# 8 Troubleshooting

#### **Timing Issues?**

#### (Usually applies when using RS-485 2-wire)

Model BB-485LDRC9 uses RC time constant. This means that, when you are setting the DIP switches for the "baud rate", you are setting a turnaround time, not a "baud rate".

Sometimes, the turnaround time on an RS-485 2-wire device does not match the turnaround time that is set on the BB-485LDRC9 converter, even though they are both set for the same baud rate. Refer to the chart in Step 3 to match the turnaround time of your RS-485 2-wire device. If you do not know the turnaround time of your device, you can do the following:

- Keep your device at its current baud rate, but change the "baud rate" on the BB-485LDRC9. Set it for one or two steps above or below the baud rate of your device until you get communication.
- Alternatively, you can use Model BB-485DRCi-PH instead of the BB-485LDRC9. Model 485DRCi-PH uses bit-wise control so you do not have to worry about matching the timing of your device.

Note: Do Not use the shield drain wire as the Signal Ground between RS-422/485 devices. RS-422/485 systems may communicate successfully without the Signal Ground when nodes are located close together and circuit grounds for all nodes are at the same potential – e.g., a controlled lab environment. However, this practice is not recommended. If a Signal Ground is not used when nodes are separated by distance, and there is the possibility of lightning and/or other electrical noise, the communications, or even damage the transceivers in the system nodes.

## **9** UL Installation Information

#### **UL Installation Information**

Underwriters Laboratories Conditions of Acceptability – When installed in the end-use equipment, consideration should be given to the following:

- 1. The wiring terminals are suitable for factory wiring only.
- 2. This device is to be mounted in a suitable enclosure in the endproduct.
- 3. This device is suitable for operation at a maximum surrounding air temperature as described in the documentation.
- 4. These devices are intended for use in a Pollution Degree 2 environment.
- Input Voltage: 10 30 VDC
- Input Power: 0.5 Watts
- Wire Range: 12 24 AWG
- Tightening Torque: 4 kgf-cm
- Temperature Rating of field installed conductors is 105 °C minimum, sized for 60 °C ampacity.
- Use copper wire only.
- Maximum surrounding ambient air temperature 80 °C.



## www.advantech.com

Recommended Accessories

**Serial Cable** 

RS-232 DB9 Male to DB9 Female

**Industrial Power Supply** 

100-240V 40W 24V, DIN Rail





## ULI-224TC

## Model BB-485LDRC9 RS-422/485 Converter, Industrial

Before you begin, be sure you have the following:

- + Model BB-485LDRC9 Serial Converter
- + Required, but not included:
  - Power Supply
  - RS-232 Cable
  - RS-422/485 Cable



## **Product Overview**



## **Connect RS-232 Device**



- · Use a straight-through DB9 to DB9 if you are connecting to a computer (DTE).
- · Use a cross-over (null modem) DB9 to DB9 if you are not connecting to a computer. (DCE)
  - Additional technical notes on RS-232 DTE & DCE connections are available on the website.

#### Set RS-422/485 Converter Side 2



	SW-1	SW-2	SW-3	SW-4
RS-485 2-Wire Half-Duplex	ON	ON	ON	ON
RS-485 4-Wire Full-Duplex	ON	OFF	OFF	OFF
RS-422 Full-Duplex	OFF	OFF	OFF	OFF

Additional RS-422/485 technical notes are available on the website.

## Set the Dipswitch Settings for Baud Rate 3

	SW-6	SW-7	SW-8	Timeout (MS)
2400	OFF	OFF	ON	4.16
4800	OFF	ON	OFF	2.08
9600	ON	OFF	OFF	1.04
19.2K	ON	ON	ON	0.580

## **Termination Switch:** Set to OFF (recommended)



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Converter uses 0.5 W

#### 6 **Loopback Test**

· Configure for RS-485 4-wire, 9600 baud.

- Jumper terminals H to L, and G to K.
- · Connect a PC to RS-232 port (see Step 1).
- · Using HyperTerminal or similar program, connect to the appropriate COM port (remember to set the baud rate at 9600). Turn off HyperTerminal local echo.
- Start typing. If you can see the data you are typing, you have a good loopback. If you cannot, contact Advantech B+B Technical Support.
- · LED Indicators: Power is ON when power is applied. TD flashes when RS-422/485 data is sent. RD flashes when RS-422/485 data is received.

#### Set DIP Switches to: ON OFF 2 OFF 3 OFF 4 OFF 5

OFF 7

OFF 8

RS-485

4-Wire

ON

6

G

## **LED** Indicators

Transmit Data (Red)	Flashing - RS-422/485 data is transmitted.
Receive Data (Red)	Flashing - RS-422/485 data is received.
Power (Red)	On - when power applied.

+-With no devices attached, LEDs should be Off; Power On.

## TIPS:

ON

OFF

If LEDs are On before devices are attached, it may indicate that the Termination Resistor is On.

Using termination with power ON, but no devices connected, may cause the Receive LED to turn ON solid. The loading from the termination may cause the Receiver Bias to go into an indeterminate state.