intelbras

User guide

Series SC 3130

Data protection and security

Observe local laws regarding the protection and use of such data and the regulations that prevail in the country.

The aim of data protection legislation is to prevent infringements of individual privacy rights based on the misuse of personal data.

Processing of personal data

This system uses and processes personal data such as passwords, detailed call records, network addresses and customer data records, for example.

Guidelines that apply to Intelbras employees

» Intelbras employees are subject to safe trading practices and data confidentiality under the terms of the company's work procedures.

» It is imperative that the following rules are observed to ensure that statutory provisions relating to services (be they in-house services or remote administration and maintenance) are strictly followed. This preserves the client's interests and provides additional personal protection.

Guidelines controlling data processing

» Ensure that only authorized persons have access to customer data.

» Use password assignment facilities, without allowing any exceptions. Never share passwords with unauthorized persons.

» Ensure that no unauthorized person can process (store, change, transmit, disable or erase) or use customer data.

» Prevent unauthorized persons from gaining access to data media, for example, backup disks or protocol printouts.

» Ensuring that data media that are no longer needed are completely destroyed and that documents are not stored or left in generally accessible places.

» Working together with the client builds trust.

Misuse and hacking

» Access passwords allow access and alteration of any facility, such as external access to the company's system to obtain data. of misuse.

Important: This product does not have encryption. Intelbras does not access, transfer, capture, or carry out any other type of processing of personal data from this product, with the exception of data necessary for the operation of the product itself.

All images in this document are for illustrative purposes only.

Contents

Preparing for installation

This document is applicable to the SC 3130 switch series. Table 1 describes the SC 3130 switch series models.

Table 1 SC 3130 switch series models

PoE switch models
SC 3130-8M2U-2X
SC 3130-24GP-2M10-2X
SC 3130-48GP-2M10-2X

Safety recommendations

To avoid equipment damage or bodily injury, read the following safety recommendations before installation. Note that the recommendations do not cover every possible hazardous condition.

- Before cleaning the switch, remove all power cords from the switch. Do not clean the switch with wet cloth or liquid.
- Do not place the switch near water or in a damp environment. Prevent water or moisture from entering the switch chassis.
- Do not place the switch on an unstable case or desk.
- Ensure good ventilation at the installation site and keep the air inlet and outlet vents of the switch free of obstruction.
- Connect the yellow-green protection grounding cable before power-on.
- Make sure the power source voltage is as required.
- To avoid electrical shocks, do not open the chassis while the switch is operating or when the switch is just powered off.
- To avoid ESD damage, wear an ESD wrist strap to hot-swap a power module.

Examining the installation site

The switch must be used indoors. You can mount your switch in a rack or on a workbench, but make sure:

- Adequate clearance is reserved at the air inlet and exhaust vents for ventilation.
- The rack or workbench has a good ventilation system.
- The rack is sturdy enough to support the switch and its accessories.
- The rack or workbench is reliably grounded.

To ensure correct operation and long service life of your switch, install it in an environment that meets the requirements described in the following subsections.

Temperature/humidity

Maintain temperature and humidity in the equipment room as described in "Technical specifications."

- Lasting high relative humidity can cause poor insulation, electricity leakage, mechanical property change of materials, and metal corrosion.
- Lasting low relative humidity can cause washer contraction and ESD and cause problems including loose mounting screws and circuit failure.
- High temperature can accelerate the aging of insulation materials and significantly lower the reliability and lifespan of the switch.

For the temperature and humidity requirements of different switch models, see "Appendix A Chassis views and technical specifications."

Cleanliness

Dust buildup on the chassis might result in electrostatic adsorption, which causes poor contact of metal components and contact points, especially when indoor relative humidity is low. In the worst case, electrostatic adsorption can cause communication failure.

Table 2 Dust concentration limit in the equipment room

Substance	Concentration limit (particles/m³)
Dust	$\leq 3 \times 10^4$ (no visible dust on the tabletop over three days)
NOTE: Dust diameter ≥ 5 μm	

The equipment room must also meet strict limits on salts, acids, and sulfides to eliminate corrosion and premature aging of components, as shown in Table 3.

Table 3 Harmful gas limits in the equipment room

Gas	Maximum concentration (mg/m³)
SO_2	0.2
H_2S	0.006
NH_3	0.05
Cl_2	0.01

EMI

All electromagnetic interference (EMI) sources, from outside or inside of the switch and application system, adversely affect the switch in the following ways:

- A conduction pattern of capacitance coupling.
- Inductance coupling.
- Electromagnetic wave radiation.
- Common impedance (including the grounding system) coupling.

To prevent EMI, use the following guidelines:

- If AC power is used, use a single-phase three-wire power receptacle with protective earth (PE) to filter interference from the power grid.

- Keep the switch far away from radio transmitting stations, radar stations, and high-frequency devices to make sure the EMI levels do not exceed the compliant range.
- Use electromagnetic shielding when necessary. For example, use shielded interface cables.
- To prevent signal ports from getting damaged by overvoltage or overcurrent caused by lightning strikes, only route interface cables indoors.

Laser safety

⚠ **WARNING!**

Disconnected optical fibers or transceiver modules might emit invisible laser light. Do not stare into beams or view directly with optical instruments when the switch is operating.

The switch is a Class 1 laser device.

Installation tools

No installation tools are provided with the switch. Prepare the following tools yourself as required.
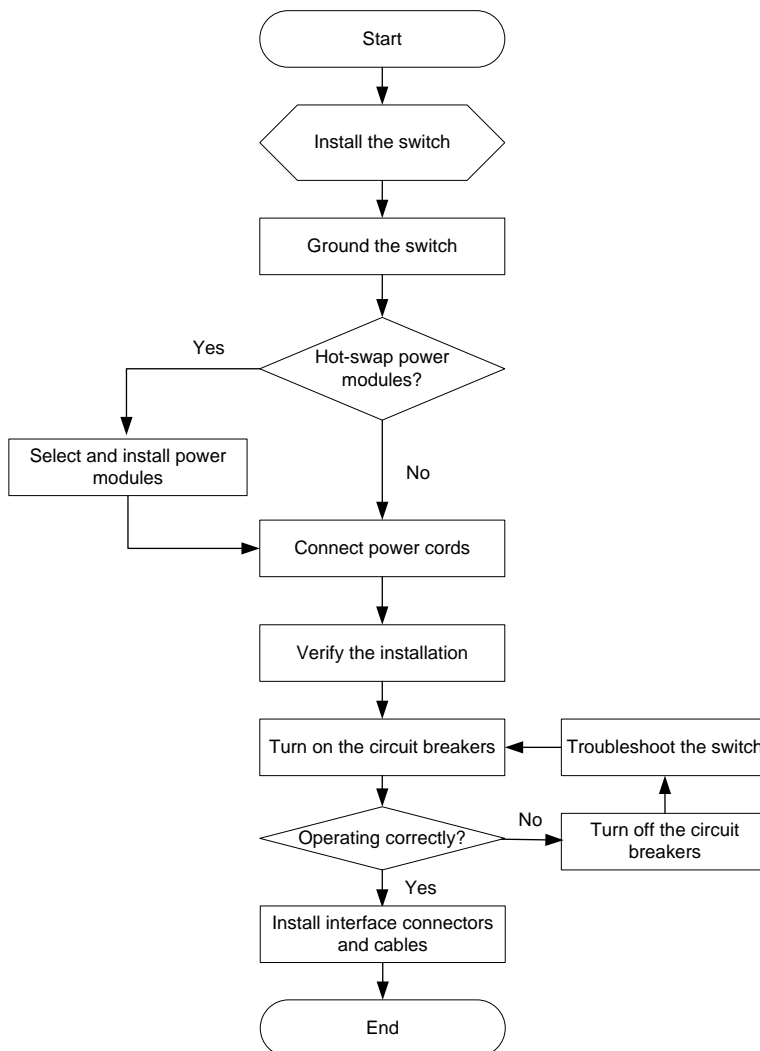
- Flat-blade screwdriver
- Phillips screwdriver
- ESD wrist strap
- Needle-nose pliers
- Diagonal pliers
- Crimping tool
- Marker
- Heat gun

Installing the switch

⚠ **CAUTION:**

Keep the tamper-proof seal on a mounting screw on the chassis cover intact, and if you want to open the chassis, contact Intelbras for permission. Otherwise, Intelbras shall not be liable for any consequence.

Figure 1 Hardware installation flow

```
                    ┌──────────────┐
                    │    Start     │
                    └──────┬───────┘
                           ▼
                   ╱───────────────╲
                   │ Install the switch │
                   ╲───────────────╱
                           ▼
                   ┌───────────────┐
                   │ Ground the switch │
                   └───────┬───────┘
                           ▼
          Yes        ◇───────────◇
     ┌──────────────◇ Hot-swap power ◇
     │              ◇   modules?   ◇
     ▼               ◇───────────◇
┌──────────────┐          │ No
│ Select and install │      ▼
│ power modules │    ┌──────────────┐
└──────┬───────┘    │ Connect power cords │
       └──────────▶ └───────┬───────┘
                           ▼
                   ┌───────────────┐
                   │ Verify the installation │
                   └───────┬───────┘
                           ▼
         ┌───────────────────────┐      ┌──────────────────┐
         │ Turn on the circuit breakers │◄──│ Troubleshoot the switch │
         └───────────┬───────────┘      └────────▲─────────┘
                     ▼                            │
             ◇─────────────◇    No       ┌────────┴─────────┐
             ◇ Operating correctly? ◇────────▶│ Turn off the circuit │
             ◇─────────────◇          │ breakers │
                     │ Yes             └──────────────────┘
                     ▼
         ┌───────────────────────┐
         │ Install interface connectors │
         │     and cables         │
         └───────────┬───────────┘
                     ▼
              ┌──────────────┐
              │     End      │
              └──────────────┘
```

Installing the switch in a 19-inch rack
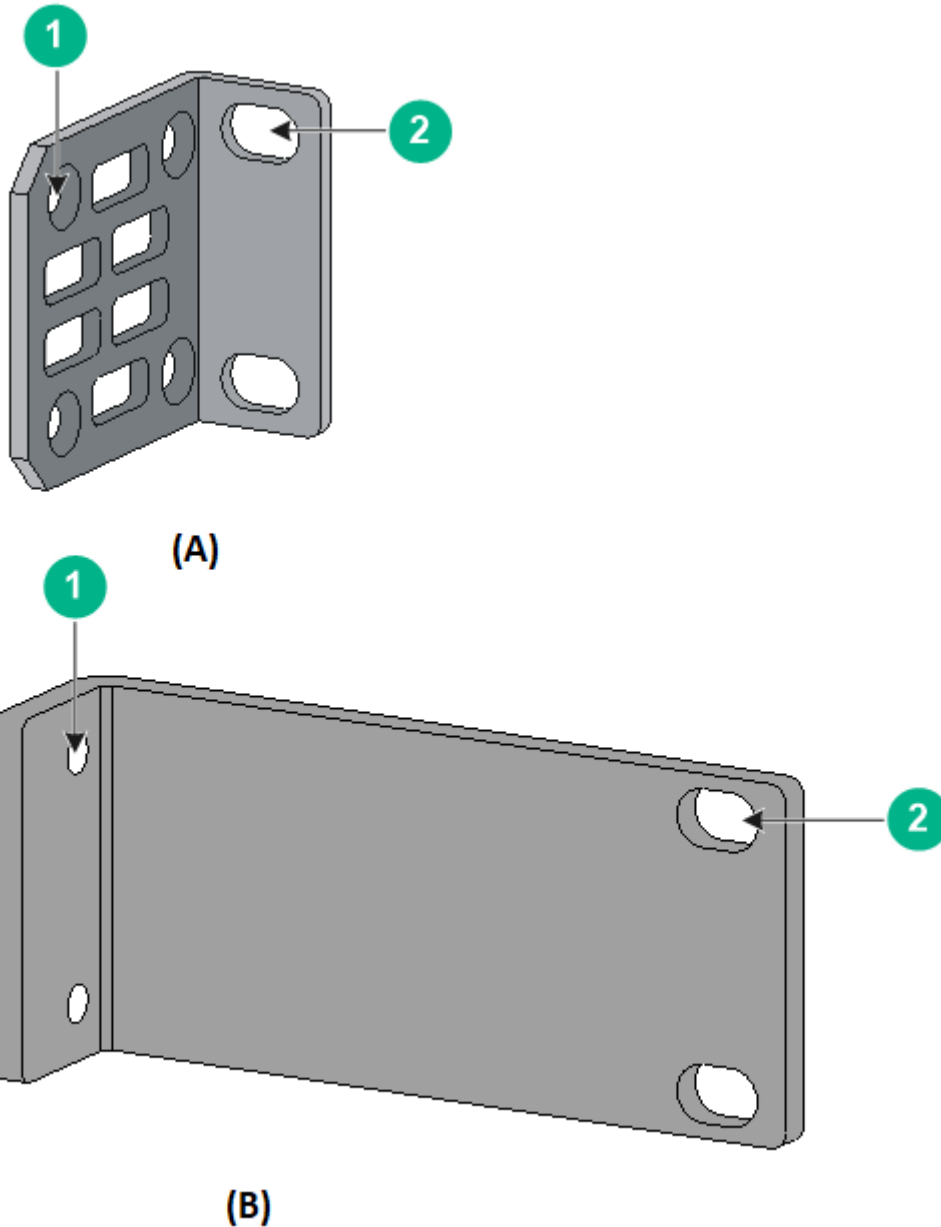
Mounting brackets

