Hardware Installation Manual

AudioCodes MediaPack Analog Gateway Series

MP-1288

High-Density Analog Media Gateway

audiocodes

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Notes and Warnings

Read and adhere to all warning statements in this document before installing the device.

This device is considered as IPX0 non-water ingress protected and therefore, must be installed only indoors.

The Ethernet port interface cabling must be shielded and routed only indoors.

The device must be connected to a grounded power outlet.

Routing of FXS telephony cables: Routing FXS telephony cables outdoors can be done only in conjunction with a three-electrode Gas Discharge Tube (GDT) rated at 350V located at the entry point of the two-wire into the building, and properly grounded. When done correctly, the installation will meet ITU-T K.21 requirements.

Caution Electrical Shock: Do not open or disassemble this device. The device carries high voltage and contact with internal components may expose you to electrical shock and bodily harm.

The device must be installed and serviced only by qualified service personnel.

The device must be installed only in restricted access locations that are compliant with ETS 300 253 guidelines where equipotential bonding has been implemented.

Disconnect the device from the mains and Telephone Network Voltage (TNV) before servicing.

For AC powered models, use only the AC power cord that is supplied with the device to connect to the power source.

Related Documentation

Document Name
Datasheet
MP-1288 Media Gateway User's Manual

Document Revision Record

LTRT	Description
28020	Initial document release.
28021	Cable anchor clip for power cord; adding FXS blade procedure (removing connector covers).
28022	Physical dimensions updated; warning bulletin for 19-inch rack cabinet.
28023	AC power cable warning (Japanese).
28024	REN 3 update.
28025	Lifeline activation only upon power outage; FXS off-hook current.
28026	Fan tray section and air filter replacement section updated.
28027	Off-hook loop current and ring voltage updated regarding ports.
28028	Power surge warning updated.
28029	Air filter replacement statement.
28030	Logo updated.
28031	DC power supply added; package items updated; airflow illustration added.
28032	Note removed from environmental specifications.
28033	Off-hook loop current updated.
28034	Duration of press for reset to defaults; trademarks.
28035	Power Supply module hardware revisions note bulletin.
28037	Device and CPU module replacement.
28038	Rack shelf for 19-inch mounting.
28039	EN 55035 replaced by EN 55035

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1 Introduction

This document provides a hardware description of AudioCodes MP-1288 Analog Media Gateway (hereafter referred to as device) and step-by-step procedures for mounting and cabling the device.

The device supports the following:

- Up to 288 FXS ports, 72 FXS ports per FXS blade (can house up to four FXS blades)
- Two 100/1000 Base-T Gigabit Ethernet ports
- Fan Tray module
- 1+1 AC or DC Power Supply modules

Hardware configurations may change without notice. Currently available hardware configurations are listed in AudioCodes Price Book. For available hardware configurations, contact your AudioCodes sales representative.

2 Unpacking the Device

Follow the procedure below for unpacking the carton in which the device is shipped.

➢ **To unpack the device:**

1. Open the carton and remove packing materials.
2. Remove the chassis from the carton.
3. Check that there is no equipment damage.
4. Ensure that in addition to the chassis, the package contains the following items:
   - 2 x front-mounting brackets for 19-inch rack mounting
   - 1 x RJ-45 to DB-9 serial cable adapter for serial communication
   - For AC-powered models: 2 x AC power cords
   - For DC-powered models: 2 x DC terminal blocks
   - 1 x grounding lug
5. Check, retain and process any documents.

If there are any damaged or missing items, notify your AudioCodes sales representative.

3 Physical Description

This section provides a physical description of the device.

Physical Dimensions and Operating Environment

The device's physical dimensions and operating environment are listed in the following table:

Table 3-1: Physical Dimensions and Operating Environment

Physical Specification	Description
Dimensions (H x W x D)	3U high, 19-inch rack wide 132.5 x 438 x 482.5 mm (5.22 x 17.24 x 19 inches)
Weight	21 kg (46.3 lbs.) for fully-populated chassis
Environmental	■ Operational: 0 to 40°C (41 to 104°F) ■ Storage: -40 to 70°C (-40 to 158°F) ■ Humidity: 5 to 90% non-condensing ■ Over-voltage protection and surge immunity: ITU-T K.21 (basic) compliant

Front Panel Description

The device's front panel is shown in the following figure and described in the subsequent table.

Figure 3-1: Front Panel

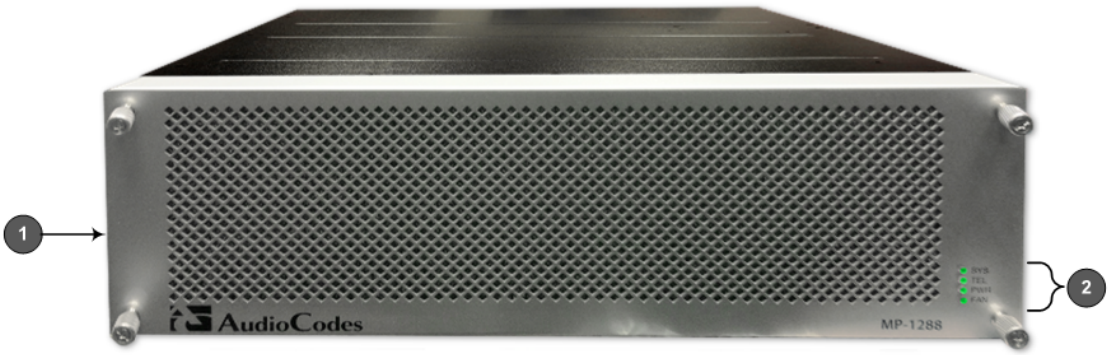


Table 3-2: Front Panel Description

Item #	Label	Description
1	-	Fan Tray cover. For more information, see Fan Tray on page 6.
2	SYS / TEL / PWR / FAN	Front-panel LEDs. For more information, see LED Descriptions below.

LED Descriptions

This section describes the LEDs on the front panel of the chassis.

SYS LED

The SYS LED indicates the device's operating status, as described in the following table.

Table 3-3: SYS LED Description

Color	State	Description
Green	On	LED lit as a result of one of the following: ■ Device is operating normally ■ During first stage of boot up when device is powered on
Orange	On	Chassis is approaching high temperature threshold, but not yet critical
Red	On	LED lit as a result of one of the following: ■ Fault detected in CPU module ■ Incompatible or faulty software version (.cmp file) detected during boot up ■ Approaching critical high temperature threshold
	Off	No power

TEL LED

The TEL LED indicates the status of the FXS blades, as described in the following table.

Table 3-4: TEL LED Description

Color	State	Description
Green	On	LED lit as a result of one of the following:

Color	State	Description
		■ During booting up phase ■ During normal operation, indicating normal FXS blade operation
Orange	On	At least one DSP hasreached the high temperature threshold.
Red	On	LED lit as a result of one of the following: ■ During initial phase of power-up ■ Failure detected in at least one FXS blade ■ No FXS blades detected in the chassis
-	Off	No power.

PWR LED

The PWR LED indicates the power status, as described in the following table.

Table 3-5: PWR LED Description

Color	State	Description
Green	On	Chassis receiving power and Power Supply modules are functioning normally. If the device is configured to use only one Power Supply module, the LED is lit if at least one of them is operating normally.
Red	On	One of the Power Supply modules is faulty (if device is configured to use two Power Supply modules).
-	Off	No power received by the device.

FAN LED

The FAN LED indicates the status of the Fan Tray module, as described in the following table.

Table 3-6: FAN LED Description

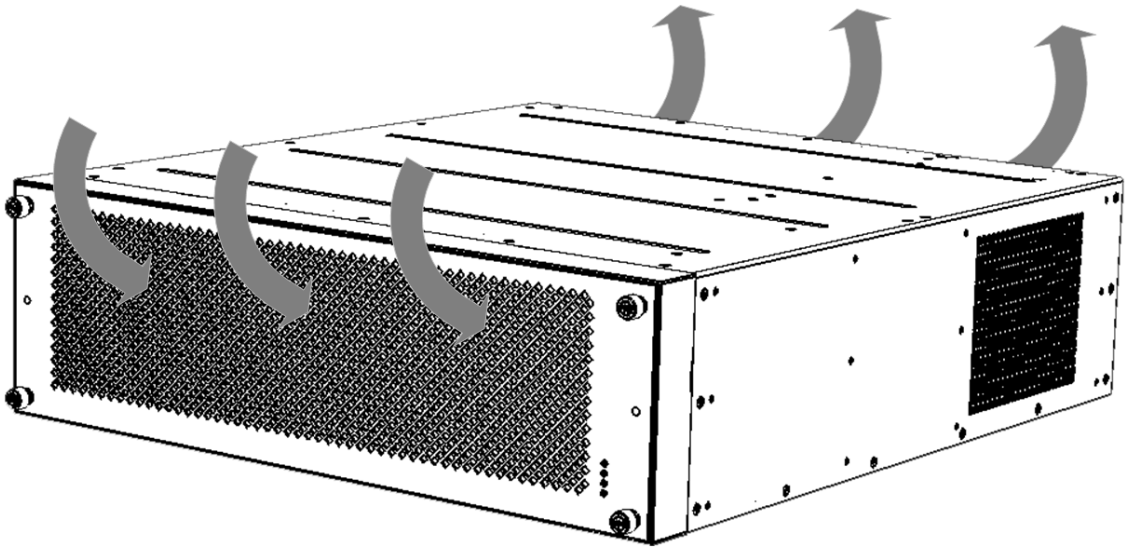
Color	State	Description
Green	**On**	Fans are functioning normally.
Red	**On**	At least one fan in the Fan Tray module is faulty.
-	**Off**	No power.

Fan Tray

The device provides a Fan Tray module, located on the front panel, which is concealed by a fan tray cover. The Fan Tray module contains six individual fans which cool the device's internal components to maintain an acceptable operating temperature inside the chassis.

The Fan Tray module draws air in from the outside through the perforated fan tray cover on the front panel (see following figure). A replaceable air filter, located inside the fan tray cover, removes dust particles from the sucked in air. The incoming air passes through the chassis, cooling the internal components and then exits the chassis through the vents on the rear panel (see following figure).

Figure 3-2: Airflow Directions through Chassis



When installing the chassis, make sure there is sufficient front- and rear-side clearance for proper airflow into and out of the chassis.

Figure 3-3: Fan Tray Module

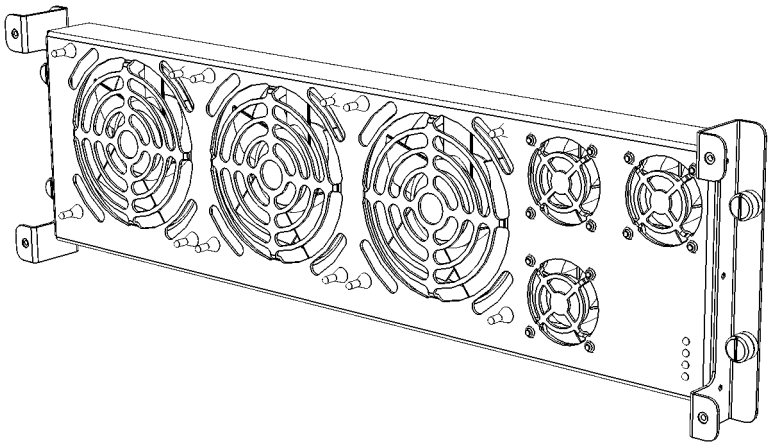
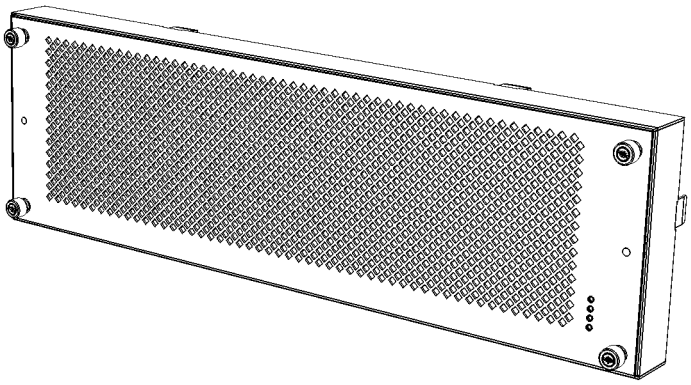


Figure 3-4: Fan Tray Cover



The Fan Tray provides a LED indicating the operating status of the Fan Tray module. For more information, see FAN LED on page 5.

During system operation, the inner ambient temperature is continuously monitored. Upon excessive temperature conditions, an SNMP Temperature Alarm is generated (acBoardTemperatureAlarm). Upon a speed degradation or full stop of any fan, an SNMP Fan Alarm (acFanTrayAlarm) is generated.

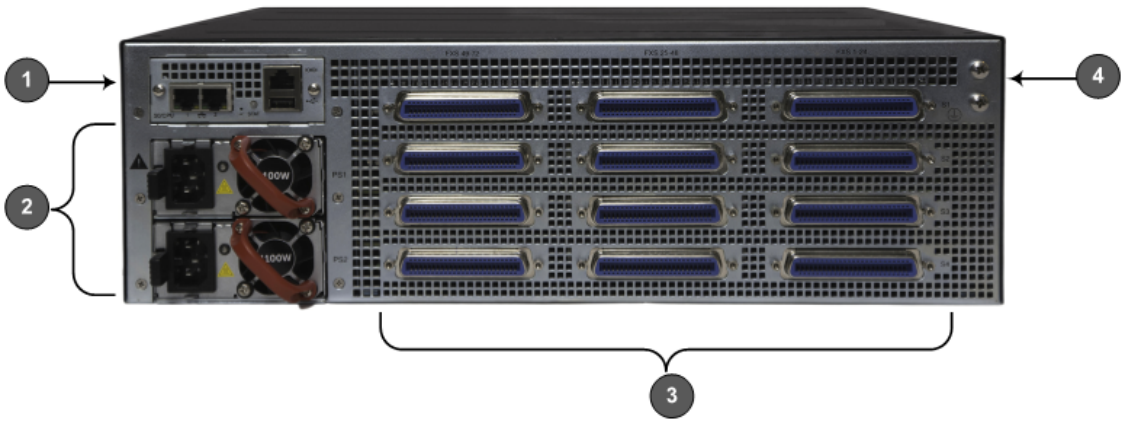
The Fan Tray module is hot-swappable, allowing you to replace it even when the device is powered on. The Fan Tray module, fan tray cover, and air filter are available as field-replaceable units (FRU). For replacing the Fan Tray module, see Replacing the Fan Tray Module on page 39. For replacing the air filter, see Replacing the Air Filter on page 41.

For replacing the Fan Tray module or any of its components, perform only the instructions as described in Replacing the Fan Tray Module on page 39.

Rear Panel Description

The device's rear panel is shown in the following figure and described in the subsequent table.

Figure 3-5: Rear Panel Description



The figure above is used only as an example. The number of installed FXS blades, and number and type of Power Supply modules (AC or DC) depend on your ordered hardware configuration.

Table 3-7: Rear Panel Description

Item #	Label	Description
1	CPU	CPU module providing the central processing unit and various network port interfaces. For more information, see CPU Module below.
2	PS1 / PS2	Power Supply modules. For more information, see Power Supply Module on page 12.
3	Blades: S1 / S2 / S3 / S4 FXS Ports: FXS 1-24 / FXS 25-48 / FXS 49-72	FXS blades providing FXS port interfaces. For more information, see FXS Blades on the next page.
4	⏚	Protective grounding for connecting a grounding lug for chassis ground connection for ESD-preventive equipment or a grounding wire.

CPU Module

The CPU module provides the central processing unit and port interfaces, as shown in the following figure and described in the subsequent table.

