

## MediaPack 11x Series

### MP-112, MP-114 & MP-118





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## Notice

This document describes the hardware installation for AudioCodes MediaPack MP-11x series Voice-over-IP (VoIP) SIP media gateways.

Information contained in this document is believed to be accurate and reliable at the time of printing. However, due to ongoing product improvements and revisions, AudioCodes cannot guarantee accuracy of printed material after the Date Published nor can it accept responsibility for errors or omissions.

Before consulting this document, check the corresponding Release Notes regarding feature preconditions and/or specific support in this release. In cases where there are discrepancies between this document and the Release Notes, the information in the Release Notes supersedes that in this document. Updates to this document and other documents as well as software files can be downloaded by registered customers at <http://www.audiocodes.com/downloads>.

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Date Published: August-16-2016

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## Abbreviations and Terminology

Each abbreviation, unless widely used, is spelled out in full when first used.

Throughout this manual, unless otherwise specified, the following terms are used:

- *Device*: refers to the MP-11x series gateways.
- *MP-11x* refers to MP-112, MP-114, and MP-118

## Related Documentation

Document Name
SIP Release Notes
MP-11x & MP-124 SIP User's Manual
MP-11x SIP Fast Track Guide

## Notes and Warnings



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



**Warning:** The MP-1xx device is an **indoor** unit and therefore, must be installed **only INDOORS**.



**Warning:** Routing of FXS telephony cables outdoors can be done only in conjunction with AudioCodes' approved surge protector (Circa model 4B3S-75) and proper installation and grounding. When done correctly, the installation will meet ITU-T K.21 basic level. For more information, see Section 5.1 on page 23.



**Warning:** The Ethernet port interface cabling must be routed **only** indoors and must **not** exit the building.



### 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.



**Warning:** The device is supplied as a sealed unit and must only be serviced by qualified service personnel.



**Warning:** Before servicing the device, disconnect the device from the mains and from the telephone network cabling.

## Regulatory Information

The Regulatory Information can be viewed at <http://www.audiocodes.com/downloads>.

## Document Revision Record

LTRT	Description
59815	Initial document release for Version 6.6.
59821	FXO warning statement added; power surge protection.
59822	Max. power consumption added.
59823	Illustrations for wall mounting added; CPN removed for 19-inch shelf.
59824	AC power cable warning (Japanese).

## Documentation Feedback

AudioCodes continually strives to produce high quality documentation. If you have any comments (suggestions or errors) regarding this document, please fill out the Documentation Feedback form on our Web site at <http://www.audiocodes.com/downloads>.

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# 1 Introduction

This document provides a hardware description of the MediaPack MP-11x product (hereafter referred to as *device*) and step-by-step procedures for cabling the device.

The MP-11x series includes the following models:

**Table 1-1: MP-11x Model Telephony Support**

MP-11x Model	FXS	FXO	Combined FXS and FXO	Number of Channels
MP-112	✓	✗	✗	2
MP-114	✓	✓	2 + 2	4
MP-118	✓	✓	4 + 4	8

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## 2 Unpacking the MP-11x

Follow the procedure below for unpacking the carton in which MP-11x is shipped.

➤ **To unpack MP-11x:**

1. Open the carton and remove the packing materials.
2. Remove the MP-11x unit from the carton.
3. Check that there is no equipment damage.
4. Ensure that in addition to the MP-11x unit, the package contains the following items:
  - AC power cable.
  - Small plastic bag containing four anti-slide bumpers for desktop installation.
  - Regulatory Information document.
5. Check, retain, and process any documents.
6. Notify AudioCodes or your local supplier of any damage or discrepancies.

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## 3 Physical Description

This chapter provides a physical description of MP-11x.

### 3.1 Physical Dimensions and Operating Environment

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

**Table 3-1: Physical Dimensions and Operating Environment**

Physical Specification	Description
<b>Dimensions (H x W x D)</b>	42 x 172 x 220 mm (1.65 x 8.66 x 6.77 in.)
<b>Weight</b>	0.5 kg (1.1 lbs.) approx.
<b>Environmental</b>	<ul style="list-style-type: none"> <li>▪ Operational: 5 to 40°C (41 to 104°F)</li> <li>▪ Storage: -25 to 85°C (-13 to 185°F)</li> <li>▪ Humidity: 10 to 90% non-condensing</li> </ul>

### 3.2 Front Panel and LED Description

The device's front panel provides LEDs for indicating various operating statuses. The figure below displays the front panel of the MP-118. This is similar to the MP-114 and MP-112 models, differing only in the number of **Channel Status** LEDs (corresponding to the number of channels).

