Mediant™ 800

Gateway and E-SBC

SIP Protocol

Hardware Installation Manual

SBC

SAS
Stand Alone Survivability
Continuous VoIP Service

HD VoIP
Sounds Better

AudioCodes

Version 6.6

February 2013

Document # LTRT-10252

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Reader's Notes

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Date Published: February-17-2013

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Throughout this manual, unless otherwise specified, the term *device* refers to Mediant 800 Gateway and E-SBC.

Related Documentation

Document Name
SIP Release Notes
Mediant 800 Gateway and E-SBC User's Manual

Notes and Warnings

Note: Open source software may have been added and/or amended for this product. For further information, please visit our website at http://audiocodes.com/support or contact your AudioCodes sales representative.

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 must be installed and serviced only by qualified service personnel.

Warning: The device is an **indoor** unit and therefore, must be installed **only** indoors.

Warning: For deployment in Finland, Sweden and Norway, the device must be installed ONLY in restricted access locations that are compliant with ETS 300 253 guidelines where equipotential bonding has been implemented.

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

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1 Introduction

This document provides a hardware description of the Mediant 800 Gateway and E-SBC (hereafter referred to as *device*) and step-by-step procedures for mounting and cabling the device.

The device provides the following interfaces:

- Up to 6 RJ-45 E&M port interfaces.
- Up to 2 E1/T1 port interfaces (over single copper wire pair).
- Up to 8 BRI ports (supporting up to 16 voice channels).
- Up to 12 FXS port interfaces.
- Up to 8 FXO port interfaces.
- 12 LAN Ethernet interfaces - up to 4 Gigabit Ethernet ports and up to 8 Fast Ethernet ports. These ports operate in port-pair redundancy, providing up to 6 port-pair groups.
- Open Solutions Network (OSN) server platform for hosting third-party applications such as an IP PBX.

Note: For available hardware configuration models, contact your AudioCodes sales representative.

Reader's Notes

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:
   - Four anti-slide bumpers for desktop installation
   - Two mounting brackets for 19-inch rack mounting
   - One FXS Lifeline cable adapter (only for models with FXS interfaces)
   - One AC power cable
5. Check, retain and process any documents.

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

Reader's Notes

3 Physical Description

This section provides a physical description of the device.

3.1 Physical Dimensions

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

Table 3-1: Physical Dimensions

Physical Specification	Value
Dimensions (H x W x D)	32 x 34.5 cm (12.6 x 13.6 inches) x 1U
Weight	2.5 kg (5.5 lb)

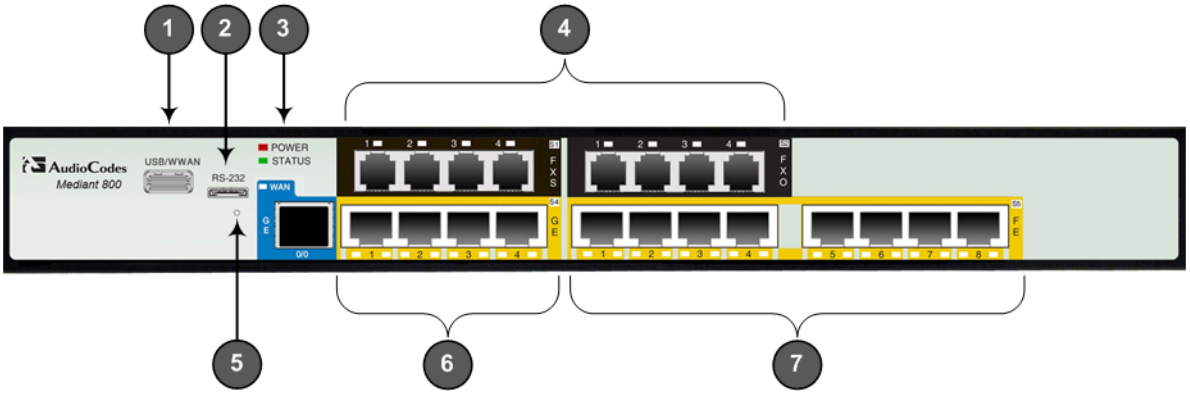
3.2 Front Panel Description

The front panel provides the telephony port interfaces, various networking ports, reset pinhole button, and LEDs.

3.2.1 Ports and Buttons

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

Figure 3-1: Front Panel



Note: The figure above is used only as an example. The number and type of port interfaces depends on the ordered model.

Table 3-2: Front Panel Description

Item #	Label	Description
1	**USB/WWAN**	USB port. **Note:** This port is reserved for future use.
2	**RS-232**	RS-232 port for serial communication.
3	**POWER / STATUS**	LEDs indicating the status of the power and reboot/initialization. For more information, see Section 3.2.2 on page 15.
4	**E&M / FXS / FXO / BRI / Digital**	Telephony port interfaces that can include one or a combination of the following, depending on the ordered model: • FXS port interfaces (RJ-11) • FXO port interfaces (RJ-11) • E&M port interfaces (RJ-45) • ISDN BRI port interfaces (RJ-45) • E1/T1 port interfaces (RJ-48) **Notes:** • The FXS/FXO interfaces support loop-start signalling (indoor only). • For supported hardware configuration options, refer to the *Release Notes*.
5	**-**	Reset pinhole button for resetting the device and optionally, for restoring the device factory defaults. To restore the device to factory defaults, do the following: ▪ With a paper clip or any other similar pointed object, press and hold down the Reset pinhole button for **at least 12 seconds, but no more than 25 seconds**.
6	**GE**	Up to four 10/100/1000Base-T (Gigabit Ethernet) LAN ports for connecting IP phones, computers, or switches. These ports support the following features: ▪ **1+1 LAN port redundancy:** These ports are grouped in pairs, where one port is active and the other redundant. When a failure occurs in the active port, a switchover is done to the redundant port. ▪ **Half- and full-duplex modes** ▪ **Auto-negotiation** ▪ **Straight or crossover cable detection**
7	**FE**	Eight Fast Ethernet (10/100Base-TX) RJ-45 LAN ports for connecting IP phones, computers, or switches. The supported port features are the same as the GE ports (see Item #6 above).

3.2.2 LEDs Description

The front panel provides various LEDs depending on the device's hardware configuration (e.g., the available telephony interfaces). These LEDs are described in the subsequent subsections.

3.2.2.1 LAN Interface LEDs

Each LAN port provides a LED (located on its left) for indicating LAN operating status, as described in the table below.

Table 3-3: LAN LEDs Description

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

3.2.2.2 FXS LEDs

Each FXS port provides a LED for indicating operating status, as described in the table below.

Table 3-4: FXS LEDs Description

LED Color	LED State	Description
Green	On	Phone is off-hooked.
	Flashing	Rings the extension line.
Red	On	Error - malfunction in line or out of service due to Serial Peripheral Interface (SPI) failure.
-	Off	Phone is on hook.
-	Off	No power received by the device.

3.2.2.3 FXO LEDs

Each FXO port provides a LED for indicating operating status, as described in the table below.

Table 3-5: FXO LEDs Description

LED Color	LED State	Description
Green	On	FXO line is off-hooked toward the PBX.
	Flashing	Ring signal detected from the PBX.
Red	On	Error - malfunction in line or out of service due to Serial Peripheral Interface (SPI) failure.
-	Off	Line is on hook.
-	Off	No power received by the device.

