DATAFORTH®

2024 Catalog Data Communications

Line Drivers, Converters, and Fiber Optic Converters



Instrument Class®

Industrial Electronics

Celebrating

40 YEARS

Instrument Class®
INNOVATION

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

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The Company

"Our passion at Dataforth Corporation is designing, manufacturing, and marketing the best possible data acquisition and control, signal conditioning, and data communication products. Our mission is to set new standards of product quality, performance, and customer service." **Dataforth Corporation**, with 40 years of experience, is a worldwide leader in *Instrument Class*® **Industrial Electronics –** rugged, high-performance data acquisition and control, signal conditioning, and data communication products that play a vital role in maintaining the integrity of industrial automation, data acquisition, and quality assurance systems. Our products directly connect to most industrial sensors and protect valuable measurement and control signals and equipment from the dangerous and degrading effects of noise, transient power surges, internal ground loops, and other hazards.

Global Service and Support

Dataforth spans the globe with more than 50 International Distributors and US Representative Companies. Our customers benefit from a team of over 130 sales people highly trained in the application of precision products for industrial markets. In addition, we have a team of application engineers at our Tucson factory ready to solve any in-depth application questions, and we maintain ample inventory that allows small-quantity orders to be shipped from stock.

Research and Development Team

A professional staff of engineering and marketing personnel identify and develop products to satisfy our customers' most stringent requirements. Dataforth's design department specializes in innovative analog and isolation circuit development, high-performance mixed signal design, and software development, to ensure that our customers receive the highest performance products at an affordable price.

Automated Manufacturing and Test

Our products are manufactured in the USA on our state-of-the-art SMT systems to optimize time-to-ship and control costs. All products are tested multiple times, and many undergo a 48-hour burn-in at elevated temperatures to ensure performance and reliability.

Quality Control

Dataforth operates under the ISO9001:2015 quality management system. Since our products are used in critical industrial data acquisition, control, and test and measurement applications, we strive to produce the highest quality, premier performance products available on the market. Zero defects and complete customer satisfaction are our goals. To further strengthen our commitment to quality, Dataforth secures certifications such as UL, CSA, ATEX, and CE.

www.dataforth.com

Our website presents visitors with an intuitive, informative layout that quickly leads them to their areas of interest. A parametric search engine efficiently locates products by model number or functional description, and the ability to quickly access pricing information and place online orders. Fully detailed product data sheets and application and tech notes are available for download. Visitors can also view new product release data, sign up to receive our newsletters, get answers to technical questions, and quickly locate Distributors and Sales Representatives worldwide.

The Future

We fully understand that our ongoing success depends on satisfying our customers' requirements. Building upon our position as marketplace leader, Dataforth continues to seek out the most cost-effective emerging technologies in design and manufacturing in order to provide the highest performance quality products at an affordable price. By intelligently observing and responding to changing market needs, we ensure continuation of our critical customer partnerships.

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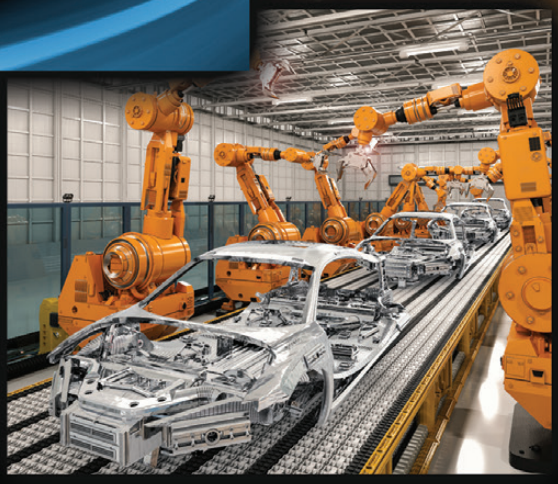
Dataforth

- 2000+ Products for Industrial Data Acquisition and Control, Signal Conditioning, and Data Communications
- Energy Monitoring
- 40 Years of Experience
- Better than 6σ Reliability
- Products Manufactured and Designed in the USA per RoHS III Directive (EU) 2015/863
- Quality Management System is ISO9001:2015 Registered

For Product Information, Certifications, System Builders, and Online Ordering, go to: **www.dataforth.com**

Additional Resources

- Application Notes
- Tech Notes
- Press and Product Releases



Our Track Record Proves We are Dedicated to Your Success!

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SCM5B Isolated Analog Signal Conditioning Modules

True 3-way Isolation, 5V Supply Voltage, Unparalleled Performance

20 family groups of 300+ different modules: a wide selection of input and output functions

Each SCM5B module provides a single channel of isolated analog input or output. Input modules interface to all types of industrial sensors. Analog inputs include voltage and current in narrow and wide bandwidths, thermocouple, RTD, accelerometer, potentiometer, strain gauge, frequency, and 2-wire and 3-wire, as well as 4-wire transmitter. Output modules accept a high-level analog voltage signal from a host system and provide process current or voltage output to field devices.

SCM5B Key Features

- ±0.03% Accuracy (typ)
- ±0.005% Linearity
- 1500Vrms Transformer Isolation and 240Vrms Field-side Protection
- ANSI/IEEE C37.90.1 Transient Protection
- 5V Power Supply Voltage (30mA (typ))
- 4- to 6-pole Low-pass Filtering
- Low Output Noise
- –40°C to +85°C Operating Temperature
- CSA C/US Certified, (Class I, Division 2, Groups A, B, C, D)
- CE and ATEX Compliant
- Manufactured per RoHS III Directive 2015/863



SCM7B Isolated Process Control Signal Conditioning Modules

2-way Isolation, 14-35VDC Supply Voltage, Industrial Performance

15 family groups of 200+ different modules: a compact, low-cost solution for industrial data acquisition and process control applications

Each SCM7B module provides a single channel of isolated analog input or output. Various input modules accept analog voltage or current signals from all types of field sensors and sources; they provide high-level analog outputs suitable for use in a process control system. Output modules accept high-level analog voltage signals from a process control system and provide current or voltage output to a field device.



SCM7B Key Features

- ±0.03% Accuracy (typ)
- ±0.01% Linearity
- 1500Vrms Transformer Isolation and 120Vrms Field-side Protection
- ANSI/IEEE C37.90.1 Transient Protection
- 14-35VDC Wide Supply Voltage
- 5-pole Low-pass Filtering
- Low Output Noise
- –40°C to +85°C Operating Temperature
- CSA C/US Certified (Class I, Division 2, Groups A, B, C, D)
- CE and ATEX Compliant
- Manufactured per RoHS III Directive 2015/863

The SCM5B, SCM7B product lines include a complete selection of backpanels, DIN-rail mounting options, cables, racks, power supplies, and other accessory items.

Custom SCM5B, SCM7B modules are available: consult factory for minimum quantity and pricing details on custom input ranges, output ranges, bandwidth, and other key parameters.

SensorLex® 8B Isolated Analog Signal Conditioning Modules

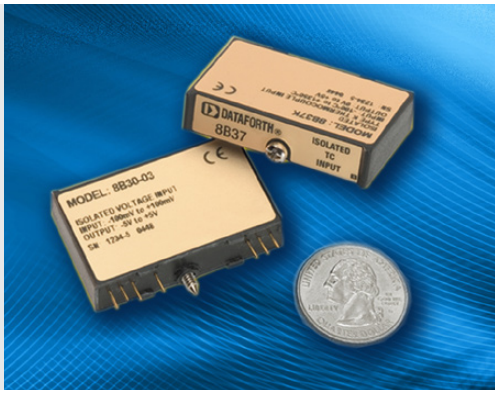
Miniature Size, 2-way Isolation, 5V Supply Voltage, *Instrument Class*® Performance

19 family groups of 130+ modules: an optimal solution for monitoring real-world process signals and providing high-level signals for data acquisition

Developed in response to customer requests for a smaller, isolated signal conditioner, SensorLex 8B modules are housed in a miniature package that is ideal for embedded and portable applications. All 8B modules are fully functional and provide *Instrument Class* analog voltage output. They interface to a wide variety of voltage, current, temperature, position, frequency, and strain measuring devices.

8B SensorLex Key Features

- ±0.05% Accuracy (typ)
- ±0.02% Linearity
- 1500Vrms Transformer Isolation and 240Vrms Field-side Protection
- ANSI/IEEE C37.90.1 Transient Protection
- 5V Power Supply Voltage (30mA (typ))
- 3- to 5-pole Low-pass Filtering
- Low Output Noise
- –40°C to +85°C Operating Temperature
- UL/cUL Listed (Class I, Division 2, Groups A, B, C, D)
- CE Compliant
- ATEX Compliance Pending
- Manufactured per RoHS III Directive 2015/863



SCMD Isolated Digital I/O Modules

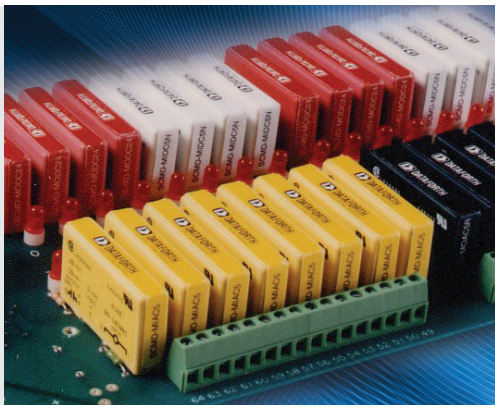
Miniature Digital I/O Modules with 4kV Isolation

A rugged, protective isolation barrier, effective to 4kV, between the field and computer system

SCMD miniature digital I/O modules are solid-state devices that send “On” and “Off” electrical signals to and from a computer. Input modules convert AC or DC voltages to DC logic signals and send them to the computer system. Output modules work in the opposite direction, switching either AC or DC circuits On or Off in response to logic-level voltage commands from the computer.

Key SCMD Features

- 4000Vrms Optical Isolation
- Industry Standard Packaging
- Input Modules Incorporate Input Filtering for Transient-free Switching
- Complete Selection of Backpanels and Accessories
- Optional Low-noise, Fast-switching Models
- UL Listed, CSA Certified, CE Compliant
- Manufactured per RoHS III Directive 2015/863



The SensorLex 8B and SCMD product lines include a complete selection of backpanels, DIN-rail mounting options, cables, racks, power supplies, and other accessory items.

Custom SensorLex 8B modules are available: consult factory for minimum quantity and pricing details on custom input ranges, output ranges, bandwidth, and other key parameters.

DSCA High-Performance, DIN-rail Mount, Isolated Signal Conditioners

True 3-way Isolation, High Accuracy, *Instrument Class*® Performance

16 family groups of 375+ different modules: a wide selection of input and output functions

Each *Instrument Class* DSCA module provides a single channel of isolated analog input or output for use in data acquisition, test and measurement, and control system applications.

DSCA Key Features

- ±0.03% Accuracy (typ)
- ±0.01% Linearity
- 1500Vrms Transformer Isolation and 240Vrms Field-side Protection
- ANSI/IEEE C37.90.1 Transient Protection
- 15-30VDC Wide Supply Range
- Industry Standard Outputs of 0-10V, ±10V, 0-20mA, or 4-20mA
- 4- to 6-pole Low-pass Filtering
- Low Output Noise
- –40°C to +80°C Operating Temperature
- Plug-in Terminal Blocks Simplify Wiring
- UL/cUL Listed (Class I, Division 2, Groups A, B, C, D)
- CE and ATEX Compliant
- Manufactured per RoHS III Directive 2015/863



SCM9B Isolated Analog Signal Conditioning Modules

Isolated, Intelligent Signal Conditioning Products

11 family groups of 200+ different modules: a wide selection of input and output functions

High-quality 9B modules provide cost-effective protection and conditioning for a wide range of distributed data acquisition and control applications including but not limited to process monitoring and control, remote data logging, product testing, and motion and motor speed control.

Dataforth's extensive line includes fixed and programmable sensor-to-computer and computer-to-analog output interface modules, RS-232/RS-485 converters, RS-485 repeaters, and applications software. Accessories include a complete selection of backpanels, DIN-rail mounting options, interface cables, mounting racks, power supplies, and other accessory items.

SCM9B Key Features

SCM9B Sensor-to-Computer Modules

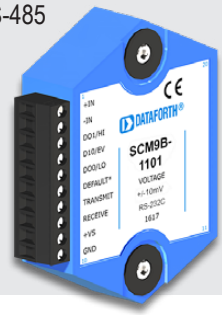
- 500Vrms Input Isolation
- Programmable Scaling and Linearization
- ASCII Command/Response Protocol
- 15-bit Measurement Resolution
- Continuous Self-calibration
- Analog Readback
- DIN-rail Mountable D100 Series

SCM9B Computer-to-Analog Output Modules

- 0-1V, ±1V, 0-5V, ±5V, 0-10V, ±10V, 0-20mA, 4-20mA Output Ranges
- 500Vrms Output Isolation
- 12-bit Output Resolution
- Programmable 0.01V/s (mA/s) to 10,000V/s (mA/s) Output Slopes
- Analog Readback
- Data Scaling

SCM9B Converters and Repeaters

- Transparent to Host
- Optically Isolated Bidirectional Data Flows
- Automatic Internal RS-485 Bus Supervision
- DIN-rail Mountable D192 Model



Custom DSCA modules are available: consult factory for minimum quantity and pricing details on custom input ranges, output ranges, bandwidth, and other key parameters.

DSCL Industrial Loop Isolators and Transmitters

Passive, Active, Programmable 4-20mA Loop Products

Loop and universal AC/DC-powered isolators and transmitters in DIN-rail, component, and head-mount packages

This family includes basic loop-powered isolators, wide-range AC/DC-powered isolators and transmitters, and fixed-gain or hardware- and software-configurable models. They accept voltage, current, thermocouple, and RTD-input signals and provide high-level analog outputs for data acquisition, test and measurement, and control system applications.

Key DSCL Features

- Full Family of Loop Isolators and Transmitters
- Signal-powered Passive Loop Isolator Models
- Wide Range 24-60V or 85-230V AC/DC Powered Models
- Jumper and Software Configurable Models
- 4000Vrms Isolation
- PCB, DIN-rail, Panel Mount, or Instrument Head Mounting
- Multiple Channels per Package Available
- No Recalibration or Maintenance Required
- Fault Detection of Input Signal Available
- CE Compliant
- Manufactured per RoHS III Directive 2015/863

Compact 6.2mm Signal Converters

- Ideal for Applications in Limited Space
- Dip-switch Configuration
- 3 Power Supply Options
- 3.67” x 0.24” x 4.04” (93.1mm x 6.2mm x 102.5mm) casing
- 1.6 oz (45g) Per Module



DSCP User-Programmable Transmitters

Passive, Active, Programmable 4-20mA Loop Products

Loop and universal AC/DC-powered isolators and transmitters in DIN-rail, component, and head-mount packages

This family includes basic loop-powered isolators, wide-range AC/DC-powered isolators and transmitters, and fixed-gain or hardware and software configurable models. They accept voltage, current, thermocouple, and RTD-input signals and provide high-level analog outputs for data acquisition, test and measurement, and control system applications. The compact 6.2mm DSCP dip-switch configurable signal converters are ideal when space is limited.

Key DSCP Features

- Full Family of Loop Isolators and Transmitters
- Signal-powered Passive Loop Isolator Models
- Wide Range 24-60V or 85-230V AC/DC Powered Models
- Jumper and Software Configurable Models
- 4000Vrms Isolation
- PCB, DIN-rail, Panel Mount, or Instrument Head Mounting
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Compact 6.2mm Signal Converters

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- 1.6 oz (45g) Per Module



DSCT Loop-Powered Isolated Two-wire Transmitters

Instrument Class® Performance in a Low-Cost DIN-rail Mount Package

7 family groups of 45+ transmitter models: economical connections between sensors and control rooms

DSCT 2-wire transmitters condition and send analog signals from sensors located in the field to monitoring and control equipment—usually computers—located thousands of feet away in central control areas. The transmitters accept a wide range of inputs, including millivolt, volt, milliamp, thermocouple, RTD, potentiometer, and slide wire. They operate on power from a 2-wire signal loop and modulate the supply current to represent the input signal within a 4-20mA range.