Figure 3-6: CPU Module

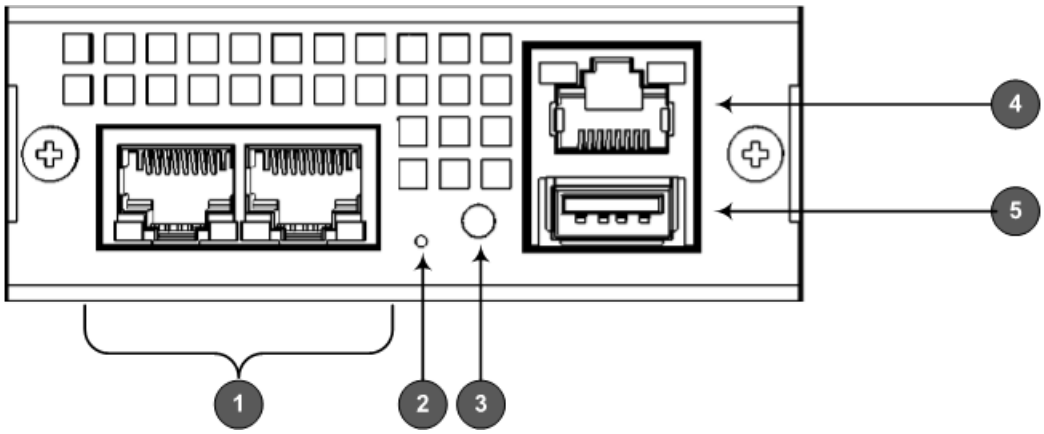


Table 3-8: CPU Module Description

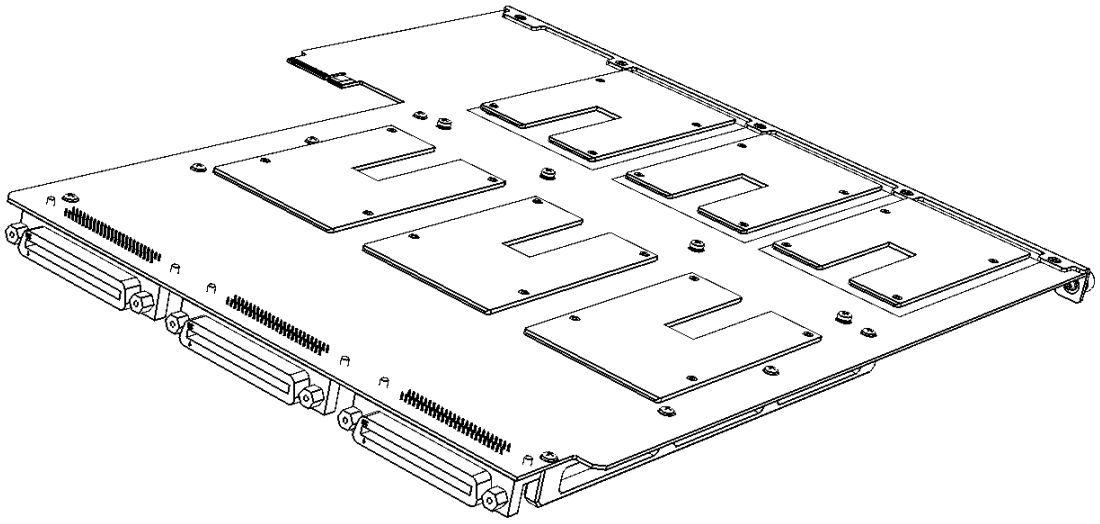
Item #	Label	Description
1		Two 100/1000Base-T (Gigabit) Ethernet ports (RJ-45) for connecting to the IP network. The ports support the following features: ■ 1+1 Ethernet port redundancy ■ Half- and full-duplex modes ■ Auto-negotiation ■ Straight or crossover cable detection The ports provide LEDs to indicate Ethernet status. For more information, see Ethernet LEDs on page 14.
2		**Reset pinhole button** for resetting the device and restoring factory defaults**:** ■ **To reset the device:** Using a paper clip or any other similar pointed object, press and hold down the button for at least 2 seconds (but no more than 10 seconds). ■ **To restore the device to factory defaults:** Using a paper clip or any other similar pointed object, press and hold down the button for at least 15 seconds (but no more than 30 seconds).
3	STAT	LED indicating the status of the CPU module. For more information, see STAT LED on page 14.
4	|O|O|	RJ-45 port for RS-232 serial communication.
5		USB Type-A port which can be used, for example, for various storage capabilities to an external USB hard drive or flash disk (disk on key).

FXS Blades

The FXS blade (referred to as Module in the device's management interfaces) provides the FXS port interfaces. Each blade provides three FXS port connectors - 50-pin Telco connector (Centronics type). Each connector provides 24 FXS interfaces and therefore, each blade provides up to 72 FXS interfaces (3 x 24 FXS). The device can be housed with up to four FXS blades thereby, supporting up to 288 FXS port interfaces (4 blades x 72 FXS). The FXS blades are available as spare parts. For replacing FXS blades, see Replacing the Fan Tray Module on page 39.

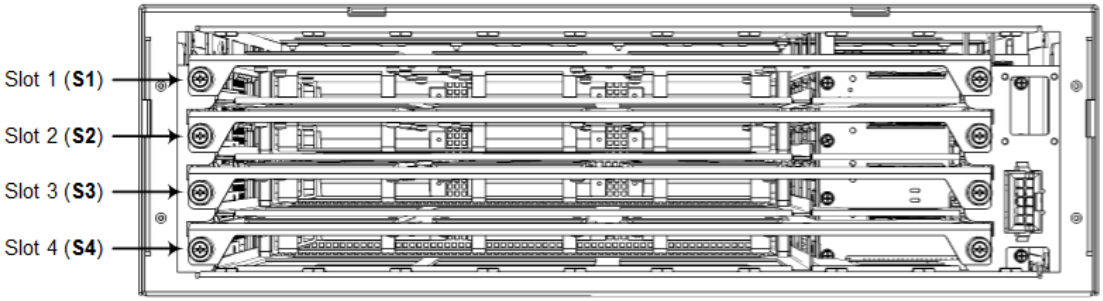
Each FXS blade provides a LED on the front and rear panel, as described in FXS LEDs on page 14.

Figure 3-7: FXS Blade Showing Three FXS Telco Connectors



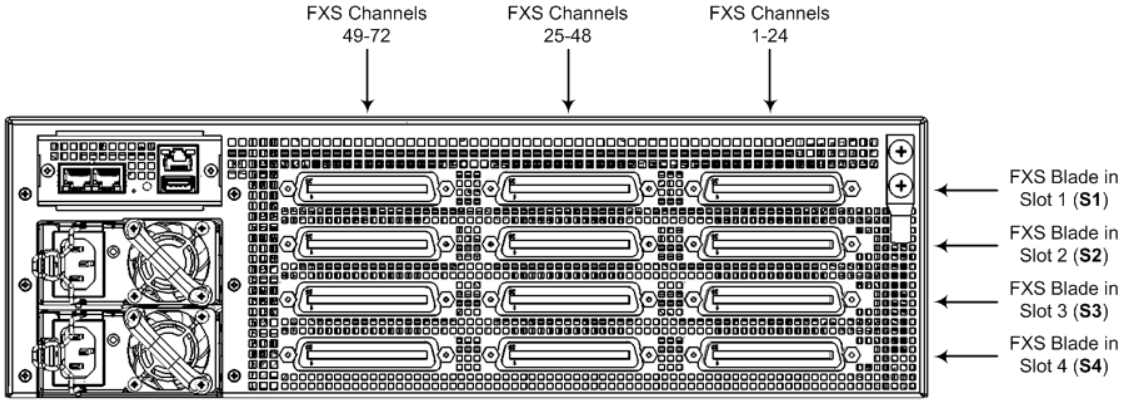
The chassis slot assignment for the FXS blades is shown in the following figure (front panel). Note that the slot labels (S1, S2, S3 and S4) are located on the rear panel.

Figure 3-8: Chassis Slot Assignment for FXS Blades (Front Panel)



The FXS channel (port) number range of each FXS connector on an FXS blade is indicated by the labels (FXS 1-24, FXS 25-48, and FXS 49-72) located on the rear panel above the FXS blades, as shown in the following figure:

Figure 3-9: FXS Blades and FXS Channels per FXS Connector (Rear Panel)



The following table lists the specifications of the device's FXS ports.

Table 3-9: FXS Port Specifications

Specification	Description
Analog Lifeline (PSTN Fallback)	The FXS blade supports analog lifeline (PSTN Fallback). For more information, see Connecting the FXS Analog Lifeline on page 30.
Interface Type	FXS connection via 50-pin CHAMP connector
FXS Signaling Formats	In-band signaling DTMF (TIA 464B)
FXS Loop Impedance	Up to 1500 ohm (including phone impedance)
Off-hook Loop Current	■ 25 mA (maximum) on all ports ■ 35 mA (maximum) on the first (1) and last (24) ports per FXS connector. In other words, it applies to up to six ports per FXS Blade. This applies to emergency / elevator phones.
Ring Voltage (Sine)	■ 54 Vrms ■ 80 Vrms on six ports per FXS Blade (for emergency / elevator phones) **Note:** ■ Balanced ringing only. ■ Simultaneous ringing of 288 phones (72 per FXS Blade given REN 3 load)
Ring Frequency	25-100 Hz
Maximum Ringer Load	Ringer Equivalency Number (REN) 3
Caller ID	Bellcore GR-30-CORE Type 1 using Bell 202 FSK modulation, ETSI Type 1, NTT, Denmark, India, Brazil, British and DTMF ETSI CID (ETS 300-659-1)
Polarity Reversal / Wink	Immediate or smooth to prevent erroneous ringing
Metering Tones	12/16 KHz sinusoidal bursts; generation on FXS
Distinctive	By frequency (15-100 Hz) and cadence patterns

Specification	Description
Ringing	
Message Waiting Indication (MWI)	DC voltage generation (TIA/EIA-464-B); V23 FSK data; Stutter dial tone

Power Supply Module

The device can be powered from an AC or a DC power source. The type of power depends on your ordered hardware configuration.

AC Power Supply Module

For the AC-powered model, the device provides two AC Power Supply modules for load sharing and power redundancy. The power source is a standard electrical outlet providing AC power.

Power surge protection, caused for example from lightning, is also supported. For more information, see Grounding and Surge Protection on page 19.

The Power Supply module is available as a spare part. The Power Supply modules are hot-swappable and therefore, if only one needs to be replaced, it can be done while the device is receiving power from the working Power Supply module. For replacing Power Supply modules, see on page 50.

Figure 3-10: AC Power Supply Module

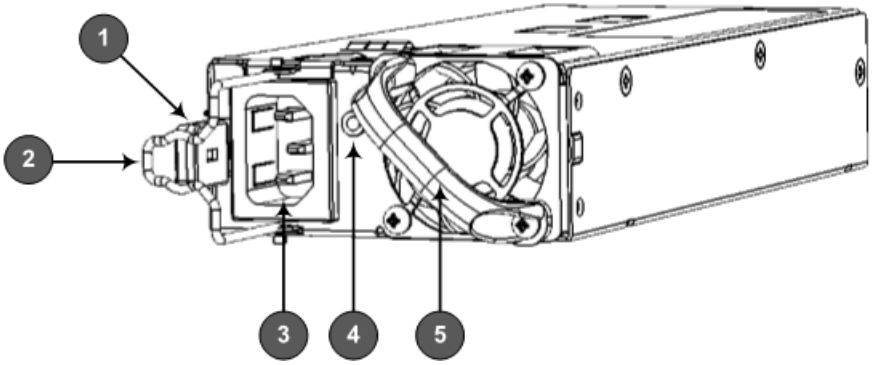


Table 3-10: AC Power Supply Module Description

Item #	Description
1	Release latch for releasing and securing module from / to chassis slot.
2	Power cord anchor clip.
3	3-Prong power inlet.

Item #	Description
4	LED for indicating power status. For more information, see Power Supply LED on page 16.
5	Handle for extracting and installing module.

The two Power Supply modules installed in the chassis must be of the **same** hardware revision. For more information, see the note in on page 50.

DC Power Supply Module

For the DC-powered model, the device provides two DC Power Supply modules for load sharing and power redundancy.

Power surge protection, caused for example from lightning, is also supported. For more information, see Grounding and Surge Protection on page 19.

The Power Supply module is available as a spare part. The Power Supply modules are hot-swappable and therefore, if only one needs to be replaced, it can be done while the device is receiving power from the working Power Supply module. For replacing Power Supply modules, see on page 50.

Figure 3-11: DC Power Supply Module

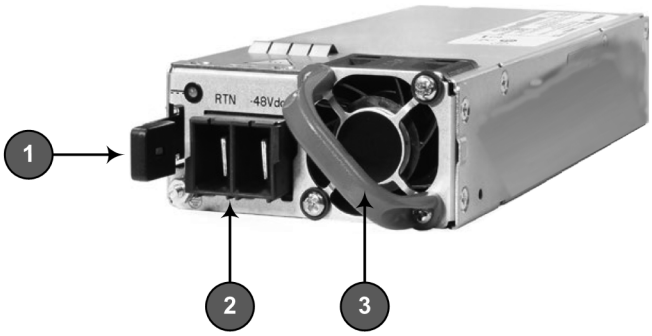


Table 3-11: DC Power Supply Module Description

Item #	Description
1	Release latch for releasing and securing module from / to chassis slot.
2	DC power inlet.
3	Handle for extracting and installing module.

LED Descriptions

This section describes the LEDs on the rear panel of the chassis.

Ethernet LEDs

Each Ethernet port on the CPU module provides a LED (located on its left) which indicates network connectivity status, as described in the following table.

Table 3-12: Ethernet LEDs Description

Color	State	Description
Green	On	Ethernet link established.
	Flashing	Data is being received or transmitted.
-	Off	No Ethernet link.

STAT LED

The STAT LED on the CPU module indicates the operating status of the CPU module, as described in the following table.

Table 3-13: STAT LED Description

Color	State	Description
Green	On	LED is lit because of one of the following: ■ Device is operating normally ■ During first stage of boot up when device is powered on
Orange	On	Chassis is approaching high-temperature threshold, but not yet critical
Red	On	LED is lit because of one of the following: ■ Fault detected in CPU module ■ Incompatible or faulty software version (.cmp file) detected during boot up ■ Approaching critical high-temperature threshold
-	Off	No power.

FXS LEDs

Each FXS blade provides two LEDs that indicate the status of the FXS blade, as described in the following table. Both LEDs indicate the same status information. One LED is located on its front panel and the other LED on its rear panel to the left of the left-most FXS port (labeled FXS 49-72), as shown in the following figures:

Figure 3-12: FXS LED Location on Front Panel per FXS Blade

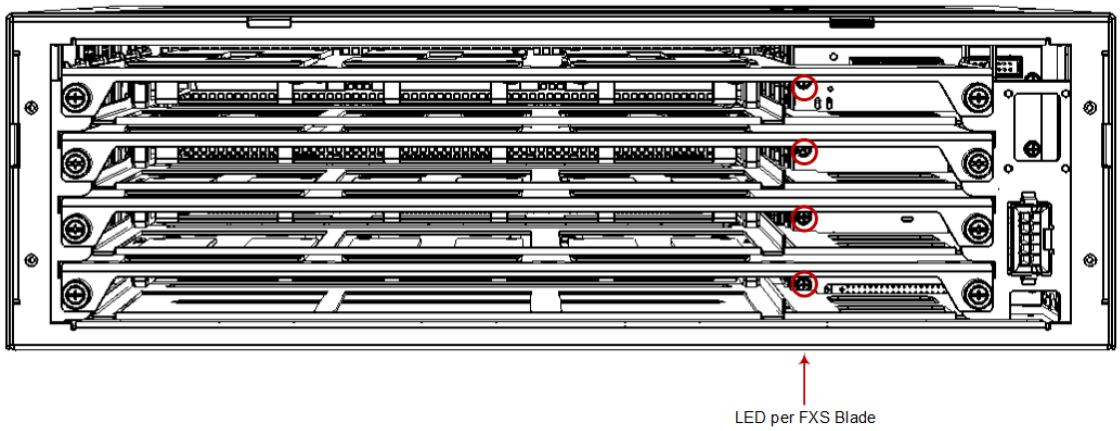


Figure 3-13: FXS LED Location on Rear Panel per FXS Blade

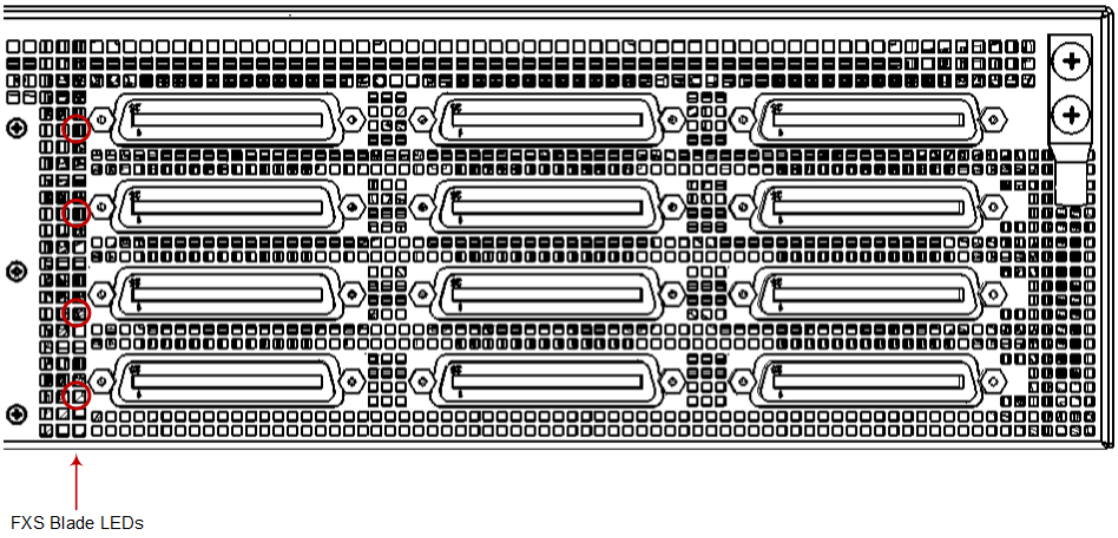


Table 3-14: FXS LEDs Description

Color	State	Description
Green	On	FXS blade initialization completed and is functioning normally.
Orange	On	Some (less than a third) FXS ports are out of service.
Red	On	FXS blade initialization has not completed or a failure detected in the FXS blade due to any of the following: ■ Multiple FXS ports (more than a third) are out of service ■ DSP failure
-	Off	No power.

Power Supply LED

The Power Supply module, located on the chassis rear panel, provides a LED which indicates the operating status of the module, as described in the following table.

Table 3-15: Power Supply Module LED Description

Color	State	Description
Green	On	Connected to power source, chassis receiving power, and Power Supply module's fan operating normally.
Amber	Flashing	Connected to power source, but chassis not receiving power or fault detected in Power Supply module's fan. If the chassis houses two Power Supply modules, but only one of them is connected to the power source, the LED on the Power Supply module that is not connected flashes amber.
-	Off	No power received from power source.

4 19-Inch Rack Mounting

The device is designed to be mounted in a standard 19-inch rack. Mounting is done by placing it on a pre-installed shelf (not supplied), and then securing it to the rack using front-mounting brackets (supplied).

