DCP485
Fully Isolated RS-232/RS-485 Converter

DIN Rail MOUNT

FEATURES

- 1500VRMS ISOLATION WITH OPTICAL COUPLERS AND POWER DC-TO-DC CONVERTER (6,000VDC, 1MIN)

- INDUSTRIAL SURGE PROTECTION DEVICES AND 15KV ESD PROTECTED RS-232 INHERENT

- FOUR LED DIAGNOSTIC INDICATORS

- 115.2K BPS (BAUD) AT 0.8 MILE (1.3KM), 38.4K BPS (BAUD) AT 1 MILE (1.6KM)

- 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

- EASILY MOUNTS ON STANDARD DIN RAIL

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. Data rates are DC to 115.2K bits per second (baud). 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 a DIP switch 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.
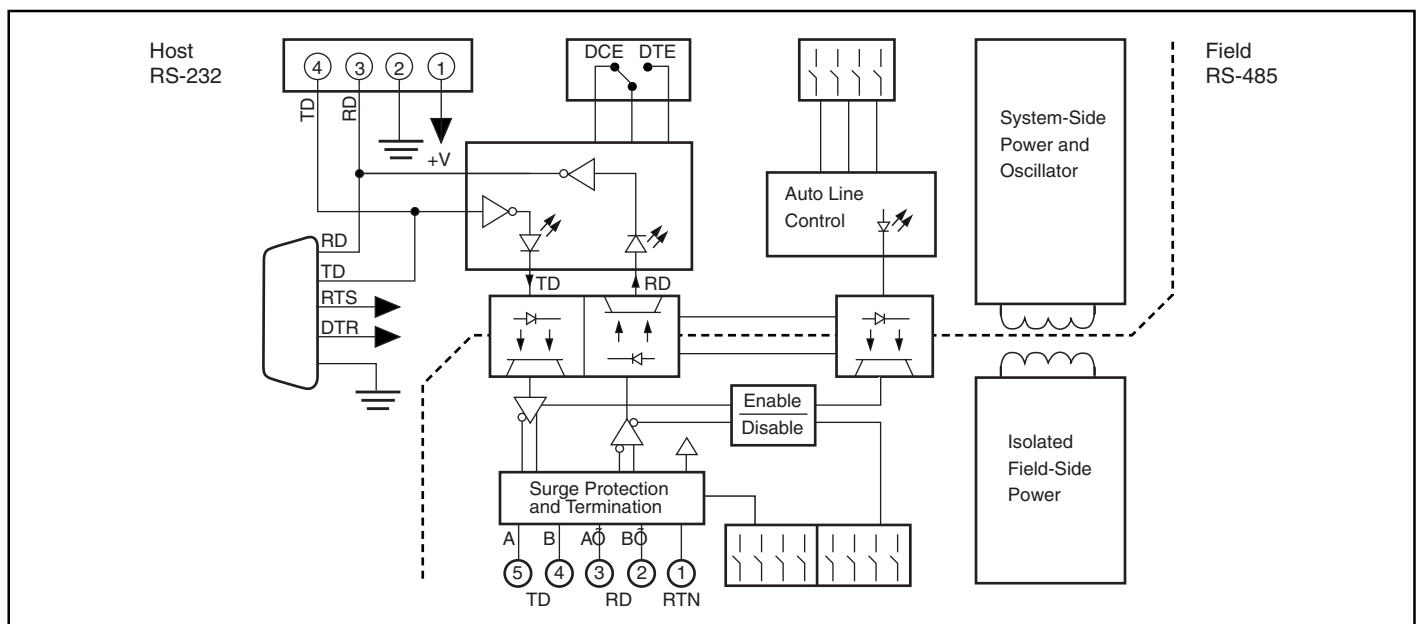

Fig 1: DCP485 Block Diagram

Front

DB-9

RS-232 standard 9 position D-sub pinout with pin 9 not connected (see **RS-232 P1 Pin Descriptions**).

LEDs

TD - shows state of RS-232 Transmit Data - is on when TD is a SPACE.

RD - shows state of RS-232 Receive Data - is on when RD is a SPACE.

RS-232 Side

Terminal Block

Includes DCP485 power input and optional RS-232 TD, RD and Ground connections (see **RS-232/POWER P2 Pin Descriptions**).

DIP Switches

COMM MODE DCE / DTE - reverses pins 2 & 3 of the DB-9 connector and screw terminals 3 & 4 of the RS-232/Power terminal block.

CTRL MODE AUTO / RTS/DTR - select AUTO mode or RTS / DTR to enable the RS-485 transmitter.

LINE RTS / DTR - select RTS or DTR to enable the RS-485 transmitter.

Front

LEDs

CTRL - shows state of RS-232 control line (RTS / DTR) or data enabled auto mode RS-485 transmitter control line - LED is on when control line is asserted.

PWR - is on when DCP485 is supplied with +10 to +30V DC power.

RS-485 Side

Terminal Block

Includes four RS-485 terminals and one isolated return terminal (see **RS-485 P3 Pin Descriptions**).

DIP Switches

TD Term - switches a 120Ω (termination resistor across the RS-485 transmit data lines TD A & TD B.

RD Pull Up / Term / Pull Dn - RD Term switches a 120Ω (termination resistor

across the RS-485 receive data lines. RD Pull Up & RD Pull Dn switch a pull up resistor to RD B' and a pull down resistor to RD A', respectively.

