Dell Networking S4100-ON Series

Set-Up Guide

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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.**

Topics:

· Related documents
· Information symbols

Related documents

For more information about the S4100–ON Series, see the following documents:

· *Dell Networking OS10 Enterprise Edition Release Notes*
· *Dell Networking OS10 Enterprise Edition User Guide*
· *Dell Networking S4100–ON Series Setup Guide*
· *Dell Open Networking Hardware Diagnostic Guide*
· *Dell S4100–ON Series Release Notes*

ⓘ **NOTE: For the most recent documentation, visit Dell 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.

Site preparations

The S4100–ON Series is suitable for installation as part of a common bond network (CBN).

You can install the system in:

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

For more information about the S4100–ON Series specifications, see Specifications.

ⓘ **NOTE: Install the S4100–ON Series switch into a rack or cabinet before installing any optional components.**

Topics:

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

Site selection

Install Dell 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 S4100–ON Series switch meets the following safety requirements:

- Near an adequate power source. Connect the system to the appropriate branch circuit protection according to your local electrical codes.
- Environmental—switch location—continuous temperature range is from 50° to 104°F (from 5° to 40°C).
- Operating humidity is from 5 to 85 percent noncondensing, continuous.
- 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.
- Positioned in a rack or cabinet, or on a desktop with adequate space in the front, back, and sides for proper ventilation and access.

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

Cabinet placement

Install the S4100–ON Series only in indoor cabinets designed for use in a controlled environment.

Do not install the S4100–ON Series 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.

System ground

Dell recommends grounding your system. Use the S4100–ON Series switch in a CBN.

Fans and airflow

The fans on the S4100–ON Series support two airflow options: normal and reverse.

Fan combinations

Fan installation is done as part of the factory install based on SKU type. The S4100–ON Series has stock keeping units (SKUs) that support the following configurations:

- AC PSU with fan airflow from the I/O to the PSU—normal
- AC PSU with fan airflow from the PSU to the I/O—reverse
- DC fan unit with airflow from the I/O to the PSU—normal
- DC fan unit with fan airflow from the PSU to the I/O—reverse

Be sure to order the fans suitable to support your site's ventilation. Use a single type of airflow fan in your system. Do not mix reverse and normal airflows in a single S4100-ON Series switch.

For proper ventilation, position the S4100–ON Series switch in an equipment rack or cabinet with a minimum of 5 inches (12.7 cm) of clearance around the exhaust vents. The fan speed varies based on internal temperature monitoring. The S4100–ON Series never intentionally turns off the fans.

Power

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

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

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

⚠ CAUTION: Always disconnect the power cable before you service the power supply slots.

⚠ CAUTION: On the AC system, 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.

ⓘ NOTE: Module power is software controlled. You do not see module LEDs when the system powers up in ONIE.

Storing components

If you do not install your S4100–ON Series swtich and components immediately, Dell recommends properly storing the switch and all optional components following these guidelines:

- Storage location temperature must remain constant. The storage range is from -40° to 149°F (-40° to 65°C).
- 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 S4100–ON Series switch and its accessories. After you remove the original packaging, place the S4100–ON Series switch and its components on an anti-static surface.**

S4100–ON Series installation

To install the S4100–ON Series, Dell recommends completing the installation procedures in the order presented in this section.

Always handle the S4100–ON Series switch and its components with care. Avoid dropping the system or any field replaceable units (FRUs).

(i) **NOTE: ESD damage can occur if components are mishandled. Always wear an ESD-preventive wrist or heel ground strap when handling the S4100–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 system.**

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

Topics:

- Unpack the system
- Unpack
- Rack or cabinet installation
- ReadyRails installation
- 1U Tool-less mount installation
- Two-post flush-mount installation
- Two-post center-mount installation
- Four-post threaded installation
- S4100-ON Series system installation
- 1U front-rack installation
- Optics installation
- Optics removal
- System power-up
- After system installation

Unpack the system

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

When unpacking the S4100–ON Series switch, make sure that the following items are included:

- One S4100–ON Series switch
- One RJ-45 to DB-9 female cable
- Two sets of rail kits, no tools required
- Two PSUs
- Three or four fan units
- Two country- and region-specific AC power cords
- *Dell Networking S4100–ON Series Setup Guide*
- *Safety and Regulatory Information*
- *Warranty and Support Information*

Unpack

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.

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. Rack mounting includes four-post, two-post, round threaded holes, or square holes. The Dell ReadyRails system is provided for 1U front-rack and two-post installations.

The ReadyRails system includes two separately packaged rail assemblies. To begin installation, separate each rail assembly by sliding the inside rail out of the outside rail.

