



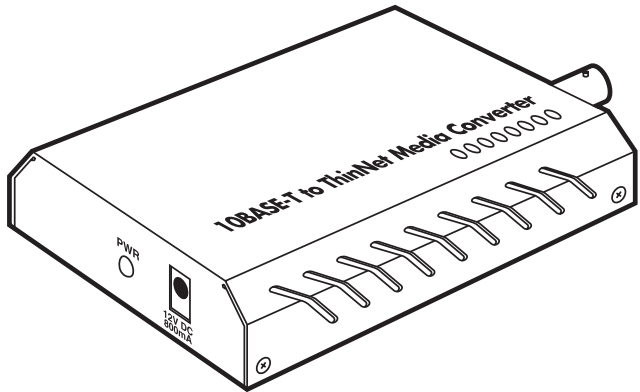
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MAY 2003
LE1604A-US
LE1604A-EU
LE1604A-UK
LE1604A-AU
LE1604A-JP

10BASE-T to ThinNet Media Converter



CUSTOMER SUPPORT INFORMATION

Order **toll-free** in the U.S.: Call **877-877-BBOX** (outside U.S. call **724-746-5500**)
FREE technical support 24 hours a day, 7 days a week: Call **724-746-5500** or fax **724-746-0746**
Mailing address: **Black Box Corporation**, 1000 Park Drive, Lawrence, PA 15055-1018
Web site: www.blackbox.com • E-mail: info@blackbox.com

**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 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 a 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 connectado 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 fisica 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 energia.
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 liquidos 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.

TRADEMARKS USED IN THIS MANUAL

Any trademarks mentioned in this manual are acknowledged to be the property of the trademark owners.

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1. Specifications

NOTE

In this manual (except where noted otherwise), LE1604A represents models LE1604A-US, LE1604A-EU, LE1604A-UK, LE1604A-AU, and LE1604A-JP.

Standards: IEEE 802.3 10BASE-T/10BASE2

Operation: Half duplex

Maximum Distance: UTP: 328 ft. (100 m) Category 3;

Coaxial: 606.8 ft. (185 m);

Total segment length (UTP plus coaxial): 934.8 ft.
(285 m)

User Controls: (1) Pushbutton for twisted-pair MDI/MDI-X connection

Connectors: All models: (1) RJ-45, (1) BNC F,
(1) barrel connector for Power

Indicators: (6) LEDs: (1) PWR, (1) PART, (2) LNK,
(2) RCV

Temperature Tolerance:

Operating: 32 to 158°F (0 to 70°C);

Storage: -4 to +158°F (-20 to +70°C)

Relative Humidity: Up to 80%, noncondensing

Power: All models: External power supply:

Output: 12 VDC @ 0.8 A;

LE1604A-US: Input: 120 VAC, 60 Hz (2-prong);

LE1604A-EU: Input: 230 VAC, 50 Hz (2-prong);

LE1604A-UK: Input: 230 VAC, 50 Hz (3-prong);

LE1604A-AU: Input: 240 VAC, 50 Hz, (3-prong);

LE1604A-JP: Input: 100 VAC, 50/60 Hz (2-prong)

Size: 0.9"H x 2.9"W x 5"D (2.3 x 7.4 x 12.7 cm)

Weight: 0.3 lb. (0.1 kg)

2. Introduction

2.1 Description

The 10BASE-T to ThinNet Media Converter connects UTP-based Ethernet to coaxial-based Ethernet. The converter is completely transparent to the network, so the network performs exactly the way it did before; however, now it can connect to both UTP and coaxial cable. It complies with 802.3 10BASE-T/10BASE2 standards.

Connecting the converter to coaxial segments can extend distances up to a maximum of 606.8 ft. (185 m) beyond the converter for a total segment length of 934.8 ft. (285 m). The converter can be connected to an additional fiber converter for even longer distances.

An MDI/MDI-X button allows the media converter to connect directly to a workstation, switch, or hub using either crossover or straight-through cable.

Figure 2-1 shows the media converter.

