



Installation guide
Series SDC 5850

This is a product approved by Anatel, the approval number can be found on the product label.

For more information, consult the Anatel website: <https://www.gov.br/anatel/pt-br>

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.

AC power supplies, DC power supplies are sold separately and are not included with the product.

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1 Preparing for installation

Intelbras SDC 5850 Ethernet switch series includes the following model:

Product serie	Product model
Intelbras SDC 5850 series	SDC 5850-2S-32H

Safety recommendations

To avoid any equipment damage or bodily injury caused by incorrect use, 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. The switch might be severely damaged in case of a fall.
- Ensure good ventilation of the equipment room 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 operating voltage is in the required range.
- To avoid electrical shocks, do not open the chassis while the switch is operating or when the switch is just powered off.
- When replacing field replaceable units (FRUs), including power modules and fan trays, wear an ESD wrist strap to avoid damaging the units.

Examining the installation site

The switch must be used indoors.

Mount your switch in a rack and verify the following items:

- Adequate clearance is reserved at the air inlet and outlet vents for ventilation.
- The rack has a good ventilation system.
- Identify the hot aisle and cold aisle at the installation site, and make sure ambient air flows into the switch from the cold aisle and exhausts to the hot aisle.

- Identify the airflow designs of neighboring devices, and prevent hot air flowing out of the neighboring devices from entering the top device.
- The rack is sturdy enough to support the switch and its accessories.
- The rack 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 appropriate temperature and humidity in the equipment room.

- 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.

Cleanliness

Dust buildup on the chassis might cause electrostatic adsorption and dust corrosion, resulting in poor contact of metal connectors and contact points. This might shorten the device's lifetime and even cause device failure in the worst case. [Table1-1](#) describes the switch requirement for cleanliness.

Table1-1 Switch requirement for cleanliness

Substance	Particle diameter	Concentration limit
Dust particles	$\geq 0.5 \mu\text{m}$	$\leq 1.8 \times 10^7 \text{ particles/m}^3$

To maintain cleanliness in the equipment room, follow these guidelines:

- Keep the equipment room away from pollution sources. Do not smoke, eat, or drink in the equipment room.
- Use double-layer glass in windows and seal doors and windows with dust-proof rubber strips. Use screen doors and window screens for doors and windows open to the outside and make sure the external windows are air tight.
- Use dustproof materials for floors, walls, and ceilings and use wallpaper or matt paint that does not produce powders.
- Clean the equipment room regularly and clean the air filters of the rack each month.
- Wear ESD clothing and shoe covers before entering the equipment room, keep the ESD clothing and shoe covers clean, and change them frequently.

Corrosive gas limit

Corrosive gases can accelerate corrosion and aging of metal components. Make sure the corrosive gases do not exceed the concentration limits as shown in [Table1-2](#).

Table1-2 Corrosive gas concentration limits

Gas	Average concentration (mg/m ³)	Maximum concentration (mg/m ³)
SO ₂	0.3	1.0
H ₂ S	0.1	0.5
Cl ₂	0.1	0.3
HCl	0.1	0.5
HF	0.01	0.03
NH ₃	1.0	3.0
O ₃	0.05	0.1
NO _x	0.5	1.0



CAUTION:

As a best practice, control the corrosive gas concentrations in the equipment room at their average values. Make sure the corrosive gas concentrations do not exceed 30 minutes per day at their maximum values.

To control corrosive gases, use the following guidelines:

- As a best practice, do not build the equipment room in a place with a high concentration of corrosive gases.
- Make sure the equipment room is not connected to sewer, vertical shaft, or septic tank pipelines and keep it far away from these pipelines. The air inlet of the equipment room must be away from such pollution sources.
- Use environmentally friendly materials to decorate the equipment room. Avoid using organic materials that contains harmful gases, such as sulfur or chlorine-containing insulation cottons, rubber mats, sound-proof cottons, and avoid using plasterboards with high sulfur concentration.
- Place fuel (diesel or gasoline) engines separately. Do not place them in the same equipment room with the device. Make sure the exhausted air of the engines will not flow into the equipment room or towards the air inlet of the air conditioners.
- Place batteries separately. Do not place them in the same room with the device.
- Employ a professional company to monitor and control corrosive gases in the equipment room regularly.

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 protection earth (PE) to filter interference from the power grid.
- Keep the switch far away from radio transmitting stations, radar stations, and high-frequency devices.

- Use electromagnetic shielding, for example, shielded interface cables, when necessary.
- To prevent signal ports from getting damaged by overvoltage or overcurrent caused by lightning strikes, route interface cables only indoors.

Laser safety



WARNING!

- The switch is a Class 1M laser device.
- 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.

Installation tools

No installation tools are provided with the switch. Prepare the following tools yourself:

- Phillips screwdriver.
- ESD wrist strap.
- Marker.

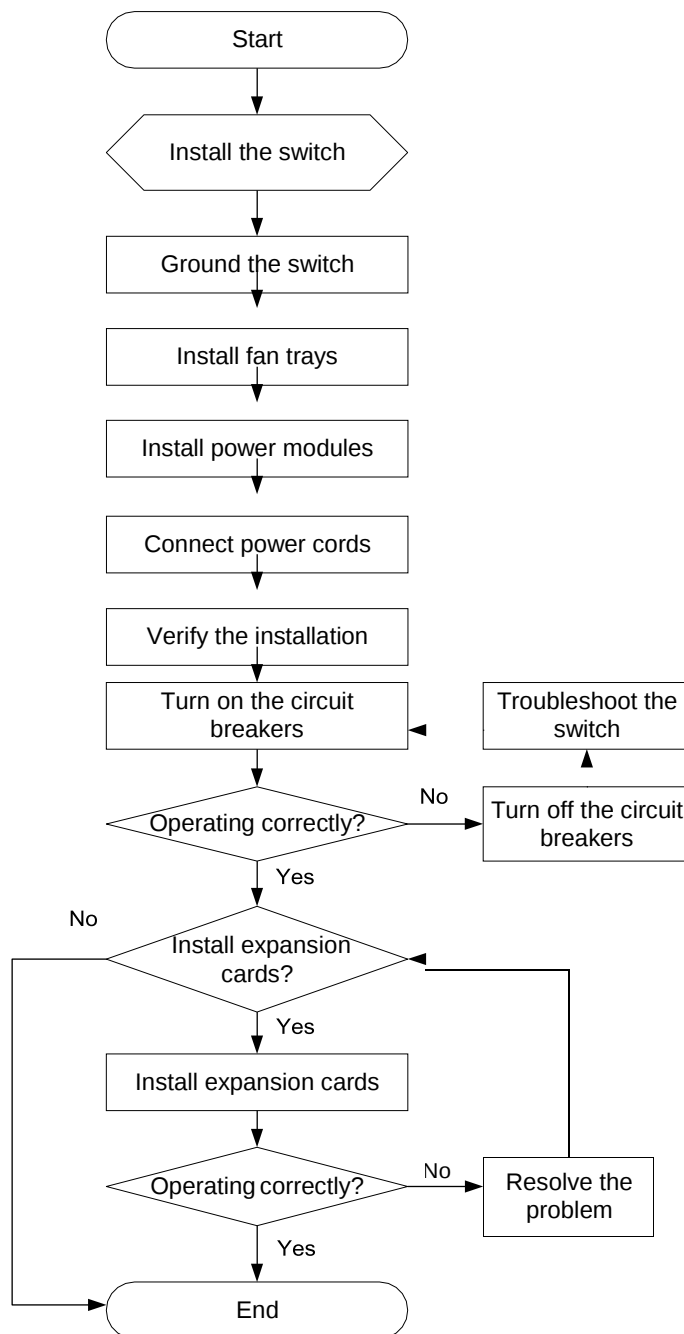
2 Installing the switch



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 caused thereby.

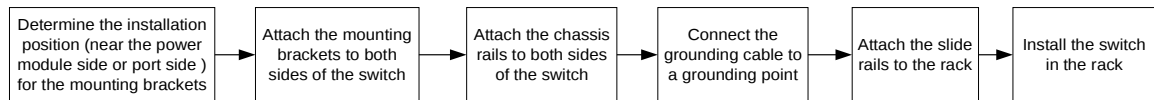
Figure2-1 Hardware installation flow



Installing the switch in a 19-inch rack

Rack-mounting procedures at a glance

Figure2-2 Rack-mounting procedure

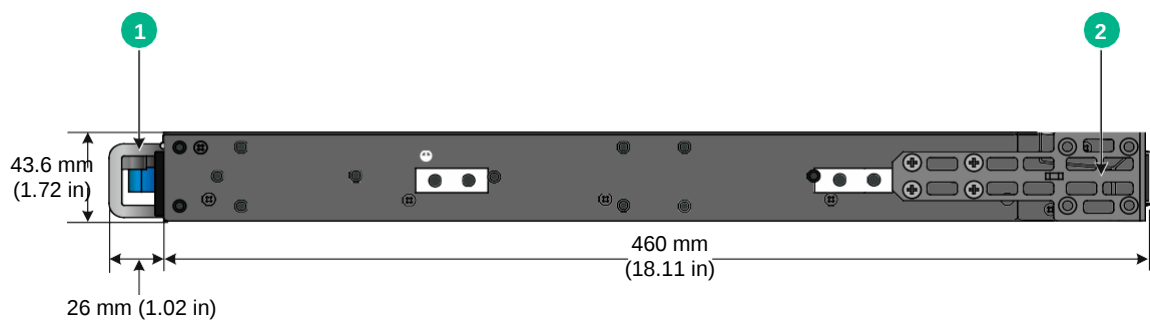


NOTE:

If a rack shelf is available, you can put the switch on the rack shelf and slide the switch to a position so that the mounting brackets make close contact with the front rack posts. Then use screws to secure the mounting brackets to the rack.