Table 4 describes the mounting brackets applicable to the switch.

4

Table 4 Mounting brackets applicable to the switch

Switch model	Mounting brackets	Views
SC 3130-24GP-2M10-2X SC 3130-48GP-2M10-2X	Mounting brackets A (provided)	See A in Figure 2.
SC 3130-8M2U-2X	Mounting brackets B with product code **LS5-FL-D** (optional)	See B in Figure 2.

Figure 2 Mounting brackets

(A)

(B)

(1) Screw hole for attaching the bracket to the switch

(2) Screw hole for attaching the bracket to the rack post

Attaching the mounting brackets to the switch

1. Determine the installation position for the mounting brackets.
   - The SC 3130-24GP-2M10-2X and SC 3130-48GP-2M10-2X switches provide two installation positions for the mounting brackets: port side mounting position and power module side mounting position.
   - The other SC 3130 switches provide only the port side mounting position for the mounting brackets.
2. Align one mounting bracket with the screw holes at the mounting position. Use M4 screws to attach the mounting bracket to the chassis. See Figure 3 and Figure 4 for installing mounting bracket A, and **Erro! Fonte de referência não encontrada.** for installing mounting bracket B.

   M4 screws are provided only for switches shipped with mounting brackets.

   An optional mounting bracket kit contains M4 screws.
3. Repeat step 2 to attach the other mounting bracket to the chassis.

Figure 3 Attaching mounting bracket A to the port side mounting position (SC 3130-48GP-2M10-2X switch)
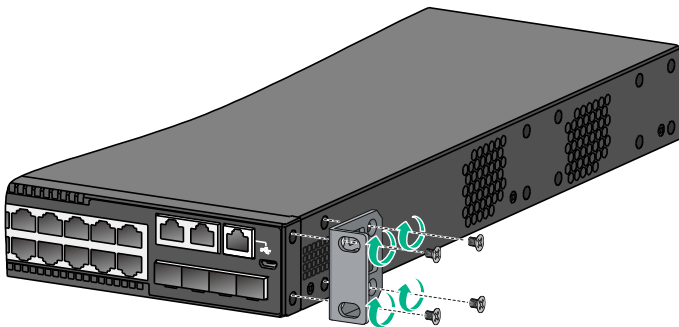
Figure 4 Attaching mounting bracket A to the power module side mounting position (SC 3130-48GP-2M10-2X switch)
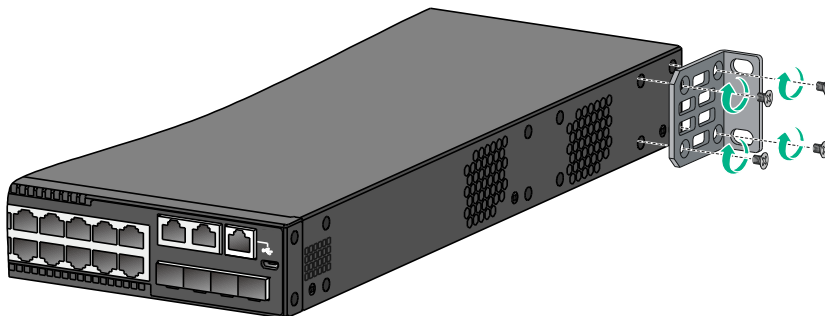
Rack-mounting the switch

This task requires two people. To mount the switch in the rack:

1. Wear an ESD wrist strap and make sure it makes good skin contact and is reliably grounded.
2. Verify that the mounting brackets have been securely attached to the switch chassis.
3. Install cage nuts in the mounting holes in the rack posts.

No cage nuts are provided with the switch. Prepare them yourself.

4. One person holds the switch chassis and aligns the mounting brackets with the mounting holes in the rack posts, and the other person attaches the mounting brackets to the rack with M6 screws.

   M6 screws are provided only for switches shipped with mounting brackets. For switches not shipped with mounting brackets, prepare M6 screws yourself.

5. Verify that the switch chassis is horizontal and secure.

   Figure 5 Mounting an SC 3130-48GP-2M10-2X switch in the rack (port side mounting position for the mounting brackets)
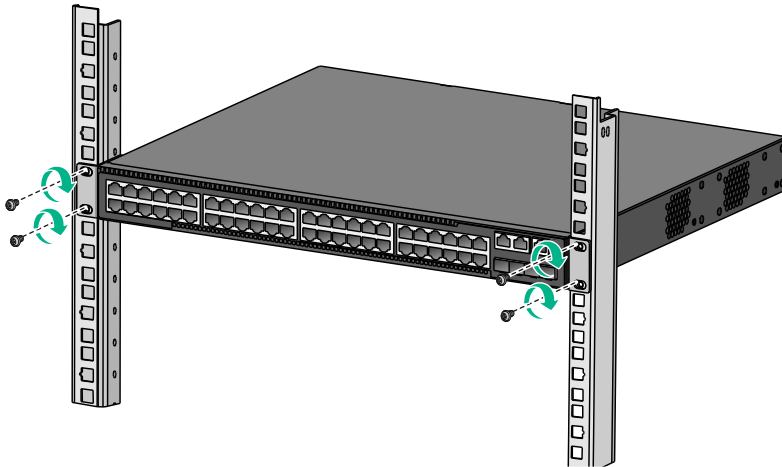
   Figure 6 Mounting an SC 3130-48GP-2M10-2X switch in the rack (power module side mounting position for the mounting brackets)
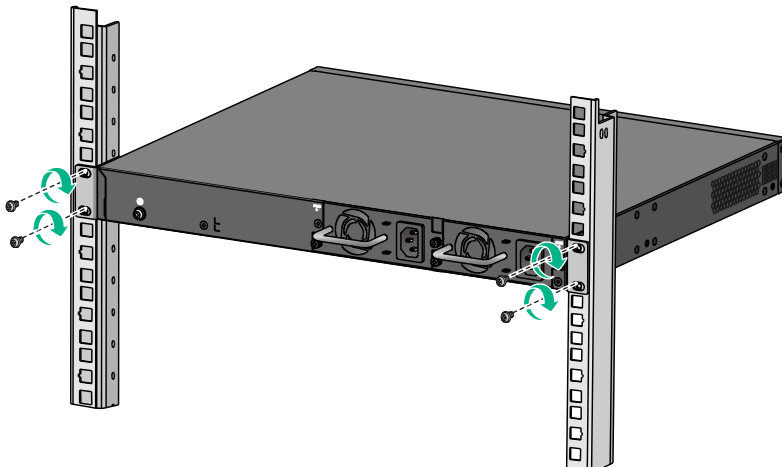
Mounting the switch on a workbench

(!) **IMPORTANT:**

- Ensure 10 cm (3.9 in) of clearance around the chassis for heat dissipation.
- Do not place heavy objects on the switch.

If a standard 19-inch rack is not available, you can place you switch on a workbench.

To mount the switch on a workbench:

1. Verify that the workbench is sturdy and reliably grounded.
2. Place the switch with bottom up, and clean the round holes in the chassis bottom with dry cloth.
3. Attach the rubber feet to the four round holes in the chassis bottom.
4. Place the switch with upside up on the workbench.

Mounting the switch on a wall

△ **CAUTION:**

- Before drilling holes in a wall, make sure no electrical lines exist in the wall.
- Leave a minimum clearance of 10 mm (0.39 in) around the chassis for heat dissipation.

Table 5 describes the switch models that support wall mounting and installation holes distances required for wall-mounting the switch.

Table 5 Installation hole distances for switch models that support wall mounting

Switch model	Hole distance
SC 3130-8M2U-2X	102 mm (4.02 in)

20 mm (0.79 in) long screws and screw anchors as shown in Figure 7 are provided with these switches for wall-mounting.
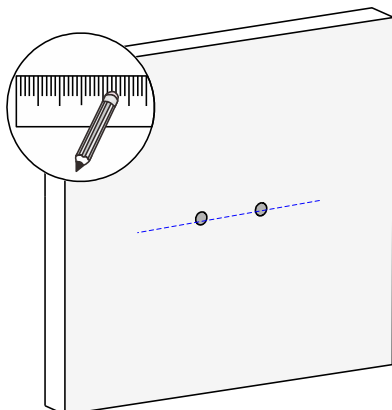
**Figure 7 Screw anchor and screw**
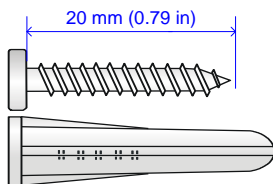
To mount the switch on a wall:

1. Mark two installation holes on the wall. Make sure the two holes are on the same horizontal line. See Table 5 for the distance requirement between the two holes.

   **Figure 8 Installing the switch on a wall (1)**

2. Drill two holes with a diameter of 6 mm (0.24 in) and a depth of 25 mm (0.98 in) at the marked locations. Hammer the screw anchors into the wall and use a Phillips screwdriver to fasten the screw into the screw anchor. Leave 1.5 mm (0.06 in) between the screw head and the wall for hanging the switch.

Figure 9 Installing the switch on a wall (2)
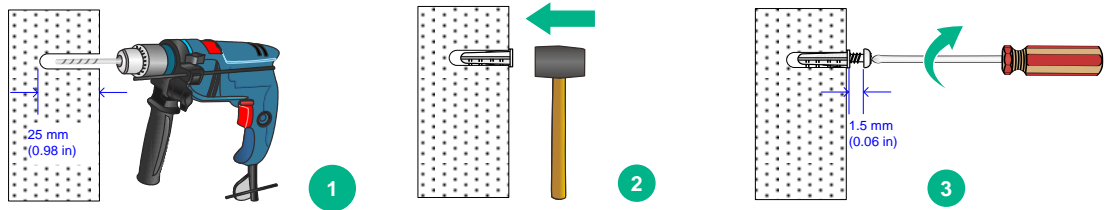
3. Align the installation holes in the switch rear with the screws on the wall and hang the switch on the screws. Make sure the port side faces down and the left and right sides are perpendicular to the ground.

