



Model: 485LDRC9
Industrial DIN Rail Mounted
Optically Isolated RS-232 to RS-422/485
Converter with Surge Suppression

Introduction

The DIN Rail mountable Model 485LDRC9 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. Features Send Data Control circuitry so 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 485LDRC9 has screw down terminal blocks on the RS-232 side and the RS-422/RS-485 side. The RS-232 side also has a DB9 female connector. Transmit (TD), Receive (RD) and Ground are supported on the RS-232 side. The unit is powered by a supply voltage of 10 to 30VDC on the RS-232 side, useful where 24VDC is commonly found. 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 485LDRC9 are dipswitch selectable on the unit.

RS-485 Mode with Send Data Control

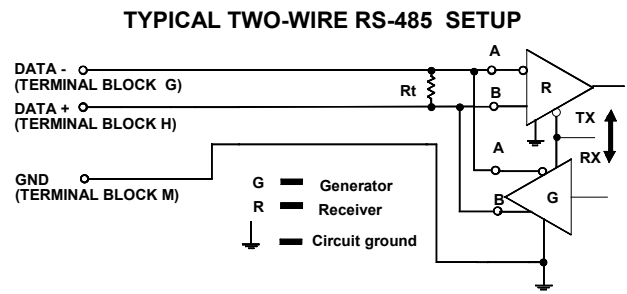
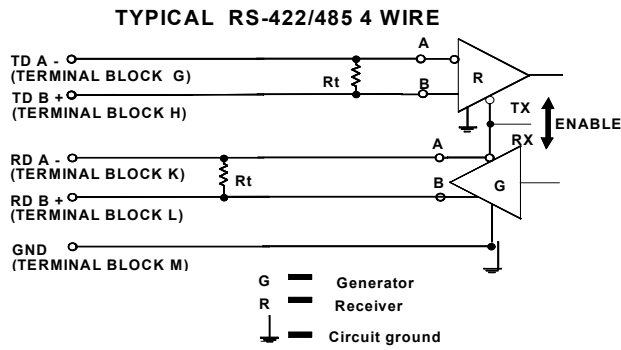
Send Data Control recognizes the first bit of data from the RS-232 side, enables the transmitter and disables the receiver. After the last bit of data is sent from the RS-232 side, the timeout waits one character length, then disables the transmitter and enables the receiver. The timeout can be selected 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 485LDRC9 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 or by mail. 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 6	Switch 7	Switch 8	R11	Time (ms)
1200	Off	Off	Off	820kΩ	8.33
2400	Off	Off	On	Not Used	4.16
4800	Off	On	Off	Not Used	2.08
9600	On	Off	Off	Not Used	1.04
19200	On	On	On	Not Used	.580
38400	Off	Off	Off	27kΩ	.260
57600	Off	Off	Off	16kΩ	.176
115200	Off	Off	Off	8.2kΩ	.0868



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

**Terminal Block Configuration
RS-232**

- (D) TD (input)
- (A) RD (output)
- (B) SIG. GND
- (F) +10 to 30VDC
- (C) PWR. GND

**DB9 Female Configuration
RS-232 (DCE)**

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

RS-422/485

- TDA (G) Tx inverted or (-) (output)
- RDA (K) Rx inverted or (-) (input)
- TDB (H) Tx non-inverted or (+) (output)
- RDB (L) Rx non-inverted or (+) (input)
- Iso. GND (M) Isolated RS-422/485 Signal Ground/Common

Switch Setting (Up = ON)

- 1 - Tx Enable (On for 485 mode. Off for 422 mode.)
- 2 - Rx Enable (On for 2-wire 485 mode. Off for 4-wire 485 and 422 mode.)
- 3 - 2/4 Wire (On for 2-wire/half duplex. Off for 4-wire full duplex.)
- 4 - 2/4 Wire (On for 2-wire. Off for 4-wire.)
- 5 - Termination Resistors (On for termination. Off for no termination.)
- 6 - 9600 Baud (On for 9600, Off for others. See Table 2 for additional baud rates.)
- 7 - 4800 Baud (On for 4800, Off for others. See Table 2 for additional baud rates.)
- 8 - 2400 Baud (On for 2400, Off for others. See Table 2 for additional baud rates.)

