

# BB-232LPTTL

## BB-232LPTTL33

### Port-powered TTL /RS-232 4-channel Converters



#### Features

- Converts 2 channels in each direction from TTL ("Transistor Transistor Logic") to RS-232
- Baud rates up to 115.2 kbps
- Powered from RS-232 data/handshake lines - no power supply required
- 5 and 3.3V TTL options

#### Introduction

These four channel TTL/CMOS converters make easy connections between TTL equipment and RS-232 ports and operate at data rates up to 115.2 kbps. Use these converters with almost any micro-controller or programmable logic controller (PLC) that supports TTL.

Model BB-232LPTTL converts RS-232 to 5 Vdc TTL/CMOS compatible levels.

Model BB-232LPTTL33 converts RS-232 to 3.3 Vdc TTL/CMOS compatible levels.

The models convert two channels (TX and RX) in each direction (bi-directional) from RS-232 to TTL/CMOS signals. And two channels are used to convert from TTL/CMOS to RS-232 signals.

The converters support TD, RD, RTS, and CTS. The RS-232 side is a DB9S female connector; The TTL/CMOS side is a DB9P male connector.

Both models are powered from the RS-232 data and handshake lines by signals on pins 7(RTS), 4 (DTR), and 3(TD). These lines can be either high or low, but must be present to power the converter. Pin 5 is Signal Ground for both connectors.

#### NOTE:

It is important that TTL/CMOS logic, and only TTL/CMOS logic (0 to +5 Vdc for the BB-232LPTTL, and 0 to +3.3 Vdc for the BB-232LPTTL33) is used for the TTL/CMOS side of the converter. The maximum sinking current for one TTL/CMOS output is 3.2 mA. The maximum source current for one TTL/CMOS is 1 mA. Signal levels are inverted by the converters. Please refer to the table.

#### Ordering Information

Model No.	RS-232 Connector	TTL Connector	TTL Vdc
BB-232LPTTL	DB9 Female	DB9 Male	5 V
BB-232LPTTL33	DB9 Female	DB9 Male	3.3 V

#### Accessories – Sold Separately

BB-9PAMF6 – Serial cable, DB9 male to DB9 female, 1.8 m (6 ft)

BB-MMNM9 – Null modem adapter, DB9 male / DB9 male



BB-232LPTTL33

## BB-232LPTTL BB-232LPTTL33

### Specifications

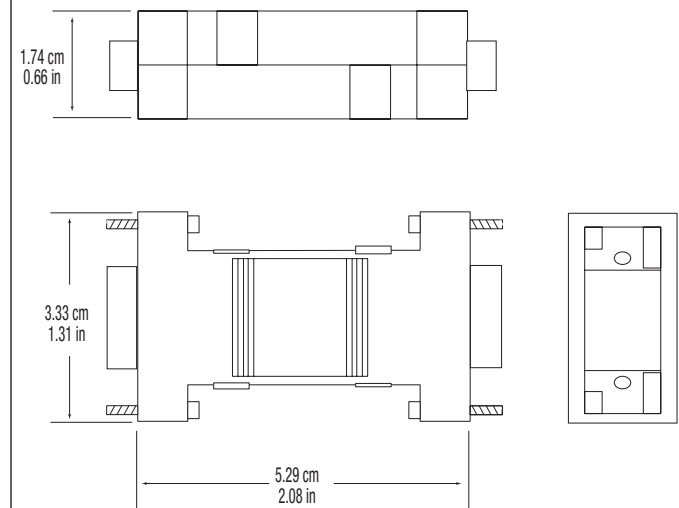
Serial / TTL Technology	
RS-232 Connector	DB9 female
RS-232 Signals	TD, RD, RTS, CTS
TTL Connector	DB9 male
TTL Signals	2 Input/2 Output channels, GND
TTL Logic	CMOS
Vdc Level	BB-232LPTTL: 5V BB-232LPTTL33: 3.3V
Data Rate	115.2 kbps, maximum
Power	
Source	Port-powered from RS-232 data/handshake lines
Power Consumption	<40 mA
Mechanical	
Dimensions	5.29 x 3.33 x 1.74 cm (2.08 x 1.31 x 0.66 in)
Enclosure	Plastic, In-line
Weight	36.2 g (0.08 lb)
Meantime Between Failures (MTBF)	
MTBF	BB-232LPTTL: 5833353 BB-232LPTTL-33: 1674682
Calculation Method	Parts Count Reliability Prediction

Pin-outs		
RS-232 DB9S Female	Function	TTL/CMOS DB9P Male
3 (Input)	TD	3 (Output)
2 (Output)	RD	2 (Input)
7 (Input)	RTS	7 (Output)
8 (Output)	CTS	8 (Input)
5 (Signal Gnd)	GND	5 (Signal Ground)

Polarity		
5 Vdc TTL/CMOS Input	3.3 Vdc TTL/CMOS Input	RS-232 Output
Low (<0.8 V)	Low (<0.8 V)	+5.0, minimum +9.0, typical
High (>2.0 V)	High (>2.0 V)	-5.0, minimum +9.0, typical
5 Vdc TTL/CMOS Output	3.3 Vdc TTL/CMOS Output	RS-232 Input
+3.45, minimum +4.6, typical	+2.4, minimum +3.0, typical	Low (0.2 V)
+0.55, maximum +0.1, typical	+0.55, maximum +0.1, typical	High (>2.4 V)

Environmental	
Operating Temperature	0 to +70 °C (+32 to +158 °F)
Storage Temperature	-40 to +85 °C (-40 to +185 °F)
Operating Humidity	0 to 95%, non-condensing
Regulatory – Approvals / Standards / Directives	
FCC Part 15, Class B Emissions, CE, UKCA	
CE - Directives	2014/30/EU – Electromagnetic Compatibility 2011/65/EU – amended by (EU) 2015/863 Reduction of Hazardous Substances (RoHS) 2012/19/EU – Waste Electrical and Electronic Equipment (WEEE)
CE - Standards	EN 55032 (Class B) – Electromagnetic Compatibility of Multimedia Equipment - Emission Requirements EN 55024 - Information Technology Equipment – Immunity Characteristics – Limits and Methods of Measurement

### Dimensions – BB-232LPTTL, BB-232LPTTL33



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