**Figure 3-1: MP-11x Front Panel (e.g., MP-118)**



The device's LEDs are described in the table below:

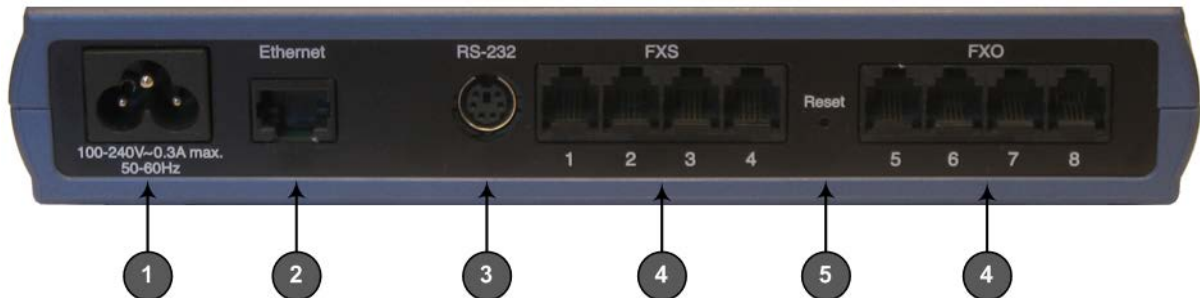
**Table 3-2: MP-11x Front-Panel LEDs Description**

LED	Color	State	Definition
Channels Status	Green	Blinking	Phone is ringing (incoming call, before answering).
		Fast Blinking	One of the following: <ul style="list-style-type: none"> <li>▪ Line malfunction.</li> <li>▪ SRTP is enabled and device resources (DSPs) are currently unavailable for calls on these ports (their resources are "borrowed" for SRTP functionality):               <ul style="list-style-type: none"> <li>✓ MP-112: Not applicable - SRTP does not affect channel capacity.</li> <li>✓ MP-114: LED state applies to <b>Channel Status 4</b> LED (i.e., Port 4 is unavailable for calls).</li> <li>✓ MP-118: LED state applies to <b>Channel Status 7</b> and <b>8</b> LEDs (i.e., ports 7 and 8 are unavailable for calls).</li> </ul> </li> </ul>
	-	On	Phone is in off-hook position or ringing.
	-	Off	Phone is in on-hook position.
Uplink	Green	On	Valid 10/100Base-TX Ethernet connection.
	-	Off	No Ethernet uplink.
Fail	Red	On	Failure (fatal error) or system initialization.
	-	Off	Normal working condition.
Ready	Green	On	Device powered up, self-test OK.
	-	Off	Loading software or system failure.
Power	Green	On	Power is received by the device.
	-	Off	Failure / disruption in the AC power supply or power is currently not being supplied to the device through the AC power supply entry.

### 3.3 Rear Panel and Port Description

The device's rear panel provides the ports for cabling the device to the various interfaces. The figure below displays the rear panel of the MP-118 device (as an example).

**Figure 3-2: MP-11x Rear Panel (e.g., MP-118)**



The table below describes the ports on the MP-11x rear panel:

**Table 3-3: MP-11x Rear Panel Component Descriptions**

Item #	Label	Component Description
1	<b>100-240~0.3A max. 50-60Hz</b>	AC power supply socket.
2	<b>Ethernet</b>	10/100Base-TX Uplink port.
3	<b>RS-232</b>	RS-232 status port (requires a DB-9 to PS/2 adaptor). <b>Note:</b> MP-112 does not provide a serial port.
4	<b>FXS and/or FXO</b>	Provides two, four, or eight FXS/FXO ports (depending on MediaPack model). <b>Note:</b> MP-112 does not support FXO interfaces.
5	<b>Reset</b>	Reset button for resetting the device.

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## 4 Mounting MP-11x

The device can be mounted in one of the following ways:

- Desktop mounting - see 'Desktop Mounting' on page 18
- Wall mounting - see 'Wall Mounting' on page 18
- Standard 19-inch rack mounting - see '19-inch Rack Mounting' on page 20

The figure below shows the mounting components on the underside of MP-11x:

**Figure 4-1: MP-11x Underside**



**Table 4-1: Mounting Components on MP-11x Underside**

Item #	Description
1	Square slot used to attach anti-slide bumpers (for desktop mounting).
2	Screw opening used to attach MP-11x to a 19-inch shelf rack.
3	Keyholes for mounting MP-11x to a wall.

## 4.1 Desktop Mounting

Attach the four (supplied) anti-slide bumpers to the base of MP-11x and place it on a desktop in the desired position.



### Desktop Mount Safety Instructions

When mounting the chassis on a desktop, adhere to the following safety instructions:

- Elevated Operating Ambient - consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (T<sub>ma</sub>) of 40°C (104°F).
- Reduced Air Flow - Installation of the equipment should be such that the amount of air flow required for safe operation on the equipment is not compromised. Avoid stacking equipment one on top of the other and ensure to keep the ventilation openings free from cables or any objects to allow free air circulation.
- Connecting to AC Mains power - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits may have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
- Connection to Protective Earth – To avoid injury, electrical shock and damage to the device, connect the device to an electrical socket with protective earth.