Key DSCT Features

- ±0.03% Accuracy (typ)
- ±0.01% Linearity
- 1500Vrms Transformer Isolation and 240Vrms Field-side Protection
- ANSI/IEEE C37.90.1 Transient Protection
- 10.8-60V Wide Loop Supply Voltage
- 5-pole Low-pass Filtering
- –40°C to +80°C Operating Temperature
- Mounts on DIN-rail EN 50022, 35x7.5 or 35x15
- CSA C/US Certified (Class I, Division 2, Groups A, B, C, D)
- CE Compliant
- Manufactured per RoHS III Directive 2015/863



DCP and LDM Industrial Data Communication Products

Line Drivers and Converters for RS-232, RS-422, and RS-485 Systems

9 family groups of 40+ transmitter models: economical connections between sensors and control rooms

Industrial LANs and data communication systems stretch over long distances, inside and outside, with signals exposed to electrical transients, noise, ground loops, power surges, and lightning. Our heavy duty products “harden” and protect these systems.

Key Data Communication Features

- Protects Equipment from Damage due to Power Surges, Transients, Lightning
- 1500Vrms Isolation with Optocouplers and Power DC-to-DC Converter (3000Vp, 1 min)
- Extends RS-232 Communication Distances without Expensive Low-capacitance Cabling
- Connects RS-232 Devices to RS-422 and RS-485 Devices
- Data Rates to 115.2kbps
- Distances to 12 Miles (20km)
- 2- or 4-wire Simplex/Duplex Connection
- CE Compliant
- Manufactured per RoHS III Directive 2015/863



SCM5B isoLynx® SLX200 Data Acquisition System

Fast, Intelligent, Modular, Fully Isolated

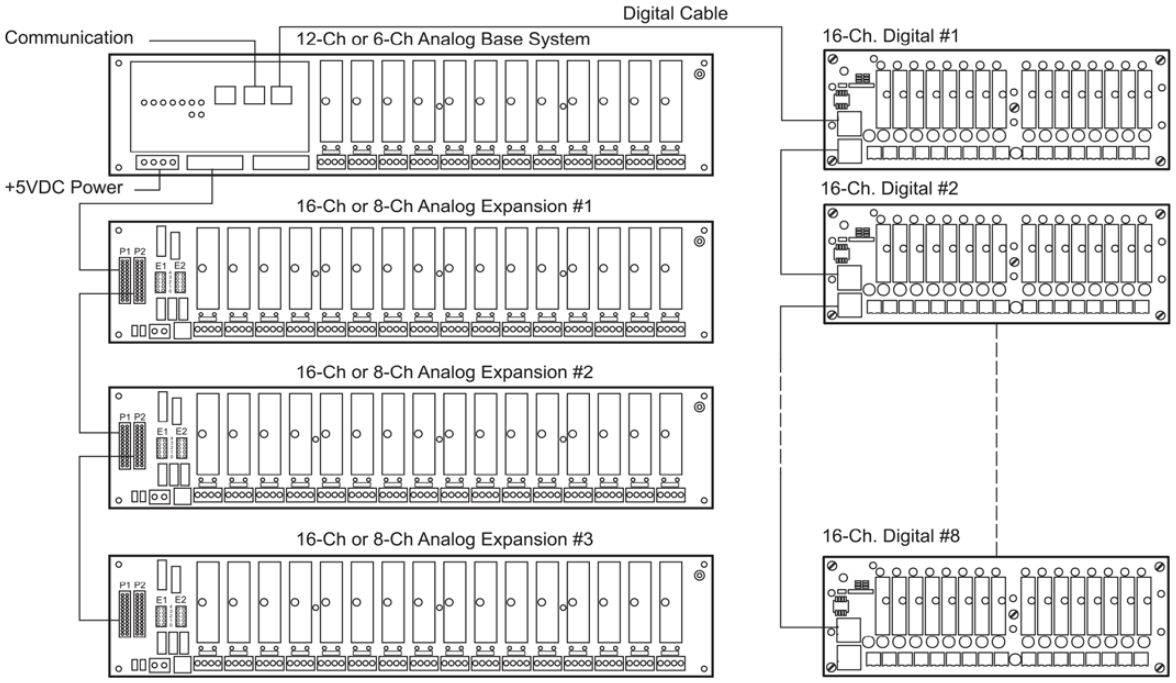
Implements industry-standard Modbus® RTU and TCP protocols, enabling communication with existing third-party software drivers and HMI/SCADA packages

Fully certified by Modbus-IDA and OPC compatible, the SCM5B isoLynx SLX200 provides superior reliability, accuracy, and isolation for a wide range of rugged industrial applications. The system offers maximum flexibility of analog and digital I/O selection; the modular design combines a 6- or 12-channel I/O Controller base system and optional 8- or 16-channel expansion backplanes, which can be panel or DIN-rail mounted. One I/O controller unit can operate up to 60 channels of differential analog I/O and 128 channels of digital I/O, using Dataforth's SCM5B analog and SCMD digital modules. All I/O is channel-to-channel and input-to-output isolated.

SCM5B isoLynx SLX200 Key Features

- Modbus RTU Support on RS-232 and RS-485
- Modbus TCP Support (optional)
- 1500Vrms Input-to-Output and Channel-to-Channel Isolation
- 240Vrms Field-side Protection
- Dual Ethernet for Redundancy
- System Expansion to 60 Analog Channels and 128 Discrete Channels
- All I/O Mix and Match Isolated
- Fast 16-Bit A/D, D/A
- Best I/O Selection with 250+ Different I/O Modules
- Drop-in Data Acquisition for Existing Installations
- Two Analog Scan Modes
- –40°C to +85°C Operating Temperature
- Free Configuration Software
- CSA C/US Certified (Class I, Division 2, Groups A, B, C, D)
- CE Compliant
- Manufactured per RoHS III Directive 2015/863





SCM5B isoLynx SLX200 System Example

8B isoLynx® SLX300 Data Acquisition System

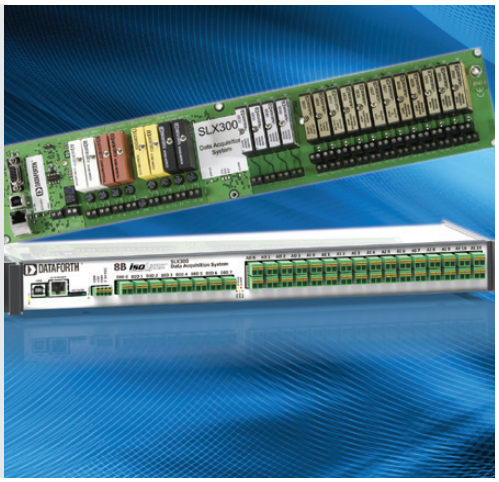
Flexible, Compact, Modular, Reliable

Configure with up to 12 isolated analog-input channels, 4 isolated analog-output channels, and 8 isolated digital I/O channels

Building on the proven reliability and outstanding performance of the SCM5B isoLynx SLX200 and miniature-sized SensorLex® 8B isolated signal conditioning modules, the 8B isoLynx SLX300 is a compact, low-cost solution for wide ranging rugged industrial applications. The system enables the mix and match of analog and digital I/Os at sustained rates of up to 3.0kS/s (100kS/s burst) and supports Modbus® RTU and TCP protocols. The SLX300 also offers 7 advanced special functions and 4 alarm states. The system can be panel or DIN-rail mounted.

8B isoLynx SLX300 Key Features

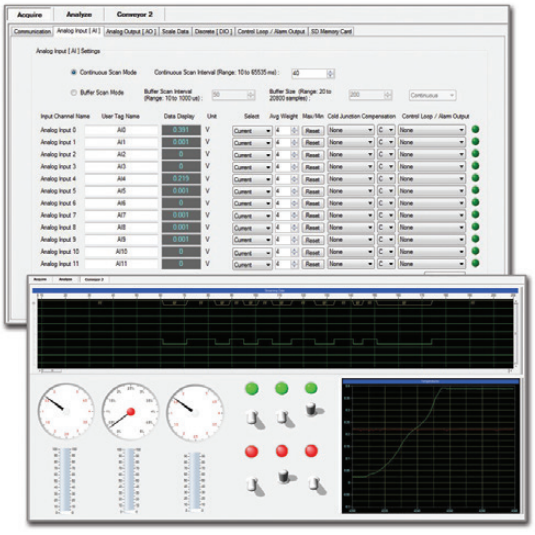
- Modbus RTU and TCP Support
- 1500Vrms Input-to-Output and Channel-to-Channel Isolation
- 240Vrms Field-side Protection
- Wide I/O Selection
  - – Analog – 19 product families, 130+ models
  - – Digital – 6 product families, 20+ models
- Mix and Match Analog and Digital I/O
- Advanced Features Including Alarms, Counters, Timers, PWMs, and more
- –40°C to +85°C Operating Temperature
- Free Configuration Software
- UL/cUL Listed (Class I, Division 2, Groups A, B, C, D)
- CE Compliant
- ATEX Compliance Pending
- Manufactured per RoHS III Directive 2015/863



ReDAQ® Shape Software for SLX300

Out-of-the-box DAQ software for the 8B isoLynx SLX300 data acquisition system

ReDAQ Shape software for SLX300 provides the easiest and most efficient development tool to create, save, and open graphical user interface projects for test, process, data collection and data analysis applications. Built-in functions in the software are pre-configured and can be used without setup; just three easy steps are required to create data acquisition and control projects.



ReDAQ Shape for SLX300 Key Features

- 64 High-quality Toolbox Tools
- 3 Easy Steps to Create Data Acquisition and Control Projects
- Pre-configured Built-in Software Functions
- Supports Any Graphical File Format
- Integrated, Across-the-Board Applicability
- Most Effective Way to Set Up and Configure 8B isoLynx SLX300

Functions:

- – Continuous and Burst Scan Modes for 12 Analog Input and 4 Analog Output Channels
- – Automatically Scales Data from Counts to Engineering Units
- – 8 Discrete I/O with 7 Special Functions Pulse/Frequency Counter, Pulse/Frequency Counter with De-Bounce, Waveform Measurement, Time Between Events, Frequency Generator, PWM Generator, One-shot Pulse Generator
- – Customer User Tag Name for Any Input and Output
- – Cold Junction Compensation and Linearization for Thermocouple-input Modules
- – Control Loop and Alarm Output
- – Three-function Timer (Count-down, 24hr/ay, Day/Time) with 10 Programmable Events

MAQ®20 Industrial Data Acquisition and Control System

High Performance, Powerful, Flexible, Industrial, Rugged Design

The industry's lowest cost-per-channel Data Acquisition and Control System offering, integral PID loop control, ±0.035% system accuracy; ideal for test and measurement, factory, process, and machine automation, military and aerospace, power and energy, environmental monitoring, and oil and gas applications

Encompassing more than 35 years of design excellence and quality in the industrial test and measurement and control industry, the MAQ20 family consists of DIN-rail mounted, programmable, multi-channel, rugged industrial signal conditioning input and output modules and communication modules. Each I/O module has a 1500Vrms isolation barrier between field-side and system-side wiring, and many models offer per-channel isolation. The MAQ20 is supported by both ReDAQ® Shape software for MAQ20 and your own ModBus® compatible data acquisition/test and measurement software.

MAQ20 Key Features

- Industry's Lowest Cost per Channel
- ±0.035% Accuracy (typ)
- 1500Vrms Channel-to-Bus Isolation
- Up to 240Vrms, Continuous Field I/O Protection
- ANSI/IEEE C37.90.1 Transient Protection
- Graphical Control Software
  - ReDAQ Shape for MAQ20 Software
  - Customer own ModBus® compatible DAQ Software
- Advanced Features Including Integral PID Control, Alarms, Counters, Timers, PWMs
- 7-34VDC Wide-range Input Power
- –40°C to +85°C Industrial Operating Temperature
- Heavy Industrial CE Compliant
- UL/cUL Listed (Class I, Division 2, Groups A, B, C, D)
- ATEX Compliance Pending
- Manufactured per RoHS III Directive 2015/863

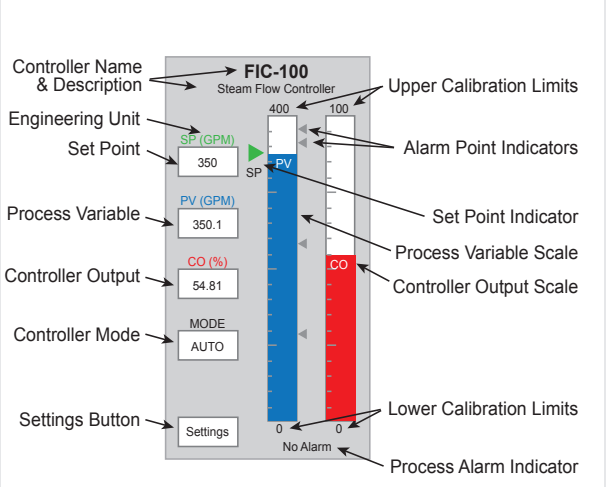


PID Loop Control

This highly effective controller operates in ReDAQ Shape for MAQ20 software

With ReDAQ Shape software, the MAQ20 Data Acquisition System runs in real time and provides up to 8 loops of PID control; faceplates within the software enable an engineer or operator to interact with the MAQ20 Data Acquisition System. Typical PID applications include steam, water, and chemical flow control; tank level control, heat-exchanger/reactor temperature control, and pressure control.

Key PID Controller Features... with ReDAQ Shape Software



PID Faceplate in ReDAQ Shape Software

- Separate Panels for Setting Basic, Advanced, and Alarm Items
- Noninteracting and Parallel PID Control Algorithms
- Proportional and Derivative Modes Can Act on Error or Process Variable
- Gap Control
- Built-in Process Variable Filtering
- Bumpless Transfer
- Change Tuning Settings Easily
- Process Variable Set Point Tracking
- Limit Controller Output Range
- Anti-reset Windup
- Four Process Alarms
- Full-featured Faceplate for Numeric and Visual Feedback
- Integrated Auto Tuner

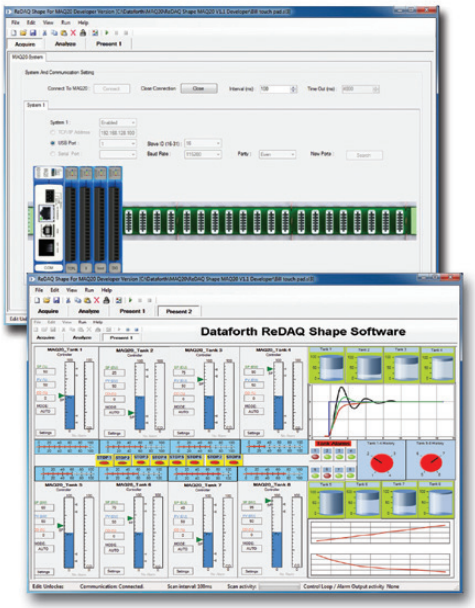
ReDAQ® Shape Software for MAQ®20

Ideal for data acquisition, monitoring and control; enables users to easily interact with the Dataforth MAQ20 Data Acquisition System

ReDAQ Shape software for MAQ20 is an easy and efficient development tool as well as an effective way to configure and customize MAQ20 functions for specific application requirements. Faceplates within the software enable an engineer or operator to interact with the MAQ20 Data Acquisition System and its features, for example PID Loop Control.

ReDAQ Shape for MAQ20 Key Features

- 3 Easy Steps to Create Customized Presentation Panels
- No Setup or Configuration Required to Acquire and Analyze Data
- Faceplates for PID Loop Control
- 65 High-quality Toolbox Tools
- Supports Any Graphical File Format
- Integrated, Across-the-board Applicability
- Most Efficient Way to Configure and Run MAQ20 Systems:
  - Continuous Acquisition and Burst Scan Modes
  - Automatically Scales Data from Counts to Engineering Units
  - Discrete I/O Offers 7 Special Functions: Pulse/Frequency Counter, Pulse/Frequency Counter with De-Bounce, Waveform Measurement, Time Between Events, Frequency Generator, PWM Generator, One-Shot Pulse Generator
  - Assign Tag Names for Any Input and Output
  - Configure Control Loops and Alarm Outputs
  - Three Function Timer (Count-Down, 24hr/Day, Day/Time) with 10 Programmable Events



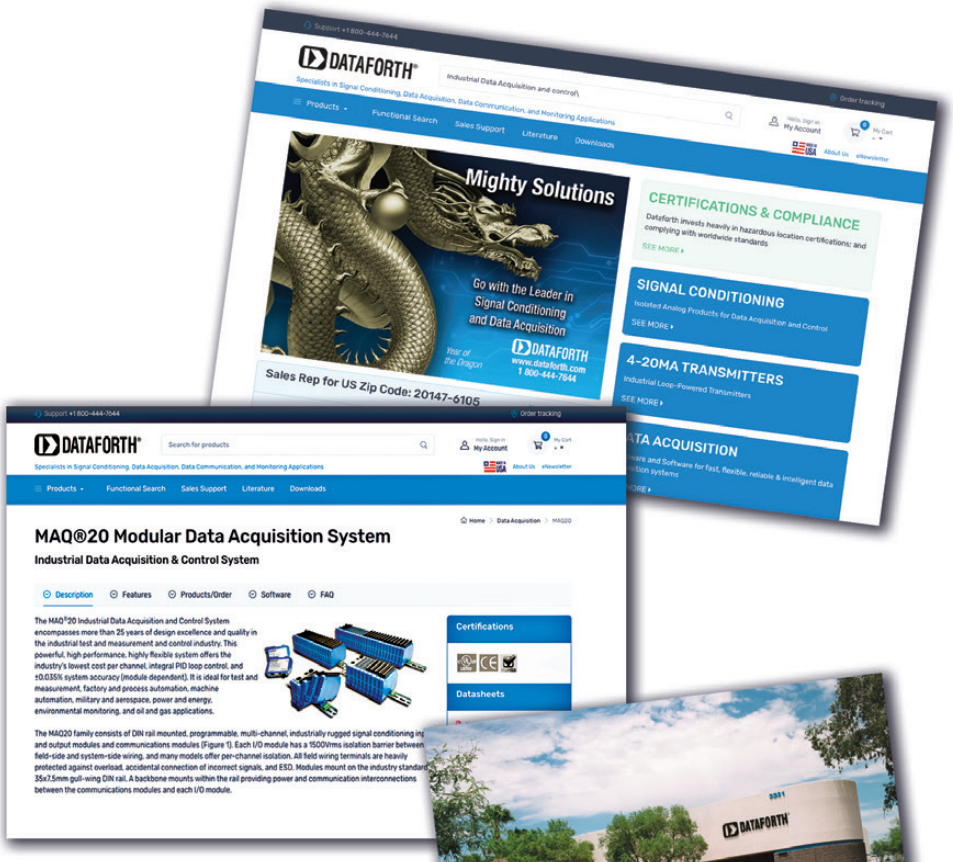
The Dataforth System Builder

Dataforth's System Builder is an innovative, interactive online tool that allows you to create your own system, module by module. Based on your stated requirements and parameters, suggestions are automatically given on which products to choose to build the most effective system. Pricing information is continuously updated, thereby enabling you to obtain the best system for your needs at the most cost-effective price.

Visit Dataforth's Website: dataforth.com

Dataforth's website is an easy-to-use, comprehensive source for sales, products, and applications information. The site includes:

- Fast, accurate parametric search capabilities for all Dataforth industrial signal conditioning, data acquisition, and data communication products
- Online product quote and purchase
- Online product data sheets, application notes, and user manuals
- Direct applications assistance, sales, and customer service help lines readily available
- Latest news on company operations and new products
- Comprehensive signal conditioning, data acquisition, and control tutorials
- Worldwide corporate and sales contact information





Online Help
Online Ordering
Data Sheets
Application Notes
Product Information



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SCM5B, SCM7B, 8B, SCM9B

Characteristic	SCM5B	SCM7B	8B	SCM9B
Mechanical Format	Modular Plug-in-board	Modular Plug-in-board	Modular Plug-in-board	Plug-in or Hockey Puck
Isolation: Voltage type	1500Vrms Transformer 3-way	1500Vrms Transformer 2-way	1500Vrms Transformer 2-way	500Vrms Transformer/Optical 2-way
CMR	160dB	110dB	100dB	100dB
NMR (60Hz) Rejection	95dB (4Hz Modules)	85dB (3Hz Modules)	70dB	Software Configurable
Bandwidth	4Hz to 10kHz	3Hz to 10kHz	3Hz to 20kHz	Software Configurable
Filter	6-pole	5-pole	3- to 5-pole	Digital
Input Voltage Withstand	240Vrms	120Vrms	240Vrms	120Vrms or 250Vrms
Input Signals	(1)	(2)	(1)	(3)
Output Range to System	0-5VDC, 0-10VDC, ±5VDC, ±10VDC, 0-1mA, 0-20mA, 4-20mA	1-5VDC, 0-5VDC, 0-10VDC, ±10VDC	0-5VDC, ±5VDC	RS-232 or RS-485
Output Range to Field	4-20mA, 0-20mA, ±20mA, ±5VDC, ±10VDC, 0-5VDC, 0-10VDC	±10VDC, 4-20mA, 0-20mA	4-20mA, 0-20mA, ±20mA, ±5VDC, ±10VDC, 0-5VDC, 0-10VDC	4-20mA, 0-20mA, 0-1VDC, ±1VDC, 0-5VDC, ±5VDC, 0-10VDC, ±10VDC
Gain/Offset Adjust	Fixed	Fixed	Fixed	Auto Zero, Auto Cal
Accuracy	0.03% (typ)	0.03% (typ)	0.05% (typ)	0.02% (typ)
Output Control	Enable/Disable	Always Enabled	Always Enabled	RS-232 or RS-485
Supply Voltage	+5VDC ±5% at 30-350mA	14-35VDC (+24V Nom) at 12-70mA	+5VDC ±5% at 25-225mA	12-30VDC at 0.75W Max
Dimensions (h)x(w)x(d)	2.28" x 2.26" x 0.6" (58mm x 57mm x 15mm)	2.13" x 1.7" x 0.6" (54.1mm x 43.3mm x 15.4mm)	1.11" x 1.65" x 0.4" (28.1mm x 41.9mm x 10.2mm)	3.60" x 2.45" x 1.10" (91.4mm x 62.2mm x 27.9mm)
Interface	14-pin	5- or 6-pin	5-, 6- or 7-pin	10- or 20-pos Term Block
Customization	Yes	Yes	Yes	No

DIN-rail, Head-mount Products - DSCA, DSCT, DSCL, DSCP

Characteristic	DSCA	DSCT	DSCL	DSCP
Mechanical Format	DIN-rail Mount	DIN-rail Mount	DIN-rail, Component, Panel	DIN-rail, Head Mount
Isolation: Voltage type	1500Vrms Transformer 3-way	1500Vrms Transformer 3-way	500Vrms to 4000Vrms Transformer/Optical	Non/1500Vrms/2300Vrms Transformer/Optical 3-way
CMR	160dB	160dB	70-110dB	Consult Data Sheet
NMR (60Hz) Rejection	85dB (3Hz Modules)	85dB (3Hz XMTRs)	20dB/Decade	SW or Dip-switch Config
Bandwidth	3Hz to 3kHz	3Hz	5Hz to 750Hz	SW or Dip-switch Config
Filter	6-pole	6-pole	2-pole	SW or Dip-switch Config
Input Voltage Withstand	240Vrms	240Vrms	N/A	N/A
Input Signals	(1)	(5)	4-20mA, 0-20mA	(4)
Output Range to System	0-10VDC, ±10VDC, 0-1mA, 4-20mA, 0-20mA	4-20mA	4-20mA, 0-20mA, V, and Selectable	SW or Dip-switch Config
Output Range to Field	4-20mA, 0-20mA, ± 20mA, ±10VDC, 0-10VDC	N/A	N/A	N/A
Gain/Offset Adjust	±5%	±10%	±10% on Some Models	Software Configurable
Accuracy	0.03% (typ)	0.03% (typ)	0.05% to 0.1% (typ)	0.1% (typ)
Output Control	Always Enabled	Always Enabled	Always Enabled	Always Enabled
Supply Voltage	15-30VDC (+24V Nom) at 25-80mA	10.8-100VDC Loop at 4-20mA	24VDC Loop at 4-20mA	24VDC Loop, or 24-230VDC/VAC
Dimensions (h)x(w)x(d)	2.95" x 0.89" x 4.13" (75mm x 22.5mm x 105mm)	2.95" x 0.89" x 4.13" (75mm x 22.5mm x 105mm)	Consult Data Sheet	Consult Data Sheet
Interface	8-pos Term Block	6-pos Term Block	Terminal Block	Terminal Block
Customization	Yes	Yes	No	SW or Dip-switch Config

NOTES:
(1) V, I, RTD, TC, Potentiometer, Strain, True RMS, 2-wire, Frequency
(2) V, I, RTD, TC, Potentiometer, 2-wire
(3) V, I, RTD, TC, Frequency, Digital I/O
(4) V, I, RTD, TC
(5) V, I, RTD, TC, Potentiometer

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High-accuracy Energy Monitoring Module

Module	PWRM10-01	PWRM20-01
Phase Voltage Range	85-265VAC	85-525VAC
Phase Frequency	50/60Hz Input	
Electrical System		
	Single-phase (2-wire)	
Voltage Measurement	Two-phase (3-wire)	
(Direct Connection or VT)	Three-phase Wye or Delta (3-wire)	
	Three-phase Wye or Delta (4-wire)	
Current Measurement	Shunt, Ct, Rogowski Coil	
Measured Parameters and Accuracy		
RMS Voltage	±0.1% of Full-scale Range	
RMS Current	±0.1% of Full-scale Range	
Active Power	±0.2%	
Apparent Power	±0.2%	
Reactive Power	±0.2%	
Power Factor	±0.2%	
Frequency Range	45-65Hz	
Active Energy	±0.25%	
Apparent Energy	±0.25%	
Fundamental Active and Reactive Energy	±0.25%	
Phase Angles	±0.1%	
Line Periods	±0.1%	
Measurement Bandwidth		
RMS Voltage and Current (–3dB)		
Total Active Energy (–3dB)	3.3kHz	
Fundamental Reactive Energy (–3dB)	3.3kHz	
Harmonic (–3dB)	3.3kHz (2.8kHz No Attenuation Pass Band)	
Temperature Drift	±100ppm°C	
Events	Over-voltage, Over-current, Sag	
Security	Password to Access Control	
Data Logging	Configurable, Automatic Download and Storage	
Connectivity	Ethernet, TCP/IP	
Mounting	DIN-rail	
Dimensions (h)x(w)x(d)	4.01" x 0.89" x 5.04" (102mm x 22.6mm x 128mm)	

Data Acquisition (DAQ) System - MAQ20

Components - Communication - MAQ20-COM2, -COM4	
Standard Industrial Buses	Ethernet, RS-232, RS-485
USB Software Interfaces	Modbus TPC/IP or RTU
Components - Analog Input - MAQ20-MVDN, -VDN, -VSN, -IDN, -ISN, -FREQ, -BRDG1, -JTC, -KTC, -RSTC, -TTC, -RTD31, -RTD41, -ISOI1, -ISOMV1, ISOV2, -ISOV2, -ISOV3, -ISOV4, -ISOV5	
Channel Count	Up To 16 Channels, Independently Configurable
Voltage and Current Inputs	8 Differential or 16 Single-ended
Thermocouple	8-channel Measurement, 5 Thermocouple Types
RTD Inputs	2-, 3-wire Sensors, Including 6 RTD Types and Potentiometers
Strain Gauge Input	Connect to Full-Bridge Sensors, Narrow/Wide BW Filtering
Frequency Input	Zero Crossing and TTL Signals of 500Hz-100kHz Frequencies
Components - Analog Output - MAQ20-VO, -IO	
Voltage and Current Outputs	Up to 8 Channels of 300vrms Ch-to-Ch Isolated Output
Components - Discrete Input/Output - MAQ20-DIV20, -DIVC20, -DIOL, -DIOH, -DODC20SK, -DORLY20	
Channel Count	5 Input/5 Output Channels per Module
Inputs	3-60VDC Input; or, 90-280VAC/VDS at 3A
Outputs	3-60VDC Output; or, 24-280VAC at 3A
Overall System Specifications	
Accuracy	±0.035% (typ)
Voltage and Current Outputs	Up to 8 Channels of 300Vrms Ch-to-Ch Isolated Output
Field I/O Protection	Up to 240Vrms, Continuous
Transient Protection	ANSI/IEEE C.37.90.1
Wide-range Input Power	7-34VDC
ReDAQ Shape Software	Up to 8 PID Loops
Operating Temperature	–40°C to +85°C
Advanced PID Control	Alarms, Counters, Timers
Operating Temperature	–40°C to +85°C

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High-voltage Attenuator Modules - SCMHVAS-Mxxxx

Module	SCMHVAS-Mxxx
Input Range	±100V_{PEAK} to ±2000V_{PEAK} (70VAC to 1414VAC)
Input Voltage (max)	±2000V_{PEAK}
Input Resistance	>10MΩ
Accuracy	±0.03%
Stability	±50ppm/ºC
Output Range	±1V
Output Resistance	<100kΩ
Mechanical Dimensions	2.13" x 1.705" x 0.605"
(h)x(w)x(d)	(54.1mm x 43.3mm x 15.4mm)
Environmental	
Operating Temp. Range	–40ºC to +85ºC
Storage Temp. Range	–40ºC to +85ºC
Relative Humidity	0 to 95% Noncondensing

*Contact factory or you local Dataforth sales office for maximum values.

See Discontinued Devices at the End of the Document.

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Data Communication Products

RoHS III COMPLIANT 2015/863 | DIN Rail MOUNT | CE

Protecting Valuable Industrial LANS and Data Communication Systems

DESCRIPTION

Industrial LANs and data communication systems stretch over long distances, inside and outside, with signals exposed to electrical transients, noise, ground loops, power surges, and lightning. Commercial communications equipment often is not designed for use in these environments, which can lead to unreliable signal quality, damage to expensive peripherals, computers, and other online equipment, and production downtime. Our heavy-duty products "harden" and protect these systems, and can extend communications for many miles without expensive low-capacitance cabling.

Our LDM Series line drivers and converters protect host computers and equipment and extend the distances over which computers, terminals, and other devices can communicate within hazardous industrial and institutional environments – up to 12 miles using wire pairs and current loop protocols, or two miles with fiber optic data links for total electrical isolation.

Our DCP485 DIN-rail RS-232 to RS-485 converter/line driver provides 1500Vrms continuous isolation and data transfer up to 115.2kbps with automatic RS-485 line control while powered from +10 to +30VDC.

FEATURES

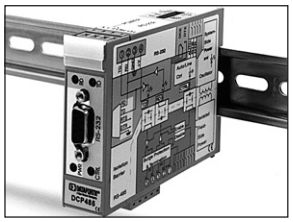
- 1500Vrms Isolation with Optocouplers and Power DC-to-DC Converter (3000Vp, 1 min)
- Industrial Temperature Range
- DTE/DC Selection Switches, Diagnostic LEDs
- Rugged, Compact Industrial Packaging, Choice of Host Connectors
- Data Rates to 115.2kbps
- Distances to 12 Miles (20km)
- Multidrop, Handshake Functions
- 2- or 4-wire, Simplex/Duplex Connection
- Full Line of Power and Connector Accessories
- CE Compliant
- Manufactured per RoHS III Directive 2015/863

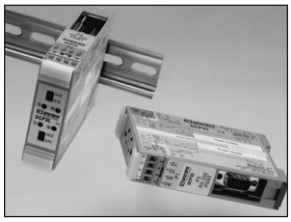
BENEFITS

- Protects Equipment from Damage Due to Power Surges, Transients, Lightning; Breaks Ground Loops
- Extends RS-232 Communication Distances without Expensive Low-capacitance Cabling
- Connects RS-232 Devices to RS-422 and RS-485 Devices

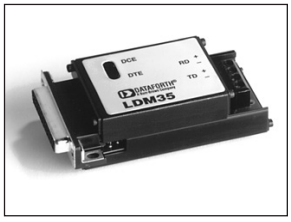
APPLICATIONS

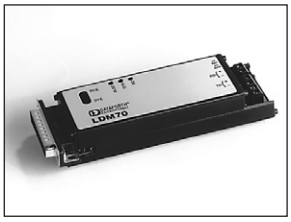
- Factory Automation and Control
- Building Automation
- Industrial Data Communication
- High-speed Data Communications

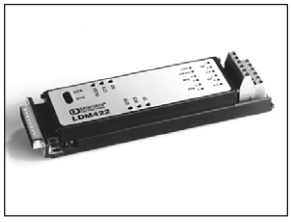

DCP485

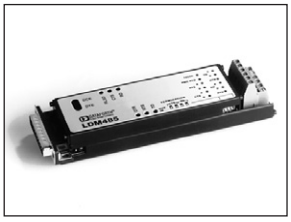

DCP35


LDM30


LDM35

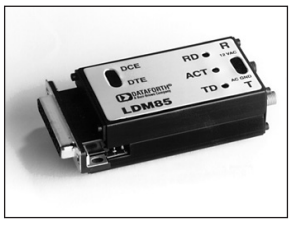

LDM70


LDM422

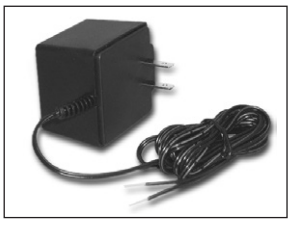

LDM485



LDM80



LDM85


PT3

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Data Communications Selection Guide

Line Drivers and Converters

Model	Max Bit Rate vs Distance	Max Distance vs Bit Rate	Field				Isolation	Host		Power	Notes
			Signal	Mode	# Wires	Connectors		Interface	Connector		
DCP35	19.2k (0.5mi) (0.8km)	12.0 mi (300) 11.3 km	Electrical Current Loop	Simplex, Full-duplex	2 4	Screw Terminals	Comm[2]	RS-232	Male/ Female DB-9	Port Signals	Port-signal Powered
DCP485	115.2k (.8mi) (1.3 km)	7 mi (2.4k) 11.3 km	Electrical RS-485 Differential Voltage	Simplex Half/ Full-duplex	2 2 4	Screw Terminals	Comm[2]/ Power[3]	RS-232	Fe/Male DB-9/ Screw Terms	Ext.[6]	DIN-rail Mounting Auto RS-485 Line Control
LDM30	57.6k (.5 mi) (0.8 km)	12 mi (1.2k) 19.3 km	Electrical Current Loop	Simplex Full-duplex	2 4	Screw Terms Mod Phone Jack	Comm[2]	RS-232	Male/ Female DB-25	Ext.[1]	Low Cost
LDM35	19.2k (.5 mi) (0.8 km)	12 mi (0.3k) 19.3 km	Electrical Current Loop	Simplex Full-duplex	2 4	Screw Terms Mod Phone Jack	Comm[2]	RS-232	Male/ Female DB-25	Port Signals	Port-signal Powered
LDM70	57.6k (.5 mi) (0.8 km)	12 mi (1.2k) 19.3 km	Electrical Current Loop	Simplex Full-duplex	2 4	Screw Terms Mod Phone Jack	Comm[2]/ Power[3]	RS-232	Male/ Female DB-25	Ext.[1]	Full Isolation, DTR/RLSD Handshake
LDM422	19.2k (1 mi) (1.6 km)	7 mi (1.2k) 11.3 km	Electrical RS-422 Differential Voltage	Simplex Half/ Full-duplex	2 2 4	Screw Terminals	Comm[2]/ Power[3]	RS-232	Male/ Female DB-25	Ext.[1]	Multidrop Capable RTS/CTS Handshake or 2nd Data Channel
LDM485	57.6k (.5 mi) (.8 km)	8 mi (2.4k) 12.9 km	Electrical RS-485 Differential Voltage	Simplex Half/ Full-duplex	2 2 4	Screw Terminals	Comm[2]/ Power[3]	RS-232	Male/ Female DB-25	Ext.[1]	Multidrop Capable RTS/CTS Handshake or 2nd Data Channel
LDM80	19.2k (2.2mi) (3.5 km)	2.2 mi (19.2k) 3.5 km	Optical	Simplex Full-duplex	1 Fiber 2 Fibers	SMA (905) ST	Total[4]	RS-232	Male/ Female DB-25	Port Signals	Total Electrical Isolation, Intrinsic Safety
LDM85	5M[5] (1.2 mi) (2 km)	1.2 mi (5M) 2 km	Optical	Simplex Full-duplex	1 Fiber 2 Fibers	SMA (905) ST	Total[4]	RS-232 RS-422/ RS-423 TTL	Male/ Female DB-25	Ext.[1]	Multipoint Optical Loop, Total Electrical Isolation

Accessories

Model	Description
Power Supply	DIN-rail Mount, 85-264VAC, 47-63Hz In
PWR-PS5R7W	24VDC, 0.3A Out
PWR-PS5R15W	24VDC, 0.65A Out
PWR-PS5R30W	24VDC, 1.3A Out
PWR-PS5R60W	24VDC, 2.5A Out
PWR-PS5R120W	24VDC, 5.0A Out

NOTES:
(1) Externally powered LDMs may be powered with wall transformer (supplied) or through pins 9 and 10 on host interface.
(2) Comm isolation provides an optical barrier on receive circuits and/or transmit circuits plus ANSI/IEEE C37.90.1 surge protection.
(3) Power isolation by DC/DC converter to field circuits.
(4) Fiber optic units provide total electrical isolation.
(5) Max data rate for LDM85 is 2.5Mbps NRZ TTL and 100Kbps RS-232/422.
(6) Externally powered +10V to +30VDC.

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DCP485

RoHS III COMPLIANT 2015/863 | DIN Rail MOUNT | CE

Fully-isolated DIN-rail RS-232 to RS-485 Converters/Line Drivers

DESCRIPTION

The DCP485 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 DIN-rail mountable enclosure for application to a junction box, a panel, a relay rack, the sides of computer equipment, or anywhere a DIN-rail can be mounted. Isolation is provided by optical couplers and a transformer isolated DC-to-DC converter. The RS-232 connection is through male or female EIA 9-pin D-sub connectors, or a 3-wire RS-232 connection can be made through convenient pluggable screw terminals. The RS-485 connections are made through convenient pluggable, solderless screw terminals.

The DCP485 series is designed for full-duplex operation over two-wire pairs. Outputs are tri-state, allowing multidropping of up to 32 units over one pair. Data rates are DC to 115.2k bits per second. Four diagnostic LED indicators are provided for installation guidance and system troubleshooting. The RS-232 interface includes Request To Send (RTS) and Data Terminal Ready (DTR) either of which can be used via DIP switches to enable the RS-485 transmitter. Alternately, the DCP485 offers automatic line switching in which the RS-485 transmitter is enabled automatically by each character sent on the RS-232 Transmit Data (TD) line. Additionally, the RS-485 transmitter and receiver may be independently enabled continuously or under RS-232 control. A convenient null modem switch is provided for the data lines. Also, line termination switches independently connect line termination and line bias resistors to the RS-485 lines. The units are powered from wide-range voltages of +10 to +30VDC through pluggable solderless screw terminals.

FEATURES

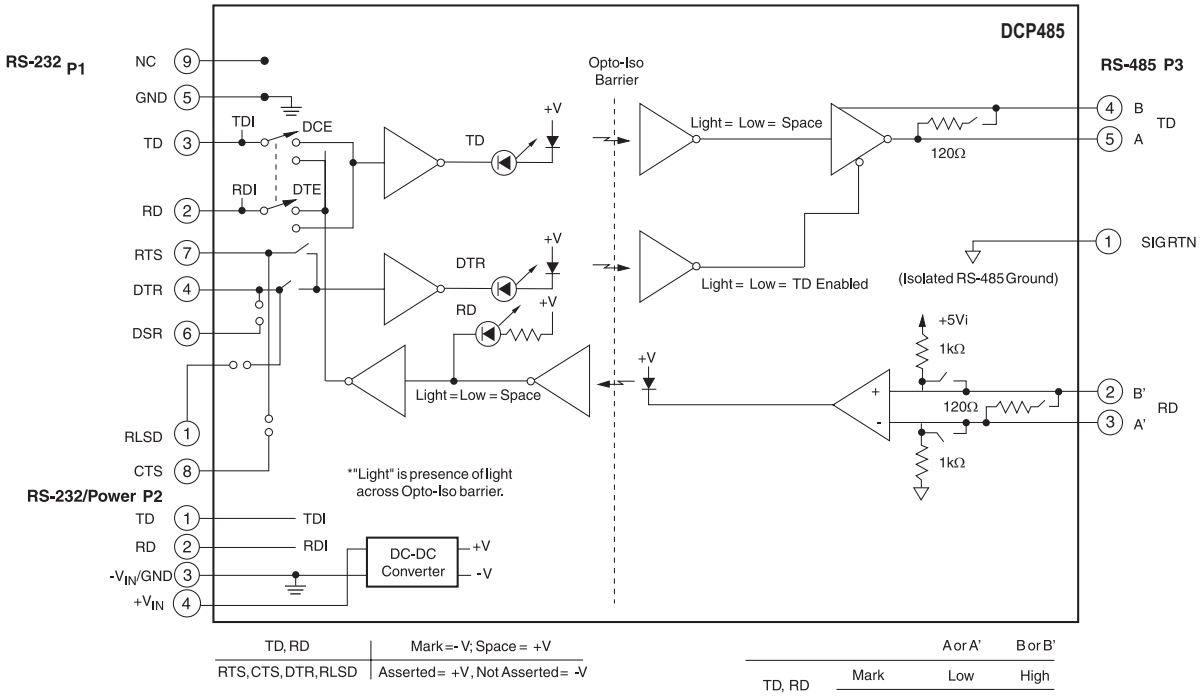
- Complete Isolation with Optical Couplers and Transformer-coupled DC-to-DC Converter
- Industrial Surge Protection Devices and 15kV ESD Protected RS-232 Inherent
- Four LED Diagnostic Indicators
- 38.4kbps at 1 Mile (1.6km), 115.2kbps at 0.8 Mile (1.3km)
- RTS, DTR, or Auto RS-485 Transmitter Control
- Tri-state Outputs for Multidrop Applications, up to 32 Devices
- Selection of Connectors
- Wide Operating Temperature Range
- Pluggable 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

- Utility Meters
- Industrial, Process, and Building Automation



DCP485 Block Diagram

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RS-232 P1 Pin Descriptions		
Pin 1	RLSD (DCD)	Receive Line Signal Detect (Data Carrier Detect)
Pin 2	RD	Receive Data
Pin 3	TD	Transmit Data
Pin 4	DTR	Data Terminal Ready
Pin 5	SG	Signal Ground
Pin 6	DSR	Data Set Ready
Pin 7	RTS	Request To Send
Pin 8	CTS	Clear To Send
Pin 9	NC	Not Connected

RS-232/POWER P2 Pin Descriptions		
Pin 4	TD	Transmit Data
Pin 3	RD	Read Data
Pin 2	GND	Ground (also Signal Ground)
Pin 1	+V	+10 to +30VDC

RS-485 P3 Pin Descriptions		
Pin 5	TD A	Transmit Data A
Pin 4	TD B	Transmit Data B
Pin 3	RD A'	Receive Data A'
Pin 2	RD B'	Receive Data B'
Pin 1	RTN	Return, Isolated

Specifications

Typical* at T_A = +25°C

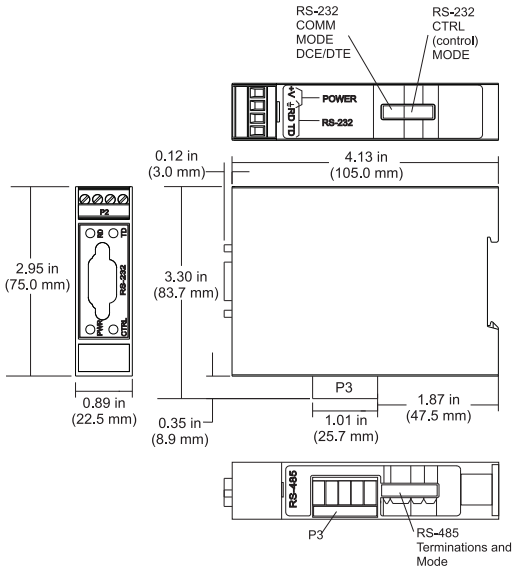
Model	DCP485
Bit Rate (bps) bps vs Distance Distance(miles) Distance(km)	0-115.2kbps 115.2k 57.6k 38.4k 19.2k 9.6k 4.8k 2.4k-0 0.8 0.9 1.0 2.0 3.0 4.0 7.0 1.3 1.5 1.6 3.2 4.8 6.4 11.3
Wire Capacitance Max Multidrop Units	Equal to 25pf Per Foot and Up to 32 Multidrop Units 32
Common-mode Isolation Differential Mode Surge Protection (9 devices)	Surge: 3000Vp, 1 (min) Continuous: 1500Vrms (DC Input and RS-232 Inputs and Outputs) ANSI/IEEE C37.90.1 (all RS-485 Inputs and Outputs)
Modes	Asynchronous 4-wire Full-duplex, 2-wire Half-duplex, 2-wire Simplex
Channel Lines(1) Control Lines(1)	TD, RD RTS, DTR
Null Modem Switch	1 (Reverses RS-232 Pins 2 and 3)
RS-485 Output Drive RS-485 Input Impedance	28mA (max) Output 12kΩ (min) Input
Power	+10 to +30 VDC at 150mA (max)
Environmental: Operating Temperature Range Storage Temperature Range Relative Humidity Altitude	 –40°C to +60°C –40°C to +70°C 0 to 95% Noncondensing to 15000 ft (4574 m)
Dimensions (h)x(w)x(d)	4.3" x 3.3" x 0.89" (109mm x 84mm x 22.5mm)
Weight	4.6 oz (130g)
MTTF(2)	>100,000 Hrs

NOTES:
*Contact factory or your local Dataforth sales office for maximum values.
(1) TD = Transmit Data, RD = Receive Data, RTS = Request To Send, DTR = Data Terminal Ready.
(2) Ground-benign environmental conditions (no salt atmosphere, <50°C ambient temperature).

