

# TTL-230XQ-3V3(5V) USB to TTL Serial Converter Cable

The TTL-230XQ-3V3 (5V) is a USB to TTL serial converter cable incorporating FTDI's FT230XQ USB - Serial UART interface IC device, the latest device to be added to FTDI's range of USB UART interface Integrated Circuit Devices. It is designed to allow for a fast, simple way to connect devices with a TTL level serial interface to USB. The FT23XQ chip used by the TTL-230XQ-3V3 (5V) is housed within the USB 'A' connector. A 1.2 meter (4 foot) cable is terminated with a 4 way 0.1" pitch header socket which provides access to the transmit (Tx), receive (Rx), as well as VCC (5V out) and GND. The FT230XQ is a USB to serial UART interface. USB to serial interface designs using the FT230XQ have been further simplified by fully integrating the external EEPROM and clock circuit.

## Features:

- Single chip USB to asynchronous serial data transfer interface.
- Entire USB protocol handled on the chip.
- No USB specific firmware programming required.
- Fully integrated 2048 byte multi-timeprogrammable (MTP) memory, storing device descriptors and CBUS I/O configuration.
- Data transfer rates from 300 baud to 3 Mbaud (RS422, RS485, and RS232) at TTL levels.
- 512 byte receive buffer and 512 byte transmit buffer utilising buffer smoothing technology to allow for high data throughput.
- FTDI's royalty-free Virtual Com Port (VCP) and Direct (D2XX) drivers eliminate the requirement for USB driver development in most cases.
- UART interface support for 7 or 8 data bits,
- 1 or 2 stop bits and odd / even / mark / space / no parity
- Device supplied pre-programmed with unique USB serial number.
- USB Power Configurations; supports bus- powered, self-powered and bus-powered with power switching Integrated +3.3V level converter for USB I/O.
- True 3.3V CMOS drive output and TTL input; operates down to 1V8 with external pullups

## Driver Support

Royalty free VIRTUAL COM PORT (VCP) DRIVERS and Royalty free D2XX Direct Drivers (USB Drivers + DLL S/W Interface) for...

- Windows 7 32,64-bit
- Windows Vista and Vista 64-bit
- Windows XP and XP 64-bit Server 2003, XP and Server 2008
- Windows XP Embedded Windows CE 4.2, 5.0 and 6.0 Mac OS-X Linux 3.2 and greater
- Android Royalty free D2XX Direct Drivers (USB Drivers + DLL S/W Interface)
- Windows 7 32,64-bit Windows Vista and Vista 64-bit
- Windows XP and XP 64-bit Server 2003, XP and Server 2008

- Windows XP Embedded Windows CE 4.2, 5.0 and 6.0
- Mac OS-X
- Linux 2.6 and greater
- Android

The drivers listed above are all available to download for free from FTDI website ([www.ftdichip.com](http://www.ftdichip.com)). Various 3rd party drivers are also available for other operating systems - see FTDI website ([www.ftdichip.com](http://www.ftdichip.com)) for details. For driver installation, please refer to <http://www.ftdichip.com/Documents/InstallGuides.htm>

#### Key Features :

**Source Power and Power Consumption.** The FT230X is capable of operating at a voltage supply between +3.3V and +5.25V with a nominal operational mode current of 8mA and a nominal USB suspend mode current of 125µA. This allows greater margin for peripheral designs to meet the USB suspend mode current limit of 2.5mA. An integrated level converter within the UART interface allows the FT230X to interface to UART logic running at +1.8V to +3.3V (5V tolerant).

**Internal MTP Memory.** The internal MTP memory in the FT230X is used to store USB Vendor ID (VID), Product ID (PID), device serial number, product description string and various other USB configuration descriptors. The internal MTP memory is also used to configure the CBUS pin functions. The FT230X is supplied with the internal MTP memory pre-programmed as described in Section 8. A user area of the internal MTP memory is available to system designers to allow storing additional data from the user application over USB. The internal MTP memory descriptors can be programmed in circuit, over USB without any additional voltage requirement. The descriptors can be programmed using the FTDI utility software called FT\_PROG, which can be downloaded from FTDI Utilities on the FTDI website ([www.ftdichip.com](http://www.ftdichip.com)).

**FIFO RX Buffer (512 bytes).** Data sent from the USB host controller to the UART via the USB data OUT endpoint is stored in the FIFO RX (receive) buffer. Data is removed from the buffer to the UART transmit register under control of the UART FIFO controller. (Rx relative to the USB interface).

**FIFO TX Buffer (512 bytes).** Data from the UART receive register is stored in the TX buffer. The USB host controller removes data from the FIFO TX Buffer by sending a USB request for data from the device data IN endpoint. (Tx relative to the USB interface).

**UART FIFO Controller.** The UART FIFO controller handles the transfer of data between the FIFO RX and TX buffers and the UART transmit and receive registers.



Figure 1 - The TTL-230XQ-3V3(5V) USB to TTL Serial Converter Cable

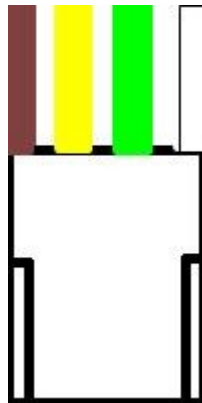


Table 1 - Serial TTL Signals

| Header pin No. | Name | Type   | Colour | Description                        |
|----------------|------|--------|--------|------------------------------------|
| 1              | GND  | GND    | Brown  | Device ground supply pin.          |
| 2              | TXD  | Output | Yellow | Transmit Asynchronous Data output. |
| 3              | RXD  | Input  | Green  | Receive Asynchronous Data input.   |
| 4              | VCC  | Output | White  | +5V USB power (max 500mA)          |

Connector type is KK Type KF2510 (MOLEX) or NSG25-4:



Mating connector for PCB mount is NSL25-4:

