



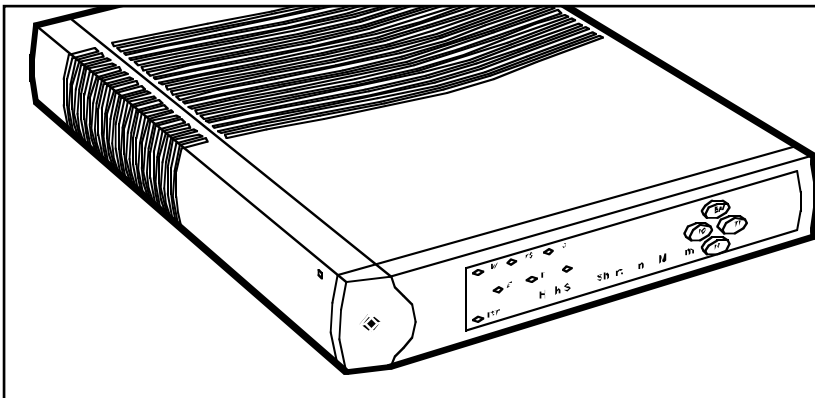
BLACK BOX[®]

NETWORK SERVICES

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Black Box Corporation.

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2.048-MBPS SHORT-RANGE DRIVER/ HIGH-SPEED SHORT-RANGE DRIVERS



*Transmit your
synchronous data at
speeds 33% faster
than T1—and over
twisted-pair cable!*

Key Features

- ▶ **Transmit data at high speeds without T1 or E1 lines.**
- ▶ **Standalone and card versions available.**
- ▶ **The DTE interface receives data from 32 kbps to 2.048 Mbps.**
- ▶ **Built-in surge protection prevents damage from AC or DC currents.**
- ▶ **Act as line drivers and interface converters.**
- ▶ **Point-to-point range up to 0.8 miles (1.3 km).**
- ▶ **Include diagnostics for checking data terminals, drivers, and overall system operation.**

Cut your file-transfer times and slice through data traffic—without installing T1 or E1 lines. Transmit data between V.35, X.21, or RS-422/449/530 devices at high speeds over unloaded 4-wire twisted-pair cable with a pair of these drivers.

The standalone models, designed for tabletop or 19" rack installation, are available with a V.35 interface (on the 2.048-Mbps Short-Range Driver) or with X.21 or RS-422/449/530 interfaces on the High-Speed Short-Range Line Drivers.

We also offer convenient modular card versions for balanced or unbalanced G.703 equipment. These synchronous cards plug easily into the compact BLACK BOX[®] RackNest 2/14, which is a 4U-high, 19" modem rack that holds one or two power supplies and any combination of up to 14 plug-in cards. (For more information on this rack and its other compatible cards, call and request **FaxBack 19273**.)

No matter what format you order, you can expect reliable point-to-point data transfers with these synchronous drivers. Ideal for cable runs across a campus network, all drivers operate full- or half-duplex over unconditioned twisted-pair wiring.

The line interface on both the standalone units and the rackmount cards can be coded as HDB3, AMI, or B8ZS, and transmits data at 2.048 Mbps, 1.92 Mbps, 1.544 Mbps, or 1.536 Mbps. Each interface receives data at 13 different data rates (from 32 kbps to 2.048 Mbps).

A line attenuation of up to 40 dB increases the drivers' operating range to nearly a mile (1.6 km).

Each driver provides transmit and receive timing two ways: internally or derived externally from the data terminal or receive signal. Internal FIFOs correct jitter attenuation or phase differences either from the incoming analog signal (line side) or from the

external clock on the DTE side.

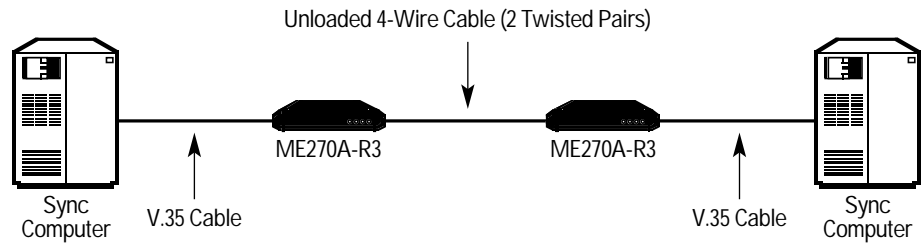
The short-range drivers incorporate interface circuits for the terminal/computer, an automatic equaliser, a modulator, and a demodulator.