Rack-mounting requirements

Figure2-3 SDC 5850-2S-32H chassis dimensions (mounting brackets installed at the port side, left-side view)



(1) Power module handle

(2) Mounting bracket

Figure2-4 SDC 5850-2S-32H chassis dimensions (mounting brackets installed at the power module side, left-side view)

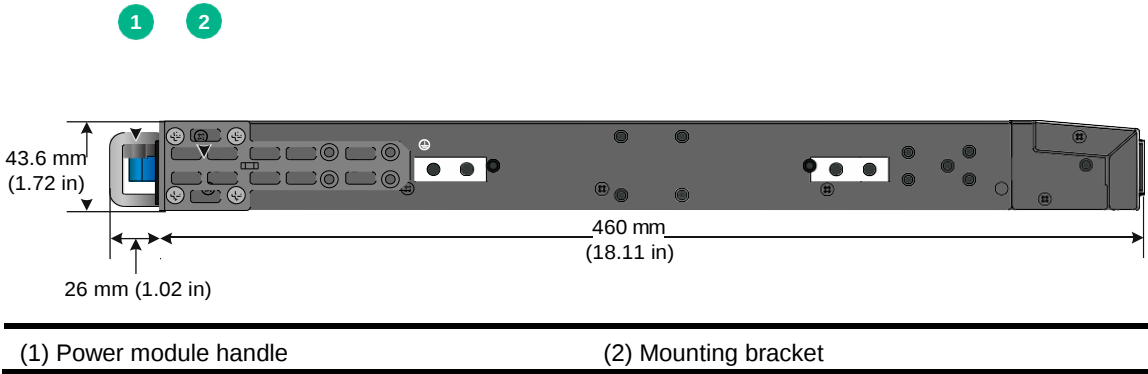


Table2-2 Distance requirements between the front and rear rack posts

Switch model	Installation method	Chassis dimensions	Distance between the front and rear rack posts	Rack requirements
SDC 5850 - 32 H	Mounting brackets and long slide rails (provided)	• Height—43.6 mm (1.72 in)/1 RU • Width—440 mm (17.32 in) • Depth—486 mm (19.13 in) ◦ 460 mm (18.11 in) for the chassis ◦ 26 mm (1.02 in) for the power module/fan tray handles	621 to 853 mm (24.45 to 33.58 in)	• A minimum of 1000 mm (39.37 in) in depth (recommended) • A minimum of 130 mm (5.12 in) between the front rack post and the front door. • A minimum of 550 mm (21.65 in) between the front rack post and the rear door.
	Mounting brackets and short slide rails (provided)		401 to 633 mm (15.79 to 24.92 in)	

Installation accessories

Table2-3 Installation accessories

Switch model	Mounting brackets (provided)	Cable management brackets	Rack mounting rail kit
SDC 5850-2S-32H	1U high, one pair. See Figure2-5 . The mounting bracket with a round hole in the narrow flange supports hanging a fixed asset tag.	N/A	1U high, including one pair of long slide rails and one pair of chassis rails (provided). See Figure2-6 . 1U high, including one pair of short slide rails and one pair of chassis rails (optional). See Figure2-7 .

Figure2-5 Mounting brackets provided with the SDC 5850-2S-32H switch

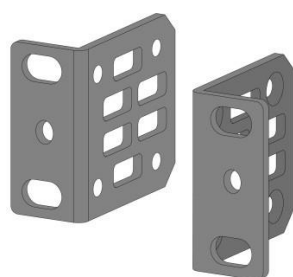


Figure2-6 1U long slide rail and chassis rail

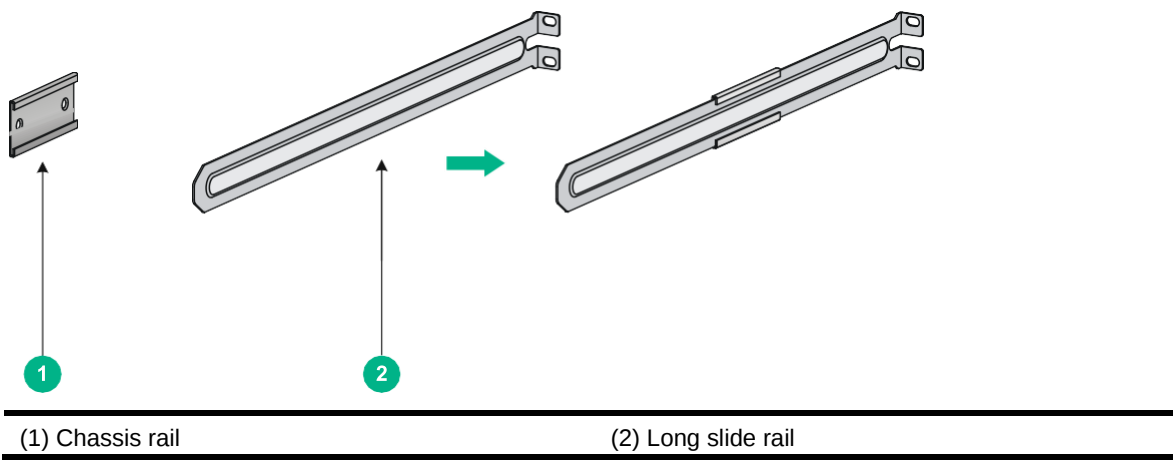
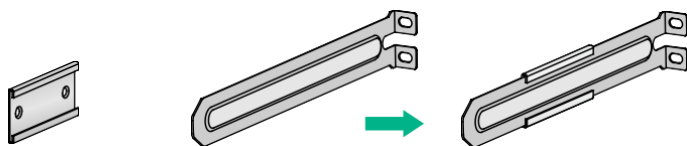


Figure2-7 1U short slide rail and chassis rail



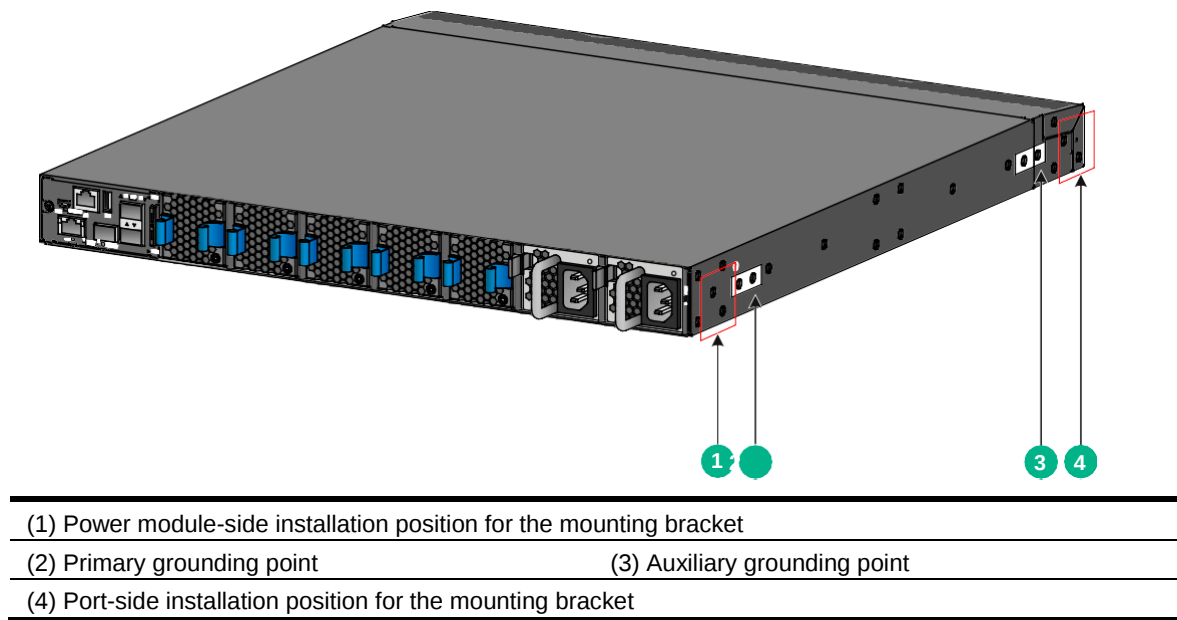
Mounting brackets, chassis rails, and grounding cable installation positions

The switch has one mounting position near the network ports and one mounting position near the power modules for mounting brackets.

The SDC 5850-2S-32H switch provides two grounding points: primary grounding point (with a grounding sign) and auxiliary grounding point, as shown in [Figure2-8](#).

Select installation positions for the mounting brackets, chassis rails, and grounding cable as required.

Figure2-8 Mounting brackets and grounding cable installation positions on the SDC 5850-2S-32H switch



Attaching the mounting brackets and chassis rails to the chassis

1. Place the wide flange of the mounting bracket against the chassis side panel. Align the mounting bracket installation holes with the appropriate screw holes in the chassis. Use the provided M4 screws to attach the mounting bracket to the chassis. As a best practice, use a torque of 12 kgf-cm (1.18 Nm) to fasten the M4 screws.
 - To install the mounting brackets at the port-side mounting position, see [Figure2-9](#). Use three installation holes to secure the mounting brackets to the SDC 5850-2S-32H switch.
 - To install the mounting brackets at the power module-side mounting position, see [Figure2-10](#). Use four installation holes to secure the mounting brackets to the switch.
2. Determine the installation position of the chassis rails based on the position of mounting brackets and the distance between the front and rear rack posts.

Table2-4 Chassis rail installation position

Switch model	Mounting bracket position	Chassis rail installation position	Distance between the front and rear rack posts
SDC 5850-2S-32H (long slide rails)	Port-side mounting position, as shown in Figure2-9	Position a	621 to 788 mm (24.45 to 31.02 in)
		Position b	621 to 853 mm (24.45 to 33.58 in)
	Power module-side mounting position, as shown in Figure2-10	Position c	621 to 853 mm (24.45 to 33.58 in)
		Position d	621 to 788 mm (24.45 to 31.02 in)
SDC 5850-2S-32H (short slide rails)	Port-side mounting position, as shown in Figure2-9	Position a	401 to 588 mm (15.79 to 23.15 in)
		Position b	454 to 633 mm (17.87 to 24.92 in)
	Power module-side mounting position, as shown in Figure2-10	Position c	454 to 633 mm (17.87 to 24.92 in)
		Position d	401 to 568 mm (15.79 to 22.36 in)

Figure2-9 Attaching the mounting brackets and chassis rails to the SDC 5850-2S-32H switch (port-side mounting position for the mounting brackets)

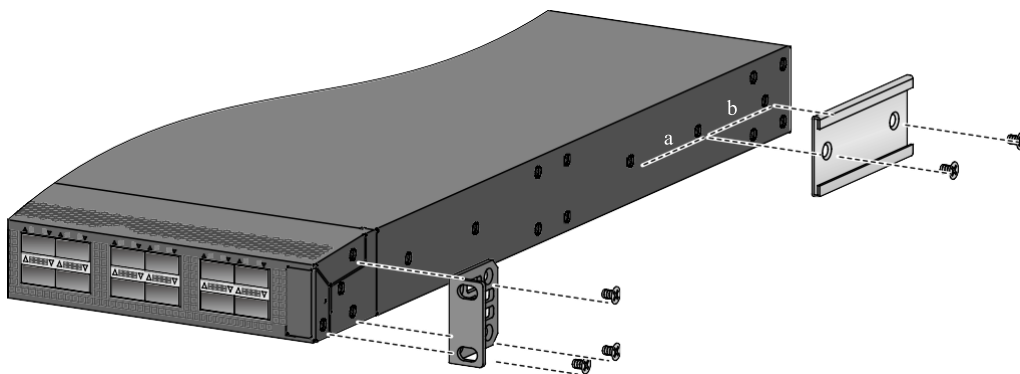
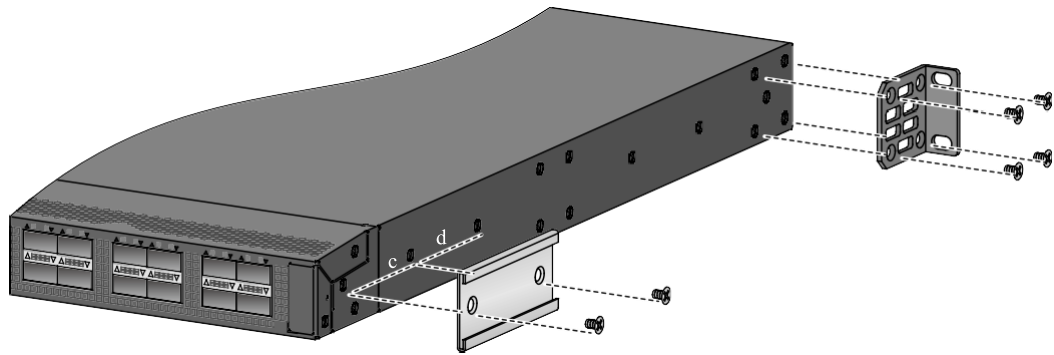


Figure2-10 Attaching the mounting brackets and chassis rails to the SDC 5850-2S-32H switch (power module-side mounting position for the mounting brackets)



NOTE:

Secure the mounting brackets and chassis rails to both sides of the chassis in the same way.

