LDM485

RoHS III COMPLIANT 2015/863 CE

Fully-isolated RS-232/485 Converters

DESCRIPTION

The LDM485 is a compact RS-232 to RS-485 converter which features a complete electrical isolation barrier and heavy-duty electrical-surge protectors. These devices feature a rugged aluminum enclosure small enough to mount on the back panel of typical computer equipment, saving valuable desk and floor space. Isolation is provided by optical couplers and a DC-to-DC converter. The RS-232 connection is through male or female EIA 25-pin connectors. The RS-485 connections are made through convenient solderless screw terminals.

The LDM485 series is designed for full-duplex operation over two-wire pairs. Outputs are tri-state, allowing multidropping of up to 64 units. Hardware handshake is available over two separate wire pairs. Data rates are DC to 57.6k bits per second. Six diagnostic LED indicators are provided (see Figure below) for installation guidance and system troubleshooting. The RS-232 interface supports Request To Send, Clear To Send, Data Set Ready, Received Line Signal Detect, and Data Terminal Ready. A convenient null modem switch is provided for the data lines. Also, a line termination switch connects a line termination resistor and line bias resistors to the RS-485 receive lines. The RS-485 interface supports Request To Send and Clear To Send on separate wire pairs. The LDM485 may be used to convert two sets of send and receive channels by using RTS and CTS circuits as the second data channels. Data rates are the same. The units use 12VAC from a wall-mounted transformer to screw terminals 1 and 2 on the RS-485 connector. Alternately, they can use ±12VDC to pins 9 (+) and 10 (–) of the RS-232 connector.

FEATURES

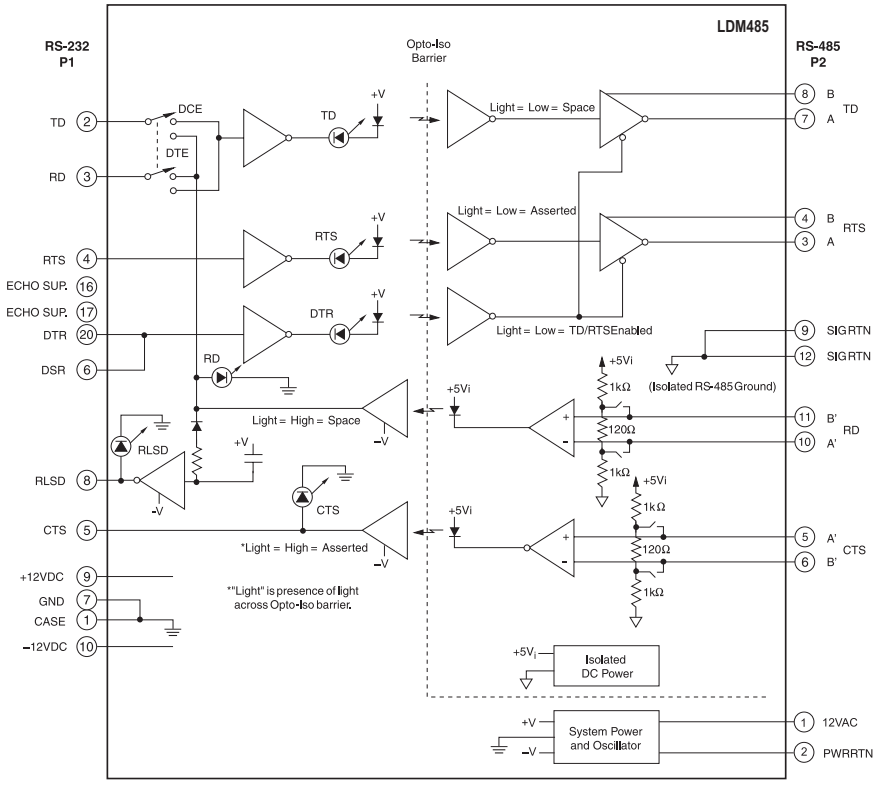
- Complete Isolation with Optical Couplers and Power DC-to-DC Converter
- Industrial Surge Protection Devices
- Six LED Diagnostic Indicators
- 19.2kbps at 3 Miles (5km), 57.6kbps at 0.5 Miles (0.8 km)
- Request-to-send, Clear-to-send Handshake
- Tri-state Outputs for Multidrop Applications, Up to 64 Devices
- Selection of Connectors
- Wide Operating Temperature Range
- Solderless Screw Terminal Field Connections
- CE Compliant
- Manufactured per RoHS III Directive 2015/863

