LDM35
Signal-Powered, Limited-Distance Modem
OMEGAnet® Online Service
omega.com

OMEGA®

Servicing North America:

U.S.A.: One Omega Drive, P.O. Box 4047
ISO 9001 Certified
Stamford, CT 06907-0047
TEL: (203) 359-1660
FAX: (203) 359-7700
e-mail: info@omega.com

Canada:
976 Bergar
Laval (Quebec) H7L 5A1, Canada
TEL: (514) 856-6928
FAX: (514) 856-6886
e-mail: info@omega.ca

For immediate technical or application assistance:

U.S.A. and Canada: Sales Service: 1-800-826-6342 / 1-800-TC-OMEGA®
Customer Service: 1-800-622-2378 / 1-800-622-BEST®
Engineering Service: 1-800-872-9436 / 1-800-USA-WHEN®

Mexico:
En Español: (001) 203-359-7803
e-mail: espanol@omega.com
FAX: (001) 203-359-7807
info@omega.com.mx

Servicing Europe:

Benelux:
Postbus 8034, 1180 LA Amstelveen, The Netherlands
TEL: +31 (0)20 3472121
FAX: +31 (0)20 6434643
Toll Free in Benelux: 0800 0993344
e-mail: sales@omegaeng.nl

Czech Republic:
Frýštatská 184, 733 01 Karviná, Czech Republic
TEL: +420 (0)59 6311899
FAX: +420 (0)59 6311114
Toll Free: 0800-1-66342
e-mail: info@omegashop.cz

France:
11, rue Jacques Cartier, 78280 Guyancourt, France
TEL: +33 (0)1 61 37 2900
FAX: +33 (0)1 30 57 5427
Toll Free in France: 0800 466 342
e-mail: sales@omega.fr

Germany/Austria:
Daimlerstrasse 26, D-75392 Deckenpfarrn, Germany
TEL: +49 (0)7056 9398-0
FAX: +49 (0)7056 9398-29
Toll Free in Germany: 0800 639 7678
e-mail: info@omega.de

United Kingdom:
ISO 9002 Certified
One Omega Drive, River Bend Technology Centre
Northbank, Irlam, Manchester
M44 5BD United Kingdom
TEL: +44 (0)161 777 6611
FAX: +44 (0)161 777 6622
Toll Free in United Kingdom: 0800-488-488
e-mail: sales@omega.co.uk

It is the policy of OMEGA Engineering, Inc. to comply with all worldwide safety and EMC/EMI regulations that apply. OMEGA is constantly pursuing certification of its products to the European New Approach Directives. OMEGA will add the CE mark to every appropriate device upon certification.

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.
LDM35
Signal Powered Limited Distance Modem

Description

The LDM35 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 enclosure small enough to mount on the back panel of VDT units, saving valuable desk and floor space.

The LDM35 series does not require a power supply for operation. The use of low power circuits and a sensitive optical receiver allows the devices to derive all necessary power from the RS-232 data and control signal. They are designed for full-duplex, asynchronous operation over two, DC-continuity, non-loaded, twisted-wire pairs. Two-wire simplex operation may be accomplished over two wires. 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.

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

- Signal-powered: No Power Source Required
- Optical Isolation: Breaks Ground Loops
- Heavy Duty Surge Protectors: Prevents Lightning Damage
- LED Diagnostic Indicators: Simplifies Installation and System Troubleshooting
- Operation to Two Miles (3.3km) at 9600 Baud, One-Half Mile (0.8km) at 19,200 Baud, Seven Miles (11.7km) at 1200 Baud
- Four-Wire: Full Duplex, Two-Wire Simplex
- Selection of Connectors
- Wide Operating Temperature Range, 0°C to +70°C
- Null Modem Switch
- CE Compliant

Figure 1: LDM35 Block Diagram
Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>LDM35</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baud Rate Range</td>
<td>0.19.2K</td>
</tr>
<tr>
<td>Baud Rate</td>
<td>19.2K 9.6K 4.8K 2.4K 1.2K 0.6 0.3 0.2 0.1</td>
</tr>
<tr>
<td>Distance (miles)</td>
<td>0.8 3.2 4.8 8.1 11.3</td>
</tr>
<tr>
<td>Common Mode Isolation</td>
<td>Surge: 500V 1000V 1500V</td>
</tr>
<tr>
<td>Voltage: 500V 1000V 1500V</td>
<td></td>
</tr>
<tr>
<td>Power</td>
<td>None</td>
</tr>
<tr>
<td>RS-232 Data</td>
<td>±5V to ±15V 3.0mA to 10.0mA</td>
</tr>
<tr>
<td>RS-232 Control Signals</td>
<td>±5V to ±15V 3.0mA to 10.0mA</td>
</tr>
<tr>
<td>Power</td>
<td>None</td>
</tr>
<tr>
<td>RS-232 Data</td>
<td>±5V to ±15V 3.0mA to 10.0mA</td>
</tr>
<tr>
<td>RS-232 Control Signals</td>
<td>±5V to ±15V 3.0mA to 10.0mA</td>
</tr>
<tr>
<td>Dimensions</td>
<td>3.6 x 2.1 x 1</td>
</tr>
<tr>
<td></td>
<td>(91.4mm x 53.3mm x 25.4mm)</td>
</tr>
<tr>
<td>MTTBF</td>
<td>&gt;150,000 hrs</td>
</tr>
</tbody>
</table>

Notes:
1) 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.
2) Ground benign environmental conditions (no salt atmosphere, <50°C ambient temperature).

