



## Model 422LP9R

### Port-Powered RS-232 to RS-422 Converter



The 422LP9R is a port-powered two-channel RS-232 to RS-422 converter. It converts TD and RD RS-232 lines to balanced RS-422 signals. The unit is powered from the RS-232 handshake lines DTR and RTS. One of these handshake lines must be asserted (high) in order to power the unit (See Table 1). The RS-422 driver is enabled when RTS is asserted. Therefore, RTS must be asserted in order to transmit data. The RS-422 receiver is always enabled. If DTR is always asserted and the RTS is used to control the driver, the 422LP9R can be used as a RS-232 to RS-485 4-wire converter. To insure reception, it is recommended that DTR is asserted.

In order to maximize the amount of power available to the RS-422 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 insure that any software being used doesn't 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.

Table 1

RTS State	DTR State	Functions Possible (when port powering unit)
Low	Low	none
Low	High	Receive
High	Low	Transmit, Receive
High	High	Transmit, Receive

\* NOTE: Low = disasserted and High = asserted

### Connections

The 422LP9R can be connected in three different type of systems: RS-422 (Figure 1), four-wire RS-485 (Figure 1), and two-wire RS-485 (Figure 2). Regardless of the system, the 422LP9R must be connected with the proper polarity. With no data is 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-422 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 piece of 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.

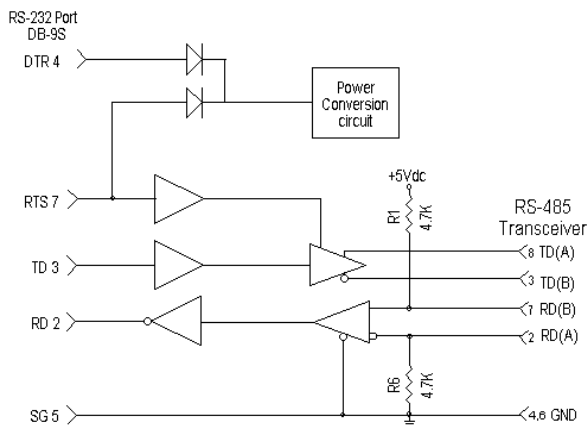


Signal	DB-9S Pin #
Transmit Data A (-)	8
Transmit Data B (+)	3
Receive Data A (-)	2
Receive Data B (+)	7
Signal Ground	4, 6

### Biasing Resistors

The biasing resistors for the RS-422/RS-485 receiver are 4.7K Ohm resistors. These resistors are labeled R1 and R6 (See Figure 3). Refer to B&B Electronics RS-422/485 Application Note for further information on biasing.

Figure 3



### Specifications

Data Rate: 115.2K Baud max.

Power: Port-Powered from RTS and DTR.

Note: If external power is required, apply power to DTR (4) and SG (5). Source must supply greater than 6VDC and current limited to 40mA

**NOTE:** When using an external supply, the supply should be connected only to specifically labeled power inputs (power jack, terminal block, etc.). Connecting an external power supply to the handshake lines may damage the unit. Contact technical support for more information on connecting an external power supply to the handshake lines.

#### 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: 422LP9R  
 Description: 9-Pin Port-Powered RS-422 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)

Robert M. Paratore, Director of Engineering