



Safety Warnings

This handout topic lists the safety warnings necessary for handling this product. Before you install or service the chassis, review these safety warnings to avoid injuring yourself or damaging the equipment.

For a complete list of translated safety warnings, see the [Regulatory Compliance and Safety Information—Cisco NCS 520](#) document.

The safety warnings are grouped under the following sections:

- [Standard Warning Statements, on page 1](#)
- [Safety Guidelines for Personal Safety and Equipment Protection, on page 2](#)
- [Safety Precautions for Module Installation and Removal, on page 2](#)
- [Safety with Electricity, on page 3](#)
- [Power Supply Considerations, on page 6](#)
- [Preventing ESD Damage, on page 7](#)

Standard Warning Statements



Warning This unit is intended for installation in restricted access areas. A restricted access area can be accessed only by using a special tool, lock and key, or other means of security. Statement 1017



Warning Ultimate disposal of this product must be handled according to all national laws and regulations. Statement 1040



Warning To prevent the system from overheating, do not operate it in an area that exceeds the maximum recommended ambient temperature of 158°F (70°C). Statement 1047



Warning Mount the device on a rack that is permanently affixed to the building. Statement 1049

**Warning**

This device is a Class A Device and is registered for EMC requirements for industrial use. You must be aware. If sold or purchased by mistake, do replace with a residential-use type. Statement 294

**Warning**

This device is a class A product. In a domestic environment, this product may cause radio interference in which case you may be required to take adequate measures. Statement 340

Safety Guidelines for Personal Safety and Equipment Protection

The following guidelines ensure your safety and protect the equipment. This list does not include all the potentially hazardous situations. Therefore, you must be alert.

- Before moving the system, always disconnect all power cords and interface cables.
- Never assume that power is disconnected from a circuit; always check.
- Before and after installation, keep the chassis area clean and dust free.
- Keep tools and assembly components away from walk areas where you or others can trip over them.
- Do not work alone if potentially hazardous conditions exist.
- Do not perform any action that creates a potential hazard to people or makes the equipment unsafe.
- Do not wear loose clothing that may get caught in the chassis.
- When working under conditions that may be hazardous to your eyes, wear safety glasses.

Safety Precautions for Module Installation and Removal

Be sure to observe the following safety precautions when you work on the chassis.

**Warning**

Class 1 laser product. Statement 1008

**Warning**

Do not stare into the beam or view it directly with optical instruments. Statement 1011

**Warning**

Invisible laser radiations present. Statement 1016

**Warning**

Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments. Statement 1051

Safety with Electricity



Warning Before working on a chassis or with power supplies, unplug the power cord on AC units. Disconnect the power at the circuit breaker on DC units. Statement 12



Warning Before working on equipment that is connected to power lines, remove jewelry (including rings, necklaces, and watches). Metal objects heat up when connected to power and ground and can cause serious burns or weld the metal object to the terminals. Statement 43



Warning Avoid using or servicing any equipment that has outdoor connections during an electrical storm. There may be a risk of electric shock from lightning. Statement 1088



Warning Before performing any of the following procedures, ensure that power is removed from the DC circuit. Statement 1003



Warning Read the installation instructions before connecting the system to the power source. Statement 1004



Warning This product relies on the building's installation for short-circuit (overcurrent) protection. For a DC installation, ensure that the branch circuit breaker is rated a maximum 15A for DC systems. For AC systems, 15 A for voltages greater than 200 Vac; 20 A for voltages below 127 Vac. Statement 1005



Warning When you connect or disconnect the power and relay connector with power applied, an electrical arc can occur. This action can cause an explosion in hazardous area installations. Be sure that power is removed from the switch and alarm circuit. Be sure that power cannot be accidentally turned on or verify that the area is nonhazardous before proceeding. Failure to securely tighten the power and relay connector captive screws can result in an electrical arc if the connector is accidentally removed. Statement 1058



Warning Take care when connecting units to the supply circuit so that wiring is not overloaded. Statement 1018



Warning The plug-socket combination must be accessible always, because it serves as the main disconnecting device. Statement 1019



Warning To avoid electric shock, do not connect safety extra-low voltage (SELV) circuits to telephone-network voltage (TNV) circuits. LAN ports contain SELV circuits, and WAN ports contain TNV circuits. Some LAN and WAN ports both use RJ45 connectors. Use caution when connecting cables. Statement 1021



Warning A readily accessible two-poled disconnect device must be incorporated in the fixed wiring. Statement 1022



Warning To reduce the risk of fire, use only 26 AWG or larger telecommunication line cord. Statement 1023



Warning This equipment must be grounded. Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available. Statement 1024



Warning Use copper conductors only. Statement 1025



Warning This unit may have more than one power supply connection. All connections must be removed to de-energize the unit. Statement 1028



Warning To prevent personal injury or damage to the chassis, never attempt to lift or tilt the chassis using the handles on modules (such as power supplies, fans, or cards). These types of handles are not designed to support the weight of the unit. Statement 1032



Warning Connect the unit only to the DC power source that complies with the safety extra-low voltage (SELV) requirements in IEC 60950 based safety standards. Statement 1033



Warning Do not use this product near water. For example, near a bath tub, wash bowl, kitchen sink or laundry tub, in a wet basement, or near a swimming pool. Statement 1035



Warning This product requires short-circuit (overturned) protection, to be provided as part of the building installation. Install only in accordance with national and local wiring regulations. Statement 1045



Warning When installing or replacing the unit, ensure the ground connection first and disconnected last. Statement 1046



Warning Failure to securely tighten the power and relay connector captive screws can result in an electrical arc if the connector is accidentally removed. Statement 1058