3.2.2.4 E&M LEDs

Each E&M port provides a LED for indicating operating status, as described in the table below.

Table 3-6: E&M LEDs Description

LED Color	LED State	Description
Green	On	Off-hook (default)
-	Off	On-hook
Red	On	Line malfunction (default)
-	Off	Normal operation

3.2.2.5 BRI LEDs

Each BRI port provides a LED for indicating operating status, as described in the table below:

Table 3-7: BRI LEDs Description

Color	State	Description
Green	On	Physical layer (Layer 1) is synchronized (normal operation).
Red	On	Physical layer (Layer 1) is not synchronized.
-	Off	Trunk is not active.

3.2.2.6 E1/T1 LEDs

Each trunk port provides a LED for indicating operating status, as described in the table below:

Table 3-8: E1/T1 LEDs Description

Color	State	Description
Green	On	Trunk is synchronized (normal operation).
Red	On	Loss due to any of the following signals: ▪ LOS - Loss of Signal ▪ LOF - Loss of Frame ▪ AIS - Alarm Indication Signal (the Blue Alarm) ▪ RAI - Remote Alarm Indication (the Yellow Alarm)
-	Off	Failure / disruption in the AC power supply or the power is currently not being supplied to the device through the AC power supply entry.

3.2.2.7 Operational Status LEDs

The **STATUS** LED indicates the operating status, as described in the table below.

Table 3-9: STATUS LEDs Description

LED Color	LED State	Description
Green	On	The device is operational.
	Flashing	The device is rebooting.
Red	On	Boot failure.

3.2.2.8 Power LEDs

The **POWER** LED indicates the operating status, as described in the table below.

Table 3-10: POWER LEDs Description

LED Color	LED State	Description
Green	On	Power is received by the device.
-	Off	No power received by the device.

3.3 Rear Panel Description

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

Figure 3-2: Rear Panel

Note: The figure above is used only as an example. The OSN server ports are available only if customer ordered.

Table 3-11: Rear Panel Description

Item #	Label	Description
1	**OSN USB**	Three USB ports (Standard-A type) for connecting computer peripherals (e.g., mouse and keyboard). These are used when implementing the OSN. **Note:** These ports are available only if the device is equipped with the OSN server (customer ordered).
2	**OSN VGA**	15-Pin DB-type female VGA port for connecting to a monitor (screen). This port is used when implementing the OSN. **Note:** This port is available only if the device is equipped with the OSN server (customer ordered).
3	**-**	Reset button for resetting the OSN server.
4	**GE 1** **GE 2**	Two 10/100/1000Base-T Ethernet ports (RJ-45) for connecting directly to the OSN server. For example, one port can be connected to the LAN (to IP Phones) and the second port to the WAN interface (to an IP PBX).
5	⏚	Protective earthing screw.
6	**100-240V~1.5A** **50-60Hz**	3-Prong AC power supply entry.

4 Mounting the Device

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

- Placed on a desktop – see Section 4.1 on page 19
- Installed in a standard 19-inch rack – see Section 4.2 on page 20

Warning: Do not place any equipment directly on top of the device or adjacent to its sides (at least 13-cm separation). In addition, if you are mounting the device in a 19-inch rack, ensure that at least a 3U separation is maintained between the device and other mounted devices or equipment.

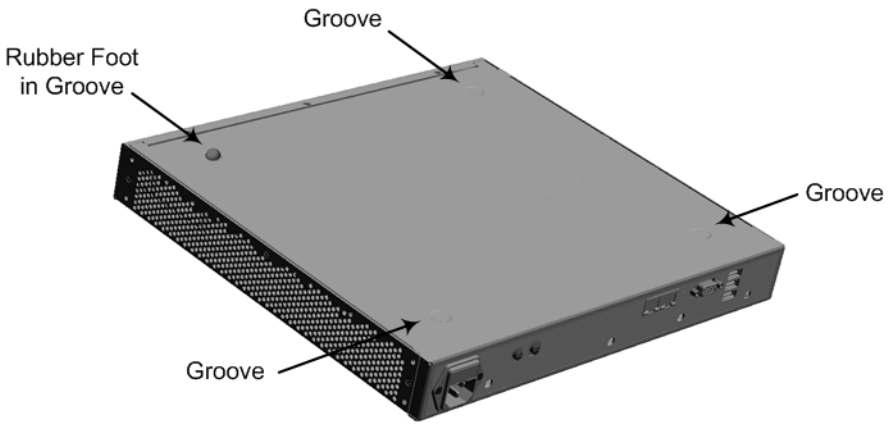
4.1 Desktop Mounting

The device can be placed on a desktop when its four anti-slide bumpers (supplied) are attached to the underside of the device.

➢ To attach the anti-slide rubber bumpers to the device:

1. Flip the device over so that its underside faces up.
2. Locate the four anti-slide grooves on the underside - one in each corner.
3. Peel off the adhesive, anti-slide rubber feet and stick one in each anti-slide groove.

Figure 4-1: Rubber Foot Attached to Underside of Device



4. Flip the device over again so that it rests on the rubber feet and place it in the required position on a desktop.

4.2 19-Inch Rack Mounting

The device can be installed in a standard 19-inch rack by implementing one of the following mounting methods:

- Placing it on a pre-installed shelf in a 19-inch rack – see Section 4.2.1 on page 20
- Attaching it directly to the rack's frame using the device's mounting brackets (supplied) that need to be attached to the chassis – see Section 4.2.2 on page 21

Rack Mount Safety Instructions

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

- **Elevated Operating Ambient 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 with maximum ambient temperature (Tma) 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). For earthing the device, see Section 5.1 on page 23.

4.2.1 Using a Pre-installed Rack Shelf

The procedure below describes how to place the device on a pre-installed shelf in a 19-inch rack.

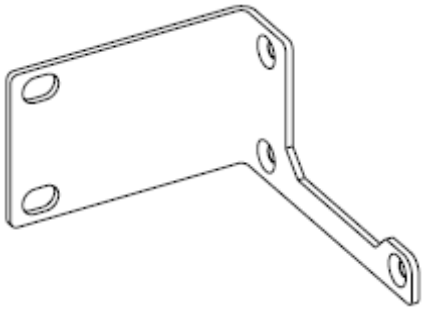
➢ **To mount the device on a pre-installed shelf in the rack:**

1. Before installing it in the rack, ensure that you have a pre-installed rack shelf on which the device can be placed.
2. Place the device on the pre-installed shelf in the rack.

4.2.2 Using Mounting Brackets

The procedure below describes how to mount the device in a 19-inch rack. Rack mounting involves placing the device on a pre-installed rack shelf and then attaching the device's mounting brackets (to the device and rack frame). The purpose of the mounting brackets is to secure the device to the rack.