⚠ | 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 ReadyRails 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 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 in the downward position.

ReadyRails installation

To easily configure your rack for installation of your S4100–ON Series system, use the ReadyRails rack mounting system provided.

You can install the ReadyRails system using the 1U tool-less square-hole method or one of three possible 1U threaded round-hole methods. The tooled installation methods include two-post flush mount, two-post center mount, or four-post threaded mount.

To begin installation, separate each rail assembly by sliding the inside rail out of the outside rail.

ⓘ | NOTE: For more installation instructions, see the installation labels attached to the rail assembly.
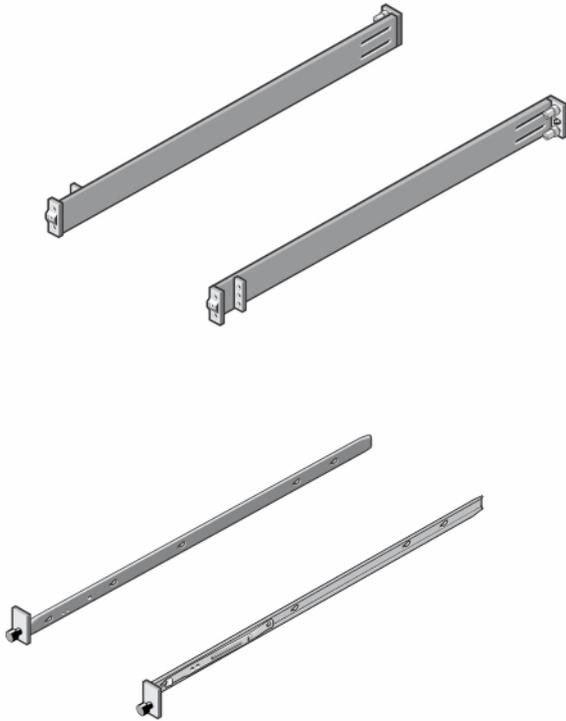
Figure 2. Separate rails

1U Tool-less mount installation

ⓘ NOTE: For more installation instructions, see the installation labels attached to the rail assembly.

1   Face the ReadyRails flange ears facing outward. Place one rail between the left and right vertical posts. Align and seat the back flange rail pegs in the back vertical post flange.

    The center extractions show how the pegs appear in both the square and nonthreaded round holes.
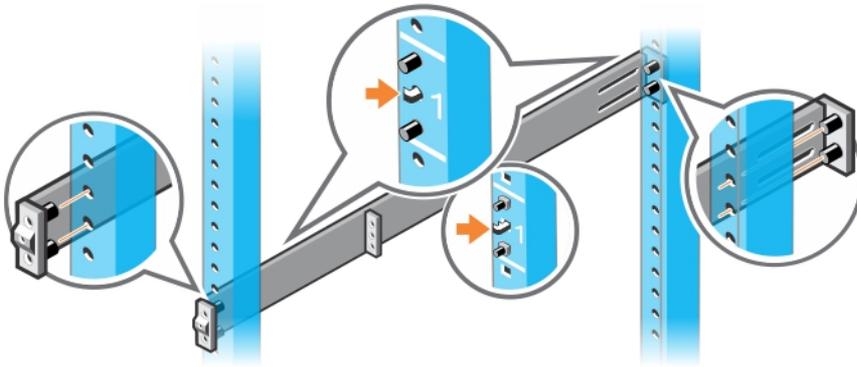
Figure 3. 1U tool-less installation

2   Align and seat the front flange pegs in the holes on the front side of the vertical post.

> ⓘ NOTE: **Be sure that the rails click into place and are secure.**

3   Repeat this procedure for the second rail.

4   To remove each rail, pull on the latch release button on each flange ear and unseat each rail.

Two-post flush-mount installation

> ⓘ NOTE: **For more installation instructions, see the installation labels attached to the rail assembly.**

