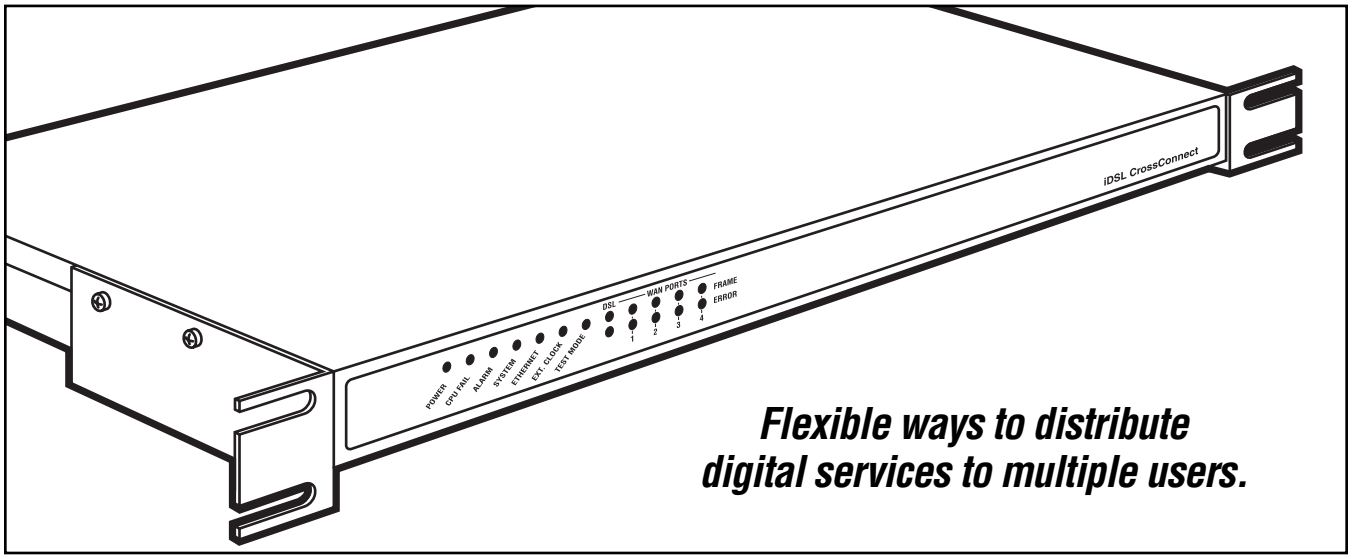
BLACK BOX®
NETWORK SERVICES

iDSL AND mDSL DIGITAL CROSS CONNECTS



Flexible ways to distribute digital services to multiple users.

Key Features

- ***Use 4, 8, or 16 T1/E1 connections to provide digital service access to multiple users.***
- ***Provide DSL to campus, retail, and enterprise environments.***
- ***iDSL models support access speeds up to 128 kbps.***
- ***mDSL models support access speeds up to 2.3 Mbps in 64-kbps increments.***
- ***Point-to-point WAN networking over UTP/STP at distances of more than 5 miles.***

Set up your own iDSL or mDSL network and become your own DSL provider by giving remote access services to remote users. An iDSL or mDSL Digital Cross Connect provides both transmission and networking in a 1U rackmountable chassis. Both types of Digital Cross Connects combine dual-redundant power supplies, a time-division mux, and centralized management.

There's no need to provide individual T1/E1 lines to remote users. Just situate a Digital Cross Connect in a central location, then expand access services via an iDSL or mDSL line driver to individual remote users, whether they are offices or floors apart. This way, you give them the bandwidth they need and save yourself the expense of a dedicated T1/E1 line for each user. Each time slot in a T1 or E1 WAN port has 24 or 31 64-kbps DS0s.