Figure 10 Installing the switch on a wall (3)
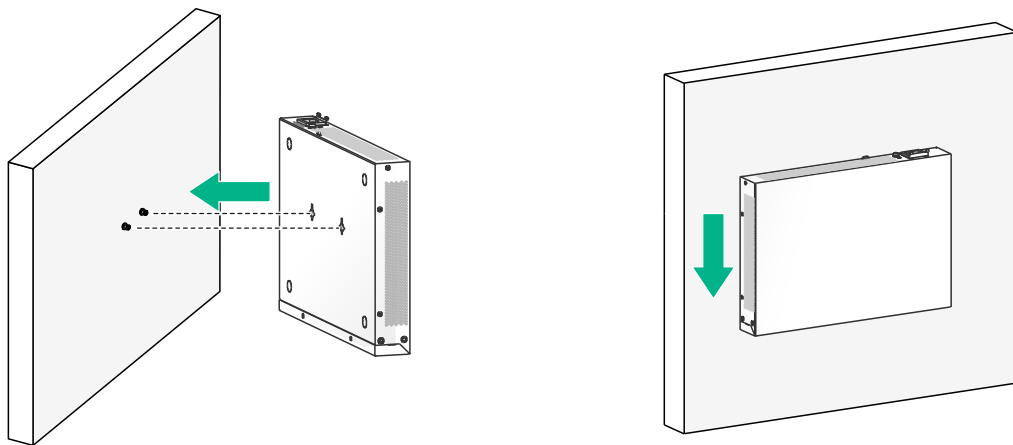
Grounding the switch

⚠ **WARNING!**

Correctly connecting the switch grounding cable is crucial to lightning protection and EMI protection.

The power input end of the switch has a noise filter, whose central ground is directly connected to the chassis to form the chassis ground (commonly known as PGND). You must securely connect this chassis ground to the earth to minimize the potential for system damage, maximize the safety at the site, and minimize EMI susceptibility of the system.

You can ground the switch in one of the following ways, depending on the grounding conditions available at the installation site:

● Grounding the switch with a grounding strip
● Grounding the switch with a grounding conductor buried in the earth ground

NOTE:

The chassis views and power module and grounding terminal positions in the following figures are for illustration only.

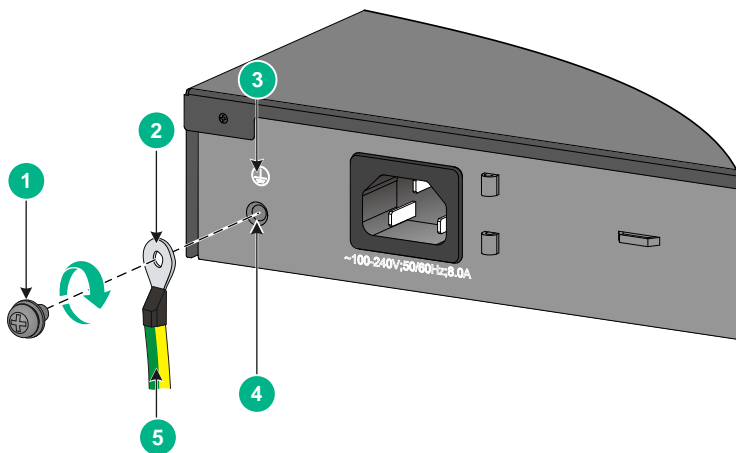# Grounding the switch with a grounding strip

> **⚠ WARNING!**
> Connect the grounding cable to the grounding system in the equipment room. Do not connect it to a fire main or lightning rod.

If a grounding strip is available at the installation site, use the grounding strip to ground the switch.

To ground the switch by using a grounding strip:

1. Attach the ring terminal end of the grounding cable to the grounding hole in the switch.

   a. Remove the grounding screw from the grounding hole in the rear panel of the switch.

   b. Attach the grounding screw to the ring terminal of the grounding cable.

   c. Use a screwdriver to fasten the grounding screw into the grounding screw hole.

   Figure 11 Attaching the grounding cable to the grounding hole of the switch

(1) Grounding screw	(2) Ring terminal
(3) Grounding sign	(4) Grounding hole
(5) Grounding cable	

2. Connect the other end of the grounding cable to the grounding strip.

   a. Cut the grounding cable to a length according to the distance between the switch and the grounding strip.

   b. Peel 20 mm (0.79 in) of insulation sheath by using a wire stripper.

   c. Use the needle-nose pliers to bend the bare wire.

   d. Hook the grounding cable to the post on the grounding strip, and use the hex nut to secure the cable to the post.

Figure 12 Connecting the grounding cable to a grounding strip
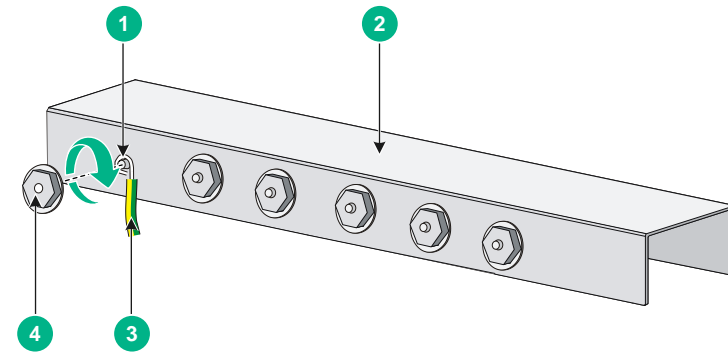
(1) Grounding post	(2) Grounding strip
(3) Grounding cable	(4) Hex nut

Grounding the switch with a grounding conductor buried in the earth ground

If the installation site has no grounding strips, but earth ground is available, hammer a 0.5 m (1.64 ft) or longer angle iron or steel tube into the earth ground to serve as a grounding conductor.

The dimensions of the angle iron must be at least 50 × 50 × 5 mm (1.97 × 1.97 × 0.20 in). The steel tube must be zinc-coated and its wall thickness must be at least 3.5 mm (0.14 in).

Weld the yellow-green grounding cable to the angel iron or steel tube and treat the joint for corrosion protection.

Figure 13 Grounding the switch by burying the grounding conductor into the earth ground
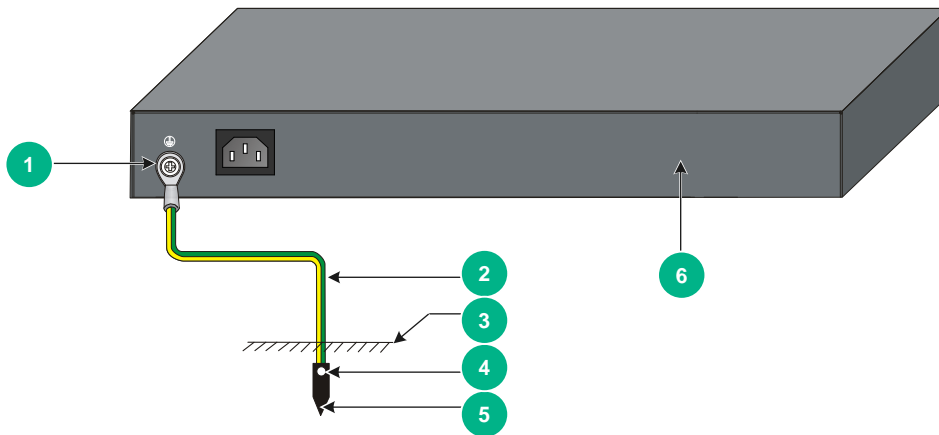
(1) Grounding screw	(2) Grounding cable	(3) Earth
(4) Joint	(5) Grounding conductor	(6) Chassis rear panel

Connecting the power cord

⚠ **CAUTION:**
- Provide a circuit breaker for each power cord.
- Before connecting the power cord, make sure the circuit breaker on the power cord is turned off.

Table 6 Power cord connection procedures at a glance

Switch model	Available power source	Connection procedure reference
SC 3130-8M2U-2X	AC power source	Connecting the AC power cord for the fixed AC power module (method 2)
	Intelbras RPS1600-A	Connecting the DC power cord for the fixed DC power module (method 1)
Other SC 3130 switches	AC power source	Connecting the AC power cord for the fixed AC power module (method 1)

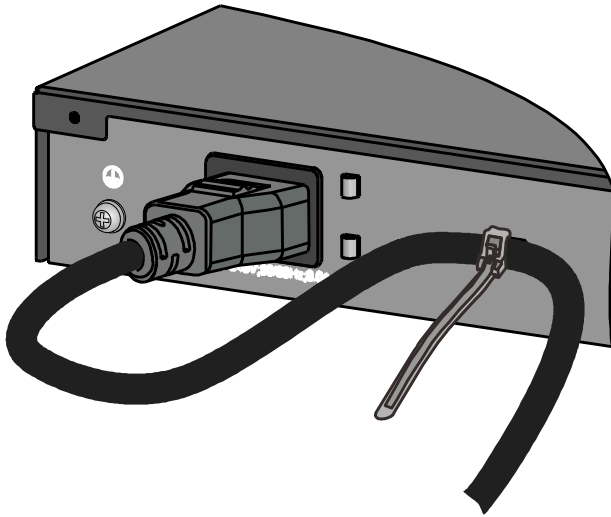## Connecting the AC power cord for the fixed AC power module (method 1)

1. Connect the plug of the AC power cord to the AC-input power receptacle on the switch. See Figure 14.
2. Use a cable tie to secure the power cord to the handle near the AC power receptacle. See Figure 15.
3. Connect the other end of the power cord to an AC power source.

   Figure 14 Connecting the AC power cord for the fixed AC power module
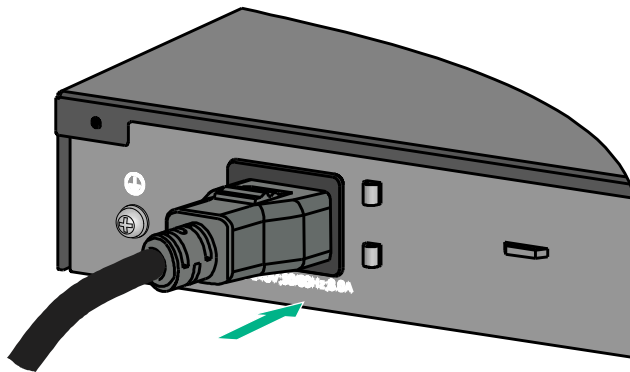
Figure 15 Securing the AC power cord for the fixed AC power module through a cable tie

Connecting the AC power cord for the fixed AC power module (method 2)

1. Insert the two ends of the bail latch through the two holes at both sides of the AC-input power receptacle.
2. Pivot up the bail latch, as shown in Figure 16.
3. Connect the plug of the AC power cord to the AC-input power receptacle on the switch, as shown by callout 1 in Figure 17.
4. Pivot down the bail latch to secure the plug to the power receptacle, as shown by callout 2 in Figure 17.
5. Connect the other end of the power cord to the power source.

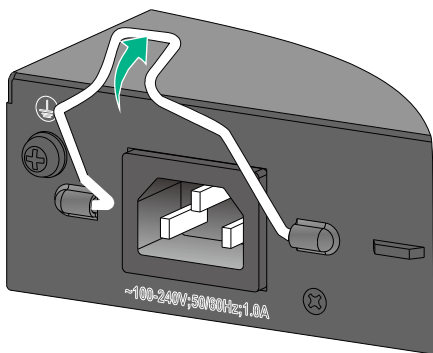**Figure 16 Connecting the AC power cord for the fixed AC power module**

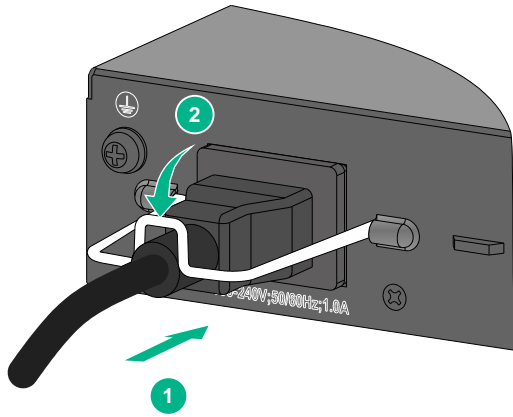**Figure 17 Securing the AC power cord for the fixed AC power module through a bail latch**

Connecting the DC power cord for the fixed DC power module (method 1)

⚠ **CAUTION:**

- To connect the switch to a –48 VDC power source, use the DC power cord provided by Intelbras. To avoid connection mistakes, identify the positive (+) and negative (-) marks on the two wires of the DC power cord before connection.
- To connect the switch to an Intelbras RPS, use a power cord compatible with the RPS.

