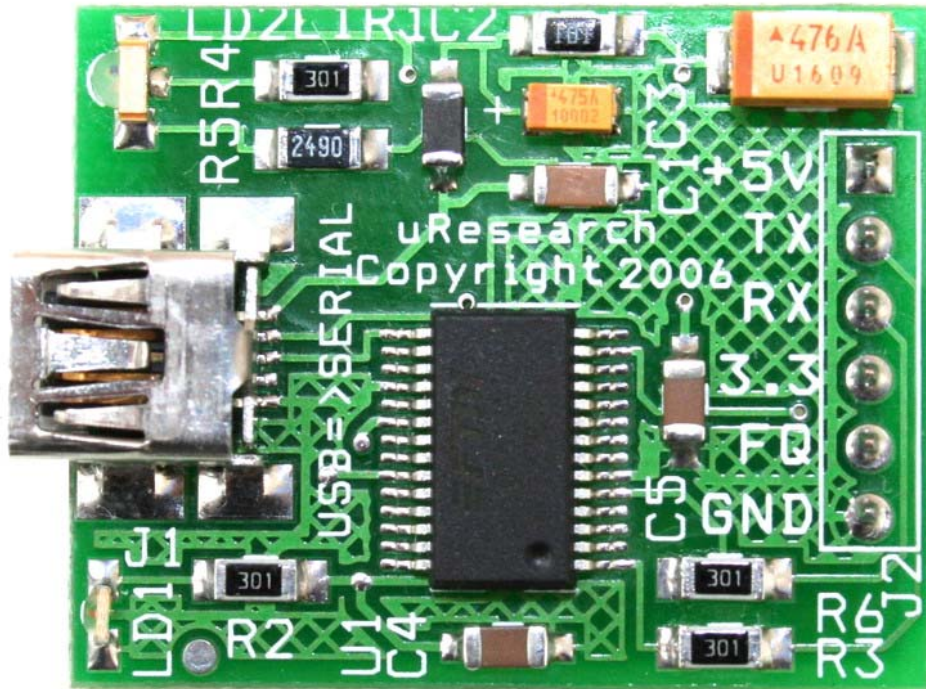


USB-SER™ USB to UART Converter User Manual

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# USB-SER™ USB to UART Converter User Manual

## Description

This USB-SER board is a USB to Serial UART (TTL level) converter module. It is allow you to connect your computer through USB port and use it as a regular serial communication. All USB protocol is handled within the module. There is no other device or programming required.

This board features innovations that set it apart from other USB to Serial Converter boards. Innovations feature like 256 byte receive buffer and 128 byte transmit buffer utilize new buffer smoothing technology to allow for high data throughput. Also, 6MHz clock output signal options for driving external MCU or FPGA. The TX and RX pins from the USB-SER can be connected directly to RX and TX pins of your preferred microcontroller or serial application for a simple serial cable replacement connection.

The USB-SER board is perfect for embedded systems that require a serial connection to a computer. The board attaches directly to the USB bus via a standard type mini B receptacle connector. It shows up on any Windows computer as a standard serial COM port. Any applications that talk to this COM port is automatically convert to USB and back to UART to your target board.

Drivers are available for Windows 98, 98SE, ME, 2000, Server 2003, XP, Vista/Longhorn, XP Embedded and CE.NET 4.2 & 5.0. Mac OS8/9, OS-X and Linux 2.4 and greater are supported.

## Features

- Small 1.25 x 1.00 inches board.
- Single board USB to asynchronous serial data transfer interface.
- Decoupling supply voltage.
- Design easy for breadboard.
- UART interface support for 7 or 8 data bits, 1 or 2 stop bits and odd/even/ mark/ space/ no parity.
- Data transfer rates from 300 baud to 1 Mega baud.
- 256 byte receive buffer and 128 byte transmit buffer utilizing buffer smoothing technology to allow for high data throughput.
- Transmit and receive LEDs.
- 6MHz clock output signal for driving external MCU or FPGA.
- Support for USB suspend and resume.
- Integrated 3.3V level 50mA output.
- Support for USB suspend and resume.
- Low USB bandwidth consumption

## Applications

- USB communication with your favorite microcontroller or project board.
- Data collection from external measurement instrument.
- Cell phone, PDA, MP3 player and laptop USB data transfer.
- USB to RS232 converters.
- And much more...

