

# LDM85

## Fiber Optic Converters



### Description

The LDM85 is a small, inexpensive fiber optic transmitter/receiver. It features a complete RS-232/422/423 port as well as high speed TTL data transmit and receive. It is capable of data rates from DC to 5Mbps. A pair of these units allows most RS-232C cable links to be replaced and extended with a duplex fiber optic cable. The normal 50-foot RS-232 limit may be extended to 1.2 miles (2 km). Fiber optic data communications provide complete EMI/RFI rejection, isolation, elimination of ground loops, and reduced error rates. Data security is enhanced by almost nonexistent electromagnetic emissions. A unique multipoint capability allows local area networks to be formed with the isolation and data security of a fiber optic data highway.

The LDM85 is packaged in a rugged aluminum enclosure small enough to mount on the back panel of typical computer equipment, saving valuable desk and floor space. The RS-232 connection is through male or female EIA 25-pin connectors. The fiber optic connection is either through SMA (905) or ST connectors. Additional features include a TD/RD reversing switch for connection to DTE (Data Terminal Equipment) or DCE (Data Communication Equipment) ports, three diagnostic LED indicators, and locally connected handshake lines. The TTL port combined with the RS-232 port may be interfaced to RS-422/423 ports in 4-wire point-to-point mode only.

### Features

- Data Rates to 5Mbps
- RS-232, RS-422, TTL System Interfaces
- Multipoint Capability
- LED Indicators
- DCE/DTE Switch
- Small Size
- Low Cost
- SMA- or ST-Compatible Optic Connectors
- 120/220VAC, +5VDC or 8 to 20VAC/DC Power
- CE Compliant

