Industrial USB ⇔ RS-232/485/422

Opto-isolated Converter

(Part Number: USB-Serial-3)

Http://www.CommFront.com

■ **INTRODUCTION**

The USB-Serial-3 is a rugged, industrial-grade, optically-isolated USB to RS-232/485/422 converter, which can be used to convert any standard USB port into a three-wire RS-232 port, a two-wire RS485 port, or a four-wire RS422/RS485 port and vice versa. This product features opto-isolation circuitry, which effectively protects your USB devices from transient surges, noise problems, ground loops, remote lightning and spikes. The unit is powered from the USB port and it features data format auto-sensing and self-adjusting; therefore, no DIP switch or jumpers are required. The unit can be used to communicate with one loop of up to 128 units of RS485/RS422 devices. When working with RS-485 signals, the CommFront's auto-turnaround feature eliminates the need for flow control. The unit uses the latest chipset from Silicon Labs and is fully compatible with Windows 10/8/7/Vista/XP/Server2003/2000 (32-bit), Windows 10/8/7/Vista (64-bit), Win CE (5.0, 6.0), Mac OSX, and Linux (4.x.x, 3.x.x, 2.6.x).
Note: the latest drivers (chipset: Silicon Labs' CP210x) are available at
https://www.silabs.com/products/development-tools/software/usb-to-uart-bridge-vcp-drivers.

■ **FEATURES**

- Industrial grade enclosed in a rugged, rustless ABS housing.
- Direct DIN-Rail or wall/panel mounting without using any unsecured brackets or adapters.
- Adds one RS-232, RS-485 or RS-422 port to your USB port.
- Optical isolation effectively protects USB devices from ground loops, transient surges, remote lightning and spikes. It also eliminates ground loop and noise problems.
- Communicate with one loop of up to 128 units of RS485/RS422 devices.
- Supports high-speed data rates: 300 to 115,200 bps.
- Operating temperature: -40ºF to 185ºF (-40ºC to 85ºC).
- Built-in 600W surge protection, 15kV static protection and circuit protection.
- Built-in 120Ω end-of-line terminators for system reliability and easy installation.
- USB port powered, no external power is required.
- RS485/RS422 auto-detection, no jumper setting is required.
- Plug and play; Data direction auto-turnaround, no flow control is required.
- Surface Mount Technology manufactured to RoHS and ISO-9001 standards.
- Safety: Strictly certified by TUV (Cert No. SG-CE-100004; SG-FCC-100001).
- 5-year manufacturer's warranty.

■ **SPECIFICATIONS**

Compatibility:	USB 2.0, EIA/TIA RS-232/485/422 standards
Power Source:	From USB port
Current Consumption:	Less than 200mA
Baud Rates:	300 to 115,200 bps (auto-sensing and self-adjusting)
Optical Isolation:	2500Vrms (AC, 1 min)
Distance:	USB: 10ft (3m); RS232: 16ft (5m); RS485/422: Depending on the power from USB port, will transmit up to 4000ft (1.2km) at 19,200 bps
Connectors:	USB: Type B male; RS-232/485/422: 10-way terminal block
Accessories:	1x 5ft (1.6m) USB extension cord (Type B female to Type A female)
Maximum Number of Drops:	RS-232: 1; RS-485/422: 128
Surge Protection:	600W
Static Protection (ESD):	Up to 15kV
End-of-line Terminators:	120Ω (Built-in)
Dimensions (H x W x D):	4.5 x 3.6 x 0.9 in (115 x 73 x 33 mm)
Weight:	4.2 oz (120 g) (with terminal block)
Operating Temperature:	-40ºF to 185ºF (-40ºC to 85ºC)
Operating Humidity:	Up to 90% RH (no condensation)

RS-232/485/422 Side (Terminal Block):