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## Interfaces

### UART:

All serial interface pins are 5V logic level

- **TX:** Transmit *from* the USB-SER board. It is a Serial Output and normally connected to the RX pin on any microcontroller or equivalent UART.
- **RX:** Receive *into* the USB-SER board. It is a Serial Input and normally connected to the TX pin on any microcontroller or equivalent UART.

### Power:

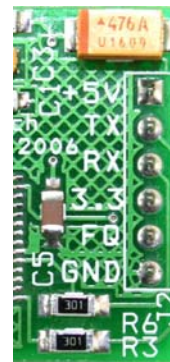
The USB-SER board has two connections to power: 5V (unregulated) and 3.3V

- **+5V:** is connected to USB 5V bus via a filter ferrite bead. It can range from 4.0 – 5.0 V depending on the regulation of the given USB port. In USB 2.0 system, this pin can provide a maximum of 500mA in accordance with the USB 2.0 specification.

**WARNING! DO NOT APPLY EXTERNAL POWER TO THIS PIN. IT IS AN OUTPUT NOT INPUT PIN.**

- **3.3:** is connected to the internal regulator and can source a maximum of 50mA. You may use this pin to power your 3.3V circuit.

- **GND:** is a common ground for every pin. This pin must be connected to ground when using external power supply on the target board.
- **FQ:** is a 6MHz clock output signal. You may use this pin to drive external MCU or FPGA.



## USB Driver Installation

### Download:

Go to the FTDI website [www.ftdichip.com](http://www.ftdichip.com) and click on the "Drivers" tab. Choose VCP (Virtual COM Port) drivers.

Save the appropriate zip file for your operating system to disk. Remember the directory (path and folder). After the file has been downloaded, unzip the folder/files to a suitable directory.

**Note:** *The driver installation procedure for Window XP is described below. The installation procedure for other operating systems should be similar.*

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Attach the USB device to your system. The *Found New Hardware Wizard* should pop up:



Select “No, not this time” from the options available and then click “Next” to proceed with the installation.



Select “Install from a list or specific location (Advanced)” as show below and then click “Next”.



Select “Search for the best driver in these locations” and enter the file path in

the combo-box (“C:\CDM 2.00.00 in the example below) or browse to it by clicking the browser button. Once the file path has been entered in the box, click next to proceed.



If Windows XP is configured to warn when unsigned (non-WHQL-certified) driver are about to be installed, the following screen will be displayed. Click on “Continue Anyway” to continue with the installation. If Window XP is configured to ignore file signature warnings, no message will appear.



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The following screen will be display as Windows XP copies the required drive files.



Windows should then display a message indicating that the installation was successful. Click "Finish" to complete the installation for the first port of the device.



Another *Found New Hardware Wizard* may open for the USB Serial Port. If the wizard open up, use the following procedures to complete the installation.

Select "No, not this time" from the options available and then click "Next" to proceed with the installation.



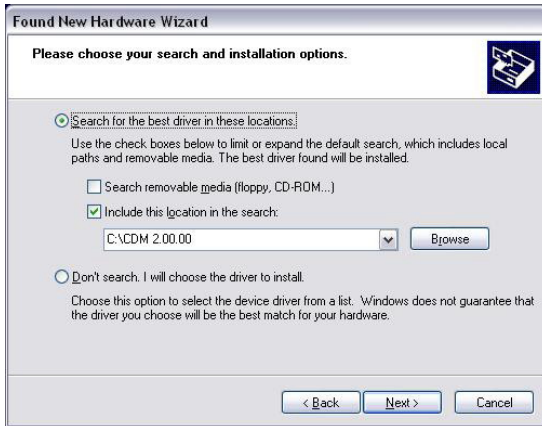
Select "Install from a list or specific location (Advanced)" as show below and then click "Next".



Select "Search for the best driver in these locations" and enter the file path in the combo-box ("C:\CDM 2.00.00 in the example below) or browse to it by clicking the browser button. Once the file path has been entered in the box, click next to proceed.