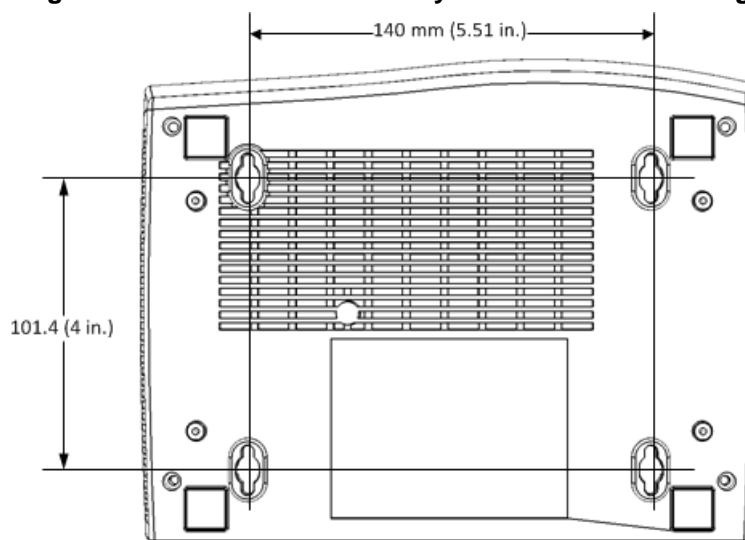
## 4.2 Wall Mounting

Follow the procedure below for mounting MP-11x on a wall.

➤ **To mount MP-11x on a wall:**

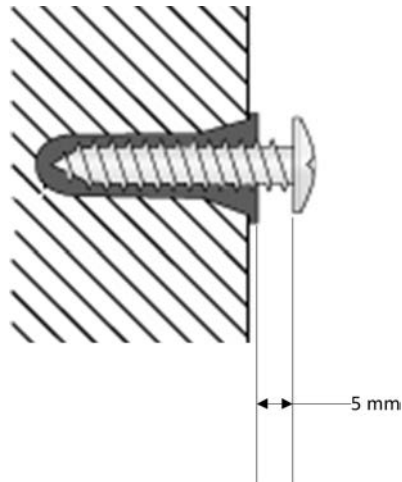
1. Drill four holes in the wall where you want to mount the device, using the following dimensions:
  - Horizontal distance between keyholes: 140 mm (5.51 inches)
  - Vertical distance between keyholes: 101.4 mm (4 inches)

**Figure 4-2: Distance between Keyholes for Wall Mounting**



2. Insert a wall anchor of the appropriate size into each hole.
3. Fasten a DIN 96 3.5 x 20 wood screws (not supplied) into each of the wall anchors. Make sure that the heads extend sufficiently (about 3/16 inch or 5 mm) from the wall for the device's keyholes to hang on:

**Figure 4-3: Protruded Screw Distance from Wall Surface**

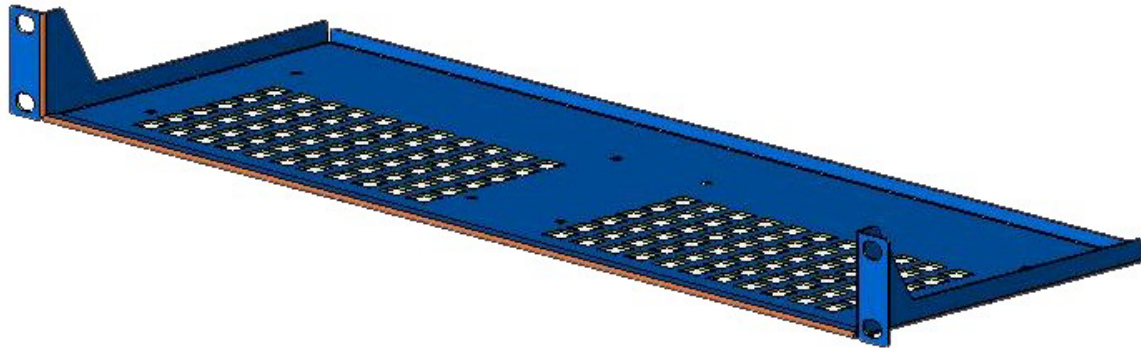


4. Mount the device on the wall by hanging the device's keyholes on the screw heads.

## 4.3 19-inch Rack Mounting

MP-11x can be installed in a standard 19-inch rack by placing it on an AudioCodes' 19-inch rack-mounting shelf (special customer order) that must be pre-installed in a rack. The shelf can hold up to two MP-11x devices. The rack-mounting shelf can be ordered separately from AudioCodes. The 19-inch rack installation package contains a single shelf (shown in the figure below), and eight shelf-to-device screws.

