

POTS 2-Wire to Fiber Converters

Connect your standard analog phone system with fiber.

Connect central office voice signals to distant "Plain Old Telephone Service" (POTS) equipment over fiber cables, using standard telephone signaling.



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FEDERAL COMMUNICATIONS COMMISSION AND INDUSTRY CANADA RADIO FREQUENCY INTERFERENCE STATEMENTS

This equipment generates, uses, and can radiate radio-frequency energy, and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.

Normas Oficiales Mexicanas (NOM) Electrical Safety Statement INSTRUCCIONES DE SEGURIDAD

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.
2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.
4. Todas las instrucciones de operación y uso deben ser seguidas.

5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc.
6. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.
7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.
8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.
9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.
10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.
11. El aparato eléctrico deberá ser conectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.
12. Precaución debe ser tomada de tal manera que la tierra física y la polarización del equipo no sea eliminada.
13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.
14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.
15. En caso de existir, una antena externa deberá ser localizada lejos de las líneas de energía.
16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.

17. Cuidado debe ser tomado de tal manera que objetos líquidos no sean derramados sobre la cubierta u orificios de ventilación.
18. Servicio por personal calificado deberá ser provisto cuando:
 - A: El cable de poder o el contacto ha sido dañado; u
 - B: Objetos han caído o líquido ha sido derramado dentro del aparato; o
 - C: El aparato ha sido expuesto a la lluvia; o
 - D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o
 - E: El aparato ha sido tirado o su cubierta ha sido dañada.

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1. Specifications

1.1 General Specifications

Distance (Maximum) — TE160A-R2–TE163A-R2: Multimode: 3.1 mi. (4.9 km);
TE164A-R2–TE165A-R2: Single-mode: 12.4 mi. (19.9 km)

Input Power — TE160A-R2–TE163A-R2: Multimode: -14.0 dBm;
TE164A-R2, TE165A-R2: Single-mode: -8.0 dBm

Link Budget — TE160A-R2–TE163A-R2: Multimode: 11.0 dB;
TE164A-R2–TE165A-R2: Single-mode: 16.0 dB

RX Sensitivity — TE160A-R2–TE163A-R2: Multimode: -31.0 dBm;
TE164A-R2–TE165A-R2: Single-mode: -30.0 dBm

TX Power — TE160A-R2–TE163A-R2: Multimode: -19.0 dBm to -14.0 dBm,
TE164A-R2–TE165A-R2: Single-mode: -15.0 dBm to -8.0 dBm

CE Approval — Yes

Connectors — TE160A-R2–TE161A-R2: (1) RJ-11, (1) pair of ST®;
TE162A-R2–TE165A-R2: (1) RJ-11, (1) pair of SC

Indicators — (3) LEDs: Fiber link on/off; Active in use/ringing; Power on/off

Power — Output: 12 VDC, 0.6 A from external power supply

Size — 1.9"H x 3.7"W x 4.8"D (4.8 x 9.4 x 12.2 cm)

Weight — 2 lb. (0.9 kg)

1.2 Cable Specifications

1.2.1 Copper Cable—Category I

NOTE: Either shielded (STP) or unshielded (UTP) twisted-pair cable is acceptable.

Gauge — 24 to 22 AWG

Maximum Number of Nodes — 2

Maximum Cable Length — 16.4 ft. (5 m) for Unit A and CO;
3.1 mi. (5 km) for Unit B and telephone

Chapter 1: Specifications

1.2.2 Fiber Cable

Bit Error Rate — Less than or equal to 10^{-9}

Multimode Fiber (Recommended) — 62.5/125 μm

Multimode Fiber (Optional) — 100/140, 85/140, 50/125 μm

TE160A-R2–TE163A-R2:

Cable — 1300-nm multimode fiber

Fiber Optic Transmitter Power — Minimum: -19.0 dBm, Maximum: -14.0 dBm

Fiber Optic Receiver Sensitivity — Minimum: -30.0 dBm, Maximum: -14.0 dBm

Link Budget — 11.0 dB

TE164A-R2–TE165A-R2:

Cable — 1310-nm single-mode fiber

Fiber Optic Transmitter Power — Minimum: -15.0 dBm, Maximum: -8.0 dBm

Fiber Optic Receiver Sensitivity — Minimum: -31.0 dBm, Maximum: -8.0 dBm

Link Budget — 16.0 dB

1.3 RJ-11C Connector Specifications

Unit A (Telephone Emulation):