Figure 4-2: Mounting Bracket (Right)

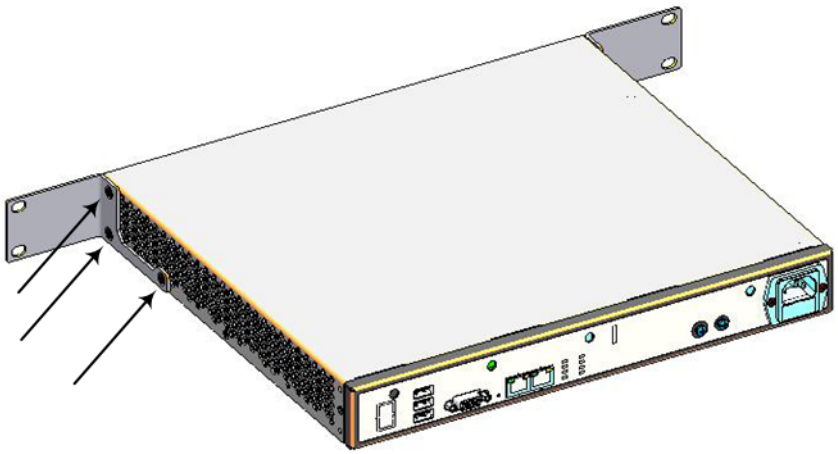


Note: 19-inch rack mounting using mounting brackets is a customer ordered feature.

➢ To mount the device in a 19-inch rack using mounting brackets:

1. Attach the two mounting brackets (supplied) to each side of the device's chassis, using the supplied screws, as shown in the figure below:

Figure 4-3: Attaching the Mounting Brackets



2. Place the device on a pre-installed shelf in the rack.
3. Attach the ends of the mounting brackets (that you installed in Step 1) to the vertical track of the rack's frame, using standard 19-inch rack bolts (not supplied).

Reader's Notes

5 Cabling the Device

This section describes the cabling of the device, which includes the following:

5.1 Grounding the Device

The device must be connected to earth (grounded) using an equipment-earthing conductor.

Protective Earthing

The equipment is classified as Class I EN60950 and UL60950 and must be earthed at all times.

For Finland: "Laite on liltettava suojamaadoituskoskettimilla varustettuun pistorasiaan."

For Norway: "Apparatet rna tilkoples jordet stikkontakt."

For Sweden: "Apparaten skall anslutas till jordat uttag."

➢ **To ground the device:**

1. Connect an electrically earthed strap of 16 AWG wire (minimum) to the chassis' grounding screw (located on the rear panel), using the supplied washer.

Figure 5-1: Grounding the Device

2. Connect the other end of the strap to a protective earthing. This should be in accordance with the regulations enforced in the country of installation.

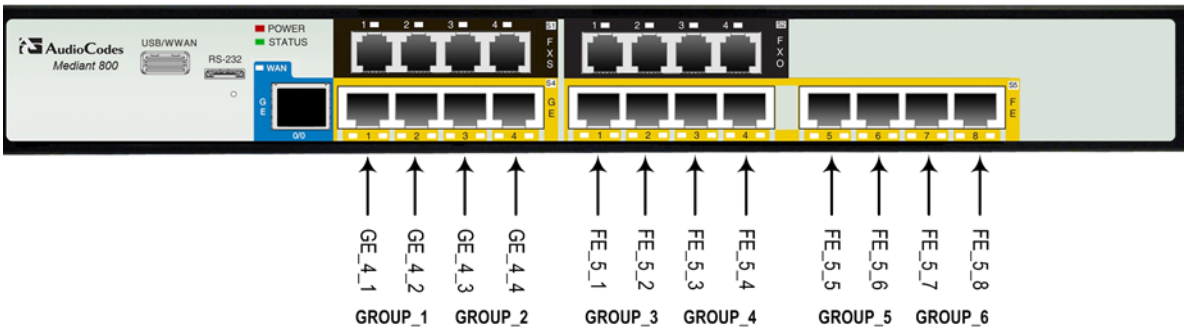
5.2 Connecting to LAN

The device provides up to four 10/100/1000Base-T (Gigabit Ethernet) RJ-45 ports and up to eight 10/100Base-TX (Fast Ethernet) RJ-45 ports for connection to the LAN.

These LAN ports operate in pairs (*groups*) to provide LAN port 1+1 redundancy. In each pair, one port serves as the active LAN port while the other as standby. When the active port fails, the device switches to the standby LAN port.

The figure below shows the LAN port-pair groups and the name of the ports and groups as displayed in the Web interface for configuring the port groups and assigning them to IP network interfaces (refer to the *User's Manual* for more information):

Figure 5-2: LAN Port-Pair Groups and Web Interface String Names



These ports support half- and full-duplex modes, auto-negotiation, and straight or crossover cable detection.

The RJ-45 connector pinouts are described in the table below:

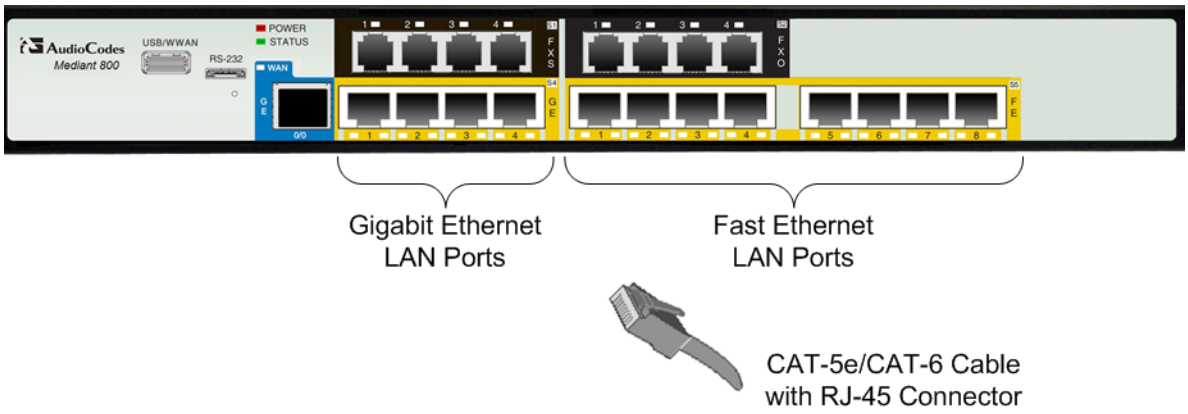
Table 5-1: RJ-45 Connector Pinouts for GbE/FE

Pin	Signal Name
1	Ethernet signal pair (10/100/1000Base-T)
2	
3	Ethernet signal pair (10/100/1000Base-T)
6	
4	Ethernet signal pair (1000Base-T)
5	
7	Ethernet signal pair (1000Base-T)
8	
Shield	Chassis ground

➢ To connect the device to the LAN:

1. Connect one end of a straight-through RJ-45 Cat 5e or Cat 6 cable to the RJ-45 port labeled **GE** (for Gigabit Ethernet ports) and/or **FE** (for Fast Ethernet ports).

Figure 5-3: Connecting the LAN Ports



2. Connect the other end of the cable to the Gigabit Ethernet network (for the **GE** ports) and/or Fast Ethernet network (for the **FE** ports).
3. For 1+1 LAN protection, repeat steps 1 and 2 for the standby port, but connect it to another network (in the same subnet).

Note: If you are implementing the LAN port-pair redundancy, ensure that the two ports making up a pair are each connected to a different network (in the same subnet).