1   For this configuration, remove the latch castings from the front side of each ReadyRails assembly, item 1.

To remove the two screws from each front flange ear on the switch side of the rail and remove each latch casting, use a Torx screwdriver. Retain the latch castings for future rack requirements. It is not necessary to remove the back flange castings.
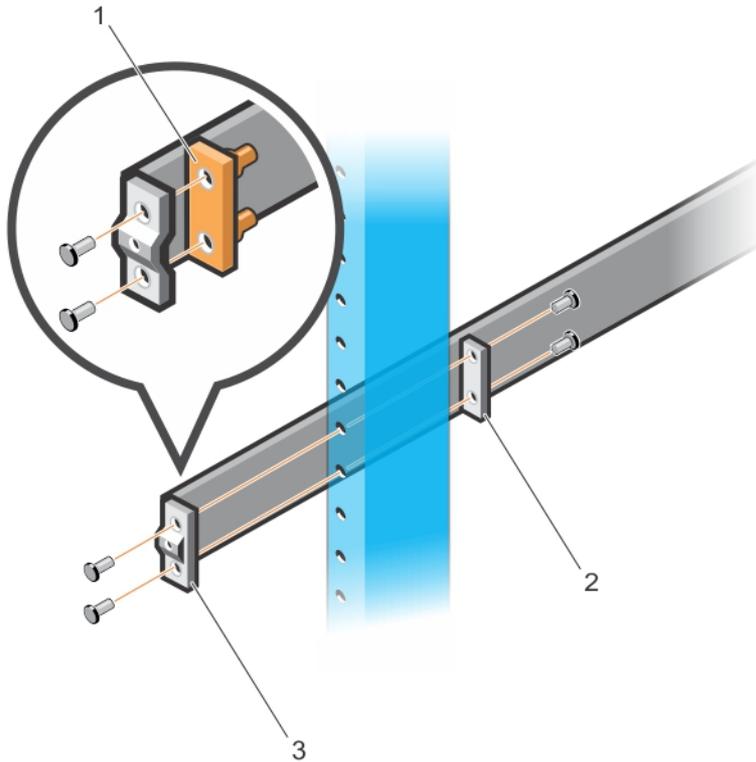
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Figure 4. Two-post flush-mount installation

2   Attach one rail to the front post flange with two user-supplied screws, item 2.

3   Slide the plunger bracket forward against the vertical post and secure the plunger bracket to the post flange with two user-supplied screws, see item 3.

4   Repeat this procedure for the second rail.

Two-post center-mount installation

ⓘ **NOTE: For more installation instructions, see the installation labels attached to the rail assembly.**

1   Slide the plunger bracket rearward until it clicks into place and secure the bracket to the front post flange with two user-supplied screws, item 1.
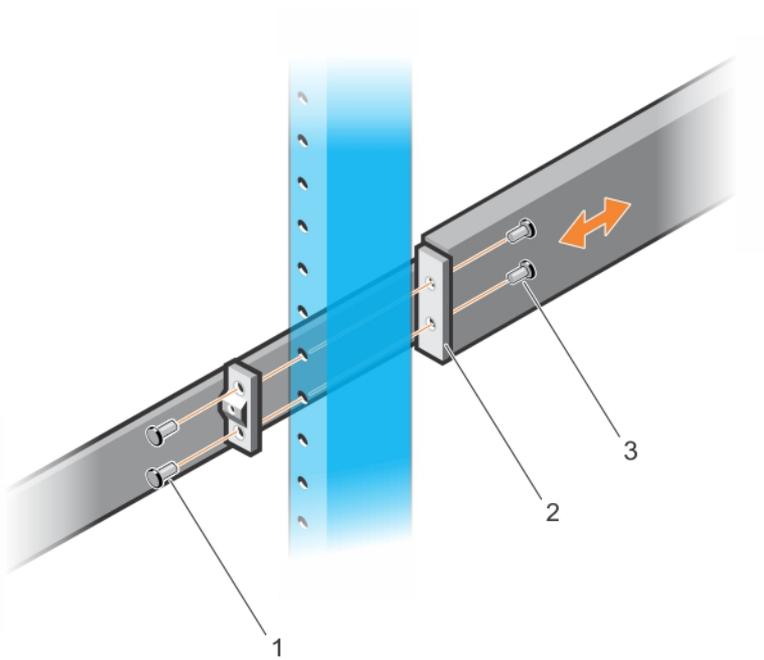
Figure 5. Two-post center-mount installation

2   Slide the back bracket towards the post. Secure it to the post flange with two user-supplied screws, items 2 and 3.

3   Repeat this procedure for the second rail.

Four-post threaded installation

ⓘ NOTE: **For more installation instructions, see the installation labels attached to the rail assembly.**

1   Remove the latch castings from each end of the ReadyRails assemblies. To remove the two screws each latch casting, use a Torx driver.