To connect the DC power cord for the fixed DC power module:

1. Correctly orient the DC power cord plug and insert the plug into the power receptacle on the power module.

   If you orient the DC power cord plug upside down, you cannot insert the plug into the power receptacle.

2. Use a flat-head screwdriver to fasten the screws on the power cord connector, as shown in Figure 18.

3. Connect the other end of the power cord to a –48 VDC power source or an RPS.

Figure 18 Connecting the DC power cord for the fixed DC power module

Connecting the DC power cord for the fixed DC power module (method 2)

⚠ **CAUTION:**

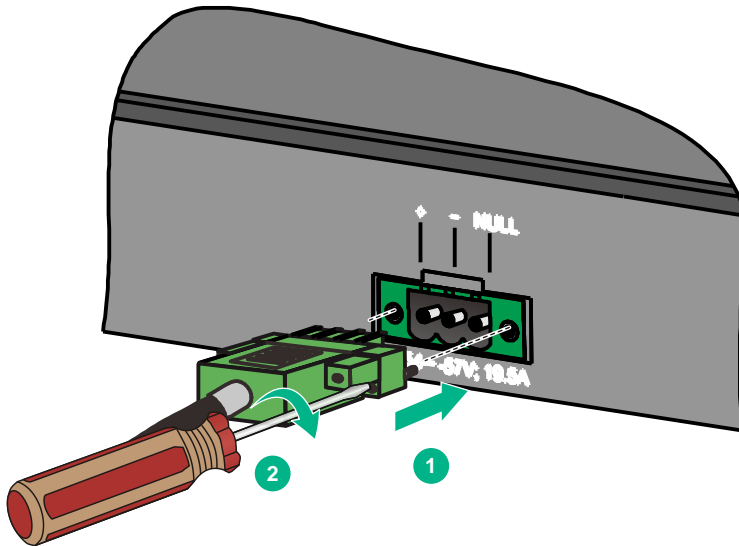To avoid connection mistakes, identify the positive (+) and negative (-) marks above the DC power receptacle before connecting the switch to a –48 VDC power source.

ⓘ **IMPORTANT:**

No DC power cord is provided with the switch. As a best practice, purchase a DC power cord with a current carrying capacity over 6A.

To connect the DC power cord for the fixed DC power module:

1. Correctly orient the terminal block and attach the terminal block to the power receptacle on the power module, as shown by callout 1 in Figure 19.

   If you orient the terminal block upside down, you cannot attach it to the power receptacle.

2. Use a flat-head screwdriver to fasten the screws on the terminal block to secure the terminal block to the power receptacle. See callout 2 in Figure 19.

3. Insert the two DC power wires into the terminal block, as shown by callout 1 in Figure 20.

4. Use a flat-head screwdriver to fasten the screw at the top of the terminal block to secure the DC power cord to the power receptacle. See callout 2 in Figure 20.

5. Connect the other end of the power cord to a –48 VDC power source.

Figure 19 Attaching the terminal block to the fixed DC power module
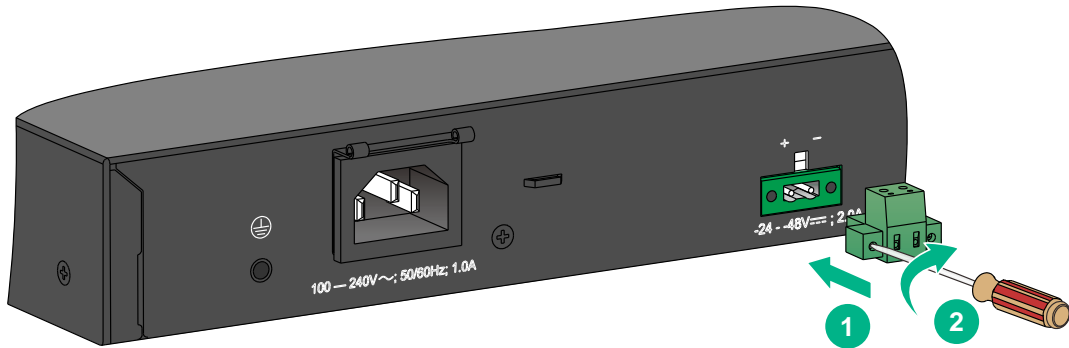
Figure 20 Securing the DC power cord to the terminal block
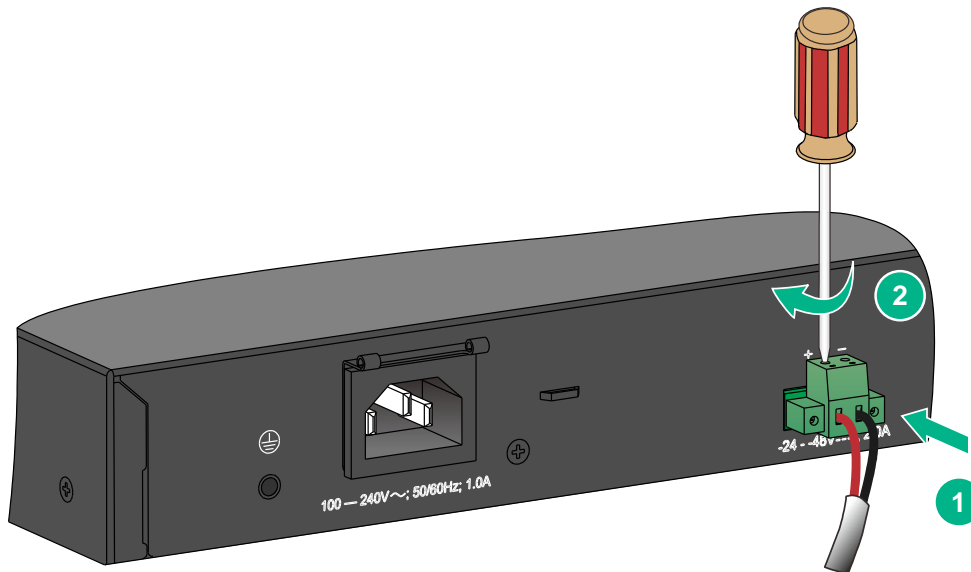
Connecting the power cord for a PSR75-12A/PSR150-A1 power module

1. Pull the bail latch leftward, as shown in Figure 21.
2. Connect the plug of the power cord to the power receptacle on the switch. See Figure 22.
3. Pull the bail latch rightward to secure the plug to the power receptacle. See Figure 22.
4. Connect the other end of the power cord to a power source.
5. For a PSR150-A1 power module, connect the power cord to an AC power source. For a PSR75-12A power module, connect the power cord to an AC power source or a 240V high-voltage DC power source.

Figure 21 Connecting the power cord for a PSR75-12A/PSR150-A1 power module (1)
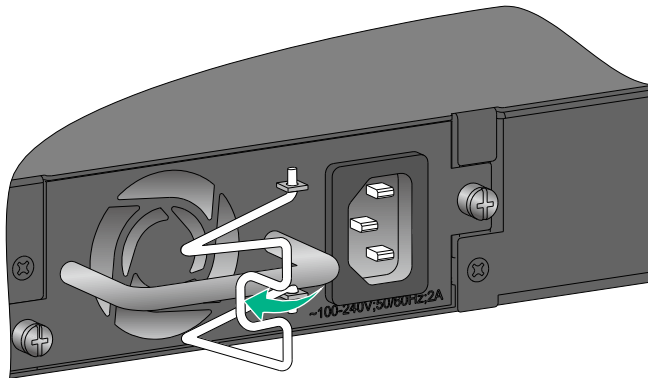
Figure 22 Connecting the power cord for a PSR75-12A/PSR150-A1 power module (2)
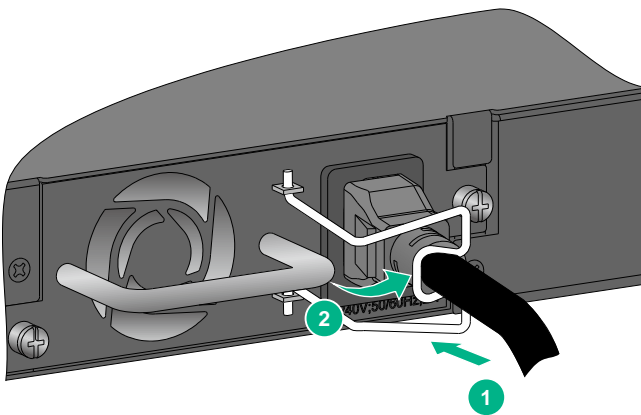
Connecting the power cord for a PSR150-D1 power module

⚠ **CAUTION:**

- Connect the other ends of the wires for a PSR150-D1 power module to a –48 VDC power source, with the negative wire (**–** or **L–**) to the negative terminal (**–**) and the positive wire (**+** or **M/N**) to the positive terminal (**+**).
- To use an Intelbras RPS to supply power to the power module, use a compatible RPS power cord to connect the RPS to the power module.
- The power cord color code scheme in Figure 23 is for illustration only. The cable delivered for your country or region might use a different color scheme. When you connect the power cord, always identify the polarity symbol on its wires.

To connect the power cord for a PSR150-D1 power module:

1. Correctly orient the plug at one end of the cable with the power receptacle on the power module, and insert the plug into the power receptacle. See callout 1 in Figure 23.

   If you cannot insert the plug into the receptacle, re-orient the plug rather than use excessive force to push it in.

2. Tighten the screws on the plug with a flat-blade screwdriver to secure the plug in the power receptacle. See callout 2 in Figure 23.

3. Connect the other end of the power cord to a –48 VDC power source or an RPS.

Figure 23 Connecting the DC power cord for a PSR150-D1 power module
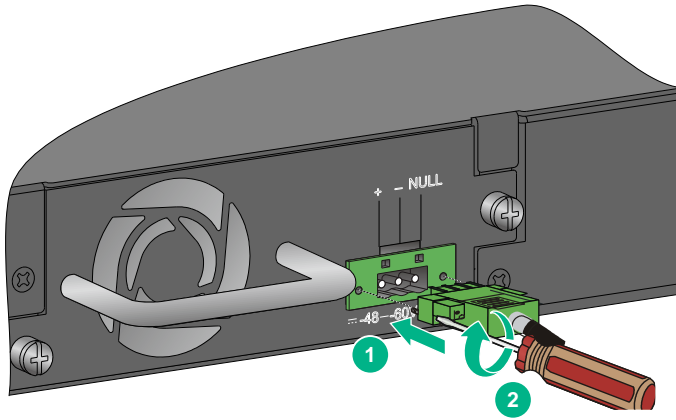
Verifying the installation

After you complete the installation, verify that:

- There is enough space for heat dissipation around the switch, and the rack or workbench is stable.
- The grounding cable is securely connected.
- The correct power source is used.
- The power cords are correctly connected.
- All the interface cables are cabled indoors. If any cable is routed outdoors, verify that the socket strip with lightning protection and lightning arresters for network ports have been correctly connected.

Accessing the switch for the first time

Setting up the configuration environment

The following switch models each provide a serial console port and a micro USB console port. You can access the switch from either port. If you connect both ports, only the micro USB console port is available.