Figure 4-4: 19-inch Rack Shelf for MP-11x



**Note:** The 19-inch rack shelf is not supplied in the standard package kit, but can be ordered separately: Bulk Pack package containing 10 rack mounting shelves for MP-11x. For ordering and pricing, please contact your AudioCodes' sales representative.



### Rack Mount Safety Instructions

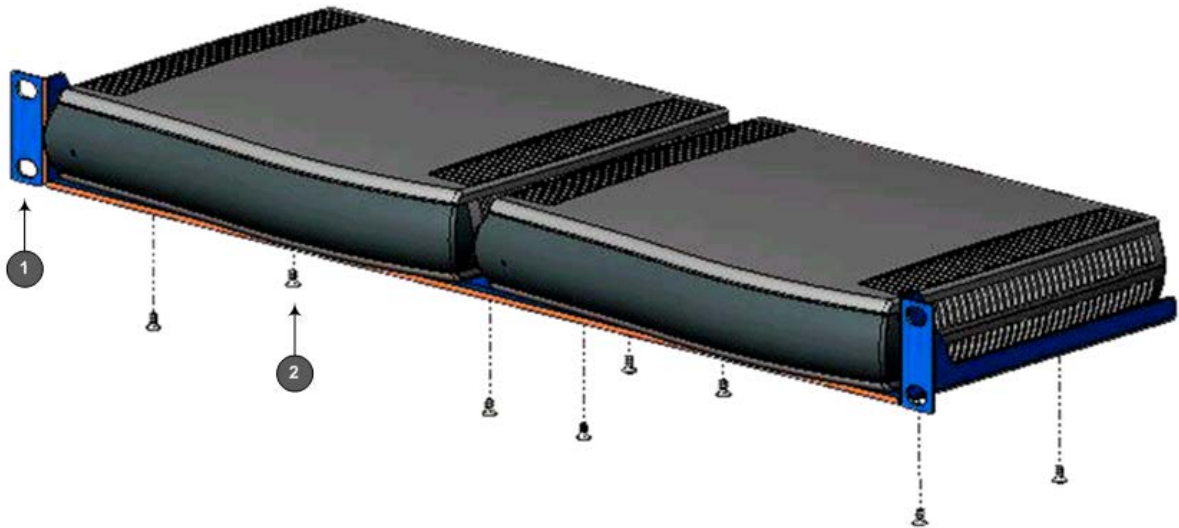
When installing the chassis in a rack, adhere to the following safety instructions:

- Elevated Operating Ambient - If installed in a closed or multi-unit rack assembly, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature ( $T_{ma}$ ) 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. Avoid stacking equipment one on top of the other and ensure to keep the ventilation openings free from cables or any objects to allow free air circulation.
- Mechanical Loading - Mounting the equipment in the rack should be such that a hazardous condition does not occur 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 may have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
- Connection to Protective Earth - To avoid injury, electrical shock and damage to the device, 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 install MP-11x in a 19-inch rack:**

1. Attach one or two MP-11x devices to the shelf using the shelf-to-device screws (supplied).
2. Position the shelf in the rack and align its side holes with the rack frame holes.
3. Attach the shelf to the rack using four standard rack screws (not supplied).

**Figure 4-5: MP-11x Rack Mount Installation**



**Table 4-2: MP-11x Rack Mount**

Item #	Functionality
1	Standard rack holes used to attach the shelf to the rack.
2	Eight shelf-to-device screws.

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## 5 Cabling MP-11x

This section describes the MP-11x cabling procedures:

➤ **To cable MP-11x:**

- Power Surge Protection and Grounding – see 'Power Surge Protection and Grounding' on page [23](#)
- Connecting to the Ethernet network – see 'Connecting MP-11x to the Network' on page [25](#)
- Connecting to FXS/FXO devices – see 'Connecting MP-11x to FXS/FXO Devices' on page [26](#)
- Cabling the FXS Lifeline – see 'Cabling MP-11x FXS Lifeline' on page [29](#)
- Serial connection to a computer – see 'Connecting MP-11x RS-232 Port to a PC' on page [31](#)
- Connecting to the power supply – see 'Connecting MP-11x to Power' on page [32](#)

### 5.1 Power Surge Protection and Grounding

Lightning is the transient passage of electrical current between a cloud and the surface of the earth. Part of the lightning current can be carried inside a building from electrical lines and analog telephone lines located outside. This direct injection of lightning current inside a building can cause significant damage to electronic circuits and equipment.

To protect MP-11x from these power surges, it must be connected to an external lightning protector. You must use a lightning protector of the type CIRCA 4B3S-75 manufactured by CircaTelecom (<http://www.circatelecom.com>). The connection must be made using the terminal fixture of the type CIRCA 2625QC/QC or 26100QC/QC.