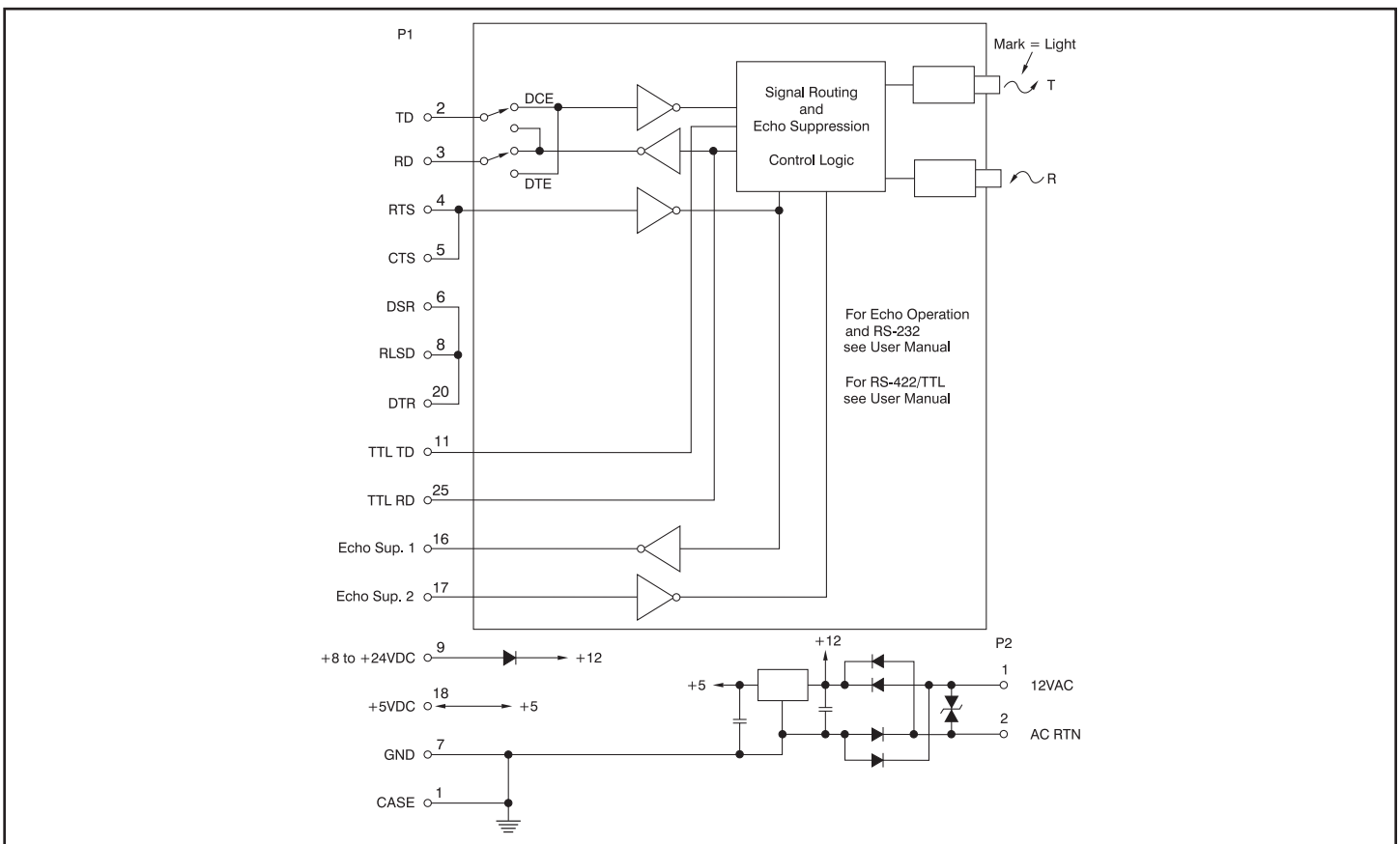


Figure 1: LDM85 Block Diagram

**Specifications** Typical\* at T<sub>A</sub> = +25°C

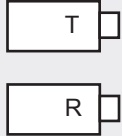
Model	LDM85
Bit Rate Range TTL	0 – 5M, 0 – 2.5M NRZ
Bit Rate Range RS-232/422/423	0 – 100k
Distance (miles)	Up to 1.05 depending on cable
Distance (km)	Up to 1.75 depending on cable
Modes	Asynchronous 2-fiber full duplex, 1-fiber simplex
Channel Lines <sup>(1)</sup>	TD, RD, TTL TD, TTL RD
Control Lines <sup>(1)</sup>	RTS, CTS, DTR, DSR, RLSD
Optical Transmitter	820nm wavelength –11.5dBm typical output from 1m cable, –16dBm minimum output (–40°C to +85°C)
Numerical Aperture	0.49
Optical Port Diameter	290mm
Optical Receiver	–25dBm to –12dBm dynamic range for logic 1, –24dBm minimum input logic 1 (–40°C to +85°C), –40dBm maximum input logic 0
Equivalent Numerical Aperture	0.50
Optical Port Diameter	400µm
Optical Connectors	ST, SMA (905)
Power Budget	7dB (–40°C to +85°C), 9dB (–20°C to +55°C)
DCE/DTE Switch	1
Diagnostic LEDs	3
Power AC operation <sup>(2)</sup>	120VAC or 220VAC (3W wall transformer) or 10VAC to 20VAC (3W transformer rating)
DC operation	+8VDC to +24VDC at 130mA or +5VDC ±0.25VDC at 130mA
Environmental: Operating Temperature Range	–40°C to +85°C
Storage Temperature Range	–40°C to +85°C
Relative Humidity	0 to 95% Noncondensing
Dimensions	3.75" x 2.1" x 1" (95.3mm x 53.3mm x 25.4mm)
Weight PT3, PT3E	3.7 oz (105g) max 11.0 oz (312g)
MTTF <sup>(3)</sup>	≥ 20,000 hrs

**Ordering Information**

Model	Description
LDM85-P <sup>(4)</sup>	Pinned RS-232 connector
LDM85-S <sup>(4)</sup>	Socketed RS-232 connector
LDM85-PT <sup>(4)</sup>	Pinned RS-232 connector, U.S. wall transformer, 120VAC
LDM85-ST <sup>(4)</sup>	Socketed RS-232 connector, U.S. wall transformer, 120VAC
LDM85-PE <sup>(4)</sup>	Pinned RS-232 connector, European wall transformer, 220VAC
LDM85-SE <sup>(4)</sup>	Socketed RS-232 connector, European wall transformer, 220VAC
PT3	U.S. wall transformer, 120VAC
PT3E	European wall transformer, 220VAC

P1 Pin Descriptions		P2 Pin Descriptions	
Pin 1	CASE Ground	Pin 1	12VAC
Pin 2	TD [3] Transmit Data	Pin 2	AC RTN (GND)
Pin 3	RD [2] Receive Data		
Pin 4	RTS [7] Request To Send		
Pin 5	CTS [8] Clear To Send		
Pin 6	DSR [6] Data Set Ready		
Pin 7	GND [5] Signal Ground		
Pin 8	RLSD [1] Receive Line Signal Detect		
Pin 9	+VDC +8 to +24 VDC Power In		
Pin 11	TTL TD TTL TD Inverse of TD		
Pin 16	Echo Sup 1 Echo Suppress Control Out		
Pin 17	Echo Sup 2 Echo Suppress Control In		
Pin 18	+5VDC +5VDC Power In, Pull Up Power Out		
Pin 20	DTR [4] Data Terminal Ready		
Pin 25	TTL RD TTL RD Inverse of RD		

**Fiber Optic**



Pin numbers given are for the 25-pin connector with the 9-pin equivalent in [ ].

NOTES:  
 \*Contact factory or your local Dataforth sales office for maximum values.  
 (1) TD = Transmit Data, RD = Receive Data, TTL TD and TTL RD are DCE referenced TTL signals, RTS = Request To Send, CTS = Clear To Send, DTR = Data Terminal Ready, DSR = Data Set Ready, RLSD = Received Line Signal Detect.  
 (2) 120VAC and 220VAC power transformers are available.  
 (3) Ground-benign environmental conditions (no salt atmosphere, <50°C ambient temperature).  
 (4) For ST fiber optic connector, add -025 to the part number.

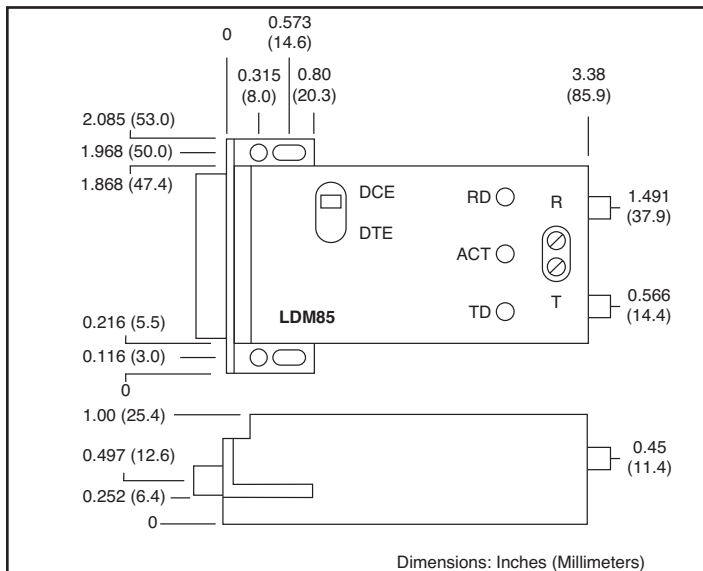


Figure 2: LDM85 Dimensions