At least two people are required to mount the device in the 19-inch rack.
Avertissements: Au moins deux personnes sont nécessaires pour monter l'appareil dans le bâti 19 pouces.

A fully-populated chassis weighs up to 21 kg (46.3 lbs.). The 19-inch rack cabinet must be able to withstand this weight.

In addition to the front-mounting brackets (supplied), the chassis must be mounted in the rack using a rack shelf (not supplied).

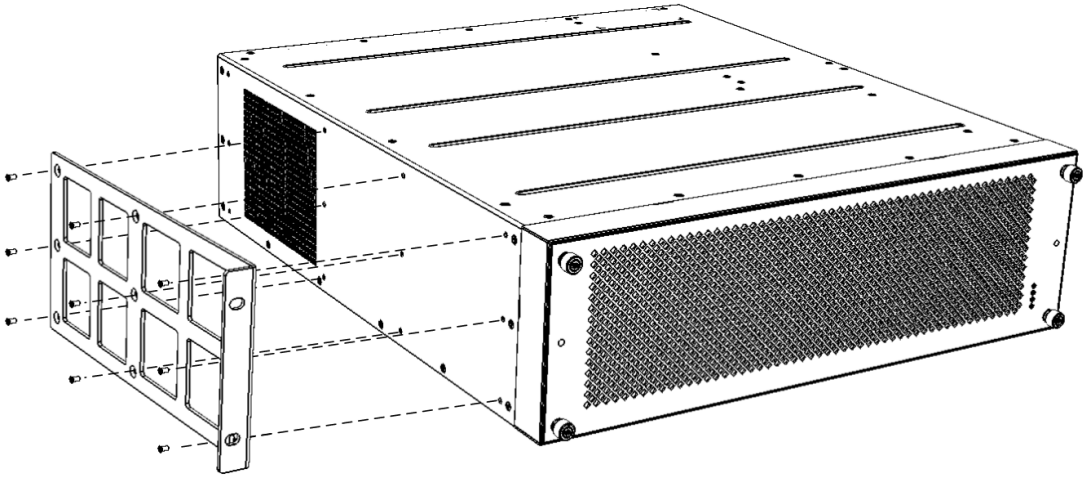
Rack Mount Safety Instructions: When installing the chassis in a rack, adhere the following safety instructions:

- Elevated Operating Temperature: If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient temperature. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (Ta) of 40°C (104°F).
- Reduced Air Flow: Installation of the equipment in a rack should be such that the amount of air flow required for safe operation on the equipment is not compromised.
- Mechanical Loading: Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
- Circuit Overloading: Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on over-current protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
- Reliable Earthing: Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g., use of power strips.)

➢ **To mount the device in a 19-inch rack:**

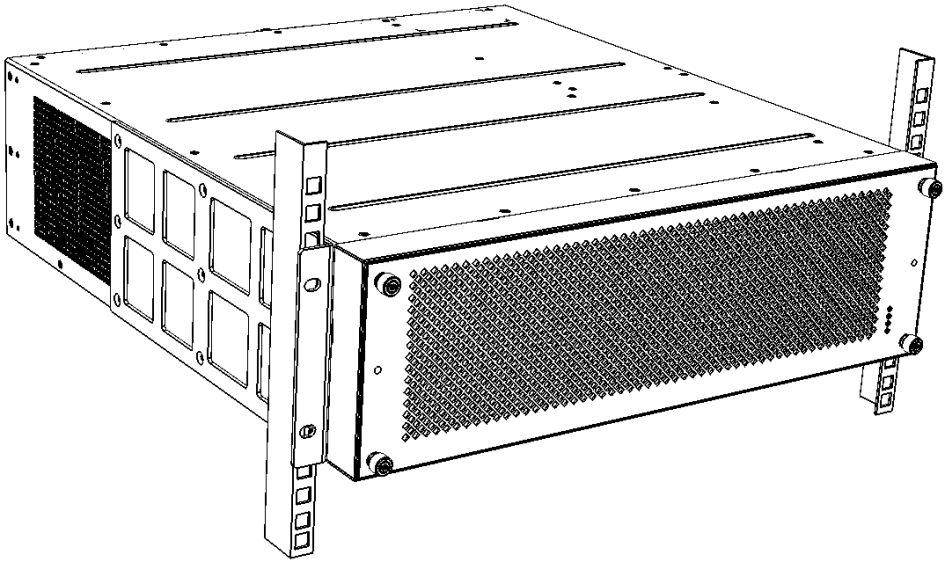
1. Attach the two front-mounting brackets (supplied) to both sides of the chassis, as shown in the following figure. Each bracket is secured to the chassis using 9 screws (supplied).

Figure 4-1: Attaching Mounting Brackets to Chassis



2. Install a shelf (not supplied) in the rack at the desired position. Make sure that it's secured to the rack's posts and horizontally level with the rack.
3. Lift the chassis with at least another person, and then from the front of the rack, place it gently on the shelf.
4. Gently push the chassis on to the shelf until the front-mounting brackets become flush against the front-rack posts and the brackets' holes (2 on each side) align with the holes of the rack posts, as shown in the following figure:

Figure 4-2: Front-Mounting Brackets Flush and Aligned with Front Rack Posts



5. Secure the two front-mounting brackets to the rack posts, using 19-inch rack bolts (not supplied). Each mounting bracket is secured to the rack by two bolts.

Make sure that the left and right front-mounting brackets are attached to the rack posts at the same level so that the chassis is in a horizontal position.

5 Cabling the Device

This section describes how to cable the device:

- Connecting to earth / ground – see Grounding and Surge Protection below
- Connecting to the LAN – see Connecting Ethernet Interfaces on page 21
- Connecting the FXS interfaces – see Connecting FXS Interfaces on page 22
- Connecting the FXS lifeline – see Connecting the FXS Analog Lifeline on page 30
- Connecting to a PC for serial communication – see Connecting the Serial Interface to a Computer on page 32
- Connecting to power – see Connecting to Power on page 33

Grounding and Surge Protection

The following procedure describes how to ground the device.

Grounding and Power Surge Protection:

- The device must be installed only in telecommunication sites / centers in compliance with ETS 300-253 requirements "Earthing and Bonding of Telecommunication Equipment in Telecommunication Centers".
- Prior to installation, earth loop impedance test must be performed by a certified electrician to ensure grounding suitability at the power outlet intended to feed the unit. It is essential that the impedance will be kept below 0.5 ohms!
- Proper grounding is crucial to ensure the effectiveness of the lightning protection, connect the device permanently to ground (as described in the procedure below). The device's grounding screw must be connected to the equipotential grounding bus bar located in the Telecommunication rack or installation site, using a wire of 6 mm^2 surface wire. If the device is installed in a rack with other equipment, the rack must be connected to the equipotential grounding bus bar of the Telecommunication room, using a stranded cable with surface area of 25 mm^2. The length of this cable must be as short as possible (no longer than 3 meters).

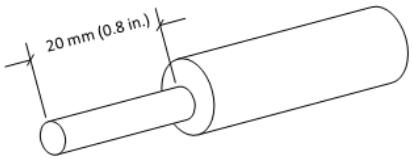
Protective Earthing:

- The equipment is classified as Class I EN 60950 and UL 60950 and must be earthed at all times (using an equipment-earthing conductor).
- Finland: "Laite on liltettava suojamaadoituskoskettimilla varustettuun pistorasiaan."
- Norway: "Apparatet rna tilkoples jordet stikkontakt."
- Sweden: "Apparaten skall anslutas till jordat uttag."

➢ **To connect the chassis to an earth ground:**

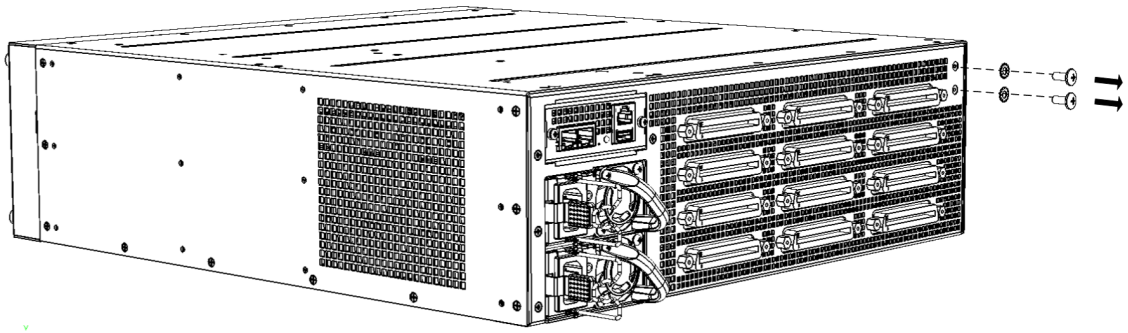
1. Prepare an adequate length (maximum 20 mm or 0.8 in.) of stranded grounding wire (16 AWG minimum size) for the ground connection, as shown in the following figure:

Figure 5-1: Stripped Grounding Wire



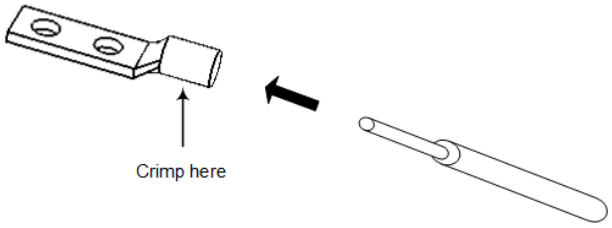
2. Using a Philips-head screwdriver, remove the two screws and their spring washers for attaching the grounding lug, located on the chassis' rear panel as shown in the following figure:

Figure 5-2: Removing Screws and Washers



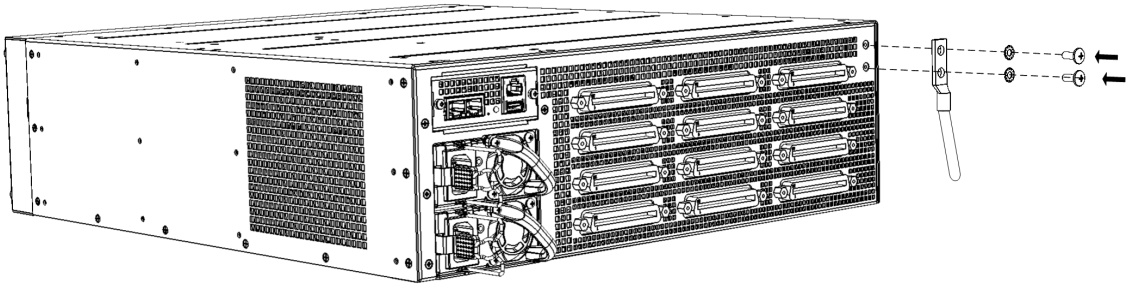
3. Insert one end of the grounding wire into the grounding lug (supplied), as shown in the following figure, and then use a crimping tool (not supplied) to secure the wire to the grounding lug:

Figure 5-3: Attaching Grounding Wire to Grounding Lug



4. Attach the grounding lug (supplied) to the chassis using the two screws.
5. Attach the grounding lug to the chassis, as shown in the following figure. Make sure that the spring washers are located between screw head and lug.

Figure 5-4: Attaching Grounding Lug to Chassis



6. Connect the other end of the grounding wire to the building protective earth. This should be in accordance with the regulations enforced in the country in which the device is installed.

Connecting Ethernet Interfaces

The device provides two 100/1000Base-T Gigabit Ethernet ports (RJ-45) for connecting to the IP network (e.g., LAN). The ports support half- and full-duplex modes, auto-negotiation, and straight or crossover cable detection.

The ports can operate as a pair (Ethernet Group) to provide 1+1 port redundancy, where one port serves as the active port while the other as standby. When the active port fails, the device switches to the standby port.

The cabling specifications and procedure for connecting the device to the LAN is as follows:

- Cable: Straight-through, Category (Cat) 5/5e/6 cable
- Connector: Standard RJ-45
- Connector Pinouts:

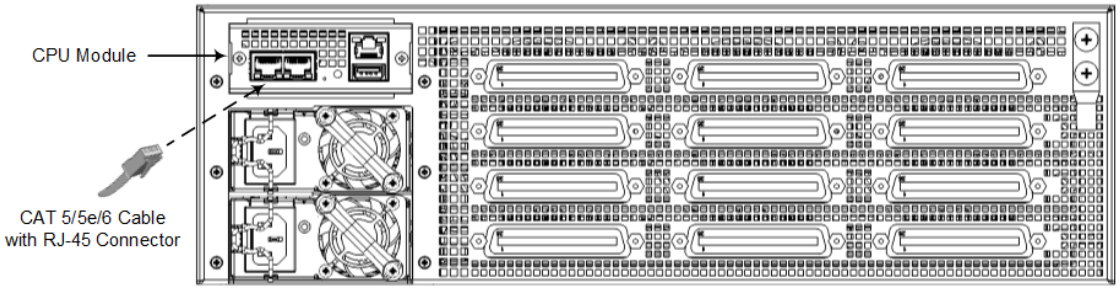
Table 5-1: RJ-45 Connector Pinouts for Ethernet Ports

Pin	Signal Name
1	Ethernet signal pair
2	
3	Ethernet signal pair
6	
4	Ethernet signal pair
5	
7	Ethernet signal pair
8	
Shield	Chassis ground

➢ **To connect the Ethernet interfaces:**

1. Connect the RJ-45 connector, at one end of a straight-through Cat 5e or Cat 6 cable, to one of the Ethernet ports (labeled) on the CPU module located on the chassis' rear panel, as shown in the following figure:

Figure 5-5: Connecting the LAN Ports



2. Connect the other end of the cable to your network.
3. For 1+1 Ethernet port redundancy, repeat steps 1 through 2 for the standby port. Make sure that you connect each port to a different network (but in the same subnet).

Connecting FXS Interfaces

The device interfaces with the FXS analog telephone equipment (e.g., fax machines, modems, or telephones) through the 50-pin Telco connectors provided on the FXS blades. For more information on the FXS blades, see FXS Blades on page 9.

Safety Notice:

- Make sure that the FXS ports are connected to the appropriate, external devices; otherwise, damage to the device may occur.
- FXS ports are considered TNV-2.

FXS Outdoor Cabling and Power Surge Protection:

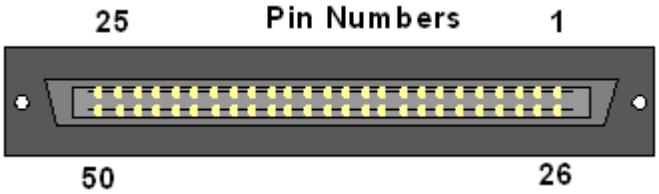
- The device includes an integrated secondary surge protection, but does not include primary telecom protection! When the FXS telephone lines are routed outside the building, additional protection - usually a 350V three-electrode Gas Discharge Tube (GDT) as described in ITU-T K.44 - must be provided at the entry point of the telecom wires into the building (usually on the main distribution frame / MDF), in conjunction with proper grounding. The center pin of the GDT (MDF grounding bar) must be connected to the equipotential grounding bus bar of the Telecommunication room.
- Failing to install primary surge protectors and failing to comply with the grounding instructions or any other installation instructions, may cause permanent damage to the device!
- The device complies with protection levels as required by EN 55035 / EN 300386. Higher levels of surges may cause damage to the device.
- To protect against electrical shock and fire, use a minimum of 26-AWG wire size to connect the FXS ports.

To configure the current (mA) that the device supplies to the FXS ports in off-hook state, use the EnhancedFXSLineCurrent parameter. Configuration is applicable only to the first and last ports (e.g., 1 and 24) on each FXS connector. For more information, refer to the User's Manual.