Connector — RJ-11C

Impedance — 600 ohms

Ringer Equivalence Number (REN) — 0.48

Loop Current — 20 to 60 mA

Insertion Loss — 0.0 ± 1.0 dB at 1000 Hz (when both ports are terminated at 600 ohms)

Unit B (Central Office Emulation):

Connector — RJ-11C

Impedance — 600 ohms

Battery Source — 48 VDC ± 5 V

Ringling Supply — 90 Vp-p

Ring Frequency — 15–30 Hz (reproduces the frequency detected by Unit A)

Ring Cadence — Reproduces the cadence detected by Unit A

Insertion Loss — 0.0 ± 1.0 dB at 1000 Hz (when both ports are terminated at 600 ohms)

2. Overview

2.1 Introduction

The POTS 2-Wire to Fiber Converters connect central-office voice-grade signals to distant Plain Old Telephone Service (POTS) equipment using standard telephone signaling. They can extend, over fiber, the distance between two voice path communications devices up to 12.4 miles (19.9 km) using multimode or single-mode fiber cable.

The converters provide audio transmission, Caller ID, ringing at the distant end, and automatic ringdown. Two units are required to implement an end-to-end system. An RJ-11 female connector provides the electrical interface between the device and the telephone device.

2.2 What’s Included

Your package should include the following items. If anything is missing or damaged, contact Black Box Technical Support at 724-746-5500 or info@blackbox.com.

- (1) POTS to 2-Wire Fiber Converter
- Power supply
- This user’s manual

NOTE: For a standard configuration, one line side FXS and one customer side FXO are required. For an automatic ring-down configuration, two line side FXS units are required. (See Table 2-1, below.)

Table 2-1. Available models.

Product Code	Description	Connectors	Works with
TE160A-R2	Line side FXS	RJ-11 (5 km), ST connector, 1300 nm multimode, 2 km	TE161A-R2
TE161A-R2	Customer side FXO	RJ-11 (5 km), ST connector, 1300 nm multimode, 2 km	TE160A-R2 or a second TE161A-R2
TE162A-R2	Line side FXS	RJ-11 (5 km), SC connector, 1300 nm multimode, 2 km	TE163A-R2
TE163A-R2	Customer side FXO	RJ-11 (5 km), SC connector, 1300 nm multimode, 2 km	TE162A-R2 or a second TE163A-R2
TE164A-R2	Line side FXS	RJ-11 (5 km), SC connector, 1310 nm single-mode, 20 km	TE165A-R2
TE165A-R2	Customer side FXO	RJ-11 (5 km), SC connector, 1310 nm single-mode, 20 km	TE164A-R2 or a second TE165A-R2

2.3 Hardware Description

Figures 2-1 through 2-6 show the side panels of the POTS 2-wire to fiber converter. Tables 2-2 through 2-7 describe their components.

NOTE: TE160A-R2 and TE161A-R2 work together.

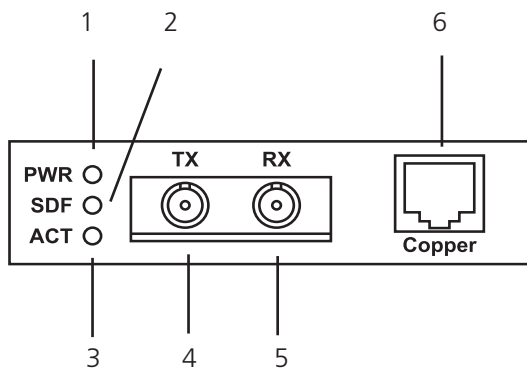


Figure 2-1. Side panel (TE160A-R2).

Table 2-2. Side-panel components (TE160A-R2).

Number	Component	Description
1	Power LED	Lights when power to the unit is on.
2	SDF LED	Lights when fiber link is connected.
3	ACT LED	Lights when active in use/ringing.
4	(1) ST connector for TX	Connect up to 1.2 mi. (2 km) of 1300-nm multimode fiber cable.
5	(1) ST connector for RX	Connect up to 1.2 mi. (2 km) of 1300-nm multimode fiber cable.
6	RJ-11 connector	Connect up to 3.1 mi. (5 km) of copper cable.

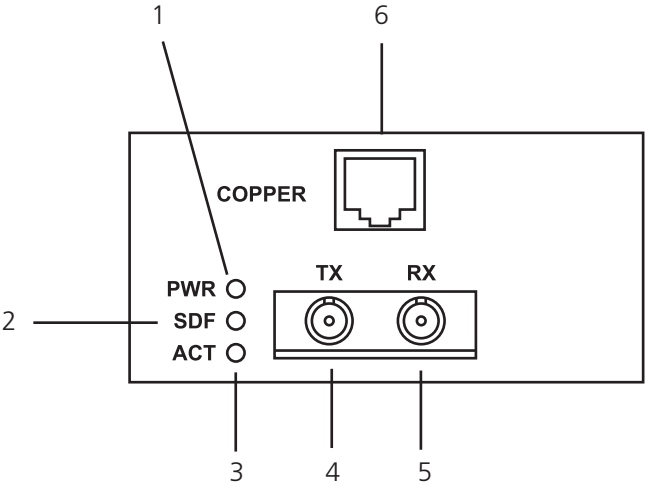


Figure 2-2. Side panel (TE161A-R2).

Table 2-3. Side-panel components (TE161A-R2).

Number	Component	Description
1	Power LED	Lights when power to the unit is on.
2	SDF LED	Lights when fiber link is connected.
3	ACT LED	Lights when active in use/ringing.
4	(1) ST connector for TX	Connect up to 1.2 mi. (2 km) of 1300-nm multimode fiber cable.
5	(1) ST connector for RX	Connect up to 1.2 mi. (2 km) of 1300-nm multimode fiber cable.
6	RJ-11 connector	Connect up to 3.1 mi. (5 km) of copper cable.

NOTE: TE162A-R2 and TE163A-R2 work together.

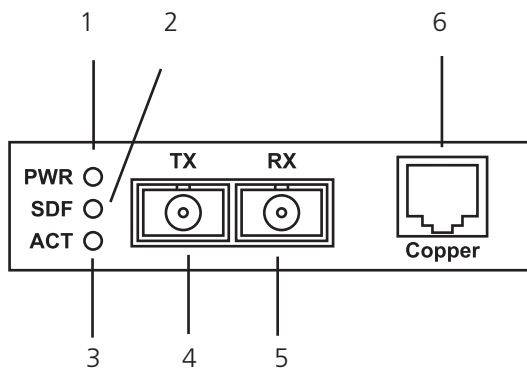


Figure 2-3. Side panel (TE162A-R2).

Table 2-4. Side-panel components (TE162A-R2).

Number	Component	Description
1	Power LED	Lights when power to the unit is on.
2	SDF LED	Lights when fiber link is connected.
3	ACT LED	Lights when active in use/ringing.
4	(1) SC connector for TX	Connect up to 1.2 mi. (2 km) of 1300-nm multimode fiber cable.
5	(1) SC connector for RX	Connect up to 1.2 mi. (2 km) of 1300-nm multimode fiber cable.
6	RJ-11 connector	Connect up to 3.1 mi. (5 km) of copper cable.

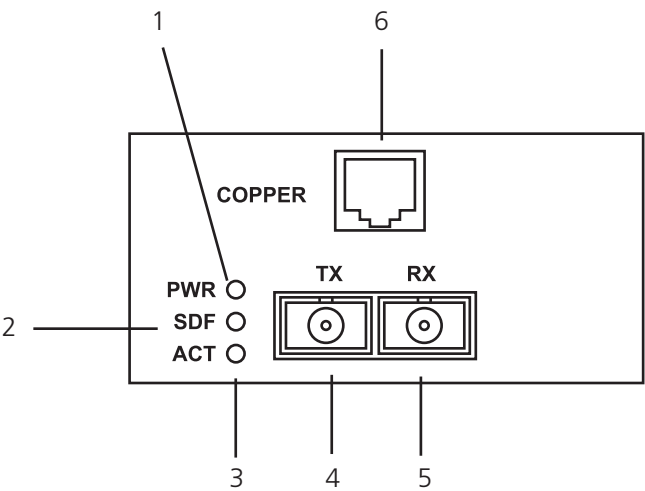


Figure 2-4. Side panel (TE163A-R2).

Table 2-5. Side-panel components (TE163A-R2).

Number	Component	Description
1	Power LED	Lights when power to the unit is on.
2	SDF LED	Lights when fiber link is connected.
3	ACT LED	Lights when active in use/ringing.
4	(1) SC connector for TX	Connect up to 1.2 mi. (2 km) of 1300-nm multimode fiber cable.
5	(1) SC connector for RX	Connect up to 1.2 mi. (2 km) of 1300-nm multimode fiber cable.
6	RJ-11 connector	Connect up to 3.1 mi. (5 km) of copper cable.

NOTE: TE164A-R2 and TE165A-R2 work together.