Ordering Information

Model	Description
DCP485-P DCP485-S	Male RS-232 Connector Female RS-232 Connector

Model	Description
Power Supply PWR-PS5R7W	DIN-rail Mount 85-264VAC, 47-63Hz In 24VDC, 0.3A Out



DCP485 Dimensions

SECTION 8 - Data Comm

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DCP35

DIN-rail Signal-powered RS-232 Line Drivers

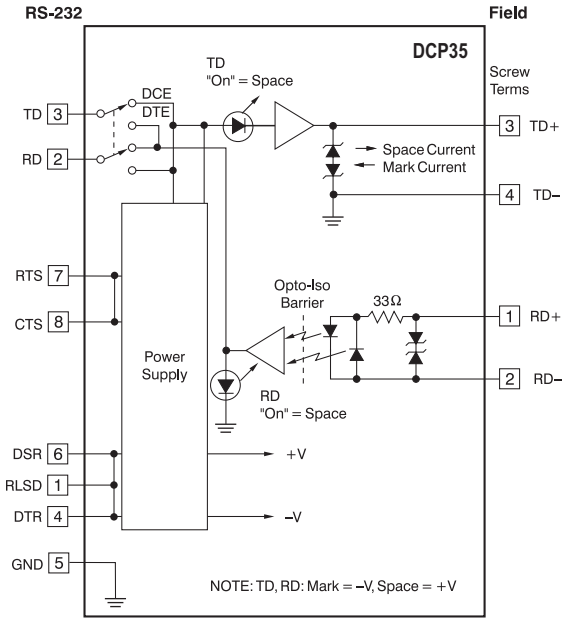
DESCRIPTION

The DCP35 series of products is designed to allow RS-232 devices to be inter-connected over distances sufficient to cover any industrial or institutional complex of buildings. These line drivers feature a DIN-rail mountable enclosure for application to a junction box, a panel, a relay rack, the sides of computer equipment, or anywhere a DIN-rail can be mounted.

The DCP35 series does not require a power supply for operation. The use of low-power circuits and a sensitive optically isolated receiver allows the devices to derive all necessary power from the RS-232 data and control signals. They are designed for full-duplex, asynchronous operation over two, DC-continuous, non-loaded, twisted-wire pairs. Two-wire simplex operation may be accomplished over one twisted-wire pair. The line driver 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 DCE (Data Communication Equipment) to DTE (Data Terminal Equipment) switch which reverses pins 2 and 3 of the RS-232 connector. For installation and system 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 9-pin connector. Field connection is made through pluggable solderless screw terminals.



DCP35 Block Diagram

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
- 19.2kbps to 0.5 Mile (0.8km), 9.6kbps to 2.0 Miles (3.2km), 1.2kbps to 7.0 Miles (11.3km)
- Four-wire Full-duplex, Two-wire Simplex
- Pluggable Solderless Screw Terminal Field Connections
- Null Modem Switch
- CE Compliant
- Manufactured per RoHS III Directive 2015/863

BENEFITS

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

APPLICATIONS

- Industrial Data Communication
- Factory Automation and Control
- Building Automation

RS-232 Pin Descriptions				Field Pin Descriptions		
Pin 1	RLSD	[8]	Receive Line Signal Detect	Screw Terms		
Pin 2	RD	[3]	Receive Data	Pin 1	RD+	Receive Data +
Pin 3	TD	[2]	Transmit Data	Pin 2	RD–	Receive Data –
Pin 4	DTR	[20]	Data Terminal Ready	Pin 3	TD+	Transmit Data +
Pin 5	SG	[7]	Signal Ground	Pin 4	TD–	Transmit Data –
Pin 6	DSR	[6]	Data Set Ready			
Pin 7	RTS	[4]	Request To Send			
Pin 8	CTS	[5]	Clear To Send			

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

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Specifications

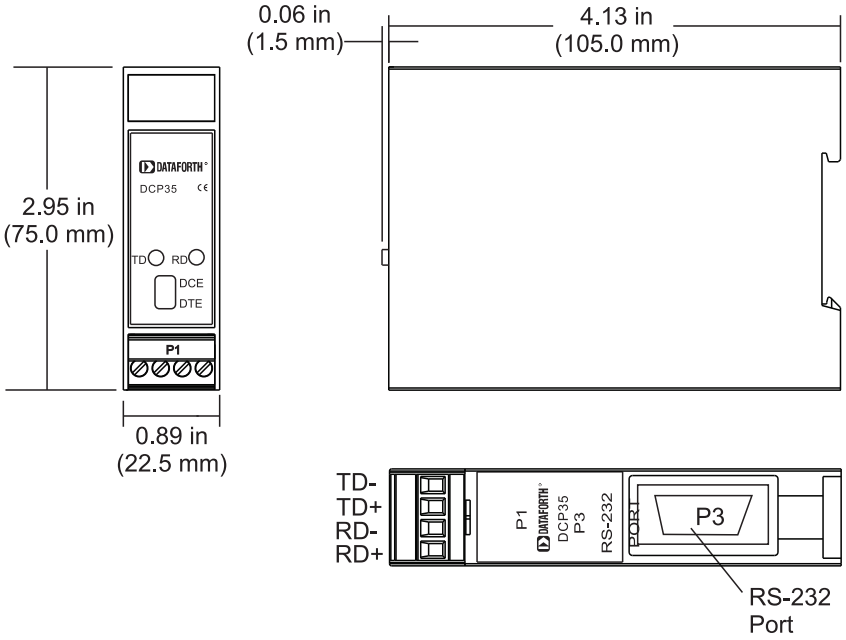
Typical* at T_A = +25°C

Model	DCP35
Bit Rate (bps) bps vs Distance Distance (miles) Distance (km)	0-19.2kbps 19.2k 9.6k 4.8k 2.4k 1.2k-0 0.5 2.0 3.0 5.0 7.0 0.8 3.2 4.8 8.1 11.3
Common-mode Isolation Differential-mode Surge Protection (3 devices)	Surge: 500Vp, 1 min. Continuous: 300Vrms ANSI/IEEE C37.90.1
Modes	Asynchronous 4-wire Full-duplex, 2-wire Simplex
Channel Lines(1) Control Lines(1)	TD, RD RTS, CTS, DTR, DSR, RLSD(DCD)
Null Modem Switch	1 (Reverses RS-232 Pins 2 and 3)
Power RS-232 Data RS-232 Control Signals	RS-232 Data and Control Signals ±5V to ±15V, 3.0mA to 10.0mA ±6V to ±15V, 3.0mA to 10.0mA
Environmental: Operating Temperature Range Storage Temperature Range Relative Humidity	 0°C to +70°C –10°C to +85°C 0 to 95% Noncondensing
Dimensions (h)x(w)x(d)	4.2" x 3.3" x 0.89" (107mm x 84mm x 22.5mm)
Weight	4.2 oz (119g)
MTTF(2)	>150,000 hrs

NOTES:
*Contact factory or your local Dataforth sales office for maximum values.
(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 (DCD = Data Carrier Detect).
(2) Ground-benign environmental conditions (no salt atmosphere, <50°C ambient temperature).

Ordering Information

Model	9-pin Connector	Termination
DCP35-P	1-ch Male	Screw Terminals
DCP35-S	1-ch Female	Screw Terminals



DCP35 Dimensions

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LDM30

RoHS III COMPLIANT 2015/863 CE

General-purpose RS-232 Line Drivers

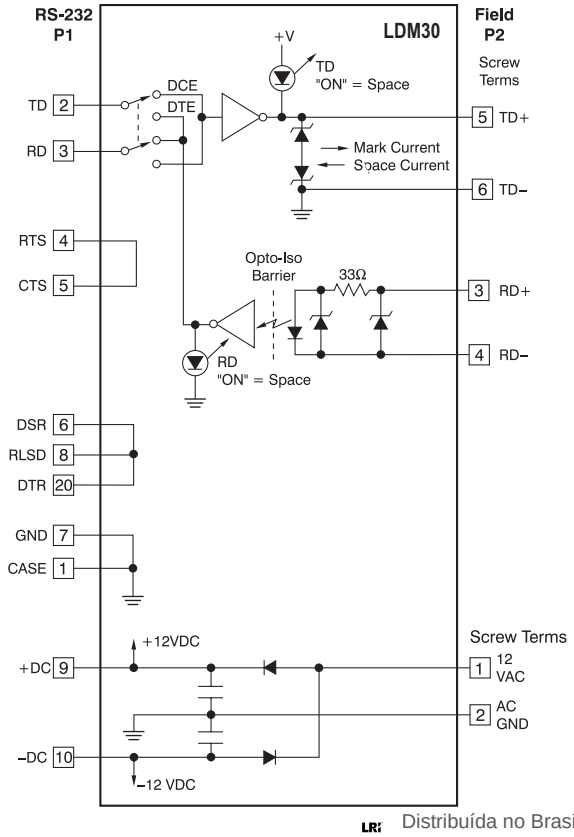
DESCRIPTION

The LDM30 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 line drivers feature a rugged aluminum enclosure small enough to mount on the back panel of VDT units, saving valuable desk and floor space.

The LDM30 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 57,600bps. 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 line driver 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.



LDM30 Block Diagram

FEATURES

- DC to 57,600bps
- Optical Isolation
- Surge Protectors
- LED Diagnostic Indicators
- Operation to 3 Miles (5km) at 9600bps,
  1 Mile (1.7km) at 19,200bps,
  0.5 Miles (0.8km) at 57,600bps
- 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
- Manufactured per RoHS III Directive 2015/863

BENEFITS

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

APPLICATIONS

- Industrial Building Complex Communications
- Wired Networking
- Data Centers

RS-232 P1 Pin Descriptions				Field P2 Pin Description
				Screw Terms
Pin 1	CASE		Ground	Pin 1 12VAC
Pin 2	TD	[3]	Transmit Data	Pin 2 AC GND
Pin 3	RD	[2]	Receive Data	Pin 3 RD+
Pin 4	RTS	[7]	Req. To Send	Pin 4 RD–
Pin 5	CTS	[8]	Clear To Send	Pin 5 TD+
Pin 6	DSR	[6]	Data Set Ready	Pin 6 TD–
Pin 7	GND	[5]	Signal Ground	
Pin 8	RLSD	[1]	Receive Line Signal Detect	RD+ = Receive Data +
Pin 9	+DC		Positive DC Supply Input	RD– = Receive Data –
Pin 10	–DC		Negative DC Supply Input	TD+ = Transmit Data +
Pin 20	DTR	[4]	Data Terminal Ready	TD– = Transmit Data –
Pin Numbers Given are for the 25-pin Connector with the 9-pin Equivalent in [ ].				

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Specifications

Typical* at T_A = +25°C

Model	LDM30
Bit Rate (bps)	0-57.6k
bps vs Distance	57.6k 38.4k 19.2k 9.6k 4.8k 2.4k 1.2k-0
Distance(miles)	0.5 0.75 1.0 3.0 5.0 7.0 12.0
Distance(km)	0.8 1.21 1.6 4.8 8.1 11.3 19.3
Common-Mode Isolation	Surge: 500Vp, 1 minute
	Continuous: 300Vrms
Differential-Mode Surge Protection (3 devices)	ANSI/IEEE C37.90.1
Modes	Asynchronous 4-wire Full-duplex, 2-wire Simplex
Channel Lines(1)	TD, RD
Control Lines(1)	RTS, CTS, DTR, DSR, RLSD
Power	
AC operation(2)	12VAC at 92mA
DC operation	±9VDC to ±15VDC, 35mA
Environmental:	
Operating Temperature Range	0°C to +70°C
Storage Temperature Range	–10°C to +85°C
Relative Humidity	0 to 95% Noncondensing
Dimensions (h)x(w)x(d)	3.6" x 2.1" x 1" (91.4mm x 53.3mm x 25.4mm)
Weight	3.5 oz (100g) (max)
PT3	11.0 oz (312g) (max)
MTTF(3)	>150,000 hrs

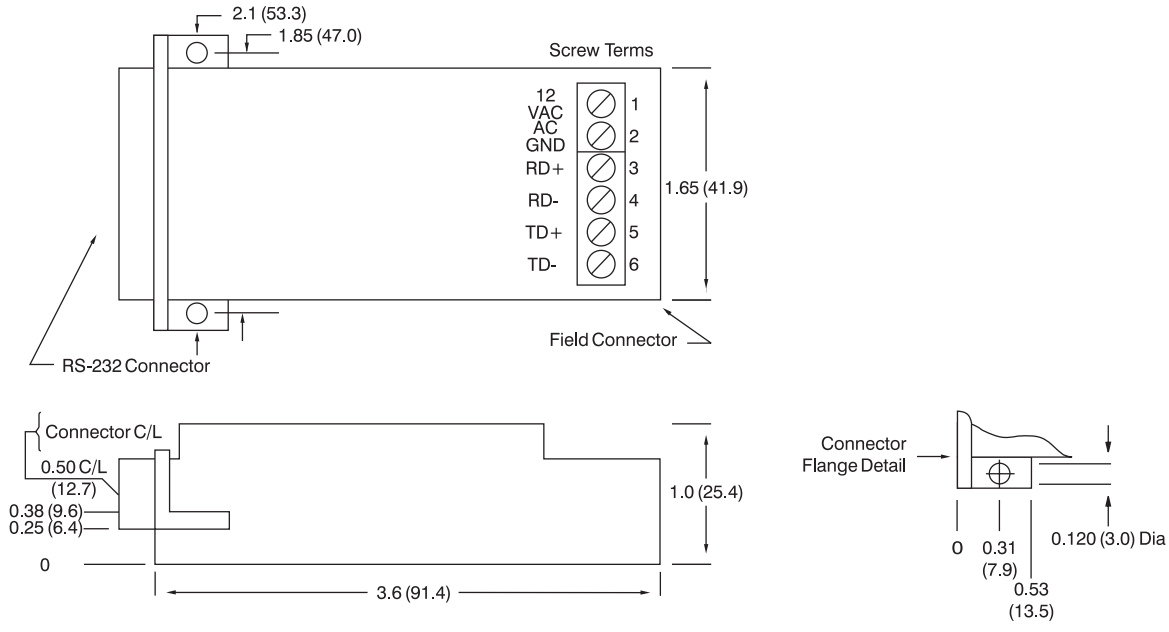
NOTES:
*Contact factory or your local Dataforth sales office for maximum values.
(1) TD = Transmit Data, RD = Receive Data, RTS = Request To Send, CTS = Clear To Send, DTR = Data Terminal Ready, DSR = Data Set Ready, RLSD = Received Line Signal Detect.
(2) 120VAC and 220VAC power transformers are available.
(3) Ground-benign environmental conditions (no salt atmosphere, <50°C ambient temperature).

Ordering Information

Model	Type	Power	Termination
LDM30-P*	Male	Host-Powered	Screw Termination
LDM30-S*	Female	Host-Powered	Screw Termination
LDM30-PT*	Male	U.S. Transformer	Screw Termination
LDM30-ST*	Female	US. Transformer	Screw Termination

*Last Time Buy

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



Dimensions: Inches (Millimeters)

LDM30 Dimensions

SECTION 8 - Data Comm

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LDM35

RoHS III COMPLIANT 2015/863 CE

Signal-powered RS-232 Line Drivers

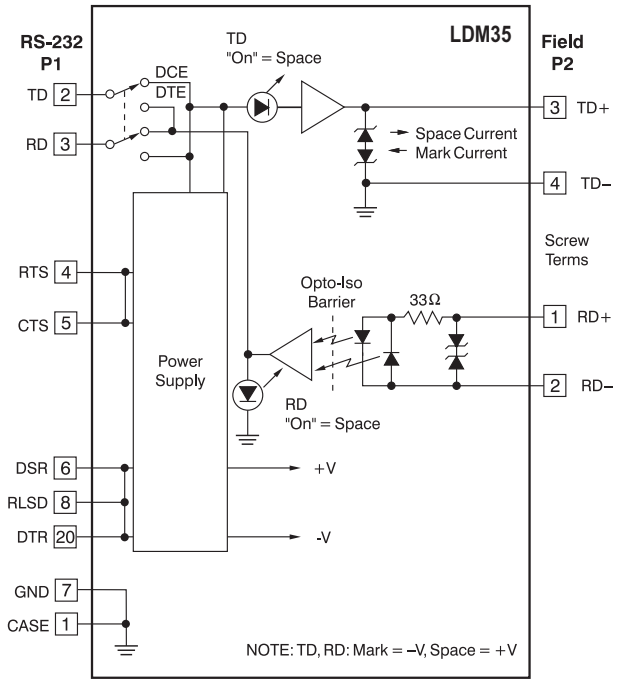
DESCRIPTION

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 line drivers 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 line driver 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.