Plus, there's no need to worry about outside interference when you connect DTEs in different buildings. The drivers feature built-in surge and line protection against AC or DC overvoltages. Isolation transformers work with other circuitry to guard against surges.

The different interfaces and their compliance with the CCITT X.21 recommendation enable the drivers to act as interface converters, too. You can use a driver, for example, to convert data between an X.21 interface and a V.35 interface.

The drivers also have a bit error rate (BER) tester to test the integrity of your data link, so you won't need external test equipment. The drivers run an internal pseudo-random 511-bit

Use a pair of short-range drivers to transmit data nearly a mile in point-to-point applications.



test pattern in accordance with the ITU V.52 standard.

You can also run local analog, remote digital, and local digital loopback tests that comply with the V.54 standard.

The local analog loopback (LLB) test, which is performed separately at both local and remote sites, checks the performance of the local driver, the local data terminal, and the connections between them.

To check the performance of the local and remote drivers and their connecting lines, run the remote digital loopback (REM) test. This loopback sets a loop at the remote driver from the DTE that's coupled with the local driver.

The local digital loopback (DIG) test enables the operator at the remote end to check the performance of the local and remote drivers and their connecting lines. The DIG test loops the received data back to the remote driver. This test is equivalent to activating the remote loopback from the remote driver.

Any of the three loopback tests can be activated via the front-panel buttons, while local analog and remote digital loopbacks can also be initiated via the DTE interface pins.

Specifications

Line Interface

Line Type: Unloaded 4-wire twisted-pair cable (19- to 26-gauge preferred)

Line Code: Strap to HDB3, AMI, (both comply with ITU G.703) or B8ZS

Framing: Unframed format

Transmit Level: According to G.703

Data Rates: 2048, 1920, 1544, or 1536 kbps (see Table 1 below)

Impedance: 75Ω for 2048 and 1920 kbps unbalanced (BNC coax);
100Ω for 1544 and 1536 kbps balanced (terminal block or DB15);
120Ω for 2040 and 1920 kbps (terminal block or DB15)

Return Loss: Better than 15 dB

Line Attenuation: Up to 40 dB

Range (Maximum): 1 mile (1.6 km) over 24 AWG wire

Connector: DB15 or 5-screw terminal block

DTE Interface

Protocol: Synchronous

Operation: Full- or half-duplex over unloaded 4-wire twisted-pair cable

Data Rates: 32, 64, 128, 192, 256, 384, 512, 768, 1024, 1536, 1544, 1920, or 2048 kbps (see Table 1 below)

Interface:

ME270A-R3, ME270C-35-R2, ME275C-35-R2: ITU-TSS V.35;
ME271A-R3, ME275C-X21-R2: ITU-TSS X.21;
ME270C-530-R2: EIA RS-530/449/422 (ITU-TSS V.36)

Connectors: ME270A-R3, ME270C-35-R2:
(1) 34-pin M-block F,
(1) 5-screw terminal block;
ME275C-35-R2: (1) 34-pin M-block F;
ME271A-R3, (1) DB15 F,
(1) 5-screw terminal block;
ME275C-X21-R2: (1) DB15 F;
ME272A-R3, ME270C-530-R2:
(1) DB25 F, (1) 5-screw terminal block

Timing

Transmit and Receive Clocks: Derived from three alternative sources:

1. Internal oscillator,
2. External from the DTE, or
3. Receive clock derived from the receive signal, looped back as a transmit clock.