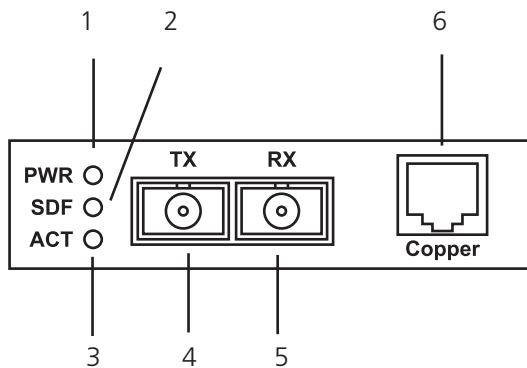


Figure 2-5. Side panel (TE164A-R2).

Table 2-6. Side-panel components (TE164A-R2).

Number	Component	Description
1	Power LED	Lights when power to the unit is on.
2	SDF LED	Lights when fiber link is connected.
3	ACT LED	Lights when active in use/ringing.
4	(1) SC connector for TX	Connect up to 12.4 mi. (20 km) of 1310-nm single-mode fiber cable.
5	(1) SC connector for RX	Connect up to 12.4 mi. (20 km) of 1310-nm single-mode fiber cable.
6	RJ-11 connector	Connect up to 3.1 mi. (5 km) of copper cable.

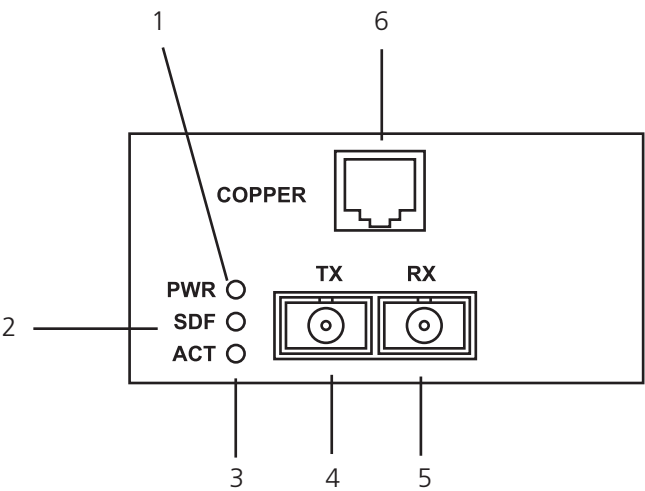


Figure 2-6. Side panel (TE165A-R2).

Table 2-7. Side-panel components (TE165A-R2).

Number	Component	Description
1	Power LED	Lights when power to the unit is on.
2	SDF LED	Lights when fiber link is connected.
3	ACT LED	Lights when active in use/ringing.
4	(1) SC connector for TX	Connect up to 12.4 mi. (20 km) of 1310-nm single-mode fiber cable.
5	(1) SC connector for RX	Connect up to 12.4 mi. (20 km) of 1310-nm single-mode fiber cable.
6	RJ-11 connector	Connect up to 3.1 mi. (5 km) of copper cable.

2.4 Typical Applications

Figure 2-7 shows a standard configuration. Figure 2-8 shows an automatic ring-down configuration.

2.4.1 Standard Configuration

One Unit A device and one Unit B device are required for the standard configuration. The Unit A device is connected to the Central Office (CO), and the Unit B device is connected to a telephone device.

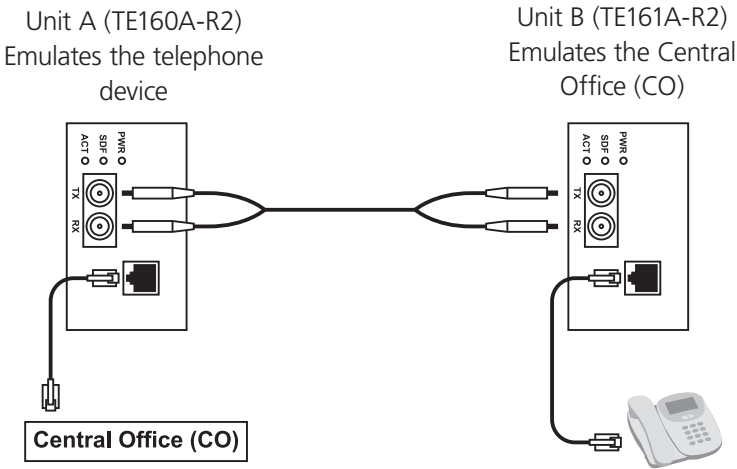


Figure 2-7. Standard configuration.

