FT232RL Breakout
User Guide

NUMATO LAB

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Introduction

Numato Lab's FT232RL Breakout is a versatile product for a USB to serial UART interface. This board can be used with Arduino/any microcontroller which supports serial communication. The FTDI UART Interface and CBUS group pins supply can be configured for **3V3/5V,** so it is compatible with microcontrollers with both TTL logic. Major advantage of this board is, it can be controlled without any USB specific firmware programming since the entire USB protocol handled on the chip itself.

Some of the possible uses of this module include

- USB to RS232/RS422/RS485 Converters.
- Interfacing MCU/PLD/FPGA based designs to USB.
- Single chip USB to asynchronous serial data transfer interface.
- Integrated +3.3V level converter for USB I/O.
- USB Instrumentation.

This product is compatible with the following operating systems.

- Windows XP and later
- Linux
- And any other operating system that supports USB CDC devices.

  The drivers listed above are all available to download for free from http://www.ftdichip.com/FTDrivers.htm.

Features

- Data transfer rates from 300 baud to 3 M baud (RS422, RS485, RS232) at TTL levels.
- Entire USB protocol handled on the chip. No USB specific firmware programming required.
- FTDI's royalty-free Virtual Com Port (VCP) and Direct (D2XX) drivers eliminate the requirement for USB driver development in most cases.
- Transmit and receive LED indication.
- Integrated +3.3V level converter for USB I/O.
- Integrated power-on-reset circuit.
- Entire USB protocol handled on the chip. No USB specific firmware programming required.
- Fully integrated USB termination resistors.
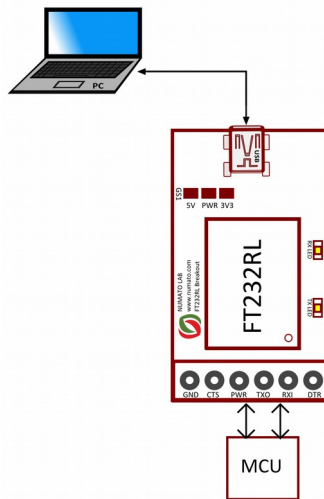
How to Use the Breakout

The following section describes how to use this Breakout.

Components/Tools required

Along with the module, you may need the items in the list below for easy and fast installation.
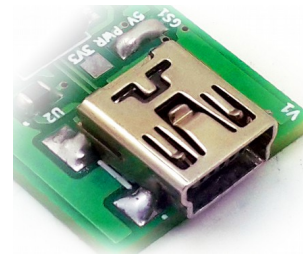
1. USB A to Mini B cable

Connection Diagram

Above image shows basic connection diagram that can be used in most of the situations. The following sections identify individual connections in detail.

USB Interface

The on board full speed USB controller that helps a PC/Linux/Mac computer to communicate and control this module seamlessly. Use a USB A to Mini B cable to connect with a PC. The logic section of the module is powered from USB(5V) so make sure not to overcrowd unpowered USB hubs (the picture on the right shows USB Mini B connector). The FTDI UART Interface and CBUS group pins supply can be configured for **3V3/5V.** This option can be chose in jumper **GS1. By default the UART Interface and CBUS group pins are configured to use 5V.**

