



*Model: 485OPDRI*  
**Industrial DIN Rail Mounted  
 RS-422/485 Line Isolator/Repeater**



**Features**

- ✓ **High Speed Communications. Supports data rates up to 115.2 kbps.**
- ✓ **Extended Communications. Supports distances up to 4,000 ft (1200 m).**
- ✓ **Wide Temperature Range, -40 to 176°F (-40 to 80°C).**
- ✓ **Modbus ASCII or RTU Compatible.**
- ✓ **Removable terminal blocks for easy connections.**
- ✓ **2000V 3-way Optical Isolation. Reliable in harsh electrical environments.**
- ✓ **UL, Class 1 Div 2 Approved.**

**Functional Description**

The 485OPDRI provides 3-way optical isolation between one piece of RS-422 / RS-485 equipment and the rest of the system. It can also be used as a repeater to extend the distance of an existing network. Additionally, an RS-485 system can be expanded beyond the 32 node limitation imposed by the standard. All inputs are interfaced through removable terminal blocks. External power is applied via a separate terminal block. A 10 – 48 VDC power supply (not included) is required.

**Ordering Information**

<b>Model Number</b>	<b>Description</b>
485OPDRI	RS-422 / RS-485 Isolator / Repeater
PS5R-A12	12 VDC, 7.5 W DIN Rail mounted Power Supply
PS5R-A24	24 VDC, 7.5 W DIN Rail mounted Power Supply
6545	5 Position Terminal Block (2 included)
7145	2 Position Terminal Block (1 included)



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## Operation

- Configure operating mode and baud rate using the guidance provided in Tables 1 and 2. Refer to figure 1 for switch orientation.
- LED's indicate data flow and power.
- Common applications are illustrated in Figures 2 through 4.
- Terminal blocks support TD (A and B), RD (A and B), and Signal Ground.
- Power and ground are isolated from each side of the converter.
- Timeout period is factory preset to approximately 1 millisecond which accommodates 9.6 kbps.
- Mode is factory preset to RS-485 2-wire.
- RS-485 operation requires bias to maintain proper operation when all transmitters are inactive. Bias can be disabled if provided elsewhere, or enabled if required. Switch 6 controls transmit bias for 4-wire operation. Switch 7 controls receive bias.
- Refer to B&B Electronics' RS-422/RS-485 Application Note for detailed information concerning RS-422 and RS-485 networks. This document is available for download at [http://www.bb-elec.com/tech\\_articles/rs422\\_485\\_app\\_note/table\\_of\\_contents.asp](http://www.bb-elec.com/tech_articles/rs422_485_app_note/table_of_contents.asp)

**Table 1 – Baud Rate Selection**

Baud Rate	SW 8	SW 9	SW 10	SW 11	SW 12	Time (mS)
2400	ON	OFF	OFF	OFF	OFF	4.73
4800	OFF	ON	OFF	OFF	OFF	2.20
9600	OFF	OFF	ON	OFF	OFF	1.10
19200	OFF	OFF	OFF	ON	OFF	.62
38400	OFF	OFF	OFF	OFF	ON	.29
57600	ON	OFF	ON	OFF	OFF	.17
76800	ON	OFF	ON	ON	OFF	.15
115200	ON	ON	ON	OFF	OFF	.11