Connecting the grounding cable to the chassis



IMPORTANT:

- If the grounding cable length or terminal type cannot meet your requirement, make an applicable grounding cable or contact Intelbras Support.
 - If you use a grounding point on the side panel to ground the switch, connect the grounding cable to the grounding point before installing the switch in the rack.
-

For an SDC 5850-2S-32H switch, the primary grounding point and auxiliary grounding point are on the left side panel. Both grounding points support a grounding cable that has a single-hole lug or dual-hole lug. Use M5 grounding screws to attach the grounding cable to the switch. Choose the grounding point according to the mounting bracket installation positions.

- If you install the mounting bracket at the port side, connect the grounding cable to the grounding point at the port side.
- If you install the mounting bracket at the power module side, connect the grounding cable to the grounding point at the power module side.

Attaching the slide rails to the rack

The procedure is the same for attaching 1U and 2U slide rails to the rack. This section uses the 1U slide rails as an example.

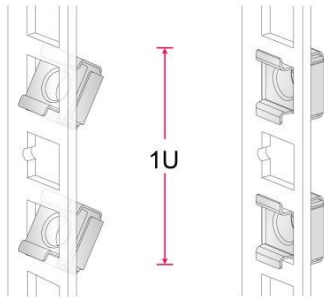
To attach the slide rails to the rack:

1. Identify the planned slide rail installation position in the rack.

Plan a 1U rack space for installation of 1U slide rails and a 2U rack space for installation of 2U slide rails. [Figure2-11](#) shows a standard 1U rack space.

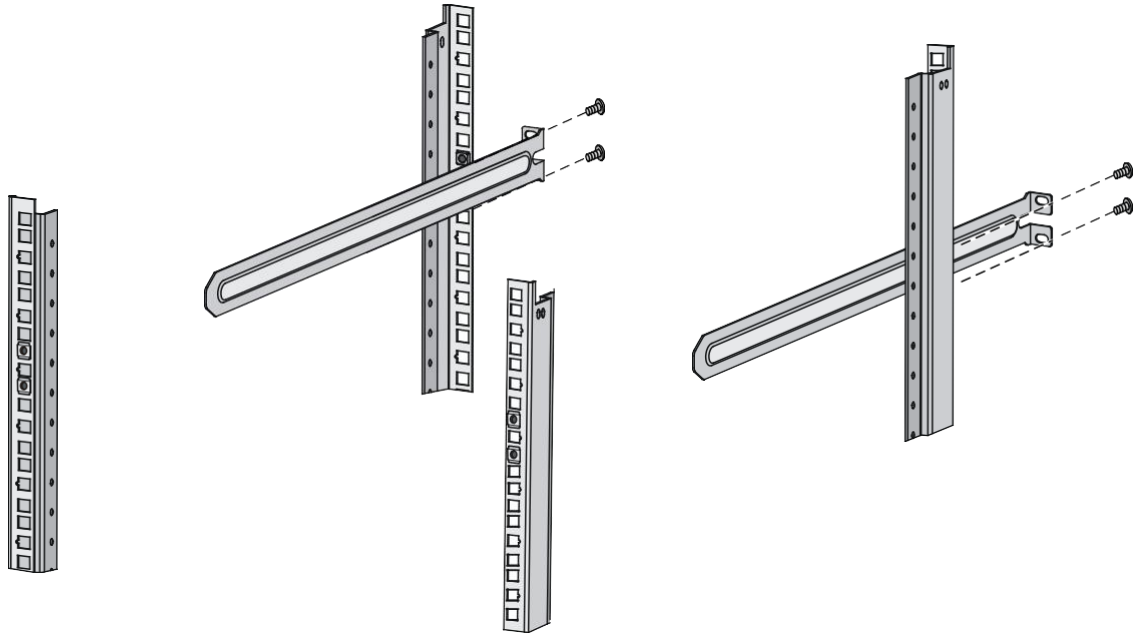
In a standard 1U rack space, there are three installation holes, one in the middle for auxiliary installation and one at either end for standard installation. The spacing between two adjacent standard installation holes is slightly smaller than the distance between a standard installation hole and the middle, auxiliary installation hole.

Figure2-11 1U rack space



2. Install cage nuts (user-supplied) in the mounting holes in the rack posts.
3. Align the screw holes in one slide rail with the cage nuts in a rear rack post. Use user-supplied M6 screws to attach the slide rail to the post. See [Figure2-12](#).
As a best practice, use a torque of 30 kgf-cm (2.94 Nm) to fasten the M6 screws.
4. Repeat the preceding steps to attach the other slide rail to the other rear rack post.
Keep the two slide rails at the same height so the slide rails can attach into the chassis rails.

Figure2-12 Installing the 1U slide rails



Mounting the switch in the rack

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 and chassis rails have been securely attached to the switch chassis.
3. Verify that the slide rails have been correctly attached to the rear rack posts.
4. Attach cage nuts (user-supplied) to the front rack posts and make sure they are at the same level as the slide rails.
5. One person performs the following operations:
 - a. Supporting the bottom of the switch, aligns the chassis rails with the slide rails on the rack posts.
 - b. Pushes the switch slowly to slide the chassis rails along the slide rails until the mounting brackets are flush with the rack posts.

! IMPORTANT:

- To rack-mount the SDC 5850-2S-32H, make sure the front ends of the slide rails reach out of the chassis rails for a minimum of 20 mm (0.79 in) after installation.
-
6. Another person uses user-supplied M6 screws to attach the mounting brackets to the rack. As a best practice, use a torque of 30 kgf-cm (2.94 Nm) to fasten the M6 screws.

Figure2-13 Mounting the SDC 5850-2S-32H switch in the rack (port-side mounting position for the mounting brackets)

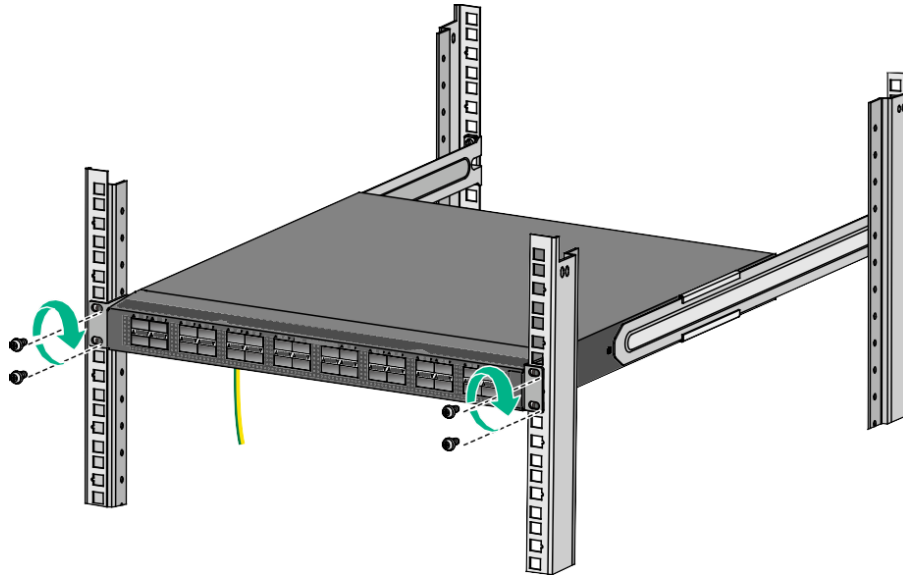
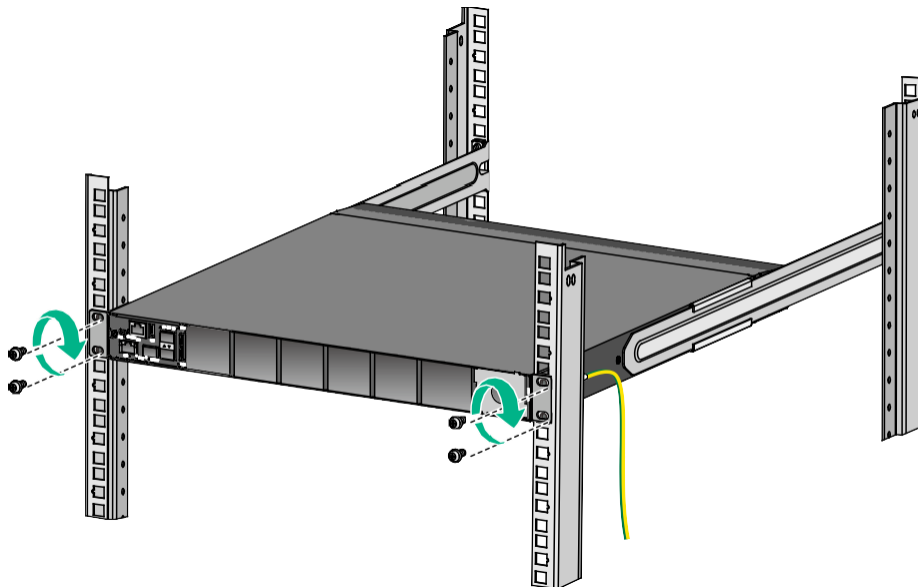


Figure2-14 Mounting the SDC 5850-2S-32H switch in the rack (power module-side mounting position for the mounting brackets)



Grounding the switch

⚠ CAUTION:

- Correctly connecting the grounding cable is crucial to lightning protection and EMI protection.
- Connect the grounding cable to the grounding system in the equipment room. Do not connect it to a fire main or lightning rod.

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 so the faradism and leakage electricity can be safely released to the earth to minimize EMI susceptibility of the switch.

You can ground a switch by using a grounding strip at the installation site.

