Cisco Provider Connectivity Assurance Sensor F25 Hardware Installation Guide

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CHAPTER 1

Overview

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Features

The Cisco® Provider Connectivity Assurance Sensor F25 (formerly Accedian Skylight Flex 25 Performance Element) is a next-generation, multiport, 25 Gigabit Ethernet platform that delivers the same ultra-low-latency packet forwarding and jitter found in the rest of the Cisco Provider Connectivity Assurance Sensor portfolio.

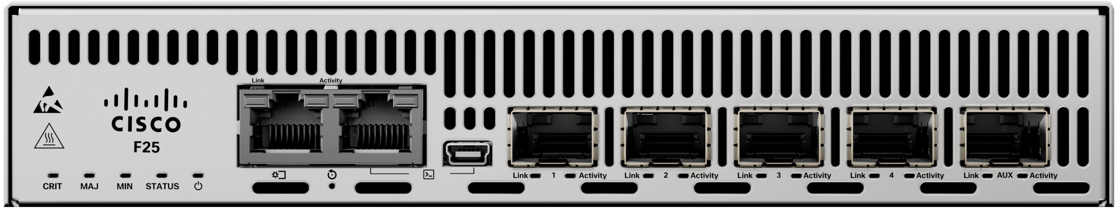
Designed for high-bandwidth and high-availability applications that require granular service assurance, the Provider Connectivity Assurance Sensor F25 is optimized for scalable service delivery and high-precision, real-time performance monitoring. It is an ideal edge, aggregation, or External Network-to-Network Interface (ENNI) unit for demanding high-bandwidth wireless backhaul and fronthaul, SLA-backed business services, Ethernet wholesale, and dark fiber termination applications.

The Provider Connectivity Assurance Sensor F25 provides all the tools to establish, validate, and monitor Layer 2 and Layer 3 services in a single unit. Zero-touch provisioning and IPv4/IPv6 management make these Assurance Sensors easy and secure to deploy and manage.

Fully integrated with the Cisco Provider Connectivity Assurance platform, it supports service delivery automation and scalable, real-time metrics collection and reporting. Accelerated service rollouts and improved operational efficiency are enabled by the platform's actionable insights and machine learning capabilities.

The Provider Connectivity Assurance Sensor F25 interoperates with other Cisco Provider Connectivity Assurance Sensors to deliver a scalable end-to-end and core-to-edge performance-assured networking solution tailored to your applications.

Figure 1: Cisco Provider Connectivity Assurance Sensor F25



The following table lists the features of the Assurance Sensor F25.

Table 1: Cisco Provider Connectivity Assurance Sensor F25 Features

Feature	Description
Form factor	1RU
Rack mount	Standard 19-inch (48.3 cm) or 23-inch (58.42 cm) rack
Airflow	Front to rear
Management port	Built-in One RJ-45 connector (10M/100M/1GbE)
USB console port	One USB Mini-B console port (USB 2.0)
Traffic ports	Four SFP28 connectors (1/10/25GbE)
Auxiliary port	One SFP10 connector (1/10GbE)
Serial console port	One RJ-45 serial connector (RS-232 or two dry contacts)
Fans	Three fans for front-to-rear cooling

The following table lists the regulation and standard compliance features of the Assurance Sensor F25.

Table 2: Regulation and Standard Compliance (Model: NG25)

Feature	Description
Safety	IEC 62368-1, EN IEC 62368-1, AS/NZS 62368.1, CSA/UL 62368-1, GB 4943.1, J62368-1, SASO-IEC 62368-1
EMC - Emission (Class A)	CISPR 32, IEC 61000-3-2, IEC 61000-3-3, EN 55032, EN 61000-3-2, EN 61000-3-3, FCC (47 CFR 15, Subpart B), ICES-003, AS/NZS CISPR 32, VCCI-CISPR 32
EMC - Immunity	CISPR 35, EN 55035
EMC - Radio	ETSI EN 301 489-19, ETSI EN 303 413

Feature	Description
Telco	NEBS Level-3: GR-63, GR-1089
Enviro	RoHS: IEC 63000, EN IEC 63000

Package Contents

Package contents for the Cisco Provider Connectivity Assurance Sensor F25 include the following:

- Assurance Sensor F25 (1)
- Power kit accessories (1)
  - DC Unit—Input mating connectors (2)
  - AC Unit—Power cord retainer clip (1)
- *Cisco Provider Connectivity Assurance Sensor F25*

  This document contains URLs that point to the hardware installation guide, regulatory compliance and safety information guide, warranty, and licensing pages, and a QR code that points to the management center Documentation Portal.

Note The package can contain other ordering options.

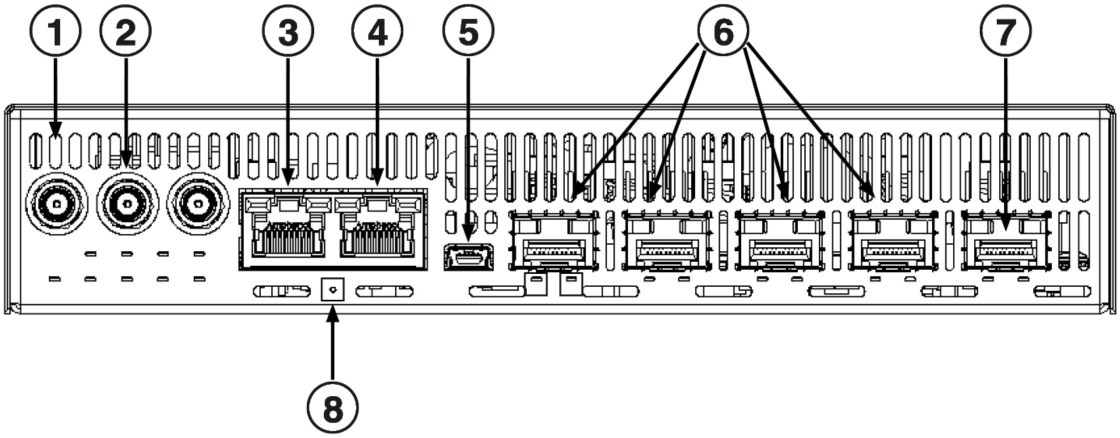
Serial Number Locations

The Serial Number (SN) and the Media Access Control (MAC) address are located at the bottom of the Assurance Sensor F25.

Front Panel

The following figure shows the front panel features of the Assurance Sensor F25. See Front Panel LEDs, on page 5 for a description of the LEDs.

Figure 2: Font Panel



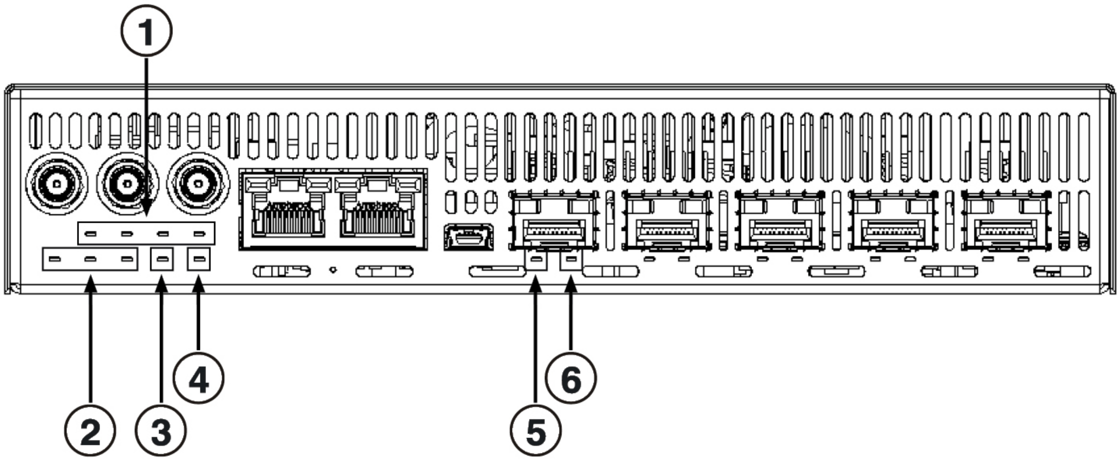
1	System ventilation holes Fresh air intake	**2**	Synchronization input/output (optional) **Warning** Ensure the unit's power source(s) have been turned off before servicing. Installations where a unit with the GNSS may be exposed to voltage in excess of 10kV, additional measures such as external surge suppressor may be necessary. • One SMA, GNSS antenna input • One SMA, sync IN • One SMA, sync OUT

3	Management port RJ-45 connector (10M/100M/1GbE)	**4**	Console / Dry Contacts RJ-45 connector (RS-232 or 2 dry contacts) **Note** Cannot be used at the same time. **Caution** The Dry Contacts Interface is strictly Safety Extra Low Voltage (SELV). • PIN #1—Dry contact 1 • PIN #2—Not connected • PIN #3—RS-232 TX data • PIN #4—Ground • PIN #5—Ground • PIN #6—RS-232 RX data • PIN #7—Not connected • PIN #8—Dry contact 2
5	Console port USB Mini-B port (USB 2.0)	**6**	Traffic ports Four SFP28 connectors (1/10/25GbE)
7	Auxiliary port SFP10 connector (1/10GbE)	**8**	RST System reset button **Note** Press the RST button for more than five seconds to reset the unit to factory defaults. **Warning** Service-affecting

Front Panel LEDs

The following figure shows the front panel LEDs and describes their states.

Figure 3: Front Panel LEDs and Their States



1	Synchronization LEDs (optional) ANT • Green—GNSS is enabled and is locked on satellite. • Green, flashing—GNSS is enabled and searching for satellite. SYNC IN • Off—No synchronization input detected. • Green—Synchronization input detected. SYNC OUT • Off—Synchronization output deactivated. • Green—Synchronization output activated. ALM • Off—No synchronization module alarm condition. • Red—Synchronization module alarm condition.	**2**	MIN MAJ CRIT LEDs • MIN Yellow—A minor alarm condition is present. • MAJ Red—A major alarm condition is present. • CRIT Red—A critical alarm condition is present.
3	Status LED • Green—Normal operation. • Green, flashing—The unit is booting.	**4**	PWR LED • Off—The device is unpowered. • Green—The device is powered.

5	Link LED • Off—Link is inactive. • Green—Link is active.	**6**	Activity LED • Off—No TX/RX activity. • Green, flashing—Port is receiving/transmitting data.

Rear Panel

The unit can be ordered in these rear panel configurations:

- AC power
- DC power

The following figure shows the rear panel of the Assurance Sensor F25.

