

9-pin Port-Powered RS-232 to RS-485 Converter

Model BB-485LP9TB

B+B SMARTWORX

Powered by

ADVANTECH

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FEATURES

- + Extends RS-232 signals to 1.22 km (4000 ft)
- + Baud rates up to 115.2 kbps
- + Quick, easy, inline installation
- + Automatic Send Data Control - no software drivers needed
- + Powered from RS-232 handshake lines – no power supply required
- + Optional external power (power supply not included, sold separately)

Model BB-485LP9TB is a port-powered, two-channel converter. It converts TD and RD RS-232 lines to balanced RS-485 signals. The unit can be powered from the RS-232 handshake lines, DTR and RTS. If port-powering the unit, one of these handshake lines must be asserted (high) in order to power the unit (See Table 1). DTR must be asserted to receive data. The RS-485 driver is enabled when RTS is asserted and disabled when RTS is disasserted. The RS-485 receiver is disabled when the driver is enabled and is enabled when the driver is disabled.

To maximize the amount of power available to the RS-485 driver, the RS-232 **handshake lines are not looped back** (tied together). As a result, the following handshake lines will appear as disasserted (low): CTS, DCD, and DSR. Care should be taken to ensure that any software being used does not require any of these handshake lines be asserted. If existing software requires any of the handshake lines to be asserted, you can loop back the required handshake lines in your cable.

An external power supply may be used to power the converter (not included, sold separately).

ORDERING INFORMATION

MODEL NUMBER	RS-232 CONNECTOR	RS-485 CONNECTOR	OUTPUT	OPTIONAL EXTERNAL POWER?
BB-485LP9TB	DB9 Female	Terminal Block	RS-485 2-wire	Yes

ACCESSORIES – sold separately

BB-SM16-12-V-ST* - Power Supply, 12 VDC, 6 Watt, Stripped and Tinned, International AC Input, International AC Blades

BB-9PAMF6 - Serial Cable – DB9M--DB9F, 1.8 m (6 ft)

Table 1. Handshake Lines & Port-Powering

RTS State	DTR State	Functions Possible (when using port-power)
Low	Low	None
Low	High	Receive Data
High	Low	Transmit Data
High	High	Transmit Data

* NOTE: Low = disasserted and High = asserted

Automatic Send Data Control Explained

As operating systems become more complex, it is increasingly difficult to control an RS-485 driver with standard software and the RTS line. This is especially true in Windows and multi-tasking operating systems. With Advantech B+B SmartWorx' Automatic Send Data Control circuit, driver control is in the converter hardware, so you do not have to work with software at all.

The circuit monitors data flow and enables the driver during transmission and automatically disables it when no data is being sent. There is no need to rework software or install new drivers. Most Advantech B+B SmartWorx RS-232 to RS-485 converters and RS-485 serial cards include Automatic Send Data Control.

Why use an “optional” power supply with a port-powered converter?

Simply put, all RS-232 ports are not created equal. Many laptop PCs, for example, deliberately reduce power to the RS-232 port to save the battery. And, if you are working at the distance limits of RS-422 or 485, you might need an extra boost. For the majority of applications though, the converter's port powering is sufficient to accomplish the task.

All product specifications are subject to change without notice.

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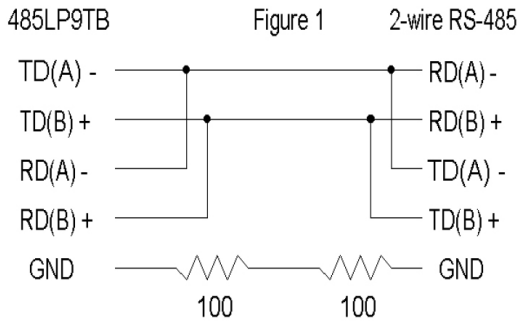
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Connections

A typical two-wire RS-485 connected is shown in Figure 1. Regardless of the system, Model BB-485LP9TB must be connected with the proper polarity. With no data being sent and the driver enabled, the RS-232 line should be negative and the TD(A) should be negative with respect to TD(B).

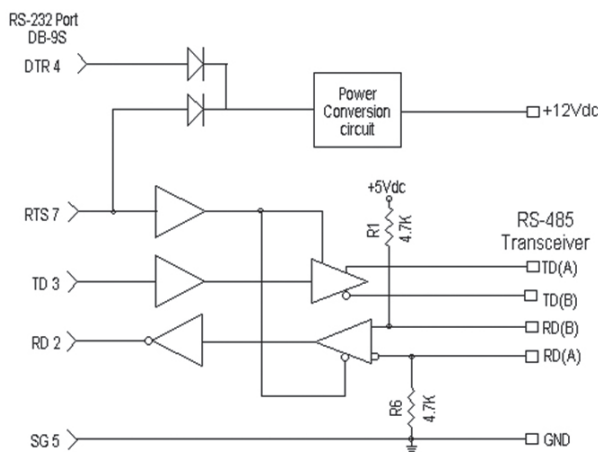


Proper operation of any RS-485 system requires the presence of a signal return path between the signal grounds of the equipment at each end of an interconnection. This circuit reference may be established by a third conductor connecting the common leads of devices, or it may be provided by connections in each equipment to an earth reference. When the circuit reference is provided by a third conductor, the connection between the signal grounds and the third conductor should contain some resistance (e.g. 100 Ohms) to limit circulating currents when other ground connections are provided for safety.

Biasing Resistors

The biasing resistors for the RS-485 receiver are 4.7K Ohm resistors. These resistors are labeled R1 and R6 (See Figure 2). Refer to B+B SmartWorx RS-422/RS-485 Application Note for further information on biasing.

Figure 2



SPECIFICATIONS

SERIAL TECHNOLOGY	
Data Rate	115.2 kbps maximum
RS-232 Connector	DB9 female
RS-485 Connector	Terminal Block board
Biasing Resistors	4.7k Ohms
POWER	
Source Options	Port-power: from RS-232 handshake lines. 12-16 VDC external power option (not included, sold separately)
Power Connector	Terminal block
Input Voltage	12 VDC
Power Consumption	40mA maximum
MECHANICAL	
Dimensions	8.7 x 3.2 x 1.6 cm (3.4 x 1.3 x 0.6 in)
Enclosure	Plastic
Weight	81.6 g (0.18 lb)
MEANTIME BETWEEN FAILURE (MTBF)	
MTBF	8532569 hours
MTBF Calc. Method	MIL 217F Parts Count Reliability Prediction
APPROVALS, DIRECTIVES, STANDARDS	
FCC	
CE - Directives	2014/30/EU - Electromagnetic Compatibility Directive 2011/65/EU - Reduction of Hazardous Substances (RoHS) 2012/19/EU - Waste Electrical and Electronic Equipment (WEEE)
CE - Standards	EN 55032 Class A - Electromagnetic Compatibility of Multimedia Equipment - Emission Requirements EN 55024 - Information Technology Equipment - Immunity Characteristics - Limits and Methods of Measurement EN 61000-6-4 + A1 - Generic Emission Standard for Industrial Environments (Class A) EN 61000-6-2 - Generic Immunity Standard for Industrial Environments

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