The FXS cabling specifications include the following:

- Cable: You can use any of the following cables:
  - AudioCodes orderable FXS Patch Panel (see Connecting FXS Interfaces using AudioCodes FXS Patch Panel on the next page)
  - AudioCodes orderable Centronics cable connector (10 m) to open leads, which needs to be connected to a distribution panel (see Connecting FXS Interfaces using Centronics Cable on page 28)
  - Third-party, main distribution frame (MDF) connector (see Connecting FXS Interfaces Directly to an MDF on page 29)
- Connector Type: 50-pin Telco

Figure 5-6: 50-pin Telco Connector



- Connector Pinouts:

Table 5-2: 50-pin Telco Connector Pinouts

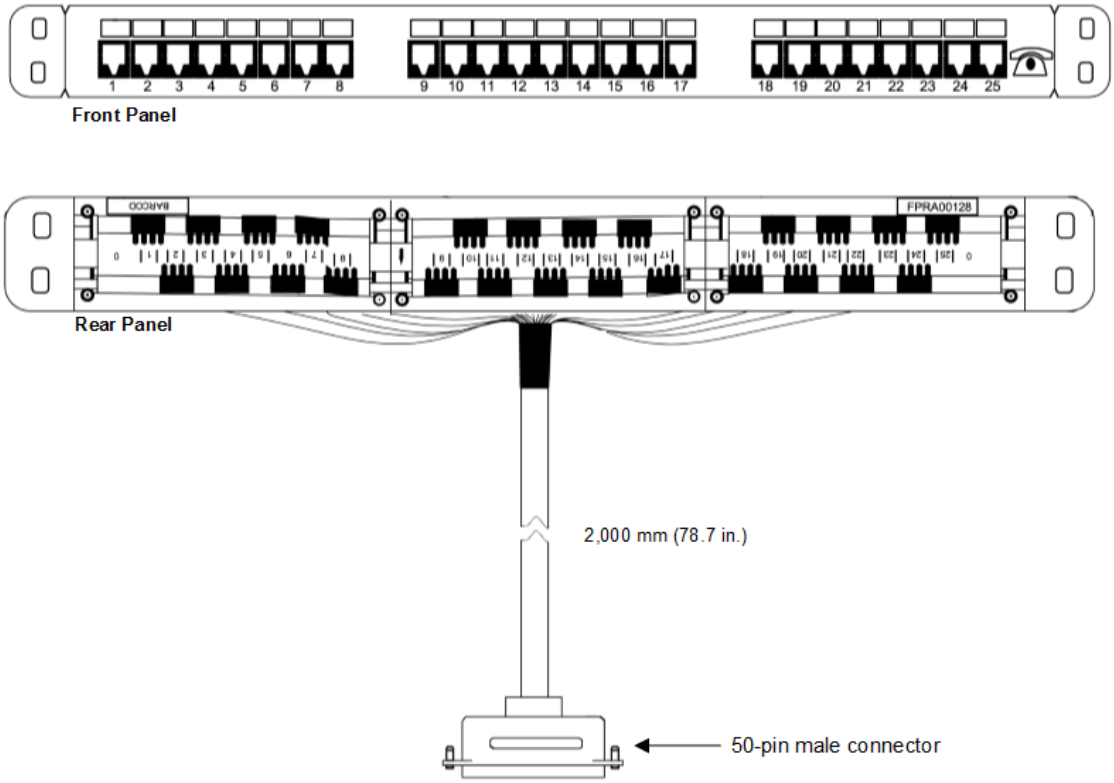
FXS Phone Channel (Ports)	Connector Pins
1	1/26
2	2/27
3	3/28
4	4/29
5	5/30
6	6/31
7	7/32
8	8/33

FXS Phone Channel (Ports)	Connector Pins
9	9/34
10	10/35
11	11/36
12	12/37
13	13/38
14	14/39
15	15/40
16	16/41
17	17/42
18	18/43
19	19/44
20	20/45
21	21/46
22	22/47
23	23/48
24	24/49
25 for Analog Lifeline	25/50 For analog Lifeline cabling, see Connecting the FXS Analog Lifeline on page 30.

Connecting FXS Interfaces using AudioCodes FXS Patch Panel

You can purchase AudioCodes' FXS Patch Panel (shown in the following figure) to connect the FXS interfaces to FXS equipment. The patch panel can be mounted in a 19-inch rack using integrated mounting brackets and provides a 2-meter (78.7 in.) extension cable with a 50-pin male connector for connection to the FXS port on the FXS blade. All incoming wires from the 50-pin Telco connector are terminated to the back of the patch panel. The FXS endpoints (e.g. telephones) can be plugged into the corresponding RJ-11 jacks on the front of the patch panel.

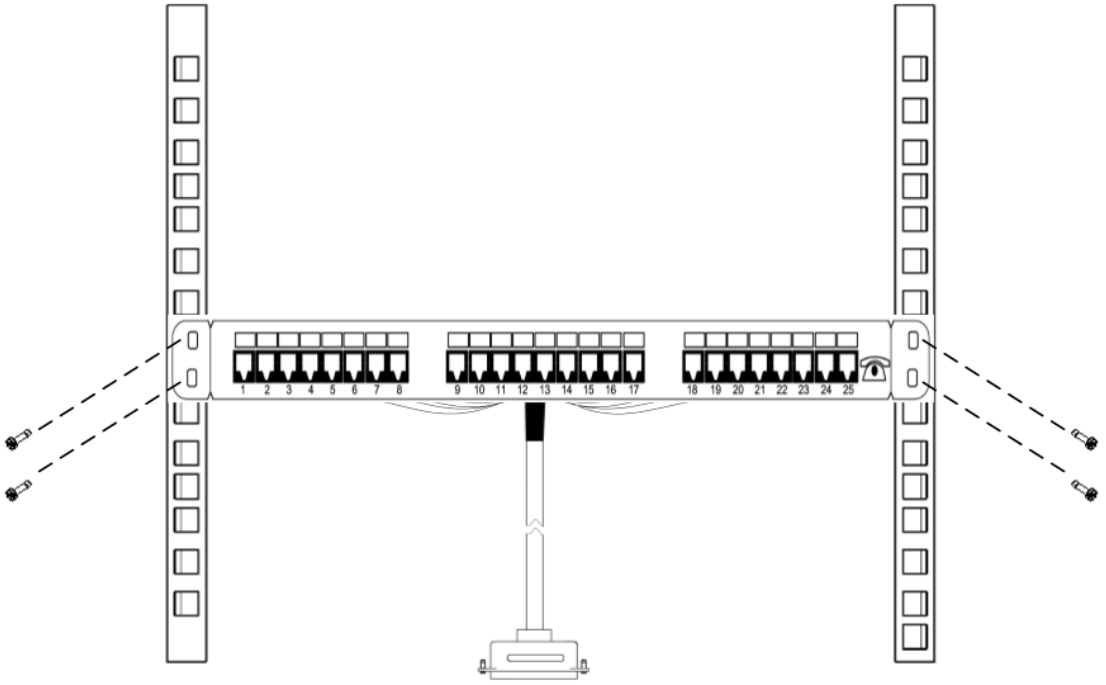
Figure 5-7: Orderable FXS Patch Panel



➢ **To connect the FXS interfaces using the FXS Patch Panel:**

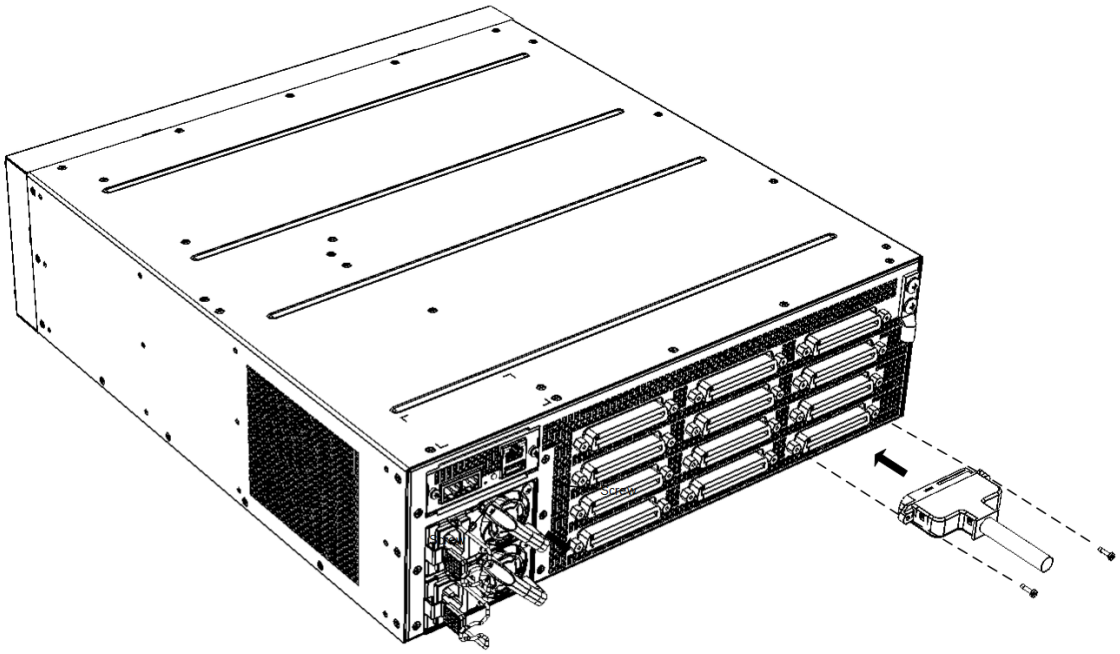
1. Mount the Patch Panel in a 19-inch rack, using the integrated mounting brackets located on either side of the Patch Panel. Use four 19-inch rack bolts (not supplied) to securely attach the brackets to the front-rack posts. Make sure that the left and right mounting brackets are attached to the rack posts at the same level so that the patch panel is supported in a horizontal position.

Figure 5-8: Mounting Patch Panel in Rack



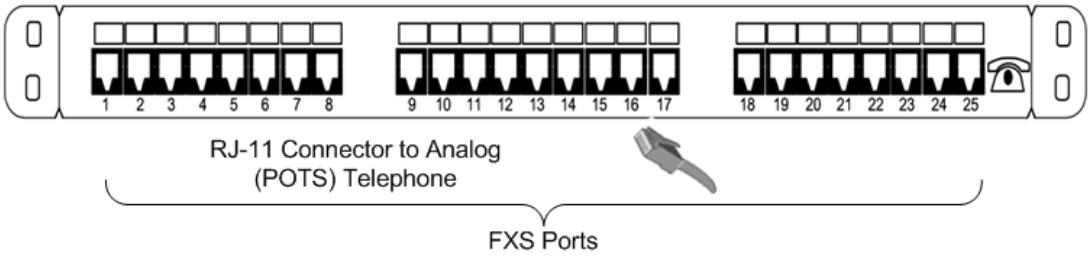
2. Connect the Patch Panel's 50-pin male connector to one of the FXS blade's 50-pin female Telco connectors located on the chassis' rear panel, and secure the connector with the two captive screws located on either side of the connector, using a flat-head screwdriver:

Figure 5-9: Connecting 50-Pin Telco Connector to Port on FXS Blade



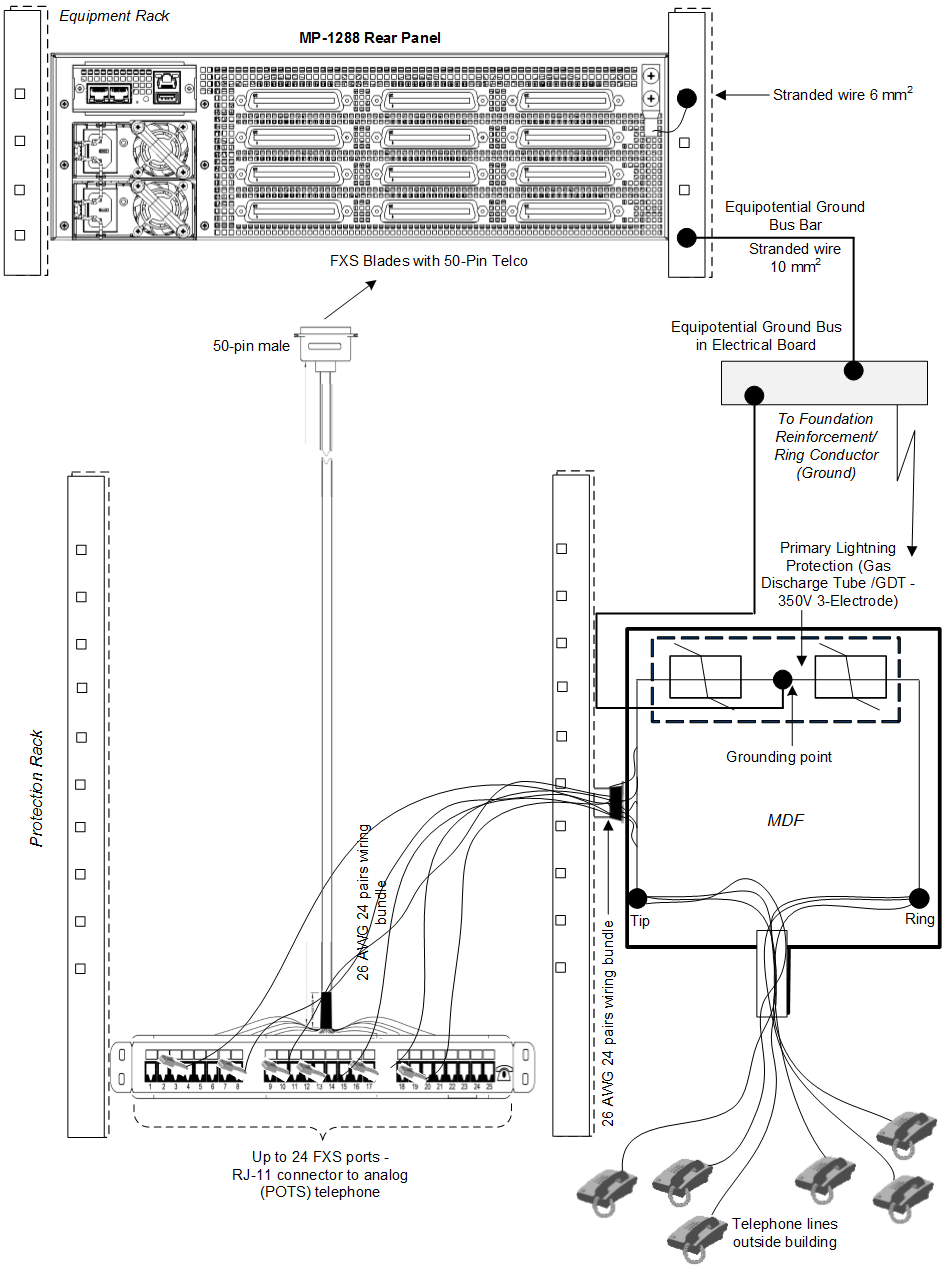
3. Connect your analog equipment to the Patch Panel, by plugging the RJ-11 connectors into the RJ-11 sockets on the Patch Panel's front panel:

Figure 5-10: Connecting Analog Equipment to FXS Patch Panel



For outdoor FXS cabling installations, you must install additional power surge protection as illustrated in the following figure. For indoor FXS cabling installations, there is no need for primary lightning protection usage.

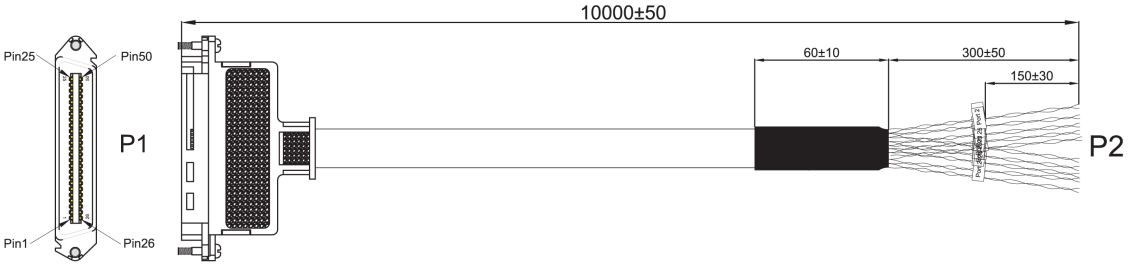
Figure 5-11: Connecting FXS Interfaces using FXS Patch Panel



Connecting FXS Interfaces using Centronics Cable

You can purchase AudioCodes' Centronics-type cable connector, as shown in the following figure, to connect the FXS interfaces to FXS equipment. The 10-meter cable (32.8 ft.) provides a 50-pin male Telco connector on one end and open leads on the other end, which need to be connected to your patch panel or distribution frame.

Figure 5-12: Orderable Centronics Cable and Pinouts



P1		Label
26	WHITE	
1	BLUE	Port 1
27	WHITE	
2	ORANGE	Port 2
28	WHITE	
3	GREEN	Port 3
29	WHITE	
4	BROWN	Port 4
30	WHITE	
5	GRAY	Port 5

P1		Label
31	RED	
6	BLUE	Port 6
32	RED	
7	ORANGE	Port 7
33	RED	
8	GREEN	Port 8
34	RED	
9	BROWN	Port 9
35	RED	
10	GRAY	Port 10

P1		Label
36	BLACK	
11	BLUE	Port 11
37	BLACK	
12	ORANGE	Port 12
38	BLACK	
13	GREEN	Port 13
39	BLACK	
14	BROWN	Port 14
40	BLACK	
15	GRAY	Port 15

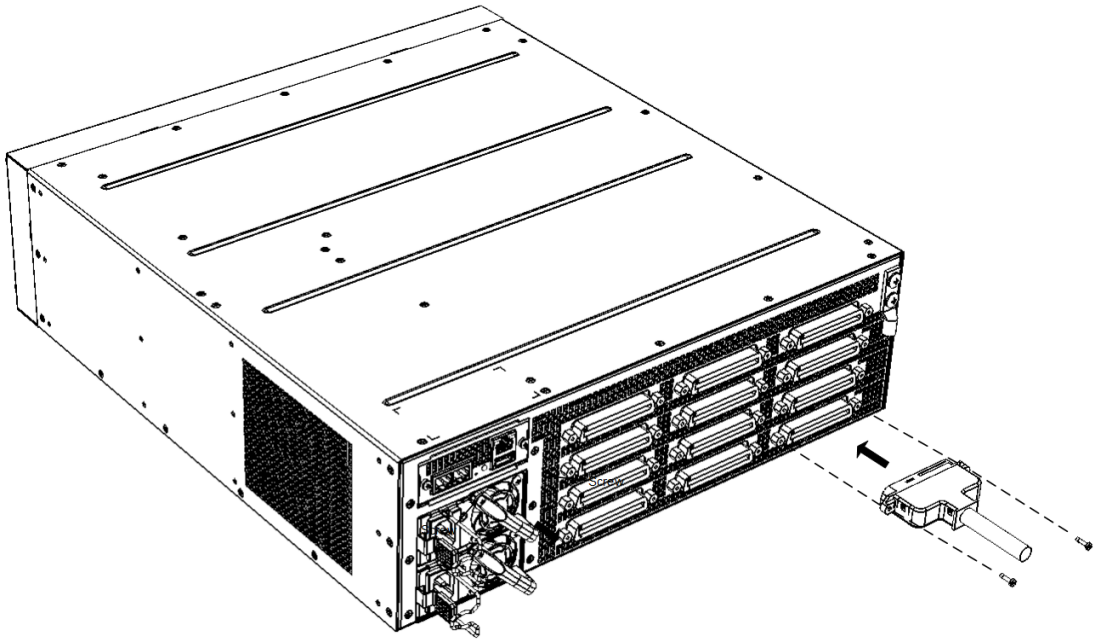
P1		Label
41	YELLOW	
16	BLUE	Port 16
42	YELLOW	
17	ORANGE	Port 17
43	YELLOW	
18	GREEN	Port 18
44	YELLOW	
19	BROWN	Port 19
45	YELLOW	
20	GRAY	Port 20

P1		Label
46	PURPLE	
21	BLUE	Port 21
47	PURPLE	
22	ORANGE	Port 22
48	PURPLE	
23	GREEN	Port 23
49	PURPLE	
24	BROWN	Port 24
50	PURPLE	
25	GRAY	Port 25-LL

➢ To connect the FXS interfaces using the Centronics cable:

1. Connect the 50-pin male connector on end of the cable to one of the FXS blade's 50-pin female Telco connectors located on the chassis' rear panel, and secure the connector with the two captive screws located on either side of the connector, using a Philips screwdriver:

Figure 5-13: Connecting 50-Pin Telco Connector to Port on FXS Blade



2. Terminate the wires on the other end of the cable to your patch panel or distribution frame. The wires are grouped in pairs with labels indicating the FXS channels. Make sure that you connect the wires according to the correct port channels as labelled on the wires.
3. Connect your analog equipment to your patch panel or distribution frame, by plugging their RJ-11 connectors into the RJ-11 sockets on the patch panel or distribution frame.