This fixture must be connected alongside or within the Main Distribution Frame (MDF). You must connect the grounding connection of this electrical cabinet to the grounding bus of the electrical circuit board, using AWG wires of at least 10mm<sup>2</sup> and maximum length of 3 meters. MP-11x must be connected to the power surge protector using minimum 26-AWG wire thickness.

**Warnings:**

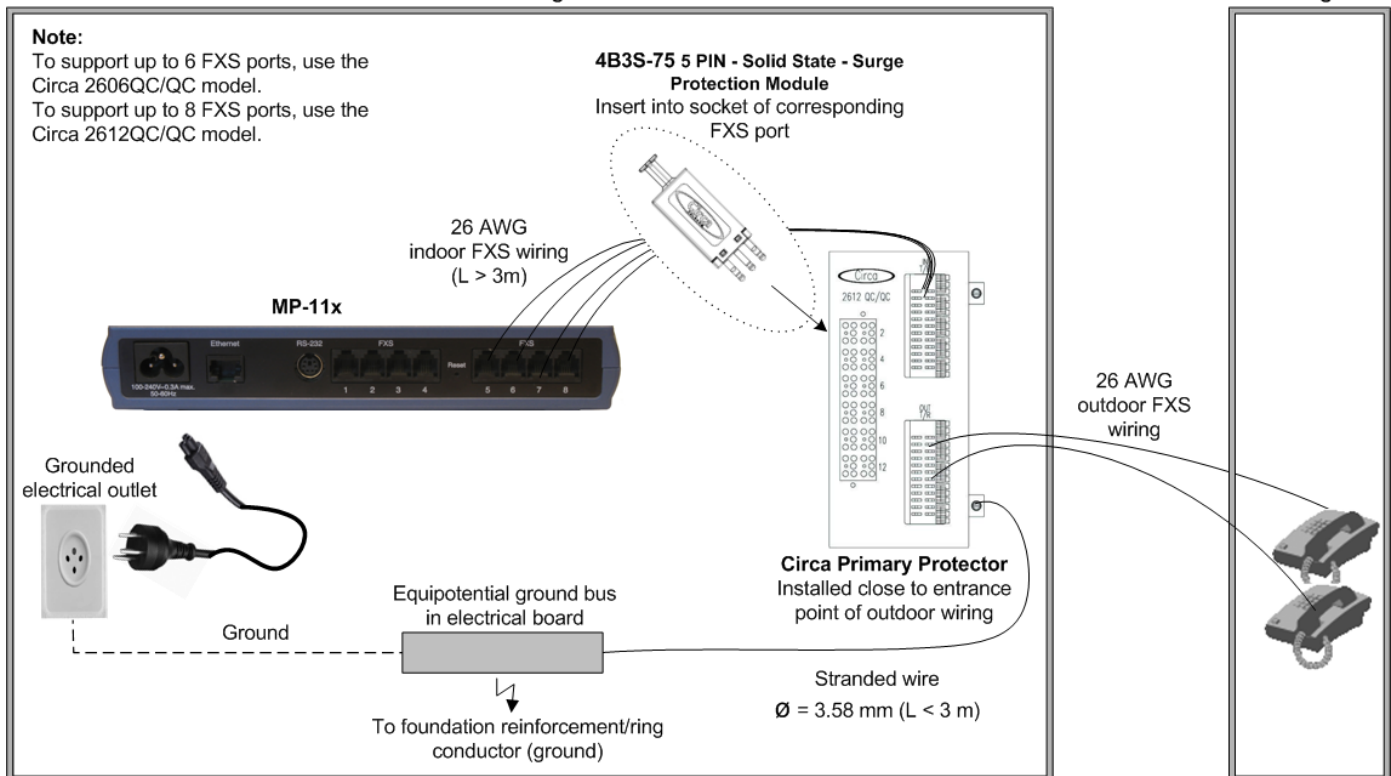
- Ensure that you connect MP-11x to an electrical socket outlet that provides protective earthing (grounding). Prior to connecting power, refer to the Regulatory Information on AudioCodes Web site.
  - ✓ **Finland:** "Laitte on lilitettava suojamaadoituskoskettimilla varustettuun pistorasiaan."
  - ✓ **Norway:** "Apparatet må tilkoples jordet stikkontakt."
  - ✓ **Sweden:** "Apparaten skall anslutas till jordat uttag."
- MP-11x is immune against power surge levels of up to 1 Kilovolts (KV) as required by the following standards: IEC 61000-4-5, EN 55024, and EN 300386.
- Power surges above protection levels as required by EN 55024/EN 300386 may cause damage to MP-11x.
- The telecommunication site must comply with ETS 300-253 "Earthing and Bonding of Telecommunication Equipment in Telecommunication Centers".
- MP-11x provides only Secondary Protection against power surges. In deployments where the telephone lines are installed outside, you must install AudioCodes' approved surge protector (Circa model 4B3S-75) as the primary protection against lightning and other over voltages phenomena's which might couple the 2-wire. Only lightning protectors recommended by AudioCodes must be used. Failing to install Circa primary surge protectors, failing to comply with the grounding instructions or any other installation instructions, may cause permanent damage to MP-11x. When done correctly, the installation will meet ITU-T K.21 basic level.
- As most of the installation is the responsibility of the customer, AudioCodes can assume responsibility for damage only if the customer can establish that MP-11x does not comply with the standards specified above (and MP-11x is within the hardware warranty period).