5.3 FXS Interfaces

The procedure below describes how to cable the device's FXS interfaces.

Warnings:

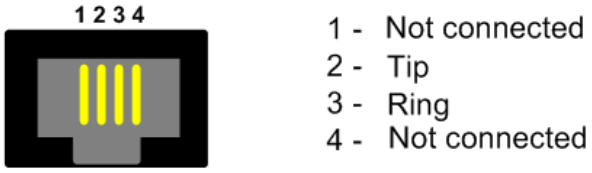
- Ensure that the FXS ports are connected to the appropriate, external devices; otherwise, damage to the device may occur.
- FXS ports are considered TNV-2.

Notes:

- FXS cabling is applicable only if the device is ordered with FXS interfaces.
- FXS 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.
- For configuring various settings for the FXS ports, refer to the *User's Manual*.

The RJ-11 connector pinouts used for this connection are shown in the figure below:

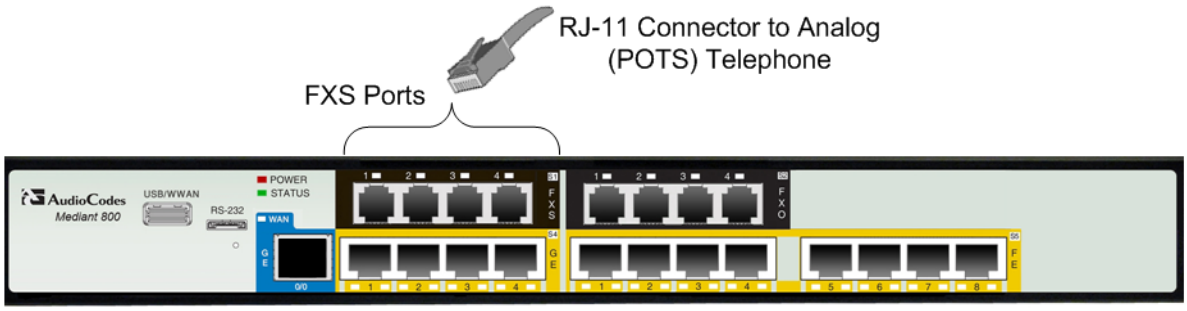
Figure 5-4: RJ-11 Connector Pinouts for FXS Interface



➢ To connect the FXS interfaces:

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

Figure 5-5: Connecting FXS Interfaces



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

5.3.1 Connecting to Analog Devices

The procedure below describes how to cable the device's FXO interfaces.

Warnings:

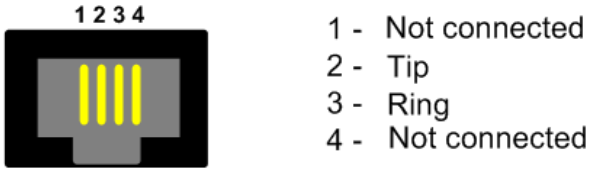
- To protect against electrical shock and fire, use a minimum 26-AWG wire to connect FXO ports to the PSTN.
- Ensure that the FXO ports are connected to the appropriate, external devices; otherwise, damage to the device may occur.
- FXO ports are considered TNV-3.

Notes:

- FXO cabling is applicable only if the device is ordered with FXO interfaces.
- FXO 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 (similar to an analog telephone). An FXO VoIP device interfaces between the CO/PBX line and the Internet.
- For configuring various settings for the FXO ports, refer to the *User's Manual*.

The RJ-11 connector pinouts used for this connection are shown in the figure below:

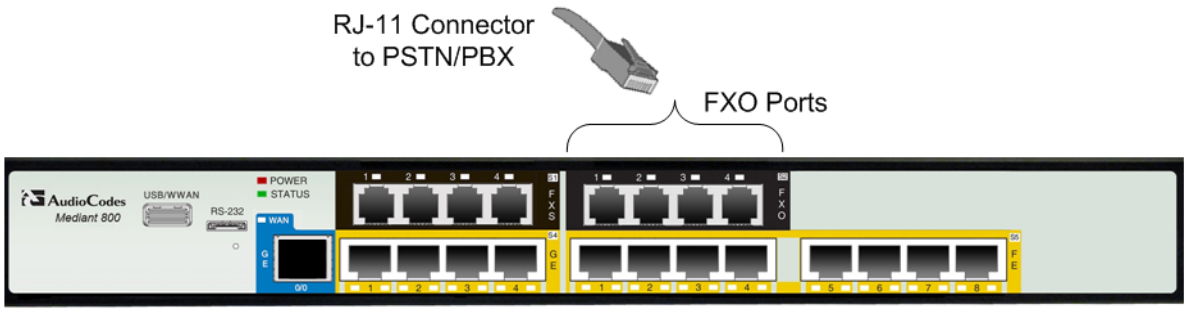
Figure 5-6: RJ-11 Connector Pinouts for FXO Interface



➢ **To connect the FXO interfaces:**

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

Figure 5-7: Connecting FXO Interfaces

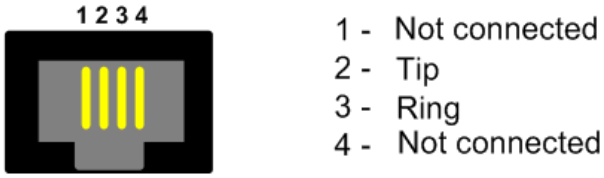


2. Connect the other end of the cable to the required telephone interface: (e.g., telephone exchange analog lines or PBX extensions).

5.3.2 Connecting the Analog Lifeline

The device's analog Lifeline phone feature redirects IP calls to the PSTN upon a power outage or loss of IP network connectivity, thereby guaranteeing call continuity. The Lifeline is provided by FXS Port # **1**. This port connects to the analog POTS phone and the PSTN / PBX using a splitter cable. The Lifeline splitter connects pins 1 and 4 to another source of an FXS port, and pins 2 and 3 to the POTS phone. The RJ-11 connector pinouts are shown in the figure below.

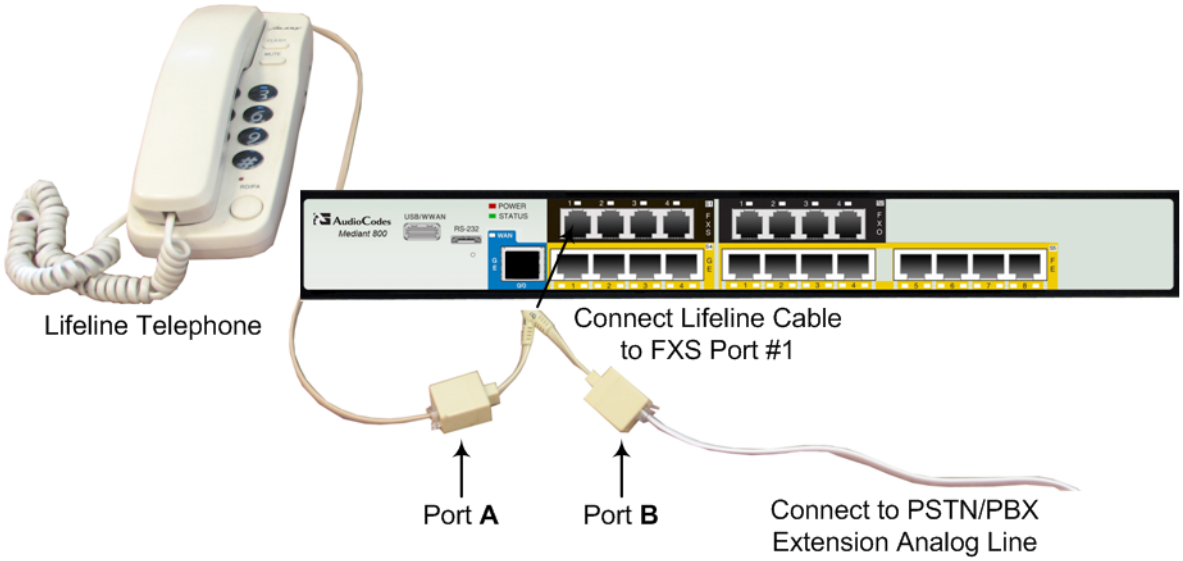
Figure 5-8: RJ-11 Connector Pinouts for FXS Lifeline



