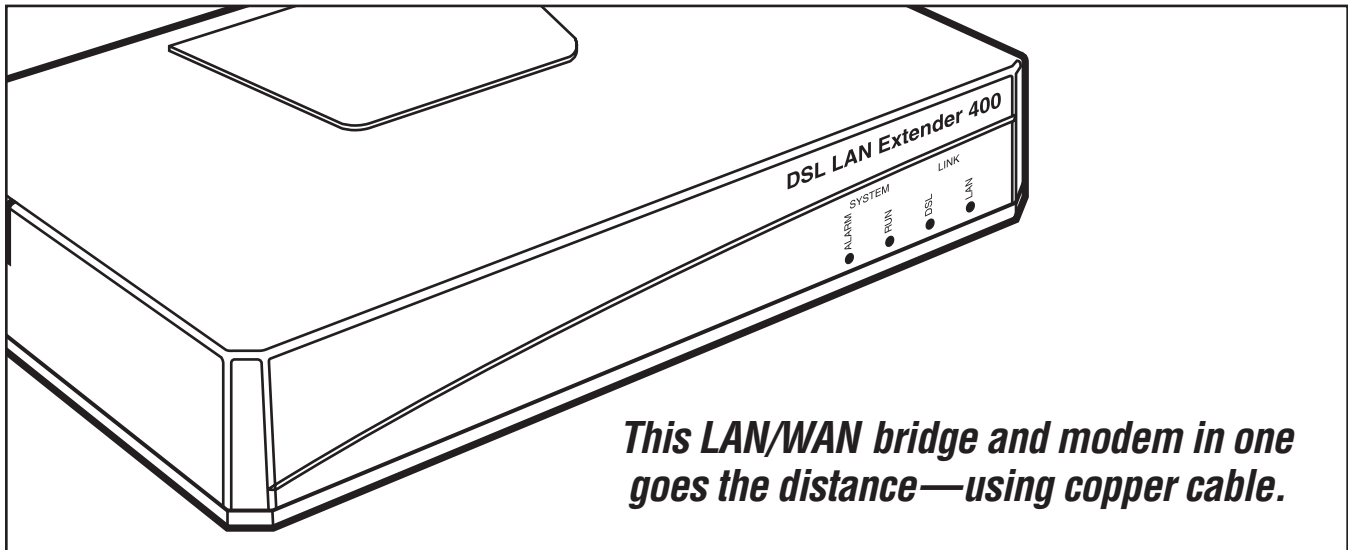


# BLACK BOX<sup>®</sup>

## NETWORK SERVICES

### DSL LAN EXTENDER 400



*This LAN/WAN bridge and modem in one goes the distance—using copper cable.*

#### Key Features

- ▶ **Uses SDSL technology for multi-rate selection over a single copper telephone pair.**
- ▶ **Functions as an Ethernet transparent learning bridge.**
- ▶ **Includes DSL, RS-232, and Ethernet connectors.**
- ▶ **Supports system management via the RS-232 console port, Telnet, or SNMP.**
- ▶ **Software upgradable over the Ethernet link via TFTP or the RS-232 console port.**

If you want to use a single, unloaded, unshielded twisted-pair (UTP) copper phone cable for Internet access in remote LAN-to-LAN applications, choose the DSL LAN Extender 400. It's a combo SDSL bridge/router/modem that offers standard-compliance, high-speed, symmetrical access for Internet services with an ordinary telephone wire pair. And it works 82 times as fast as a typical 56K modem over copper!

Because it uses Symmetrical Digital Subscriber Line (SDSL) technology, the extender is ideal for high-speed, long-distance use. The extender operates in SDSL mode with CAP encoding, and provides symmetrical 4.64 Mbps speeds at distances up to 7500 ft. (2.28 km) or 144 kbps up to 21,300 ft. (6.49 km) using a 26 AWG wire pair.

The DSL LAN Extenders *must* be used in pairs. The DSL speed and distance are inversely

proportional—the shorter the length of the UTP cable, the faster the speed. A pair of extenders can negotiate the highest speed possible given the conditions—such as length, quality, crosstalk, etc.—of the UTP cable between them. One extender automatically detects the line rate configured on the other remote DSL LAN extender and uses the lower line rate setting of the two devices.

#### Install and upgrade...

The extenders are easy to install and are upgradable via Trivial File Transfer Protocol (TFTP) or the RS-232 console port. A complete power-on self-test (POST) ensures proper operation.

#### Configure...

Featuring Dynamic IP assignment with DNS and gateway setting using a built-in DHCP server, the extenders are quick to configure. You save time because you don't have to assign static IP

addresses to every PC on the LAN. One extender must be configured as a CO (Central Office) device and the other as a CP (Customer Premise) device.