**Figure 5-1: Power Surge Protection**

Building A

Building B





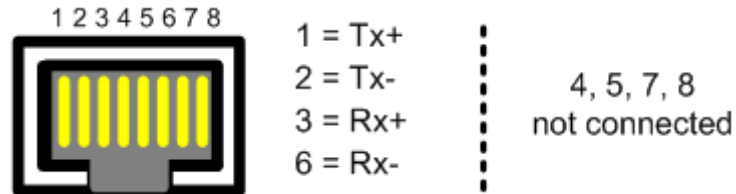
## 5.2 Connecting MP-11x to the Ethernet Network

The procedure below describes how to connect MP-11x directly to the Ethernet network.

Cable specifications:

- **Cable:** Crossover Ethernet cable
- **Connector:** RJ-45
- **Connector Pinouts:**

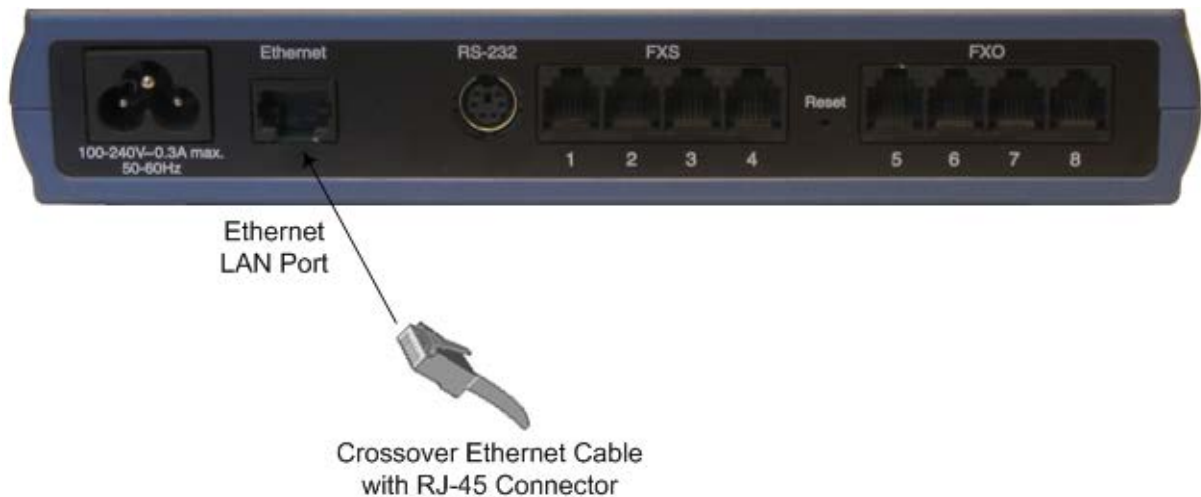
Figure 5-2: RJ-45 Connector Pinouts for Ethernet Connection



- **To connect MP-11x directly to the Ethernet network:**

1. Connect one end of a crossover RJ-45 Ethernet cable to the Ethernet port (labeled **Ethernet**).

Figure 5-3: Connecting to the Ethernet



2. Connect the other end of the cable to the network.

### 5.3 Connecting MP-11x to FXS Interfaces

The procedure below describes how to cable the MP-11x FXS interfaces.



**Warnings:**

- Make sure that you connect FXS ports only to analog telephones; otherwise, damage to MP-11x may occur.
- FXS ports are considered TNV-3
- If SRTP is enabled, the device "borrows" resources (DSPs) for this functionality from other ports, making these ports unavailable for calls:
  - ✓ MP-112: Not applicable - SRTP does not affect channel capacity.
  - ✓ MP-114: Port 4 is unavailable for calls.
  - ✓ MP-118: Ports 7 and 8 are unavailable for calls.

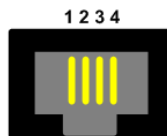


**Note:** FXS (Foreign Exchange Station) is the interface replacing the Exchange (i.e., the CO or the PBX) and connects to analog telephones, dial-up modems, and fax machines. The FXS is designed to supply line voltage and ringing current to these telephone devices. An FXS VoIP device interfaces between the analog telephone devices and the Internet.

