



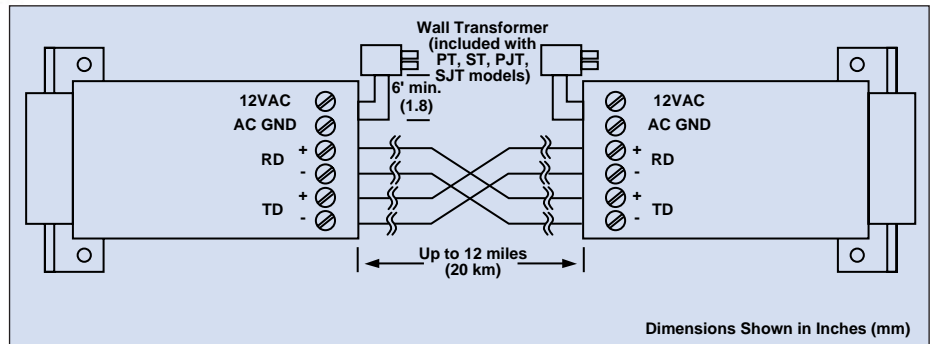
# Fully Isolated Limited Distance Modem



**\$133**  
Basic Unit



- ✓ DC to 57,600 Baud
- ✓ Complete Isolation with Optical Couplers and Power DC-to-DC Converter
- ✓ Data Terminal Ready, Carrier Detect Handshake Without Extra Wires
- ✓ Surge Protectors
- ✓ Four LED Diagnostic Indicators
- ✓ Operation to 3 Miles (5 KM) at 9600 Baud, 1 Mile (1.7 KM) at 19,200, 0.5 Miles (0.8 KM) at 57,600
- ✓ Four-Wire Full Duplex, Two-Wire Simplex
- ✓ Self-Powered or Host-Powered
- ✓ Selection of Connectors
- ✓ Wide Operating Temperature Range: 0 to +70°C



The LDM70 Series of products is designed to allow video display terminals (VDTs) and other RS-232 devices to be connected over distances sufficient to cover any industrial or institutional complex of buildings. These modems feature a rugged aluminum enclosure small enough to mount on the back panel of VDT units, saving valuable desk and floor space.

The LDM70 Series is designed for full duplex, asynchronous operation over two DC-continuity, non-loaded, twisted-wire pairs. Through special high-speed optically coupled circuits, they may communicate at data rates up to 57,600 baud. A handshake operation is implemented over the same

two-wire pairs. A self-powered model and a host-powered model are available. The self-powered unit uses 12 Vac from a wall-mounted transformer, while the host-powered unit takes  $\pm$ DC power from pins 9 and 10 of the RS-232 connector. The modem circuits—and, consequently, the host device—are protected from electrical transients due to lightning strikes or operation of heavy industrial equipment.

Each device features a convenient Data-Communication Equipment (DCE) to Data-Terminal Equipment (DTE) switch which reverses pins 2 and 3 of the RS-232 connector. For installation and troubleshooting, each unit has diagnostic Light-Emitting Diodes (LEDs) on the

transmit and receive lines. In addition, LEDs indicate valid carrier detect and data terminal ready.

The RS-232 connector may be ordered as a male or female 25-pin connector. Field connection is made through a modern, solderless, screw-termination assembly. Alternatively, a convenient four-wire modular phone jack is available.

