Black Box Corporation

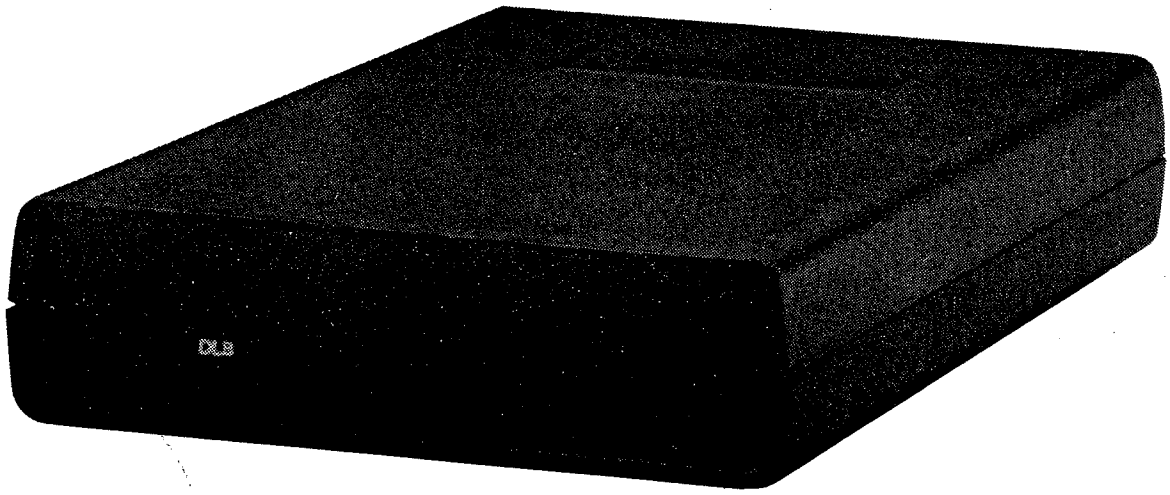
$5.00

NOVEMBER 1989
ME701
ME703-C

810-0137

ASYNCHRONOUS MULTIPOINT LINE DRIVER (LD400MP)

Same Rack as ME705A836



- **CAN BE USED IN POINT-TO-POINT OR MULTIPOINT CONFIGURATIONS**
- **DATA RATES UP TO 19.2 KBPS**

CUSTOMER SUPPORT INFORMATION

Call our technical support specialists to discuss your application. We have a 60-day money-back guarantee.
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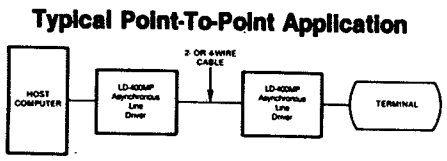
WHAT IT DOES

The asynchronous multipoint line driver, model LD400MP, provides short-haul data transmission for use in-house over customer-owned twisted pair cable. The line driver is ideally suited for local area networking.

Transmission may be point-to-point - with the line driver operating in 2-wire half-duplex as well as 2-wire or 4-wire full-duplex modes. Or for polling applications, transmission may be multipoint, with up to 16 units in as many different locations operating on a single data transmission link - with the line driver operating in either a 2-wire or 4-wire mode. See typical application diagrams below.

The LD-400MP unit operates at data rates up to 19200 bps. A switch-selectable RTS/CTS delay assures high throughput in multipoint applications. Transmission distances range up to 25 miles for 4-wire, full-duplex circuits using 26 gauge wire at 110 bps; transmission distances are reduced at the higher data rates and depend on specific operating conditions and wire gauges.



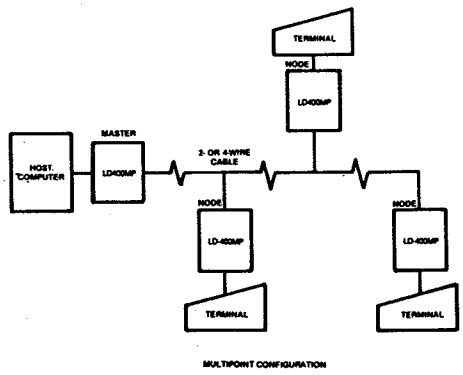
Typical Point-to-Point Application

The unit's small size and light weight minimize logistics problems and simplify installation and replacement in the field. Since no special tools are required, the LD-400MP unit is designed for do-it-yourself installation.

Four indicators and a test mode selection switch facilitate do-it-yourself troubleshooting. The indicators monitor power, carrier, transmitted data, and received data signals. The test mode selector switch provides digital (at the terminal interface) loopback mode.

Available for standalone or rack-mount applications, the compact line driver is packages in a small table-top enclosure; or it can be installed in the rack-mount chassis (part number ME700), which holds up to 16 cards. The rackmount version of the line driver (part number ME703C) is functionally identical to the standalone version (part number 701).

