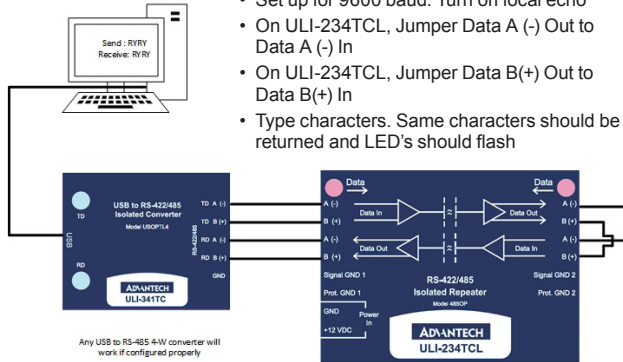


## 4 Loopback Test

- Use terminal emulation software such as Hyper Terminal
- Set up for 9600 baud. Turn off local echo
- On ULI-234TCL, Jumper Data A (-) Out to Data A (-) In
- On ULI-234TCL, Jumper Data B(+) Out to Data B(+) In
- Type characters. Same characters should be returned and LED's should flash



## 5 Troubleshooting

### Timing Issues?

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

Model BB-485OP 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-485OP 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-485OP. Set it for one or two steps above or below the baud rate of your device until you get communication.**

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 common mode voltage can rise to levels that could compromise communications, or even damage the transceivers in the system nodes.

## 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 end-product.
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 – 14 VDC
  - Input Power: 1.0 Watt
  - Wire Range: 22 – 14 AWG
  - Tightening Torque: 0.5 Nm
  - Temperature rating of field installed conductors is 105 °C minimum, sized for 60 °C ampacity.
  - Use copper wire only maximum surrounding ambient air temperature 55 °C.

## + QUICK START GUIDE



### ULI-234TCL

Model: BB-485OP  
RS-422/485 Optically Isolated Repeater

Before you begin, be sure you have the following:

- + BB-485OP Repeater
- + 12 VDC Wall Power Supply with Stripped & Tinned Leads

**ADVANTECH**

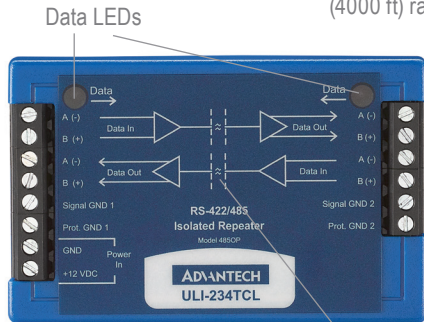
[www.advantech.com](http://www.advantech.com)

**ADVANTECH**

# Product Overview

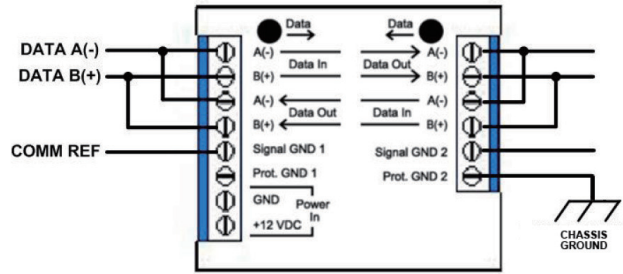
2000 V, 2-way  
Optical Isolation

Gain an extra 1219 m  
(4000 ft) range

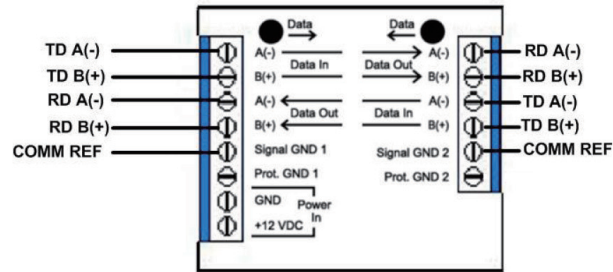


Terminal blocks for  
RS-422 or  
2 and 4-wire RS-485

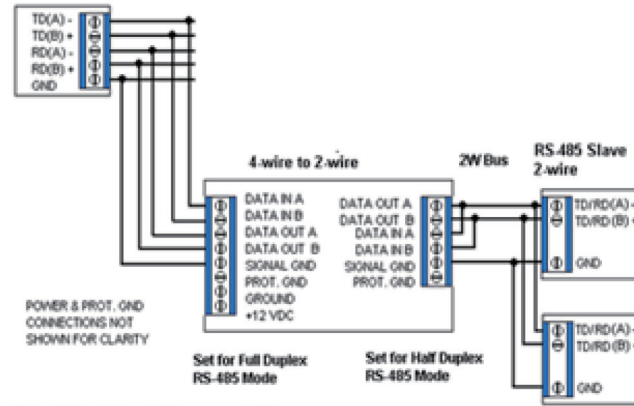
Convenient wiring  
schematic



RS-485 2-Wire



RS-422/485 4-Wire



RS-485 Master 4-Wire

## 2 | Set the Jumpers

Set the jumpers for 2 or 4-wire and for baud rate. Default on both sides is 2-wire, 9600. If you want to set the unit for 4-wire or change the baud rate, you will need a screwdriver. Remove the 4 screws and open the unit. Set jumpers as shown below.



BAUD RATE	TIME (ms)	R26 & R27 (KΩ)	C15 & C16 (mfd)	JP2 & JP4
2400	4.16	STD (430)	STD (0.01)	A
4800	2.08	STD (200)	STD (0.01)	B
9600	1.04	STD (100)	STD (0.01)	C
19.2 K	0.52	STD (56)	STD (0.01)	D
38.4 K	0.26	STD (27)	STD (0.01)	E

If you set the unit for 38.4, it will usually work at higher baud rates. If you need a specific turnaround time, contact Advantech.

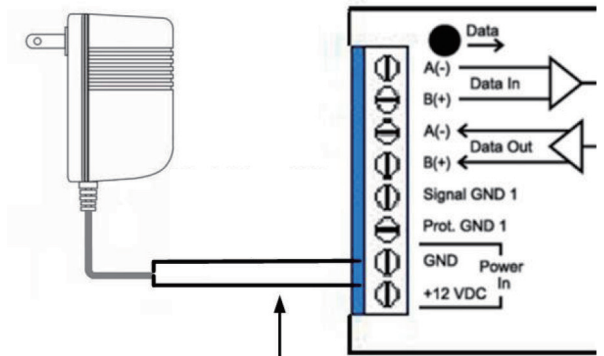
## 1 | Wire the BB-485OP

LABEL	SIDE	SIGNAL
A(-) Data In	Left	TDA(-) / Data A(-)
B(+ ) Data In	Left	TDB(+ ) / Data B(+)
A(-) Data Out	Left	RDA(-) / Data A(-)
B(+ ) Data Out	Left	RDB(+ ) / Data B(+)
Signal GND 1	Left	Signal Ground
Prot. GND 1	Left	Protected Ground
GND	Left	Power Ground
A(-) Data Out	Right	RDA(-) / Data A(-)
B(+ ) Data Out	Right	RDB(+ ) / Data B(+)
A(-) Data In	Right	TDA(-) / Data A(-)
B(+ ) Data In	Right	TDB(+ ) / Data B(+)
Signal GND 2	Right	Signal Ground
Prot. GND 2	Right	Protected Ground

## 3 | Power the Unit

Included Power Supply is rated for 12 VDC@500 mA max

Power Requirements:  
10 to 14 VDC, 1 Watt



PSU polarity information is contained inside the PSU Box