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PRODUCT INFORMATION

USOPTL4DR & USOPTL4DR-2
Isolated USB to RS-422/485 Converter

✓ **3000 V Optical Isolation**

✓ **15 KV ESD Protection**

✓ **USB Bus Powered**

✓ **RS-422/485 Data Rates up to 921.6 Kbps**

✓ **High Retention USB Connector**

Universal Serial Bus (USB) has become the connectivity workhorse of today's PCs. However, many commercial and industrial devices still use the RS-422/485 interface. To connect these devices to modern PCs, you need a simple and reliable conversion solution. The USOPTL4DR-x offers this solution. Specifically designed for industrial applications, they offer 3000V optical isolation with 15 KV ESD Protection. The slim-line DIN Rail mountable enclosure has a small footprint and since it draws power from your computer's USB bus, an additional power supply is not required. Simply plug the converter into an available USB port on your computer or USB hub and install the drivers supplied on CD ROM. The device will show up as an additional COM port in the Windows Device Manager which is fully compatible with your Windows applications. One and two port versions are available. The single port version is also available with a "locked serial number." This feature allows you to interface your PC with multiple converters without having to load a driver for each one, perfect for field service applications. A one meter USB cable is included. Remember, when it comes to USB to Serial Conversion, B&B Electronics Ulinx™ brand is your number one choice.

Specifications

Serial Technology

RS-485 2-Wire	Data A(-), Data B(+), Ground
RS-485 4-Wire	TDA(-), TDB(+), RDA(-), RDB(+), Ground
Connector	Removable Terminal Block, 12 to 28 AWG
Data Rate	Up to 921.6 Kbps
Isolation	3000 V Optical Isolation
Surge Protection	15 KV ESD

USB Technology

Connector	USB Type B Female, high retention Withdrawal > 15 N
Standard	2.0 (Backward Compatible)
Data Rate	12 Mbps

Power

Source	USB Port
Input Voltage	5 VDC
Consumption	~2.5 W (High Power Device, draws >500 mA

Software

Driver CD	Windows 98, ME, 2000, XP, Vista

Mechanical

Dimensions	3.8 x 4.7 x 1.2 in (9.7 x 11.9 x 3.1 cm)
Enclosure	DIN Rail Mountable, Plastic
Weight	0.49 lbs (222.3 g) with USB Cable

Environmental

Operating Temp	32 to 158°F (0 to70 °C)
Storage Temp	-40 to 185 °F (-40 to 85 °C)
Op Humidity	0 to 95 % (Non-condensing)
MTBF USOPTL4DR	184556 hours
MTBF USOPTL4DR-2	79551 hours
MTBF Method	Parts Count Reliability Prediction

Regulatory

Approvals	FCC, CE

Ordering Information

Model Number	Description
USOPTL4DR	Isolated USB to RS-422/485 Converter (1Port)
USOPTL4DR-2	Isolated USB to RS-4422/485 Converter (2 Port)
USOPTL4DR-LS	Isolated USB to RS-422/485 Converter (1 Port) (Locked Serial Number)

Accessories	
USBAMBM-3F	3 ft (1 M) USB Cable (One Included)
7466	Replacement Standard Terminal Block Unit comes with one or two installed depending on the model number.
DRPM25	Panel Mount Adapter
TB5P508SR-2PK	Optional terminal block with strain relief 2 pack

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Package Contents

- USOPTL4DR-xx Isolated USB to RS-422/485 Converter
- 3ft (1m) USB Cable
- Datasheet
- CD with Drivers for Windows 98, ME, 2000, XP and Vista

If any item is missing or damaged, contact B&B Electronics for a replacement.

Driver Installation
Screen shots are from Windows XP

THE FOUND NEW HARDWARE WIZARD WILL RUN MULTIPLE TIMES. ONCE TO INSTALL THE USB DEVICE AND ONCE FOR EACH SERIAL COM PORT

- Connect the converter to your PCs USB port with the supplied cable.
- The Found New Hardware wizard will start.
- When prompted to connect to Windows Update to search for the driver, select "No, not at this time" and click on Next >