Figure 4: AC Power

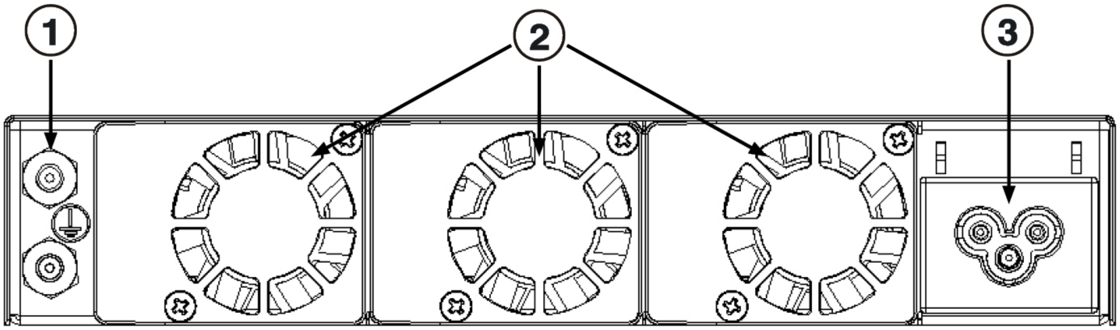
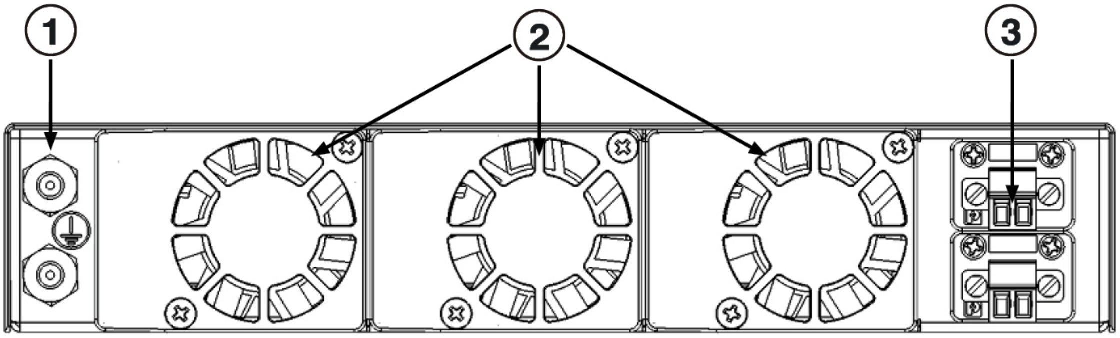


Figure 5: DC Power



1	Ground lugs Unit protective ground point (Lug type: 2x Stud #10 hole, 16 mm spacing)	**2**	Hot-swappable fan modules Hot air outtake
3	AC input connector: IEC 60320/C6 (1x) DC input connectors: Phoenix, 1829345 (2x)		—

Power Supply

The following table lists the specifications for each power supply used in the Assurance Sensor F25.

Table 3: Power Specifications

Description	**Specification**
Input power ratings	AC input: 100 to 240 V AC, 50–60 Hz, 1.8 to 0.75 A_{Max} DC input: 40 to 57 V DC, 3.8 to 2.4 A_{Max}
Output power ratings	Antenna (Sync. Option): 3.3 V DC ±10%, 50 mA_{Max} SFP28: 3.5 W_{Max} per port SFP10: 3.0 W_{Max} per port **Warning** Transceivers used in the ports must stay within their specifications under all operating conditions of the system.
Power consumption	72 W_{Typ}, 97 W_{Max} (246 BTU/hr_{Typ}, 328 BTU/hr_{Max})

Hardware Specifications

The following table contains hardware specifications for the Assurance Sensor F25.

Dimensions (H x W x D)	1.4 x 7.7 x 12.4 inches (3.66 x 19.66 x 31.65 cm)
Weight	5.2 lb (2.4 kg)
Temperature	Operating: • AC or DC Commercial: 32 to 122°F (0 to 50°C) • DC Hardened: -40 to 149°F (-40 to 65°C) Storage: -40 to 158°F (-40 to 70°C)

Humidity	Operating: 5 to 85% RH, noncondensing Storage: 5 to 95% RH, noncondensing
Altitude	Maximum: 9900 ft (3000 m), above sea level

Product ID Numbers

The following table lists the field-replaceable PIDs associated with the Assurance Sensor F25. If any internal components fail, you must get a return material authorization (RMA). See the Cisco Returns Portal for more information.

Table 4: Provider Connectivity Assurance Sensor F25 PIDs

PID	Description
SKY-F25-A	Provider Connectivity Assurance Sensor F25 Quad 25GbE Ports (SFP28), AC power input, Commercial
SKY-F25-D	Provider Connectivity Assurance Sensor F25 Quad 25GbE Ports (SFP28), DC power input, Commercial
SKY-F25-H-D	Provider Connectivity Assurance Sensor F25 Quad 25GbE Ports (SFP28), DC power input, Hardened

Power Cord Specifications

Each AC power input requires a separate power cord. Power cords are available for connection to the Assurance Sensor F25.

If you do not order the optional power cord with the system, you are responsible for selecting the appropriate power cord for the product. Using a incompatible power cord with this product may result in electrical safety hazard.

PID	Description
SKY-PC-NA	North America - C5 termination
SKY-PC-EUR	Europe – C5 termination
SKY-PC-UK	United Kingdom – C5 termination
SKY-PC-JPN	Japan – C5 termination
SKY-PC-IND	India – C5 termination
SKY-PC-SIN	Singapore – C5 termination
SKY-PC-AUS	Australia / New Zeland – C5 termination
SKY-PC-SWI	Switzerland – C5 termination

PID	Description
SKY-PC-ITA	Italy – C5 termination
SKY-PC-ISL	Israel – C5 termination
SKY-PC-TWN	Taiwan – C5 termination
SKY-PC-ARG	Argentina – C5 termination
SKY-PC-BRZ	Brazil – C5 termination
SKY-PC-C20	C20 – C5 termination
SKY-PC-C14	C14 – C5 termination
SKY-PC-CHN	China – C5 termination

Note Only the approved power cords for the Assurance Sensor F25 are supported.