Connecting FXS Interfaces Directly to an MDF

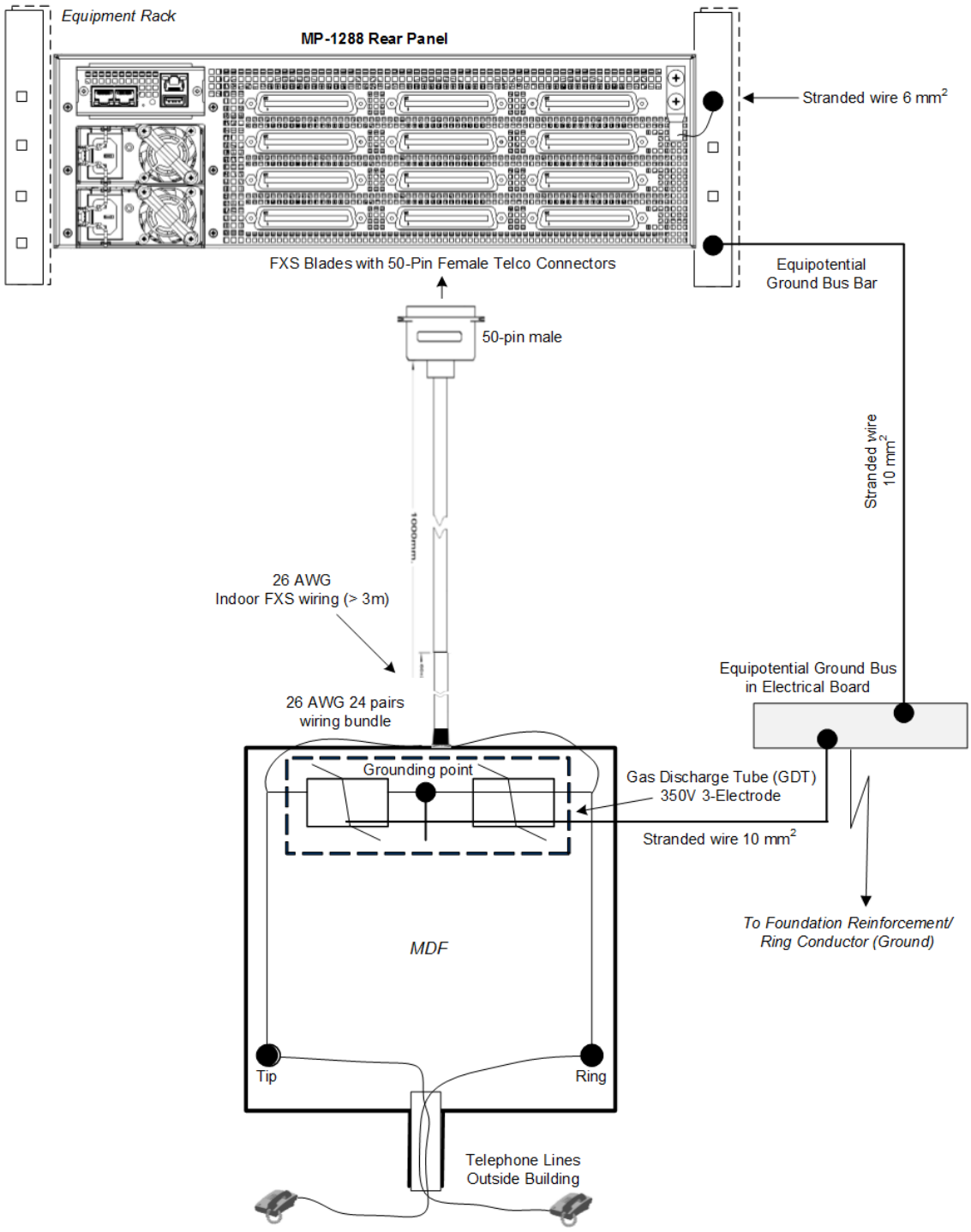
If you are using your own third-party MDF, perform the following instructions.

To reduce noise interference, use a twisted pair Octopus cable that is terminated on a metal-hooded 50-pin Telco connector.

➢ **To connect FXS interfaces directly to an MDF:**

1. Wire the 50-pin Telco connectors according to the pinouts in Connecting FXS Interfaces on page 22.
2. Connect the wire-pairs at the other end of the cable to a 50-pin male Telco connector (not supplied).
3. Attach the male connector to one of the FXS blade's 50-pin female Telco connectors, located on the chassis' rear panel.
4. Attach each pair of wires from a 25-pair Octopus cable (not supplied) to its corresponding socket on the MDF.
5. Connect the telephone lines from the MDF to the analog equipment, by inserting each RJ-11 connector on the 2-wire line cords to the RJ-11 sockets on the front of the MDF:

Figure 5-14: Connecting FXS Interfaces Directly to MDF



Connecting the FXS Analog Lifeline

The device supports PSTN Fallback (analog Lifeline), whereby it automatically connects an FXS port (Lifeline extension or phone) to the PSTN / PBX upon a power outage. This enables the phone to make and receive calls to and from the PSTN respectively, instead of the IP network.

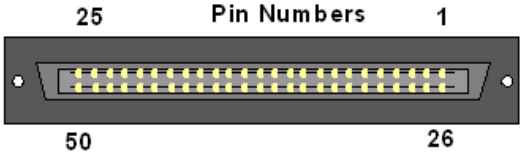
Each FXS blade supports up to three FXS Lifelines, one per FXS connector. For each connector, the first channel provides the connection to the Lifeline extension and the last channel is the

Lifeline interface providing the connection to the PSTN / PBX. For example, for FXS connector labeled FXS 1-24, channel 1 is the Lifeline extension and channel 25 is the Lifeline interface for the PSTN / PBX.

The cable specifications for the FXS Lifeline include the following:

- Cable: For optional cable types, see Connecting FXS Interfaces on page 22.
- Connector Type: 50-pin Telco

Figure 5-15: 50-pin Telco Connector for FXS Lifeline



- Connector Pinouts:

Table 5-3: 50-pin Telco Connector Pinouts for FXS Lifeline

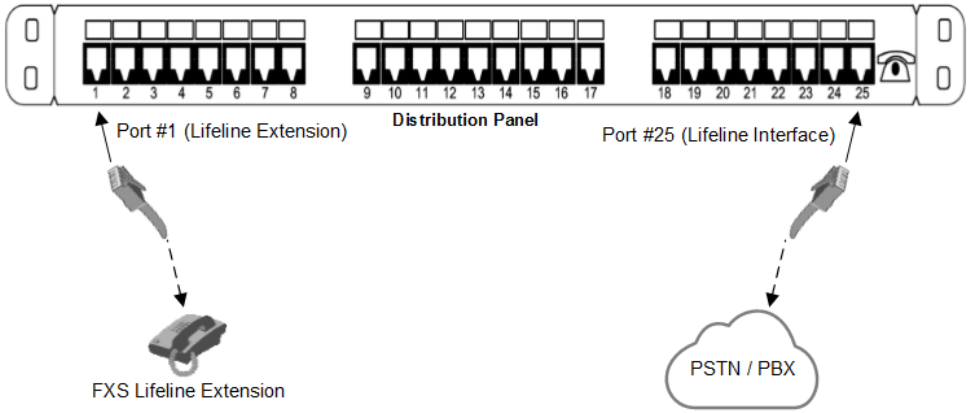
Telco Connector Pins	Description
1/26	Connects to FXS Lifeline extension
25/50	Connects to PSTN / PBX (Lifeline interface)

For all the connector's pinouts, see Connecting FXS Interfaces on page 22.

➢ **To cable FXS Lifeline per FXS connector:**

1. See Connecting FXS Interfaces on page 22 for connecting the 50-pin Telco connector to the FXS blade and for connecting it to a distributional panel.
2. Once you have performed Step 1, connect the lifeline as follows:
   - Connect Port #1 to the FXS extension (e.g., telephone).
   - Connect Port #25 to the PSTN / PBX (Lifeline interface).

Figure 5-16: Cabling FXS Lifeline



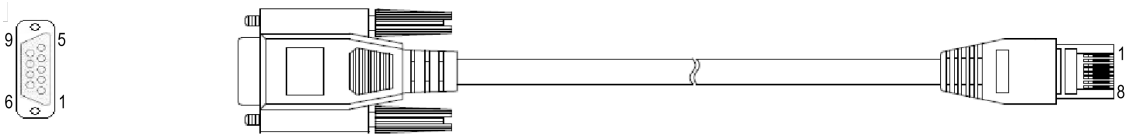
Connecting the Serial Interface to a Computer

The RS-232 interface port is used to access the command line interface (CLI) for serial communication.

The device provides an RS-232 serial interface port on its rear panel. The RS-232 interface port is used to access the device's command line interface (CLI).

- Port Type: RJ-45
- Cable: RJ-45 to DB-9 female cable adapter (supplied)

Figure 5-17: RJ-45 to DB-9 Female Cable Adapter



- Connector Pinouts:

Table 5-4: RJ-45 to DB-9 Serial Cable Connector Pinouts

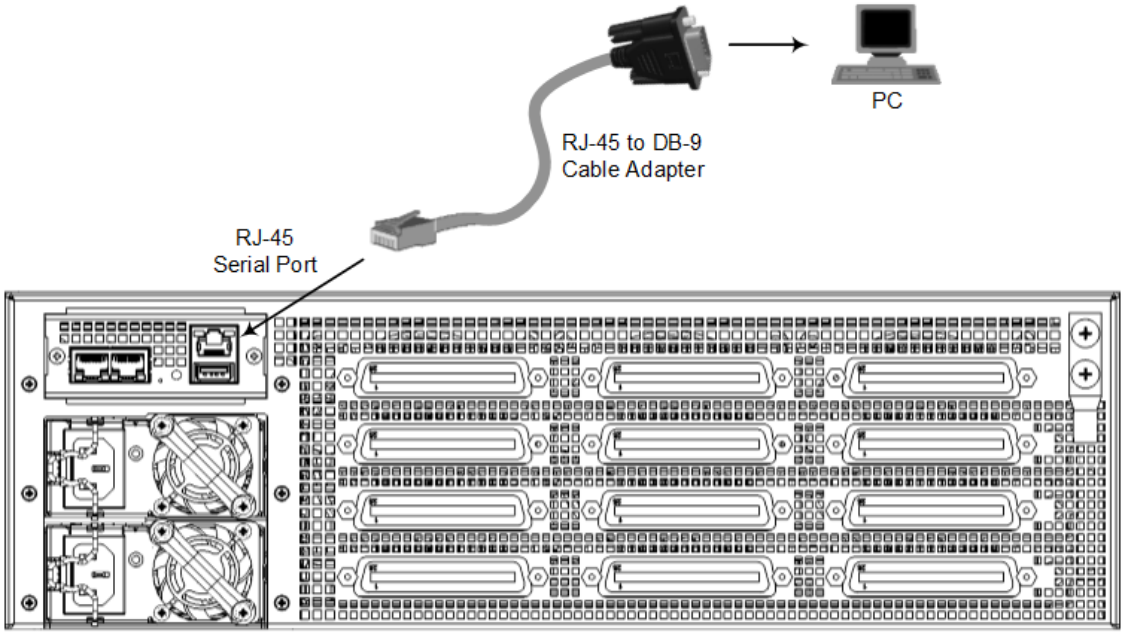
RJ-45		DB-9 Female	
Pin	**Signal**	**Pin**	**Signal**
1	Internally used	8	Not used
2	Ground (GND)	6	Ground (GND)
3	Transmit Data (TXD)	2	Receive Data (RXD)
4	Internally used	5	Not used
5	Internally used	5	Not used

RJ-45		DB-9 Female	
6	Receive Data (RXD)	3	Transmit Data (TXD)
7	Ground (GND)	4	Ground (GND)
8	Internally used	7	Not used

➢ **To connect the serial interface port to a computer:**

1. Connect the RJ-45 connector, at one end of the cable, to the device's serial port (labeled |0|0|), located on the CPU module on the rear panel.

Figure 5-18: Connecting Serial Interface



2. Connect the DB-9 connector, at the other end of the cable, to a COM RS-232 communication port on your PC.

The RS-232 port is not intended for permanent connection.

Connecting to Power

The device can be powered from an AC or a DC power source, depending on ordered hardware configuration.

AC Power Supply

The device provides two hot-swappable Power Supply modules for load-sharing and power redundancy in case of failure in one of the modules. To replace a faulty power supply module, see Replacing the Fan Tray Module on page 39.

The device receives power from a standard alternating current (AC) electrical outlet. The connection is made using the supplied AC power cord.

Table 5-5: AC Power Specifications

Physical Specification	Value		
Input Voltage	Dual universal AC power supply 100-240V		
AC Input Frequency	50/60 Hz		
Max. AC Input Current	10 A		
Max. Power Consumption	FXS Interfaces	Short Haul (W)	Long Haul (W)
	288	450	950
	216	400	770
	144	350	600

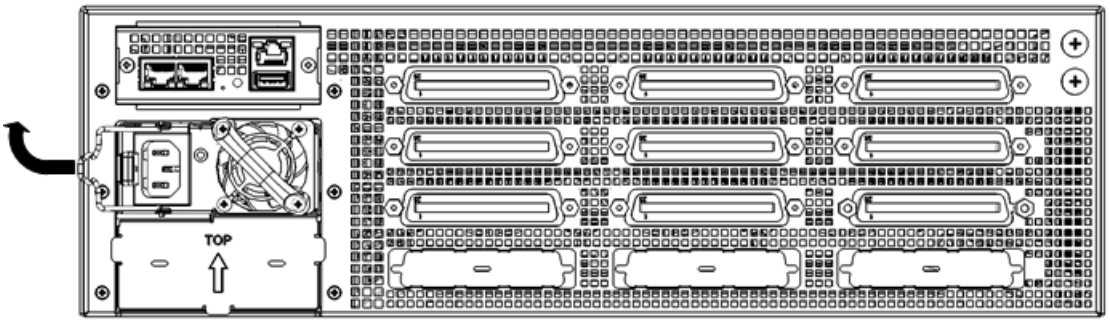
If you are using both Power Supply modules, connect each one to a different AC power supply source. The two AC power sources must have the same ground potential.

ご注意
本製品に添付の電源ケーブルは、MP-1288に専用設計されているため、汎用性がありません. 本電源ケーブルを他の機器に使用されないよう、ご注意ください.

➢ **To connect the device to power:**

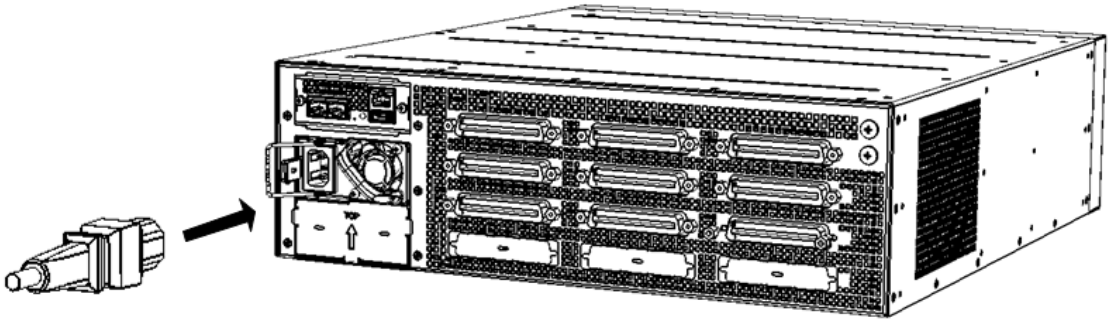
1. Swing the cable anchor clip, located over the power inlet of the Power Supply module, sideways, away from the power inlet to provide space for the power plug.

Figure 5-19: Swinging Cable Anchor Clip away from Power Inlet



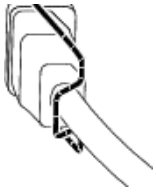
2. Plug the female end of the AC power cord (supplied) into the power inlet.

