RS-485 CONVERTER

101-0019

USB to 2-Wire RS-485 Converter
Galvanically Isolated,
DIN Rail Mounted

Installation Operation & Specifications Manual

General Description

The 101-0019 USB to RS-485 converter provides a simple, interface between a PC or laptop computer with a USB port and 2-wire RS-485 devices. Virtual serial port Universal Serial Bus (USB) drivers make this converter compatible with most software developed for RS-232 communications serial port interfaces because it appears as an RS-232 port to your software. Switching between receive and transmit is automatically controlled, so RTS (Request To Send) is not needed - maximizing software compatibility. Power for the converter is taken from the USB port eliminating the need for an external converter power supply. It includes high ESD protection (±15kV HBM) on transceiver, high common mode transient immunity (30kV/μs), plus 2500V$_{RMS}$ transformer isolation between the line transceiver and USB logic. Ideal for systems where the ground loop may be broken allowing for large common mode voltage variation.

DIN rail mounting allows the converter to be quickly installed in your equipment rack, along with other DIN mounted equipment.

Microflex

CE FC

Driver Pre-Installation

The USB drivers should be installed before the RS-485 converter is connected to the PC's USB port. After the drivers are installed, Windows will automatically detect the converter when it is connected to a USB port and complete the setup.

To pre-install the drivers, run **Setup.exe** from the included CD and follow the on-screen prompts. The CD will auto-run this file if the Windows Autorun feature is enabled for your CD drive. **Setup.exe** is a utility that will determine your operating system and run the correct installer. Click the **Install RS-485 Converter USB drivers...** button to pre-install the drivers. The driver installer will guide you through the setup process.

Important!

Install USB driver before connecting to the USB port.
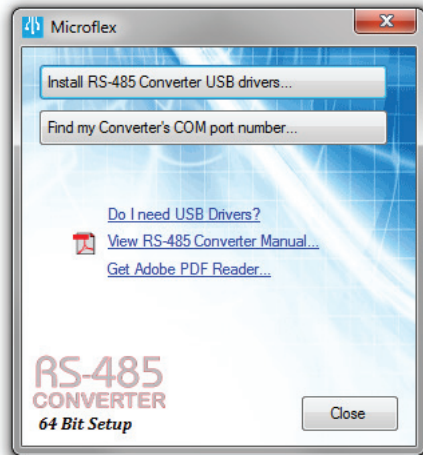
RS-485 Convert Setup Utility

Installers can also be run manually from the CD using **\x86\DPInstx86.exe** for 32 bit operating systems or **x\64\DPInstx64.exe** for 64 bit operating systems.

Driver - Manually Installed

To manually install the driver...
1. Connect the Converter to the USB port.
2. Open the Windows Device Manager.
3. The new device wizard will have added the converter under **Ports (COM & LPT)** and will appear as **USB RS485 Serial Converter (COMx)**. Right click the device and select **Update Driver Software...**
4. Choose to Browse for the driver software and browse to the CD or the location of the **Mflex485.inf** file.
5. Follow the wizard prompts to complete the driver setup.

Uninstalling the USB Driver

Use the Windows Device Manager to uninstall the driver from your system. With the RS-485 Converter connected to your USB port, locate the RS-485 converter in the hardware tree. For details on how to do this refer to the section on *Changing the COM Port Number* in this manual. Right click on **USB RS485 Serial Converter** and select **Uninstall** from the pop-up menu. When the process has finished, unplug the converter from the USB port.

Finding the Assigned COM Port Number

When Windows installed the serial port emulator driver the next available COM port number was assigned to the converter. The software you use with the converter must be set to use the same COM port number. To find the number assigned to your converter run the setup utility from the CD and click **Find my Converter's COM port number...**

The assigned COM port number can also be found using the Windows Device Manager. You may need to expand the Device Manager tree under **Ports (COM and LPT)** to see the converter.
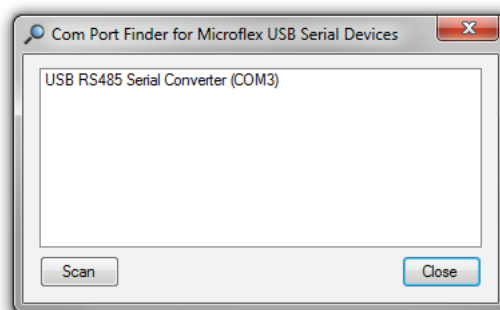
COM Port number finder. This converter is assigned to COM 3.

