

10/100BASE-TX Ethernet over Coax Extender User's Manual

Extend one Ethernet channel over existing coaxial cable.



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10/100BASE-TX Ethernet over Coax Extender

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.

CE Mark Warning

This equipment complies with the requirements relating to electromagnetic compatibility, EN 55022 class A for ITE, the essential protection requirement of Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility.

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 bloquear 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 debe 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.

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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

Emissions: FCC Part 15, Class A; EN61000-6-3, EN55022, EN61000-3-2, EH610000-3-3

Environmental Test Compliance: IEC60068-2-6 Fc (vibration resistance), IEC60068-2-27 Ea (shock), IEC60068-2-32 (free fall)

Speed: 10BASE-T: 10-/20-Mbps for half-/full-duplex;
100BASE-TX: 100-/200-Mbps for half-full-duplex;
Ethernet Extender: 1, 5, 10, 20, 30, 40, 50, 60, 70, 75 Mbps

Standards: IEEE 802.3 10BASE-T, IEEE 802.3u 100BASE-TX, Ethernet over VDSL

Connectors: 10-/100-Mbps Ethernet port: (1) RJ-45, Ethernet Extender port: (1) BNC

Indicators: Per unit: (12) LEDs: Unit: Pwr;
Ethernet: Lnk/Act, Fdx;
Line: Rmt, Err, Loc, Lnk;
Speed: 1, 2, 3, 4, 5

Temperature Tolerance: Operating: +14 to +140° F (-10 to +60° C);
Storage: -4 to +158° F (-20 to +70° C)

Operating Humidity: 5 to 95%, noncondensing

Power: LBNC300A: 100–240 VAC, 50–60 Hz, 12 VDC, 0.5 A, 6 W max.;
LBNC300AE: 100–240 VAC, 50–60 Hz, 12 VDC, 1A, 12 W max.

Size: 0.94"H x 3.2"W x 4.3"D (2.4 x 8 x 10.9 cm)

Weight: 0.3 lb. (0.2 kg)

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2. Overview

2.1 Introduction

The LBNC300A provides one channel for Ethernet over existing coaxial cable. Use it as a standalone device or with a chassis.

2.2 Features

- Complies with EN61000-6-2 & EN61000-6-3 EMC generic standard immunity for Industrial environment.
- Operates transparent to higher-layer protocols.
- One Ethernet port (RJ-45 connector): 10-/100-Mbps full-/half-duplex, auto-negotiation, Auto MDI/MDI-X.
- Complies with IEEE802.3 10BASE-T and IEEE802.3u 100BASE-TX standards.
- One Ethernet Extender port (BNC connector): Symmetrical on the VDSL, high-speed, full-duplex 75-Mbps communications link over existing coaxial cable.
- Has BNC to F-Type connector.
- Supports one DIP switch to select local or remote site.
- Ten reference speeds: supports up to 75 Mbps @ about 656 feet (200 meters) down to 1 Mbps @ about 8530 feet (2600 meters).
- External AC to DC power adapter.
- +14 to +140° F (-10 to +60° C) operating temperature range.
- Hardened aluminum case.
- Supports DIN-rail or wallmounting installation.
- Use as a standalone device or with a chassis. Hot-swappable when used with a chassis.

2.3 What's Included

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

LBNC300A:

- Ethernet extender
- This user's manual (on CD-ROM)
- Quick Start Guide (printed)
- AC to DC power adapter
- BNC to F-Type connector

LBNC300AE:

- Ethernet extender
- This user's manual (on CD-ROM)
- Quick Start Guide (printed)
- AC to DC power adapter with EU, UK clips
- BNC to F-Type connector

2.4 Hardware Description

2.4.1 Front Panel

Figure 2-1 shows the Ethernet Extender's front panel. Table 2-1 describes its components.

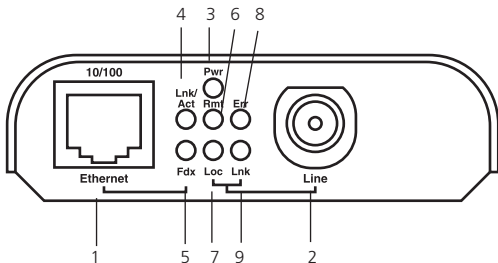


Figure 2-1. Front panel.

Table 2-1. Front-panel components.

Number	Component	State	Description
1	RJ-45 port		10/100 Ethernet connection
2	BNC connector		Line connection
3	Pwr LED	Steady	Power on
		Off	Power off
4	Lnk/Act LED	Steady	A valid Ethernet connection is established
		Flashing	Transmitting or receiving data
		Off	Neither a valid Ethernet connection nor transmitting/receiving Ethernet data.
5	Fdx LED	Steady	Ethernet transferring data at 100 Mbps (full-duplex)
		Off	Ethernet transferring data at 10 Mbps (half-duplex)

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Table 2-1 (continued). Front-panel components.