Cable specifications:

- **Cable:** Standard two-wire telephone cord
- **Connector:** RJ-11
- **Connector Pinouts:**

**Figure 5-4: RJ-11 Connector Pinouts for FXS Interface**



- 1 - Not connected
- 2 - Tip
- 3 - Ring
- 4 - Not connected

➤ **To connect MP-11x to FXS interfaces:**

1. Connect one end of an RJ-11 two-wire telephone cord to the desired FXS port (labeled FXS).

**Figure 5-5: Connecting FXS Interfaces**



2. Connect the other end of the cord to the required telephone interface (e.g., fax machine, dial-up modem, or analog POTS telephone).

## 5.4 Connecting MP-11x to FXO Interfaces

The procedure below describes how to cable the MP-11x FXO interfaces.



### Warnings for FXO Port Interfaces:

- The device does **not** include primary telecom protection! Additional protection (usually a 350V 3-pin Gas Arrestor 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 or MDF), in conjunction with proper grounding. If primary protection is not implemented, permanent damage to the device may occur due to external power surges and/or lightning over the telecom lines.
- Ensure that you connect FXO ports only to CO/PBX lines; otherwise, damage to the device may occur.
- To protect against electrical shock and fire, use a 26 AWG minimum wire to connect FXO ports to the PSTN.
- FXO ports are considered TNV-3.



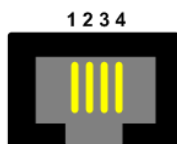
### Notes:

- If SRTP is enabled, the device "borrows" resources (DSPs) for this functionality from other ports, making these ports unavailable for calls:
  - ✓ MP-114: Port 4 is unavailable for calls
  - ✓ MP-118: Ports 7 and 8 are unavailable for calls
- FXO (Foreign Exchange Office) is the interface replacing the analog telephone and connects to a Public Switched Telephone Network (PSTN) line from the Central Office (CO) or to a Private Branch Exchange (PBX). The FXO is designed to receive line voltage and ringing current, supplied from the CO or the PBX (just like an analog telephone). An FXO VoIP device interfaces between the CO/PBX line and the Internet.

Cable specifications:

- **Cable:** Standard two-wire telephone cord
- **Connector:** RJ-11
- **Connector Pinouts:**

Figure 5-6: RJ-11 Connector Pinouts for FXO Interface



- 1 - Not connected
- 2 - Tip
- 3 - Ring
- 4 - Not connected

➤ **To connect MP-11x to FXO devices:**

1. Connect one end of an RJ-11 cable to the desired FXO port (labeled **FXO**).

**Figure 5-7: Connecting FXO Interfaces**



2. Connect the other end of the cable to the required telephone interface (e.g., telephone exchange analog lines or PBX extensions).

## 5.5 Connecting MP-11x to Analog FXS Lifeline Phone

The Lifeline provides a wired analog POTS phone connection to any PSTN or PBX FXS port when there is no power or when the network connection fails. Therefore, you can use the Lifeline phone even when MP-11x is not powered or not connected to the network.

The Lifeline feature is implemented as follows, depending on FXO/FXS support:

- **For devices providing only FXS ports:** A single Lifeline connected to Port #1 using a splitter (not supplied) is available.
- **For devices providing FXS and FXO ports:** A splitter is not required - all FXS ports are automatically connected to corresponding FXO ports (i.e., FXS Port #1 to FXO Port #5, FXS Port #2 to FXO Port #6, and so on).
- **For devices providing only FXO ports:** A Lifeline is not available.



### Notes:

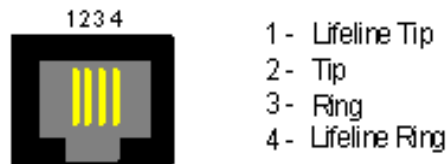
- The Lifeline feature is not supported by MP-112.
- The use of the Lifeline upon network failure can be disabled using the `LifeLineType ini` file parameter (described in the *User's Manual*).

The Lifeline's splitter connects pins #1 and #4 to another source of an FXS port, and pins #2 and #3 to the POTS (FXS) phone.