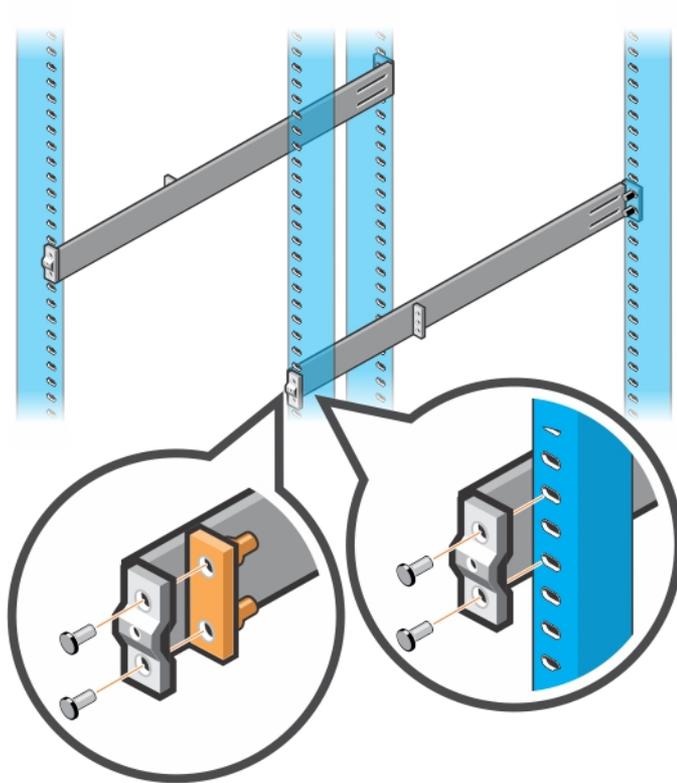Retain the latch castings for future rack requirements.

Figure 6. Four-post threaded installation

2   For each rail, attach the front and back flanges to the post flanges with two user-supplied screws at each end.

S4100-ON Series system installation

You can mount the system in the 1U front-rack two-post, flush, or center configuration or a four-post configuration. The following is an example of a front-rack configuration:

For the 1U two-post configurations, slide the system into the rails in the same manner as the four-post configurations.

1U front-rack installation

Configure the rails that are attached to the system.

1   ⓘ | NOTE: **For more information, see the installation instruction labels on the rail.**

Attach the inner switch rails to the S4100–ON Series switch.

Line up the rail with the mounting heads and attach the rail to the chassis. Slide the rail back until it locks into place. The following shows the detail of the front standoff with the locking tab:
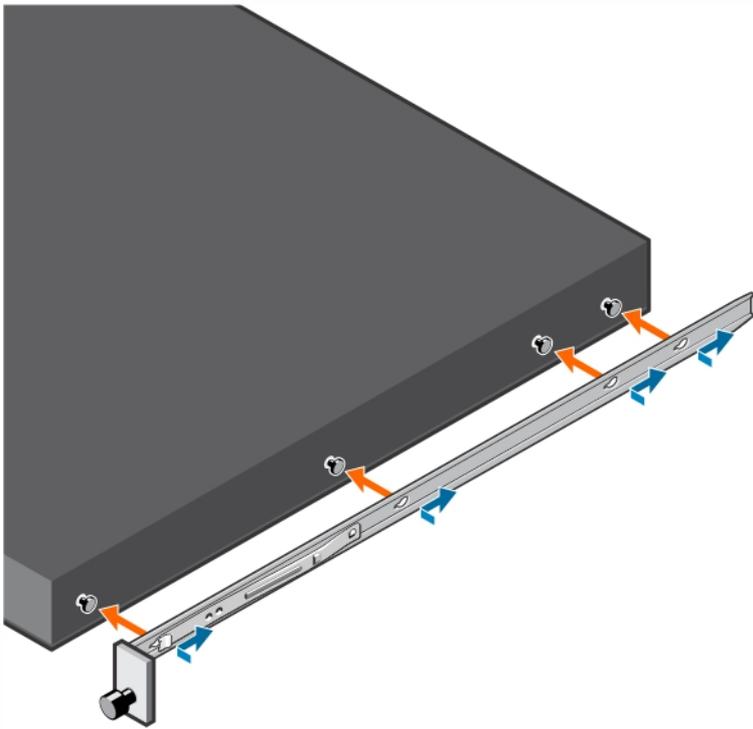
Figure 7. Switch rail attachment

2 After you install both rails, line them up on the ReadyRails. Slide the switch in until it is flush with the front of rack.