Changing the COM Port Number

The assigned serial COM port number can be changed to any available COM port by using the Device Manager. Open the Device Manager and select **View > Devices by Type**. Expand **Ports (COM & LPT)** in the list to see which port the converter is assigned to. In the example shown below, the converter is assigned to COM3.
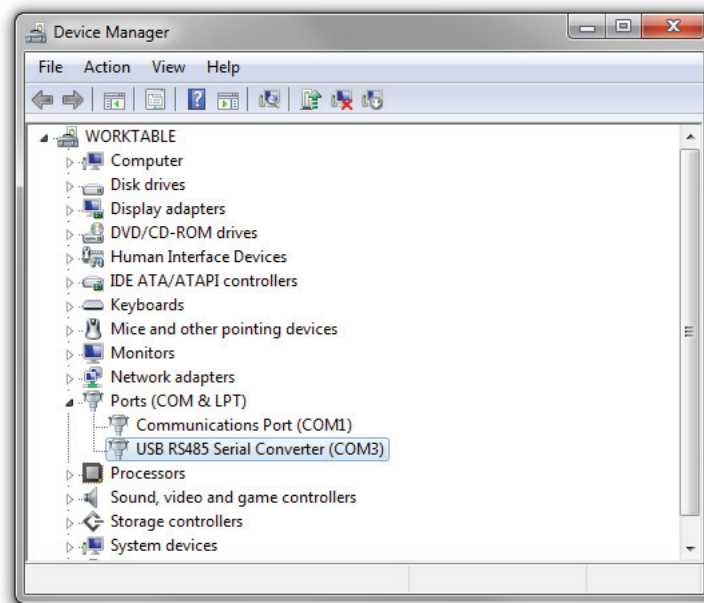
Windows Device Manager.

Right click on **USB RS485 Serial Converter** and select **Properties** from the pop-up menu.

On the **Port Settings** tab, click **Advanced**. Drop down the **COM Port Number** list and select the desired port number. Click **OK** to use the new port number and close the window.

Click **OK** again to close the Properties window.

Software Setup

Make sure your software is set to use the same serial COM port that the RS-485 converter was assigned to. Refer to *Finding the Assigned COM Port Number* and *Changing the COM Port Number* in this manual for details. There are no hardware settings required by the RS-485 Converter and power is provided by the USB port. All other settings, such as BAUD rate, are taken care of by your software. The converter automatically switches between transmit and receive so RTS is not required.

DIN Rail Mounting

The converter is designed to mount on standard 35mm DIN rail. It can be easily snapped on and off the DIN rail without the need for any tools.

Release Lever

35mm DIN Rail
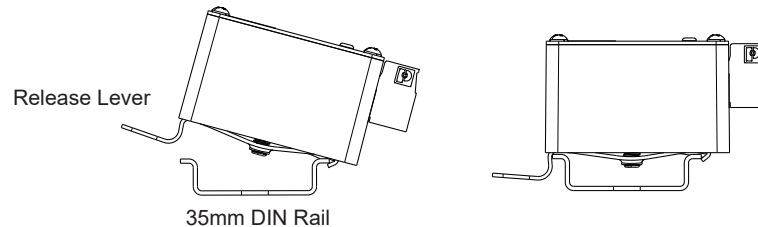
Lift up on the release lever to unsnap the converter from the rail.

Connecting to the RS-485 Bus

Connect the converter to the RS-485 bus using the **A**, **B**, and **G** screw terminals. Connect the **G** terminal to the RS-485 bus ground or shield. The **G** ground is galvanically isolated from the converters USB ground. **A** and **B** are the non-inverting and inverting RS-485 transceivers.

The converter does not include an internal bus terminating resister. RS-485 busses typically require a terminating resister at each end of the bus. Connecting directly to a device, to perform a configuration for example, may be done without a terminating resistor.

Status LED

When the converter is connected to a USB port the LED will be green after the USB enumeration process completes and the USB drivers have successfully initialized. A green LED indicates that the converter is ready to receive or is receiving.

The LED will be red while the converter is transmitting RS-485 data.

5

Safety Considerations

FC Conformity in accordance with Part 2, and Part 15, Subparts A and B of the Federal Communications Rules and Regulations, and ICES-003 of the Industry Canada standards.

⚠ This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Changes or modifications not expressly approved by Microflex, LLC could void the user's authority to operate this equipment.