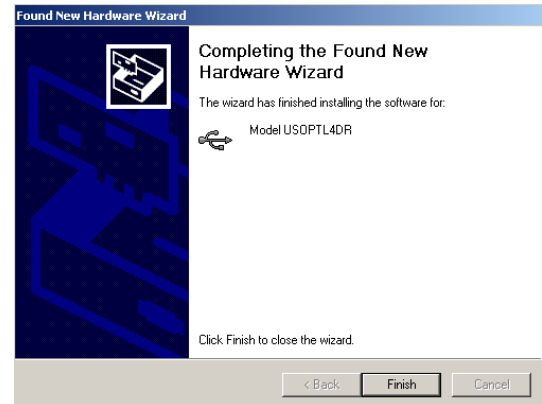- Select Install the software automatically and click Next>
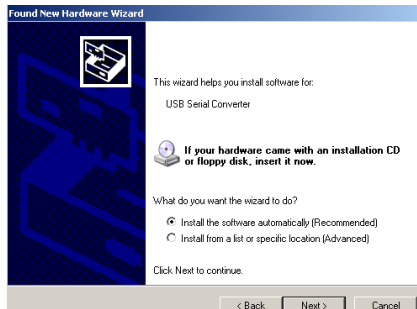
- A warning concerning Windows logo testing will be displayed. Click on Continue Anyway >
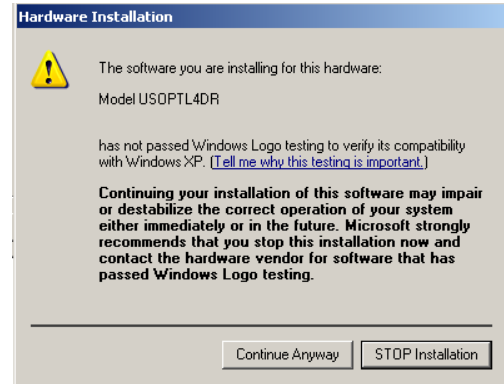
- The Completing the Found New Hardware Wizard will be displayed. Click on Finish >
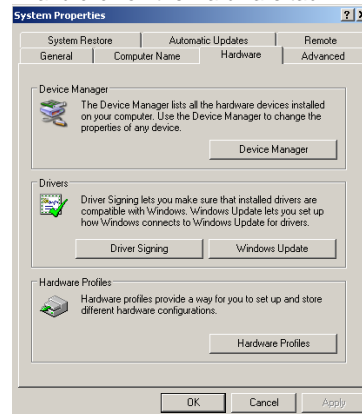
THE FOUND NEW HARDWARE WIZARD WILL START AGAIN TO INSTALL THE SERIAL COMP PORT(S)

Check Drivers
Screen shots are from Windows XP

- Right click on My Computer, select properties and click on the Hardware tab.

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Check Drivers
Continued

- Expand the USB Controllers tree. The USB Serial Converter will be listed.
- Expand the Ports (COM & LPT) tree. The USB serial port will be listed as the next available COM Port.

Installation Notes

- Model USOPTL4DR is offered as serialized (each unit has a unique electronic serial number) or with locked serial numbers (each unit has the same electronic serial number). LS models are great for applications, such as field service, in which a pool of converters are shared.
- SEARIALIZED – Select a serialized model if the USB to serial Converter is to be assigned to a unique COM port. If you plug in a converter with a different serial number, the driver installation procedure will be initiated again. This will also allocate another COM port and USB Controller in Windows. This will happen even if the first converter is not plugged in.
- LOCKED SERIAL NUMBER – Select a locked serial number model (-LS suffix) if you desire different USB to serial converters of the same type to share a single COM port (one at a time). With the locked serial number models, you only need to install the driver once, provided two converters are not plugged in at the same time. The locked serial number products are intended for uses, such as field service, in which PC's and converters are mixed and matched.
- Instructions for uninstalling the driver are located on the CD ROM.
- Model USOPTL4DR-2 (two port USB to Serial converter) is designed as a locked serial number device.

Terminal Block

The terminal block layout is top to bottom (as viewed from a DIN rail installation). The signal names on the front label are only visible when the terminal block is removed. The USOPTL4DR-2 has two terminal blocks. In both configurations, the TB layout is the same.

| TB Position	Label	Function
A	T-	TDA(-)
B	T+	TDB(+)
C	R-	RDA(-)
D	R+	RDB(+)
E	G	Ground

DIN Rail Mounting
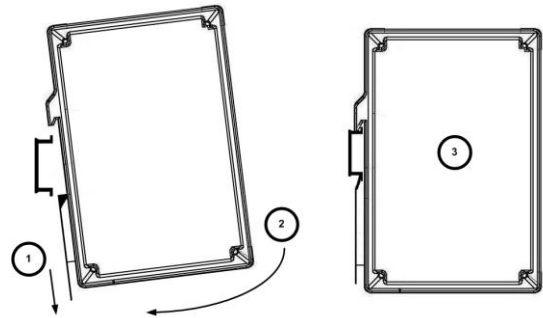
1. Slide and hold the DIN clip toward the bottom of the converter. Angle the top portion of the DIN mount over the top of DIN Rail.
2. Move the converter so that it is parallel with the DIN Rail.
3. Let go of the DIN Clip. The spring should return it to its original position.