Figure 5-20: Connecting to Power



3. Secure the power cord to the power inlet by providing strain relief, using the cable anchor clip. Slide the cable anchor clip sideways, towards the power inlet and then push the power cord into the cable anchor clip, as shown in the following figure. This protects the plug from accidentally being pulled out.

Figure 5-21: Strain Relief for Power Cord using Cable Anchor Clip



Strain relief for the power cord using the cable anchor clip is not mandatory.

4. Connect the male end of the power cord to a standard AC electrical outlet.
5. If you are using both Power Supply modules, repeat steps 1 through 3 for connecting the second Power Supply module, but using the power socket associated with the second Power Supply module and connecting this to a different supply circuit.
6. Turn on the power at the power source (if required).
7. Check that the LED on each Power Supply module (front panel) is lit green, indicating that the device is receiving power. For more information on the power LED, see Power Supply LED on page 16.

DC Power Supply

The device houses two hot-swappable Power Supply modules, providing 1+1 load-sharing and power redundancy in case of a Power Supply module failure.

Table 5-6: DC Power Specifications

Physical Specification	Value		
Input Ratings	Dual universal power supply 40-60 VDC, 32A max		
Connection to DC Mains Supply	Molex terminal block (supplied)		
Max. Power Consumption	**FXS Interfaces**	**Short Haul (W)**	**Long Haul (W)**
	288	450	950
	216	400	770
	144	350	600

DC Power Safety Notice:

- Connect the device to a safety extra-low voltage (SELV) source that is sufficiently isolated from the mains.
- The device must be permanently connected to earth (ground), as described in Grounding and Surge Protection on page 19.
- Connection of the device to the DC mains power must be done only by a certified electrician and in accordance with local national electrical regulations.
- Both Power Supply modules must be connected. Ensure that you connect each one to a different DC power supply source.
- The two DC power sources must have the same ground potential.
- If a failure occurs in any one of the Power Supply modules, replace the module immediately.

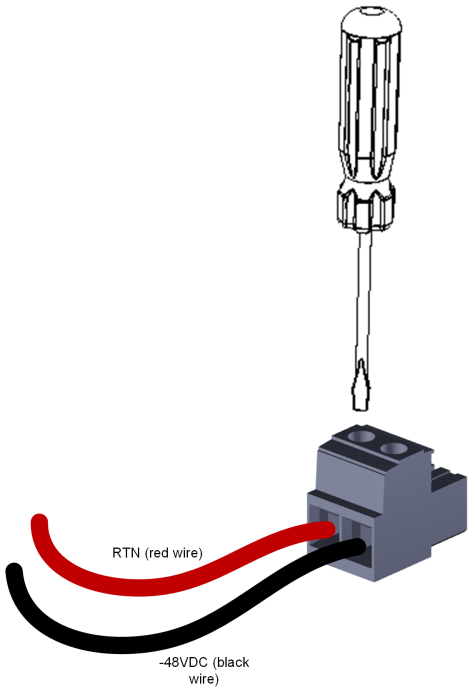
The device is shipped with a DC terminal block plug for each Power Supply module. You need to connect two 6-AWG power leads (one for positive and one for negative) to this terminal block.

➢ **To connect to a DC power supply:**

1. Disconnect your DC wires from your DC power source.
2. Using a wire-stripping tool, strip the ends of the two wires (6-AWG) to a length that is sufficient for inserting into the supplied terminal block. Make sure that you do not strip too much of the insulation so that wire is not exposed when it exits the terminal block plug after it has been secured to the terminal block.

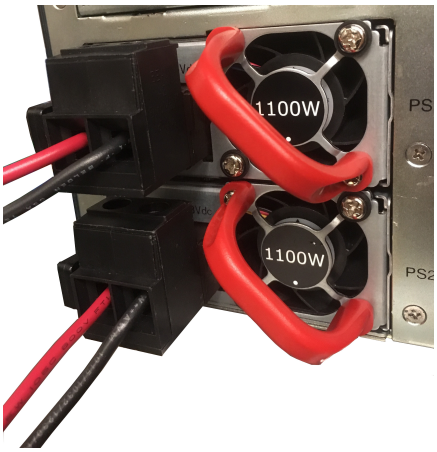
3. Identify the polarity (negative and positive) of the two DC power feed wires. Polarity of power feed wires are typically color-coded, where red is positive (RTN) and black is negative (-48VDC).
4. Insert the exposed wire of one of the two DC-input power source wires into the correct opening (according to polarity) on the terminal block plug (supplied), as shown in the following figure. Make sure that only wire with insulation exits the terminal block.
5. Using a Philips or flat-head screwdriver, tighten the captive screw located above the installed wire lead to secure the wire to the terminal block.
6. Repeat steps 1 through 5 for the second wire.

Figure 5-22: Wiring DC Power Leads to Terminal Block



7. Make sure that no wire strands are left outside the connector and that all strands have been clamped under the terminal block screw.
8. Gently try and pull the wires from the terminal block. Only if the wires remain secured to the terminal block may you continue to the next step; otherwise, if the wires become free, repeat Step 5 to secure the wires to the terminal block.
9. Insert the DC terminal block plug into the DC inlet of the Power Supply module located on the device's rear panel. The following figure shows the completed wiring of the terminal block.

Figure 5-23: Wired DC Power Supply Modules



10. Connect the DC power leads to a 48-VDC power source.

6 Hardware Maintenance

The device is designed as a modular chassis and allows you to order any module as a Field Replacement Unit (FRU). This section describes the procedures for replacing modules.

Ensure that all unoccupied module chassis slots are covered with blank panels. This allows optimal internal airflow pressure within the chassis.

Preventing Electrostatic Discharge Damage

Electrostatic discharge (ESD) due to improper handling of the device's modules and components can cause irreversible damage to the equipment. Therefore, adhere to the following guidelines for preventing ESD:

- When handling modules, always wear a grounded ESD wrist strap or ankle strap at a grounded work area to prevent ESD. Connect the equipment end of the strap to the chassis' ground lug.
- To prevent static electrical damage to the module, do not touch the electrical components of the module. Instead, hold the module only on the edges where no electrical components are located.
- Make sure that the modules are securely installed in the chassis.

➢ **To attach an ESD wrist strap to the chassis:**

1. Attach the ESD wrist strap to your body (typically, the wrist) so that it is in direct contact with your skin.
2. Attach the other end of the wrist strap (e.g., an alligator clip) to the grounding lug located on the rear panel of the chassis. To attach a grounding lug, see Grounding and Surge Protection on page 19.

Replacing the Fan Tray Module

The following procedure describes how to replace the Fan Tray module.

- DO NOT operate the device without the Fan Tray module.
- Before replacing a failed Fan Tray module, make sure that you have the replacement Fan Tray module on hand so that you can replace the module immediately.
- When removing the Fan Tray module, the fan blades may still be rotating at high speeds (even if you power off the device). Therefore, partially extract the module from the chassis and then wait a few seconds to allow the fan blades to stop, prior to extracting the module entirely from the chassis.

Avertissements:

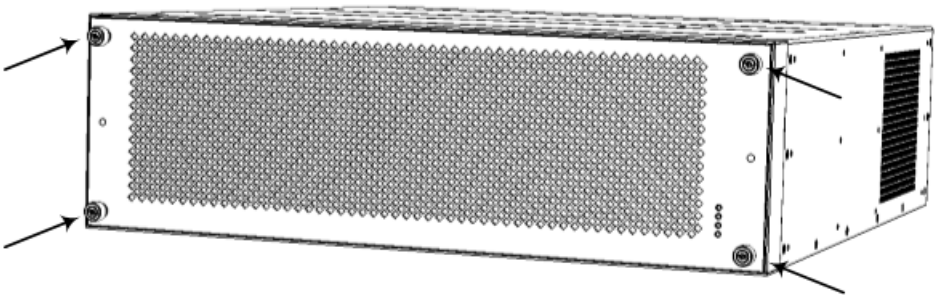
- N'opérez pas l'appareil sans module de Caisse de ventilateur ! Avant de remplacer le module de Caisse de ventilateur, assurez-vous que vous avez le module de remplacement en main.
- Avant de retirer le module de Caisse de ventilateur et une fois l'appareil mis hors tension, les lames risquent de continuer à tourner à grande vitesse. Aussi, patientez quelques secondes pour permettre aux lames de s'arrêter, avant d'extraire le module du châssis.

➢ To replace the Fan Tray module:

1. Remove the Fan Tray module:

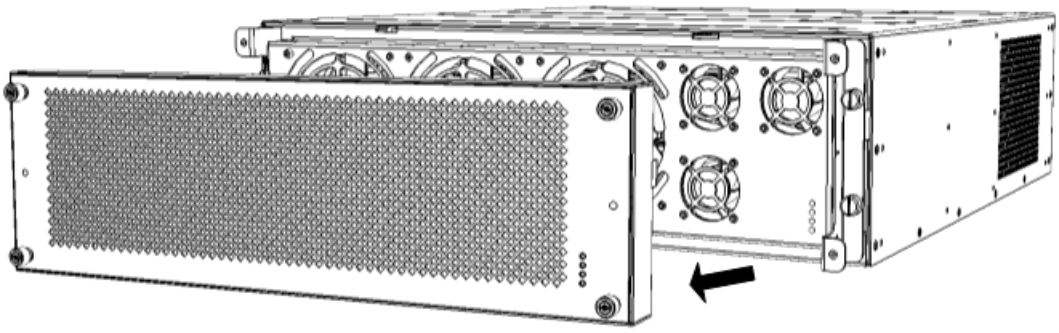
   a. On the front panel, loosen the four Philips-head, spring-loaded captive screws located in each corner of the Fan Tray cover, using a flat-head or Philips screwdriver:

Figure 6-1: Location of Screws on Fan Tray Cover



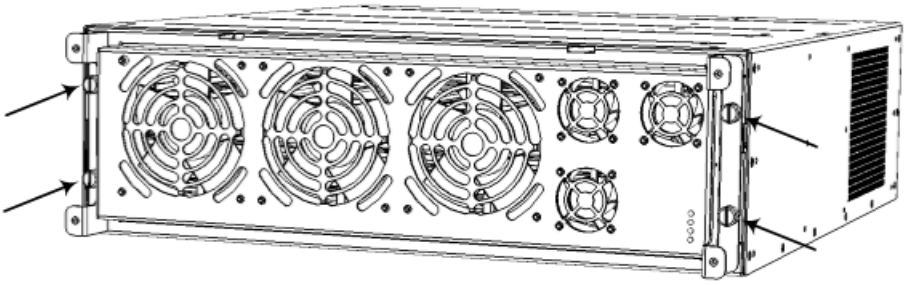
   b. Remove the Fan Tray cover:

Figure 6-2: Removing Fan Tray Cover



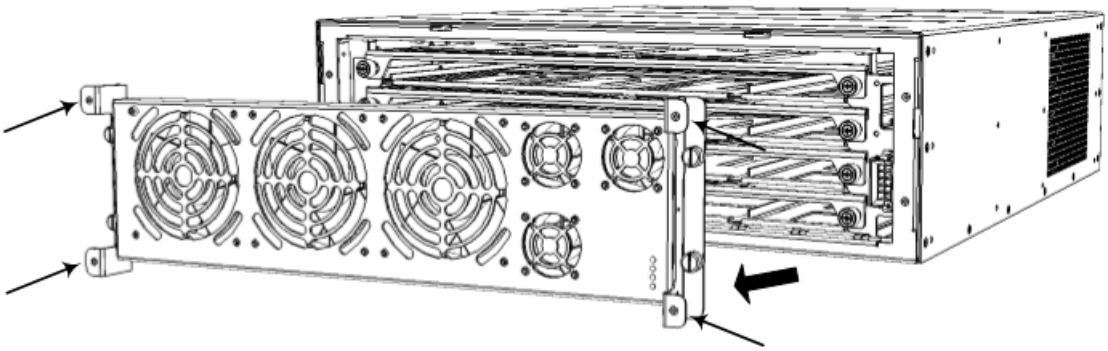
   c. Loosen the four flat-head, spring-loaded captive screws securing the Fan Tray module to the chassis, using a flat-head screwdriver.

Figure 6-3: Location of Screws on Fan Tray Module



d. Grip the handle of the Fan Tray module where you removed the screws in the previous step, and then gently but firmly pull the module away from the chassis so that it disconnects from the connector providing it with power:

Figure 6-4: Location of Handles and Removing Fan Tray Module



2. Install the new Fan Tray module:
   a. Orientate the Fan Tray module as shown in the previous figure.
   b. Grip the handles on the Fan Tray module, and then gently attach the module to the front panel, making sure that it has engaged with the chassis backplane.
   c. Secure the Fan Tray module to the chassis by tightening the four flat-head, spring-loaded captive screws on the front panel of the module. You can use a flat-head screwdriver.
   d. Orientate the Fan Tray cover as shown in Step 1 above and then place it over the Fan Tray module so that the screws are flush with screw holes on the handles of the Fan Tray module. Secure the cover by tightening the four Philips-head, spring-loaded captive screws located in each corner of the cover.

Replacing the Air Filter

The air filter is intended to prevent dust and other airborne particles from entering the chassis and adversely affecting its components. To maintain proper operation of the device, you must periodically replace the air filter. The frequency of replacing the air filter depends on the cleanness at the installation site. In installation rooms with extra-building openings (exposed to dust and/or air particles), you may need to replace the air filter once every 3 months. In cleaner rooms (e.g., no extra-building openings), you may need to replace the air filter once every 6

months. In air-purified (conditioned) rooms, air filter replacement can be done annually. It's the user's responsibility to determine the cleanness level and the air filter replacement frequency.

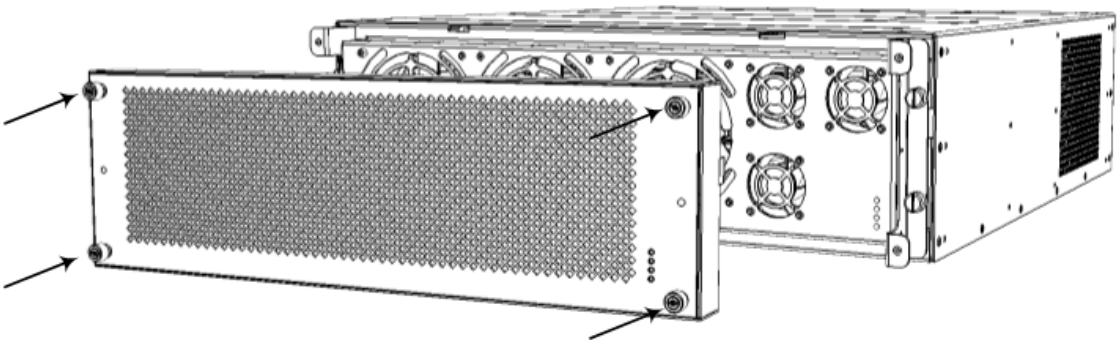
- The device's components may be damaged due to a dirty or blocked air filter.
- Replace the air filter only with an air filter purchased from AudioCodes.
- Before removing the air filter, make sure that you have the replacement air filter on hand so that you can replace it immediately.

The air filter is hot-swappable.

➢ **To replace the air filter:**

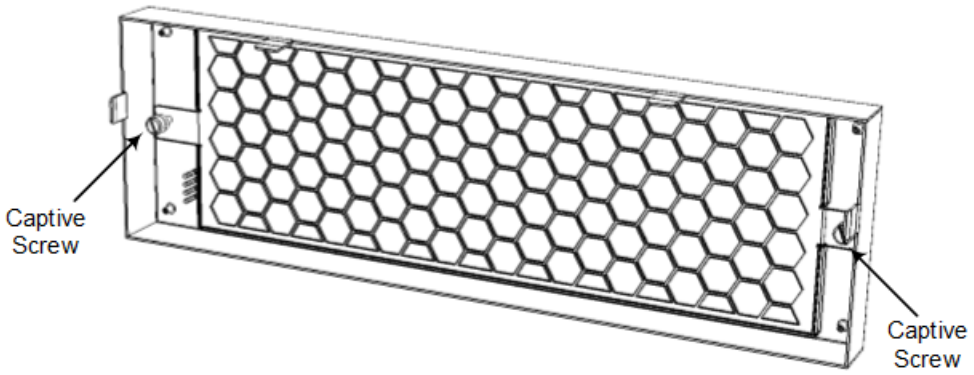
1. On the front panel, remove the Fan Tray cover, by loosening the four Philips-head, spring-loaded captive screws located in each corner of the cover and then gently pulling the cover away from the chassis:

Figure 6-5: Removing Fan Tray Cover on Front Panel



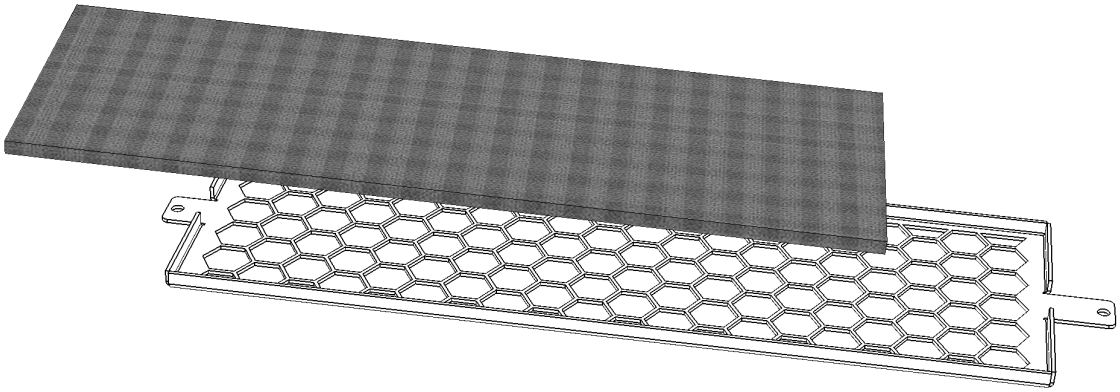
2. Remove the air filter cover, located on the inside of the Fan Tray cover, by removing the two flat-head, spring-loaded captive screws located on either side of the air filter cover, using a flathead screwdriver:

Figure 6-6: Removing Air Filter Cover from Fan Tray Cover



3. Pull out the exposed air filter from the enclosure of the air filter cover and dispose of it:

Figure 6-7: Removing Air Filter from Air Filter Cover



4. Insert the new filter into the enclosure of the air filter cover.
5. Attach the air filter cover back on the Fan Tray cover by using the two spring-loaded captive screws (see the figure in Step 2).
6. Attach the Fan Tray cover to the chassis (see the figure in Step 1).