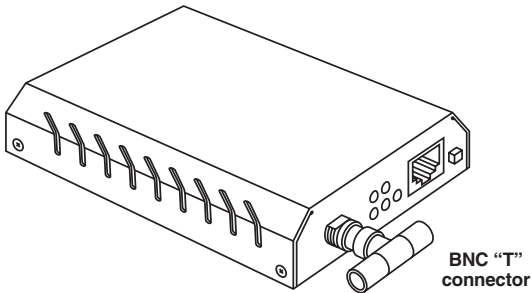


Figure 2-1. Media converter with BNC “T” connector installed.

2.2 What the Package Includes

- (1) 10BASE-T to ThinNet Media Converter
- (1) BNC “T” connector
- (1) AC adapter
- (4) Non-skid rubber feet
- (2) Mounting screws
- This users’ manual

If anything is missing or damaged, please contact Black Box at 724-746-5500.

3. Installation

3.1 MDI/MDI-X Connection

Before plugging in and installing your media converter, you'll need to set the MDI/MDI-X button. This button selects whether you need to use crossover or straight-through twisted-pair cabling to connect the RJ-45 ports on the 10BASE-T portion of your network. (See Figure 3-1.) Simply set the button as described in Table 3-1.

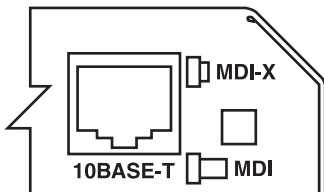


Figure 3-1. MDI/MDI-X button.

NOTE

When the button is pressed in, MDI-X is selected. When the button is out, MDI is selected.

Table 3-1. Crossover selection table.

Connected Device	Cable Configuration	Setting
Hub or switch	Straight-through	MDI-X
Hub or switch	Crossover	MDI
DTE (NIC)	Straight-through	MDI
DTE (NIC)	Crossover	MDI-X

3.2 Typical Applications

Once you've set the MDI/MDI-X button, you'll need to determine which application you'll use. See Figures 3-2 through 3-4.

10BASE-T TO THINNET MEDIA CONVERTER

EXAMPLE 1

The converter allows the conversion from 10BASE-T UTP to 10BASE2 coaxial cable. In this configuration, you can add a coaxial device to an existing 10BASE-T network. There can be up to 934.8 ft. (285 m) between the Ethernet hub or switch that's connected to the converter and the coaxial device.

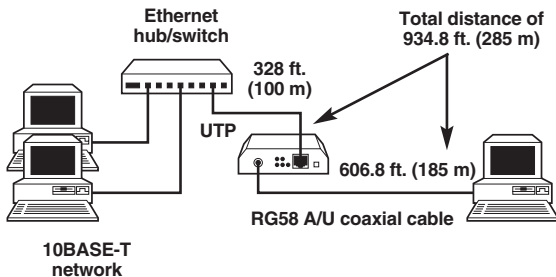


Figure 3-2. Adding equipment to existing 10BASE-T networks.

EXAMPLE 2

The converter allows the conversion from 10BASE-T UTP to 10BASE2 coaxial cable. In this configuration, an additional 10BASE2 segment is added to the network.

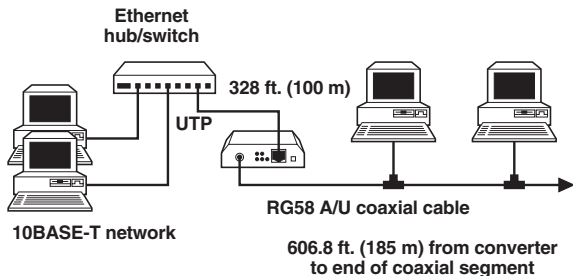


Figure 3-3. Adding a 10BASE2 segment to the network.

10BASE-T TO THINNET MEDIA CONVERTER

EXAMPLE 3

Use two converters to extend a twisted-pair network via coaxial cable.

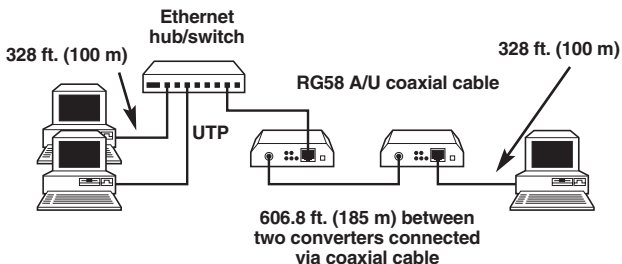


Figure 3-4. Extending 10BASE2 segments.