**Table 2 – Typical Configurations**

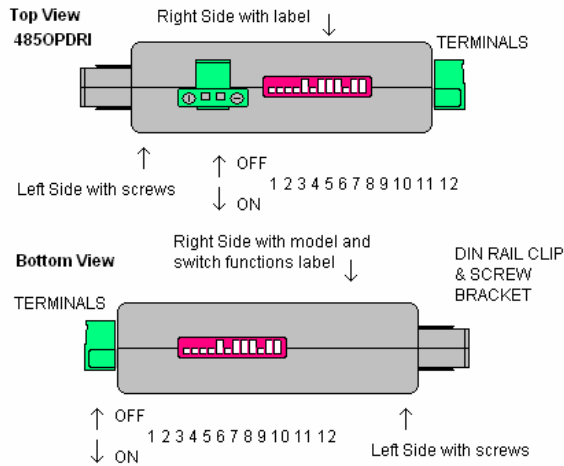
	SW 1 TX Enable	SW 2 RX Enable	SW 3 2/4 Wire	SW 4 2/4 Wire	SW 5 Term	SW 6 TX Bias Disable	SW 7 RX Bias Disable
<b>RS-485 2-Wire Mode</b> (half duplex)	ON	ON	ON	ON	OFF	ON	OFF
<b>RS-485 4-Wire Mode</b> (full duplex)	ON	OFF	OFF	OFF	OFF	OFF	OFF
<b>RS-422 Mode</b> (full duplex)	OFF	OFF	OFF	OFF	OFF	ON	ON



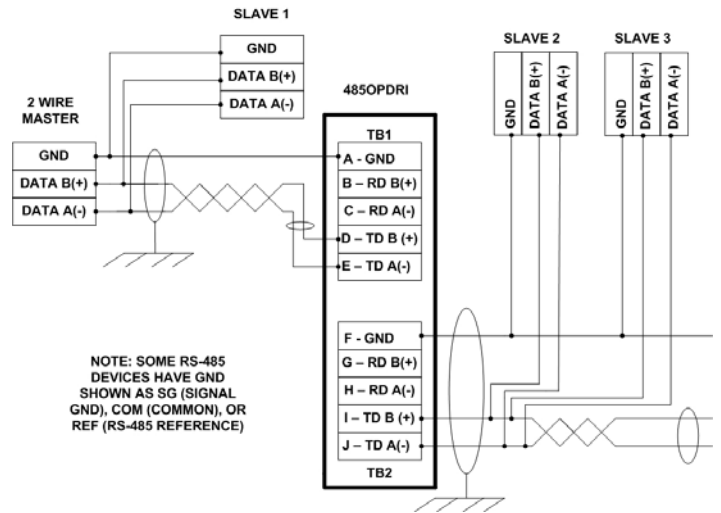
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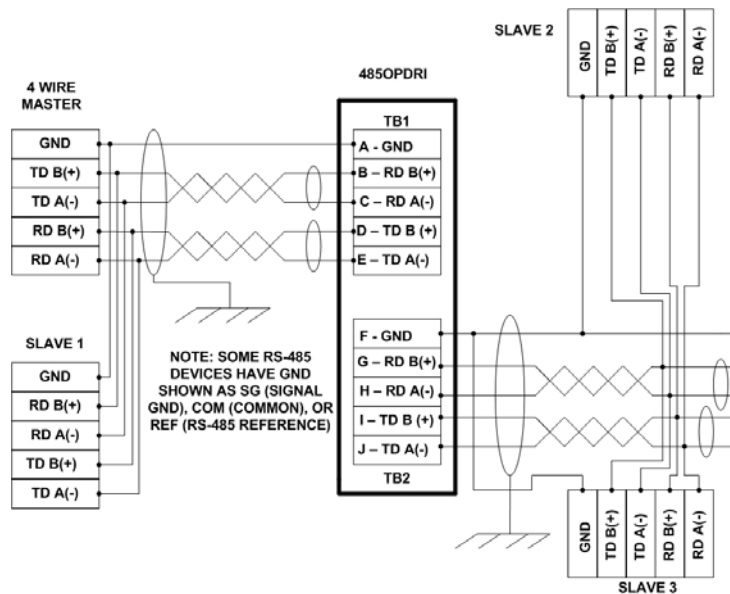
**Figure 1 – DIP Switch Orientation**