Number	Component	State	Description
6	Rmt LED	Steady	Device operating in remote mode
7	Loc LED	Steady	Device operating in local mode
8	Err LED	Steady	Error occurred
9	Lnk LED	Steady	A valid connection is established

2.4.2 Back Panel

Figure 2-2 shows the extender's back panel. Table 2-2 describes its components.

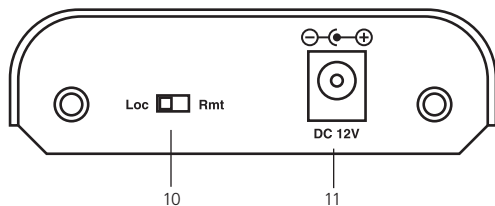


Figure 2-2. Back panel.

Table 2-2. Back panel components.

Number	Component	Description
10	Loc/Rmt selection switch	Select local or remote
11	Barrel connector	Attach 12 VDC power cord here

2.4.3 Top Panel

Figure 2-3 shows the top panel. Table 2-3 describes its indicators.

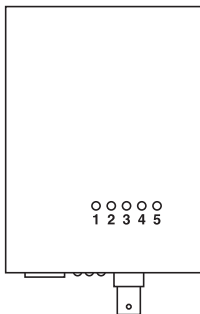


Figure 2-3. Top panel.

LEDs 1-5 on the top panel indicate the extender's speeds. See Table 2-3 for details. Units automatically select the fastest speed for your connection.

Table 2-3. LED indicators on the top panel.

LED	Color	Description
1	Green	Link speed: 1–5 Mbps; Distance: 8530 ft. (2600 m)
	Amber	Link speed: 6–10 Mbps; Distance: 7874 ft. (2400 m)
2	Green	Link speed: 11–16 Mbps; Distance: 6561 ft. (2000 m)
	Amber	Link speed: 17–20 Mbps; Distance: 5905 ft. (1800 m)
3	Green	Link speed: 21–29 Mbps; Distance: 5249 ft. (1600 m)
	Amber	Link speed: 30–43 Mbps; Distance: 4593 ft. (1400 m)
4	Green	Link speed: 44–54 Mbps; Distance: 3937 ft. (1200 m)
	Amber	Link speed: 55–63 Mbps; Distance: 3280 ft. (1000 m)
5	Green	Link speed: 64–74 Mbps; Distance: 1968 ft. (600 m)
	Amber	Link speed: 75–85 Mbps; Distance: 656 ft. (200 m)

3. Installation

3.1 Selecting a Site for the Equipment

CAUTION: Before you install the switch, we strongly recommend that you:

1. Place the extender within an appropriate ventilation environment. Allow at least 1" (2.5 cm) of space around the unit.
2. Position the extender and the relevant components away from sources of electrical noise such as radios, transmitters, and broadband amplifiers.
3. Place the extender away from environments beyond the recommended moisture specification (10–90% humidity).

3.2 Desktop Installation

1. Install the extender on a level surface that can support the weight of the unit and the relevant components.
2. Plug the female end of the provided power cord to the extender and plug the male end to the power outlet.

3.3 Rackmount Installation

To mount the switch in a rack:

1. Disconnect all the cables from the extender.
2. Place the unit right-side-up on a hard, flat surface with the front facing you.
3. Place a mounting bracket (not included) over the mounting holes on one side of the unit.
4. Insert the screws and fully tighten with a screwdriver.
5. Repeat the two previous steps for the other side of the unit.
6. Insert the unit into the rack and secure with screws (not included).
7. Reconnect all the cables.

3.4 Installing Network Cables

1. Use crossover or straight-through cable to connect the switch with PCs, other switches, hubs, and/or routers. All the ports on the extender support Auto-MDI/MDI-X.
2. Use CAT3, 4, 5, or 5e UTP/STP cables to make a valid connection and obtain optimal performance. Table 3-1 lists what cables work with each network speed.

Table 3-1. Compatible cables.

Media	Speed	Wiring
10-/100-Mbps copper	10 Mbps	Category 3, 4, 5, 5e UTP/STP
	100 Mbps	Category 5, 5e UTP/STP

3.5 Network Extension Application

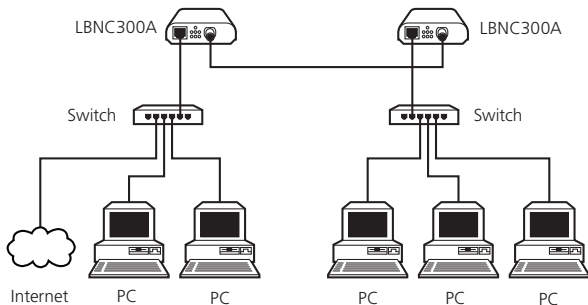
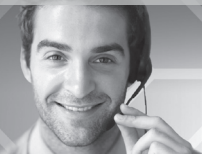


Figure 3-1. Typical application.

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