LDM35 Block Diagram

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 2 Miles (3.3km) at 9600bps, 0.5 Miles (0.8km) at 19,200bps, 7 Miles (11.7km) at 1200bps
- Four-wire Full-duplex, Two-wire Simplex
- Selection of Connectors
- Wide Operating Temperature Range, 0°C to +70°C
- Null Modem Switch
- CE Compliant
- Manufactured per RoHS III Directive 2015/863

BENEFITS

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

APPLICATIONS

- Industrial Building Complex Communications
- Wired Networking
- Data Centers

RS-232 P1 Pin Descriptions				Field P2 Pin Description
				Screw Terms
Pin 1	CASE	Ground		Pin 1 RD+
Pin 2	TD	[3]	Transmit Data	Pin 2 RD–
Pin 3	RD	[2]	Receive Data	Pin 3 TD+
Pin 4	RTS	[7]	Req. To Send	Pin 4 TD–
Pin 5	CTS	[8]	Clear To Send	
Pin 6	DSR	[6]	Data Set Ready	RD+ = Receive Data +
Pin 7	GND	[5]	Signal Ground	RD– = Receive Data –
Pin 8	RLSD	[1]	Receive Line Signal Detect	TD+ = Transmit Data +
				TD– = Transmit Data –
Pin 20	DTR	[4]	Data Terminal Ready	

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

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Specifications

Typical* at T_A = +25°C

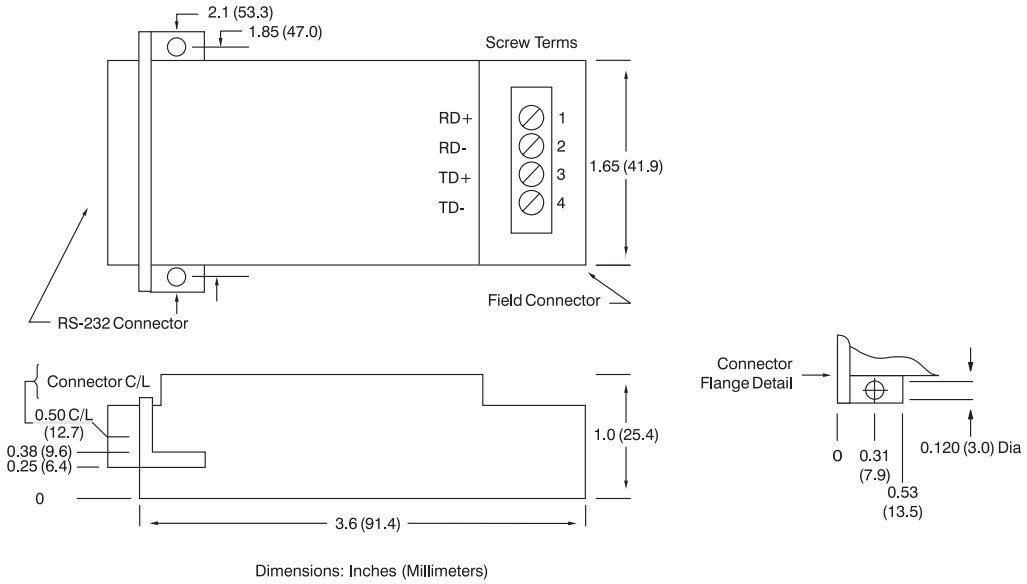
Model	LDM35
Bit Rate (bps) bps vs Distance Distance(miles) Distance(km)	0-19.2k 19.2k 9.6k 4.8k 2.4k 1.2k-0 0.5 2.0 3.0 5.0 7.0 0.8 3.2 4.8 8.1 11.3
Common-mode Isolation Differential-mode Surge Protection (3 devices)	Surge: 500Vp, 1 Minute Continuous: 300Vrms ANSI/IEEE C37.90.1
Modes	Asynchronous 4-wire Full-duplex, 2-wire Simplex
Channel Lines(1) Control Lines(1)	TD, RD RTS, CTS, DTR, DSR, RLSD
Power RS-232 Data RS-232 Control Signals	RS-232 Data and Control Signals ±5V to ±15V, 3.0mA to 10.0mA ±6V to ±15V, 3.0mA to 10.0mA
Environmental: Operating Temperature Range Storage Temperature Range Relative Humidity	 0°C to +70°C –10°C to +85°C 0 to 95% Noncondensing
Dimensions (h)x(w)x(d)	3.6" x 2.1" x 1" (91.4mm x 53.3mm x 25.4mm)
Weight	3.2 oz (91g) (max)
MTTF(2)	>150,000 Hrs

NOTES:
*Contact factory or your local Dataforth sales office for maximum values.
(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

Model	25-pin Connector	Termination
LDM35-P* LDM35-S*	Male Female	Screw Terminals Screw Terminals

*Last Time Buy



Dimensions: Inches (Millimeters)

LDM35 Dimensions

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LDM70

RoHS III COMPLIANT 2015/863 CE

Fully-isolated RS-232 Line Drivers

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 line drivers 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 bits per second. 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 line driver 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 solderless screw-termination assembly.

FEATURES

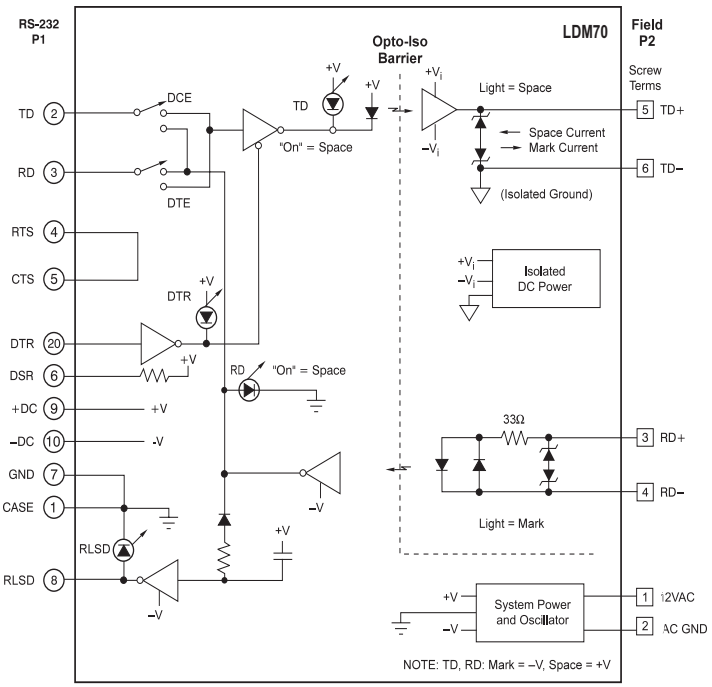
- DC to 57,600bps
- Complete Isolation with Optical Couplers and Power DC-to-DC Converter
- Data Terminal Ready, Carrier Detect Handshake without Extra Wires
- Four LED Diagnostic Indicators
- Four-wire Full-duplex, Two-wire Simplex
- Self-powered or Host-powered
- Wide Operating Temperature Range, 0 to +70°C
- Surge Protectors
- Operation to 3 Miles (5km) at 9600bps, 1 Mile (1.7km) at 19,200bps, 0.5 Miles (0.8km) at 57,600bps
- Selection of Connectors
- CE Compliant
- Manufactured per RoHS III Directive 2015/863

BENEFITS

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

APPLICATIONS

- Industrial Building Complex Communications
- Wired Networking
- Data Centers



LDM70 Block Diagram

RS-232 P1 Pin Descriptions				Field P2 Pin Description
				Screw Terms
Pin 1	CASE	Ground		Pin 1 12VAC
Pin 2	TD	[3]	Transmit Data	Pin 2 AC GND
Pin 3	RD	[2]	Receive Data	Pin 3 RD+
Pin 4	RTS	[7]	Req. To Send	Pin 4 RD–
Pin 5	CTS	[8]	Clear To Send	Pin 5 TD+
Pin 6	DSR	[6]	Data Set Ready	Pin 6 TD–
Pin 7	GND	[5]	Signal Ground	
Pin 8	RLSD	[1]	Receive Line Signal Detect	RD+ = Receive Data +
Pin 9	+DC		Positive DC Supply Input	RD– = Receive Data –
Pin 10	–DC		Negative DC Supply Input	TD+ = Transmit Data +
Pin 20	DTR	[4]	Data Terminal Ready	TD– = Transmit Data –
Pin Numbers Given are for the 25-pin Connector with the 9-pin Equivalent in [ ].				

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Specifications

Typical* at T_A = +25°C

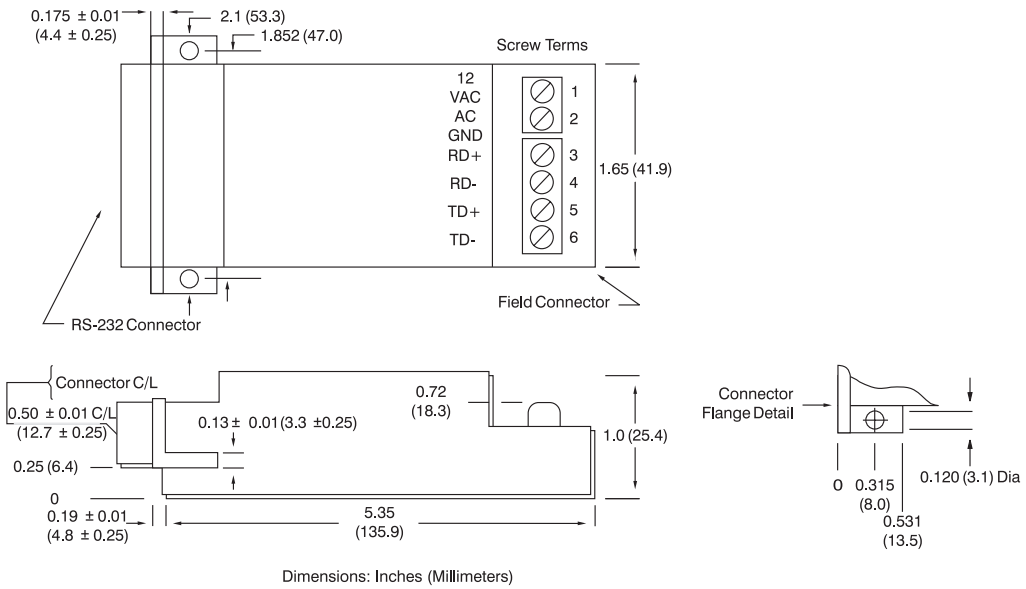
Model	LDM70
Bit Rate (bps) bps vs Distance Distance(miles) Distance(km)	0-57.6k 57.6k 38.4k 19.2k 9.6k 4.8k 2.4k 1.2k-0 0.5 0.75 1.0 3.0 5.0 7.0 12.0 0.8 1.21 1.6 4.8 8.1 12.9 19.3
Common-Mode Isolation Differential-Mode Surge Protection (3 devices)	Surge: 1500Vp, 1 Minute Continuous: 1000Vrms ANSI/IEEE C37.90.1
Modes	Asynchronous 4-wire Duplex, 2-wire Simplex
Channel Lines(1) Control Lines(1)	TD, RD DTR, RLSD
Power AC operation(2) DC operation	 12VAC at 120mA ±9VDC to ±15VDC, 45mA
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)	5.7" x 2.1" x 1" (144.8mm x 53.3mm x 25.4mm)
Weight PT3	5.5 oz (156g) (max) 11.0 oz (312g) (max)
MTTF(3)	>100,000 Hrs

NOTES :
*Contact factory or your local Dataforth sales office for maximum values.
(1) TD = Transmit Data, RD = Receive Data, DTR = Data Terminal 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).

Ordering Information

Model	Type	Power	Termination
LDM70-S LDM70-ST	Female Female	Host-powered U.S. Transformer	Screw Termination Screw Termination

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



Dimensions: Inches (Millimeters)

LDM70 Dimensions

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LDM422

RoHS III COMPLIANT 2015/863 CE

Fully-isolated RS-232/RS-422 Converters

DESCRIPTION

The LDM422 is a compact RS-232 to RS-422 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 RS422 connections are made through convenient solderless screw terminals.

The LDM422 series is designed for full-duplex operation over two-wire pairs. Outputs are tri-state, allowing multidropping of up to 32 units. Hardware handshake is available over two separate wire pairs. Data rates are 75 to 19,200 bits per second. Six diagnostic LED indicators are provided (see Figure 1) 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. The RS-422 interface supports Request To Send and Clear To Send on separate wire pairs. The LDM422 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 or ±12VDC to pins 9 (+) and 10 (–) of the RS-232 connector.

FEATURES

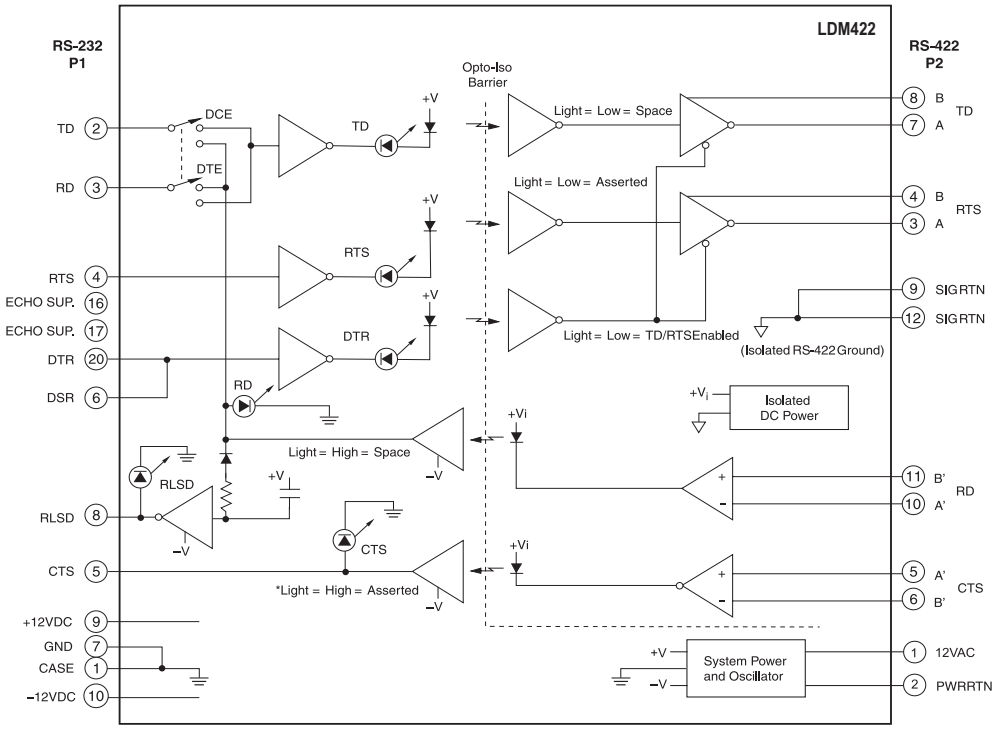
- Complete Isolation with Optical Couplers and Power DC-to-DC Converter
- Industrial Surge Protection Devices
- Six LED Diagnostic Indicators
- DC to 19,200bps at 6000 Feet (1800m), 9600bps at 3 Miles (5km)
- Request-to-send, Clear-to-send Handshake
- Tri-state Outputs for Multidrop Applications
- Selection of Connectors
- Wide Operating Temperature Range
- Solderless Screw Terminal Field Connections
- CE Compliant
- Self-powered or Host-powered
- 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



LDM422 Block Diagram

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

NOTE: Open or Tri-State on RD inputs produces same logic condition as 'MARK input. Open or Tri-State on CTS inputs produces same logic condition as 'Asserted input.