➢ To cable the FXS Lifeline:

1. Connect the Lifeline Splitter (supplied) to FXS Port **1**.
2. On the Lifeline splitter cable, do the following:
   a. Connect the analog telephone to Port **A**.
   b. Connect an analog PSTN line to Port **B**.

Figure 5-9: Cabling FXS Lifeline



Notes:

- Analog Lifeline cabling is applicable only if the device is ordered with FXS interfaces.
- The number of supported Lifelines depends on the device's hardware configuration. For the combined FXS/FXO configuration, one Lifeline is available; for the 12-FXS configuration, up to three Lifelines are available.
- The scenarios upon which Lifeline is activated is configured by the LifeLineType *ini* file parameter (for more information, refer to the *User's Manual*).

5.4 Connecting the E&M Analog Voice Interfaces

The device supports up to six E&M ("ear and mouth", "recEive and transMit", or "earth and magneto") signaling interfaces. E&M is a supervisory line signaling that uses DC signals on separate leads, called the "E" lead and "M" lead, traditionally used in the telecommunications industry between telephone switches.

This enables the device to be integrated into various applications requiring E&M signaling interfaces. For example, the device can operate in a radio-over-IP (RoIP) gateway solution for two-way radio systems. In such a solution, the device interfaces between the analog radio station (servicing the land mobile radios) and the IP-based push-to-talk (PTT) server.

The device's E&M interfaces support the following:

- Dial Type: DTMF touch-tone dialer; pulse dialer
- Impedance: 600R and TBR21
- Operation: two- or four-wire. 4-wire E&M uses a 4-wire (2-pair) transmission path for the voice signal. 2-wire E&M uses a single pair for both transmit and receive voice signal.
- Hook Signaling: LMR immediate (without DTMF / MF dialing).
- Interface Type V: Type V is the most common variant in use outside United States. Both ends of the connection indicate a call by grounding the relevant lead. This means that it is easy to interconnect two PABXs "back-to-back" by crossing over the E&M leads and transmit and receive pairs.

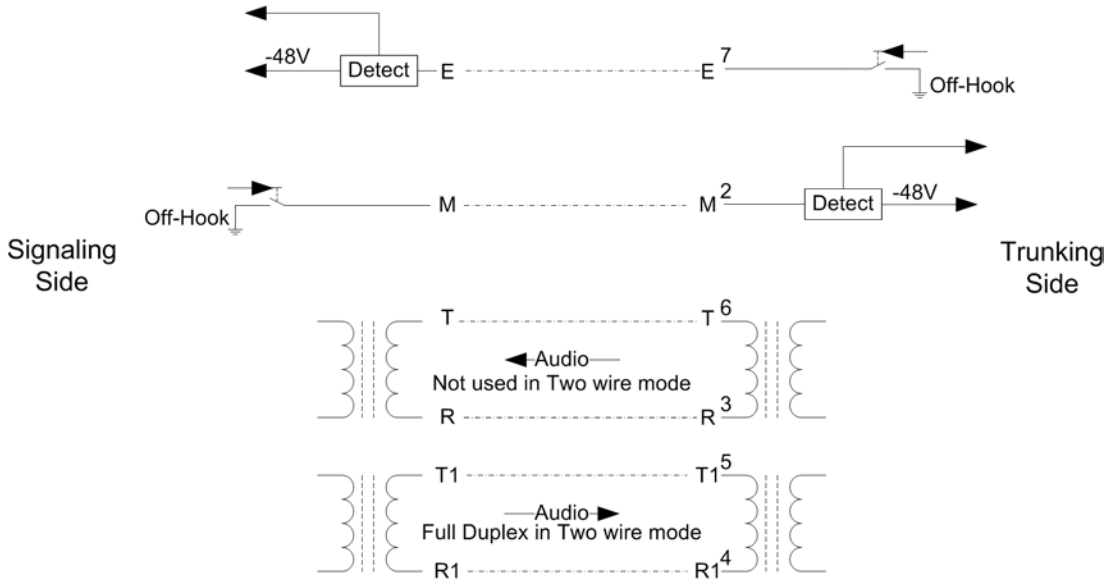
An RJ-45 cable connector with the following pinouts is used:

Table 5-2: RJ-45 Connector Pinouts for E&M Interface

Pin	Name	2W/4W VF	Description
1	SB		SB lead
2	sM (tE)		Signaling side M lead, trunk side E lead
3	sR1(tR)	4W	Signaling side R1 lead, trunk side R lead
4	sR (tR1)	2W/4W	Signaling side R lead, trunk side R1 lead
5	sT (tT1)	2W/4W	Signaling side T lead, trunk side T1 lead
6	sT1(tT)	4W	Signaling side T1 lead, trunk side T lead
7	sE (tM)		Signaling side E lead, trunk side M lead
8	SG		SG lead

The E&M interface wiring for Type V 4-wire is shown in the figure below:

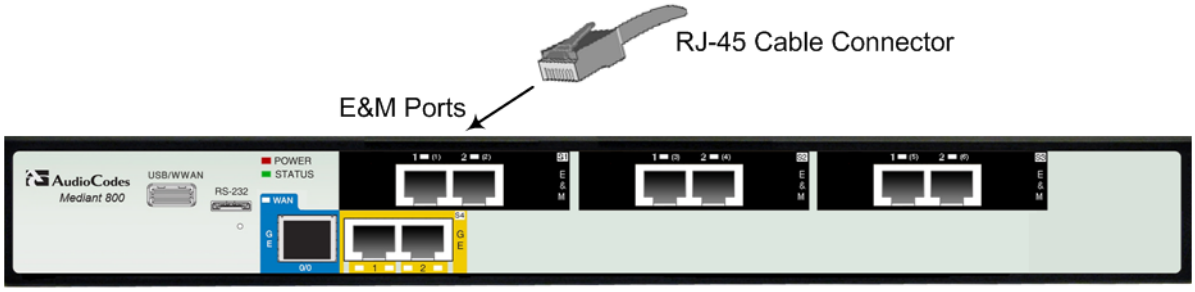
Figure 5-10: E&M Type V 4-Wire Interface



➢ To connect the E&M interfaces:

1. Connect one end of an RJ-45 cable to the E&M port (labeled **E&M**).

Figure 5-11: Connecting E&M Interfaces



2. Connect the other end of the cable to the required E&M interface (e.g., analog / digital radio interface).

Note: For configuring E&M, refer to the *User's Manual*.