2.4.2 Automatic Ring-Down Configuration

Two Unit B devices are required for the ARD (automatic ring-down) configuration. ARD is a dedicated, point-to-point voice system. When one telephone is taken off-hook, the other telephone rings without dialing. Two Unit B devices, connected via the fiber ports, are required for this mode of operation, with a telephone device at each end.

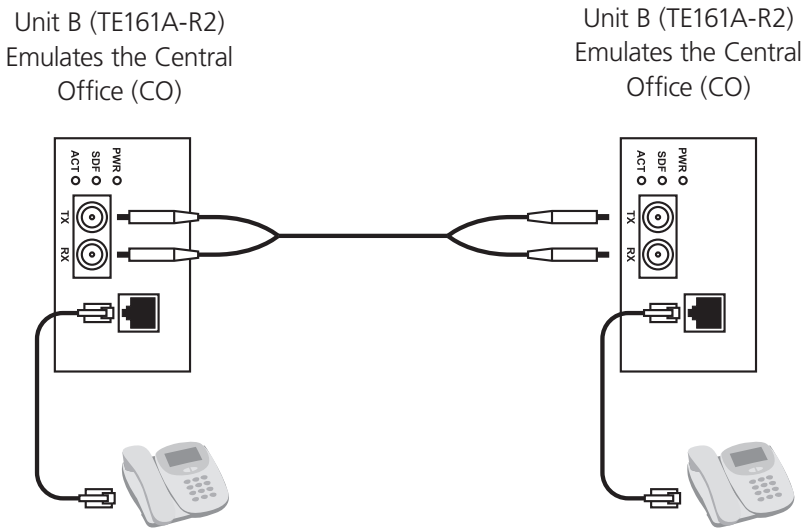


Figure 2-8. Automatic ring-down configuration.

3. Installation

CAUTION: Wear a grounding device and observe electrostatic discharge precautions when setting the jumpers. If you don't, the device may not work.

3.1 Setting the Jumpers

1. Using a small screwdriver, remove the screws that secure the cover to the device and carefully remove the cover.
2. Locate the jumpers on the circuit board.
3. Using small needle-nosed pliers or similar device, move the jumper to the desired position. (Refer to Figure 3-1.)
4. Carefully replace the cover on the device and replace the screws to secure the cover.

3.1.1 Standard/Automatic Ring-Down

The jumper labeled "JP1" is used to switch between the Standard or Automatic Ring-Down configuration and is located on the top circuit board of Unit B (TE161A-R2, TE163A-R2, or TE165A-R2).

Figure 3-1 illustrates the jumper settings.

- Set Jumper JP1 on the Unit B device to the Standard setting when using the Standard configuration.
- Set Jumper JP1 on both Unit B devices to the Automatic Ring-Down setting when using the Automatic Ring-Down configuration.

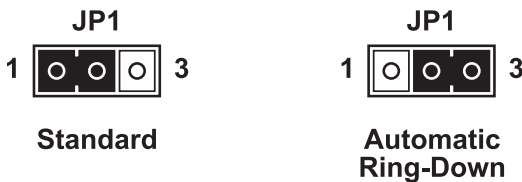


Figure 3-1. JP1 jumper settings.

3.1.2 US/EU Telephone Regulation

The jumper labeled “US EU” is used to switch between the US or EU telephone configuration and is located on the top circuit board of Unit A (TE160A-R2, TE162A-R2, or TE164A-R2).

This feature is required to comply with the EU TBR21 telephone regulation. The jumper has been set at the factory to the US setting as the default.

Figure 3-2 illustrates the jumper settings.

- Set Jumper “US EU” on the Unit A device to the US setting if the device is to be used with US-based telephone systems.
- Set Jumper “US EU” on the Unit A device to the EU setting if the device is to be used with European-based telephone systems.



Figure 3-2. US/EU jumper settings,

3.2 Grounding the Device

The POTS 2-Wire to Fiber Converter comes equipped with grounding lugs located on the back panel. They require a grounding conductor wire terminated with a two-hole, compression-type, grounding connector. The grounding wire—which must be a copper conductor—is not included with the chassis and must be provided by the customer/installer.

The electrical conducting path from the single-slot chassis must:

- Flow via the grounding lugs to the common bonding network (CBN).
- Be of sufficiently low impedance to conduct fault currents likely to be imposed on the device, and
- Enable proper operation of any overcurrent protection devices.

The conductor must be fastened to the grounding lugs with antirotation star washers (not included) and lug-nut fasteners (not included). The applied torque required to the connector lug-nut fasteners is specified by the connector’s manufacturer.