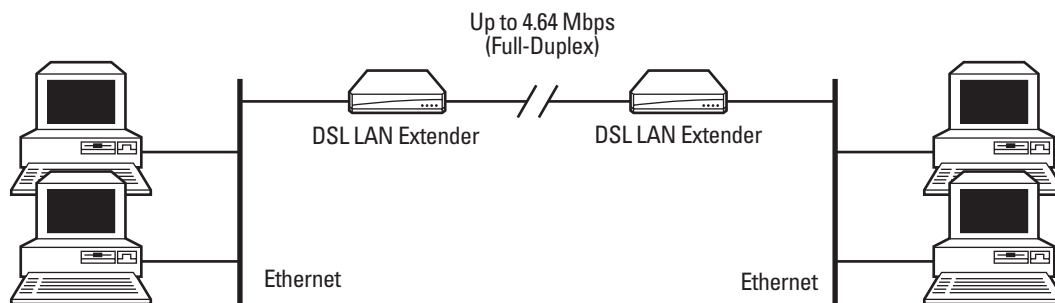
#### Manage...

Manage the extenders via the RS-232 console port, Telnet™, or SNMP. Separate inbound and outbound bandwidth management keep your data flowing without interruption.

In addition, the Ethernet port conforms to standard 10BASE-T specifications, so the extender works with your legacy Ethernet equipment. Use it as a standalone device or mount it in a rack. It also supports your customer-side Web, FTP, and email servers.

The extender is perfect for campus networks, remote LAN interconnection, and high-speed Internet access. And it's easier to install than any other available modem-like device.

## ***DSL LAN Extenders run full-duplex at up to 4.64 Mbps over standard copper wire.***



## Technically Speaking

### xDSL

xDSL, a term used that encompasses the broad range of digital subscriber line (DSL) services, has the potential to revolutionize Internet access and telecommuting by offering a low-cost, high-speed data transport option for both individuals and businesses. xDSL provides data services more than 100 times faster than today's top-speed, 56-kbps analog modems, using the local loop, the existing outside-plant telephone cable network that runs right to your home or office.

By last count, our Technical Support experts identified 16 distinct references to DSL services (including DSL itself), many of which prove to be redundant references to the same technology. Two popular types of DSL are HDSL and SDSL.

High bit-rate DSL (HDSL) provides transfer rates comparable to a T1 line (about 1.544 Mbps). HDSL receives and sends data at the same speed, but it requires two lines that are separate from your normal phone line. Typically, you'd run HDSL where T1 is not practical.

SDSL (Symmetric DSL) represents the two-wire version of HDSL—which is actually symmetric DSL, albeit a four-wire version. SDSL sends and receives data at the same high-speed rate, over a single two-wire telephone line. According to *Newton's Technical Dictionary*, SDSL has come to be known within the ANSI standards organization as HDSL2.

Essentially offering the same capabilities as HDSL, SDSL offers T1 rates (1.544 Mbps) at ranges up to 10,000 feet and is primarily designed for business applications.

## Specifications

**Approvals:** FCC Class A, CSA

**Clock:** Internal, Output

**Diagnostics:** Self-test, Local Loopback, Remote Loopback

**Line Encoding:** MSDSL

**Operation:** Full-duplex

**Speed/Distance:** 4.64 Mbps (symmetrical) up to 7500 ft. (2.28 km) using 26 AWG wire; 144 kbps up to 21,300 ft. (6.49 km) using 26 AWG wire

**Connectors:** DSL: (1) 2-wire RJ-11; RS-232: (1) DB9 F; Ethernet: (1) 10BASE-T

**Indicators:** (4) LEDs: Running, Status 1, Status 2, Fault (System)

**Altitude:** Up to 10,000 ft. (3048 m) above sea level

**Temperature:** Operating: 32 to 122°F (0 to 50°C); Storage: -4 to +158°F (-20 to +70°C)

**Humidity:** Up to 95%, noncondensing

**Power:** 90 to 264 VAC, 50 to 60 Hz (autosensing)

**Size:** 1.8"H x 12"W x 7.8"D (4.6 x 30.5 x 19.8 cm)

**Weight:** 5.8 lb. (2.6 kg)

## Ordering Information

ITEM	CODE
DSL LAN Extender 400.....	LR0060A-R3

*NOTE: Must be used in pairs.*

*For optimum performance and a 20% savings, order ...*  
**CAT5 100-MHz Bulk Cables, 24 AWG, 2-Pair, Beige, Custom Lengths .....**EYN717A