- SC 3130-8M2U-2X

The other SC 3130 switch models each provide only a serial console port.

No serial console cable or micro USB console cable is provided with the switch. Prepare yourself or purchase it from Intelbras.

Figure 24 Connecting the serial console port to a PC
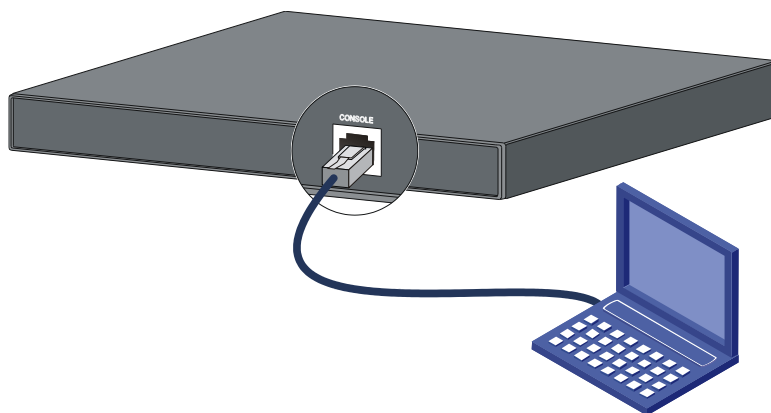
Connecting the serial console cable

A serial console cable is an 8-core shielded cable, with a crimped RJ-45 connector at one end for connecting to the serial console port of the switch, and a DB-9 female connector at the other end for connecting to the serial port on the configuration terminal.

Figure 25 Serial console cable
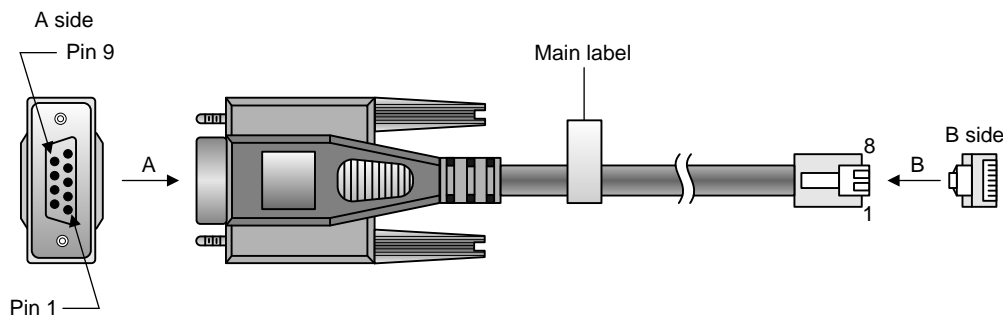
Table 7 Serial console cable pinouts

RJ-45	Signal	DB-9	Signal
1	RTS	8	CTS
2	DTR	6	DSR
3	TXD	2	RXD
4	SG	5	SG
5	SG	5	SG
6	RXD	3	TXD
7	DSR	4	DTR
8	CTS	7	RTS

To connect a terminal (for example, a PC) to the serial console port on the switch:

1. Plug the DB-9 female connector of the serial console cable to the serial port of the PC.
2. Connect the RJ-45 connector to the serial console port of the switch.

NOTE:

-   Identify the mark on the serial console port and make sure you are connecting to the correct port.
-   The serial ports on PCs do not support hot swapping. To connect a PC to an operating switch, first connect the PC end. To disconnect a PC from an operating switch, first disconnect the switch end.

Setting up an IRF fabric (Stacking)

You can use Intelbras IRF technology to connect and virtualize the switches into a large virtual switch called an "IRF fabric" for flattened network topology, and high availability, scalability, and manageability.

A SC 3130 switch can form an IRF fabric only with switches in the same series.

-   The SC 3130-8M2U-2X switches belong to one group.
-   The remaining SC 3130 switch models belong to another group.

All IRF member devices must run the same software image version. Make sure the software auto-update feature is enabled on all member devices.

IRF fabric setup flowchart

Figure 26 IRF fabric setup flowchart
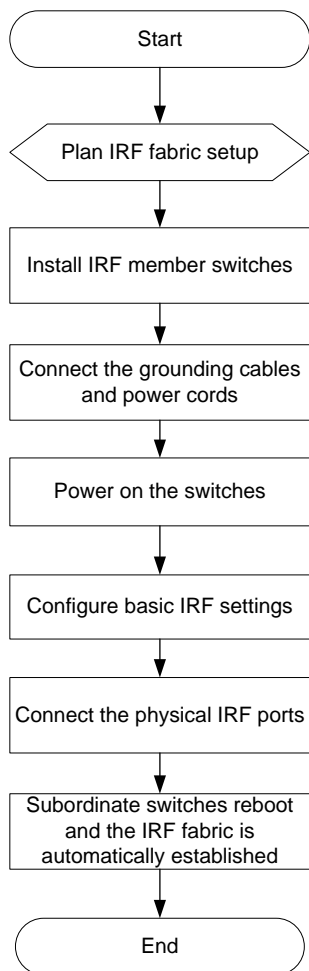
To set up an IRF fabric:

Step	Description
1. Plan IRF fabric setup.	Plan the installation site and IRF fabric setup parameters: • Planning IRF fabric size and the installation site • Identifying the master switch and planning IRF member IDs • Planning IRF topology and connections • Identifying IRF physical ports on the member switches • Planning the cabling scheme
2. Install IRF member switches.	See "Installing the switch in a 19-inch rack" or "Mounting the switch on a workbench."
3. Connect grounding cables and power cords.	See "Grounding the switch" and "Connecting the power cord."
4. Power on the switches.	N/A
5. Configure basic IRF settings.	See the IRF configuration guide or virtual technologies configuration guide for the switch series, depending on the software version.

Step	Description
6. Connect the IRF physical ports.	Connect IRF physical ports on switches. All switches except the master switch automatically reboot, and the IRF fabric is established.

Planning IRF fabric setup

This section describes issues that an IRF fabric setup plan must cover.

Planning IRF fabric size and the installation site

Choose switch models and identify the number of required IRF member switches, depending on the user density and upstream bandwidth requirements. The switching capacity of an IRF fabric equals the total switching capacities of all member switches.

Plan the installation site depending on your network solution, as follows:

- Place all IRF member switches in one rack for centralized high-density access.
- Distribute the IRF member switches in different racks to implement the ToR access solution for a data center.

Identifying the master switch and planning IRF member IDs

Determine which switch you want to use as the master for managing all member switches in the IRF fabric. An IRF fabric has only one master switch. You configure and manage all member switches in the IRF fabric at the CLI of the master switch. IRF member switches automatically elect a master. You can affect the election result by assigning a high member priority to the intended master switch. For more information about master election, see the IRF configuration guide or virtual technologies configuration guide for the switch series, depending on the software version.

Prepare an IRF member ID assignment scheme. An IRF fabric uses member IDs to uniquely identify and manage its members, and you must assign each IRF member switch a unique member ID.

Planning IRF topology and connections

You can create an IRF fabric in daisy chain topology or more reliable ring topology. In ring topology, the failure of one IRF link does not cause the IRF fabric to split as in daisy chain topology. Instead, the IRF fabric changes to a daisy chain topology without interrupting network services.

You connect the IRF member switches through IRF ports, the logical interfaces for the connections between IRF member switches. Each IRF member switch has two IRF ports: IRF-port 1 and IRF-port 2. To use an IRF port, you must bind at least one physical port to it.

When connecting two neighboring IRF member switches, you must connect the physical ports of IRF-port 1 on one switch to the physical ports of IRF-port 2 on the other switch.

The switch can form an IRF fabric only with switches from the same switch series. For the physical ports that can be used for IRF connections and the restrictions for using the ports, see Table 8. The IRF physical ports can set up IRF connections only when operating at their highest speeds. For example, a 10-GE port must operate at 10 Gbps. A 1-GE port must operate at 1 Gbps.

You can bind multiple ports to an IRF port for increased bandwidth and availability.

The following figures use the SFP+ ports on the SC 3130-24GP-2M10-2X switch as an example. For the ports that can be used for IRF connections, see Table 8.

Figure 27 IRF fabric in daisy chain topology
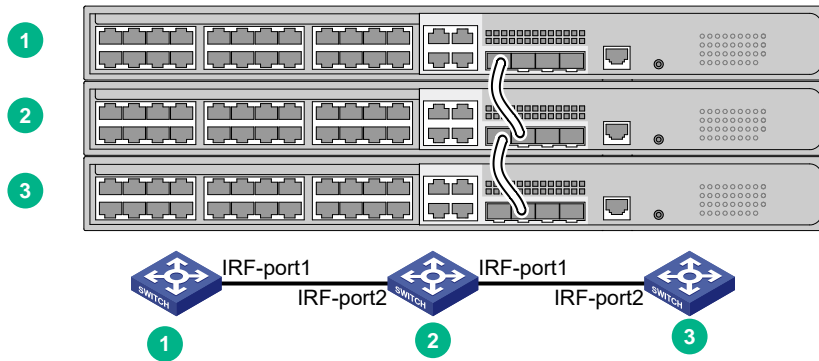
Figure 28 IRF fabric in ring topology
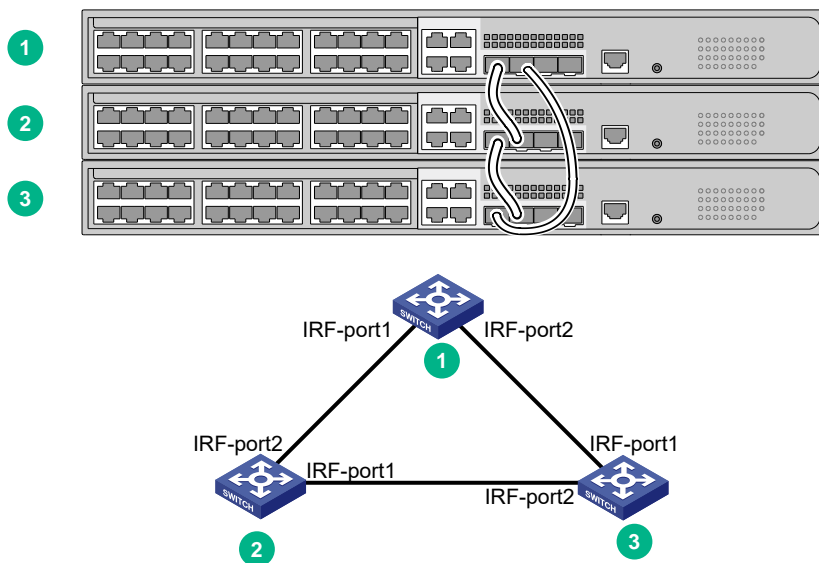
Identifying IRF physical ports on the member switches

Identify the IRF physical ports on the member switches according to your topology and connection scheme.

Table 8 shows the physical ports that can be used for IRF connection and the port use restrictions.

Table 8 IRF physical ports and use restrictions

Device model	Candidate IRF physical ports	Restrictions for using the ports for IRF connections
SC 3130-8M2U-2X	All the following ports on the front panel: • 2.5G/1000/100BASE-T	The port must operate at its highest speed. • **2.5G/1000/100BASE-T autosensing port**—2.5 Gbps

Device model	Candidate IRF physical ports	Restrictions for using the ports for IRF connections
	autosensing Ethernet ports • SFP+ ports	• **SFP+ port**—10 Gbps The IRF physical ports on the member switches must be same type.
SC 3130-24GP-2M10-2X SC 3130-48GP-2M10-2X	All the following ports on the front panel: • 10/5/2.5/1GBASE-T autosensing Ethernet ports • 10/100/1000BASE-T autosensing Ethernet ports • SFP+ ports	The port must operate at its highest speed. • **10/5/2.5/1GBASE-T autosensing port**—10 Gbps • **10/100/1000BASE-T autosensing port**—1 Gbps • **SFP+ port**—10 Gbps The IRF physical ports on the member switches must be same type. For switches with 52 service ports, the service ports are divided into two groups: ports 1 to 24, port 51, and port 52 in one group and ports 25 to 50 in the other group. To bind multiple ports to an IRF port, make sure the ports are in the same group. Ports in one group can be bound to different IRF ports.