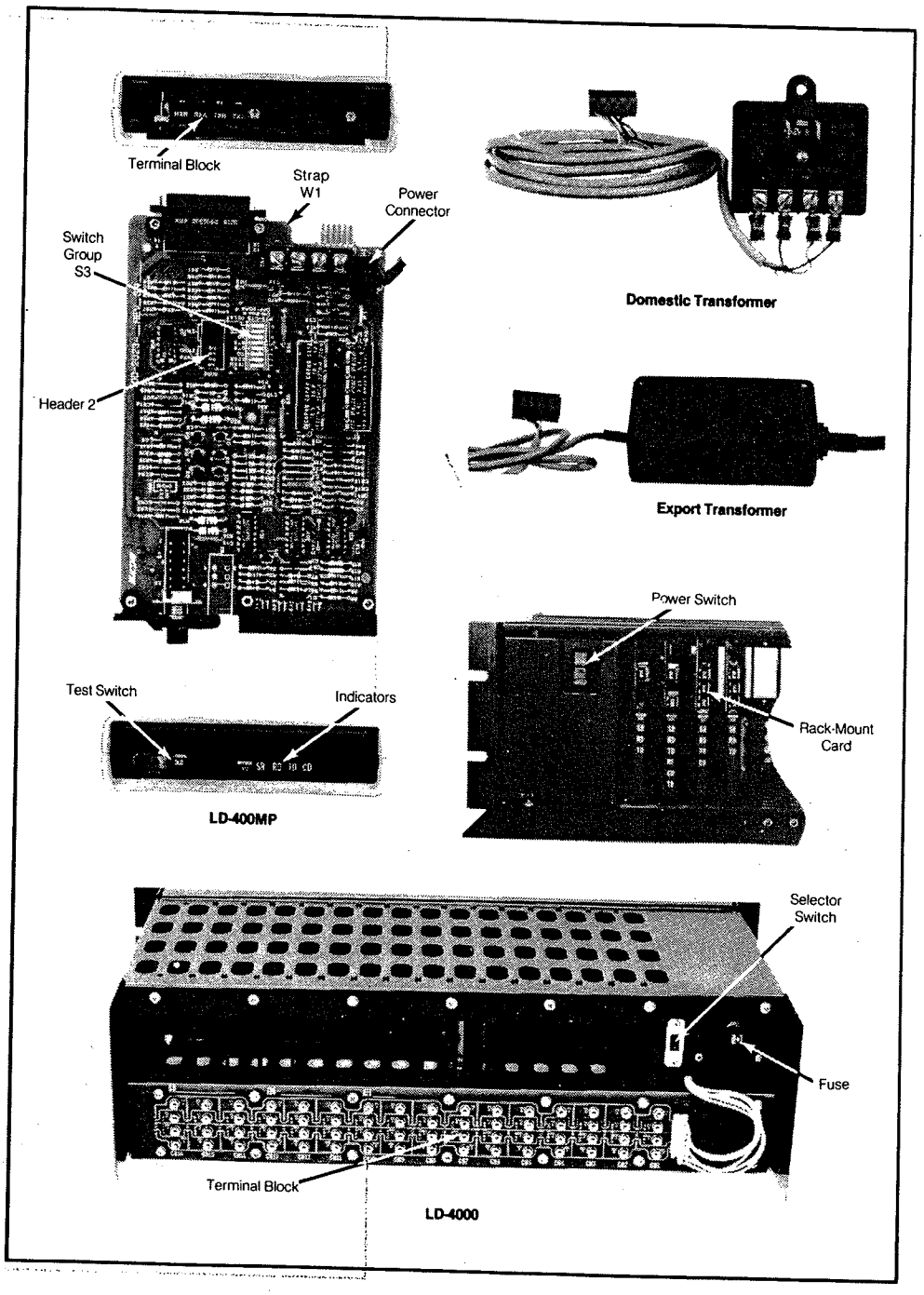
Typical Multipoint Application



MULTIPOINT CONFIGURATION

CONTROLS AND INDICATORS

On the pages that follow, INSTALLATION, CONFIGURATION, OPERATION and TEST procedures are provided. The illustration below shows the location of the switches, controls, straps, and indicators discussed in these procedures.



INSTALLATION

Standalone Units

Step 1. Remove top by removing release screw.

Step 2. Plug in cord from transformer to the male power connector on card. Do not yet plug transformer into ac outlet.

Step 3. Using the cable supplied with your terminal or computer port, connect it to the 25-pin connector at rear of the unit.

Step 4. Connect your communication line to the 4-screw terminal block (see diagrams below for connections required); polarity must be matched at each unit.

Rack-Mount Cards

Step 1. Install rack-mount chassis in rack.

Step 2. Check voltage selector switch for proper setting and for proper fuse: switch position 115V uses 2 A, 3 AG, Slo-Blo fuse; switch position 230V uses a 1 A, 3 AG, Slo-Blo fuse.

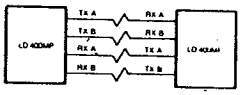
Step 3. Plug in power cord - from rear of rack-mount chassis to ac outlet. Make sure power switch (at front) is off.

Step 4. Install card in rack-mount chassis.

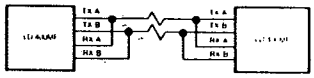
Step 5. Using the cable supplied with your terminal or computer port, connect it to the 25-pin connector at rear of card.