Replacing FXS Blades

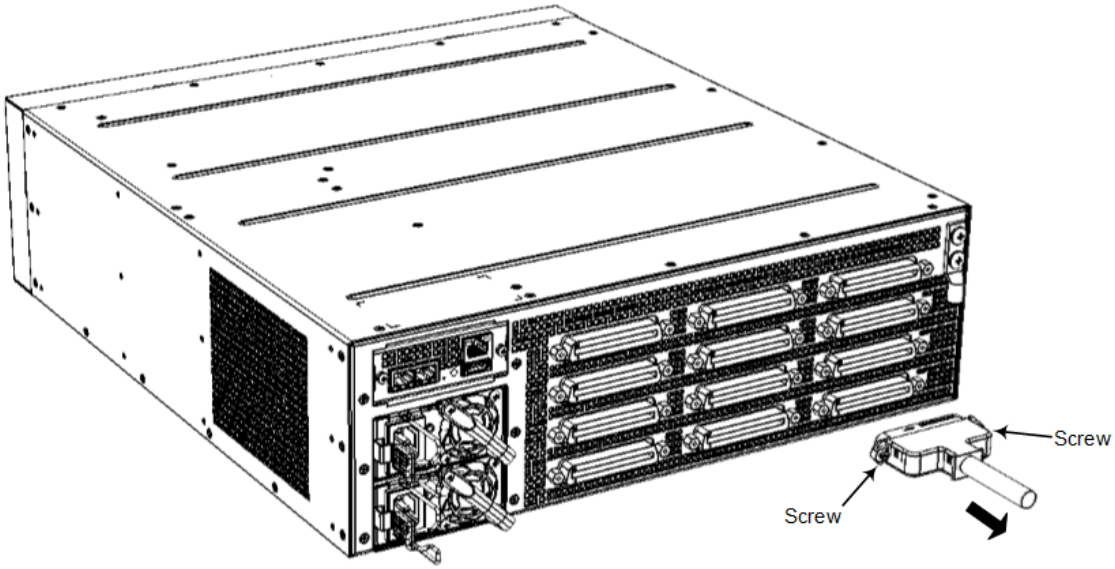
The following procedure describes how to replace an FXS blade.

Power off the device when removing or installing FXS blades.

➢ **To replace an FXS blade:**

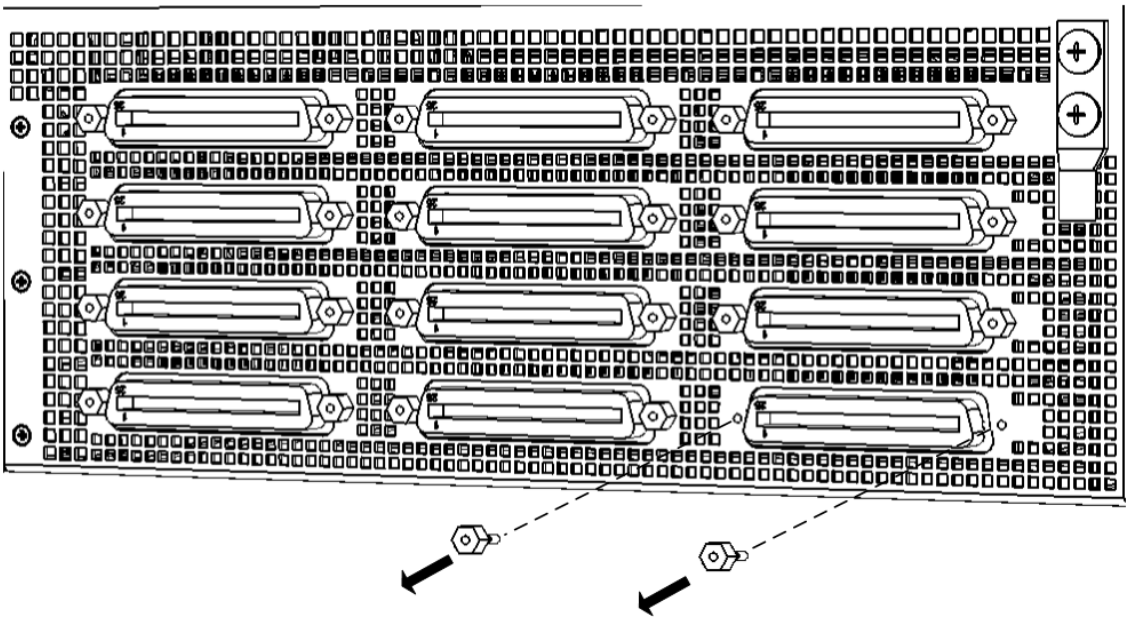
1. Remove the faulty FXS blade:
   a. Identify the faulty FXS blade by the color of its LED, located on the rear panel as described in FXS LEDs on page 14.
   b. Power down the device, by disconnecting the power cord from the power source, and then unplugging the power cord from the power inlet on the Power Supply module.
   c. On the rear panel, disconnect the FXS cables from the 50-pin FXS ports on the FXS blade. This is done by removing the captive screws, located on either side of the Telco connector, from the blade's hex-standoff screws, using a flathead screwdriver:

Figure 6-8: Removing 50-Pin Telco Connector



d. On the rear panel, remove all the hex-standoff screws securing the FXS blade to the chassis, using a 3/16-in. hex-head nut driver. Each FXS port has two hex-standoff screws (7 mm) on either side and therefore, you need to remove all six screws:

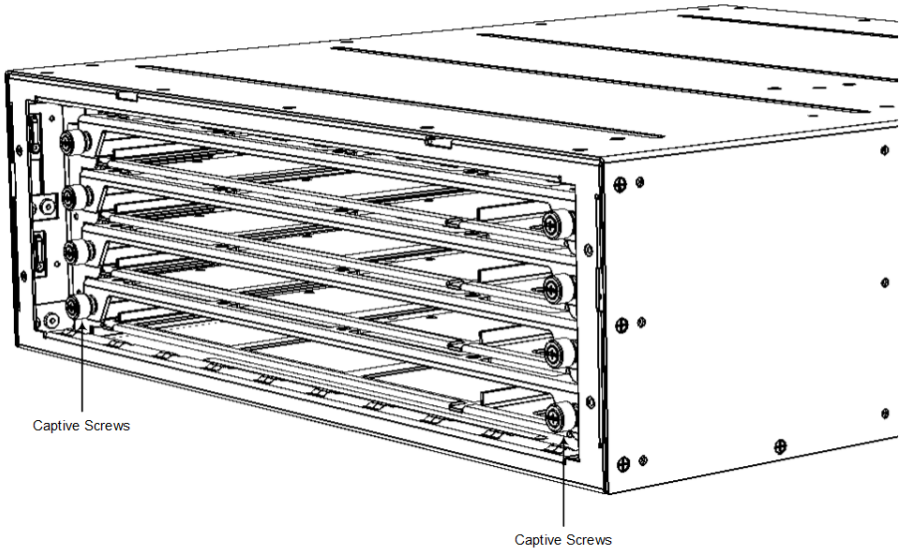
Figure 6-9: Removing Hex Standoff Screws on Rear Panel (Example FXS Blade S4)



e. On the front panel, remove the Fan Tray cover and Fan Tray module, as described in Replacing the Fan Tray Module on page 39.

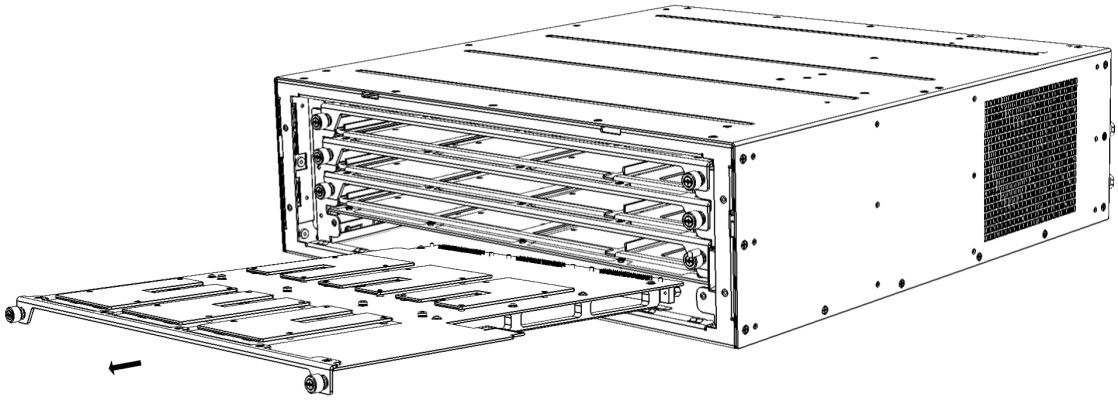
f. On the front panel, loosen the two Philips-head, spring-loaded captive screws located on either side of the FXS blade:

Figure 6-10: Loosening Screws on FXS Blade on Front Panel



g. Gently pull the FXS blade out of the chassis slot:

Figure 6-11: Removing FXS Blade from Chassis Slot on Front Panel



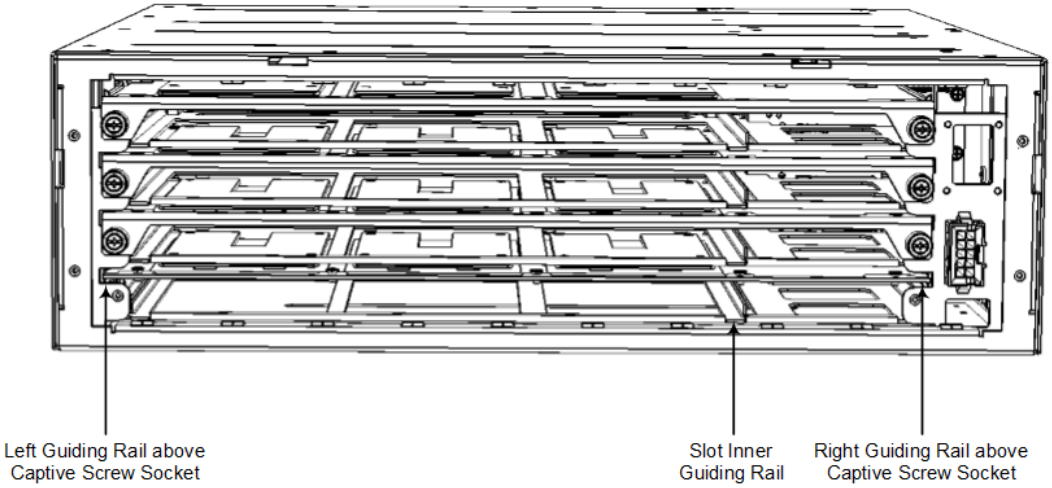
2. Install the new FXS blade:

a. Hold the blade on the front where the captive screws are located, making sure that you do not touch the blades electrical components.

b. On the chassis front panel, orientate the FXS blade as shown in the previous figure.

c. Gently slide the blade into the slot, keeping the left side of the blade aligned with the left guiding rail located above the captive screw socket, and ensuring that the notch on the underside of the blade is aligned to the left of the inner guiding rule, as shown in the following figure. Slide the FXS blade into the slot until it has engaged with the chassis backplane:

Figure 6-12: Slot's Guiding Rails for FXS Blade



d. On the rear panel, secure the FXS blade to the chassis by inserting the hex-standoff screws (see the figure in Step 1.d for location of screws), using a 3/16-in. hex-head nut driver. Do not tighten the screws.

e. On the front panel, secure the FXS blade to the chassis, by tightening the two Philips-head, captive screws on the front panel of the blade. You can use a Phillips or flathead screwdriver.

f. On the rear panel, insert the hex-standoff screws on the FXS blade, using a 3/16-in. hex-head nut driver.

g. On the rear panel, connect the 50-pin Telco connector cables to the FXS ports of the new FXS blade.

h. On the front panel, re-install the Fan Tray module and Fan Tray cover, as described in Replacing the Fan Tray Module on page 39.

i. Re-connect the chassis to the power source.

Adding an FXS Blade

The following procedure describes how to add an FXS blade.

Power off the device before adding an FXS blade.

➢ **To add an FXS blade:**

1. Power down the device, by disconnecting the power cord from the power source, and then unplugging the power cord from the power inlet on the Power Supply module.
2. On the rear panel, remove all three metal plates covering the slot openings for the three 50-Pin Telco connectors. To do this, insert a flat-head screwdriver into the hole of the metal plate and carefully pry the plate off by moving the screwdriver downwards:

Figure 6-13: Inserting Screwdriver into Cover Plate Hole

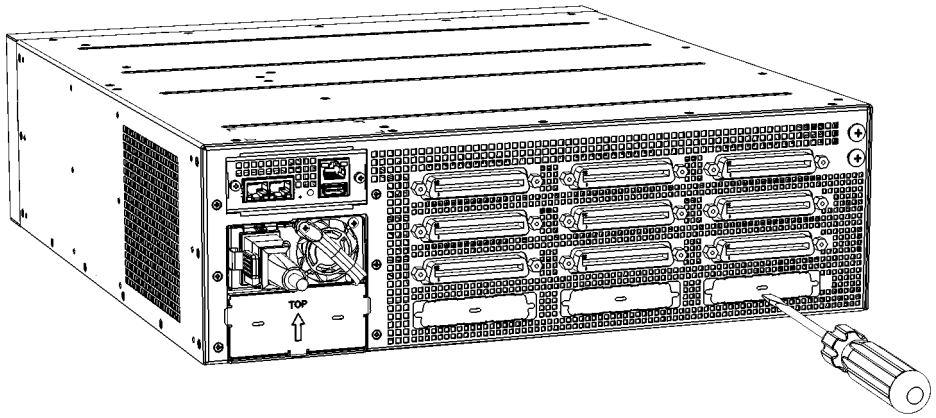
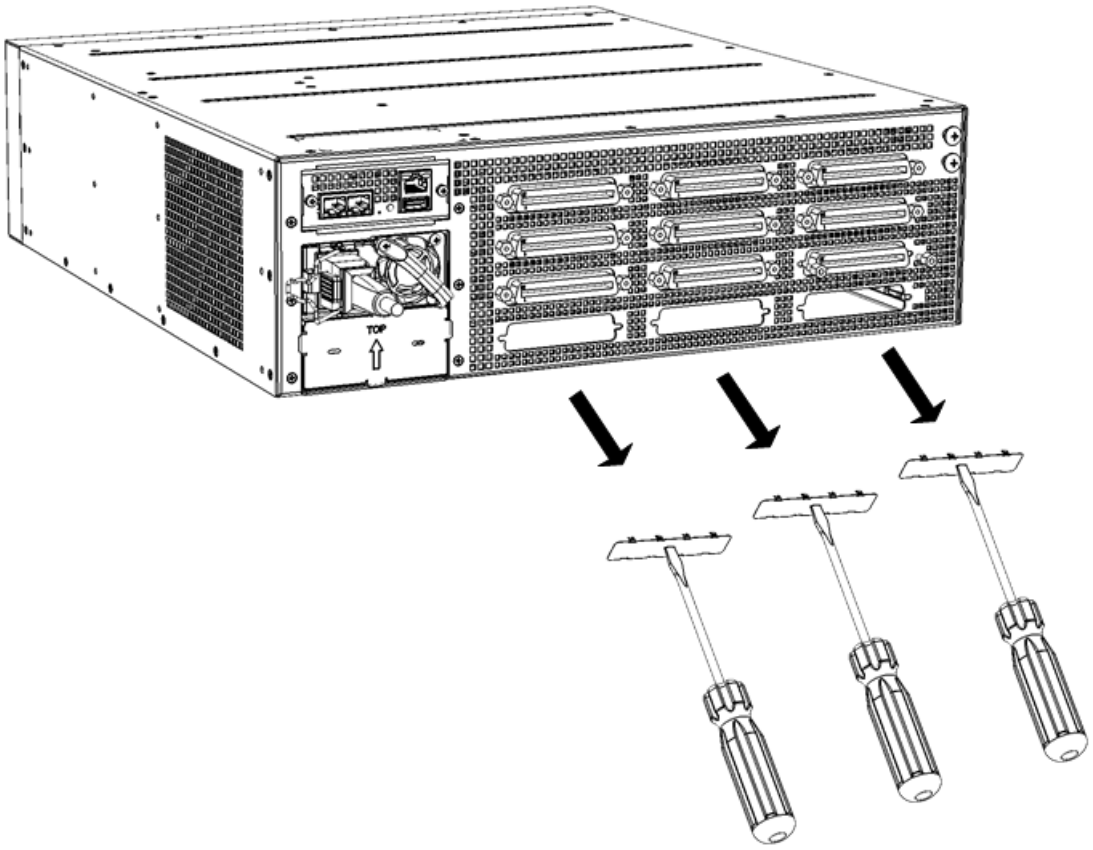