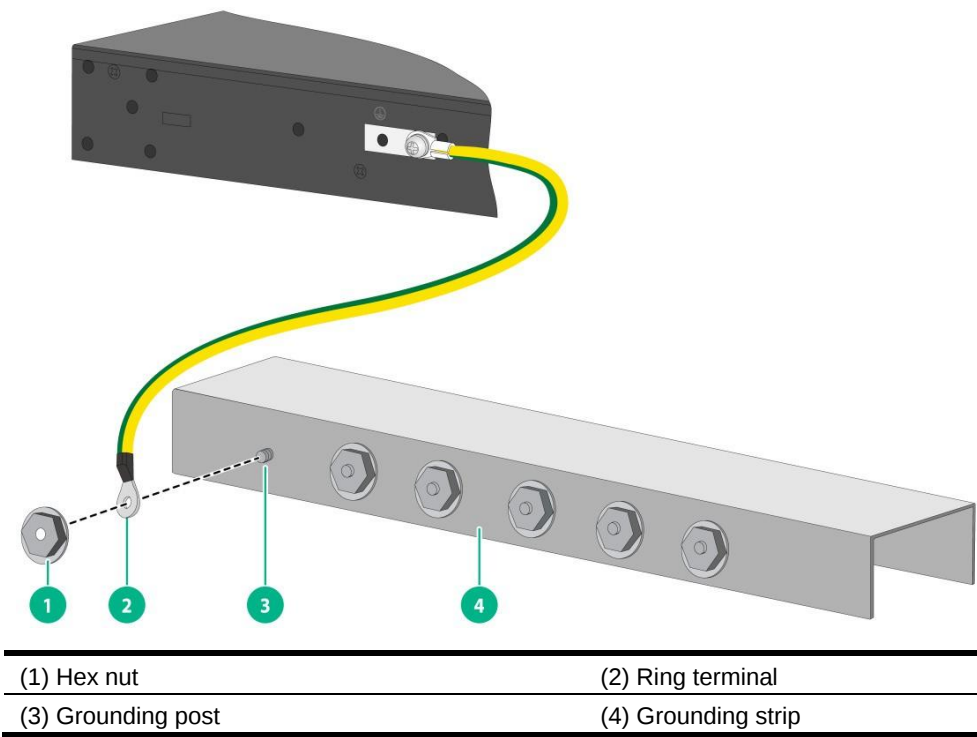
NOTE:

- The grounding terminals in this section are for illustration only.
- As a best practice to guarantee the grounding effect, use the grounding cable provided with the switch to connect to the grounding strip in the equipment room.

To connect the grounding cable:

1. Attach the two-hole grounding lug of the grounding cable to a grounding point on the chassis. For more information, see "[Connecting the grounding cable to the chassis.](#)"
2. Remove the hex nut of a grounding post on the grounding strip.
3. Attach the ring terminal of the grounding cable to the grounding post on the grounding strip, and secure the ring terminal to the grounding post with the hex nut.

Figure2-15 Connecting the grounding cable to a grounding strip



Installing/removing fan trays

CAUTION:

The switch has multiple fan tray slots. To ensure good ventilation of the switch, follow these guidelines to install and remove fan trays:

- The switch comes with the fan tray slots empty. As a best practice for adequate heat dissipation of the switch, fully configure the switch with fan trays of the same model. If the number of installed fan trays is less than the minimum required number, the device will output an error message and does not power up.
- Make sure all slots have a module or filler panel installed when the switch is operating.
- If multiple fan trays fail on an operating SDC 5850-2S-32H switch, do not remove the fan trays at the same time. Replace the fan trays one after another and finish replacing a fan tray within 3 minutes.

CAUTION:

- Do not touch any bare cables or terminals on the fan tray.
 - Do not place the fan tray in a wet area, and prevent liquid from entering into the fan tray.
 - When an internal circuit or component of the fan tray fails, contact Intelbras Support. Do not remove any component from the fan tray yourself.
-

The installation and removal procedures are the same for fan trays of different models. The following installation and removal procedures use the LSWM1FANSA and FAN-40B-1-C fan trays as examples.

Installing a fan tray

⚠ CAUTION:

To prevent damage to the fan tray or the connectors on the backplane, insert the fan tray gently. If you encounter a hard resistance while inserting the fan tray, pull out the fan tray and insert it again.

⚠ IMPORTANT:

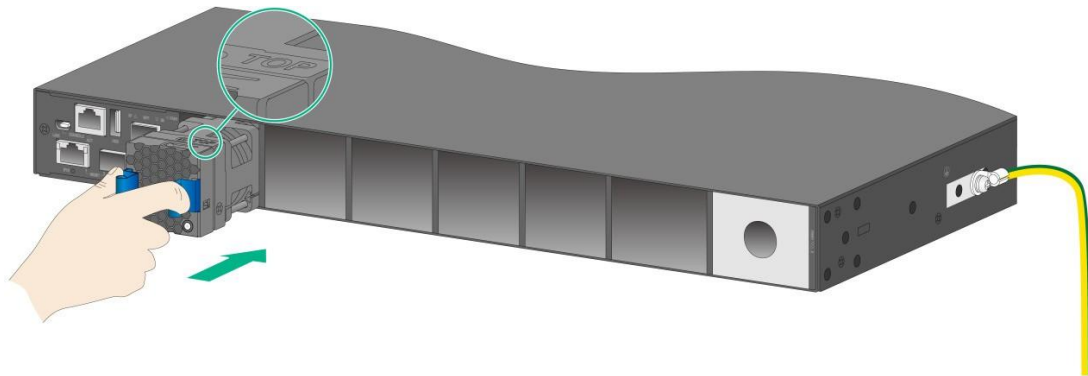
Before powering on the switch, make sure the fan tray airflow direction and the preferred airflow direction of the switch are the same. If they are not the same, the system generates traps and logs. You can use the **fan prefer-direction** command to configure the preferred airflow direction for the switch. By default, the preferred airflow direction of the switch is from the port side to the power module side.

The switch model supports shipping with fan trays and power modules installed. If your switch came with fan trays preinstalled, skip this section.

To install a fan tray:

1. Wear an ESD wrist strap and make sure it makes good skin contact and is reliably grounded.
2. Unpack the fan tray and verify that the fan tray model is correct.
3. For an LSWM1FANSA fan tray, orient the fan tray with the "TOP" mark on top. Grasp the handle of the fan tray with one hand and support the fan tray bottom with the other, and slide the fan tray along the guide rails into the slot until the fan tray is fully seated in the slot and has a firm contact with the backplane. See [Figure2-16](#)

Figure2-16 Installing an LSWM1FANSA fan tray



Removing a fan tray

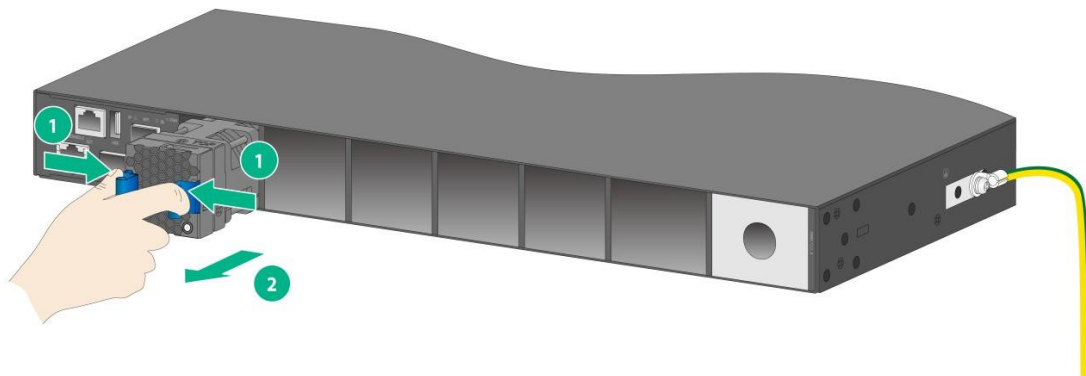
WARNING!

- Ensure electricity safety and never touch the rotating fans when you hot-swap a fan tray.
- To prevent a fan from causing loud noise, do not touch the fan blades and rotation axis, even if the fan is not rotating.

To remove a fan tray:

1. Wear an ESD wrist strap and make sure it makes good skin contact and is reliably grounded.
2. For an LSWM1FANSA fan tray, grasp the handle of the fan tray with one hand and pull the fan tray part way out of the slot. Support the fan tray bottom with the other and pull the fan tray completely out of the slot. See [Figure2-17](#).
3. Put the removed fan tray in an antistatic bag.

Figure2-17 Removing an LSWM1FANSA fan tray



Installing/removing power modules

⚠ WARNING!

- To avoid bodily injury and device damage, strictly follow the procedures in [Figure2-18](#) and [Figure2-19](#) to install and remove a power module.
- Provide a separate circuit breaker for each power module.

The SDC 5850-2S-32H switch have two power module slots. The SDC 5850-2S-32H switch come with one power module slot empty and one installed with a filler panel.

Figure2-18 Installation procedure

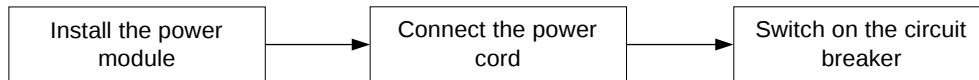
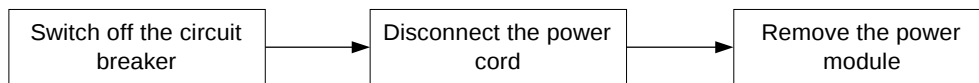


Figure2-19 Removal procedure



Safety guidelines

To prevent device damage and even bodily injury, follow these restrictions and guidelines when you install or remove a power module:

- Always wear an ESD wrist strap and make sure the strap makes good skin contact.
- Before installing a power module, make sure the voltage of the power source is as required by the power module, and the output voltage of the power module is as required by the device.
- Do not touch any bare cables or terminals on the power module.
- Do not place the power module in a wet area, and prevent liquid from entering the power module.
- To avoid power module damage, do not open the power module. When an internal circuit or component of the power supply fails, contact Intelbras Support.

Installing a power module

⚠ CAUTION:

- Follow the forward inertia of the power module when inserting it into the chassis, and make sure the power module has firm contact with the connectors on the backplane.
- To prevent damage to the connectors inside the switch chassis, insert the power module gently. If you encounter a hard resistance while inserting the power module, pull out the power module and insert it again.

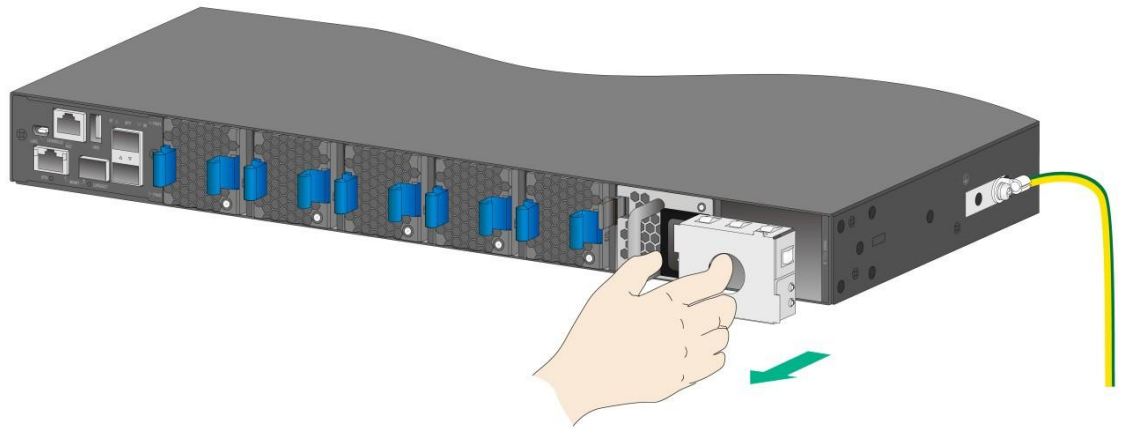
The switch model supports shipping with fan trays and power modules installed. If your switch comes with power modules preinstalled, skip this section.

The installation procedure is the same for the power modules. The figures in this section use a switch as an example.