The subscriber side of the ME0092A units link up to 24 iDSL circuits for 64- or 128-kbps data transfers over twisted pair. In comparison, the subscriber side of the ME0095A units connect up to 16 mDSL circuits for data rates up to 2.3 Mbps over twisted pair.

Interface options include standalone or rackmount line driver cards for RS-232, V.35, RS-530, G.703, X.21, and 10BASE-T. Call Tech Support to find the line drivers right for your application.

Here comes the…groom?

The ME0092A units combine 24 iDSL ports for concentration to two channelized TDM T1/E1 WAN ports at user-selectable access speeds of 64 or 128 kbps. With complete TDM mapping, the iDSL Digital Cross Connects can be used to allocate the bandwidth of any DS0 channel to any other DS0 channel, including another iDSL port. This is known as *grooming*.

Offering even greater flexibility for allocating more bandwidth to your remote users, the ME0095A units link 4, 8, or 16 T1/E1 circuits onto 8 or 16 mDSL ports in N x 64K increments. Each remote user port supports digital connections in 64-kbps steps up to 2.3 Mbps.

The ME0095A units can groom any DS0 channel to any other DS0 channel from the WAN ports or the mDSL ports.

Multiple management methods.

Each iDSL or mDSL port requires one twisted-pair cable for full-duplex transmission up to 5 miles (8 km).

Each WAN port terminates T1/E1 with flexible any-to-any DS0 mapping. The entire system can be managed using SNMP, Telnet™, SYSLOG Client, a Digital Cross Connect's RS-232 console port, or Web-based management screens.

Technically Speaking

XDSL, a term that encompasses the broad range of digital subscriber line (DSL) service options, has the potential to revolutionize the areas of Internet access and telecommuting by offering a low-cost, high-speed data transport option for both individuals and businesses.

The basic allure of xDSL is that it provides faster data services than today's top-speed, 56-kbps analog modems—more than 100 times faster—using the local loop, the existing outside-plant telephone cable network that runs to your home or office.

The appeal is obvious: Any technology that enables phone companies to offer broadband service without major network rewiring can be implemented quickly and profitably, especially because it can benefit both the consumer (with faster data rates) and the service providers (with new revenues from old cables).

Here's how it works:

Nearly all existing phone lines can carry frequencies up to 1 MHz. But analog phone service only requires a maximum frequency of 3.3 kHz, leaving a large amount of the bandwidth unused. xDSL makes use of this otherwise wasted space by piggybacking high-speed data traffic onto the unused bandwidth.

By filtering the frequencies at each end of this wide-open range (4 kHz to 2.2 MHz) and isolating them from the voice-bandwidth channel, the local telco can transport both traditional phone signals and high-speed xDSL signals over the same old four-wire telephone line that already links your home or business to its central office (CO). At least, that's the promise of xDSL.

But reality has cast a shadow over the case for xDSL being made by telco providers, competitive local exchange carriers (CLECs), and Internet service providers—all clamoring for a piece of what's estimated to become a billion-dollar business over the next several years.

Implementing DSL.

Today, with more than 750 million sites around the world wired for telephone service, the basic infrastructure for xDSL is already in place; each twisted-pair circuit is a veritable high-speed, dedicated pathway just waiting to be activated.

Cable modem service is the biggest challenge to xDSL in the beyond-analog broadband market. But the inherent advantages of the widespread copper telco network over CATV coax suggested (and still do) that xDSL is better positioned to deliver more bang for the consumer's buck—at least in the near future.

Anecdotal reports from early cable modem users, who once enjoyed the lion's share of the service's 10-Mbps coax pipeline, suggest data slowdowns are increasing as more people tap into the shared service, leaving smaller portions of the overall pie for anyone to access.

Additionally, with a comparatively modest 65 million sites around the globe wired with the hybrid fiber coax (HFC) cabling system necessary to support cable modem service, xDSL arguably enjoys a strategic market advantage.