CHAPTER 2

Installation Preparation

- Installation Warnings, on page 11
- Maintain Safety with Electricity, on page 13
- Network Equipment-Building System (NEBS) Statements, on page 13
- Prevent ESD Damage, on page 15
- Power Supply Considerations, on page 15
- Rack Configuration Considerations, on page 15
- Safety Recommendations, on page 16
- Site Considerations, on page 16
- Site Environment, on page 16

Installation Warnings

Read the Regulatory Compliance and Safety Information document before installing the Provider Connectivity Assurance Sensor F25.

Caution Do *not* open the appliance except under direction from TAC.

Take note of the following warnings:

Warning **Statement 1071**—Warning Definition

IMPORTANT SAFETY INSTRUCTIONS

Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Read the installation instructions before using, installing, or connecting the system to the power source. Use the statement number at the beginning of each warning statement to locate its translation in the translated safety warnings for this device.

SAVE THESE INSTRUCTIONS

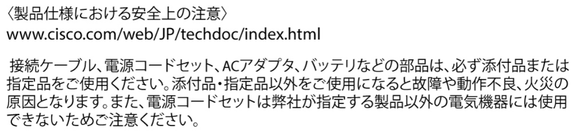
Note

Statement 407—Japanese Safety Instruction

You are strongly advised to read the safety instruction before using the product.

https://www.cisco.com/web/JP/techdoc/pldoc/pldoc.html

When installing the product, use the provided or designated connection cables/power cables/AC adapters.



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Warning

Statement 1005—Circuit Breaker

This product relies on the building's installation for short-circuit (overcurrent) protection. To reduce risk of electric shock or fire, ensure that the protective device is rated not greater than: AC 20 A/DC 40 A

Warning

Statement 1073—No User-Serviceable Parts

There are no serviceable parts inside. To avoid risk of electric shock, do not open.

Warning

Statement 1074—Comply with Local and National Electrical Codes

To reduce risk of electric shock or fire, installation of the equipment must comply with local and national electrical codes.

Warning

Statement 1089—Instructed and Skilled Person Definitions

An instructed person is someone who has been instructed and trained by a skilled person and takes the necessary precautions when working with equipment.

A skilled person or qualified personnel is someone who has training or experience in the equipment technology and understands potential hazards when working with equipment.

There are no serviceable parts inside. To avoid risk of electric shock, do not open.

Warning

Statement 1091—Installation by an Instructed Person

Only an instructed person or skilled person should be allowed to install, replace, or service this equipment. See statement 1089 for the definition of an instructed or skilled person.

There are no serviceable parts inside. To avoid risk of electric shock, do not open.

Warning **Statement 9001**—Product Disposal

Ultimate disposal of this product should be handled according to all national laws and regulations.

Maintain Safety with Electricity

Warning Before working on a chassis, be sure the power cord is unplugged.

Read the Regulatory Compliance and Safety Information document before installing the chassis.

Follow these guidelines when working on equipment powered by electricity:

- Do not work alone if potentially hazardous conditions exist anywhere in your work space.
- Never assume that power is disconnected; always check.
- Look carefully for possible hazards in your work area, such as moist floors, ungrounded power extension cables, frayed power cords, and missing safety grounds.
- Use the chassis within its marked electrical ratings and product usage instructions.
- The chassis is equipped with an AC-input power supply, which is shipped with a three-wire electrical cord with a grounding-type plug that fits into a grounding-type power outlet only. Do not circumvent this safety feature. Equipment grounding should comply with local and national electrical codes.

Network Equipment-Building System (NEBS) Statements

NEBS describes the environment of a typical United States Regional Bell Operating Company (RBOC) central office. NEBS is the most common set of safety, spatial, and environmental design standards applied to telecommunications equipment in the United States. It is not a legal or regulatory requirement, but rather an industry requirement.

The following NEBS statements apply to the Assurance Sensor F25:

Warning **Statement 7003**—Shielded Cable Requirements for Intrabuilding Lightning Surge

The intrabuilding port(s) of the equipment or subassembly must use shielded intrabuilding cabling/wiring that is grounded at both ends.

The following port(s) are considered intrabuilding ports on this equipment:

Warning **Statement 7005—**Intrabuilding Lightning Surge and AC Power Fault

The intrabuilding port(s) of the equipment or subassembly is suitable for connection to intrabuilding or unexposed wiring or cabling only. The intrabuilding port(s) of the equipment or subassembly MUST NOT be metallically connected to interfaces that connect to the OSP or its wiring for more than 6 meters (approximately 20 feet). These interfaces are designed for use as intrabuilding interfaces only (Type 2, 4, or 4a ports as described in GR-1089) and require isolation from the exposed OSP cabling. The addition of primary protectors is not sufficient protection in order to connect these interfaces metallically to an OSP wiring system.

The following ports are considered intrabuilding ports on the equipment:

Warning **Statement 7012—**Equipment Interfacing with AC Power Ports

Connect this equipment to AC mains that are provided with a surge protective device (SPD) at the service equipment that complies with NFPA 70, the National Electrical Code (NEC).

Note **Statement 7013—**Equipment Grounding Systems—Common Bonding Network (CBN)

This equipment is suitable for installations using the CBN.

Note **Statement 7016—**Battery Return Conductor

The battery return conductor of this equipment shall be treated as DC-1.

Note **Statement 7017—**Minimum Steady State DC Input Voltage

This equipment operates without degradation at a minimum steady state voltage of -40.5 VDC. The nominal DC input voltage rating is -48 VDC.

Note **Statement 8015—**Installation Location Network Telecommunications Facilities

This equipment is suitable for installation in network telecommunications facilities.

Note **Statement 8016—**Installation Location Where the National Electric Code (NEC) Applies

This equipment is suitable for installation in locations where the NEC applies.

Prevent ESD Damage

ESD occurs when electronic components are improperly handled, and it can damage equipment and impair electrical circuitry, which can result in intermittent or complete failure of your equipment.