Step 6. Connect your communication line to the 4-screw terminal block on rear panel of rack-mount chassis (see diagrams below for connections required); polarity must be matched at each unit.

4-Wire Connections

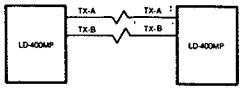


2-Wire Half-Duplex Connections



2-Wire Full Duplex Connections

2-Wire Full-Duplex Connections
(Point-to-Point Applications Only)



CONFIGURATION

Step 1. Set switch group S3 as required.

Switch Group S3 Switch Settings

	Switch Position Settings							
Function	1	2	3	4	5	6	7	8
Receiver Impedance:								
High	OFF							
Low*	ON							
DSR Mode:								
Switched		ON						
Constant*		OFF						
Carrier Mode:								
Switched*			ON					
Constant			OFF					
Transmitter Control Signal:								
DTR				ON	OFF			
RTS*				OFF	ON			
Operating Mode:								
Full-duplex*						OFF		
Half-duplex						ON		
RTS or DTR Mode:								
Switched*							OFF	
Constant							ON	
RTS or DTR/CTS Delay:								
8 milliseconds*								ON
50 milliseconds								OFF

*Factory standard setting

Step 2. Install strap W1 and Header 2 as required: signal and frame grounds are connected by W1 for lightning protection; install Header 2 with positions 5-8 shorted for 2-wire full-duplex and with positions 1-4 shorted for 4-wire or 2-wire half-duplex operation.

Guide for Selecting Configuration Settings

Function	Application			
	2-Wire Point-to-Point	4-Wire Point-to-Point	2-Wire Multi-Point	4-Wire Multi-Point
Carrier Mode (S3/ position 3)	Both units 'switched'*	User option	All 'switched	All nodes 'switched'; master user option
Operating Mode (S3/ position 6)	All half-duplex**	All full-duplex	All half-duplex	All full-duplex
RTS Mode (S3/position 7)	'Switched'*	User option	'Switched'	'Switched'
Receiver Impedance (S3/ position 1)	Both 'LO'	Both 'LO'	Master 'LO'; longest link node 'LO'	Master 'LO'; longest link node 'LO'

* If 2-wire half-duplex; both units constant if 2-wire full-duplex.

** If 2-wire half-duplex; all full-duplex if 2-wire full-duplex.

OPERATION

Step 1. For standalone units, install top cover. (If desired, use supplied bracket for wall mounting).

Step 2. For standalone units, plug in transformer; for rack-mount chassis, turn on power switch (at front).

Step 3. Observe indicators to monitor status.

System Status Displays

Legend	ON	OFF
SR	Power on	Power off (or power failure)
RD	Received data in SPACE	Received data in MARK
TD	Transmitted data in SPACE	Transmitted data in MARK
CD	Carrier signal detected	No carrier signal

SPECIFICATIONS

Data Rate: 1200, 2400, 4800, 9600 or 19200 bps

Terminal Interface: EIA RS232-C (CCITT V.24.V.28); serial asynchronous; female 25-pin connector; RTS/CTS delay or 8 or 50 milliseconds.

Communication Line Interface: 4-screw terminal block

Line Requirements: Twisted pair up to 26 gauge; dc continuity required

Operating Modes: 2-wire half-duplex, 2 or 4-wire full-duplex; point-to-point or multipoint (up to 16 locations)

Transmitter Output Level: 6.5 V peak-to-peak typical

Line Impedance: 200 ohms nominal

Transmission Distances: (4-wire, point-to-point, 26 gauge)

Data Rate	Distances
110 bps	25 miles
150 bps	23 miles
300 bps	17 miles
600 bps	13 miles
1200 bps	9.5 miles
2400 bps	6.5 miles
4800 bps	5 miles
9600 bps	4 miles
19200 bps	3 miles

NOTE

Distances depend on specific operating conditions.

Physical Dimensions:

Table-top enclosure		Rack-mount chassis	
Width:	5 1/2" (14.Ø cm)	Width:	19" (48.3 cm)
Height:	1 3/4" (4.4 cm)	Height:	5 1/4" (13.3 cm)
Depth:	8 1/2" (21.6 cm)	Depth:	1Ø" (25.4 cm)
Weight:	2 pounds (Ø.9 kg)	Weight:	16 pounds (7.2 kg)

Operating Environment: 32' to 122'F (Ø' to 5Ø'C); Ø to 95% relative humidity.

Power: 115 V ac +/- 1Ø%; 6Ø Hz +/- 1Ø%; 3 watts
Export: 2Ø7 to 253 V ac; 45 to 65 Hz; 3 watts

Lightning Protection: All units provide lightning protection per FCC Part 68, d and e.

TEST

Remote Digital Loopback Test (for full-duplex applications only)

Step 1. Have remote DLB switch engaged for loopback at remote digital (terminal) interface.

Step 2. Enter data at the local terminal; the data should be returned intact.

Step 3. Have remote DLB switch released to end test.

Remote Digital Loopback Test Diagram