Recent standardization efforts have made it easier and more affordable to roll out some varieties of xDSL. In fact, many leading service providers have recently redoubled their efforts to make xDSL available to their customers, desperate for a foot-in-the-door edge over cable companies.

DSL alphabet soup.

Understanding the basic premise of DSL service is simple enough. Trying to get a handle on the variations—the proposed, standardized, and sometimes abandoned incarnations that have been lumped together as xDSL—is a different matter.

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. Different sources often cite different definitions with different distance limits and data rates.

As with any developing technology, nailing down such essential details is challenging, especially when you consider that some of the xDSL variants are outdated or proprietary versions being put forth by private companies. With that caveat in mind, consider these pertinent xDSL terms.

Digital Subscriber Line (DSL).

DSL is the root of all xDSL services. In fact, DSL is the root physical layer for ISDN BRI service—two 64-kbps bearer (B) channels and one 16-kbps data (D) channel (2B+D) all bundled together to provide a functional 128-kbps pipeline capable of supporting simultaneous transmission of voice and data, fax, or video signals.

DSL service can support high-speed data transmission over a local loop ranging up to 18,000 feet from the CO. As with most xDSL services, speeds increase near the CO and taper off with distance. One other important thing to consider when discussing xDSL is that top speeds and distances are often expressed as theoretical maximums for ideal line conditions.

Various factors such as excessive crosstalk, wire gauge, the physical condition of the line, and hardware issues such as the presence of load coils or bridge taps on the loop all may conspire to limit the effectiveness of, or even preclude the possibility of using, xDSL services.

ISDN Digital Subscriber Line (iDSL).

iDSL provides DSL technology over ISDN lines. Transfer rates of iDSL are similar to ISDN (144 kbps vs. 128 kbps, respectively). Unlike IDSN, iDSL circuits typically carry only data and not voice.

There are several advantages of switching to iDSL from ISDN. For example, iDSL's always-on connections eliminate call setup delays. Additionally, iDSL has flat-rate billing instead of per-minute fees. Plus, data is transmitted over a true data-only network instead of the PSTN.

Moderate-Speed Digital Subscriber Line (mDSL).

Although the final definition for this xDSL variant has not been rendered, mDSL is already being widely used in systems requiring a balance between fast data rates and increasing the capacity of a copper loop.

The top speed of mDSL is 2.3 Mbps. While that's not as fast as 52-Mbps vDSL, mDSL's slower speed enables a copper loop to handle a greater amount of communications.

What the Package Includes

- Digital Cross Connect unit.
- (1) RJ-45 cable.
- (1) DB9 to RJ-45 cable for RS-232 console port.
- (1) Micro D 68 male connector to open-end cable (ME0095A models only).
- (1) rackmounting kit (rack ears and mounting hardware).
- (2) power cords.
- (1) manual.

Specifications

Alarm Reporting: 3-contact relay (3-pin terminal block), configurable alarms, front-panel LEDs, remote SNMP traps

Clocking: Internal, network (from T1/E1 port), external BITS (clock source via 3-pin terminal block); also provides clocking to remote units

Compliance:
EMC: EMC Directive 89/336/EEC; Low-Voltage Directive 73/23/EEC (EN 60950); FCC Part 15, Subpart B, Class A;
Safety: Canadian cMET, CS-03, UL® 1950 (MET);
Telecom: CE Mark, ITU CTR 12 and 13, FCC Part 68

Cooling Method:
ME0092A: Convection;
ME0095A: Hot-swappable fan tray

Line Code:
ME0092A:
E1: HDB3/AMI; T1: AMI/B8ZS;
ME0095A: 2B1Q (CAP);
E1: HDB3/AMI; T1: AMI/B8ZS

Management: HTTP, RS-232 console port, SNMP, SYSLOG Client, Telnet™

Operating Temperature: 32 to 104°F (0 to 40°C)