CE Emissions EN55022: 1998

Electrostatic Discharge EN61000-4-2: 1995, A1: 1998, A2: 2001

Radiated Immunity EN 61000-4-3: 2002

Safety Compliance EN 60950-1: 2002

⚠ This device does not have protection from over-voltages which may exist on USB ports of computers and relies on the protection existing in a host computer.

⚠ This device is not intended for connection to the phone line through the appropriate converters and shall not be connected to telecommunication lines because it has no protection against over-voltages which may exist in these lines.

⚠ The user shall ensure the protection of the operator from access to areas with hazardous voltages or hazardous energy in their equipment.

⚠ The user shall ensure that the connection port of the field device and the converter is separated at least by basic insulation from any primary circuit existing in the field device.

Dimensions
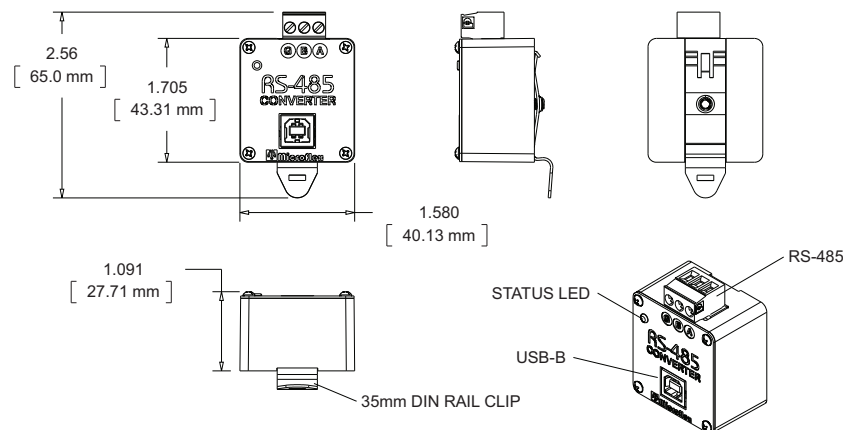
Specifications

Enclosure

Polycarbonate plastic and Stainless Steel Cover
Weight .... 5 ounces

USB

Connector.. USB-B
Compatibility.. USB 1.1, USB 2.0, USB 3
Active Current ....35mA Max
Suspend Current..Less than 600μA Typical

RS-485

Termination .... Plugable Screw Terminals, 26-12 AWG
G = Isolated ground, A = Non-inverting, B = Inverting
BAUD Rates .. 300, 600, 1200, 2400, 4800, 9600, 14400, 9200, 38400, 57600, 115200
Parity ....None, Odd, Even, Space, Mark
Driver Output Voltage .... Unloaded 5V
@ 27Ω Load 1.5V Min
Δ Input Threshold Receive Voltage.. +/- 0.2V
Receiver Input Hysteresis .... 25 mV Typ.
Receiver Input Resistance .... > 96KΩ,125KΩ Typ.
Galvanic Isolation .... 2500V$_{RMS}$
Surge Protection .... 600W Silicone Avalanche Diodes

• Does not include RS-485 termination resistor
• Auto transmit control - RTS is not needed
• Power Up/Down glitch-free permits live insertion or removal
• High common mode transient immunity: 30kv/us
• 2500V$_{RMS}$ Galvanic isolation
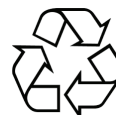• 7-bit no parity mode will use 2 stop bits

Status LED

Green...USB Enumerated and ready / Receiving
Red .... Transmitting

Mounting

Snaps on and off standard 35mm DIN rail, no tools needed

Environmental

Operating Temperature .... -20ºC to 50ºC (-4ºF to 122ºF)
Storage Temperature.. -40ºC to 85ºC (-40ºF to 185ºF)
Humidity...0 to 99% (non-condensing)

Limited Warranty

Microflex, LLC warrants this unit against defects in materials and workmanship for a period of one year from the date of shipment. Microflex, LLC will, at its option, repair or replace equipment that proves to be defective during the warranty period. This warranty includes parts and labor.

A Return Materials Authorization (RMA) number must be obtained from the factory and clearly marked on the outside of the package before equipment will be accepted for warranty work.

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Microflex, LLC
35900 Royal Road
Pattison, Texas 77423
USA

Phone 281-855-9639
Fax 832-422-4391
www.microflx.com