About three inches before you fully insert your system, the rail locking feature engages to keep the switch from inadvertently sliding out and falling.
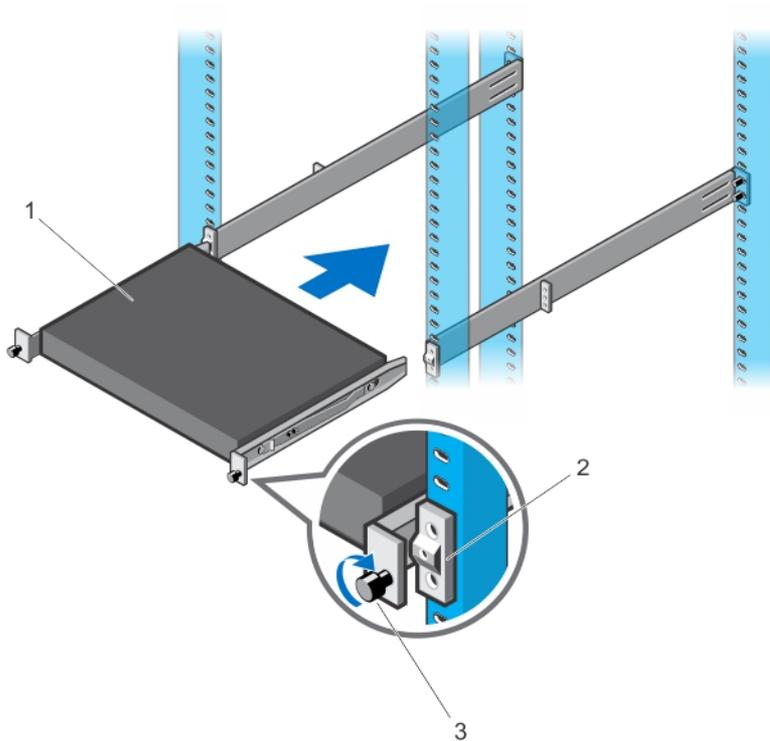
Figure 8. Front rack installation

> ⓘ NOTE: Do not the use the mounted Ready-Rails as a shelf or a workplace.

3   Tighten the two thumb screws and rack screws.

To remove the chassis from the rack or cabinet, press in the two side-release bars on the chassis at the same time and slide the chassis forward.

Optics installation

For a list of supported optics, see the S4100–ON Series data sheet at www.dell.com/support or contact your Dell representative.

> ⚠ CAUTION: ESD damage can occur if components are mishandled. Always wear an ESD-preventive wrist or heel ground strap when handling the S4100–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.

System power-up

Supply power to the S4100–ON Series switch after you mount it in a rack or cabinet.

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

- The equipment is properly secured to the rack. Dell 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 S4100–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.

⚠️ **CAUTION: Do not power up the switch if you did not install a fan module.**

ⓘ **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 S4100–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 system continues to boot up.

After system installation

To configure your system, after you have securely installed and powered on the S4100–ON Series switch, see your open network installation environment (ONIE)-compatible operating system documentation at www.onie.org.

Specifications

This section lists the S4100–ON Series system specifications.

⚠ **CAUTION: Operate the product at an ambient temperature not higher than 113°F—45°C.**

⚠ **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.**

Chassis physical design

Table 1. Chassis physical design

Parameter	Specifications
Height	1.73 inches (44 mm)
Width	17.1 inches (434 mm)
Depth	18.2 inches (462 mm)
	Handle: 1.57 inches (40 mm)
Chassis weight with factory-installed components	19 lbs (2* PSUs)
	8.62 kg (2* PSUs)
Rack clearance required	Front: 5 inches (12.7 cm)
	Back: 5 inches (12.7 cm)

Table 2. Environmental parameters

Parameter	Specifications
Operating temperature	5° to 40°C (50°F to 104°F) continuously -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, continuously 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

Parameter	Specifications
Maximum thermal output	600 W = 2047 BTU/Hr
Maximum operational altitude	10,000 feet (3,048 meters)
Maximum non-operational altitude	39,370 feet (12,000 meters)
Shock	SV0115 — ODM

Table 3. AC power requirements

Parameter	Specifications
Power supply	100–240 VAC 50/60 Hz
Maximum current draw per system	6A/5A at 100/120V AC 3A/2.5A at 200/240V AC
Maximum power consumption	600 Watts
Typical power consumption	300 Watts

Table 4. DC power requirements

Parameter	Specifications
Minimum and maximum input voltage range	−40.5, −60V DC, 15A Max
Maximum Input current	−40.5V/15A, −48V/12.5A, −60V/10A (without fan)
Start up VDC	39.0 ± 1.5 V
Start off VDC	37.5 ±1.5 V

Dell support

The Dell support site provides documents and tools to help you effectively use Dell 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 Networking support site provides integrated, secure access to these services.

To access the Dell Networking 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, found on the luggage tag, or the 11-digit express service code of your switch and click **Submit**.

  To view the switch service tag or express service code, pull out the tag or enter the `show chassis` command from the CLI. The luggage tag is on the PSU-side of the system.

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

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

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

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