BENEFITS

- Extends Communication Distances
- Protects Sensitive Communication Ports
- Wide Power Supply Range

APPLICATIONS

- Factory Automation and Control
- HVAC Systems
- Building Automation



LDM485 Block Diagram

		A or A'	B or B'
TD, RD	Mark	Low	High
	Space	High	Low
	Asserted	High	Low
RTS, CTS	Not Asserted	Low	High

NOTE: Open or Tri-State on RD inputs produces a Mark state, and on CTS inputs produces an Asserted state.

TD, RD	Mark = –V; Space = +V
RTS, CTS, DTR, RLSD	Asserted = +V, Not Asserted = –V

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Specifications

Typical* at T_A = +25°C

Model	LDM485
Bit Rate (bps) bps vs Distance Distance(miles)(1) Distance(km)	0-57.6k 57.6k 38.4k 19.2k 9.6k 4.8k 1.2k-0 0.5 1.0 3.0 4.0 5.0 8.0 0.8 1.6 4.8 6.4 8.1 12.9
Wire Capacitance Maximum Multidrop Units	Equal to 25pf Per Foot and Up to 32 Multidrop Units 64
Common-Mode Isolation Differential-Mode Surge Protection (9 devices)	Surge: 1500Vp, 1 Minute Continuous: 1000Vrms (AC input) ANSI/IEEE C37.90.1 (All RS-485 Inputs and Outputs)
Modes	Asynchronous 4-wire Duplex, 2-wire Half-duplex, 2-wire Simplex
Channel Lines(2) Control Lines(2)	TD, RD, RTS, CTS RTS, CTS, DTR, DSR, RLSD
Null Modem Switch	1 (Reverses RS-232 Pins 2 and 3)
RS-485 Output Drive RS-485 Input Impedance	60mA (max) Output 12kΩ (min) Input
Power AC operation(3) DC operation	 12VAC, ±10%, 10W Screw Terms 1 & 2 +11.5VDC to +17.0VDC at 500mA on Pin 9 –11.5VDC to –17.0VDC at 100mA on Pin 10
Environmental: Operating Temperature Range Storage Temperature Range Relative Humidity	 0°C to +70°C –40°C to +85°C 0 to 95% Noncondensing
Dimensions (h)x(w)x(d)	6.6" x 2.1" x 1.28" (167.6mm x 53.3mm x 32.5mm)
Weight PT3	7 oz (198g) (max) 11.0 oz (312g) (max)
MTTF(4)	>100,000 Hrs

NOTES:
*Contact factory or your local Dataforth sales office for maximum values.
(1) Distances reduced if multidropping more than 32 units; by 30% for 33-48 units; 50% for 49-64.
(2) TD = Transmit Data, RD = Receive Data, RTS = Request To Send, CTS = Clear To Send, DTR = Data Terminal Ready, DSR = Data Set Ready, RLSD = Received Line Signal Detect.
(3) 120VAC and 220VAC power transformers are available.
(4) Ground-benign environmental conditions (no salt atmosphere, <50°C ambient temperature).