Always follow ESD-prevention procedures when removing and replacing components. Ensure that the chassis is electrically connected to an earth ground. Wear an ESD-preventive wrist strap, ensuring that it makes good skin contact. Connect the grounding clip to an unpainted surface of the chassis frame to safely ground ESD voltages. To properly guard against ESD damage and shocks, the wrist strap and cord must operate effectively. If no wrist strap is available, ground yourself by touching the metal part of the chassis.

For safety, periodically check the resistance value of the antistatic strap, which should be between one and 10 megohms.

Power Supply Considerations

When installing the chassis, consider the following:

- Check the power at the site before installing the chassis to ensure that it is free of spikes and noise. Install a power conditioner, if necessary, to ensure proper voltages and power levels in the appliance-input voltage.
- Install proper grounding for the site to avoid damage from lightning and power surges.
- The chassis does not have a user-selectable operating range. Refer to the label on the chassis for the correct appliance input-power requirement.
- Several styles of AC-input power supply cords are available for the chassis; make sure that you have the correct style for your site.
- If you are using dual redundant (1+1) power supplies, we recommend that you use independent electrical circuits for each power supply.
- Install an uninterruptible power source for your site, if possible.

Rack Configuration Considerations

Consider the following when planning a rack configuration:

- Standard 19-inch (48.3 cm) 4-post EIA rack with mounting rails that conform to English universal hole spacing according to section 1 of ANSI/EIA-310-D-1992.
- The rack-mounting posts need to be 2 to 3.5 mm thick to work with the slide rail rack mounting.
- If you are mounting a chassis in an open rack, make sure that the rack frame does not block the intake or exhaust ports.
- If your rack includes closing front and rear doors, the doors must have 65 percent open perforated area evenly distributed from top to bottom to permit adequate airflow.
- Be sure enclosed racks have adequate ventilation. Make sure that the rack is not overly congested as each chassis generates heat. An enclosed rack should have louvered sides and a fan to provide cooling air.

- In an enclosed rack with a ventilation fan in the top, heat generated by equipment near the bottom of the rack can be drawn upward and into the intake ports of the equipment above it in the rack. Ensure that you provide adequate ventilation for equipment at the bottom of the rack.
- Baffles can help to isolate exhaust air from intake air, which also helps to draw cooling air through the chassis. The best placement of the baffles depends on the airflow patterns in the rack. Experiment with different arrangements to position the baffles effectively.

Safety Recommendations

Observe these safety guidelines:

- Keep the area clear and dust free before, during, and after installation.
- Keep tools away from walkways, where you and others might trip over them.
- Do not wear loose clothing or jewelry, such as earrings, bracelets, or chains that could get caught in the chassis.
- Wear safety glasses if you are working under any conditions that might be hazardous to your eyes.
- Do not perform any action that creates a potential hazard to people or makes the equipment unsafe.
- Never attempt to lift an object that is too heavy for one person.

Site Considerations

Considering the following helps you plan an acceptable operating environment for the chassis, and avoid environmentally-caused equipment failures.

- Electrical equipment generates heat. Ambient air temperature might not be adequate to cool equipment to acceptable operating temperatures without adequate circulation. Make sure that the room in which you operate your system has adequate air circulation.
- Ensure that the chassis cover is secure. The chassis is designed to allow cooling air to flow effectively within it. An open chassis allows air leaks, which may interrupt and redirect the flow of cooling air from the internal components.
- Always follow ESD prevention procedures to avoid damage to equipment. Damage from static discharge can cause immediate or intermittent equipment failure.

Site Environment

See Hardware Specifications, on page 8 for information about physical specifications.

To avoid equipment failures and reduce the possibility of environmentally caused shutdowns, plan the site layout and equipment locations carefully. If you are currently experiencing shutdowns or unusually high error rates with your existing equipment, these considerations may help you isolate the cause of failures and prevent future problems.

CHAPTER 3

Rack-Mount the Chassis

- Unpack and Inspect the Chassis, on page 17
- Desktop-Mount the Chassis, on page 18
- Wall-Mount the Chassis, on page 18
- Rack-Mount the Chassis, on page 19
- Ground the Chassis, on page 21

Unpack and Inspect the Chassis

Note The chassis is thoroughly inspected before shipment. If any damage occurred during transportation or any items are missing, contact your customer service representative immediately. Keep the shipping container in case you need to send the chassis back due to damage.

See Package Contents, on page 3 for a list of what shipped with the chassis.

Note Mounting kits are ordered separately.

Warning You must install the unit in a restricted access location in the following cases:

- If you are using a DC power connection and the ambient temperature is more than 50°C.
- If you are using a centralized DC power connection.

Step 1 Remove the chassis from its cardboard container and save all packaging material.

Step 2 Compare the shipment to the equipment list provided by your customer service representative. Verify that you have all items.

Step 3 Check for damage and report any discrepancies or damage to your customer service representative. Have the following information ready:

- Invoice number of shipper (see the packing slip)
- Model and serial number of the damaged unit
- Description of damage
- Effect of damage on the installation

Desktop-Mount the Chassis

Attach the included rubber feet to the bottom of the unit for added stability when placing on a desktop or other flat surface.

Ensure that the fan airflow is not blocked by any obstacles.

Caution Do not stack one chassis on top of another chassis. If you stack the units, they overheat, which causes the units to power cycle.