To install a power module:

1. Remove the filler panel, if any, from the target power module slot, as shown in [Figure2-20](#).

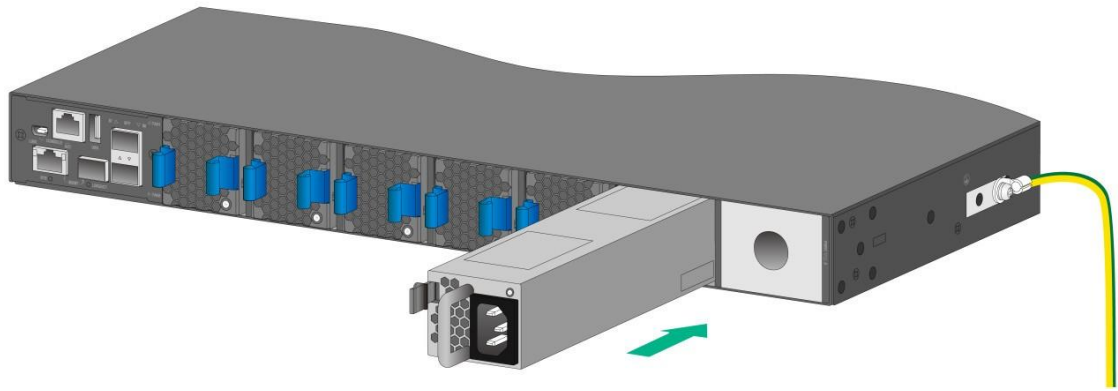
Figure2-20 Removing a filler panel



2. Unpack the power module and verify that the power module model is correct.
3. Correctly orient the power module with the words on the power module upward. Grasp the handle of the power module with one hand and support its bottom with the other, and slide the power module slowly along the guide rails into the slot.

The slot is foolproof. If you cannot insert the power module into the slot, re-orient the power module rather than use excessive force to push it in.

Figure2-21 Installing a power module (LSVM1AC650)



Removing a power module

⚠ CAUTION:

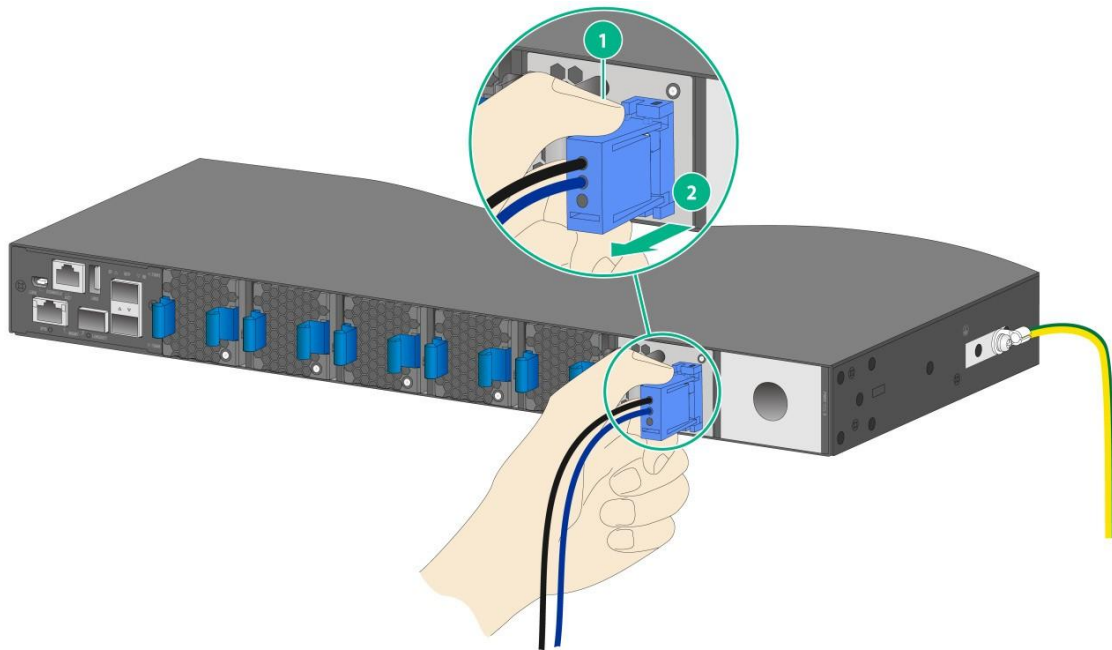
- When the SDC 5850-2S-32H switch uses two power modules in 1+1 redundancy mode, removing one power module does not affect the operation of the switch. When the switch has only one power module installed, removing the power module powers off the switch.

The removal procedure is the same for power modules. The figures in this section use a switch as an example.

To remove a power module:

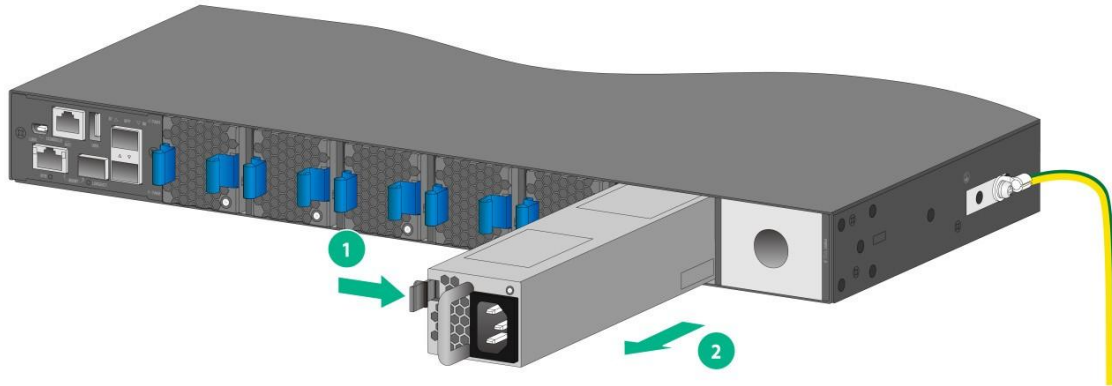
1. Remove the power cord from the power module. To remove a DC power cord, squeeze the tabs on the power cord connector with your thumb and forefinger, and then pull the connector out, as shown in [Figure2-22](#).
2. Hold the handle on the power module with one hand, pivot the latch on the power module with your thumb, and pull the power module part way out of the slot, as shown in [Figure2-23](#).
For an LSVM1AC650 or LSVM1DC650 power module, pivot the latch on the power module to the right.
For an SW-A-PSR550-12A-B or SW-B-PSR550-12A-B power module, pivot the latch on the power module to the left.
3. Supporting the power module bottom with one hand, slowly pull the power module out with the other hand.
4. Put the removed power module in an antistatic bag for future use.
5. If you are not to install a new power module, install a filler panel in the slot to ensure good ventilation in the switch, as shown in [Figure2-24](#).

Figure2-22 Removing the DC power cord



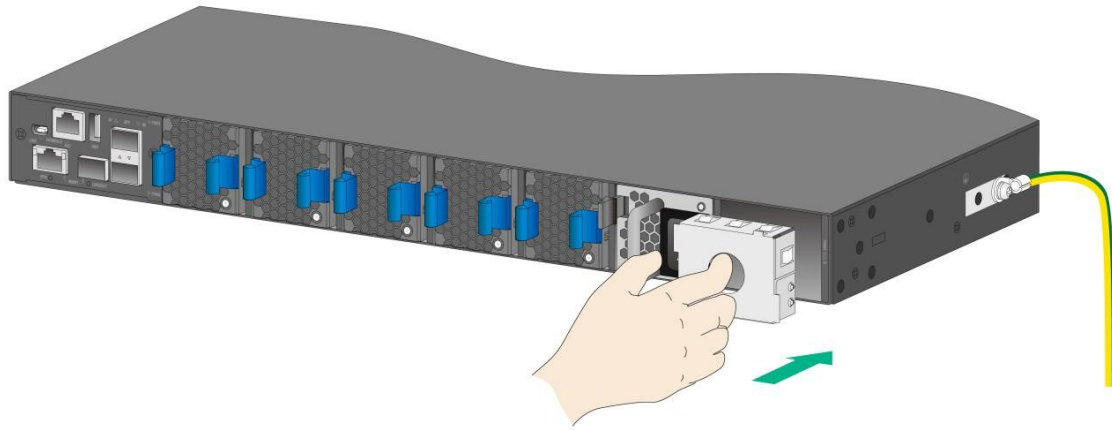
-
- (1) Press the tabs on the power cord connector with your thumb and forefinger
 - (2) Pull the power cord connector out
-

Figure2-23 Removing an LSVM1AC650 power module



-
- (1) Pivot the latch to the right with your thumb
 - (2) Pull the power module out
-

Figure2-24 Installing a filler panel



Connecting the power cords



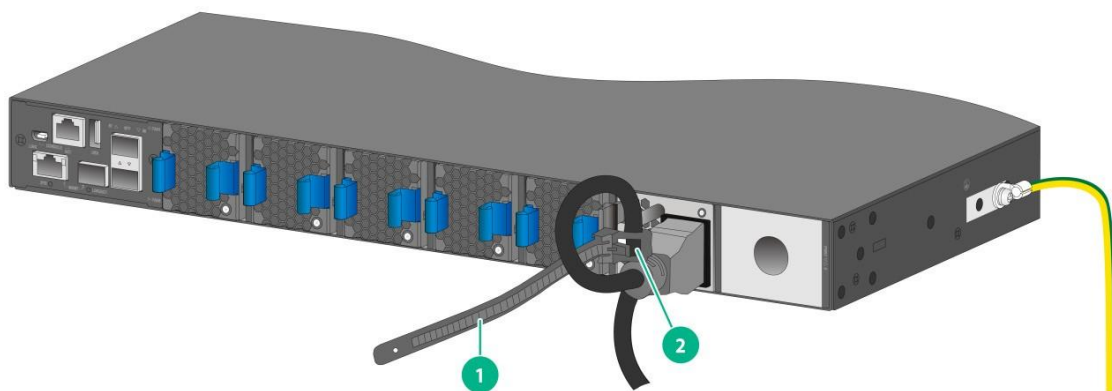
WARNING!

Provide a circuit breaker for each power input. When you connect a power cord, make sure the circuit breaker is switched off.

Connecting an AC power cord

1. Insert the female connector of the AC power cord supplied with the power module into the power receptacle on the power module.
2. For an LSVM1DC650 power module, use a cable tie to secure the power cord to the handle of the power module, as shown in [Figure2-25](#).
3. Connect the other end of the power cord to an AC power outlet.