Warning This equipment is intended to be grounded to comply with emission and immunity requirements. Ensure that the switch functional ground lug is connected to earth ground during normal use. Statement 1064



Warning When you connect or disconnect the power and/or alarm connector with power applied, an electrical arc can occur. This could cause an explosion in hazardous area installations. Be sure that all power is removed from the switch and any other circuits. Be sure that power cannot be accidentally turned on or verify that the area is nonhazardous before proceeding. Statement 1058



Warning Installation of the equipment must comply with local and national electrical codes. Statement 1074

When working on equipment that is powered by electricity, follow these guidelines:

- Locate the room's emergency power-off switch. If an electrical accident occurs, you know where to quickly turn off the power.
- Before starting work on the system, turn off the DC main circuit breaker and disconnect the power terminal block cable.
- Disconnect all power when:
 - Working on or near power supplies
 - Installing or removing a device chassis or network processor module
 - Performing most hardware upgrades
- Never install equipment that appears damaged.
- Carefully examine your work area for possible hazards, such as moist floors, ungrounded power extension cables, and missing safety grounds.
- Never assume that power is disconnected from a circuit; always check.
- Never perform any action that creates a potential hazard to people or makes the equipment unsafe.
- If an electrical accident occurs and you are uninjured:
 - Use caution to avoid injuring yourself.
 - Turn off power to the device.

- If possible, send another person to get medical aid. Otherwise, determine the condition of the victim, and then call for help.
- Determine whether the person needs rescue pulsing or external cardiac compressions; then take appropriate action.

Use the following guidelines when working with any equipment that is disconnected from a power source, but connected to telephone wiring or network cabling:

- When installing or modifying telephone lines, use caution.
- Never install telephone jacks in wet locations unless the jack is designed to handle such locations.
- Never install telephone wiring during a lightning storm.

Power Supply Considerations

Check the power at your site to ensure that you are receiving clean power (free of spikes and noise). If necessary, install a power conditioner.

Power Connection Guidelines

This section provides guidelines for connecting the device power supplies to the site power source.



Warning The plug-socket combination must be accessible at all times, because it serves as the main disconnecting device.



Warning This equipment must be grounded. To reduce the risk of electric shock, never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available.



Warning This product requires short-circuit (overcurrent) protection to be provided as part of the building installation. Install only in accordance with national and local wiring regulations.

Guidelines for DC-Powered Systems

Basic guidelines for DC-powered systems include the following:

- Each chassis power supply has its own dedicated input power source. The source must comply with the safety extra-low voltage (SELV) requirements in the UL 60950, CSA 60950, EN 60950, and IEC 60950 standards.
- Protect the circuit by a dedicated two-pole circuit breaker. Ensure that the circuit breaker is sized according to the power supply input rating and local or national code requirements.

- The circuit breaker is considered as the disconnect device and is easily accessible.
- The system ground is the power supply and chassis ground.
- Use the grounding lug to attach a wrist strap for ESD protection during servicing.
- Do not connect the DC return wire to the system frame or to the system-grounding equipment.
- Ensure that the DC return is grounded at the source side.
- Ensure that each power feed of the equipment is connected to different sources.

Guidelines for AC-Powered Systems

Basic guidelines for AC-powered systems include the following:

- Each chassis power supply has its own dedicated branch circuit.
- Ensure that the circuit breaker is sized according to the power supply input rating and local or national code requirements.
- The AC power receptacles that are used to plug in the chassis must be the grounding type. The grounding conductors that connect to the receptacles must connect to protective earth ground at the service equipment.

Prevent Power Loss

Use the following guidelines to prevent power loss to the device:

- To prevent input power loss, ensure that the maximum load on each circuit supplying the power is within the current ratings of the wiring and breakers.
- In some systems, you can use an UPS to protect against power failures at your site. Avoid UPS types that use ferroresonant technology. These UPS types can become unstable with systems such as the device, which can have substantial current-draw fluctuations due to bursty data traffic patterns.

Determining power requirements is useful for planning the power distribution system to support the device.

Preventing ESD Damage



Warning This equipment needs to be grounded. Use a green and yellow 6 AWG ground wire to connect the host to earth ground during normal use.

Electrostatic Discharge (ESD) can damage equipment and impair electrical circuitry. ESD may occur when electronic printed circuit cards are improperly handled and can cause complete or intermittent failures. When removing and replacing modules, always follow these ESD prevention procedures:

- Ensure that the device chassis is electrically connected to earth ground.
- Wear an ESD-preventive wrist strap, ensuring that it makes good skin contact. To channel unwanted ESD voltages safely to ground, connect the clip to an unpainted surface of the chassis frame. To guard against ESD damage and shocks, the wrist strap and cord must operate effectively.
- If no wrist strap is available, ground yourself by touching a metal part of the chassis.

- When installing a component, use any available ejector levers or captive installation screws to properly seat the bus connectors in the backplane or midplane. These devices prevent accidental removal, provide proper grounding for the system, and help to ensure that bus connectors are properly seated.
- When removing a component, use available ejector levers or captive installation screws, if any, to release the bus connectors from the backplane or midplane.
- Handle components by only their handles or edges; do not touch the printed circuit boards or connectors.
- Place a removed component board side up on an antistatic surface or in a static-shielding container. If you plan to return the component to the factory, immediately place it in a static-shielding container.
- Avoid contact between the printed circuit boards and clothing. The wrist strap only protects components from ESD voltages on the body; ESD voltages on clothing can still cause damage.
- Never attempt to remove the printed circuit board from the metal carrier.

For the safety of your equipment, periodically check the resistance value of the antistatic wrist strap. Maintain the value between 1 and 10 Mohm.