Pin:	TX+/A+	TX-/B-	RX+	RX-	J1	J2	J3	J4	GND	TX	RX
RS-232:	-	-	-	-	-		-		GND	TX	RX
RS-485:	485+	485-	-	-			Tie to ON 120Ω		GND	-	-
RS-422:	TX+	TX-	RX+	RX-	Tie to ON 120Ω		-		GND	-	-

■ CONNECTIONS
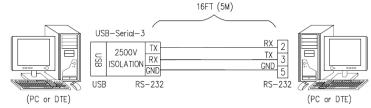
FIGURE 1: USB RS-232 CONNECTION (RS-232)
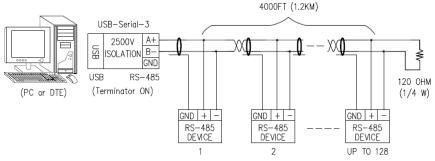
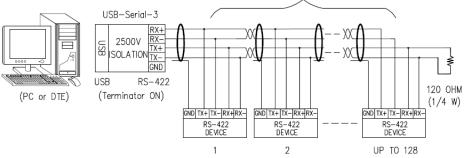FIGURE 2: MASTER-SLAVE MULTI-DROP CONNECTIONS (RS-485)

FIGURE 3: MASTER-SLAVE MULTI-DROP CONNECTIONS (RS-422)

■ LED INDICATIONS

PWR Indicator
Steady: Power on.
Off: Power off.

DOWN Indicator
Flashing: Receiving data from USB port.

UP Indicator
Flashing: Receiving data from RS-232/485/422 port.

FIGURE 4: LED INDICATIONS

■ INSTALLATIONS

①Pull ②Push

FIGURE 5: DIN-RAIL MOUNTING

1.7in(43mm)
2.76in(70mm)
Wall / Panel surface
4x Ø0.16in(4mm)
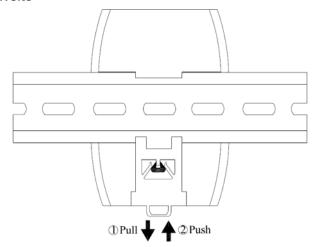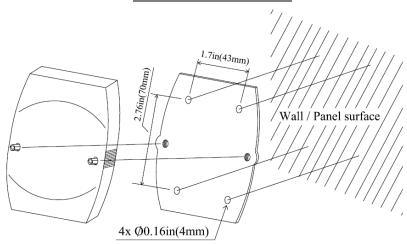
FIGURE 6: WALL/PANEL MOUNTING

■ INSTALLATION NOTES
- Install drivers from the CD provided with the product.
- The 120Ω end-of-line terminator adds heavy DC loading to a system; connect it only when the RS-422/485's distance is over 660ft (200m).

■ DRIVER INSTALLATIONS
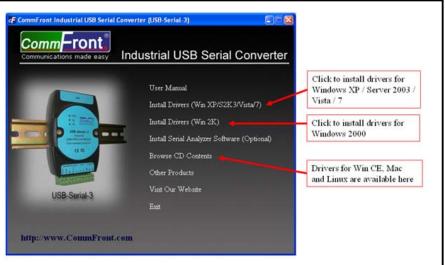- Install drivers from the CD provided with the product (as shown below):

Figure 7

- Drivers are available in the "Drivers\" folder on the CD provided with the product.
- The latest drivers (chipset: Silicon Labs' CP210x) are available at
https://www.silabs.com/products/development-tools/software/usb-to-uart-bridge-vcp-drivers

■ **TROUBLESHOOTING**
- Make sure that the USB-Serial-3 converter is connected to your USB port, and the drivers are installed correctly: the "CP210x" shows up in the device manager (Figure 8).

Figure 8

- Perform a loopback test by using CommFront's 232Analyzer software: Connect a USB-Serial-3 converter to your USB port, tie pin TX and RX, and then send a command from the 232Analyzer software. You should receive an echo of the command sent. By performing a simple loopback test like this, you can test both the transmitter and receiver of the converter. This is very helpful when you are in doubt about the performance of your converter.