

# Fully Isolated RS232/RS485 Converter

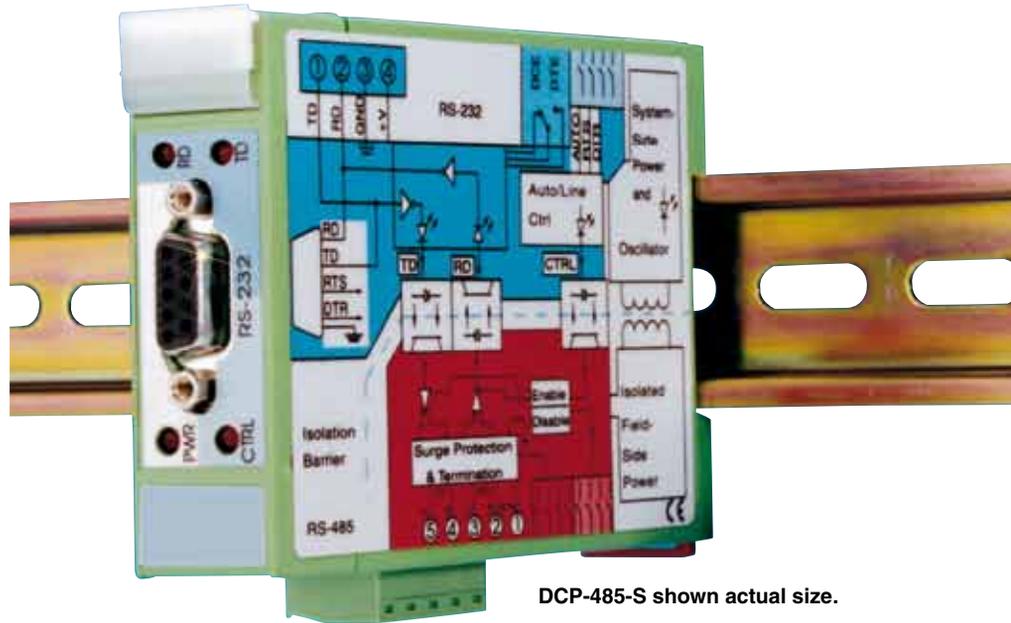
DCP-485



- ✓ 1500 VRMS Isolation with Optical Couplers and Power DC-to-DC Converter (6000 Vdc, 1 min)
- ✓ Industrial Surge Protection Devices and 15 KV ESD Protected RS232 Inherent
- ✓ Four LED Diagnostic Indicators
- ✓ 115.2 K BPS (BAUD) at 0.8 mile (1.3 km), 38.4 K BPS (BAUD) at 1 mile (1.6 km)
- ✓ RTS, DTR, or Auto RS485 Transmitter Control
- ✓ Tri-State Outputs for Multidrop Applications, up to 32 Devices
- ✓ Selection of Connectors
- ✓ Pluggable Solderless Screw Terminal Field Connections
- ✓ Easily Mounts on Standard DIN Rail
- ✓ 2-Wire or 4-Wire RS485

The DCP485 is a compact RS232-to-RS485 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 side of your computer, or anywhere a DIN rail can be mounted. Isolation is provided by optical couplers and a transformer-isolated DC-to-DC converter. The RS232 connection is made through male or female EIA 9-pin D sub connectors, or a 3-wire RS232 connection can be made through convenient pluggable screw terminals. The RS485 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 up to 115.2 K bits per second (baud). Four diagnostic



DCP-485-S shown actual size.

LED indicators are provided for installation guidance and system troubleshooting. The RS232 interface includes Request To Send (RTS) and Data Terminal Ready (DTR), either of which can be used via a DIP switch to enable the RS485 transmitter.

Alternately, the DCP-485 offers automatic line switching: the RS485 transmitter is enabled automatically by each character sent on the RS232 Transmit Data (TD) line. Additionally, the RS485 transmitter and receiver can be independently enabled continuously or under RS232 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 RS485 lines. The units are powered from wide-range voltages of 10 to 30 Vdc through pluggable solderless screw terminals.

## Component Functions and Descriptions:

### Front of Unit- DB-9 Connector

RS232 standard 9-position D sub pinout with pin 9 not connected

### LED's

TD - shows state of RS232 Transmit Data line - "on" when TD is a SPACE.

RD - shows state of RS232 Receive Data line - "on" when RD is a SPACE.

CTRL - shows state of RS232 control line (RTS/DTR) or data enabled auto mode RS485 transmitter control line - LED is on when control line is asserted. PWR - is on when DCP485 is supplied with +10 to +30 Vdc power.

### RS232 Side - Terminal Block

Includes DCP-485 power input and optional RS232 TD, RD and ground connections.

### DIP Switches

COMM MODE DCE/DTE - reverses pins 2 & 3 of the DB-9 connector and screw terminals 3 & 4 of the RS232/Power terminal block. CTRL MODE AUTO/RTS/DTR - select AUTO mode or RTS/DTR to enable the RS485 transmitter. LINE RTS/DTR - select RTS or DTR to enable the RS485 transmitter.