Figure2-25 Connecting an AC power cord to the LSVM1AC650 power module



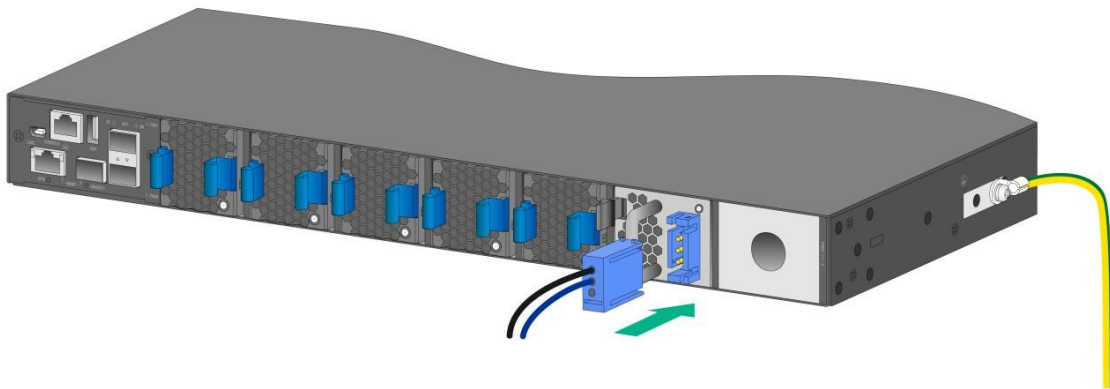
(1) Cable tie

(2) Tighten the cable tie to secure the power cord to the handle of the power module

Connecting a DC power cord

1. Align the power cord plug with the power receptacle on the power module, and insert the plug into the receptacle (see [Figure2-26](#)).
The plug and receptacle are foolproof. If you cannot insert the plug into the receptacle, re-orient the plug rather than use excessive force to push it in.
2. Use a cable tie to secure the power cord to the handle of the power module, as shown in [Figure2-25](#).
3. Connect the other end of the power cord to the DC power source.

Figure2-26 Connecting a DC power cord to the LSVM1DC650 power module



Installing/removing expansion modules

⚠ CAUTION:

When you install or remove an expansion module, follow these guidelines:

- Never touch the components on the expansion module surface with bare hands.
- Do not use excessive force.
- Do not install or remove an expansion module during the startup of the switch. Hot swapping an expansion module when the switch is operating correctly.

3 Accessing the switch for the first time

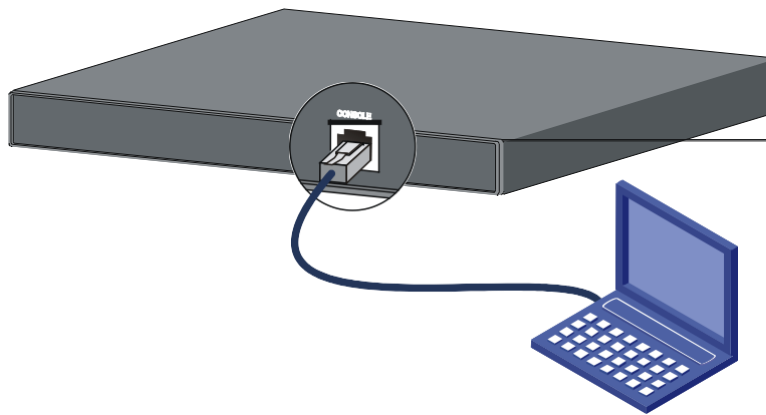
Connecting the switch to a configuration terminal

You can access the switch through the serial console port or the mini USB console port.

Only the mini USB console port is active if you connect both the serial console port and mini USB console port.

The example uses a serial console cable to connect a console terminal (PC) to the serial console port on the switch.

Figure3-1 Connecting the serial console port to a terminal



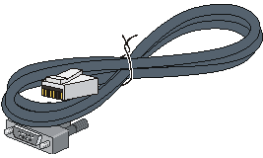
As shown in [Table3-1](#), three types of console cables can be used for connecting the switch to a configuration terminal. The switch is not provided with a serial console cable or a mini USB console cable.

Table3-1 Connection methods and console cables

Connection method	Console cable type	Configuration terminal-side connector	Switch-side connector
Using the serial console port for connection	DB9-to-RJ45 console cable	DB-9 female connector	RJ-45 connector
	USB-to-RJ45 console cable	USB connector	RJ-45 connector
Using the mini USB console port for connection	Mini USB console cable	USB connector	USB mini-Type B connector

The signal pinout for the RJ-45 connector of a serial console cable varies by vendor. To avoid abnormal configuration terminal display, use a serial console cable provided by Intelbras. For more information, see [Table3-2](#). To prepare a serial console cable yourself, make sure the signal pinout for the RJ-45 connector is the same as that shown in [Table3-3](#).

Table3-2 Console cable views

Console cable type	Console cable view	Product code for the recommended Intelbras console cable
DB9-to-RJ45 console cable		04042967
USB-to-RJ45 console cable		0404A1EE
Mini USB console cable		User supplied,

Connecting the console cable

Connecting a DB9-to-RJ45 console cable

A serial console cable is an 8-core 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 console terminal.

Figure3-2 Serial console cable

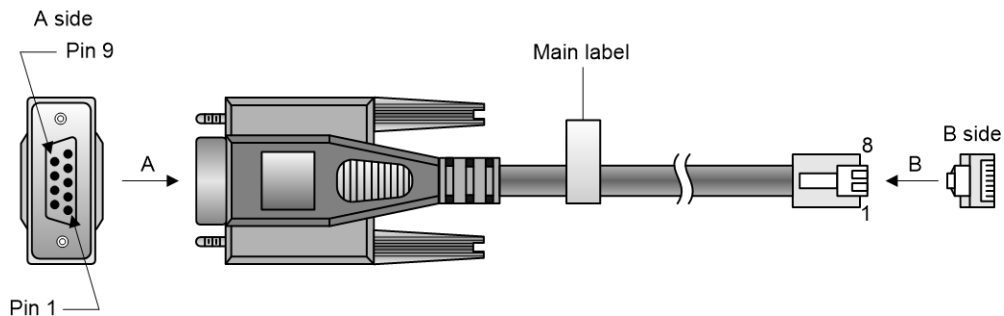


Table3-3 Console port signaling and pinout

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

RJ-45	Signal	DB-9	Signal
7	DSR	4	DTR
8	CTS	7	RTS

To connect a configuration terminal (for example, a PC) to the switch through a DB9-to-RJ45 console cable:

1. Plug the DB-9 female connector of the DB9-to-RJ45 console cable to the serial port on the PC.
2. Connect the RJ-45 connector to the serial console port on the switch.

NOTE:

- Identify the mark on the 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.
-

Connecting a USB-to-RJ45 console cable

ⓘ IMPORTANT:

- To use a USB-to-RJ45 console cable to connect the switch to a configuration terminal, first download and install the USB-to-RJ45 console driver on the configuration terminal and then connect the USB-to-RJ45 console cable to the configuration terminal.
 - If you have connected a USB-to-RJ45 console cable to the configuration terminal before driver installation, you must remove and reconnect the USB-to-RJ45 console cable to the configuration terminal.
-

The following installs the driver on the Windows system. To install the driver on other operating systems, see the installation guide in the driver compression package named by the corresponding operating system.

To connect the switch to the configuration terminal through a USB-to-RJ45 console cable.

Connecting the mini USB console cable

A mini USB console cable has a USB mini-Type B connector at one end to connect to the mini USB console port of the switch, and a standard USB Type A connector at the other end to connect to the USB port on the configuration terminal. Connect the standard USB Type A connector to the USB port of the configuration terminal.

Setting terminal parameters

To configure and manage the switch through the console port, you must run a terminal emulator program, TeraTermPro or PuTTY, on your configuration terminal. You can use the emulator program to connect a network device, a Telnet site, or an SSH site. For more information about the terminal emulator programs, see the user guides for these programs

The following are the required terminal settings:

- **Bits per second**—9600.
- **Data bits**—8.
- **Stop bits**—1.
- **Parity**—None.
- **Flow control**—None.

Powering on the switch

1. Before powering on the switch, verify that the following conditions are met:
 - All the fan tray slots have a fan tray installed.
 - The power cords are connected correctly.
 - The input power voltage is as required by the switch.
 - The console cable is connected correctly.
 - The configuration terminal(a PC, for example) has started, and its serial port settings are consistent with the console port settings on the switch.
2. Power on the switch.

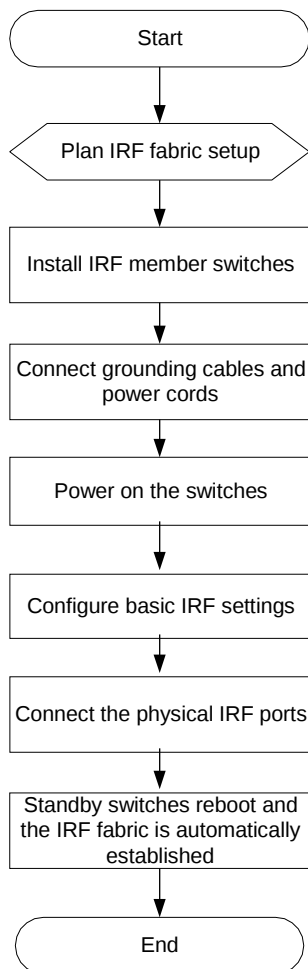
During the startup process, you can access BootWare menus to perform tasks such as software upgrade and file management. The BootWare interface and menu options vary by software version. For more information about BootWare menu options, see the software-matching release notes for the device.
3. After the startup completes, you can access the CLI to configure the switch.

4 Setting up an IRF fabric

You can use Intelbras IRF technology to connect and virtualize multiple SDC 5850 switches into a large virtual switch called an "IRF fabric" for flattened network topology, and high availability, scalability, and manageability.

IRF fabric setup flowchart

Figure4-1 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 physical IRF ports on the member switches • Planning the cabling scheme

Step	Description
2. Install IRF member switches.	See "Installing the switch in a 19-inch rack" .
3. Connect ground wires and power cords.	See "Grounding the switch" and "Connecting the power cords."
4. Power on the switches.	N/A
5. Connect the physical IRF ports.	Connect the physical IRF ports on switches. Use QSFP28/QSFP+ transceiver modules and fibers for connections over long distances. Use QSFP28/QSFP+ cables for connections over short distances. 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

Determine 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.

You can use switches of both the SDC 5850 series to form an IRF fabric.

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 top-of-rack (ToR) access solution for a data center.

As your business grows, you can add member switches into the IRF fabric to increase the switching capacity without any topology change or replacement.

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 command line interface of the master switch.

NOTE:

IRF member switches will automatically elect a master. You can affect the election result by assigning a high member priority to the intended master switch.

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 reliably, ring topology. In ring topology, the failure of one IRF link does not cause the IRF fabric to split as in daisy chain topology. Rather, 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 a minimum of 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 IRF port connections in the two figures are for illustration only, and more connection methods are available.