Planning the cabling scheme

Use the following cables to connect the IRF physical ports on the switches:

- **Category 5 or above twisted-pair cable**—10/100/1000BASE-T autosensing Ethernet ports.

- **Category 5e or above twisted-pair cable**—5G/2.5G/1000BASE-T autosensing Ethernet ports.

- **Category 5e or above twisted-pair cable**—2.5G/1000/100BASE-T autosensing Ethernet ports.

- **Category 6 or above twisted-pair cable**—10/5/2.5/1GBASE-T autosensing Ethernet ports.

- **GE SFP transceiver modules and optical fiber or SFP cable**—SFP ports. For the available models, see "Appendix C Ports and LEDs."

- **SFP+ transceiver modules and optical fiber or SFP+ cable**—SFP+ ports. For the available models, see "Appendix C Ports and LEDs."

If the IRF member switches are far away from one another, use SFP/SFP+ transceiver modules and optical fibers. If the IRF member switches are all in one equipment room, use twisted pair cables or SFP/SFP+ cables.

As a best practice, use ring topology to connect the switches. The following describes cabling schemes in ring topology.

Connecting the IRF member switches in one rack

Use SFP cables to connect the IRF member switches in a rack as shown in Figure 29. The switches in the ring topology (see Figure 30) are in the same order as connected in the rack.

Figure 29 Connecting the switches in one rack
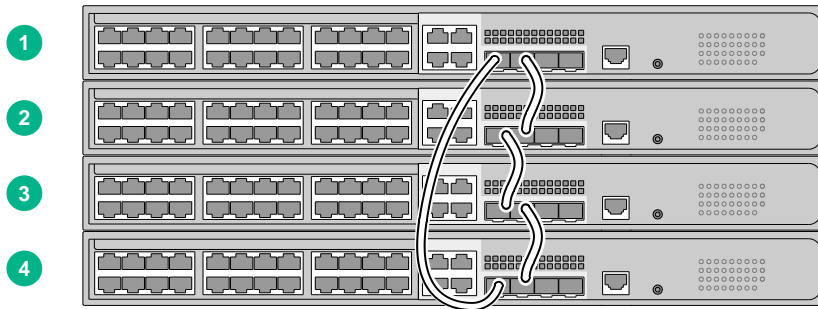
Figure 30 IRF fabric topology
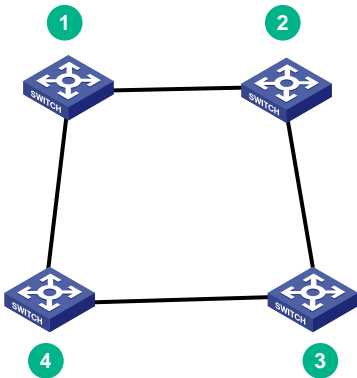
Connecting the IRF member switches in a ToR solution

You can install IRF member switches in different racks side by side to deploy a top of rack (ToR) solution.

Figure 31 shows an example for connecting four top of rack IRF member switches by using SFP transceiver modules and optical fibers. The topology is the same as Figure 30.

Figure 31 ToR cabling
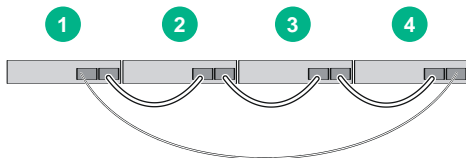
Configuring basic IRF settings

After you install the IRF member switches, power on the switches, and log in to each IRF member switch (see the fundamentals configuration guide for the switch series) to configure their member IDs, member priorities, and IRF port bindings.

Follow these guidelines when you configure the switches:

- Assign the master switch higher member priority than any other switch.

- Bind physical ports to IRF port 1 on one switch and to IRF port 2 on the other switch. You perform IRF port binding before or after connecting IRF physical ports depending on the software release.

- Execute the **display irf configuration** command to verify the basic IRF settings.

For more information about configuring basic IRF settings, see the IRF configuration guide or virtual technologies configuration guide for the switch series, depending on the software version.

Connecting the IRF physical ports

Use twisted pair cables, SFP/SFP+ cables, or SFP/SFP+ transceiver modules and fibers to connect the IRF member switches as planned.

Wear an ESD wrist strap when you connect twisted pair cables, SFP/SFP+ cables, or SFP/SFP+ transceiver modules and fibers. For how to connect them, see *Intelbras Transceiver Modules User Guide*.

Verifying the IRF fabric setup

To verify the basic functionality of the IRF fabric after you finish configuring basic IRF settings and connecting IRF ports:

1. Log in to the IRF fabric through the console port of any member switch.
2. Create a Layer 3 interface, assign it an IP address, and make sure the IRF fabric and the remote network management station can reach each other.
3. Use Telnet or SNMP to access the IRF fabric from the network management station. (See the fundamentals configuration guide for the switch series.)
4. Verify that you can manage all member switches as if they were one node.
5. Display the running status of the IRF fabric by using the commands in Table 9.

Table 9 Displaying and maintaining IRF configuration and running status

Task	Command
Display IRF fabric information.	**display irf**
Display basic IRF settings for each member device.	**display irf configuration**
Display IRF fabric topology information.	**display irf topology**

NOTE:

To avoid IP address collision and network problems, configure a minimum of one multi-active detection (MAD) mechanism to detect the presence of multiple identical IRF fabrics and handle collisions. For more information about MAD detection, see the IRF configuration guide or virtual technologies configuration guide for the switch series, depending on the software version.

Maintenance and troubleshooting

Fixed power module failure

To identify a power failure on a switch with fixed power modules, examine the system status LED (SYS) and the RPS status LED (RPS) on the switch.

NOTE:

Only the following switch provide an RPS status LED:

- SC 3130-8M2U-2X

Table 10 Power failure indication of the system status and RPS status LEDs

Power input type	LED status	Description
AC input	The system status LED is off.	AC power input failure
DC input	The system status LED or RPS status LED is off.	DC power input failure
Concurrent AC and DC inputs	The system status LED is off.	AC and DC power inputs failure
	The system status LED is on. The RPS status LED is steady yellow.	AC input failure
	The system status LED is on. The RPS status LED is off.	DC input failure

Symptom

The system status LED is off, or RPS status LED is yellow or off. The AC or DC input failure has occurred.

Solution

To resolve the issue:

1. Verify that the AC or DC power cord is correctly connected to the switch.
2. Verify that the AC-input or DC-input power receptacle on the switch and the connected AC or DC power outlet are in good condition.
3. Verify that the AC or DC power source is operating correctly.
4. Verify that the operating temperature of the switch is in the acceptable range, and the power module has good ventilation. Overtemperature can cause the power module to stop working and enter protection mode.
5. If the issue persists, contact Intelbras Support.

Fan tray failure

Symptom

The system status LED on the switch indicates a fan tray failure.

Solution

When a fan tray issue occurs, contact Intelbras Support.

Configuration terminal issues

No display on the configuration terminal

Symptom

The configuration terminal does not have display when the switch is powered on.

Solution

To resolve the issue:

1. Verify that the power system is operating correctly.
2. Verify that the switch is operating correctly.
3. Verify that the console cable has been connected correctly.
4. Verify that the following settings are configured for the terminal:
    o **Baud rate**—9600.
    o **Data bits**—8.
    o **Parity**—None.
    o **Stop bits**—1.
    o **Flow control**—None.
5. Verify that the console cable is not faulty.
6. If the issue persists, contact Intelbras Support.

Garbled display on the configuration terminal

Symptom

The configuration terminal displays garbled text.

Solution

To resolve the issue:

1. Verify that the following settings are configured for the terminal:
    o **Baud rate**—9600.
    o **Data bits**—8.
    o **Parity**—None.
    o **Stop bits**—1.
    o **Flow control**—None.
2. If the issue persists, contact Intelbras Support.

Appendix A Chassis views and technical specifications

Chassis views

SC 3130-8M2U-2X

Figure 32 Front panel
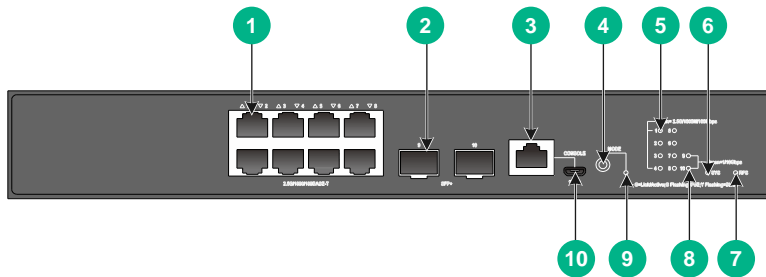
(1) 2.5G/1000/100BASE-T autosensing Ethernet port	(2) SFP+ port
(3) Console port (CONSOLE)	(4) Port LED mode switching button
(5) 2.5G/1000/100BASE-T autosensing Ethernet port LED	(6) System status LED (SYS)
(7) RPS status LED (RPS)	(8) SFP+ port LED
(9) Mode LED (MODE)	(10) Micro USB console port

Figure 33 Rear panel
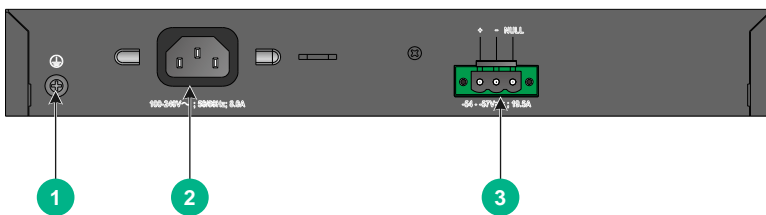
(1) Grounding screw	(2) AC-input power receptacle
(3) DC-input power receptacle	

SC 3130-24GP-2M10-2X

Figure 34 Front panel
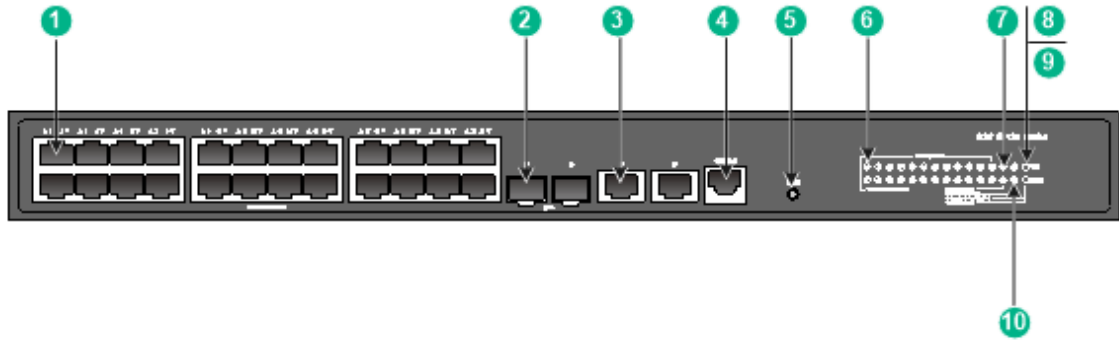
(1) 10/100/1000BASE-T autosensing Ethernet port	(2) SFP+ port
(3) 10/5/2.5/1GBASE-T autosensing Ethernet port	(4) Console port (CONSOLE)
(5) Port LED mode switching button	
(6) 10/100/1000BASE-T autosensing Ethernet port LED	
(7) SFP+ port LED	(8) System status LED (SYS)
(9) Mode LED (MODE)	
(10) 10/5/2.5/1GBASE-T autosensing Ethernet port LED	

