User's Guide

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LDM70
Fully-Isolated,
Limited-Distance Modem
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The information contained in this document is believed to be correct, but OMEGA accepts no liability for any errors it contains, and reserves the right to alter specifications without notice.

WARNING: These products are not designed for use in, and should not be used for, human applications.
LDM70
Fully Isolated Limited Distance Modem

**Description**

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 12VAC from a wall-mounted transformer, while the host-powered unit takes ±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 (RJ-11) is available.

**Features**

- 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 (5km) at 9600 Baud
  1 Mile (1.7km) at 19,200, 0.5 Miles (0.8km) 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
- CE Compliant

![LDM70 Block Diagram](image)

*Figure 1: LDM70 Block Diagram*
### Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>0.375K</th>
<th>LDM70</th>
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<tbody>
<tr>
<td>Baud Rate Range</td>
<td>57.6K</td>
<td>19.2K</td>
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<tr>
<td>Baud Rate</td>
<td>8</td>
<td>16</td>
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<tr>
<td>Distance (miles)</td>
<td>0.5</td>
<td>0.75</td>
</tr>
<tr>
<td>Distance (km)</td>
<td>0.8</td>
<td>1.2</td>
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### Ordering Information

<table>
<thead>
<tr>
<th>Model</th>
<th>Type</th>
<th>Power</th>
<th>Termination</th>
</tr>
</thead>
<tbody>
<tr>
<td>LDM70-P</td>
<td>Male</td>
<td>Host-powered</td>
<td>Screw termination</td>
</tr>
<tr>
<td>LDM70-S</td>
<td>Female</td>
<td>Host-powered</td>
<td>Screw termination</td>
</tr>
<tr>
<td>LDM70-PJ</td>
<td>Male</td>
<td>Host-powered</td>
<td>RJ-11 phone jack</td>
</tr>
<tr>
<td>LDM70-SJ</td>
<td>Female</td>
<td>Host-powered</td>
<td>RJ-11 phone jack</td>
</tr>
<tr>
<td>LDM70-PT</td>
<td>Male</td>
<td>U.S. transformer</td>
<td>Screw termination</td>
</tr>
<tr>
<td>LDM70-ST</td>
<td>Female</td>
<td>U.S. transformer</td>
<td>Screw termination</td>
</tr>
<tr>
<td>LDM70-PJT</td>
<td>Male</td>
<td>U.S. transformer</td>
<td>RJ-11 phone jack</td>
</tr>
<tr>
<td>LDM70-SJT</td>
<td>Female</td>
<td>U.S. transformer</td>
<td>RJ-11 phone jack</td>
</tr>
<tr>
<td>LDM70-PE</td>
<td>Male</td>
<td>Eurotransformer</td>
<td>Screw termination</td>
</tr>
<tr>
<td>LDM70-SE</td>
<td>Female</td>
<td>Eurotransformer</td>
<td>Screw termination</td>
</tr>
<tr>
<td>LDM70-PJE</td>
<td>Male</td>
<td>Eurotransformer</td>
<td>RJ-11 phone jack</td>
</tr>
<tr>
<td>LDM70-SJE</td>
<td>Female</td>
<td>Eurotransformer</td>
<td>RJ-11 phone jack</td>
</tr>
</tbody>
</table>

### Notes
1. TD = Transmit Data, RD = Receive Data, DTR = Data Terminal Ready, RLS&D = Received Line Signal Detect.
2. 120VAC and 220VAC power transformers are available.
3. Ground-borne environmental conditions (no salt atmosphere, <50°F ambient temperature).

### Dimensions
- 5.7" x 2.7" x 1.1" (144.8mm x 53.3mm x 25.4mm)
- MTTF < 100,000 hrs

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**Figure 2: LDM70 Dimensions**
OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA’s WARRANTY adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA’s customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA’s Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA’s WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

**OMEGA is pleased to offer suggestions on the use of its various products.** However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use of its products in accordance with information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by the company will be as specified and free of defects. **OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY:** The remedies of purchaser set forth herein are exclusive, and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no event shall OMEGA be liable for consequential, incidental or special damages.

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**RETURN REQUESTS/INQUIRIES**

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. **BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA’S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS).** The assigned AR number should then be marked on the outside of the return package and on any correspondence. The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

**FOR WARRANTY RETURNS,** please have the following information available **BEFORE contacting OMEGA:**
1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

**FOR NON-WARRANTY REPAIRS,** consult OMEGA for current repair charges. Have the following information available **BEFORE contacting OMEGA:**
1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA’s policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

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