### RS485 Side - Terminal Block

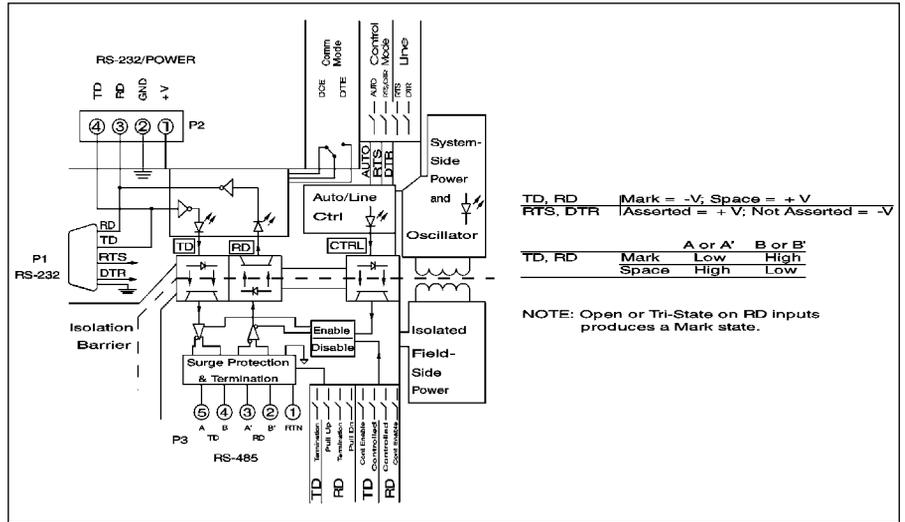
Includes four RS485 terminals and one isolated return terminal

**DIP Switches**

TD Term - switches a 120 Ω termination resistor across the RS485 transmit data lines TD A & TD B.

RD Pull Up/Term/Pull Dn - RD Term switches a 120 Ω termination resistor across the RS485 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 RS232 side signal control of the RS485 transmitter. RD Cont En/Ctrl'd - select continuous enable or RS232 side signal control of the RS485 receiver.



**DCP-485 Block Diagram**

**Specifications**

**Baud Rates (bps):** 115.2 K, 57.6 K, 38.4 K, 19.2 K, 9.6 K, 4.8 K, 0-2.4 K

**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 25 pF per foot and up to 32 multidrop units

**Max Multidrop Units:** 32

**COMMON MODE ISOLATION**

**Surge:** 6000 Vdc, 1 min

**Continuous:** 1500 Vrms

**Differential Mode Surge**

**Protection:** (dc input and RS232 inputs and outputs, RS485 inputs and outputs)

**Modes:** Asynchronous 4-wire duplex, 2-wire half duplex, 2-wire simplex

**Channel Lines:** (1) TD, RD

**Control Lines:** (1) RTS, DTR

**Null Modem Switch:**

1 (Reverses RS232 pins 2 and 3)

**RS485 Output Drive:** 28 mA max/output

**RS485 Input Impedance:**

12 kΩ min/input

**Power:** 10 to 30 Vdc @ 150 mA max

**TEMPERATURE**

**Operating Range:** 0 to 60°C

(32 to 140°F)

**Storage Range:** 0 to 70°C

(32 to 158°F)

**Relative Humidity:** 0 to 95%

non-condensing

**Altitude:** To 4574 m (15,000')

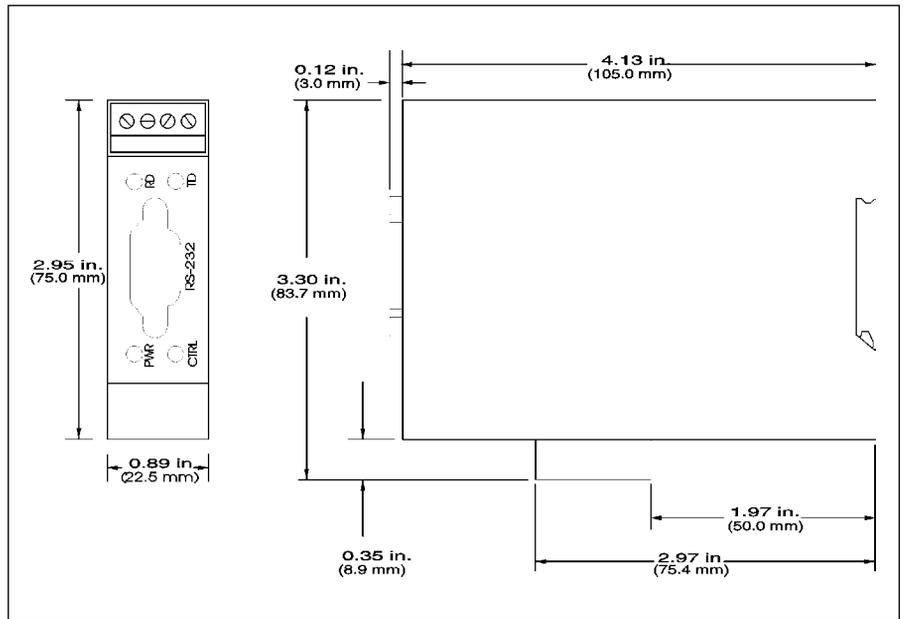
**Dimensions:**

109 H x 84 W x 22.5 mm D

(4.3 x 3.3 x 0.89")

**Weight:** 130 g (4.6 oz)

**MTBF:** (2) >100,000 hrs



**Dimensions for DCP-485**



OMEGACARE<sup>SM</sup> extended warranty program is available for models shown on this page. Ask your sales representative for full details when placing an order. OMEGACARE<sup>SM</sup> covers parts, labor and equivalent loaners.

**To Order**

Model No.	Description
DCP-485-P	Isolated RS232/RS485 converter with male RS232 9-pin connector
DCP-485-S	Isolated RS232/RS485 converter with female 9-pin connector

comes complete with operator's manual.

**Ordering Example:** DCP-485-S and OCW-1 OMEGACARE<sup>SM</sup> 1-year extended warranty for DCP-485-S adds 1 year to standard 1-year warranty.

**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).