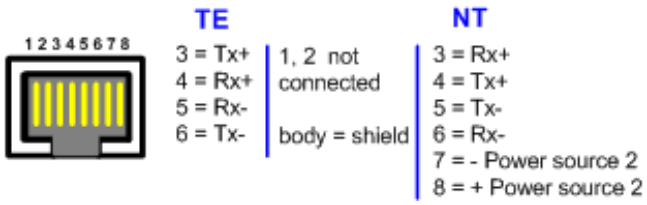
5.5 ISDN BRI Interfaces

5.5.1 Connecting to BRI Lines

The device provides up to four BRI S/T ports. These ports connect to ISDN terminal equipment such as ISDN telephones. Each BRI port can be configured either as termination equipment/user side (TE) or network termination/network side (NT). Up to eight terminal equipment (TE) devices can be connected per BRI S/T port, using an ISDN S-bus that provides eight ISDN ports. When configured as NT, the BRI port drives a nominal voltage of 38 V with limited current supply of up to 100 mA.

The connector pinouts for the BRI port when configured as TE or NT are shown below:

Figure 5-12: RJ-45 Connector Pinouts for BRI Ports



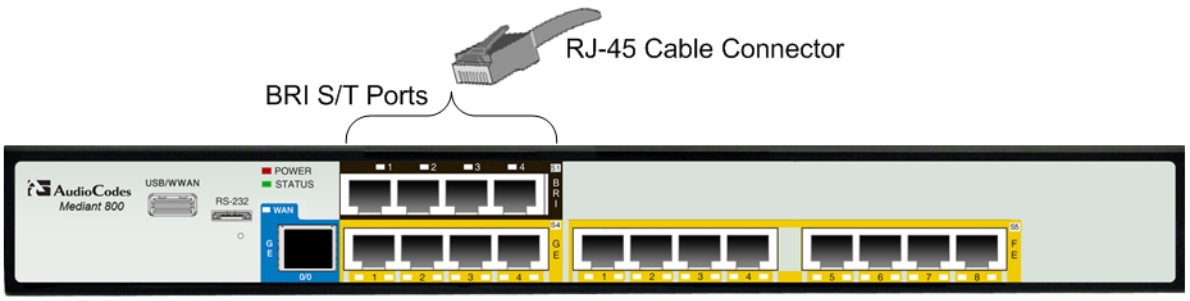
Warning: To protect against electrical shock and fire, use a 26 AWG min wire to connect the BRI ports to the PSTN.

Note: BRI cabling is applicable only if the device is ordered with BRI interfaces.

➢ To connect the BRI ports:

1. Connect the BRI cable to the device's BRI RJ-45 port.
2. Connect the other end of the cable to your ISDN telephone or PBX/PSTN switch.

Figure 5-13: Cabling BRI Ports



5.5.2 Connecting the PSTN Fallback for BRI Lines

The device supports a PSTN Fallback feature for BRI lines, whereby if a power outage or IP connectivity problem (e.g., no ping) occurs, IP calls are re-routed to the PSTN. This guarantees call continuity.

PSTN Fallback is supported if the device houses one or more BRI modules, where each BRI module provides two or four spans.

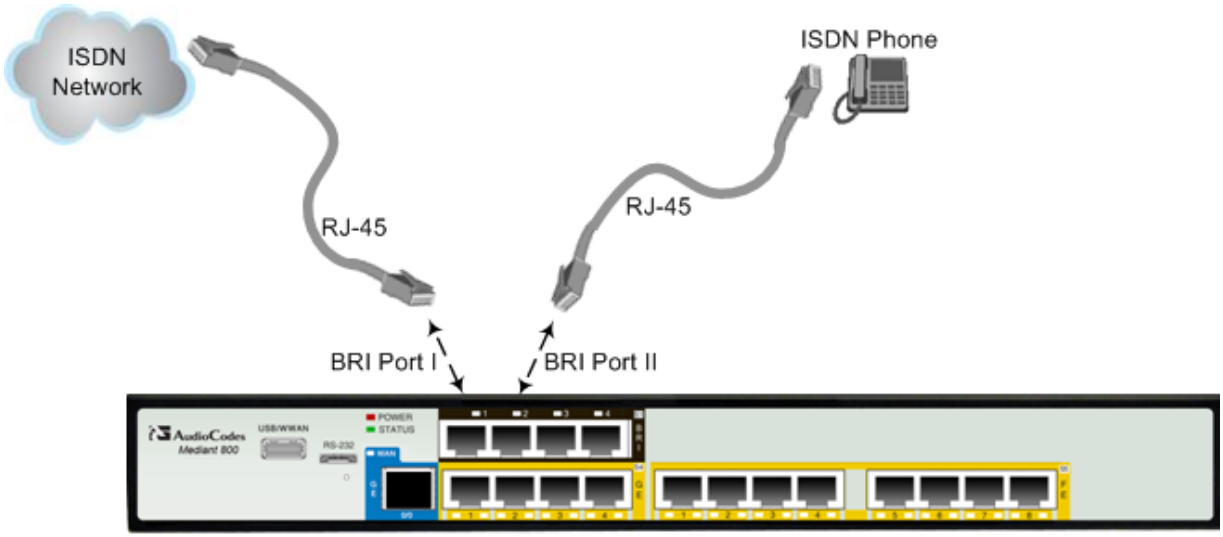
In the event of a PSTN fallback, the BRI module's metallic relay switch automatically connects line Port 1 (**I**) to Port 2 (**II**) of the BRI module.

For example, if a PBX trunk is connected to Port 1 and the PSTN network is connected to Port 2, when PSTN Fallback is activated, calls from the PBX are routed directly to the PSTN through Port 2.

➢ To connect the BRI line interfaces for 1+1 PSTN Fallback:

1. Connect line 1 to a PBX.
2. On the same BRI module, connect line 2 to the PSTN.

Figure 5-14: Cabling (Ports 1 and 2) PSTN Fallback



Notes:

- PSTN Fallback is supported only on the BRI module.
- PSTN Fallback is supported only between ports on the same BRI module.
- The scenarios that trigger PSTN Fallback (i.e., power outage and/or IP network loss) are configured by the **TrunkLifeLineType** parameter. For more information, see the *User's Manual*.
- This PSTN Fallback feature has no relation to the PSTN Fallback Software Upgrade Key.

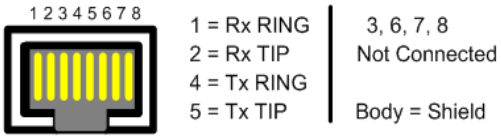
5.6 Connecting to ISDN PRI (E1/T1) Trunks

The procedure below describes the cabling of the device's E1/T1 trunk.

Warning: To protect against electrical shock and fire, use a 26 AWG min wire to connect T1 or E1 ports to the PSTN.

RJ-48c trunk connectors used in the cabling are wired according to the figure below:

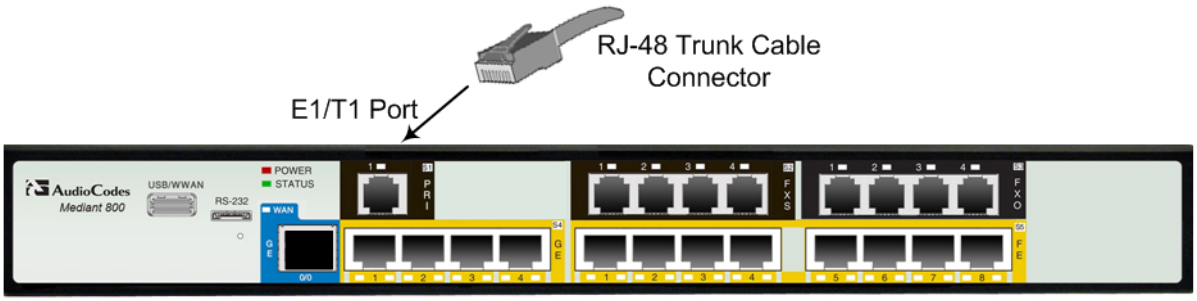
Figure 5-15: RJ-48c Connector Pinouts for E1/T1



➢ To connect the E1/T1 trunk interface:

1. Connect the E1/T1 trunk cable to the device's E1/T1 port.
2. Connect the other end of the trunk cable to your PBX/PSTN switch.

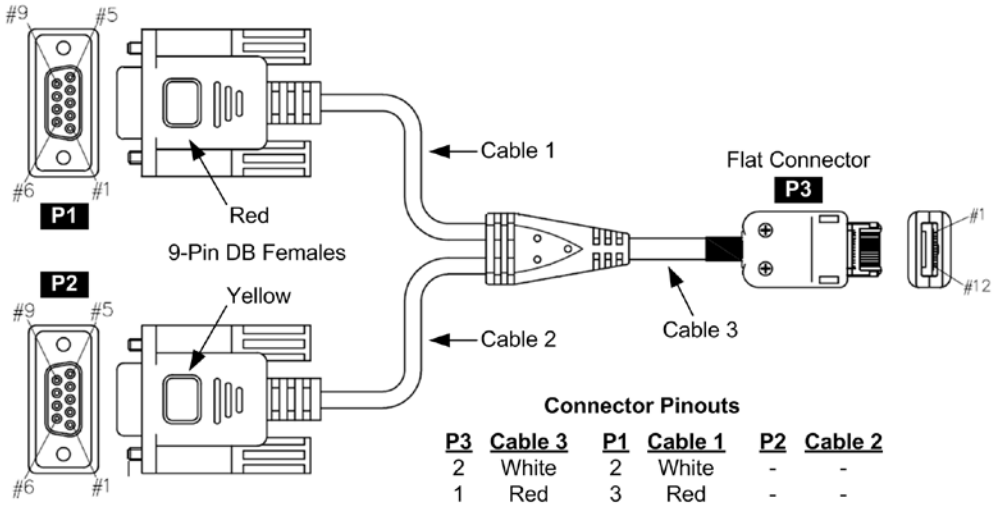
Figure 5-16: Cabling E1/T1 Ports



5.7 Connecting to a Computer for Serial Communication

The device provides an RS-232 serial interface port on its front panel. The serial cable adapter used for connecting the RS-232 interface is shown below:

Figure 5-17: RS-232 Cable Adapter



Connector Pinouts

P3	Cable 3	P1	Cable 1	P2	Cable 2
2	White	2	White	-	-
1	Red	3	Red	-	-
4	Brown	-	-	2	White
3	Black	-	-	3	Red
8	Orange	5	Black	-	-
9	Yellow	-	-	5	Black

➢ To connect the device's serial interface port to a computer:

1. Connect one end of the crossover RS-232 cable (depicted as **P3** in the figure above) to the device's RS-232 port (located on the front panel and labeled **RS-232**).
2. Connect the other end of the cable labeled **P1** (i.e., the red 9-pin DB connector) to either the COM1 or COM2 RS-232 communication port of your computer.

5.8 Connecting the OSN Server

The device may be ordered with an embedded, Open Network Solution (OSN) platform for hosting third-party services (such as an IP PBX). The OSN server features an Intel® Atom™ 1.6 GHz processor, with 1GB or 2GB RAM (depending on Mediant 800 model), and a single storage hard disk drive (SATA storage).

The OSN server's port interfaces are located on the device's rear panel. These ports include three USB ports for connecting computer peripherals such as a mouse and keyboard, one VGA port for connecting to a monitor, and two Gigabit Ethernet ports for connecting to Ethernet interfaces such as LAN and/or WAN.

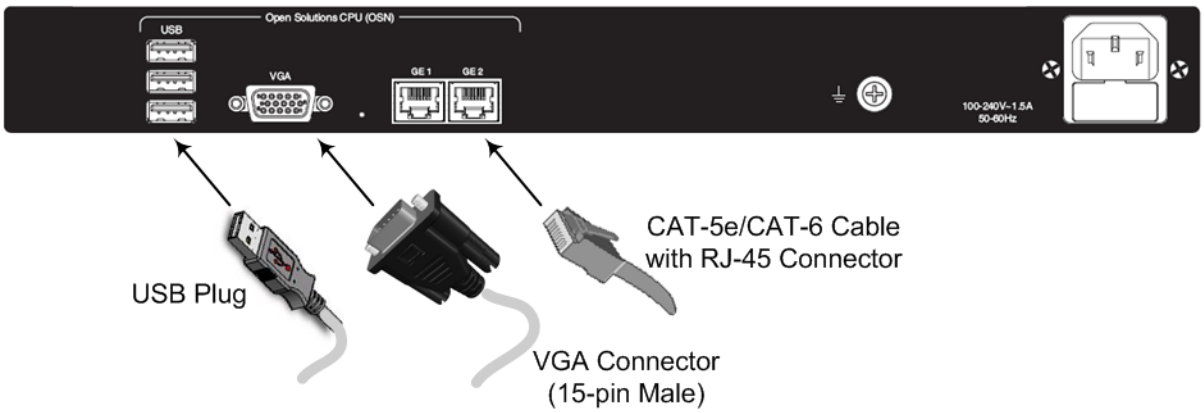
Notes:

- The OSN server platform is a customer ordered feature and therefore, the OSN interface ports are available only when the OSN is ordered.
- The OSN server also provides an internal interface connection to the Mediant 800 LAN switch. In other words, instead of using the two Gigabit Ethernet ports on the rear panel, you can use the LAN port #1 located on the front panel for connecting to the OSN server.
- If your device is shipped with an OSN server, you can download the latest OSN drivers from AudioCodes Web site at http://www.audiocodes.com/downloads.

➢ To connect the OSN server:

1. **Connecting computer peripherals:** on the rear panel, connect a USB plug to one of the USB (Standard-A type) ports (labeled **USB**), and then connect the other end of the USB cable to the peripheral device.
2. **Connecting to a monitor:** on the rear panel, connect a 15-Pin D-type male connector to the VGA female port (labeled **VGA**), and then connect the other end of the cable to a monitor.
3. **Connecting the Ethernet ports:** on the rear panel, connect an RJ-45 Ethernet cable to the Gigabit Ethernet port/s (labeled **GE 1** and **GE 2**), and then connect the end to the desired network.