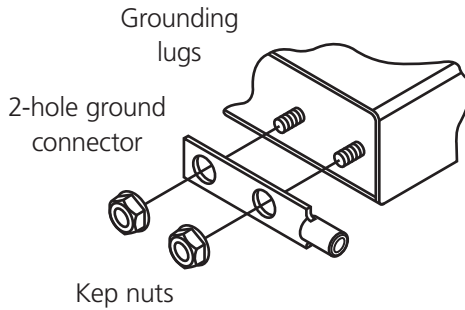


Figure 3-3. Grounding components.

To properly ground the POTS 2-Wire to Fiber Converter:

1. Obtain one (1) grounding conductor (12 AWG copper wire gauge or larger) with a two-hole, compression-type, grounding connector.
2. Attach the grounding conductor to the device by placing the two-hole connector onto the grounding lugs and fasten with lock-washers/lug-nuts (not included) at the proper torque (per the manufacturer's specification).
3. Attach the opposite end of the grounding conductor to the common bonding network (CBN), which is the building's grounding system.

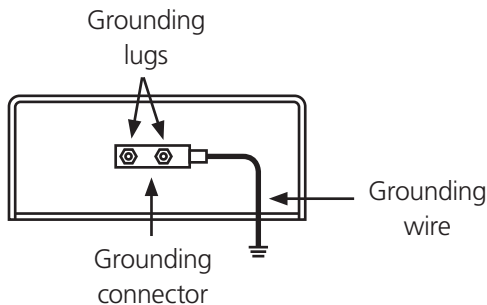


Figure 3-4. Grounding the POTS 2-Wire to Fiber Converter.

3.3 Installing the Cable—Standard Configuration

NOTE: Unit B **MUST** be configured for Standard Configuration (see Section 2.4.1).

3.3.1 Fiber

1. Use fiber cable with male, two-stranded TX to RX connectors installed at both ends.
2. Connect the fiber cables to Unit A (TE160A-R2, TE162A-R2, or TE164A-R2) as described:

Chapter 3: Installation

- Connect the male TX cable connector to the female TX port.
- Connect the male RX cable connector to the female RX port.

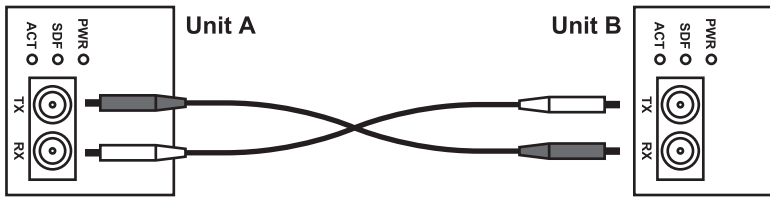


Figure 3-5. Connecting the fiber cable to Unit A (TE160A-R2, TE162A-R2, or TE164A-R2) and Unit B (TE161A-R2, TE163A-R2, or TE165A-R2).

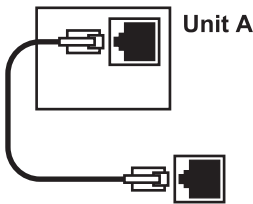
3. Connect the fiber cables to Unit B (TE161A-R2, TE163A-R2, or TE165A-R2) as described:

- Connect the male TX cable connector to the female RX port.
- Connect the male RX cable connector to the female TX port.

3.3.2 Copper

1. Use copper cables with male RJ-11C connectors installed at both ends.
2. Connect the copper cables to Unit A (TE160A-R2, TE162A-R2, or TE164A-R2) as described:

- Connect the RJ-11C connector at one end of the cable to the RJ-11C port on Unit A.
- Connect the RJ-11C connector at the other end of the cable to the RJ-11C port on the Central Office.



Connect to the RJ-11C port
on the Central Office
POTS 2-Wire to Fiber Converter

Figure 3-6. Connect to the RJ-11C port on the Central Office POTS 2-Wire to Fiber Converter.

3. Connect the copper cables to Unit B (TE161A-R2, TE163A-R2, or TE165A-R2) as described:

- Connect the RJ-11C connector at one end of the cable to the RJ-11C port on Unit B.
- Connect the RJ-11C connector at the other end of the cable to the RJ-11C port on the telephone device.

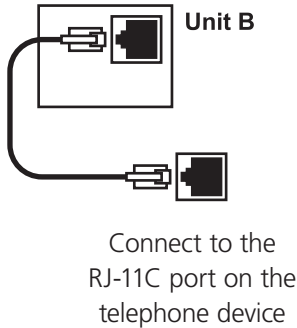


Figure 3-7. Connect to the RJ-11C port on the telephone device.

