BB-485PTBR

RS-232 to RS-485 Converter with Pluggable Terminal Block

Features

- Converts RS-232 signals to RS-485 signals
- Extends data communication up to 1219 meters
- Multi-drop capability - up to 32 receivers per driver
- Pluggable terminal block for easy wiring
- Data rate: 300 bps to 115.2 kbps
- Quick, easy inline installation
- 12 Vdc power supply required (not included, sold separately)

Introduction

Model BB-485PTBR converts unbalanced RS-232 signals to balanced, full or half-duplex RS-485 signals. RS-485 is an enhanced version of the RS-422 Standard allowing multiple drivers and receivers on a two-wire system. The RS-232 port has a female DB9 connector with pins 2(RD), 3(TD), and 5(SG) supported. Pins 7(RTS) and 8(CTS) are tied together. Also pins 6(DSR), 1(CD), and 4(DTR) are tied together, but not passed through the converter. The RS-485 port has an 8-position pluggable terminal block connector.

Baud Rate

Model BB-485PTBR supports baud rates from 300 bps to 115.2 Kbps. In order to change the baud rate, a resistor and possibly a capacitor must be changed. By looking up the selected baud rate on Table 1 the resistor and capacitor value can be determined. Remove R3 and C7 from the printed circuit board. Place new components in the R2 and C6 locations. See Figure 1 and 2 for resistor and capacitor locations.

Biasing Resistors

The biasing resistors R5 and R7 can also be altered. Model BB-485PTBR comes standard with 4.7K biasing resistors. To change the value of biasing resistors, remove R5 and R7 and replace with new value in locations R4 and R6. See Figures 1 and 2 for resistor locations.

Termination Resistor

The termination resistor is located at R8. A termination resistor can be placed in the R8 location and a jumper wire placed from the terminal location to RD(B). B+B SmartWorx recommends a 100-120 Ohm resistor for termination. See Figure 2 for termination resistor location.

Constant Receiver Enable

The BB-485PTBR is factory-set with the receiver disabled during transmission. It can be set for constant receiver enable. When R9 is removed, the receiver is in constant receive mode (four-wire). When R9 is in the circuit it is in half-duplex mode (two-wire). See Figure 1 for jumper location.

Data Line Polarity

The polarity of the two RS-485 lines must be correct. With no data being sent, the RS-232 line should be negative and the RS-485 "A" terminal should be negative with respect to the "B" terminal. If your equipment uses a "+" and "-" naming scheme, in most cases, the "A" line will be connected to the "-" and the "B" line will be connected to the "+".

Ordering Information

Model No.	Description
BB-485PTBR	RS-232 to RS-485 Converter with pluggable terminal block

Accessories -- Sold Separately

BB-SMIOS12-V-ST – Power Supply, 12 VDC 6 Watt, Stripped and Tinned, International AC Input, International AC Blades (power supply required)

Specifications

Serial Technology	
RS-232 Connector	DB9 female
RS-485 Connector	8-position, pluggable terminal block
Data Rate	300 bps to 115.2 kbps
Power	
Input Voltage	12 Vdc, 100 mA
Source	External power required (not included, sold separately)
Mechanical	
Enclosure	Plastic
Mounting	In-line installation
Meantime Between Failures (MTBF)	
MTBF	3857995 hours
Calculation Method	MIL 217F Parts Count Reliability Prediction
Regulatory – Approvals / Standards / Directives	
Approvals	FCC, CE
CE - Directives	2014/30/EU – Electromagnetic Compatibility Directive (ECD) 2011-65/EU – amended by (EU) 2015/863 Reduction of Hazardous Substances Directive (RoHS) 2012/19/EU – Waste Electrical and Electronic Equipment (WEEE)
CE - Standards	EN 55032 Class B – Electromagnetic Compatibility of Multimedia Equipment – Emission Requirments EN 55024 - Information Technology Equipment - Immunity Characteristics – Limits and Methods of Measurement
Other Standards	EN 61000-6-3 + A1 – Generic Emission Standard for Residential, Commercial and Light-industrial Environments (Class B) EN 61000-6-2 – Generic Immunity Standard for Industrial Environments

Table 1. Baud Rate Timeouts

Component Replacements for Changing Baud Rate Timeouts			
Baud Rate	**Time (ms)**	**Resistor R3 (Ohm)**	**Capacitor C7 (mfd)**
300	33.3	330k	0.1
600	16.6	160k	0.1
1200	8.33	820k	0.01
2400	4.16	430k	0.01
4800	2.08	200k	0.01
9600	1.04	100k	0.01
19200	0.520	56k	0.01
38400	0.260	27k	0.01
57600	0.176	16k	0.01
115200	0.0868	8.2k	0.01

Figure 1. PC Board Layout - Top

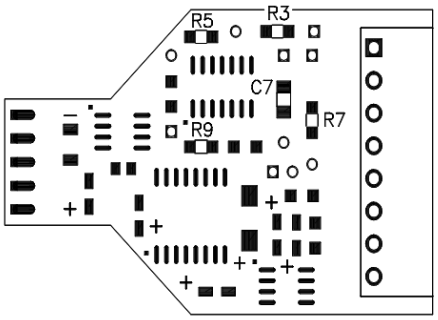
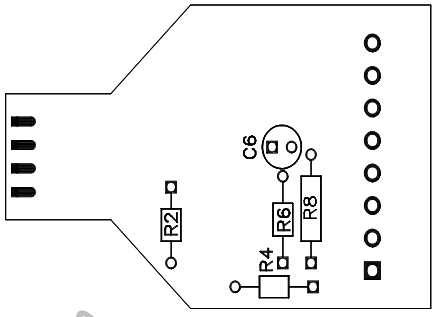


Figure 1. PC Board Layout - Bottom



Schematic