*"Light" is presence of light across Opto-Iso barrier.

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

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Specifications

Typical* at T_A = +25°C

Model	LDM422
Bit Rate (bps) bps vs Distance Distance(miles) Distance(km)	0-19.2k 19.2k 9.6k 4.8k 2.4k 1.2k-0 1.14 3.0 4.0 5.0 7.0 1.8 4.8 6.4 8.1 11.3
Maximum Multidrop Units	32. Reduced Distances May be Required When as Many as 32 Units are Multidropped. No Restrictions Apply for Distances of 1 Mile (1.7 Km) or Less.
Common-Mode Isolation Differential-Mode Surge Protection (9 devices)	Surge: 1500Vp, 1 Minute Continuous: 1000Vrms (AC input) ANSI/IEEE C37.90.1 (All RS-422 Inputs and Outputs)
Modes	Asynchronous 4-wire Duplex, 2-wire Half-duplex, 2-wire Simplex
Channel Lines(1) Control Lines(1)	TD, RD, RTS, CTS RTS, CTS, DTR, DSR, RLSD
Null Modem Switch	1 (Reverses RS-232 Pins 2 and 3)
RS-422 Output Drive RS-422 Input Impedance	20mA (Min) Output 6kΩ (Min) Input
Power AC operation(2) DC operation	 12VAC, ±10%, 10W Screw Terms 1 and 2 +11.5VDC to +17.0VDC at 400mA on Pin 9 –11.5VDC to –17.0VDC at 400mA 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(3)	>100,000 Hrs

NOTES :
*Contact factory or your local Dataforth sales office for maximum values.
(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) 120VAC and 220VAC power transformers are available.
(3) Ground-benign environmental conditions (no salt atmosphere, <50°C ambient temperature).

Ordering Information

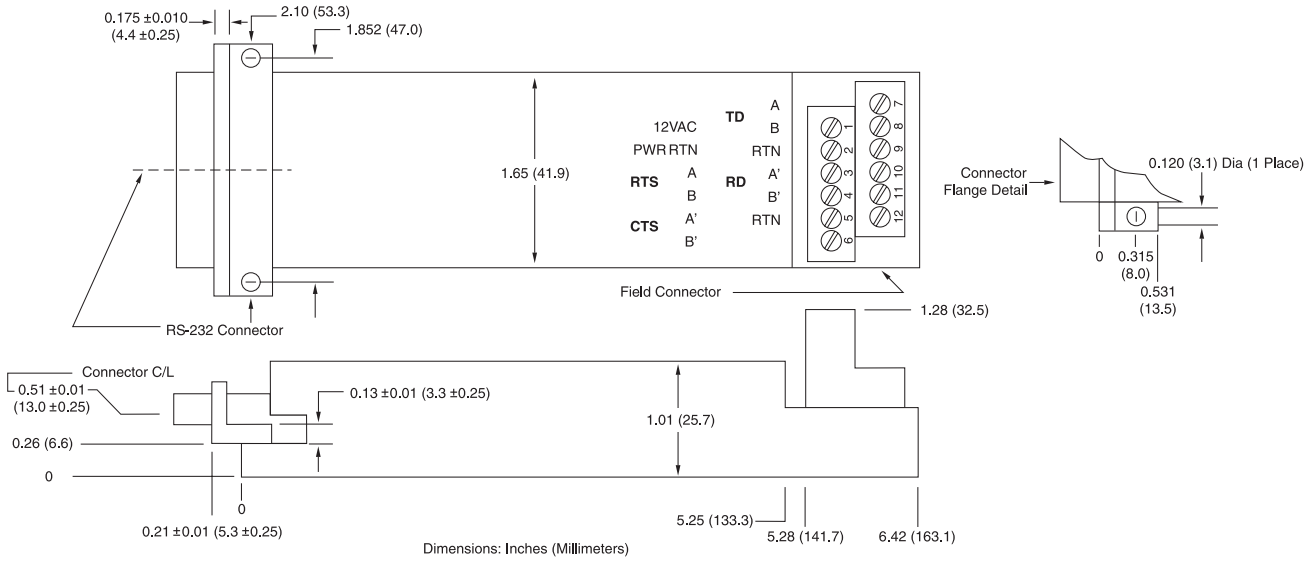
Model	Description
LDM422-P	Male RS-232 Connector
LDM422-S	Female RS-232 Connector
LDM422-PT	Male RS-232 Connector and U.S. Power Transformer
LDM422-ST*	Female RS-232 Connector and U.S. Power Transformer

*Last Time Buy

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

RS-232 P1 Pin Descriptions				RS-422 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	GND	[5]	Signal Ground	Pin 7 TD A
Pin 8	RLSD	[1]	Receive Line Signal Detect	Pin 8 TD B
Pin 9	+12VDC		Positive DC Supply Input	Pin 9 SIG RTN
Pin 10	–12VDC		Negative DC Supply Input	Pin 10 RD A'
Pin 16	Echo Sup		Echo Suppression (tie to pin 17 to enable)	Pin 11 RD B'
Pin 17	Echo Sup		Echo Suppression (tie to pin 16 to enable)	Pin 12 SIG RTN
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 [ ].



LDM422 Dimensions

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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

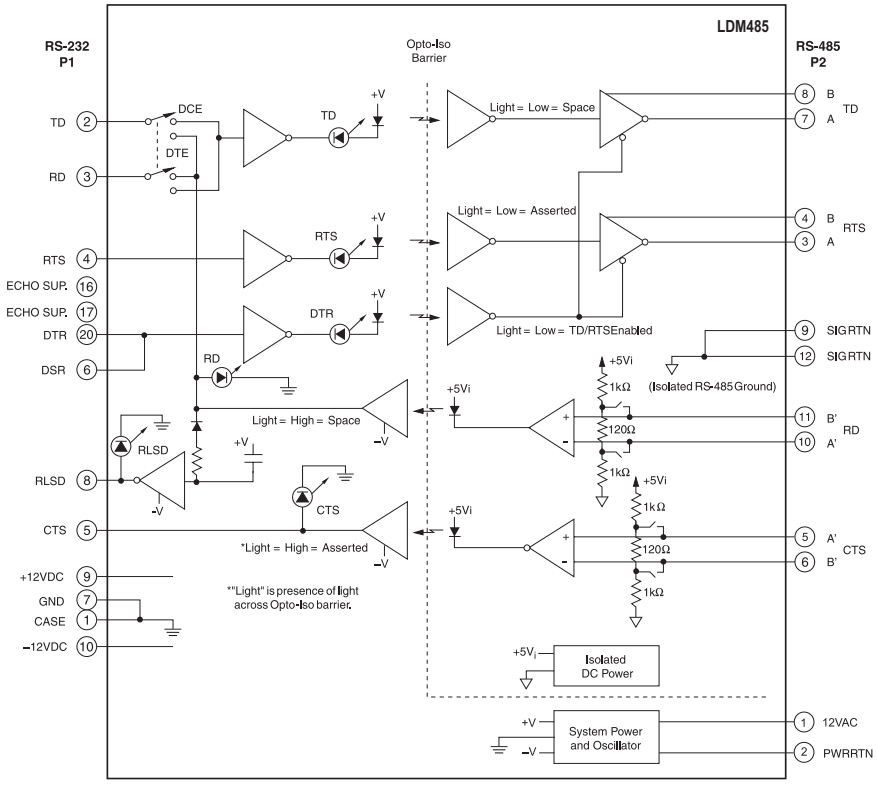
- Complete Isolation with Optical Couplers and Power DC-to-DC Converter
- Industrial Surge Protection Devices
- Six LED Diagnostic Indicators
- 19.2kbps at 3 Miles (5km), 57.6kbps at 0.5 Miles (0.8 km)
- Request-to-send, Clear-to-send Handshake
- Tri-state Outputs for Multidrop Applications, Up to 64 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
RTS, CTS	Asserted	High	Low
	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

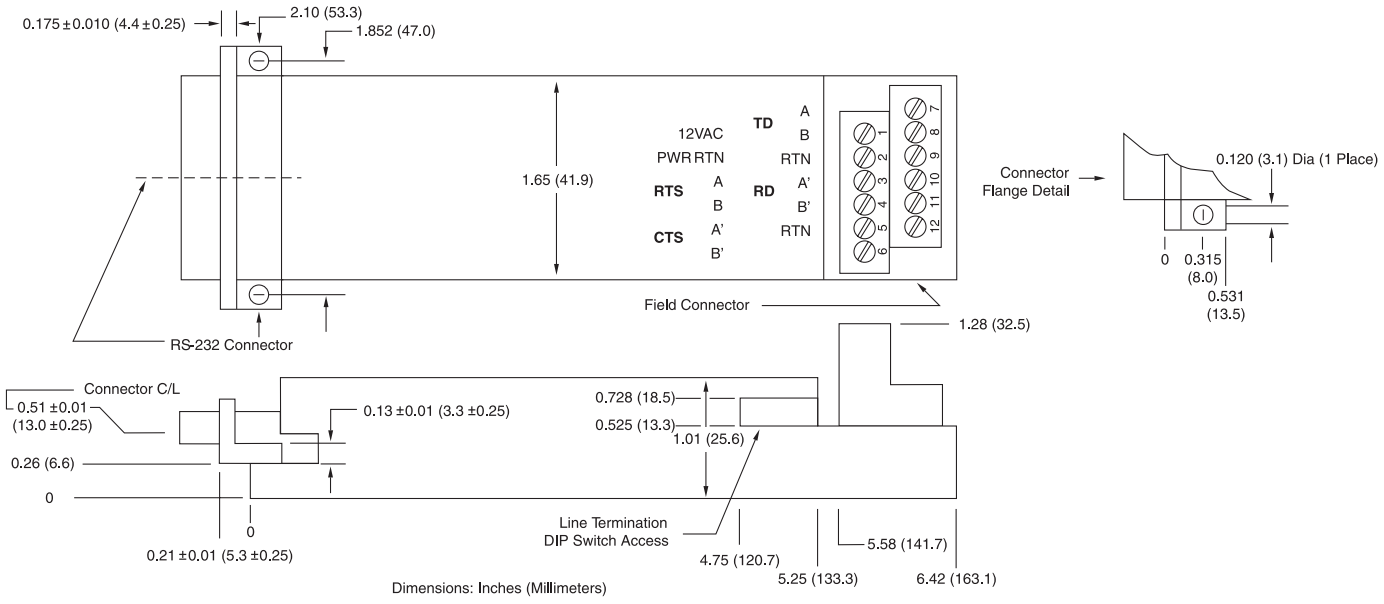
Model	Description
LDM485-P* LDM485-S LDM485-PE	Male RS-232 Connector Female RS-232 Connector Male RS-232 Connector, European Power Transformer

*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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LDM80

RoHS III COMPLIANT 2015/863 CE

Signal-powered Fiber Optic Converters

DESCRIPTION

The LDM80 is a small, inexpensive fiber optic transmitter/receiver completely powered by the host RS-232 port. The enclosure for the LDM80 is a conductive shell which greatly reduces RF radiation and susceptibility. The rugged metal enclosure is small enough to mount on the back panel of typical computer equipment saving valuable desk and floor space. 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 (15m) RS-232 limit may be extended to 2.2 miles (3.5 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. The RS-232 connection is through male or female EIA 25-pin connectors. The fiber optic connection is through ST connectors.

The LDM80 is equivalent to a 3-wire, full-duplex, RS-232 circuit. Handshake signals are locally connected as in Figure 1. Indicating LEDs come on during a “SPACE” on transmit or receive data. A TD/RD reversing DIP switch is provided for connection to DTE (Data Terminal Equipment) or DCE (Data Communication Equipment) ports.

FEATURES

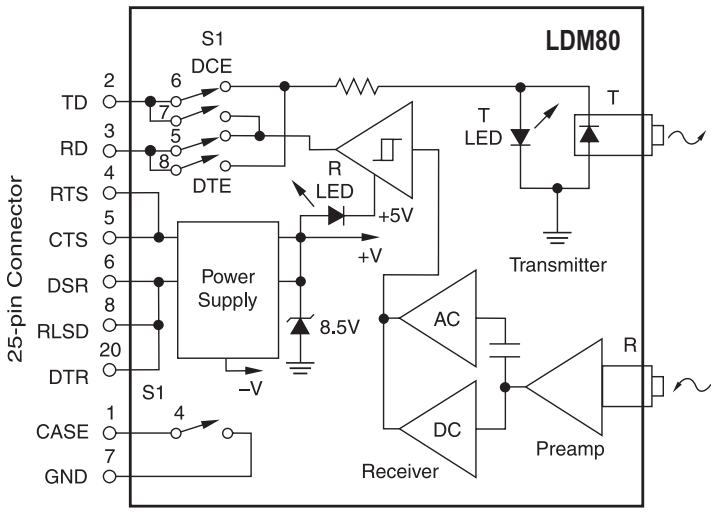
- Data Rates to 19.2kbps at 2.2 Miles (3.5km)
- 17dB Optical Link Power Budget
- Powered by RS-232 Host Port Signals
- Full-duplex Asynchronous Operation
- Indicating LEDs
- DCE/DTE Switch
- Designed for FCC Class A Requirements
- Complies with FCC Class A Requirements
- Pinned or Socketed RS-232 Connectors
- CE Compliant
- Manufactured per RoHS III Directive 2015/863

BENEFITS

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

APPLICATIONS

- High-speed Data Communications
- Industrial Data Communication



LDM80 Block Diagram

Pin Descriptions				Fiber Optic
Pin 1	CASE Ground			T R
Pin 2	TD	[3]	Transmit Data	
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	SIG GND	[5]	Signal Ground	
Pin 8	RLSD	[1]	Receive Line Signal Detect	
Pin 20	DTR	[4]	Data Terminal Ready	

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

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Specifications

Typical* at T_A = +25°C

Model	LDM80
Bit Rate (bps)	0-19.2k
Distance Over Bit Rate Range	
Fiber Core Diameter (µm)	Max Cable Length / Loss Budget (dB)
100.0 (glass)	2.2 mi (3.5) (km) / 17
50.0 (glass)	1.6 (2.6) / 9
62.5 (glass)	1.2 (1.9) / 11
85.0 (glass)	2.2 (3.5) / 16
200.0 (glass)	2.2 (3.5) / 23
1000.0 (plastic)	98 feet 30 (meters) / 32
Modes	Asynchronous 2-fiber Full-duplex, 1-fiber Simplex
Channel Lines(1)	TD, RD
Control Lines(1)	RTS, CTS, DTR, DSR, RLSD
Optical Transmitter	850 nm Wavelength
Output from 1m Cable	–26dB (typ) –27dB (min) –18dB (max)
Optical Receiver Power Input for 4µs Pulse Distortion	–44dB (min)
Optical Connectors	ST Compatible
RS-232 Output Voltage with 3kΩ Load	+5V Logic 0, –5V Logic 1
DCE/DTE Switch	1
Diagnostic LEDs	2
Power	
Port Power and/or DC Operation	+5.0 to +8.5VDC, No Current Limit, 5mA >+8.5 VDC, 10mA Current Limit
Environmental:	
Operating Temperature Range	–20°C to +70°C
Storage Temperature Range	–40°C to +85°C
Relative Humidity	0 to 95% Noncondensing
Dimensions (h)x(w)x(d)	3.57" x 2.1" x 0.74" (90.7mm x 53.3mm x 18.8mm)
Weight	4.2 oz (119g) (max)
MTTF(2)	>100,000 Hrs

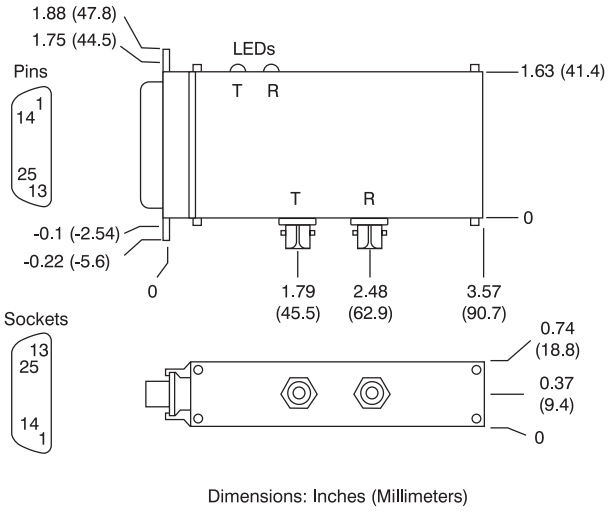
NOTES:
*Contact factory or your local Dataforth sales office for maximum values.
(1) TD = Transmit Data, RD = Receive Data, RTS = Request To Send, CTS = Clear To Send, DTR = Data Terminal Ready, DSR = Data Set Ready, RLSD = Received Line Signal Detect.
(2) Ground-benign environmental conditions (no salt atmosphere, <50°C ambient temperature).