Figure 35 Rear panel

(1) Grounding screw	(2) AC-input power receptacle

SC 3130-48GP-2M10-2X

Figure 36 Front panel
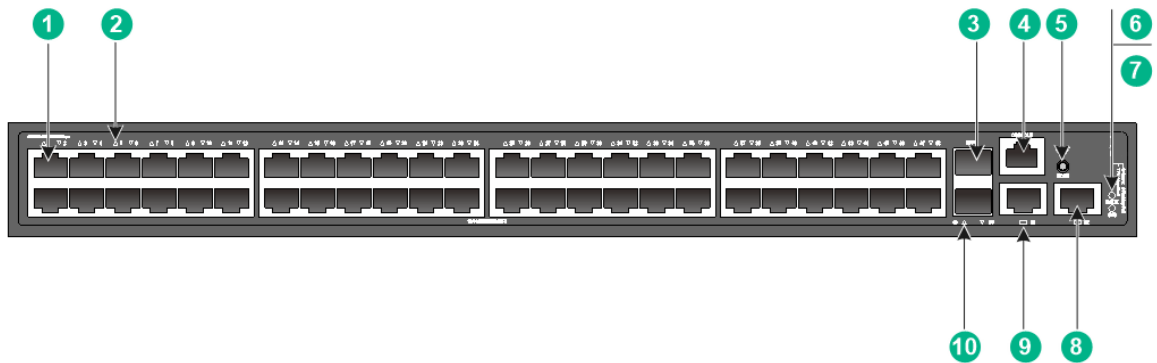
(1) 10/100/1000BASE-T autosensing Ethernet port	
(2) 10/100/1000BASE-T autosensing Ethernet port LED	
(3) SFP+ port	(4) Console port (CONSOLE)
(5) Port LED mode switching button	(6) Mode LED (MODE)
(7) System status LED (SYS)	
(8) 10/5/2.5/1GBASE-T autosensing Ethernet port	
(9) 10/5/2.5/1GBASE-T autosensing Ethernet port LED	(10) SFP+ port LED

Figure 37 Rear panel

(1) AC-input power receptacle	(2) Grounding screw

Technical specifications

Table 11 Technical specifications for PoE switch models (2)

Item	SC 3130-24GP-2M10-2X	SC 3130-48GP-2M10-2X
Dimensions (H × W × D)	43.6 × 440 × 320 mm (1.72 × 17.32 × 12.60 in)	43.6 × 440 × 320 mm (1.72 × 17.32 × 12.60 in)
Weight	≤ 4.5 kg (9.92 lb)	≤ 4.5 kg (9.92 lb)
Console port	1 × serial console port	
10/100/1000BASE-T autosensing Ethernet port	24	48

31

Item	SC 3130-24GP-2M10-2X	SC 3130-48GP-2M10-2X
10/5/2.5/1GBASE-T autosensing Ethernet port	2	
SFP+ port	2	
Input voltage	• Rated voltage: 100 VAC to 240 VAC @ 50 or 60 Hz • Max voltage: 90 VAC to 264 VAC @ 47 to 63 Hz	
Maximum PoE power per port	30 W	
Total PoE power	370 W	
Minimum power consumption	20 W	32 W
Maximum power consumption (including PoE power consumption)	450 W	470 W
Chassis leakage current compliance	UL 62368-1/EN 62368-1/IEC 62368-1/UL 60950-1/EN 60950-1/IEC 60950-1/GB4943.1	
Melting current of power module fuse	2 A/250 V	
Cooling system	Using fixed fan trays to draw ambient air in from the chassis left side and exhaust heated air from the chassis right side.	
Operating temperature	–5°C to +45°C (23°F to 113°F)	
Operating humidity	5% to 95%, noncondensing	
Fire resistance compliance	UL 62368-1/EN 62368-1/IEC 62368-1/UL 60950-1/EN 60950-1/IEC 60950-1/GB4943.1	

Table 12 Technical specifications for PoE switch models (4)

Item	SC 3130-8M2U-2X
Dimensions (H × W × D)	43.6 × 300 × 260 mm (1.72 × 11.81 × 10.24 in)
Weight	≤ 3.5 kg (7.72 lb)
Console port	• 1 × serial console port • 1 × micro USB console port When both ports are connected, only the micro USB console port is available.
10/100/1000BASE-T autosensing Ethernet port	N/A
5G/2.5G/1000BASE-T autosensing Ethernet port	N/A
2.5G/1000/100BASE-T autosensing Ethernet port	8

Item	SC 3130-8M2U-2X
SFP port	N/A
SFP+ port	2
Input voltage	AC power source: • Rated voltage: 100 VAC to 240 VAC @ 50 or 60 Hz • Max voltage: 90 VAC to 264 VAC @ 47 to 63 Hz DC power source: Intelbras RPS1600-A (supported only by the SC 3130-8M2U-2X switch) • Rated voltage: –54 VDC to –57 VDC • Max voltage: o Single DC input: –44 VDC to –60 VDC AC and DC inputs: –54 VDC to –57 VDC
Maximum PoE power per port	90 W
Total PoE power	• AC: 370 W • DC: 740 W
Minimum power consumption	• AC: 23 W • DC: 18 W
Maximum power consumption (including PoE power consumption)	• AC: 447 W • DC: 794 W
Chassis leakage current compliance	UL 62368-1/EN 62368-1/IEC 62368-1/UL 60950-1/EN 60950-1/IEC 60950-1/GB4943.1
Melting current of power module fuse	15 A/250 V
Cooling system	Using fixed fan trays to draw ambient air in from the left side and exhaust heated air from the right side.
Operating temperature	–5°C to +45°C (23°F to 113°F)
Operating humidity	5% to 95%, noncondensing
Fire resistance compliance	UL 62368-1/EN 62368-1/IEC 62368-1/UL 60950-1/EN 60950-1/IEC 60950-1/GB4943.1

Appendix C Ports and LEDs

Ports

Console port

The following switch models each provide a serial console port and a micro USB console port on the front panel. The other SC 3130 switch models each provide only a serial console port.

* SC 3130-8M2U-2X

Table 13 Console port specifications

Item	Serial console port	Micro USB console port
Connector type	RJ-45	Micro USB Type B
Compliant standard	EIA/TIA-232	USB 2.0
Transmission baud rate	9600 bps (default) to 115200 bps	
Services	• Provides connection to an ASCII terminal. • Provides connection to the serial port of a local PC running terminal emulation program.	• Provides connection to an ASCII terminal. • Provides connection to the USB port of a local PC running terminal emulation program.

10/100/1000BASE-T autosensing Ethernet port

Table 14 10/100/1000BASE-T autosensing Ethernet port specifications

Item	Specification
Connector type	RJ-45
Transmission rate, duplex mode, and auto MDI/MDI-X	• 10 Mbps, half/full duplex • 100 Mbps, half/full duplex • 1000 Mbps, full duplex • MDI/MDI-X autosensing
Max transmission distance	100 m (328.08 ft)
Transmission medium	Category-5 (or above) twisted pair cable
Compatible standards	• IEEE 802.3i • IEEE 802.3u • IEEE 802.3ab

2.5G/1000/100BASE-T autosensing Ethernet port

The SC 3130-8M2U-2X switch provides 2.5G/1000/100BASE-T autosensing Ethernet ports.

Table 15 2.5G/1000/100BASE-T autosensing Ethernet port specifications

Item	Specification
Connector type	RJ-45
Transmission rate, duplex mode, and auto MDI/MDI-X	• 2.5 Gbps, full duplex • 1 Gbps, full duplex • 100 Mbps, full duplex • MDI/MDI-X autosensing
Max transmission distance	• 2.5G mode: 200 m (656.17 ft) over Category-5e or above twisted pair • 1G mode: 200 m (656.17 ft) over Category-5e or above twisted pair • 100M mode: 200 m (656.17 ft) over Category-5e or above twisted pair
Transmission medium	Category-5e (or above) twisted pair cable
Compatible standards	• IEEE 802.3ab • IEEE 802.3an

10/5/2.5/1GBASE-T autosensing Ethernet port

The SC 3130-24GP-2M10-2X and SC 3130-48GP-2M10-2X switches provide 10/5/2.5/1GBASE-T autosensing Ethernet ports.

Table 16 10/5/2.5/1GBASE-T autosensing Ethernet port specifications

Item	Specification
Connector type	RJ-45
Transmission rate, duplex mode, and auto MDI/MDI-X	• 10 Gbps, full duplex • 5 Gbps, full duplex • 2.5 Gbps, full duplex • 1 Gbps, full duplex • MDI/MDI-X autosensing
Max transmission distance	• 10G mode: ○ 100 m (328.08 ft) over Category-6 shielded twisted pair or above twisted pair ○ 60 m (196.85 ft) over Category-5e twisted pair or Category-6 unshielded twisted pair • 5G mode: 100 m (328.08 ft) over Category-5e or above twisted pair • 2.5G mode: 200 m (656.17 ft) over Category-5e or above twisted pair • 1G mode: 200 m (656.17 ft) over Category-5e or above twisted pair
Transmission medium	Category-6 (or above) twisted pair cable
Compatible standards	• IEEE 802.3ab • IEEE 802.3an

SFP+ port

To connect SFP+ ports over a long distance, use SFP/SFP+ transceiver modules and optical fibers. To connect SFP+ ports over a short distance, use SFP+ cables. The SFP+ ports on the switch support the following transceiver modules and cables:

- 10-GE SFP+ transceiver modules in Table 17.
- 10-GE SFP+ cables in Table 18.

Table 17 10-GE SFP+ transceiver modules available for the SFP+ ports

10-GE SFP+ transceiver module	Central wavelength	Connector	Fiber	Modal bandwidth (MHz*km)	Max transmission distance
SFP-XG-SX-MM850-D	850 nm	LC	50/125 µm multi-mode optical fiber	2000	300 m (984.3 ft)
				500	82 m (269.03 ft)
				400	66 m (216.54 ft)
			62.5/125 µm multi-mode optical fiber	200	33 m (108.27 ft)
				160	26 m (85.30 ft)
SFP-XG-SX-MM850-E	850 nm	LC	50/125 µm multi-mode optical fiber	2000	300 m (984.3 ft)
				500	82 m (269.03 ft)
				400	66 m (216.54 ft)
			62.5/125 µm multi-mode optical fiber	200	33 m (108.27 ft)
				160	26 m (85.30 ft)
SFP-XG-LX-SM1310-D	1310 nm	LC	9/125 µm single-mode optical fiber	N/A	10 km (6.21 miles)
SFP-XG-LX-SM1310-E	1310 nm	LC	9/125 µm single-mode optical fiber	N/A	10 km (6.21 miles)
SFP-XG-LH40-SM1550	1550 nm	LC	9/125 µm single-mode optical fiber	N/A	40 km (24.86 miles)
SFP-XG-LH40-SM1550-D	1550 nm	LC	9/125 µm single-mode optical fiber	N/A	40 km (24.86 miles)
SFP-XG-LH80-SM1550	1550 nm	LC	9/125 µm single-mode optical fiber	N/A	80 km (49.71 miles)
SFP-XG-LH80-SM1550-D	1550 nm	LC	9/125 µm single-mode optical fiber	N/A	80 km (49.71 miles)
SFP-XG-LX-SM1270-BIDI	You must use these two transceiver modules	• TX:1270 nm • RX:1330 nm	LC	9/125 µm single-mode optical fiber	N/A	10 km (6.21 miles)
SFP-XG-LX-SM1330-BI		• TX:1330 nm • RX:1270				

10-GE SFP+ transceiver module		Central wavelength	Connector	Fiber	Modal bandwidth (MHz*km)	Max transmission distance
DI	in pairs.	nm				