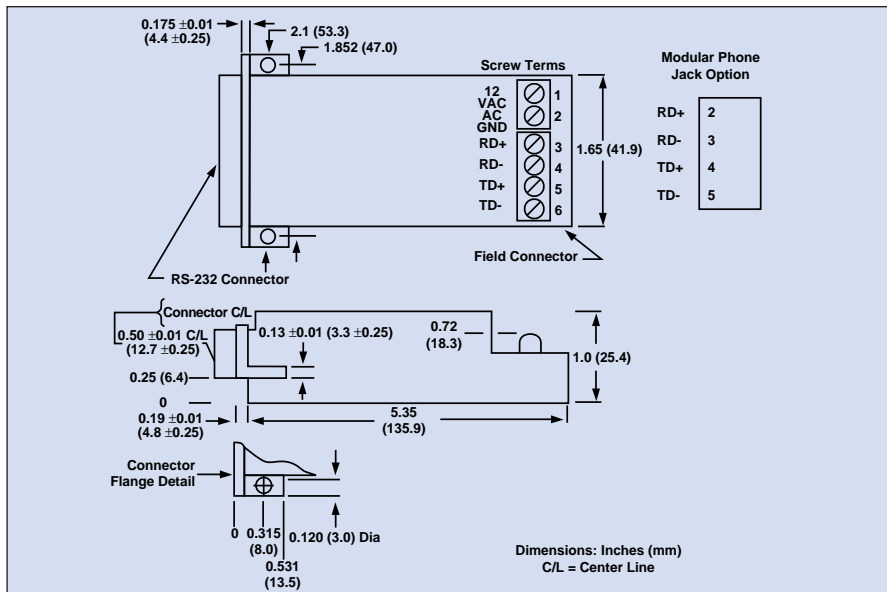
### Interface

LDM70 conforms to EIA RS-232 and CCITT V.24 specifications. Pins 4 and 5 are internally connected. Pin 6, Data Set Ready (DSR), is internally tied to the valid state through a resistor. Data Terminal Ready (DTR), pin 20, must be asserted by the host equipment before LDM70 can transmit data. When DTR is asserted, the LDM70 at the other end of the communications cable will assert Receive Line Signal Detect (RLSD), pin 8, to its host equipment. This is used by host equipment to coordinate data exchanges. If a DTR signal is not available from the host equipment, an open circuit on pin 20 will be equivalent to assertion, allowing operation without handshake.

Pin 7 is signal ground. Pins 2 and 3 are switch-reversible.

### Isolation

The LDM70 is unique compared to other popular limited-distance modems in that it completely isolates the host equipment from the field wiring through the use of optical couplers and a DC-to-DC converter. Units that use only optical couplers break ground loops but circuit power is still taken from an unisolated source, and/or host circuit ground is still connected to one field wire pair. Thus, even though the ground loop between the two pieces of host equipment has been broken, induced transient currents will still flow from the field wiring through the ground circuits of the host equipment. This can cause faulty operation of the host equipment, or even damage in extreme cases. To prevent this, the LDM70 models have a transformer-coupled DC-to-DC converter which powers the field circuits, with no path for induced transients to flow into host equipment. This isolation barrier is rated to 1000 Vrms. Continuous operation at high voltages is not recommended for safety reasons.



### Specifications

Model	LDM70							
<b>Baud Rate Range</b>	0 – 57.6K							
<b>Baud Rate</b>	57.6K	38.4K	19.2K	9.6K	4.8K	2.4K	1.2K	0
<b>Distance (miles)</b>	0.5	0.75	1.0	3	5	8	12	
<b>Distance (km)</b>	0.8	1.25	1.7	5	8.3	13.3	20	
<b>Common Mode Isolation</b>	1500V Surge, 1000 Vrms Continuous							
<b>Differential Mode Surge Protection (3 devices)</b>	ANSI/IEEE C37.90.1-1989							
<b>Channel Lines<sup>(1)</sup></b>	TD, RD							
<b>Control Lines<sup>(1)</sup></b>	DTR, RLSD							
<b>Modes</b>	Asynchronous 4-wire duplex, 2-wire simplex							
<b>Power:</b>								
<b>AC operation<sup>(2)</sup></b>	12VAC at 120mA							
<b>DC operation</b>	±9VDC to ±15VDC, 45mA							
<b>Operating Environment</b>	0°C to +70°C, 0 to 95% relative humidity, noncondensing							
<b>Dimensions</b>	5.7" x 2.1" x 1" (144.8 x 53.3 x 25.4 mm)							
<b>Weight</b>	5.5 oz (156 g) max							
<b>AC Transformer</b>	11.0 oz (311.8 g) max							
<b>MTBF<sup>(3)</sup></b>	>100,000 hrs							

Notes: (1) TD = Transmit Data, RD = Receive Data, DTR = Data Terminal Ready, RLSD = Received Line Signal Detect. (2) 120 Vac and 220 Vac power transformers are available. (3) Ground-benign environmental conditions (no salt atmosphere, <50°C ambient temperature).

### To Order (Specify Model Number)

Model Number	Price	RS232 Connector	Field Connector	Power Source
LDM70-P	\$133	25 Pin male	Screw termination	Host-powered
LDM70-S	133	25 Pin female	Screw termination	Host-powered
LDM70-PJ	133	25 Pin male	Modular phone jack	Host-powered
LDM70-SJ	133	25 Pin female	Modular phone jack	Host-powered
LDM70-PT	147	25 Pin male	Screw termination	Transformer
LDM70-ST	147	25 Pin female	Screw termination	Transformer
LDM70-PJT	147	25 Pin male	Modular phone jack	Transformer
LDM70-SJT	147	25 Pin female	Modular phone jack	Transformer

Includes operator's manual. Transformer powered units also include 120 Vac wall mount transformer.

Ordering Example: LDM70-ST converter: \$147.