Ordering Information

<table>
<thead>
<tr>
<th>Model</th>
<th>25-Pin Connector</th>
<th>Termination</th>
</tr>
</thead>
<tbody>
<tr>
<td>LDM35-P</td>
<td>Male</td>
<td>Screw terminals</td>
</tr>
<tr>
<td>LDM35-S</td>
<td>Female</td>
<td>Screw terminals</td>
</tr>
<tr>
<td>LDM35-PJ</td>
<td>Male</td>
<td>RJ-11 phone jack</td>
</tr>
<tr>
<td>LDM35-SJ</td>
<td>Female</td>
<td>RJ-11 phone jack</td>
</tr>
</tbody>
</table>

RS-232 Pin Descriptions

<table>
<thead>
<tr>
<th>Pin</th>
<th>CASE</th>
<th>25-Pin Connector</th>
<th>Termination</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CASE</td>
<td>Screw Terms</td>
<td>Phone Jack</td>
</tr>
<tr>
<td>2</td>
<td>TD</td>
<td>Pin 1 RD+</td>
<td>Pin 2 RD+</td>
</tr>
<tr>
<td>3</td>
<td>Transmit Data</td>
<td>Pin 2 RD+</td>
<td>Pin 3 RD+</td>
</tr>
<tr>
<td>4</td>
<td>Receive Data</td>
<td>Pin 3 TD+</td>
<td>Pin 4 TD+</td>
</tr>
<tr>
<td>5</td>
<td>RTS</td>
<td>Pin 4 TD-</td>
<td>Pin 5 TD-</td>
</tr>
<tr>
<td>6</td>
<td>CTS</td>
<td>Clear To Send</td>
<td>RJ-11</td>
</tr>
<tr>
<td>7</td>
<td>DSR</td>
<td>Data Set Ready</td>
<td>RD- = Receive Data -</td>
</tr>
<tr>
<td>8</td>
<td>GND</td>
<td>Signal Ground</td>
<td>RD+ = Transmit Data +</td>
</tr>
<tr>
<td>9</td>
<td>RLSD</td>
<td>Receive Line Signal Detect</td>
<td>TD+ = Transmit Data +</td>
</tr>
<tr>
<td>10</td>
<td>DTR</td>
<td>Data Terminal Ready</td>
<td>TD- = Transmit Data -</td>
</tr>
</tbody>
</table>

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

Figure 2: LDM35 Dimensions
WARRANTY/DISCLAIMER

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.

CONDITIONS: Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a “Basic Component” under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY/DISCLAIMER language, and, additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

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.

OMEGA is a registered trademark of OMEGA ENGINEERING, INC.

© Copyright 2005 OMEGA ENGINEERING, INC. All rights reserved. This document may not be copied, photocopied, reproduced, translated, or reduced to any electronic medium or machine-readable form, in whole or in part, without the prior written consent of OMEGA ENGINEERING, INC.
Where Do I Find Everything I Need for Process Measurement and Control? OMEGA...Of Course!

Shop online at omega.com

TEMPERATURE
- Thermocouple, RTD & Thermistor Probes, Connectors, Panels & Assemblies
- Wire: Thermocouple, RTD & Thermistor
- Calibrators & Ice Point References
- Recorders, Controllers & Process Monitors
- Infrared Pyrometers

PRESSURE, STRAIN AND FORCE
- Transducers & Strain Gages
- Load Cells & Pressure Gages
- Displacement Transducers
- Instrumentation & Accessories

FLOW/LEVEL
- Rotameters, Gas Mass Flowmeters & Flow Computers
- Air Velocity Indicators
- Turbine/Paddlewheel Systems
- Totalizers & Batch Controllers

pH/CONDUCTIVITY
- pH Electrodes, Testers & Accessories
- Benchtop/Laboratory Meters
- Controllers, Calibrators, Simulators & Pumps
- Industrial pH & Conductivity Equipment

DATA ACQUISITION
- Data Acquisition & Engineering Software
- Communications-Based Acquisition Systems
- Plug-in Cards for Apple, IBM & Compatibles
- Datalogging Systems
- Recorders, Printers & Plotters

HEATERS
- Heating Cable
- Cartridge & Strip Heaters
- Immersion & Band Heaters
- Flexible Heaters
- Laboratory Heaters

ENVIRONMENTAL MONITORING AND CONTROL
- Metering & Control Instrumentation
- Refractometers
- Pumps & Tubing
- Air, Soil & Water Monitors
- Industrial Water & Wastewater Treatment
- pH, Conductivity & Dissolved Oxygen Instruments