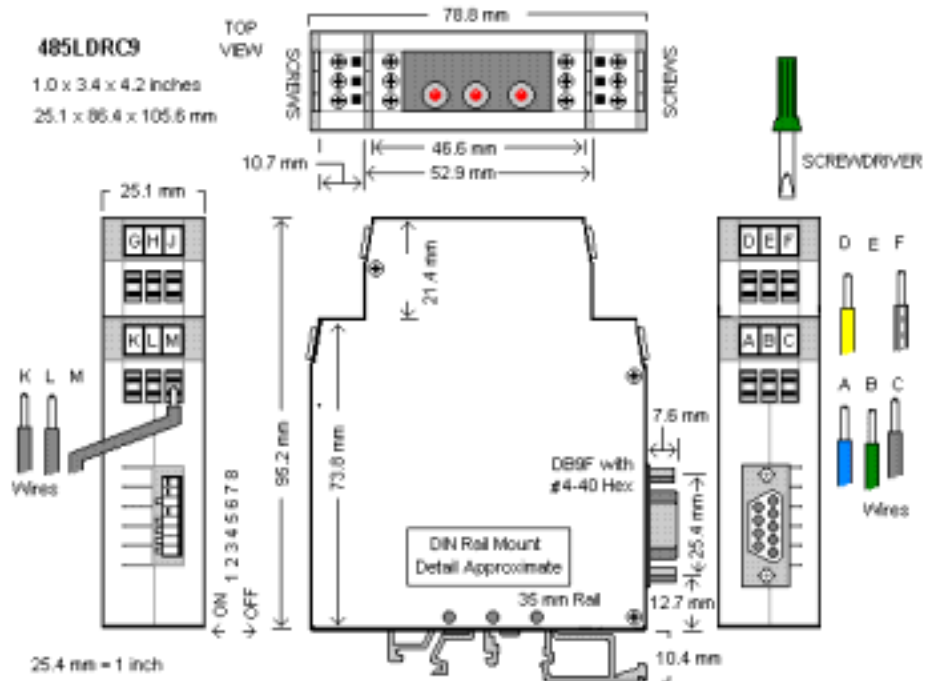


Figure 1

Removing Converter from DIN Rail

A flat-blade screwdriver will be needed when removing the 485LDRC9 from a 35mm DIN rail.

1. Place a flat-blade screwdriver blade in disengage clip on the converter enclosure (See Figure 1).
2. Gently pry on screwdriver handle.
3. Rock enclosure toward you to release it from the DIN rail.

Specifications

Dimensions: 4.2 x 3.1 x 1.0 in (10.7 x 7.8 x 2.5 cm)
 Temperature Range: -40 to +80 °C (-40 to +176°F)
 Humidity Range: 0 to 95% non-condensing
 Supply Voltage: +10 to 30VDC @ 100mA
 9 to 30 VAC @ 100 mA
 Data Rates: 1200 to 115.2 kbps
 2400 to 19200 kbps switch selectable
 Connectors: Screw down terminal blocks for RS-232 and RS-422/485 sides
 LED's: Transmit Data, Receive Data and Power
 Isolation: 2000VAC optical isolation of data signals and ground
 Surge Suppression: 7.5V, bi-directional avalanche breakdown device
 500W peak power dissipation
 Clamping time: < 1 picosecond (theoretical)

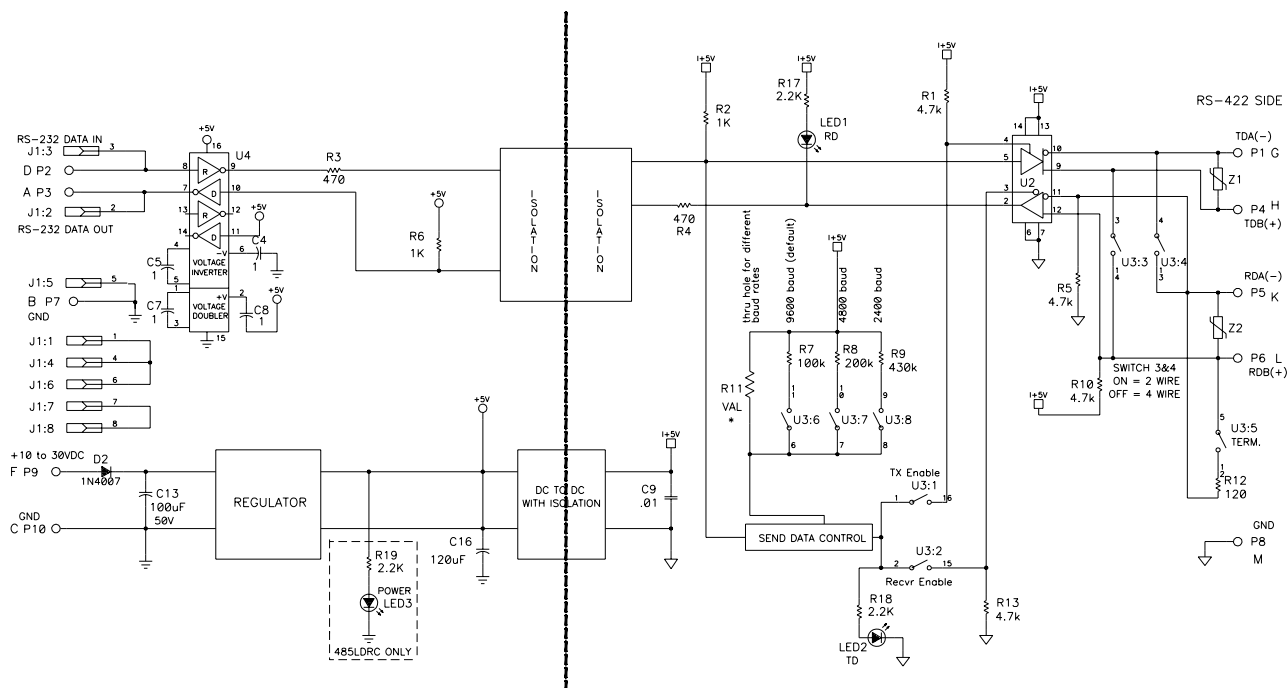


Figure 2

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: 485LDRC9
 Description: RS-485 Optically Isolated Din Mount 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)

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