Ordering Information

Model	Description
LDM80-P-025*	Pinned RS-232 Connector, St-fiber Optic Connector

*Last Time Buy

WARNING! *Modern PC ports may not have enough power to power the LDM80 sufficiently for reliable data communications. The user may have to bring in external power through RTS (pin 4), CTS (pin 5), DSR (pin 6), RLSD (pin 8), or DTR (pin 20) and GND (pin 7). The power needs to be at least +5VDC at 5mA for the receive circuits. Also, the Transmit Data port line (pin 2) should be able to provide at least ±5VDC at 5mA minimum.*



Dimensions: Inches (Millimeters)

LDM80 Dimensions

SECTION 8 - Data Comm

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LDM85

Fiber Optic Converters

RoHS III COMPLIANT 2015/863 CE

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

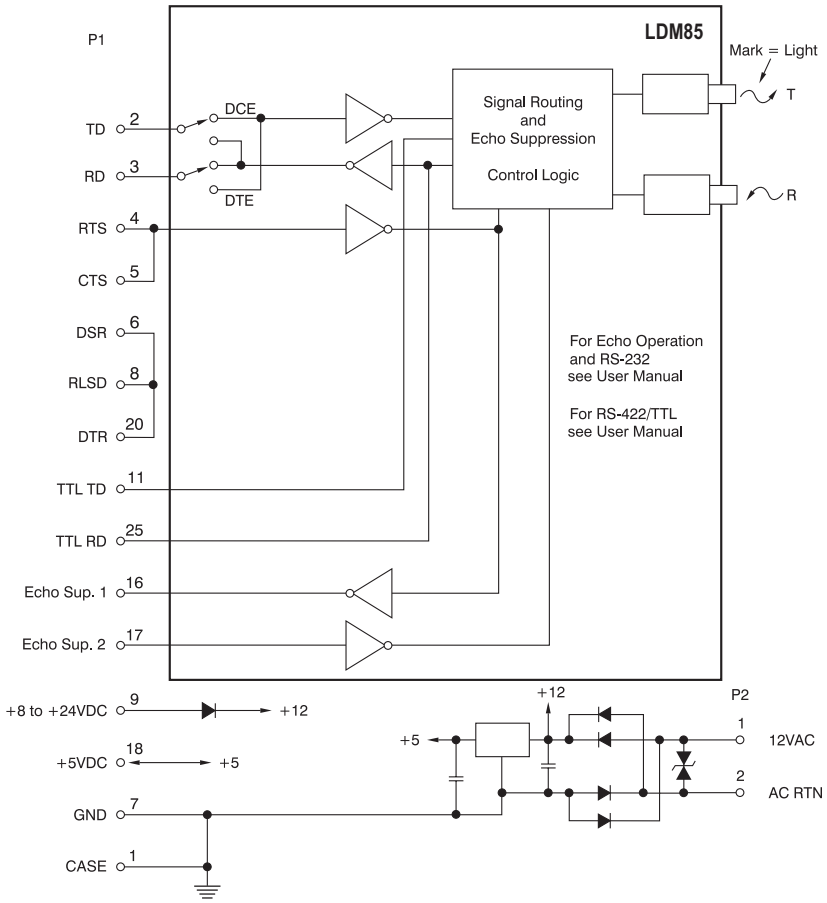
- Data Rates to 5Mbps
- RS-232, RS-422, TTL System Interfaces
- Multipoint Capability
- LED Indicators
- DCE/DTE Switch
- Small Size
- Low Cost
- SMA- or ST-compatible Optic Connectors
- 120/220VAC, +5VDC or 8 to 20VAC/DC Power
- CE Compliant
- Manufactured per RoHS III Directive 2015/863

BENEFITS

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

APPLICATIONS

- High-speed Data Communications
- Industrial Data Communication



LDM85 Block Diagram

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Specifications

Typical* at T_A = +25°C

Model	LDM85
Bit Rate Range TTL Bit Rate Range RS-232/422/423 Distance (miles) Distance (km)	0 – 5M, 0 – 2.5M NRZ 0 – 100k Up to 1.05 Depending on Cable Up to 1.75 Depending on Cable
Modes	Asynchronous 2-fiber Full-duplex, 1-fiber Simplex
Channel Lines(1) Control Lines(1)	TD, RD, TTL TD, TTL RD RTS, CTS, DTR, DSR, RLSD
Optical Transmitter Numerical Aperture Optical Port Diameter Optical Receiver Equivalent Numerical Aperture Optical Port Diameter Optical Connectors	820nm Wavelength –11.5dBm Typical Output from 1m Cable, –16dBm Minimum Output (–40°C to +85°C) 0.49 290mm –25dBm to –12dBm Dynamic Range for Logic 1, –24dBm Minimum Input Logic 1 (–40°C to +85°C), –40dBm Maximum Input Logic 0 0.50 400µm 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(2) DC Operation	 120VAC or 220VAC (3W Wall Transformer) or 10VAC to 20VAC (3W Transformer Rating) +8VDC to +24VDC at 130mA or +5VDC ±0.25VDC at 130mA
Environmental: Operating Temperature Range Storage Temperature Range Relative Humidity	 –40°C to +85°C –40°C to +85°C 0 to 95% Noncondensing
Dimensions (h)x(w)x(d)	3.75" x 2.1" x 1" (95.3mm x 53.3mm x 25.4mm)
Weight PT3	3.7 oz (105g) (max) 11.0 oz (312g)
MTTF(3)	>120,000 Hrs

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 fiber optic connector, order part numbers: LDM-P-025, LDM85-PT-025, or LDM85-ST-025.

Ordering Information

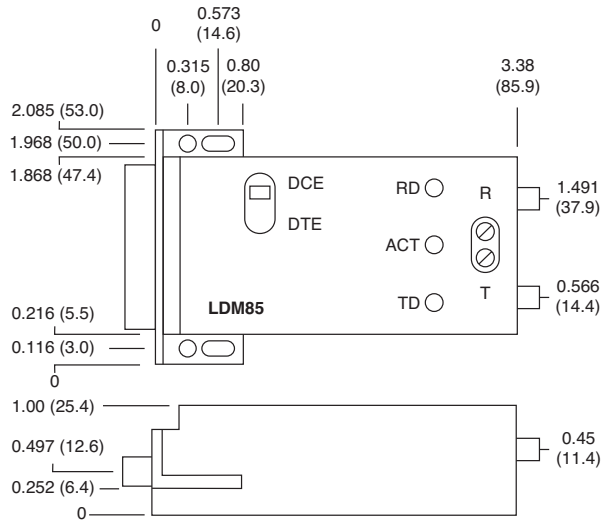
Model	Description
LDM85-PT*	Pinned RS-232 Connector, U.S. Wall Transformer, 120VAC
LDM85-P-025(4)	Fiber Optic Converter
LDM85-PT-025(4)	Fiber Optic Converter
LDM85-SE	Socketed RS-232 Connector, European Wall Transformer, 220VAC
LDM85-ST-025(4)	Socketed ST Fiber Optic Connector, U.S Wall Transformer, 120VAC

*Last Time Buy

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

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	**Fiber Optic**
Pin 16	Echo Sup 1		Echo Suppress Control Out	
Pin 17	Echo Sup 2		Echo Suppress Control In	T
Pin 18	+5VDC		+5VDC Power In, Pull Up Power Out	
Pin 20	DTR	[4]	Data Terminal Ready	R
Pin 25	TTL RD		TTL RD Inverse of RD	

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



Dimensions: Inches (Millimeters)

LDM85 Dimensions

SECTION 8 - Data Comm

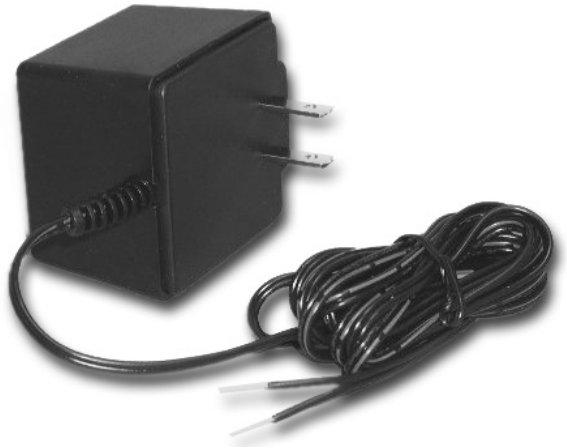
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PT3

RoHS III COMPLIANT 2015/863 CE

US-style Wall-mount Transformer



PT3 Power Supply

Specifications

Typical* at T_A = +25°C

Model	PT3
Electrical Specifications Input Output	120VAC, 60Hz, 18W 12VAC, 1000mA, 12.0VA
Output Cable Length	6.0 ft (1.83m) (min)
Dimensions (h)x(w)x(d)	2.21" x 2.14" x 1.65" (56.1mm x 54.4mm x 41.9mm)
Weight	11.0 oz (312g)

NOTES:
*Contact factory or your local Dataforth sales office for maximum values.

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Downloads

Corporate Brochure
Full-Line Product Catalog
SCM5B/SCMHVAS Attenuator System Catalog
SCM7B Catalog
8B Catalog
DSCA Catalog
SCM9B/SCMD Catalog
MAQ®20 DAQ System Catalog
isoLYNX DAQ Systems Catalog
Loop Isolators and Transmitters Catalog
Data Communications Catalog
IoT Energy Monitoring Catalog

Press Releases

- Dataforth Introduces Next Generation High-Voltage Attenuator System
- Latest ISO 9001:2015 Quality Standards
- Dataforth's DSCA High-Performance DIN Modules Receive Latest ATEX Certification
- Dataforth's DSCT Two-wire Transmitter Modules Receive ATEX Certification

See all PRESS RELEASES

Application Notes

ENGINEERING BASICS

- Measuring RMS Values of Voltage and Current (AN101)
- IC Op Amp Errors: What Are They and How Bad Can They Be (AN102)
- Common-Mode Voltage (AN103)
- 4-20mA Transmitters (AN104)
- Practical Thermocouple Temperature Measurements (AN107)
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DISCONTINUED DEVICES - Isolator Products

Affected Devices	Replacement Devices	Affected Devices	Replacement Devices
DSCL22-01	None Available	DSCL24-11-1648	None Available
DSCL22-11	None Available	DSCL24-11-1675	None Available
DSCL22-21	None Available	DSCL24-11-1676	None Available
DSCL23-01	None Available	DSCL24-12-1540	None Available
DSCL23-02	None Available	DSCL24-12-1552	None Available
DSCL24-01	DSCP81-01	DSCL24-12-1553	None Available
DSCL24-02	DSCP81-02	DSCA24-12-1559	None Available
DSCL24-11	None Available	DSCL24-12-1617	None Available
DSCL24-12	None Available	DSCL24-12-1618	None Available
DSCL24-11-1575	None Available	DSCL24-12-1626	None Available

DISCONTINUED DEVICES - Backpanels

Affected Devices	Replacement Devices
SCMD-PB4RD	NONE
SCMD-JM8	Use To Depletion No Available Replacement
SCMD-PB8	SCMD-PB4, SCMD-PB16SM, SCMD-PB24SM
SCMD-PB8H	SCMD-PB4D, SCMD-PB16SMD, SCMD-PB24SMD
SCMD-PB8SM	SCMD-PB4, SCMD-PB16SM, SCMD-PB24SM
SCMD-PB8SMD	SCMD-PB4D, SCMD-PB16SMD, SCMD-PB24SMD
SCMD-PB16	SCMD-PB4, SCMD-PB16SM, SCMD-PB24SM
SCMD-PB16H	SCMD-PB4D, SCMD-PB16SMD, SCMD-PB24SMD

DISCONTINUED DEVICES - Power Supply

Affected Devices	Replacement Devices
PWR-4504	Use To Depletion No Available Replacement

DISCONTINUED DEVICES

Affected Devices	Replacement Devices
SLX200-20	None Available
SLX200-30	None Available
SLX200-21	None Available
SLX200-31	None Available
SLX200-20D	None Available
SLX200-30D	None Available
SLX200-21D	None Available
SLX200-31D	None Available

DISCONTINUED DEVICES - Sensor-to-computer Products

Affected Devices	Replacement Devices	Affected Devices	Replacement Devices
SCM9B-1212	None Available	SCM9B-2562	None Available
SCM9B-1551	None Available	SCM9B-2611	None Available
SCM9B-1552	None Available	SCM9B-2612	None Available
SCM9B-1561	None Available	SCM9B-2641	None Available
SCM9B-1611	None Available	SCM9B-2642	None Available
SCM9B-1641	None Available	SCM9B-3161	None Available
SCM9B-2151	None Available	SCM9B-3162	None Available
SCM9B-2212	None Available	SCM9B-4121	None Available
SCM9B-2221	None Available	SCM9B-4131	None Available
SCM9B-2222	None Available	SCM9B-4162	None Available
SCM9B-2231	None Available	SCM9B-5311	None Available
SCM9B-2232	None Available	SCM9B-5331	None Available
SCM9B-2241	None Available	SCM9B-5341	None Available
SCM9B-2531	None Available	SCM9B-5342	None Available
SCM9B-2542	None Available	SCM9B-D132	None Available

DISCONTINUED DEVICES - Line Drivers and Converters

Affected Devices	Replacement Devices
LDM30-PE	None Available
LDM30-SE	None Available
LDM70-P	None Available
LDM70-PE	None Available
LDM70-PT	None Available
LDM70-SE	None Available
LDM80-S-025	None Available
LDM85-P	None Available
LDM85-PE	None Available
LDM85-PE-025	None Available
LDM85-S	None Available
LDM85-S-025	None Available
LDM85-SE-025	None Available
LDM85-ST	None Available
LDM422-PE	None Available
LDM422-SE	None Available
LDM485-PT	None Available
LDM485-ST	None Available
LDM485-PT-025	None Available
LDM485-SE	None Available

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https://www.dataforth.com/terms-and-conditions-sale

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Returns/Repair Policy

All warranty and repair requests should be directed to the Dataforth Customer Service Department at +1-520-741-1404. If a product return is required, visit dataforth.com, choose Sales Support on the blue bar and you will see the link to "Obtain an RMA". Fill out the online Return Materials Authorization (RMA) form. Be ready to provide the following information:

1. Complete product model number.
2. Product serial number.
3. Name, address, and telephone number of person returning product.
4. Special repair instructions or reason for return.
5. Purchase order number for out-of-warranty repairs.

The product should be carefully packaged, making sure the RMA number appears on the outside of the package, and shipped prepaid to:

Dataforth Corporation
ATTN: RMA Coordinator
6230 S. Country Club
Tucson, AZ 85706 USA

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