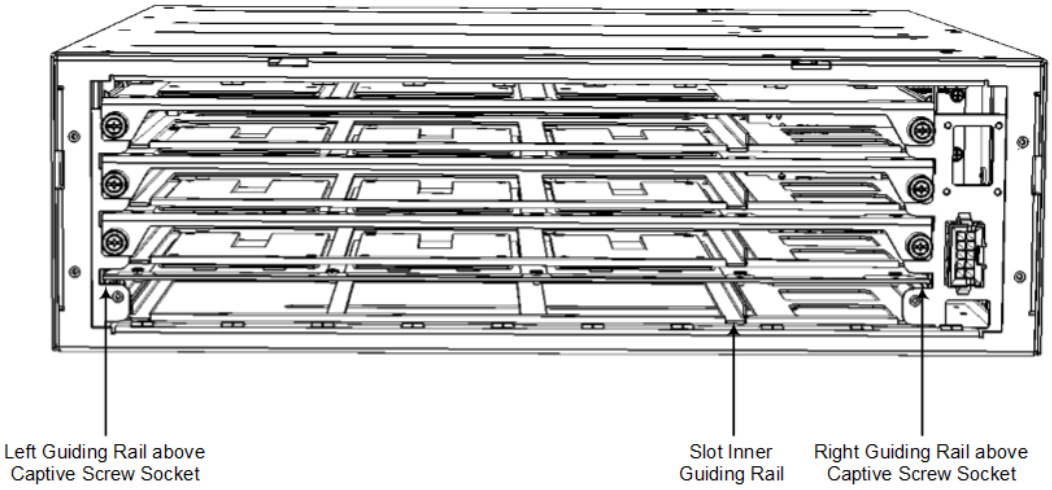
Figure 6-14: Removing Cover Plates



3. On the front panel, remove the Fan Tray cover and Fan Tray module, as described in Replacing the Fan Tray Module on page 39.
4. Hold the blade on its front where the captive screws are located, making sure that you do not touch the blades electrical components.
5. On the chassis front panel, orientate the FXS blade as shown in the figure in Step 1.g in Replacing FXS Blades on page 43, and then gently slide the blade into the slot, keeping the left side of the blade aligned with the left guiding rail located above the captive screw socket, and ensuring that the notch on the underside of the blade is aligned to the left of

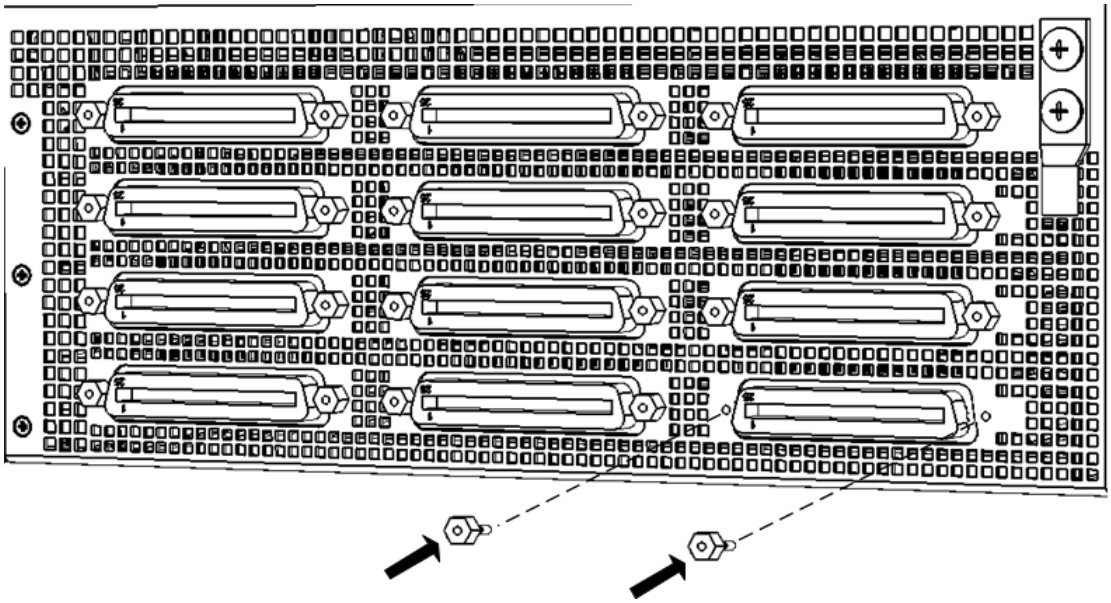
the inner guiding rule, as shown in the following figure. Slide the FXS blade into the slot until it has engaged with the chassis backplane:

Figure 6-15: Slot's Guiding Rails for FXS Blade



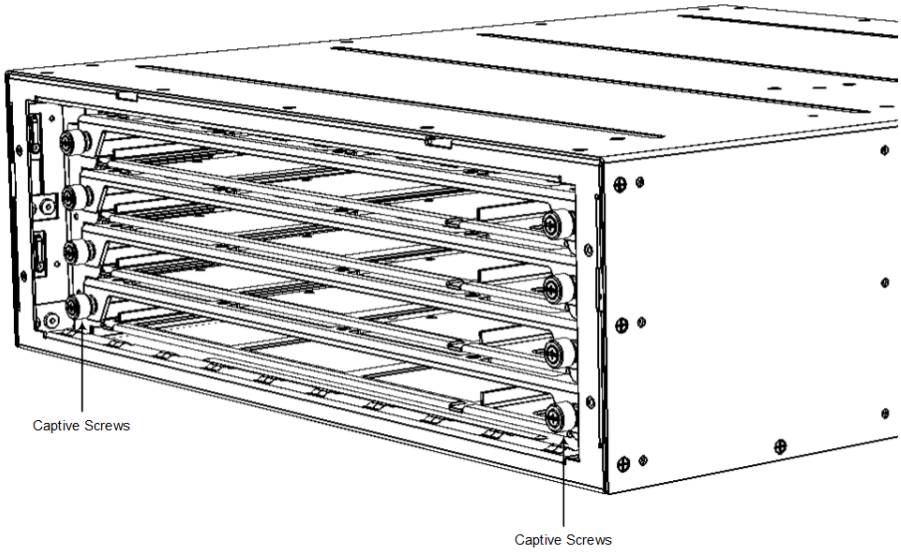
6. On the rear panel, secure the FXS blade to the chassis by inserting the hex-standoff screws, using a 3/16-in. hex-head nut driver. Do not tighten the screws:

Figure 6-16: Securing FXS Blade to Chassis



7. On the front panel, secure the FXS blade to the chassis, by tightening the two Philips-head, captive screws on the front panel of the blade. You can use a Phillips or flathead screwdriver:

Figure 6-17: Tightening Captive Screws of FXS Blade on Front Panel



8. On the rear panel, tighten the hex-standoff screws on each Telco connector of the FXS blade, using a 3/16-in. hex-head nut driver.
9. On the front panel, re-install the Fan Tray module and Fan Tray cover, as described in Replacing the Fan Tray Module on page 39.

Replacing the CPU Module

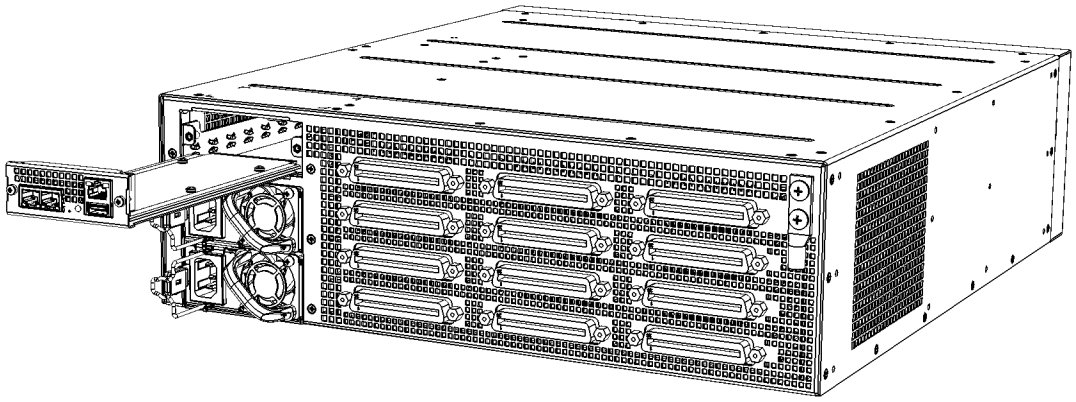
The following procedure describes how to replace the CPU module.

Power off the device before replacing the CPU module.

➢ **To replace the CPU module:**

1. Make sure that you have a new License Key for the new module. If not, ask your AudioCodes sales representative for the License Key.
2. Power down the device by disconnecting the power cord from the power source, and then unplugging the power cord from the power inlet on the Power Supply module. If your device is installed with two Power Supply modules, disconnect both of them from the power source.
3. Remove the faulty CPU module:
   a. Remove all cables connected to the ports on the CPU module.
   b. Remove the two screws on both sides of the module that secure the module to the chassis, using a Philips screwdriver.
   c. Hold the front part of the module with one hand and place your other hand under the module to support it. Gently pull the module out of the slot, keeping it at a 90-degree angle to the backplane.

Figure 6-18: Removing CPU Module

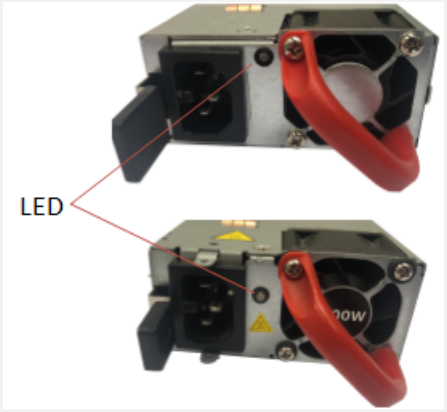


4. Install the new CPU module:
   a. Hold the front part of the module with one hand and place your other hand under the module to support it.
   b. Orientate the module as shown above and align the module with the guiding rails in the chassis slot.
   c. Gently slide the module into the slot until it has engaged with the chassis backplane.
   d. Secure the module to the chassis, by tightening the two Philips screws on the module. You can use a Phillips or flathead screwdriver.
   e. Attach the network cables to the module.
5. Power up the device, by cabling the Power Supply modules to your power source.
6. From your local computer, access the device's Web interface with the device's default IP address (192.168.0.2/24), through any one of the Ethernet ports on the CPU module.
7. Load the software file (.cmp) to the device. If you don't have the file, ask your AudioCodes sales representative for it.
8. Load the License Key file to the device.
9. Load your backup (saved) Configuration Package file or individual files (e.g., ini file, certificate files, Dial Plan file, and CPT file), if you have, to the device.
10. Check that the required certificate is installed on the device (TLS Context). If not, load it.
11. Re-cable the CPU module to your network.
12. Verify that the device is operating correctly (e.g., alarms are cleared and call traffic is being routed) and that it is successfully communicating with third-party equipment (e.g., monitoring system, billing system, or routing system), if relevant.
13. If the device is monitored by OVOC, access the OVOC web-based management interface, remove the device from the OVOC topology, and then re-add it.

Replacing Power Supply Modules

The following procedure describes how to replace a Power Supply module. The Power Supply modules are hot-swappable. Therefore, if you are replacing only one module, you can leave the second module connected to the power source.

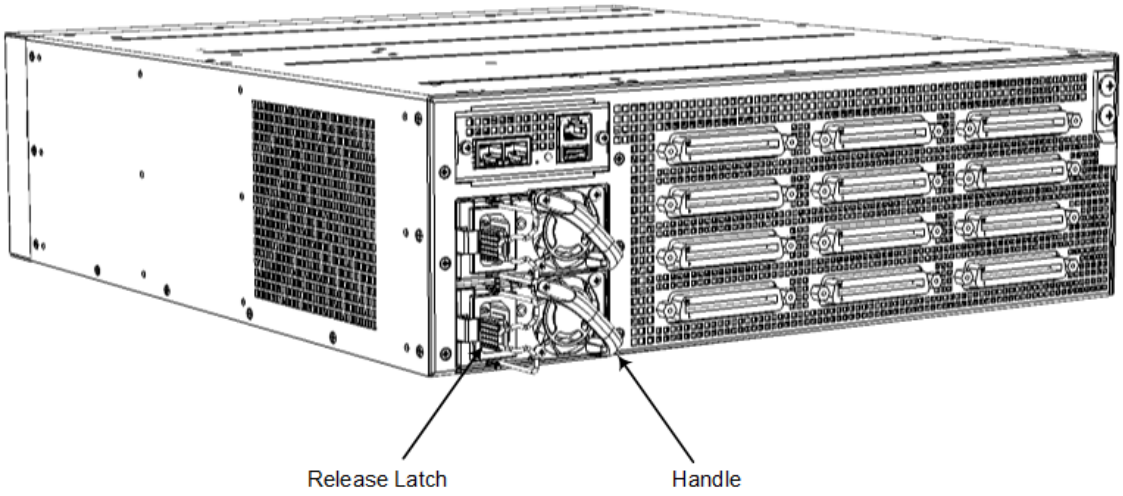
The two Power Supply modules installed in the chassis must be of the **same** hardware revision. You can identify the hardware revisions by the location (top or middle) of the power LED on the front panel, as shown below:



➢ **To replace a Power Supply module:**

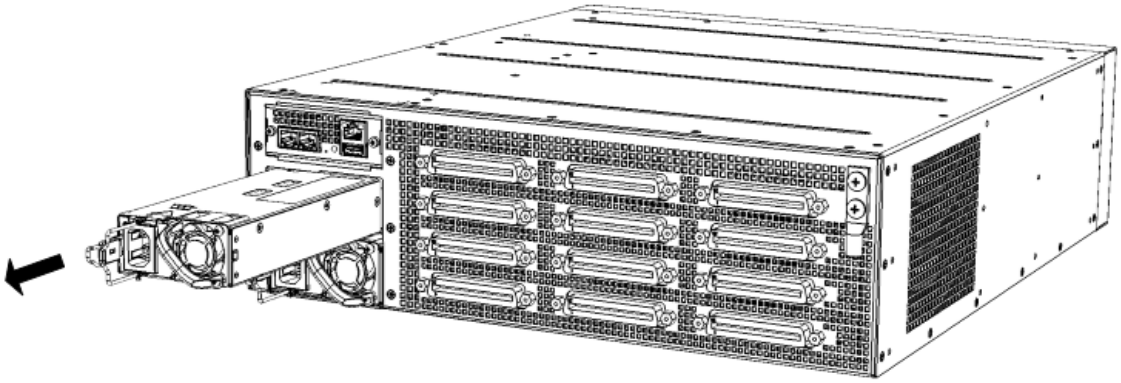
1. Remove the faulty Power Supply module:
   a. Disconnect the Power Supply module from the power source.
      - For AC Power: Disconnect the one end of the power cord from the power source, by pulling the power plug out of the electrical wall outlet. Remove the plug at the other end of the power cord from the power inlet on the Power Supply module.
      - For DC Power: Disconnect the DC power feed cables from your DC power source. Remove the DC terminal block from the Power Supply module.
   b. While pressing inwards (sideways and to the right) on the release latch of the Power Supply module, grip the handle of the module and gently pull the module halfway out of the chassis slot:

Figure 6-19: Handle and Release Latch on Power Supply Module (Example using AC Module)



c. Place your other hand under the Power Supply module for support and then slide it completely out of the chassis. Avoid touching the top of the module; it may be hot from being in the chassis:

Figure 6-20: Removing Power Supply Module from Chassis (Example using AC Module)



2. Install the new Power Supply module:

   a. Grip the handle on the Power Supply module with one hand while supporting it underneath with the other hand.

   b. Orientate the Power Supply module as shown in the previous figure and align it with the chassis slot from which you removed the faulty module.

   c. Gently insert the Power Supply module into the slot until it has engaged fully with the chassis backplane and a "click" sound heard when the release latch of the module locks it into the slot.

   d. Connect the Power Supply module to the power source.

Replacing a Faulty Device

If you need to replace a faulty device, for whatever reason, with a new device having the same hardware configuration, follow the below procedure:

➢ **To replace a faulty device:**

1. Make sure that you have a new License Key for the device. If not, ask your AudioCodes sales representative for the License Key.
2. Disconnect the faulty device from your power supply, and then unplug all cables connected to it.
3. Plug all the relevant cables into the new device, and then power it up.
4. From your local computer, access the device's Web interface with the device's default IP address (192.168.0.2/24), through any one of the Ethernet ports on the CPU module.

the rear pane

5. Load the software file (.cmp) to the device. If you don't have the file, ask your AudioCodes sales representative for it.
6. Load the License Key file to the device.
7. Load your backup (saved) Configuration Package file or individual files (e.g., ini file, certificate files, Dial Plan file, and CPT file), if you have, to the device.
8. Check that the required certificate is installed on the device (TLS Context). If not, load it.
9. Disconnect your computer from the device, and then connect the device's Ethernet port to your network.
10. Verify that the device is operating correctly (e.g., alarms are cleared and call traffic is being routed) and that it is successfully communicating with third-party equipment (e.g., monitoring system, billing system, or routing system), if relevant.
11. If the device is monitored by OVOC, access the OVOC web-based management interface, remove the device from the OVOC topology, and then re-add it.

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