TD Cont En / Ctrl'd - select continuous enable or RS-232 side signal control of the RS-485 transmitter.

RD Cont En / Ctrl'd - select continuous enable or RS-232 side signal control of the RS-485 receiver.


RS–232 P1 Pin Descriptions

Pin1	RLSD (DCD)	Receive Line Signal Detect (Data Carrier Detect)
Pin2	RD	Receive Data
Pin3	TD	Transmit Data
Pin4	DTR	Data Terminal Ready
Pin5	SG	Signal Ground
Pin6	DSR	Data Set Ready
Pin7	RTS	Request To Send
Pin8	CTS	Clear To Send
Pin9	NC	Not Connected

RS–232/POWER P2 Pin Descriptions

Pin4	TD	Transmit Data
Pin3	RD	Receive Data
Pin2	Gnd	Ground (also Signal Ground)
Pin1	+V	+10 to +30VDC

RS–485 P3 Pin Descriptions

Pin5	TD A	Transmit Data A, -, DATA*
Pin4	TD B	Transmit Data B, +, DATA
Pin3	RD A'	Receive Data A' -, DATA*
Pin2	RD B'	Receive Data B' +, DATA
Pin1	RTN	Return, Isolated
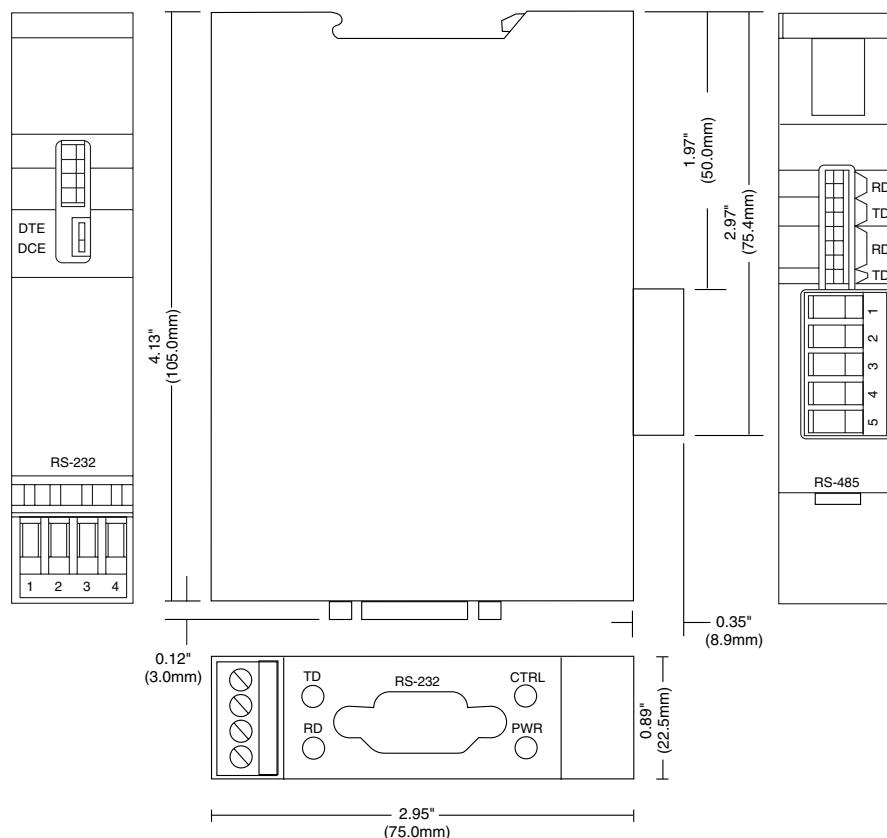
Call 800-444-7644

SPECIFICATIONS

Model	DCP485						
Baud Rate Range	0–115.2K bps (Baud)						
Baud Rate	115.2K	57.6K	38.4K	19.2K	9.6K	4.8K	2.4K-0
Distance(miles)	0.8	0.9	1.0	2.6	3.5	4.0	7.0
Distance(km)	1.3	1.5	1.6	4.2	5.6	6.4	11.3
Wire Capacitance	Equal to 25pf per foot and up to 32 multidrop units						
Max Multidrop Units	32						
Common Mode Isolation Surge: Continuous:	6000VDC, 1 min. 1500Vrms						
Differential Mode Surge Protection (9 devices)	(DC input and RS–232 inputs and outputs) ANSI/IEEE C37.90.1–1989 (all RS–485 inputs and outputs)						
Modes	Asynchronous 4–wire duplex, 2–wire half duplex, 2–wire simplex						
Channel Lines[1] Control Lines[1] Null Modem Switch	TD, RD RTS, DTR 1 (Reverses RS-232 pins 2 and 3)						
RS-485 Output Drive RS-485 Input Impedance Power	28mA max/output 12kΩ min/input +10 to +30 VDC @ 150mA max						
Temperature: Operating Storage Relative Humidity Altitude	0°C to +60°C 0°C to +70°C 0–95% non-condensing To 15000 ft (4574 m)						
Dimensions Weight	4.3 in x 3.3 in x 0.89 in (109 mm x 84 mm x 22.5 mm) 4.6 oz (130g)						
MTBF[2]	>100,000 hrs						

(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

DCP485-P	Male RS–232 connector
DCP485-S	Female RS–232 connector

BMC DR. SCHETTER