Figure4-2 IRF fabric in daisy chain topology

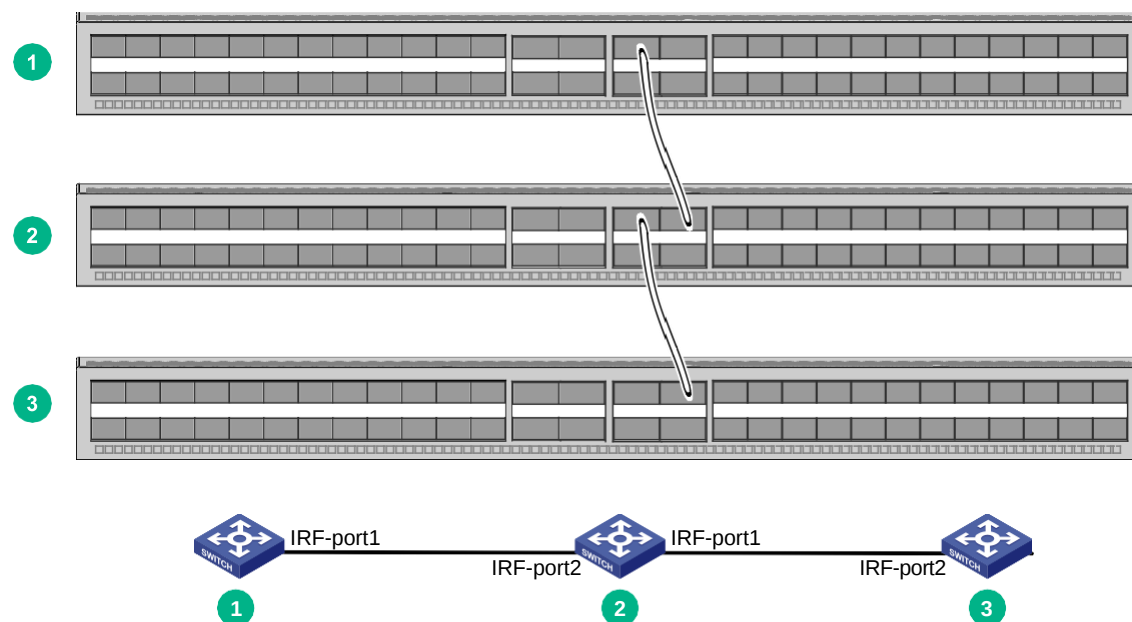
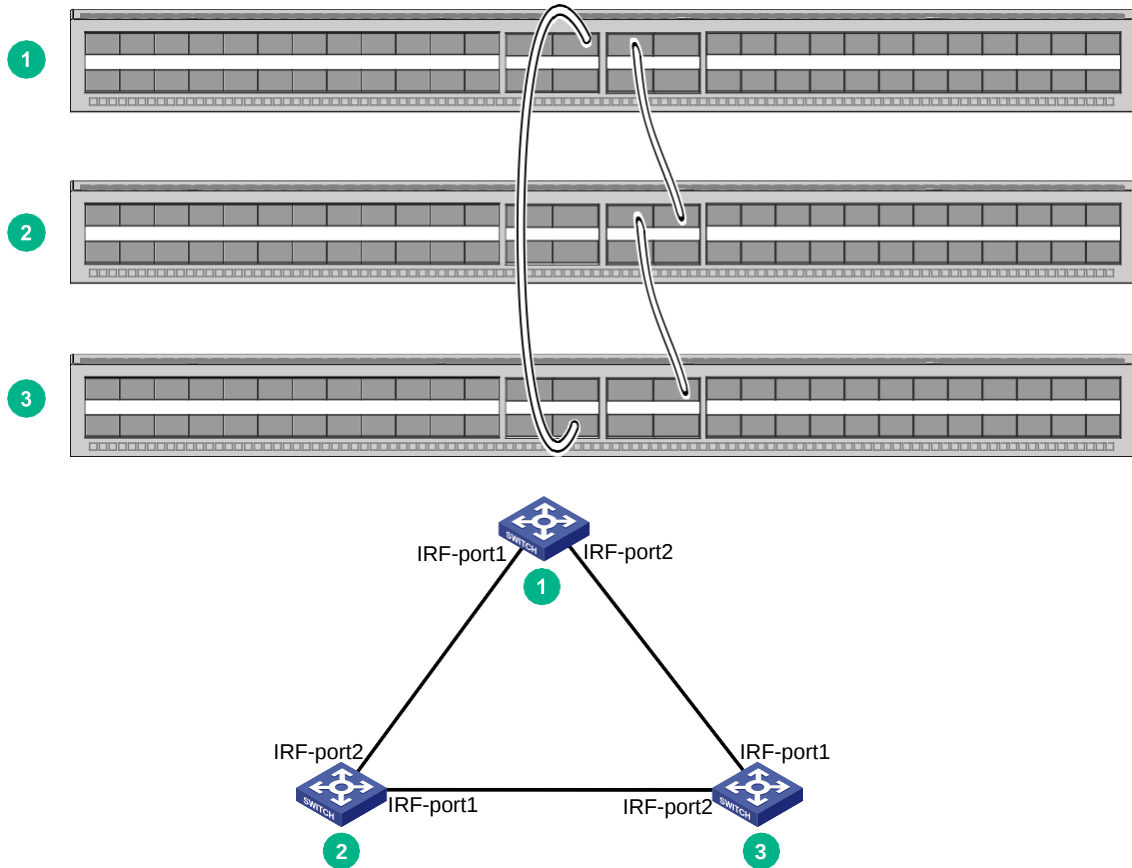


Figure4-3 IRF fabric in ring topology



You can set up IRF links between SDC 5850 switches as follows:

- Use a QSFP28 module and fiber or a QSFP28 cable to connect QSFP28 ports for a 100-GE IRF physical connection.
- Use a QSFP+ module and fiber or a QSFP+ cable to connect QSFP28 ports for a 40-GE IRF physical connection.
- Use a QSFP+ module and fiber or a QSFP+ cable to connect QSFP+ ports for a 40-GE IRF physical connection.

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

When you use a QSFP+ DAC cable to connect a pair of peer IRF physical interfaces on SDC 5850 switch series, follow these restrictions and guidelines:

- The peer interfaces must both be fixed ports or both be ports on expansion interface modules that are the same model.

Identifying physical IRF ports on the member switches

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

All the QSFP28 ports and QSFP+ ports on the switches (including those on the interface modules), can be used for IRF connections.

When you select ports in a port group for IRF links, you must use all or none of the ports in the group for IRF links. The ports can be bound to different IRF ports.

Planning the cabling scheme

You can use QSFP28/QSFP+ cables, or QSFP28/QSFP+ transceiver modules and fibers to connect the SDC 5850 switches for IRF connections.

If the switches are all in one equipment room, choose QSFP28/QSFP+ cables for IRF connections. If the switches are far away from one another, choose QSFP28/QSFP+ transceiver modules and fibers for IRF connections.

The following subsections describe several IRF connection schemes by using the QSFP28 cables and QSFP28 transceiver modules and fibers. As a best practice, use the ring topology for IRF connections.

Connecting the IRF member switches in one rack

[Figure4-4](#) shows an example for connecting four IRF member switches in a rack. The switches in the ring topology (see [Figure4-5](#)) are in the same order as connected in the rack.

Figure4-4 Connecting the switches in one rack

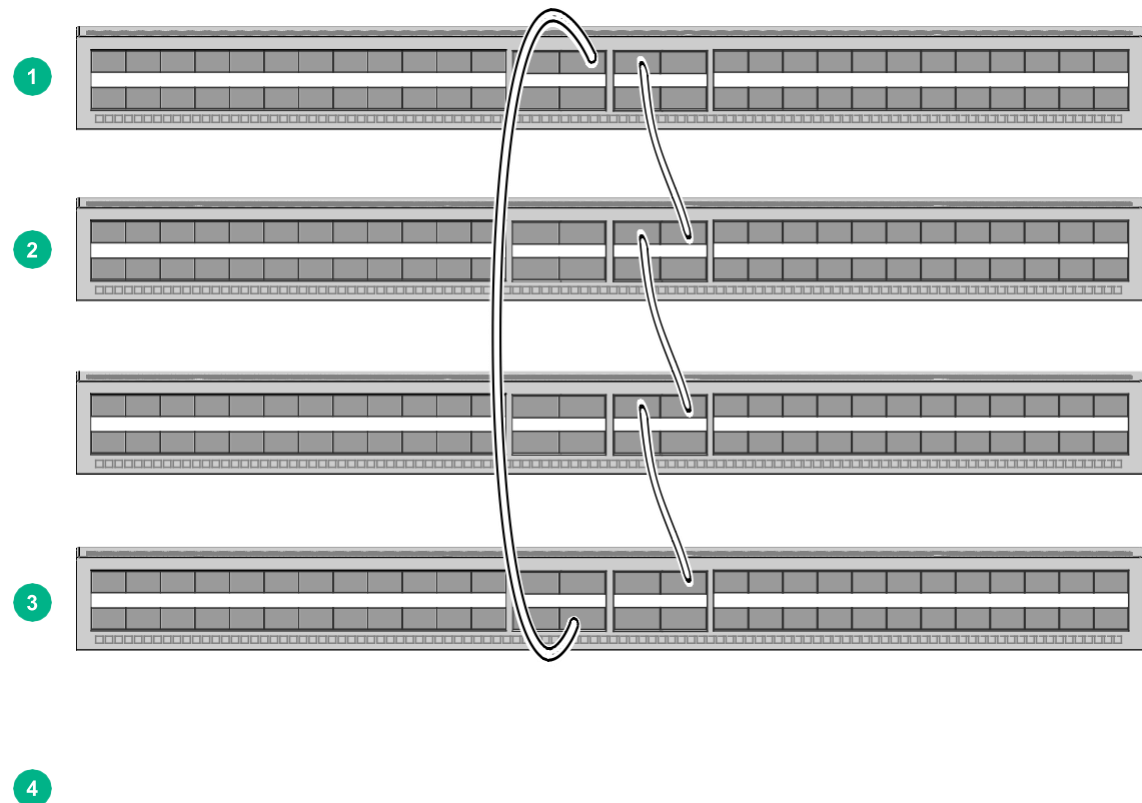
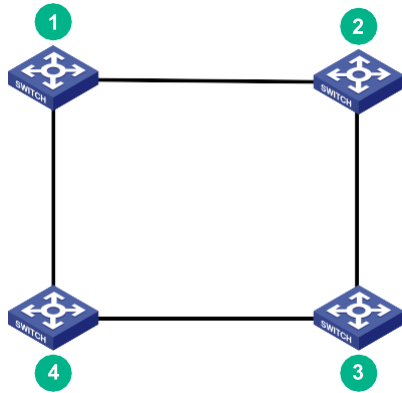


Figure4-5 IRF fabric topology

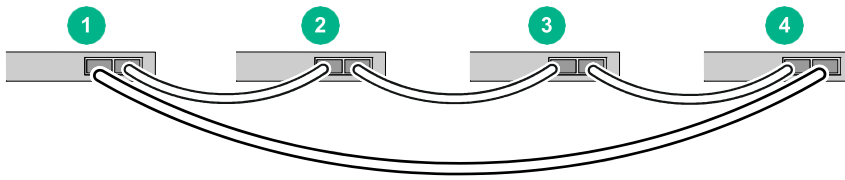


Connecting the IRF member switches in a ToR solution

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

Figure4-6 shows an example for connecting four top of rack IRF member switches. The topology is the same as Figure4-5.

Figure4-6 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.

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.

Connecting the physical IRF ports



CAUTION:

Wear an ESD wrist strap when you install transceiver modules, fibers, and cables. For more information, see the [installation guide](#).

Use transceiver modules and fibers or cables to connect the IRF member switches as planned.

Accessing the IRF fabric to verify the configuration

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.
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 [Table4-1](#).

Table4-1 Displaying and maintaining IRF configuration and running status

Task	Command
Display information about the IRF fabric.	display irf
Display all members' IRF configurations.	display irf configuration
Display IRF fabric topology information.	display irf topology

NOTE:

To avoid IP address collision and network problems, configure at least one multi-active detection (MAD) mechanism to detect the presence of multiple identical IRF fabrics and handle collisions.

5 Setting up an M-LAG system

Multichassis Link Aggregation (M-LAG) virtualizes two physical devices into one system through multichassis link aggregation to provide device-class high availability and load sharing.