Ordering Information

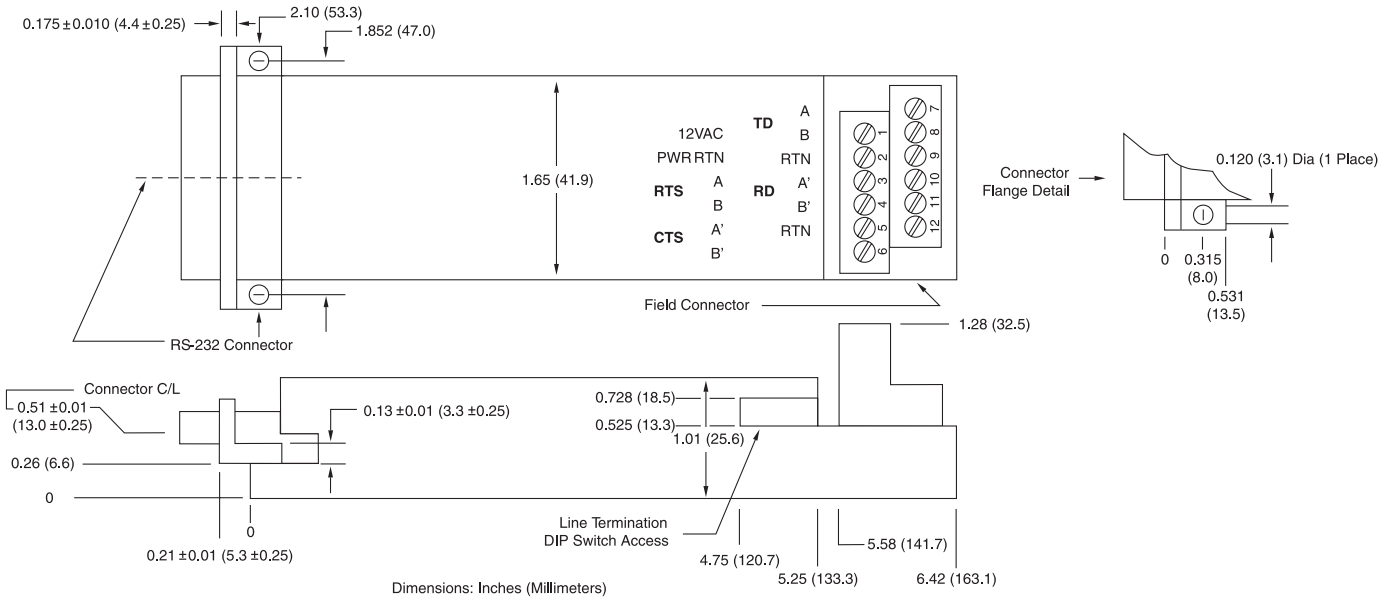
Model	Description
LDM485-P* LDM485-S LDM485-PE	Male RS-232 Connector Female RS-232 Connector Male RS-232 Connector, European Power Transformer

*Last Time Buy

Model	Description
PT3	U.S. Style Wall Mount Transformer, 120VAC

RS-232 Pin Descriptions				RS-485 P2 Pin Desc.	
Pin 1	CASE		Ground	Pin 1	12VAC
Pin 2	TD	[3]	Transmit Data	Pin 2	PWR RTN
Pin 3	RD	[2]	Receive Data	Pin 3	RTS A
Pin 4	RTS	[7]	Request To Send	Pin 4	RTS B
Pin 5	CTS	[8]	Clear To Send	Pin 5	CTS A'
Pin 6	DSR	[6]	Data Set Ready (Connected to Data Terminal Ready)	Pin 6	CTS B'
				Pin 7	TD A
				Pin 8	TD B
Pin 7	GND	[5]	Signal Ground	Pin 9	SIG RTN
Pin 8	RLSD	[1]	Receive Line Signal Detect	Pin 10	RD A'
Pin 9	+12VDC		Positive DC Supply Input	Pin 11	RD B'
Pin 10	–12VDC		Negative DC Supply Input	Pin 12	SIG RTN
Pin 16	Echo Sup		Echo Suppression (tie to pin 17 to enable)		
Pin 17	Echo Sup		Echo Suppression (tie to pin 16 to enable)		
Pin 20	DTR	[4]	Data Terminal Ready (Connected to Data Set Ready)		

Pin Numbers Given are for the 25-pin Connector with the 9-pin Equivalent in [ ].



LDM485 Dimensions

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