Cable specifications:

- **Cable:** Splitter cable with an RJ-11 connector on one end and two RJ-11 jacks on the other end
- **Connector:** RJ-11
- **Connector Pinouts:**

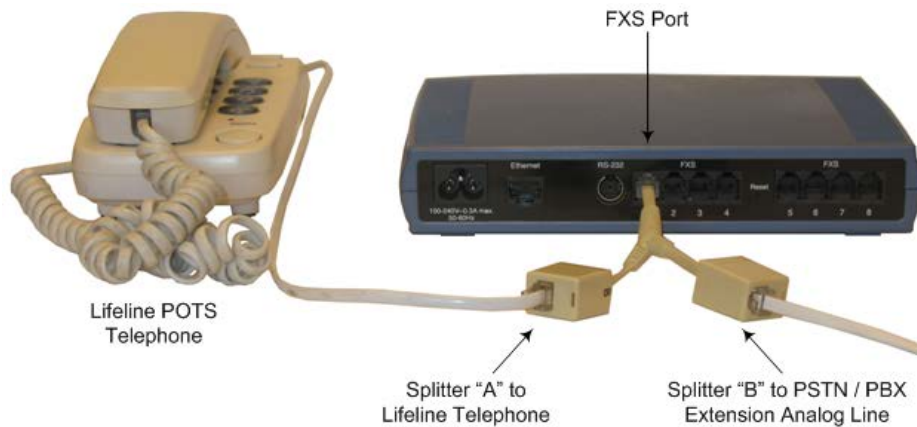
Figure 5-8: RJ-11 Lifeline Splitter Connector Pinouts



➤ **To cable the MP-11x FXS Lifeline:**

1. Connect the Lifeline splitter to Port #1 on MP-11x (the Lifeline splitter is a special order option).
2. Connect the Lifeline phone to Port A on the Lifeline splitter.
3. Connect an analog PSTN line to Port B on the Lifeline splitter.

**Figure 5-9: Lifeline Cabling (Using Splitter Cable) for FXS-Only Devices**



➤ **To cable the combined MP-11x FXS/FXO Lifeline:**

1. Connect a fax machine, modem, or phone to each of the FXS ports.
2. Connect an analog PSTN line to each of the FXO ports.

**Figure 5-10: Lifeline Cabling for FXS and FXO Devices**

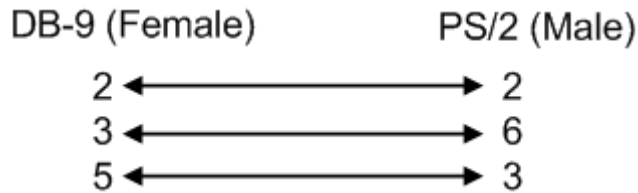


## 5.6 Connecting MP-11x to Computer for Serial Communication

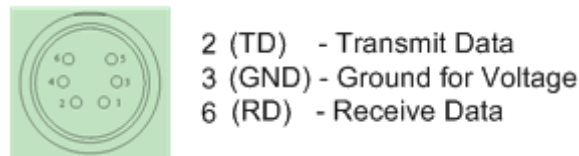
The procedure below describes how to connect the MP-11x serial (RS-232) interface to a computer.

This cabling requires a straight-through PS/2 to DB-9 cable adaptor with the following connector pinouts:

**Figure 5-11: PS/2 to DB-9 Adaptor Connector Pinouts**



**Figure 5-12: PS/2 Connector Pinouts**



**Notes:**

- This procedure is not applicable to MP-112 as this model does not provide an RS-232 serial interface port.
- The PS/2 to DB-9 cable adaptor is not included in the MP-11x package.

➤ **To connect MP-11x to a computer for serial communication:**

1. Connect the PS/2 connector on one end of the cable to the MP-11x RS-232 port (labeled **RS-232**).

**Figure 5-13: Connecting the Serial Port**



2. Connect the DB-9 connector at the other end of the cable to either the COM1 or COM2 RS-232 communication port on your computer.

## 5.7 Connecting MP-11x to Power

MP-11x is powered from a standard alternating current (AC) electrical outlet.

**Table 5-1: Power Specifications**

Physical Specification	Description	
<b>Input Ratings</b>	100-240 VAC, 50-60 Hz, 0.3A max	
<b>Max. Power Consumption</b>	<b>Model</b>	<b>Value</b>
	MP-112	16W
	MP-114 with 2 x FXS / 2 x FXO	22W
	MP-114 with 4 x FXO	4.9W
	MP-114 with 4 x FXS	22W
	MP-118 with 8 x FXS	24.5W
	MP-118 with 8 x FXO	5.4W
MP-118 with 4 x FXS / 4 x FXO	24.5W	

### Warnings:



- The device must be connected only by professional service personnel.
- Ensure that the device connects to an electrical socket outlet that provides protective earthing (grounding). Prior to connecting power, refer to the Regulatory Information document supplied with the device.
- Use only the AC power cord supplied with the device.



### ご注意

本製品に添付の電源ケーブルは、MP-11xに専用設計されているため、汎用性はありません。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 MP-11x to the power supply:**

1. Connect the line socket of the AC power cord (supplied) to the device's AC power socket (labeled **100-240V 0.3A ~50-60 Hz**), located on the rear panel.

**Figure 5-14: Connecting to the Power Supply**



2. Connect the plug at the other end of the AC power cord to a standard electrical outlet.

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Document #: LTRT-59824