Wall-Mount the Chassis

When mounting a unit on a wall, ensure that:

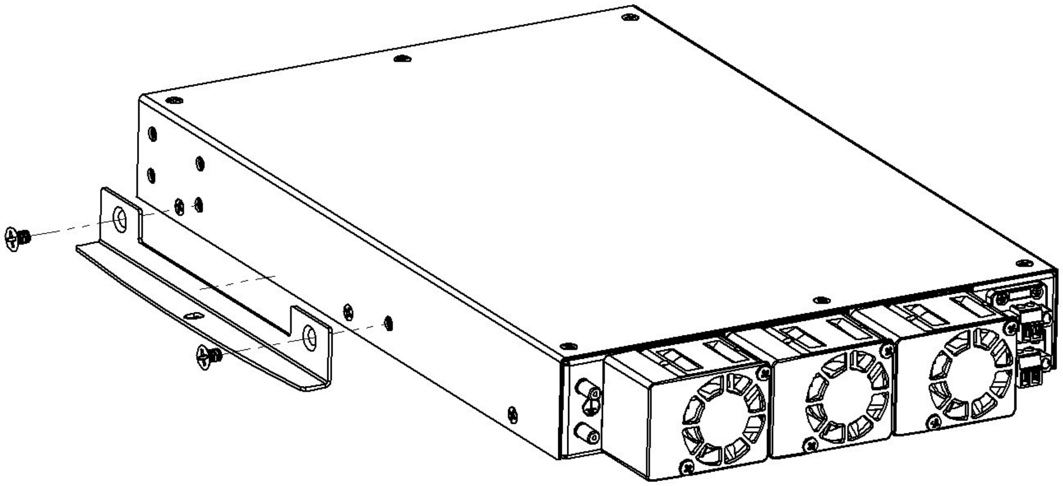
- The support surface and the fasteners you use must support at least 22 lb (10 kg).
- Cable pull (accidental or otherwise) does not exceed the 4.4 lb (2 kg) limit.

Note Mounting kits are ordered separately.

Follow these steps to mount your chassis on a wall.

Step 1 Using a Philips screwdriver, secure the Wallmount Kit to both sides of the unit using the provided screws, as shown in the figure below.

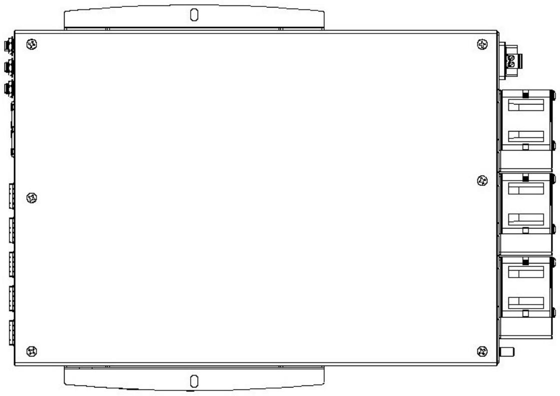
Figure 6: Align and Attach the Wallmout Kit



Step 2 Secure to the wall using the screws provided.

Warning Ensure to install the unit on the wall in the position shown below to ensure proper ventilation of the unit.

Figure 7: Wall Installation Position



Rack-Mount the Chassis

Safety Warnings

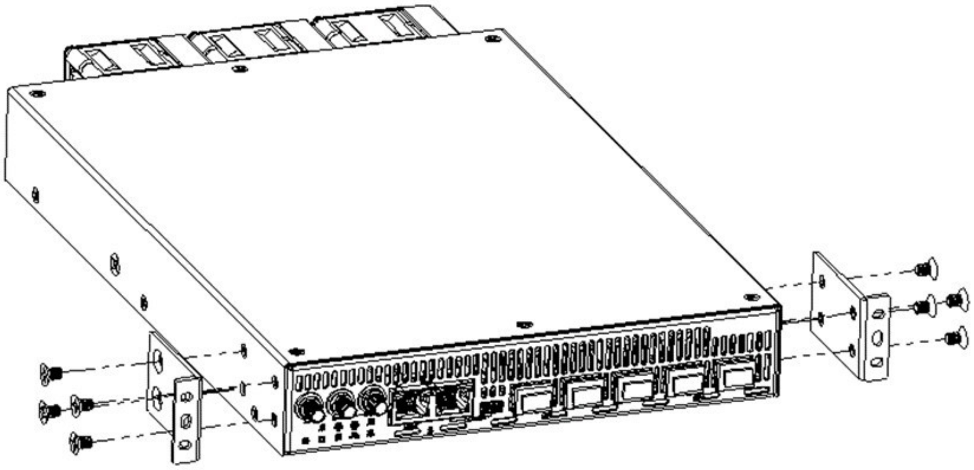
Take note of the following warnings:

Warning To conform to the NEBS Seismic Zone 4 requirements, the bracket must be secured, using screws specified by the rack manufacturer, to a NEBS Seismic Zone 4 compliant rack. Such screws are not provided with the bracket kit.

Only the flush mounting options are NEBS compliant.

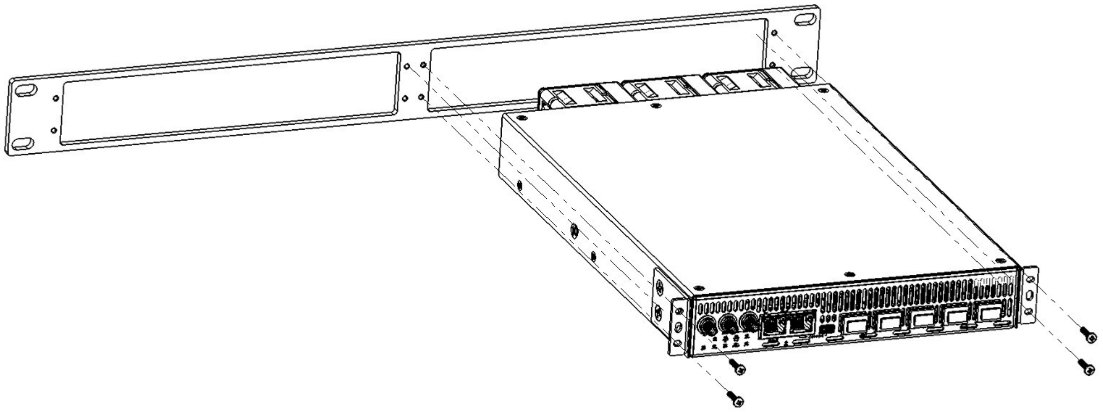
Step 1 Using a Philips screwdriver, secure two L-shaped mounting brackets vertically to both sides of the unit using the provided screws, as shown in the figure below.