3.4 Installing the Cable—Automatic Ring-Down Configuration

NOTE: Both Unit Bs **MUST** be configured for Automatic Ring-Down.

3.4.1 Fiber

1. Use fiber cable with male, two-stranded TX to RX connectors installed at both ends.
2. Connect the fiber cables to the first Unit B (TE161A-R2, TE163A-R2, or TE165A-R2) as described:
 - Connect the male TX cable connector to the female TX port.
 - Connect the male RX cable connector to the female RX port.



Figure 3-8. Connecting the fiber cable.

3. Connect the fiber cables to the second Unit B (TE161A-R2, TE163A-R2, or TE165A-R2) as described:

- Connect the male TX cable connector to the female RX port.
- Connect the male RX cable connector to the female TX port.

3.4.2 Copper

1. Use copper cables with male RJ-11C connectors installed at both ends.

2. Connect the copper cables to both Unit Bs (TE161A-R2, TE163A-R2, or TE165A-R2) as described:

- Connect the RJ-11C connector at one end of the cable to the RJ-11C port on the first Unit B.
- Connect the RJ-11C connector at the other end of the cable to the RJ-11C port on the telephone device.

3. Connect the copper cables to the second Unit B (TE161A-R2, TE163A-R2, or TE165A-R2) as described:

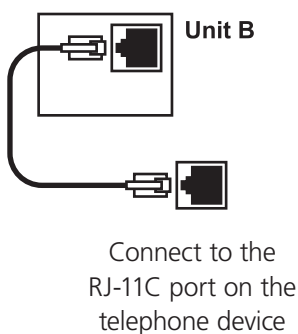


Figure 3-9. Connecting the copper cables.

4. Operation

4.1 Power the Device

NOTE: The external power supply provided with this product is UL® listed by the power supply's manufacturer.

AC:

1. Install the barrel connector of the AC power cord to the external power connector on back of the device.
2. Connect the AC power cord to the correct voltage AC rack or wall socket.
3. Verify that the device is powered by observing the illuminated LED power indicator light.

DC:

For DC power, contact Black Box Technical Support at 724-746-5500 or info@blackbox.com.

4.2 Status LEDs

Use the status LEDs to monitor the TE160A-R2–TE165A-R2 device operation in the network.

PWR (Power)

On = The device is connected to external power.

SDF (Signal Detect Fiber Link)

On = The fiber link is active.

ACT (Activity)

On = The telephone device is in use (off-hook).

Flashing = The telephone device is ringing or pulse-dialing.

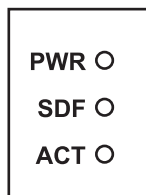


Figure 4-1. LEDs.

4.3 Loop-Start Operation

Loop-Start Service—commonly known as “Plain Old Telephone Service” (POTS)—is the primary analog signaling method used between telephone switches such as the Central Office (CO) and a telephone device. Loop-Start provides a way to indicate on-hook and off-hook conditions, which facilitates outgoing and incoming calls in a voice network.

When a customer wants to make an outgoing call, he or she takes a telephone device off-hook. This action completes the loop, which signals the CO that a customer desires to use the telephone line. To signal the customer of an incoming call, the CO applies a ring voltage to alert the customer.

The three states of the Loop-Start signaling protocol are described in Sections 4.3.1–4.3.3.

4.3.1 Idle State (On-Hook)

1. The CO applies a battery voltage to the ring lead and monitors the tip-ring current for closure of the tip-ring.
2. The telephone device draws less than 10 mA from the line while waiting for the superimposition of the ringing voltage over the ring lead.

4.3.2 Telephone In-Use (Off-Hook)

1. The customer takes the telephone device off-hook, drawing a minimum of 20 to 30 mA of current.
2. The CO senses the tip-ring current and issues a dial tone on the line.
3. Communication can now begin.

4.3.3 Central Office (CO) Rings the Telephone

1. The CO superimposes the ringing voltage over the ring lead battery.
2. The telephone device uses the ring voltage to operate the ringer, which alerts the customer of an incoming telephone call.
3. The customer takes the phone off-hook, which closes the tip-ring connection and allows the tip-ring current to flow.
4. The CO senses the DC current from the telephone device and connects the call to the telephone line.
5. Communication can now begin.

5. Troubleshooting

5.1 Problems/Solutions

Step 1. Is the power LED (PWR) lit?