Humidity Tolerance: 5 to 90% noncondensing

Speed (Maximum):
ME0092A: 128 kbps;
ME0095A: 2.3 Mbps

Connectors: To remote users:
All: (8), (16), or (24) ports on (1) 50-pin RJ-21X;
T1/E1 WAN:
ME0092A: (4) RJ-48C;
ME0095A: T1/E1 input: (1) Micro D 68-pin F;
Network management: (1) RJ-45 with EIA-561 pinout (RS-232);
Ethernet: (1) RJ-45 (10BASE-T/100BASE-TX);
External clock: (1) 3-pin terminal block;
Alarm: (1) 3-pin terminal block (3-contact relay)

Indicators: (1) LED each for CPU fail, Ethernet, external clock, power, system, test mode;
(2) LEDs each for DSL ports, EXP ports, WAN ports

Power: Dual-redundant 100–240 VAC, 50/60 Hz or 40–72 VDC, internal

Size: 1.75"H (1U) x 19"W x 12.6"D (4.4 x 48.3 x 32 cm)

Weight:
ME0092A: 9.3 lb. (4.2 kg) loaded, 13.5 lb. (6.1 kg) boxed;
ME0095A: 10 lb. (4.5 kg) loaded, 14.5 lb. (6.6 kg) boxed

Black Box offers the best warranty program in the industry—Fido Protection®. For more information, request **FaxBack 22512**.

Ordering Information

ITEM	CODE
For up to 128-kbps connections, order iDSL Digital Cross Connects…	
(2) T1/E1 Inputs, (24) Outputs	
90–264 VAC	ME0092A-IDSL
48 VDC	ME0092A-IDSL-48
For up to 2.3-Mbps connections, order mDSL Digital Cross Connects…	
(4) T1/E1 Inputs, (8) Outputs	
90–264 VAC	ME0095A-8P4
48 VDC	ME0095A-8P4-48
(4) T1/E1 Inputs, (16) Outputs	
90–264 VAC	ME0095A-16P4
48 VDC	ME0095A-16P4-48
(8) T1/E1 Inputs, (8) Outputs	
90–264 VAC	ME0095A-8P8
48 VDC	ME0095A-8P8-48
(8) T1/E1 Inputs, (16) Outputs	
90–264 VAC	ME0095A-16P8
48 VDC	ME0095A-16P8-48
(16) T1/E1 Inputs, (8) Outputs	
90–264 VAC	ME0095A-8P16
48 VDC	ME0095A-8P16-48
(16) T1/E1 Inputs, (16) Outputs	
90–264 VAC	ME0095A-16P16
48 VDC	ME0095A-16P16-48

Next, call Tech Support for rackmount cards and standalone units (RS-232, V.35, RS-530, G.703, X.21, 10BASE-T) to link to your Digital Cross Connect.

For optimum performance and a 20% savings—and to provide connections to remote users—order…

Telco Splice Block, 25-Pair with (2) Connector Clips, Prewired (Female, Telco, 50-Pin)	JP601
25-Pair Telco Connector Cable, Male to Male 50-Pin Telco, 5-ft. (1.5-m)	ELN25T-MM-0005

Why Buy From Black Box? Exceptional Value. Exceptional Tech Support. Period.

Recognize these situations?

- You wait more than 30 minutes to get through to a vendor's tech support.
- The so-called "tech" can't help you or gives you the wrong answer.
- You don't have a purchase order number and the tech refuses to help you.
- It's 9 p.m. and you need help, but your vendor's tech support line is closed.

According to a survey by Data Communications magazine, 90% of network managers surveyed say that getting the technical support they need is extremely important when choosing a vendor. But even though network managers pay anywhere from 10 to 20% of their overall purchase price for a basic service and support contract, the technical support and service they receive falls short of their expectations—and certainly isn't worth what they paid.

At Black Box, we guarantee the best value and the best support. You can even consult our Technical Support Experts before you buy if you need help selecting just the right component for your application.

Don't waste time and money—call Black Box today.