

# DCP485



## Fully Isolated DIN Rail RS-232 to RS-485 Converter/Line Driver

### 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

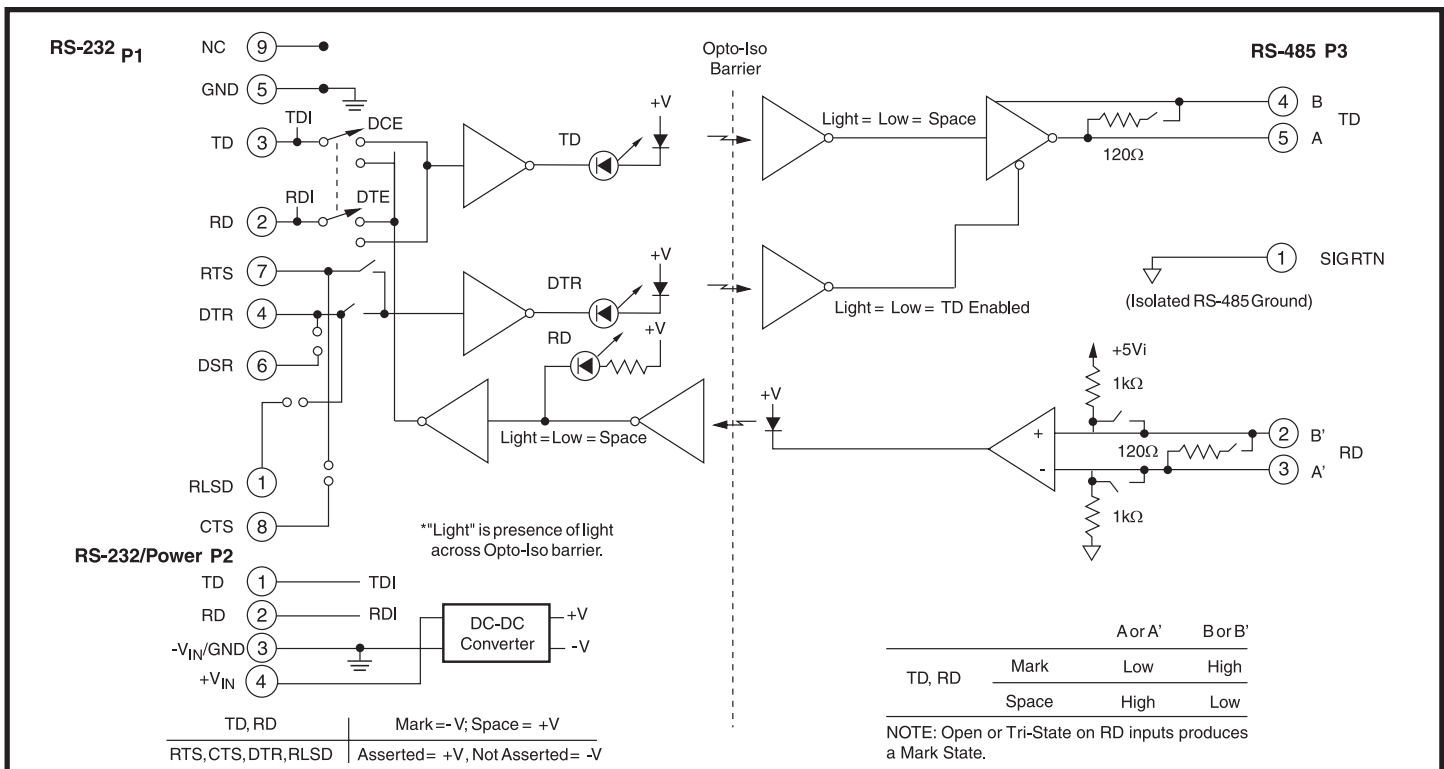


Figure 1: DCP485 Block Diagram

**Specifications**

Model	DCP485
Bit Rate (bps)	0-115.2kbps
bps vs Distance	115.2k 57.6k 38.4k 19.2k 9.6k 4.8k 2.4k-0
Distance(miles)	0.8 0.9 1.0 2.0 3.0 4.0 7.0
Distance(km)	1.3 1.5 1.6 3.2 4.8 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: 6000VDC, 1 min. Continuous: 1500Vrms
Differential Mode Surge Protection (9 devices)	(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 <sup>(1)</sup>	TD, RD
Control Lines <sup>(1)</sup>	RTS, DTR
Null Modem Switch	1 (Reverses RS-232 pins 2 and 3)
RS-485 Output Drive	28mA max/output
RS-485 Input Impedance	12kΩ min/input
Power	+10 to +30 VDC at 150mA max
Environmental:	
Operating Temperature Range	-40°C to +60°C
Storage Temperature Range	-40°C to +70°C
Relative Humidity	0 to 95% Noncondensing
Altitude	to 15000 ft (4574 m)
Dimensions	4.3" x 3.3" x 0.89" (109mm x 84mm x 22.5mm)
Weight	4.6 oz (130g)
MTTF <sup>(2)</sup>	>100,000 hrs

**Ordering Information**

Model	Description
DCP485-P	Male RS-232 connector
DCP485-S	Female RS-232 connector
Power Supply	DIN Rail Mount
PWR-PS5RA	85-264 VAC, 47-63 Hz In 24 VDC, 0.31 A Out

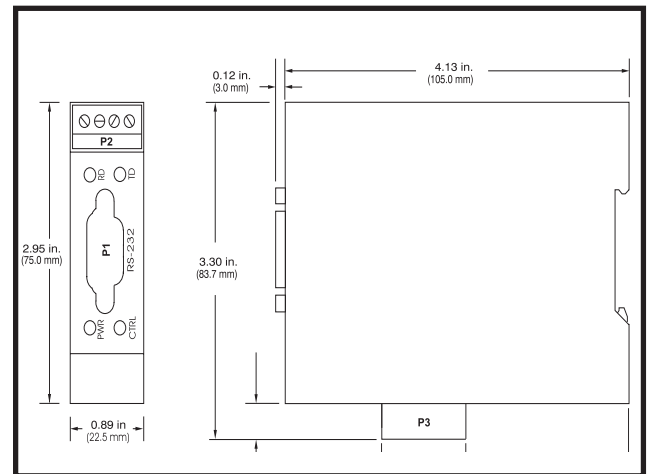


Figure 2: DCP485 Dimensions

NOTES:

- (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).

RS-232 P1 Pin Descriptions			RS-232/POWER P2 Pin Descriptions			RS-485 P3 Pin Descriptions		
Pin 1	RLSD (DCD)	Receive Line Signal Detect (Data Carrier Detect)	Pin 4	TD	Transmit Data	Pin 5	TD A	Transmit Data A
Pin 2	RD	Receive Data	Pin 3	RD	Read Data	Pin 4	TD B	Transmit Data B
Pin 3	TD	Transmit Data	Pin 2	GND	Ground (also Signal Ground)	Pin 3	RD A'	Receive Data A'
Pin 4	DTR	Data Terminal Ready	Pin 1	+V	+10 to +30VDC	Pin 2	RD B'	Receive Data B'
Pin 5	SG	Signal Ground				Pin 1	RTN	Return, Isolated
Pin 6	DSR	Data Set Ready						
Pin 7	RTS	Request To Send						
Pin 8	CTS	Clear To Send						
Pin 9	NC	Not Connected						