NO:

- Is the power adapter the proper type of voltage and cycle frequency for the AC outlet?
- Is the power adapter properly installed in the device and in the outlet?
- Does the external power source provide power?
- Contact Black Box Technical Support at 724-746-5500 or info@blackbox.com.

YES:

- Proceed to Step 2.

Step 2. Is the SDF (signal detect fiber link) LED lit?

NO:

- Check the fiber cables for proper connection.
- Verify that the TX and RX cables on the first device are connected to the RX and TX ports, respectively, on the second device.
- Contact Black Box Technical Support at 724-746-5500 or info@blackbox.com.

YES:

- Proceed to Step 3.

Step 3. Is the ACT (active) LED lit?

NO:

- Make sure that the local unit is off-hook.
- Contact Black Box Technical Support at 724-746-5500 or info@blackbox.com.

YES:

- Contact Black Box Technical Support at 724-746-5500 or info@blackbox.com.

Chapter 5: Troubleshooting

5.2 Contacting Black Box

If you determine that your POTS 2-Wire to Fiber Converter is malfunctioning, do not attempt to alter or repair the unit. It contains no user-serviceable parts. Contact Black Box Technical Support at 724-746-5500 or info@blackbox.com.

Before you do, make a record of the history of the problem. We will be able to provide more efficient and accurate assistance if you have a complete description, including:

- the nature and duration of the problem.
- when the problem occurs.
- the components involved in the problem.
- any particular application that, when used, appears to create the problem or make it worse.

5.3 Shipping and Packaging

If you need to transport or ship your POTS 2-Wire to Fiber Converter:

- Package it carefully. We recommend that you use the original container.
- If you are returning the unit, make sure you include everything you received with it. Before you ship for return or repair, contact Black Box to get a Return Authorization (RA) number.

Appendix. Consumer Information

ACTA Compliance

This equipment complies with Part 68 of the FCC rules and the requirements adopted by the Administrative Council for Terminal Attachments (ACTA). On the back of this equipment is a label that contains, among other information, a product identifier in the format US:AAAEQ##TXXXX. If requested, this number must be provided to the telephone company.

Plug and Jack

A plug and jack used to connect this equipment to the premises wiring and telephone network must comply with the applicable FCC Part 68 rules and requirements adopted by the ACTA. A compliant telephone cord and modular plug is provided with this product. It is designed to be connected to a compatible modular jack that is also compliant. See installation instructions for details.

Ringer Equivalence Number

The Ringer Equivalence Number (REN) (listed on the label on the front of the device) is used to determine the number of devices that may be connected to a telephone line. Excessive RENs on a telephone line may result in the devices not ringing in response to an incoming call. In most but not all areas, the sum of the RENs should not exceed five (5.0). To be certain of the number of devices that may be connected to a line, as determined by the total RENs, contact the local telephone company.

Harm to the Telephone Network

If the POTS 2-Wire to Fiber Converter causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice is not practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

Changes to the Telephone Company's Network

The telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the operation of the POTS 2-Wire to Fiber Converter. If this happens, the telephone company will provide advance notice for you to make necessary modifications to maintain uninterrupted service.

Problems with the Equipment

If you experience trouble with the POTS 2-Wire to Fiber Converter, for repair or warranty information, please contact Black Box Technical Support at 724-746-5500 or info@blackbox.com. If the equipment is causing harm to the telephone network, the telephone company may request that you disconnect the equipment until the problem is resolved.

Repairs to the Equipment

Aside from the jumper settings, the POTS 2-Wire to Fiber Converter is not intended to be serviced by the user. If the equipment requires repair, contact Black Box Technical Support at 724-746-5500 or info@blackbox.com.

Party Lines

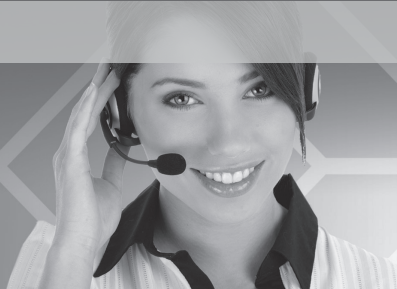
Connection to party line service is subject to state tariffs. Contact the state public utility commission, public service commission, or corporation commission for information.

Alarm Dialing Equipment

If your home has specially wired alarm equipment connected to the telephone line, make sure that the installation of the POTS 2-Wire to Fiber Converter does not disable your alarm equipment. If you have questions about what will disable alarm equipment, consult your telephone company or a qualified installer.

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