💡 Visit http://numato.com/cables-accessories. to buy cables and accessories for this product.
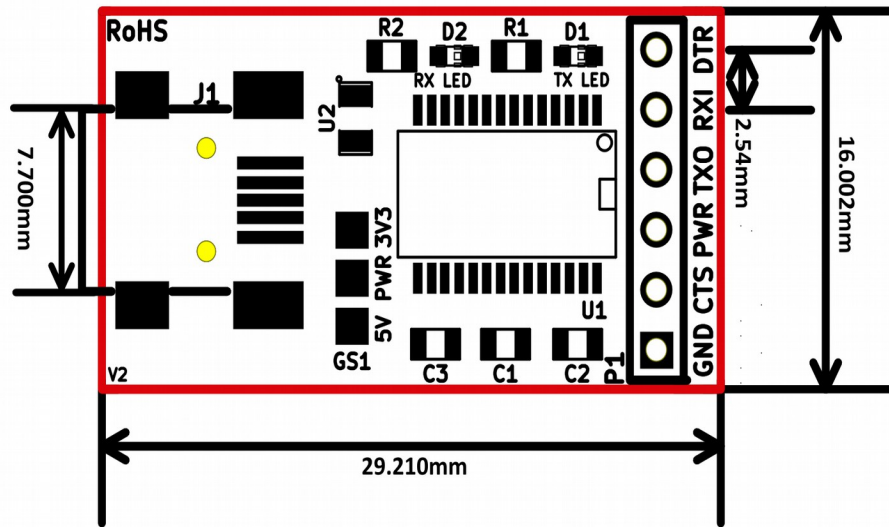
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Q. I need a customized version of this product, can Numato do the customization for me?
A. Yes, we can definitely do customization but there may be minimum order requirements depending on the level of customization required. Please write to sales@numato.com for a quote.

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A. All Numato products can be ordered directly from our web store http://www.numato.com. We accept major credit cards and Paypal and ship to almost all countries with a few exceptions. We do have distributors in many countries where you can place your order. Please find the current list of distributors at http://numato.com/distrib.
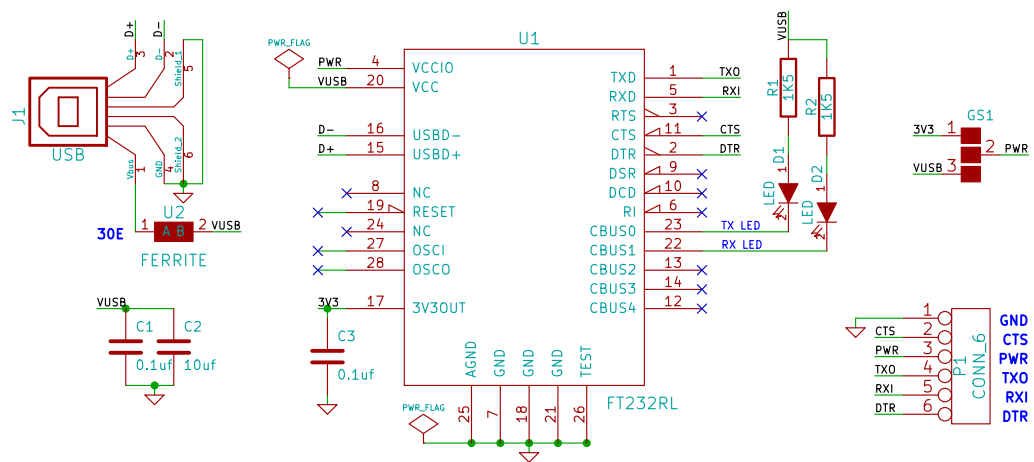
Physical Dimensions

L x W x H : 18.542 mm x 16.256 mm x 12 mm

Schematics

See next page.

U1

Pin	Signal
4	VCCIO
20	VCC
16	USBD−
15	USBD+
8	NC
19	RESET
24	NC
27	OSCI
28	OSCO
17	3V3OUT
1	TXD
5	RXD
3	RTS
11	CTS
2	DTR
9	DSR
10	DCD
6	RI
23	CBUS0
22	CBUS1
13	CBUS2
14	CBUS3
12	CBUS4
25	AGND
7	GND
18	GND
21	GND
26	TEST

FT232RL

J1 USB
D+ D−
Shield 1
Shield 2
Vbus
GND

U2 30E FERRITE
1 A B 2 VUSB

C1 0.1uf C2 10uf VUSB
C3 0.1uf 3V3

PWR_FLAG PWR
VUSB
PWR_FLAG

R1 1K5 R2 1K5 VUSB
D1 LED D2 LED
TX LED RX LED

GS1
3V3 1
2 PWR
VUSB 3

P1 CONN_6
1 GND
2 CTS
3 PWR
4 TXO
5 RXI
6 DTR

TXO RXI CTS DTR

Title: FT232RL BREAKOUT
Size: A4   Date: 25 jun 2014   Rev:
KiCad E.D.A.   Id: 1/1