Diagnostics

Buttons: (4) front-panel pushbuttons for digital loopbacks (DIG), remote digital loopbacks (REM), V.54 loop 3 local loopbacks (ANA), and sending and receiving a 511 test pattern (PATT)

V.54 Loopbacks: Local loopback: Activated by ANA button or by the DTE interface signal (V.24, V.35, and RS-530 only);

Remote loopback: Activated by REM button or by the DTE interface connector signal (V.24, V.35, and RS-530 only);

Local digital loopback: Activated by DIG button

Self-Test: Driver self-test activated by buttons PATT and ANA

Internal BERT: Built-in pattern generator and tester activated by PATT button; complies with ITU V.52

Indicators: (7) LEDs: (1) PWR, (1) RTS, (1) TD, (1) RD, (1) DCD, (1) TST, (1) ERR

Environmental

Temperature Tolerance: 32 to 122°F (0 to 50°C)

Humidity Tolerance: Up to 90%, noncondensing

Power Supply

Power: Standalone versions: 100–240 VAC, 50–60 Hz;
Card versions: From the RackNest 2/14;
Consumption: AC: 6.8 VA;
DC: 5.7 W;
Card versions: 5.2 W

Physical

Size: Standalone versions: 1.7"H x 8.4"W x 10.1"D (4.3 x 21.3 x 25.7 cm);
Card versions: 6"W x 9"L (15.2 x 22.9 cm)

Weight: Standalone versions: 1.9 lb (0.9 kg);
Card versions: 0.9 lb. (0.4 kg)

Table 1. Line Rates and Corresponding DTE Data Rates

Line Rate	Data Rates
2048 kbps	32, 64, 128, 256, 512, 1024, or 2048 kbps
1920 kbps	1920 kbps
1544 kbps	1544 kbps
1536 kbps	192, 384, 768, or 1536 kbps

Technically Speaking

The following diagnostics are built into our 2.048-Mbps Short-Range Drivers and High-Speed Short-Range Line Drivers.

- **Bit Error Rate Tester.** Press the PATT button to activate this tester during any diagnostic test. The transmitted test pattern is received by another driver or looped back to the BERT, so you can test the entire link. The ERR LED indicates any continuous or intermittent errors on the line.
- **Driver Self-Test.** The driver performs a self-test when you press the PATT and ANA buttons.
- **Local Loopback Test.** Pressing the ANA button initiates a performance check of the local driver, the local DTE device, and the cables in between.
- **Remote Loopback.** Press the REM button to check local and remote driver performance. This test creates a loopback at the remote driver.
- **Local Digital Loopback.** When you press the DIG button, received data is looped back to the remote driver. This checks the performance of both the local and remote drivers.

Packages include:

- (1) line driver
- (1) AC power cord for standalone models
- Users' manual

The ME272A-R3 also includes:

- (1) RS-530 (DB25 male) to RS-449 (DB37 female) adapter cable

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

Recognise any of 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.

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 far 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.

Typical Applications

- The drivers are ideal for transmitting data between a group of buildings, such as a college or industrial campus.
- Use a driver to transmit large data files (such as graphics or CAD files) between different floors of the same building.

Ordering Information

ITEM	CODE
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NOTE: Must be used in pairs.

For standalone applications, order...

2.048-Mbps Short-Range Driver

V.35.....ME270A-R3

High-Speed Short-Range Line Driver

X.21ME271A-R3

RS-422/449/530.....ME272A-R3

For cards that install in the RackNest 2/14, order...

Sync Cards—2.048-Mbps Speeds

Balanced G.703 Interface on Line Side

V.35ME270C-35-R2

RS-530ME270C-530-R2

Unbalanced G.703 on Line Side

V.35ME275C-35-R2

X.21ME275C-X21-R2

Choose the rack that matches your system's voltage...

RackNest 2/14

115 VAC.....RM110A

230 VACRM110AE

RackNest 2/14 with Dual Power Supplies

115 VAC.....RM110A-2PS

For more information on the RackNest 2/14, request **FaxBack 19273**.

To connect the V.35 or X.21 cards, you'll need...

V.35 AdapterFM150-R2

X.21 Adapter.....FM151

NOTE: Each adapter supports two cards.

You may also need...

V.35 Interface Cable, 10-ft. (3-m),

Male/Male.....EYN450-0010-MM

RS-530 Cable, 10-ft. (3-m),

Male/MaleEVN530-0010-MM

DB37 Interface Cable, 10-ft. (3-m)

EDN37J-0010

NOTE: Specify gender when ordering.

X.21 Adapter Cable, 3.2-ft. (1-m),

Male/MaleEVNX21-001M-MM

GigaBase® 350 350-MHz CAT5e Bulk Cable, 4-Pair, PVC,

1100-ft. (335.3-m) Boxed Reel, BlueEYN851A-1100