Table 18 10-GE SFP+ cables available for the SFP+ ports

10-GE SFP+ cable	Max transmission distance
LSWM1STK	0.65 m (2.13 ft)
LSWM2STK	1.2 m (3.94 ft)
LSWM3STK	3 m (9.84 ft)
LSTM1STK	5 m (16.40 ft)

Figure 38 10-GE SFP+ cable
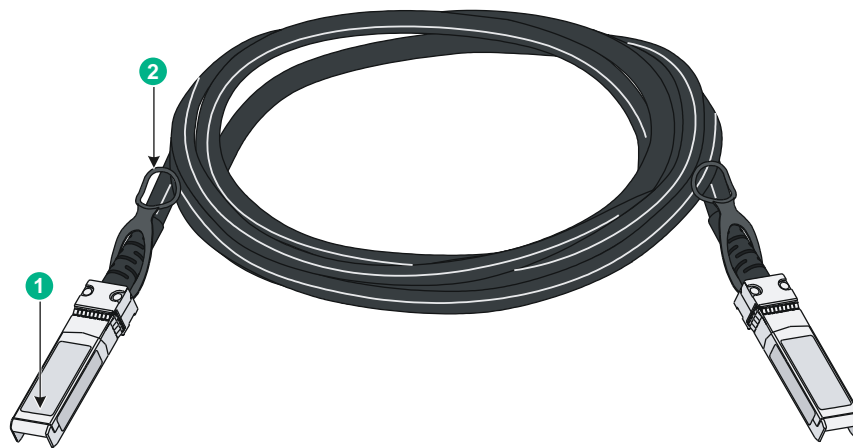
(1) Connector	(2) Pull latch

NOTE:

- As a best practice, use Intelbras SFP/SFP+ transceiver modules or SFP+ cables for the SFP+ ports.
- The Intelbras SFP/SFP+ transceiver modules and SFP+ cables available for the SFP+ ports are subject to change over time. For the most up-to-date list of Intelbras SFP/SFP+ transceiver modules and SFP+ cables available for the SFP+ ports, contact your Intelbras sales representative or technical support engineer.

LEDs

System status LED

The system status LED shows the operating status of the switch.

Table 19 System status LED description

LED mark	Status	Description
SYS	Steady yellow	Boot ROM booting stage.

LED mark	Status	Description
	Steady green	Linux kernel booting stage, or the switch has started up correctly.
	Flashing green (1 Hz)	Software image loading and decompressing stage, or software booting stage.
	Flashing red (3 Hz)	The switch has failed POST or the switch is faulty.
	Off	The switch is powered off or has not started up correctly.

Management Ethernet port LED

Table 20 Management Ethernet port LED description

LED mark	Status	Description
LINK/ACT	Steady green	A link is present on the port.
	Flashing green	The port is sending or receiving data.
	Off	No link is present on the port.

RPS status LED

The SC 3130-8M2U-2X switch support RPS input and provide an RPS status LED on the front panel to indicate the RPS operating status.

Table 21 RPS status LED description

LED mark	Status	Description
RPS	Steady green	Both the RPS DC input and the AC input are normal.
	Steady yellow	The RPS DC input is normal, but the AC input is disconnected or has failed.
	Off	The RPS DC input has failed, or no RPS is connected.

Mode LED (MODE)

Each PoE switch provides a mode LED (MODE). The mode LED works in conjunction with the Ethernet port LEDs to indicate the operating state of the Ethernet ports and the switch.

You can use the LED mode switching button to change the indication of the mode LED.

Table 22 Description for the mode LED

LED mark	Status	Description
Mode LED (MODE)	Steady green	The Ethernet port LEDs are showing link state of the ports.
	Flashing green	The Ethernet port LEDs are showing the PoE status of the ports.
	Flashing yellow	The Ethernet port LEDs work in conjunction to indicate the IRF member ID of the switch. For example, if the LED for port 5 is steady green, the IRF member ID of the switch is 5.

SFP/SFP+ port LED

Table 23 SFP/SFP+ port LED description

Status	Description
Steady green	A link is present on the port.
Flashing green	The port is sending or receiving data.
Off	• No link is present on the port. • The mode LED is operating in PoE mode (available only for PoE switch models)

Ethernet port LEDs

On a PoE switch, the following Ethernet port LEDs work in conjunction with the mode LED to indicate the operating state of the Ethernet ports and the switch from different aspects. Table 2424 describes the Ethernet port LEDs on a PoE switch.

- 10/100/1000BASE-T autosensing Ethernet port LEDs
- 2.5G/1000/100BASE-T autosensing Ethernet port LEDs
- 5G/2.5G/1000BASE-T autosensing Ethernet port LEDs
- 10/5/2.5/1GBASE-T autosensing Ethernet port LEDs

Table 24 Ethernet port LED description for PoE switch models

Mode LED status	Ethernet port LED status	Description
Steady green (Link/Active mode)	Steady green	A link is present on the port.
	Flashing green	The port is sending or receiving data.
	Off	No link is present on the port.
Flashing green (PoE mode)	Steady green	PoE power supply is normal.
	Flashing green (1 Hz)	• The maximum PoE power provided by the port fails to meet the power requirement of the PD. • PoE power supply overcurrent, overvoltage, or short-circuit occurs. • The remaining power of the switch fails to meet the power supply requirement of the port.
	Off	The port is not connected to a PD or PoE is not enabled on the port.
Flashing yellow (IRF mode)	Steady green	The Ethernet port LEDs on the switch work in conjunction to indicate the IRF member ID of the switch. For example, if the LED for port 5 is steady green and the other port LEDs are off, the IRF member ID of the switch is 5.

Warranty term

It is expressly stated that this contractual guarantee is granted subject to the following conditions:

1. All parts, pieces and components of the product are guaranteed against any manufacturing defects that may occur, for a period of 3 (three) years – 3 (three) months of legal warranty and 33 (thirty-three) months months of contractual warranty -, counted from the date of delivery of the product to the Consumer, as stated on the product purchase invoice, which is an integral part of this Term throughout the national territory. This contractual warranty includes the free exchange of parts, pieces and components that present manufacturing defects, including the labor used in this repair. If no manufacturing defect is found, but rather defect(s) arising from inappropriate use, the Consumer will bear these expenses.

2. Installation of the product must be carried out in accordance with the Product Manual and/or Installation Guide. If your product requires installation and configuration by a qualified technician, look for a suitable and specialized professional, as the costs of these services are not included in the value of the product.

3. In the event that the Consumer requests home assistance, he or she must go to the nearest Authorized Service to consult the technical visit fee. If it is found necessary to remove the product, the costs resulting from transport and security to and from the product are the responsibility of the Consumer.

4. In the event that the Consumer requests home assistance, he or she must go to the nearest Authorized Service to consult the technical visit fee. If it is found necessary to remove the product, the resulting expenses, such as transport and security to and from the product, are the responsibility of the Consumer.

5. The guarantee will completely lose its validity in the occurrence of any of the following hypotheses: a) if the defect is not manufacturing, but caused by the Consumer or by third parties outside the manufacturer; b) if damage to the product arises from accidents, accidents, acts of nature (lightning, floods, landslides, etc.), humidity, voltage in the electrical network (overvoltage caused by accidents or excessive fluctuations in the network), installation/use in disagreement with the user manual or resulting from natural wear and tear of parts, pieces and components; c) if the product has been influenced by a chemical, electromagnetic, electrical or animal nature (insects, etc.); d) if the product's serial number has been tampered with or erased; e) if the equipment has been tampered with.

6. This warranty does not cover loss of data, therefore, it is recommended, if applicable to the product, that the Consumer makes a regular backup copy of the data contained in the product.

7. Intelbras is not responsible for the installation of this product, nor for any attempts at fraud and/or sabotage in its products. Keep the software and applications used up to date, if applicable, as well as the necessary network protections to protect against intrusions (hackers). The equipment is guaranteed against defects within its normal conditions of use, and it is important to be aware that, as it is electronic equipment, it is not free from fraud and scams that could interfere with its correct functioning.

The contractual guarantee of this term is complementary to the legal one, therefore, Intelbras S/A reserves the right to change the general, technical and aesthetic characteristics of its products without prior notice.

These being the conditions of this complementary Warranty Term, Intelbras S/A reserves the right to change the general, technical and aesthetic characteristics of its products without prior notice.

Termo de garantia

Fica expresso que esta garantia contratual é conferida mediante as seguintes condições:

1. Todas as partes, peças e componentes do produto são garantidos contra eventuais defeitos de fabricação, que porventura venham a apresentar, pelo prazo de 3 (três) anos – sendo 3 (três) meses de garantia legal e 33 (trinta e três) meses de garantia contratual –, contado a partir da data de entrega do produto ao Senhor Consumidor, conforme consta na nota fiscal de compra do produto, que é parte integrante deste Termo em todo o território nacional. Esta garantia contratual compreende a troca gratuita de partes, peças e componentes que apresentarem defeito de fabricação, incluindo a mão de obra utilizada nesse reparo. Caso não seja constatado defeito de fabricação, e sim defeito(s) proveniente(s) de uso inadequado, o Senhor Consumidor arcará com essas despesas.

2. A instalação do produto deve ser feita de acordo com o Manual do Produto e/ou Guia de Instalação. Caso seu produto necessite a instalação e configuração por um técnico capacitado, procure um profissional idôneo e especializado, sendo que os custos desses serviços não estão inclusos no valor do produto.

3. Na eventualidade de o Senhor Consumidor solicitar atendimento domiciliar, deverá encaminhar-se ao Serviço Autorizado mais próximo para consulta da taxa de visita técnica. Caso seja constatada a necessidade da retirada do produto, as despesas decorrentes de transporte e segurança de ida e volta do produto ficam sob a responsabilidade do Senhor Consumidor.

4. Na eventualidade de o Senhor Consumidor solicitar atendimento domiciliar, deverá encaminhar-se ao Serviço Autorizado mais próximo para consulta da taxa de visita técnica. Caso seja constatada a necessidade da retirada do produto, as despesas decorrentes, como as de transporte e segurança de ida e volta do produto, ficam sob a responsabilidade do Senhor Consumidor.

5. A garantia perderá totalmente sua validade na ocorrência de quaisquer das hipóteses a seguir: a) se o vício não for de fabricação, mas sim causado pelo Senhor Consumidor ou por terceiros estranhos ao fabricante; b) se os danos ao produto forem oriundos de acidentes, sinistros, agentes da natureza (raios, inundações, desabamentos, etc.), umidade, tensão na rede elétrica (sobretensão provocada por acidentes ou flutuações excessivas na rede), instalação/uso em desacordo com o manual do usuário ou decorrentes do desgaste natural das partes, peças e componentes; c) se o produto tiver sofrido influência de natureza química, eletromagnética, elétrica ou animal (insetos, etc.); d) se o número de série do produto tiver sido adulterado ou rasurado; e) se o equipamento tiver sido violado.

6. Esta garantia não cobre perda de dados, portanto, recomenda-se, se for o caso do produto, que o Consumidor faça uma cópia de segurança regularmente dos dados que constam no produto.

7. A Intelbras não se responsabiliza pela instalação deste produto, e também por eventuais tentativas de fraudes e/ou sabotagens em seus produtos. Mantenha as atualizações do software e aplicativos utilizados em dia, se for o caso, assim como as proteções de rede necessárias para proteção contra invasões (hackers). O equipamento é garantido contra vícios dentro das suas condições normais de uso, sendo importante que se tenha ciência de que, por ser um equipamento eletrônico, não está livre de fraudes e burlas que possam interferir no seu correto funcionamento.

A garantia contratual deste termo é complementar à legal, portanto, a Intelbras S/A reserva-se o direito de alterar as características gerais, técnicas e estéticas de seus produtos sem aviso prévio.

Sendo estas as condições deste Termo de Garantia complementar, a Intelbras S/A se reserva o direito de alterar as características gerais, técnicas e estéticas de seus produtos sem aviso prévio.