Figure 5-18: Cabling OSN Server Ports



4. Connect the device to power.
5. Insert the operating system CD media (Linux or Microsoft Windows) into the CD-ROM drive.
6. Continue according to the CD's installation instructions.

➢ To reset the OSN server:

- Insert a sharp-pointed object (such as a drawing pin) into the Reset pinhole and then extract it after a second; the OSN server performs a reset.

5.9 Powering up the Device

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

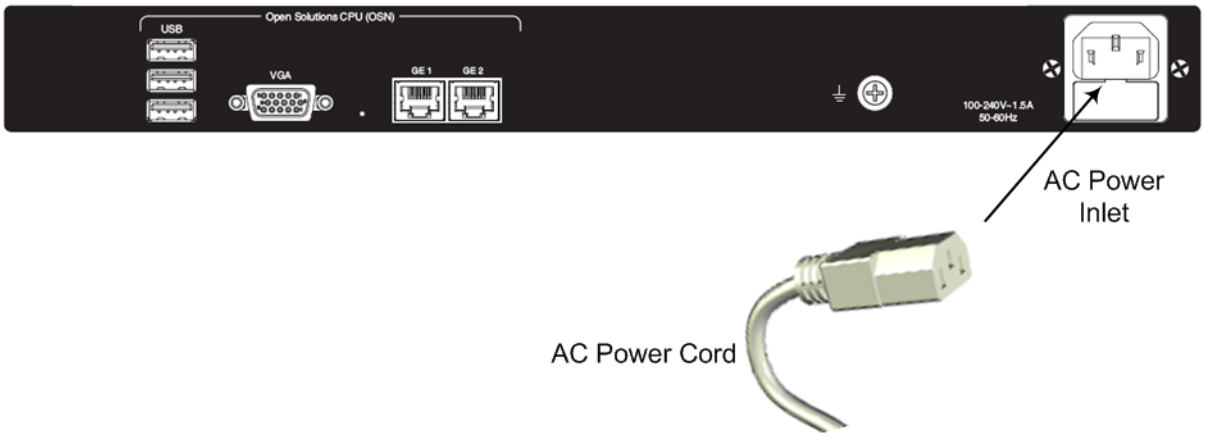
Warnings:

- The device must be connected to a socket-outlet providing a protective earthing connection.
- Use only the AC power cord that is supplied with the device.
- For replacing the power fuse, see Section 6 on page 39.

➢ To connect the device 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 1.5A ~50-60 Hz**), located on the rear panel.

Figure 5-19: Connecting to the Power Supply



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

Once you have cabled and powered-up the device, the **POWER** LED on the front panel lights up green. For a description of this LED, see Section 3.2.2.8 on page 17.

Reader's Notes

6 Maintenance – Replacing the Power Fuse

The device contains a fuse that protects the device from excessive current. The fuse is located on the rear panel, below the power socket. To replace the fuse, use only one of the following fuses described in the table below:

Table 6-1: Allowed Fuses for the Device

Manufacturer	Manufacturer Part Number
BEL	5ET2.5-R
CONQUER	UDL 2.50
LITTEFUSE	021302.5MXP

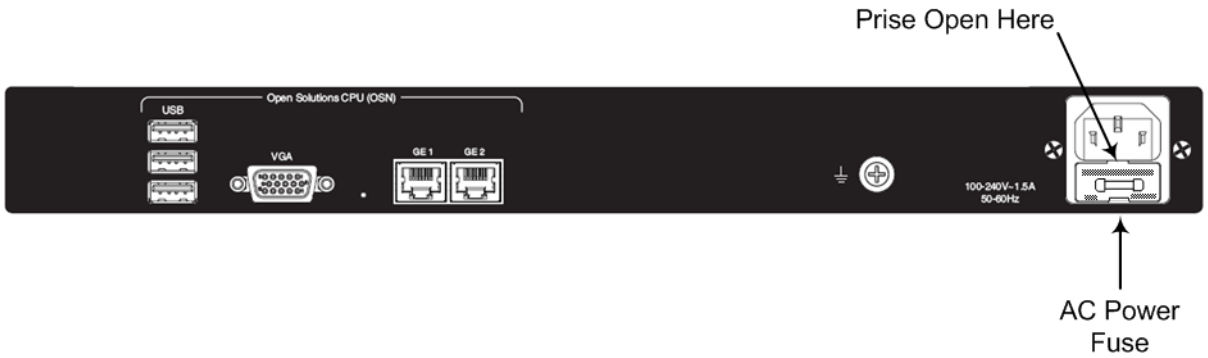
Caution

For continuous protection, replace only with the same fuse type and rating fuse.

➢ **To replace the fuse:**

1. Unplug the power cord from the electrical outlet.
2. Using a small flathead screwdriver, gently pries open the fuse cavity as illustrated in the figure below:

Figure 6-1: Opening the Fuse Cavity



3. Carefully remove the fuse from the fuse cavity.

Figure 6-2: Removed Power Fuse

4. Insert the new fuse securely into the fuse cavity until you hear a click sound.
5. Reconnect the power cord and verify that the **Power** LED is lit green.

Reader's Notes

A Installing CentOS Ver. 4.7 on OSN Server

This appendix provides important information for installing CentOS Ver. 4.7 Linux Distribution on the OSN server:

- When installing CentOS, ensure that you type **`linux irqpoll`** at the **`boot:`** prompt.
- For CentOS to identify the OSN server's Gigabit Ethernet (GE) interfaces, do the following:

  1. Obtain the following files from AudioCodes:
     - Binary compiled CentOS 4.7 driver for Intel e1000e Ethernet controller on Mediant 800 Gateway and SBC (**e1000e.ko**)
     - Manual pages (**e1000e.7.gz**)
  2. Copy the files to the **/root** directory.
  3. Remove any old e1000e modules (if any) and install the new module and manual pages:

```
#> find /lib/modules/2.6.9-78.ELsmp –name e1000e.ko –exec
rm –rf {}\;
#> find /lib/modules/2.6.9-78.ELsmp –name e1000e.ko.gz –
exec rm –rf {}\;
#> install –D –m 644 /root/e1000e.ko /lib/modules/2.6.9-
78.ELsmp/kernel/drivers/net/e1000e/e1000e.ko
#> /sbin/depmod –a
#> echo “alias eth1 e1000e” >> /etc/modprobe.conf
#> echo “alias eth2 e1000e” >> /etc/modprobe.conf
#> install –D –m 644 /root/e1000e.7.gz
/usr/share/man/man7/e1000e.7.gz
#> man –c –P`cat > /dev/null` e1000e
#> modprobe e1000e
```

     Note: The character **#>** depicts the CLI prompt and is not part of the command.
  4. Restart networking, by running the following command:

     `#> service network restart`

     Note: The character **#>** depicts the CLI prompt (i.e., this is not part of the command).

     The final result should be as follows:

```
Eth0 = r8169 (INTERNAL and not in use )
Eth1 = e1000e (GE LAN)
Eth2 = e1000e (GE LAN)
```

Hardware Installation Manual

www.audiocodes.com