Compared to IRF, M-LAG offers higher network reliability and shorter service interruption during upgrade.

You cannot configure IRF and M-LAG on the same network.

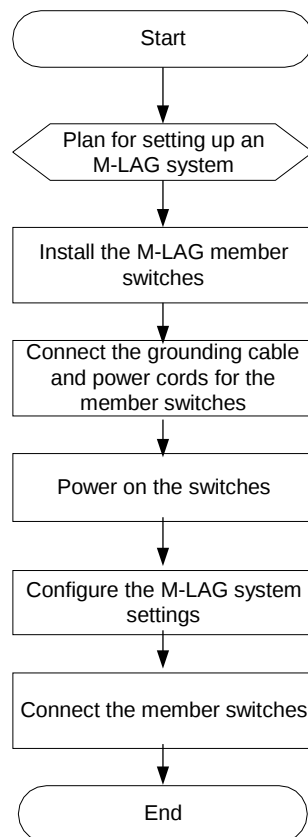


IMPORTANT:

- In Release 6635 and earlier, M-LAG is called DRNI and uses the DRNI set of command keywords in the CLI.
- In Release 6710 and later, the device supports both the M-LAG set and DRNI set of command keywords in the CLI by default. The two sets of commands are consistent in the service configuration methods, functions, and output, with only differences in the command keywords.

M-LAG system setup flowchart

Figure5-1 M-LAG system setup flowchart



To set up an M-LAG system:

Step	Description
1. Plan for setting up the M-LAG system.	Plan for setting up the M-LAG system based on the network and device conditions: • Determine the installation locations of the switches. • Reserve physical ports for M-LAG connections. • Plan the cable connection scheme. For more information, see "Planning for setting up an M-LAG system."
2. Install M-LAG member switches.	See "Installing the switch in a 19-inch rack" .
3. Connect grounding cable and power cords for the member switches.	See "Grounding the switch" and "Connecting the power cords."
4. Power on the switches.	N/A
5. Connect the member switches.	Select cables or transceiver modules and optical fibers matching the rate of the physical ports of the peer link and keepalive link for connection.

Planning for setting up an M-LAG system

Determining device installation locations

An M-LAG system can be set up with only two devices. Reserve sufficient space in the rack for installation of the devices.

You can place the two switches in one cabinet. Alternatively, you can install the switches in two cabinets if you're seeking a top-of-rack access solution in the data center.

Reserving physical ports for M-LAG connection

To set up an M-LAG system, you must establish a peer link and a keepalive link between the two devices.

The M-LAG member devices exchange protocol packets and transmit data traffic over the peer link. An M-LAG system has only one peer link. You can create a peer-link interface on each M-LAG member device, and the link between the two peer-link interfaces is the peer link.

The M-LAG member devices exchange keepalive packets over the keepalive link to detect multi-active collisions when the peer link is down.

Peer link

In addition to protocol packets, the peer link also transmits data packets between the M-LAG member devices when an uplink fails. When you set up the peer link, follow these restrictions and guidelines:

- Configure the peer-link aggregation group as follows:
 - If an M-LAG member device is a fixed-port device with interface expansion modules, assign ports from multiple interface expansion modules to the aggregation group for the peer-link interface. Make sure at least one member port resides on a different slot than the uplink interfaces.

- If an M-LAG member device is a fixed-port device, assign at least two physical interfaces to the aggregation group for the peer-link interface.
- The member ports in the aggregation group for the peer-link interface must have the same speed.
- If an M-LAG system is attached to a large number of servers by using non-M-LAG interfaces, take the size of the traffic sent among those servers into account when you determine the bandwidth of the peer link.

Keepalive link

The M-LAG member devices exchange keepalive packets over the keepalive link to detect multi-active collisions when the peer link is down.

As a best practice, establish a dedicated direct link between two M-LAG member devices as a keepalive link. Do not use the keepalive link for any other purposes. Make sure the M-LAG member devices have Layer 2 and Layer 3 connectivity to each other over the keepalive link.

You can use management Ethernet interfaces, Layer 3 Ethernet interfaces, Layer 3 aggregate interfaces, or interfaces with a VPN instance bound to set up the keepalive link.

As a best practice, do not use VLAN interfaces for keepalive link setup. If you have to use VLAN interfaces, remove the peer-link interfaces from the related VLANs to avoid loops.

On a device with interface expansion modules, do not use the same module to provide interfaces for setting up the keepalive link and peer link.

Planning the cable connection scheme

Select cables or transceiver modules and optical fibers matching the rate of physical ports of the peer link and the keepalive link for connection.

Cables are short but with high performance and stability, suitable for short-distance connections in the equipment room. Transceiver modules and optical fibers can be combined flexibly and is suitable for longer distance connections.

This following section describes several cable connection schemes that use 100G physical ports for the peer link connection and 25G physical ports for the keepalive link connection, with matching cables or transceiver module and optical fibers.

NOTE:

The physical port locations in the following figures are for illustration only.

Connecting the member switches in one rack

If two M-LAG member devices are installed in the same rack, use the following connection method to connect them as a best practice.

Figure5-2 Connecting two M-LAG member devices are installed in the same rack

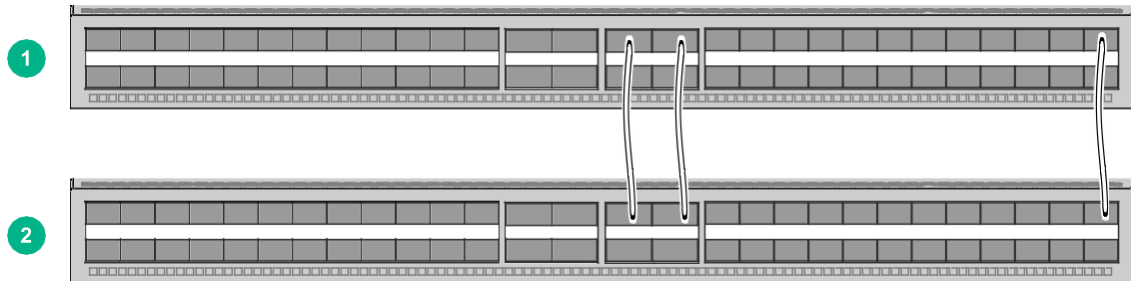
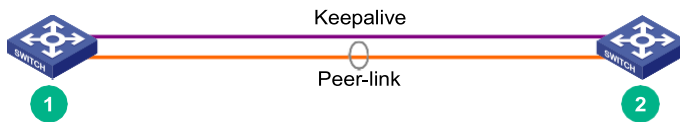


Figure5-3 Connection topology of two M-LAG member devices in the same rack



Top of rack connection scheme

You can install M-LAG member switches in two different racks side by side to deploy a top of rack (ToR) solution as shown in Figure5-4. Use transceiver modules and optical fibers for connection if a large distance exists between the member switches.

Figure5-4 Top of rack connection scheme



Configuring the M-LAG system settings

After you install the M-LAG member switches, start and log in to each member switch to configure basic M-LAG system settings, including:

- M-LAG system MAC address.
- M-LAG system ID.
- M-LAG system priority.
- Peer-link interface settings.
- Keepalive parameters.

Restrictions and guidelines

You can set up an M-LAG system with only two member devices. For the M-LAG member devices to be identified as a single M-LAG system, you must configure the same M-LAG system MAC address and M-LAG system priority for them. To distinguish between the two member devices, assign them different M-LAG system IDs.

Make sure the MAC address of the M-LAG system is unique.

For correct packet forwarding, delete M-LAG configuration from an M-LAG member device if it leaves its M-LAG system.

When you bulk shut down physical interfaces on an M-LAG member device for service changes or hardware replacement, shut down the physical interfaces used for keepalive detection prior to the physical member ports of the peer-link interface. If you fail to do so, link flapping will occur on the member ports of M-LAG interfaces.

You must configure the keepalive link interfaces (including physical ports and logical interfaces) as M-LAG reserved interfaces. This ensures that these interfaces will not be MAD down when the peer link fails.

Connecting the M-LAG member switches

CAUTION:

Wear an ESD wrist strap when you connect the M-LAG member switches. Make sure the strap makes good skin contact and is reliably grounded.

Connect the M-LAG member switches based on the network topology and cable connection scheme. For the installation method and restrictions and guidelines for connecting cables or transceiver modules and optical fibers, see the installation guide for them.

Verifying the configuration

To verify the running status of the M-LAG system:

1. Create a Layer 3 interface on a member device, assign it an IP address, and make sure the device and the remote network management station can reach each other.
2. Use Telnet or SNMP to access the device remotely.
3. Display the running status of the M-LAG system by using the **display** commands in any view.

Table5-1 Displaying and maintaining M-LAG system configuration and running status

Task	Command
Display M-LAG member device role information.	display m-lag role
Display M-LAG interface summary information.	display m-lag summary
Display M-LAG system information.	display m-lag system
Display detailed information about M-LAG interfaces.	display m-lag verbose [interface <i>interface-number</i>]

CAUTION:

- In an M-LAG system, all management Ethernet ports on the primary and secondary devices are available for use. From the perspective of the network management system, the two devices in the M-LAG system are independent and you must log in and manage them separately.
- To prevent network failures caused by M-LAG system splitting, configure HA after the M-LAG system is set up.

6 Maintenance and troubleshooting

Power module failure

Symptom

For an LSVM1AC650 or LSVM1DC650 power module, the power module status LED on the power module is not steady green or flashing green.

For an SW-A-PSR550-12A-B or SW-B-PSR550-12A-B power module, the power module status LED on the power module is not steady green.

Solution

To resolve the issue:

1. Verify that the power cord is connected correctly.
2. Verify that the power source is as required by the switch.
3. Verify that the operating temperature of the switch is in the acceptable range and the power module has good ventilation.
4. If the issue persists, contact Intelbras Support.

To replace a power module, see "[Installing/removing power modules](#)."

Fan tray failure

CAUTION:

The SDC 5850-2S-32H switch have five fan tray slots. To replace failed fan trays on an operating switch, follow these guidelines:

- If multiple fan trays fail on an operating SDC 5850-2S-32H switch, do not remove the fan trays at the same time. Replace the fan trays one after another and finish replacing a fan tray within 3 minutes.
-

Symptom

- The status LED on an LSWM1FANSA, LSWM1FANSA-SN, LSWM1FANSAB, or LSWM1FANSAB-SN fan tray is steady orange and the system outputs alarm messages.
- The status LED on an LSWM1BFANSC, LSWM1BFANSC-SN, LSWM1BFANSCB, or LSWM1BFANSCB-SN fan tray is steady yellow and the system outputs alarm messages.
- The status LED on a FAN-40B-1-C or FAN-40F-1-D fan tray is steady red and the system outputs alarm messages.

Solution

See "[Installing/removing fan trays](#)" to replace the fan tray. If the problem persists, contact Intelbras Support.

Configuration terminal display problems

No display

Symptom

The configuration terminal displays nothing when the switch is powered on.

Solution

To resolve the issue:

1. Verify that the power system is operating correctly.
2. Verify that the console cable is connected correctly.
3. Verify that the console cable does not have any problems and the terminal settings are correct.
4. If the issue persists, contact Intelbras Support.

Garbled display

Symptom

The configuration terminal has a garbled display.

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.

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.
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