3.3 Installing the Converter

After you set the MDI/MDI-X button as described in **Section 3.1** and determine how you will use your converter as shown in **Section 3.2**, you'll need to place the converter on a desktop or mount it on a wall. Next, power on the converter. Connect the converter to a 10BASE-T device or network segment. Finally, connect the converter to a 10BASE2 Ethernet device or to another media converter via ThinNet coaxial cable. Follow the steps listed below:

1. For desktop installation, affix the four non-skid rubber feet to the bottom of the converter.

For wallmount installation, use the underside of the converter as a template to measure and mark out the position of the holes onto the surface where you will install the converter. Then use the two mounting screws provided to mount the converter firmly in place.

2. Connect the appropriate power supply for your country to the power connector on the side of the converter. Plug the power supply into a suitable power outlet.

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3. Power on the converter. The power LED should light. If it does not, make sure that the power cable is plugged in properly.
4. Make sure that the Category 5 straight-through twisted-pair cable between the 10BASE-T device (hub or switch) and the converter is no longer than 328 ft. (100 m).

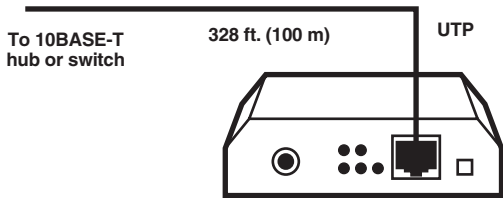


Figure 3-5. Distance between the 10BASE-T device and the converter.

5. Connect one end of the cable to the RJ-45 jack on the converter.
6. Connect the other end of the cable to the RJ-45 jack on the 10BASE-T device.
7. Check the corresponding port LED on the converter to be sure that the connection is valid. (Refer to **Chapter 4**.)

- Attach the supplied BNC T-connector to the converter's BNC connector.
- Connect one end of a ThinNet (10BASE2) coaxial cable to the BNC T-connector attached to your converter.
- Connect the other end of the coaxial cable to the BNC T-connector attached to the Ethernet device.

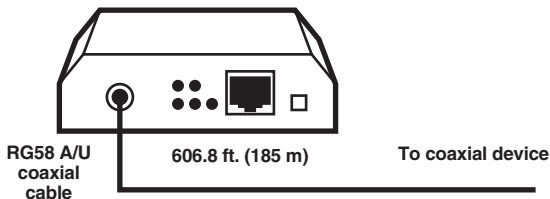


Figure 3-6. Distance between the coaxial cable and the converter.

NOTE

If either your converter or the Ethernet device is an end node, attach a BNC terminator to the open connector on the BNC T-connector.

Installation is complete.

4. LED Indicators

Once your 10BASE-T to ThinNet Media Converter is properly installed, it operates maintenance-free.

Several LEDs tell you the status of the converter and the network at a glance. See Figure 4-1.

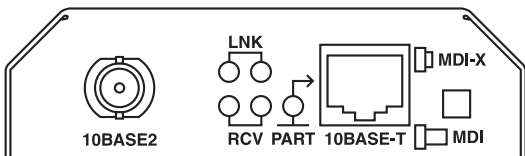


Figure 4-1. LED location.

- (2) LNK LEDs light when the converter is receiving link pulses from compliant devices.
- (2) RCV LEDs flash or light when the converter is receiving data packets.
- The PART LED lights when an excessive amount of collisions occur on the network.
- The Power LED (located on the side of the converter) lights to indicate normal operation.

5. Troubleshooting

5.1 Calling Black Box

If you determine that your 10BASE-T to ThinNet Media Converter is malfunctioning, do not attempt to alter or repair the unit. It contains no user-serviceable parts. Contact Black Box at 724-746-5500.

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.

5.2 Shipping and Packaging

If you need to transport or ship your 10BASE-T to ThinNet Media Converter:

- Package it carefully. We recommend that you use the original container.
- If you are shipping the media converter for repair, make sure you include everything that came in the original package. Before you ship, contact Black Box to get a Return Authorization (RA) number.