**Figure 2 - 2 Wire Repeater**



**Figure 3 – 4 Wire Repeater**



**Figure 4 – 4 Wire Master to 2 Wire Slave**

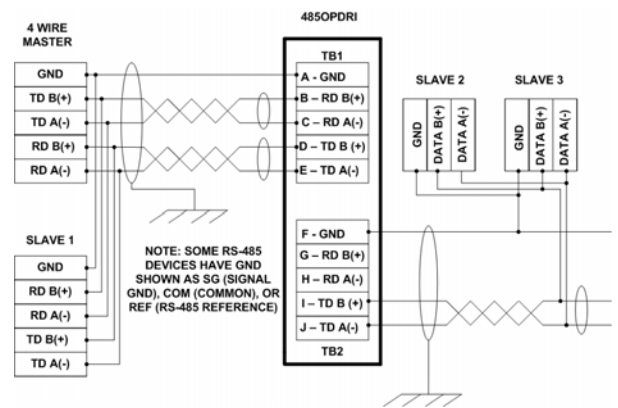
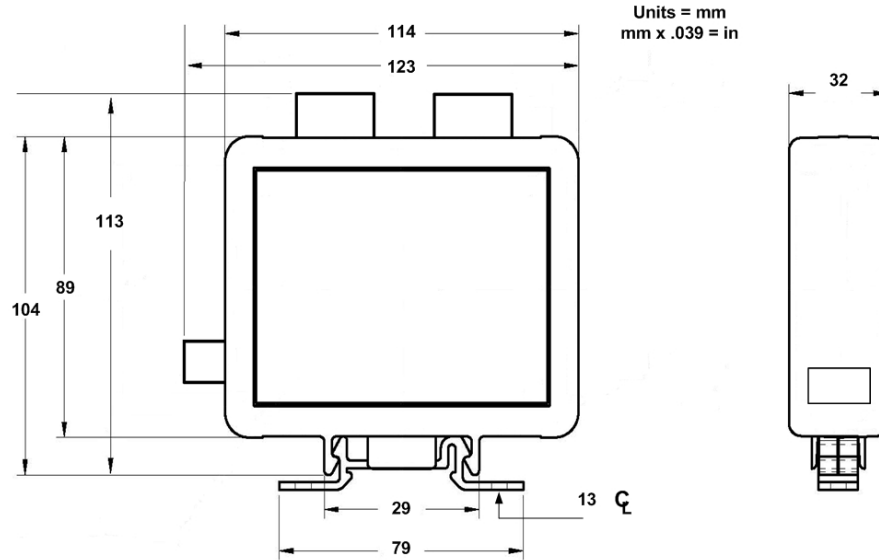


Figure 5 – Mechanical Drawing



Specifications

Input Power Requirement	10 – 48 VDC
Isolation	2KV, 3-Way (input, output, power)
Surge Suppression	6.5V working peak voltage, bidirectional over voltage suppressor 600W peak power dissipation. 3000 pF max capacitance
Current Draw	67mA @ 12 VDC
Signal Connection	Removable Terminal Block
Data Rate	2.4 – 115.2 kbps
Operating Temperature	- 40 - +80° C (- 40 – +176° F)
Operating Humidity	0 – 95% Non-condensing
LED Indicators	Data and Power
Dimensions	123 x 113 x 32 mm (4.9 x 4.5 x 1.3 in)
DIN Mount	DIN 35
Approvals	UL, cUL, CE, Class 1 Div 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: 485OPDRI  
 Description: Industrial RS-422/485 Isolator/Repeater  
 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

Special Instructions for Installation and Operation  
in a Class 1 Div 2 Environment

When this device is operated in a Class 1 Div 2 environment, the following PRECAUTIONS and WARNINGS must be observed:

1. Power, input and output (I/O) wiring must be in accordance with Class 1 Division 2 wiring methods [Article 501.10(B) of the National Electrical Code, NFPA 70] and in accordance with the authority having jurisdiction.
2. WARNING – EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS 1, DIVISION 2.
3. WARNING – EXPLOSION HAZARD – WHEN IN HAZARDOUS LOCATIONS, TURN OFF POWER BEFORE REPLACING OR WIRING MODULES.
4. WARNING – EXPLOSION HAZARD – DO NOT DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NON-HAZARDOUS.