ICES-003, Issue-4, Class A
- Europe: EN55032: CISPR 32, Class A
- EN55032
- Japan: VCCI Class A
- Korea: KN32, Class A
- Taiwan: CNS13438, Class A
- USA: FCC CFR47 Part 15, Subpart B, Class A

Immunity

- EN 300 386 EMC for Network Equipment

- EN 55024
- EN 61000-3-2 Harmonic Current Emissions
- EN 61000-3-3 Voltage Fluctuations and Flicker
- EN 61000-4-2 ESD
- EN 61000-4-3 Radiated Immunity
- EN 61000-4-4 EFT
- EN 61000-4-5 Surge
- EN 61000-4-6 Low Frequency Conducted Immunity
- EN 61000-4-11 Voltage Dips/Interruptions

Product recycling and disposal

You must recycle or discard this switch according to applicable local and national regulations. Dell EMC encourages owners of information technology (IT) equipment to responsibly recycle their equipment when it is no longer needed. Dell EMC offers a variety of product return programs and services in several countries to assist equipment owners in recycling their IT products.

Waste Electrical and Electronic Equipment (WEEE) directive for recovery, recycle, and reuse of IT and telecommunications products

Dell EMC switches are labeled in accordance with European Directive 2002/96/EC concerning waste electrical and electronic equipment (WEEE). The Directive determines the framework for the return and recycling of used appliances as applicable throughout the European Union. This label is applied to various products to indicate that the product is not to be thrown away, but rather reclaimed upon end of life per this Directive.

Figure 37. The European WEEE symbol

In accordance with the European WEEE Directive, electrical and electronic equipment (EEE) is to be collected separately and to be reused, recycled, or recovered at end of life. Users of EEE with the WEEE marking per Annex IV of the WEEE Directive, as shown above, must not dispose of end of life EEE as unsorted municipal waste, but use the collection framework available to customers for the return, recycling and recovery of WEEE. Customer participation is important to minimize any potential effects of EEE on the environment and human health due to the potential presence of hazardous substances in EEE.

Dell EMC products, which fall within the scope of the WEEE, are labeled with the crossed-out wheelie-bin symbol, as shown above, as required by WEEE.

For information on Dell EMC product recycling offerings, see the WEEE Recycling instructions on the Support page. For more information, contact the Dell EMC Technical Assistance Center.

Dell EMC support

The Dell EMC support site provides documents and tools to help you effectively use Dell EMC equipment and mitigate network outages. Through the support site you can obtain technical information, access software upgrades and patches, download available management software, and manage your open cases. The Dell EMC support site provides integrated, secure access to these services.

To access the Dell EMC support site, go to www.dell.com/support/. To display information in your language, scroll down to the bottom of the web page and select your country from the drop-down menu.

- To obtain product-specific information, enter the 7-character service tag, known as a luggage tag, or 11-digit express service code of your switch and click **Submit**. For more information about the luggage tag, see Luggage tag.

  To view the chassis service tag or express service code, pull out the tag or enter the `show chassis` command from the CLI.

- To receive more technical support, click **Contact Us**. On the Contact Information web page, click **Technical Support**.

To access switch documentation, go to www.dell.com/manuals/.

To search for drivers and downloads, go to www.dell.com/drivers/.

To participate in Dell EMC community blogs and forums, go to www.dell.com/community.