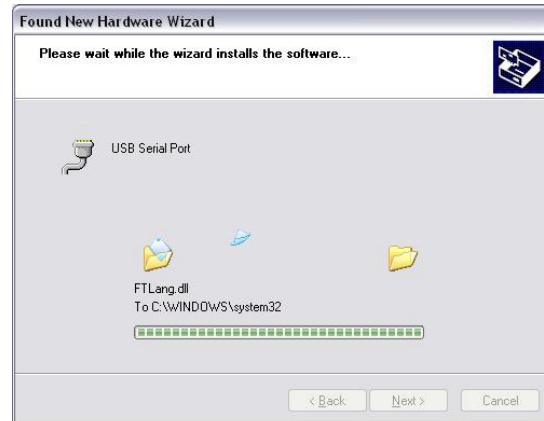
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If Windows XP is configured to warn when unsigned (non-WHQL-certified) driver are about to be installed, the following screen will be displayed. Click on “Continue Anyway” to continue with the installation. If Window XP is configured to ignore file signature warnings, no message will appear.



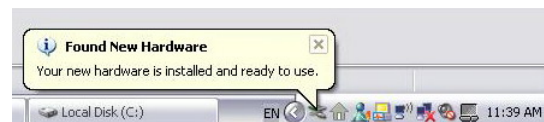
The following screen will be display as Windows XP copies the required drive files.



Windows should then display a message indicating that the installation was successful. Click “Finish” to complete the installation for the first port of the device.



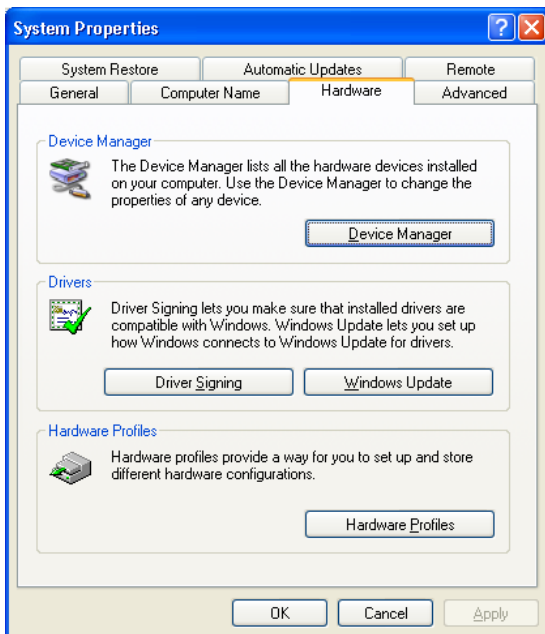
The installation is complete when the “Your new hardware is installed and ready for use” note appears.



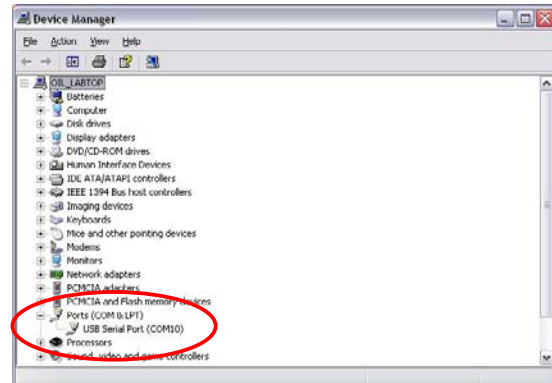
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To create a connection to the device, you will need to determine the COM port onto which it installed. This is different in every case as the USB interface IC will attach itself to the first available COM port. Follow the instruction below to find out which COM port is the USB-SER installed.

Open the Device Manager (located in “Control Panel\System”) then selects the “Hardware” tab and click “Device Manage”)



Expand “Ports (COM and LPT)” by clicking on the “+” symbol. Note the number of the COM port for the USB Serial Port.



## Accessories

All of the accessories are available for purchase via our website. If you don't see the item you need, please contract our sales department at [sales@gravitech.us](mailto:sales@gravitech.us)

- USB A-B  
6Ft 4 pin male A type to 5 pin mini B type. The cable is use to connect to USB-SER board.



## Specifications

Circuit Board Size	1.25" x 1.00"
USB Supply (from PC)	4 – 5 VDC

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## Notes

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