Figure 8: Align the L-brackets



Step 2 Secure this assembly to the rack-mount bracket using four pan head screws provided.

Figure 9: Secure the Assembly

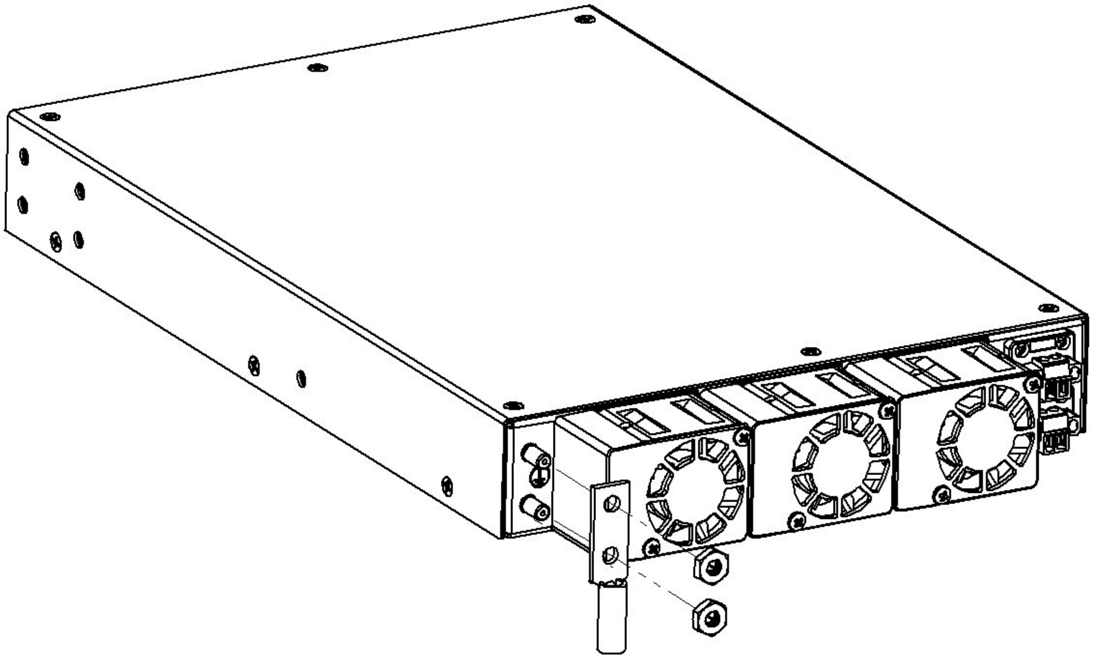


Ground the Chassis

For safety reasons, connect the protective ground lug to a suitable grounding point before applying power, as shown in the following figure.

Note Applicable wire range: 2.5 to 16 mm^2 (14 to 6 AWG). Lug type: 2x Stud #10 Hole, 16 mm spacing

Figure 10: Fasten the Ground Lug



Safety Warnings

Take note of the following warnings:

Warning **Statement 1101—**Connected To Grounded Outlet

In the Scandinavian countries (Denmark, Finland, Iceland, Norway, and Sweden) the appliance must be connected to a grounded outlet.

CHAPTER 4

Installation, Maintenance, and Upgrade

- Power the Unit via the AC Power Supply, on page 23
- Power the Unit via the DC Power Supply, on page 24
- Connect to the Network, on page 25
- Remove and Replace the Fan Module, on page 25

Power the Unit via the AC Power Supply

Safety Warnings

Take note of the following warning:

Warning Ensure the unit's power source(s) have been turned OFF before servicing.

Note This unit is designed for Common Bonding Network (CBN) installations only.

This unit is suitable for installation in network telecommunication facilities and where the National Electrical Code (NEC) applies.

To power the unit:

Before you begin

- Make sure that the chassis ground is connected on the chassis before you begin installing the AC power supply. See Ground the Chassis, on page 21 for the procedure.

Note Powering Options are ordered separately.

Step 1 Connect the AC plug to the AC appliance coupler.

Step 2 Plug the power cord into a suitable power outlet.

Step 3 Secure the power cord through the retainer clip.

Warning The AC plug must be connected to a properly grounded AC outlet.

Power the Unit via the DC Power Supply

Safety Warnings

Take note of the following warnings:

Warning Ensure the unit's power source(s) have been turned OFF before servicing.

An approved external power supply switch or circuit breaker must be installed in the supply lines and be readily accessible to act as a disconnect device. The switch or circuit breaker must disconnect all poles simultaneously and be rated 12 A max.

Connect the protective earthing terminal(s) on the power supplie(s) to the same protective earthing point as used to ground the unit.

DC PSU must be connected to Class 1 Power Source (ES1) only.

The DC Battery Return (BR) input terminal(s) of the unit are not connected to the equipement frame or grounding means of the equipement and must be configured as isolated DC Return (DC-I) in compliance with GR-1089-CORE requirements.

Note This unit is designed for Common Bonding Network (CBN) installations only.

This unit is suitable for installation in network telecommunication facilities and where the National Electrical Code (NEC) applies.