DIP Switch (1 for each serial port)

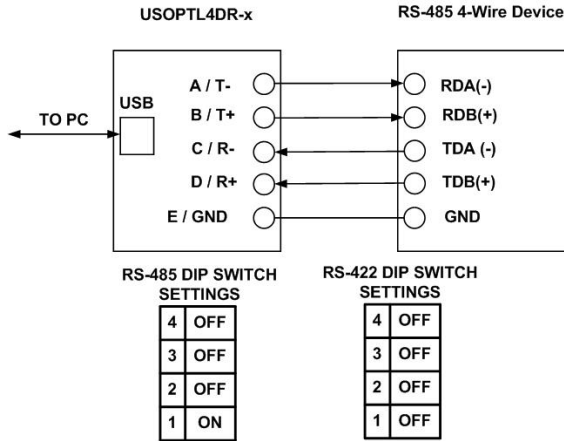| Switch	ON (Right/Down)	OFF (Left / Up)
1	RS-485	RS-422
2	ECHO OFF	ECHO ON
3	2-WIRE	4-WIRE
4	2-WIRE	4-WIRE

RS-485 2-Wire

1. Set the DIP Switch(s) as shown in the diagram.
2. In 2-wire mode, T- is tied to R- and T+ is tied to R+ internally.
3. Bias is provided by 4.7KΩ pull-up / pull-down resistors.
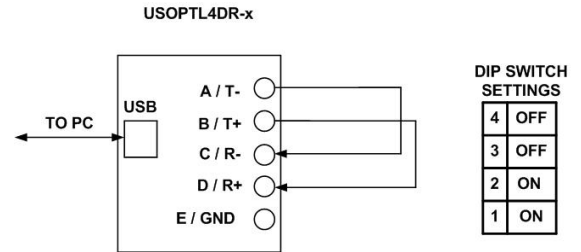
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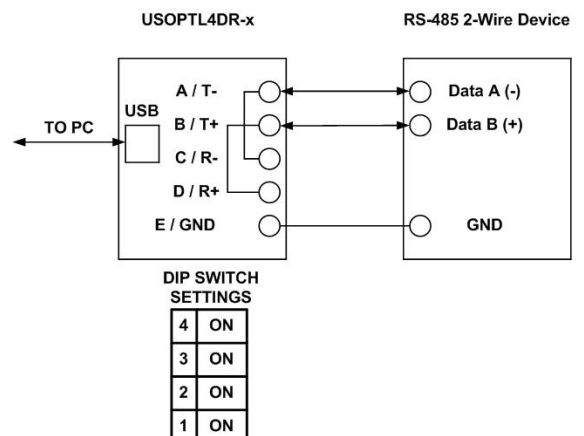
RS-422/485 4-Wire

1. Set the DIP Switch(s) as shown in the diagram.
2. Bias is provided by 4.7KΩ pull-up / pull-down resistors on the R- and R+ lines.

USOPTL4DR-x   **RS-485 4-Wire Device**

TO PC — USB

USOPTL4DR-x	RS-485 4-Wire Device
A / T-	RDA(-)
B / T+	RDB(+)
C / R-	TDA (-)
D / R+	TDB(+)
E / GND	GND

RS-485 DIP SWITCH SETTINGS

4	OFF
3	OFF
2	OFF
1	ON

RS-422 DIP SWITCH SETTINGS

4	OFF
3	OFF
2	OFF
1	OFF

Loop Back

1. Configure the converter for RS-485 4-Wire.
2. Cross connect the transmit and receive lines.
3. Connect a PC to the USB Port.
4. Using Hyper Terminal or similar program, connect to the appropriate COM port. Ensure Hyper Terminal local echo is OFF.
5. Transmit data. If the same character string is returned, the test is good.

USOPTL4DR-x

TO PC — USB

USOPTL4DR-x
A / T-
B / T+
C / R-
D / R+
E / GND

DIP SWITCH SETTINGS

4	OFF
3	OFF
2	ON
1	ON

Mechanical Diagram

1.164

1.3976 Ⓐ

.100

4.700

3.160

3.814

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