



Model: 485DRCI
RS-232 to RS-422/485 Converter
with Triple Isolation

Introduction

The DIN rail mountable Model 485DRCI optically isolates and converts unbalanced, full or half-duplex RS-232 signals to optically isolated, balanced, full or half-duplex RS-422 or RS-485 signals at baud rates up to 115.2 kbps. This unit also surge suppresses the RS-422/485 lines. It also features Send Data Control circuitry which ensures no software control of handshake lines is required in RS-485 mode.

LEDs

3 LEDs indicate RS-485 Transmit Data, RS-485 Receive Data, and Power.

Description

The 485DRCI has screw down removeable terminal blocks on the RS-422/RS-485 side. The RS-232 input has a DB9 female connector. Transmit (TD), Receive (RD) and Ground are supported on the RS-232 input. The unit is powered by a supply voltage of 10 to 48VDC, which is isolated from all data and signal ground lines. Transmit Data A (-), Transmit Data B (+), Receive Data A (-), Receive Data B (+), and Ground are supported on the RS-422/RS-485 side. Communication features on the 485DRCI are dipswitch selectable on the unit.

RS-485 Mode with Send Data Control

Send Data Control recognizes the first bit of data from the RS-232 side, enables the transmitter and disables the receiver. After the last bit of data is sent from the RS-232 side, the timeout waits one character length, then disables the transmitter and enables the receiver. The timeout can be selected with dipswitches or by changing the value of R11 (see Table 2). If the system requires the line to be "turned around" faster, i.e. the slave device starts responding before the transmitter of the 485DRCI is disabled, R11 can be changed to meet the specific baud rate. Termination resistance can be selected with Switch 5 for high baud rates and long cable distances. See B&B Electronics' RS-422/485 Application Note available on the web site. Factory setting: 9600 baud.

Table 1. Typical Communication Setups

	Switch 1 TX Enable	Switch 2 RX Enable	Switch 3 2/4 Wire	Switch 4 2/4 Wire
RS-485 2-Wire Mode (half duplex)	On	On	On	On
RS-485 4-Wire Mode (full duplex)	On	Off	Off	Off
RS-422 Mode (full duplex)	Off	Off	Off	Off

Table 2. Baud Rate Selection

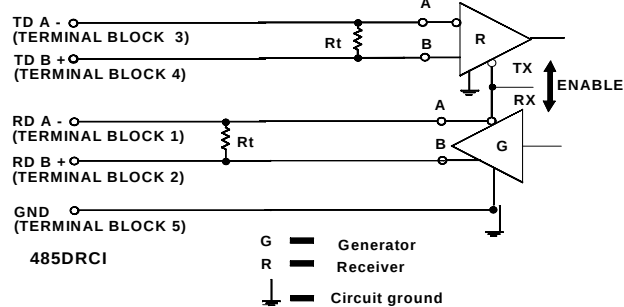
	Switch 8	Switch 9	Switch 10	Switch 11	Switch 12	R11	Time (ms)
1200	Off	Off	Off	Off	Off	820kΩ	8.33
2400	On	Off	Off	Off	Off	Not Used	4.16
4800	Off	On	Off	Off	Off	Not Used	2.08
9600	Off	Off	On	Off	Off	Not Used	1.04
19200	Off	Off	Off	On	Off	Not Used	.580
38400	Off	Off	Off	Off	On	Not Used	.260
57600	Off	Off	Off	Off	Off	16kΩ	.176
115200	Off	Off	Off	Off	Off	8.2kΩ	.0868



International Headquarters: 707 Dayton Road PO Box 1040 Ottawa, IL 61350 USA
815-433-5100 Fax 433-5104 www.bb-elec.com orders@bb-elec.com support@bb-elec.com

European Headquarters: Westlink Commercial Park Oranmore Co. Galway Ireland
+353 91 792444 Fax +353 91 792445 www.bb-europe.com orders@bb-europe.com support@bb-europe.com

TYPICAL RS-422/485 4 WIRE SETUP



DB9 Female Configuration

RS-232 (DCE)

Pin 2 RD (output)
Pin 3 TD (input)
Pin 5 SIG. GND

Terminal Block Configuration

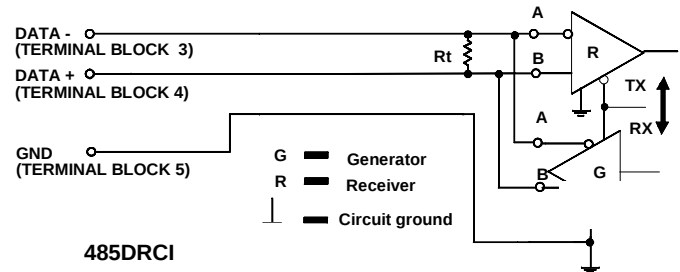
RS-422/485

TDA (1) Tx inverted or (-) (output)
RDA (3) Rx inverted or (-) (input)
TDB (2) Tx non-inverted or (+) (output)
RDB (4) Rx non-inverted or (+) (input)
Iso. GND (5) Isolated RS-422/485 Signal Ground/Common

Specifications

Dimensions: 4.9 x 4.1 x 1.3 in (12.4 x 10.4 x 3.2 cm)
Temperature Range: -40 to +85 °C (-40 to +185°F)
Humidity Range: 0 to 95% non-condensing
Supply Voltage: 10 to 48VDC (+/- 20%) @ 960mW
Data Rates: 1200 to 115,200 bps
2400 to 38400 bps switch selectable
Connectors: Screw down terminal blocks for RS-422/485 sides,
DB9 female on the RS-232 side
LEDs: Transmit Data, Receive Data and Power
Isolation: 3-way isolation, 2000V RMS input/output/power supply
Surge Suppression: 7.5V, bi-directional avalanche breakdown device
600W peak power dissipation
Clamping Time: < 1 picosecond (theoretical)
Approvals: cUL, Class1 Div2

TYPICAL TWO-WIRE RS-485 SETUP



In a two-wire setup, switches 3 & 4 should be "ON", making terminal block (3) the Data (-) line and terminal block (4) the Data (+) line.

Table 3: Switch Setting (Down = ON)

Switch	ON	OFF
1	TX Send Data	TX Enabled
2	RX Send Data	RX Enabled
3	2 Wire	4 Wire
4	2 Wire	4 Wire
5	Termination In	Termination Out
6	TX Bias Resistors Out	TX Bias Resistors In
7	RX Bias Resistors Out	RX Bias Resistors In
8	2400 Baud	
9	4800 Baud	
10	9600 Baud	
11	19.2 K Baud	
12	38.4 K Baud	

DECLARATION OF CONFORMITY

Manufacturer's Name: B&B Electronics Manufacturing Company
Manufacturer's Address: P.O. Box 1040
707 Dayton Road
Ottawa, IL 61350 USA
Model Numbers: 485DRCI
Description: Industrial Isolated RS-232 to RS-422/485 Converter
Type: Light industrial ITE equipment
Application of Council Directive: 89/336/EEC
Standards: EN 55022
EN 61000-6-1
EN 61000 (-4-2, -4-3, -4-4, -4-5, -4-6, -4-8, -4-11)

Michael J. Fahrion, Director of Engineering



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Наши контакты:

Телефон: +7 812 627 14 35

Электронная почта: sales@st-electron.ru

Адрес: 198099, Санкт-Петербург,
Промышленная ул, дом № 19, литера Н,
помещение 100-Н Офис 331