To power the unit:

Before you begin

- Make sure that the chassis ground is connected on the chassis before you begin installing the DC power supply. See Ground the Chassis, on page 21 for the procedure.

Step 1 Establish the proper connections between the wires and the power sources.

Step 2 Connect wires to the terminal block connector of the power supply.

Note Applicable wire range: 0.75 to 2.5 mm^2 (18 to14 AWG)

Connect to the Network

Establish the Ethernet connections to the unit by plugging the appropriate media types to the proper ports of the unit (see the numbered diagram of the front panel).

Note For more information, refer to the Cisco Provider Connectivity Assurance Sensor F25 User Material.

Remove and Replace the Fan Module

This Method of Procedure describes how to replace a fan in the event of a fan failure.

If a fan failure is reported, it is recommended to plan for its replacement within seven (7) days. Moreoever, as a preventative measure, it is recommended to replace **all** fans in the event of a failure.

The alarm must be ignored while the fan is being replaced. It is therefore recommended this procedure be performed during a proper maintenance window.

Caution Removing both dual fan modules exposes the chassis to no airflow. The chassis operates for 30 seconds after either one or both modules are removed. All modules must be reinserted within 30 seconds to avoid overheating the chassis. If you wait longer than 30 seconds, the chassis may power off automatically to prevent damage to components. The chassis does not power up and boot properly if the dual fan modules are missing.

Caution The fan modules must be replaced one at a time.

Note The replacement of the fan modules should be carefully planned, as the procedure must be completed within 15 minutes to reduce the thermal impact on the unit.

Safety Warnings

The following are safety guidelines that you must follow for personal safety and to operate the units correctly. All personnel working directly on the units must be trained, authorized and qualified to perform the tasks described herein. You must read and follow these guidelines before you begin.

- Power to the unit remains on throughout this process.
- To avoid personal injury, equipment damage and/or service interruptions, keep your fingers away from the fan's moving parts.
- This equipment is sensitive to electrostatic discharge (ESD). When handling, ensure you wear a properly functioning heel grounder and/or an anti-static wrist strap or another personal-grounding device.
- Incorrect handling may void warranty.

Take note of the following warnings:

Warning **Statement 1073—**No User-Serviceable Parts

There are no serviceable parts inside. To avoid risk of electric shock, do not open.

Warning **Statement 1093—**Avoid Sharp Edges

Risk of personal injury. Avoid sharp edges when installing or removing replaceable units.

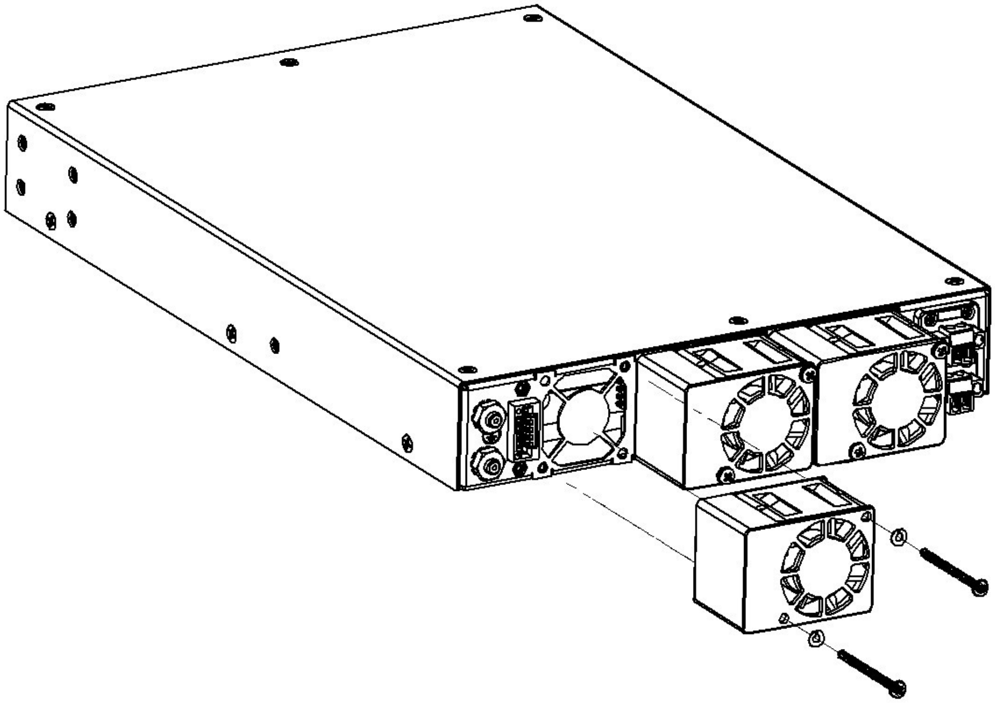
Replace the Fan Module

To replace the fan module:

Step 1 Identify which fan on the unit has malfunctioned.

Step 2 Remove the two screws that are holding the fan module to the unit's chassis and remove the fan.

Figure 11: Remove the Fan



Step 3 Put the new fan module in place by keeping the same orientation as the original one.

Step 4 Secure the new fan module to the chassis by replacing both screws.

Step 5 Ensure that the fan assembly is fully functional.

Step 6 (Optional) To replace the other fans as a preventative measure, continue with Optional Preventative Maintenance Fan Replacement , on page 27.

Optional Preventative Maintenance Fan Replacement

To perform an optional fan preventive maintenance:

Step 1 Remove the two screws that are holding the fan module to the unit’s chassis and remove the fan.

Step 2 Put the new fan module in place by keeping the same orientation as the original one.

Step 3 Secure the new fan module to the chassis by replacing both screws.

Step 4 Ensure that the fan assembly is fully functional.