JR Electronics

#JR1401

JR EasyUSBmini Module

Rev. 1.2

Introduction

JR Electronics introduces the JR EasyUSB Mini Module – a low cost USB mini B to basic UART development module. This module utilises FTDI Chip's FT230XD IC to provide an extremely simple upgrade to USB for any project.

The JR EasyUSBmini Module supports data transfer rates of up to 3MBaud, can be used as a power source - 5V (up to 500mA) / 3V3 (up to 50mA).

It eliminates the need for large USB stacks inside your microcontroller and only uses a few pins (2 I/Os minimum – 4 with basic handshaking).

For more information on the FT230X chip, visit this page;

http://www.ftdichip.com/Products/ICs/FT230X.html

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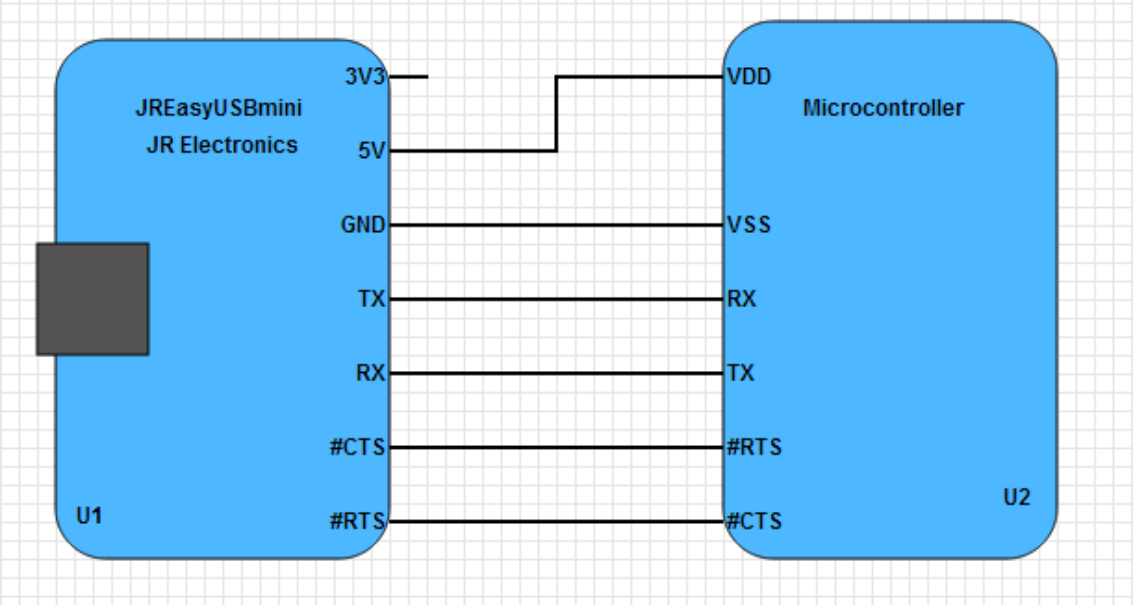
Typical application



Above is a basic diagram of how to connect the JR EasyUSBmini Module to a microcontroller. Note that the CTS and RTS connections are optional but are recommended for higher baud rates.

This allows any information from the microcontroller to be sent via USB using only a few pins. With a set up like this, the microcontroller can read and send data to an application on a computer over USB to be displayed for a user. For example, the microcontroller could be reading the temperature from the JR Temp Sensor board via SPI and then placing these readings into the

microcontroller's UART Tx register to be sent over USB to the PC. A custom application you've written could then plot a graph of temperature Vs time.

To view and download example programs for JR EasyUSBmini Module, head to the software and firmware section of our website!

Driver download and installation

To use the JR EasyUSBmini Module, you must download FTDI's royalty free drivers. The drivers can be downloaded from here;

http://www.ftdichip.com/FTDrivers.htm

FTDI offer two different types of driver, Virtual COM Port (VCP) drivers and direct (D2XX) drivers. The VCP driver emulates a standard PC serial port. Using this with the JR EasyUSBmini Module allows it to be communicated with as a standard RS232 device. If you're a beginner or a student, don't worry – it's easier than it sounds.

The D2XX driver allows direct access to the JR EasyUSBmini Module via a DLL interface. If using the D2XX driver, the D2XX Programmer's Guide from FTDI will be invaluable – this can be obtained from here;

http://www.ftdichip.com/Support/Documents/ProgramGuides/D2XX_Programmer's_Guide(FT_000071).pdf

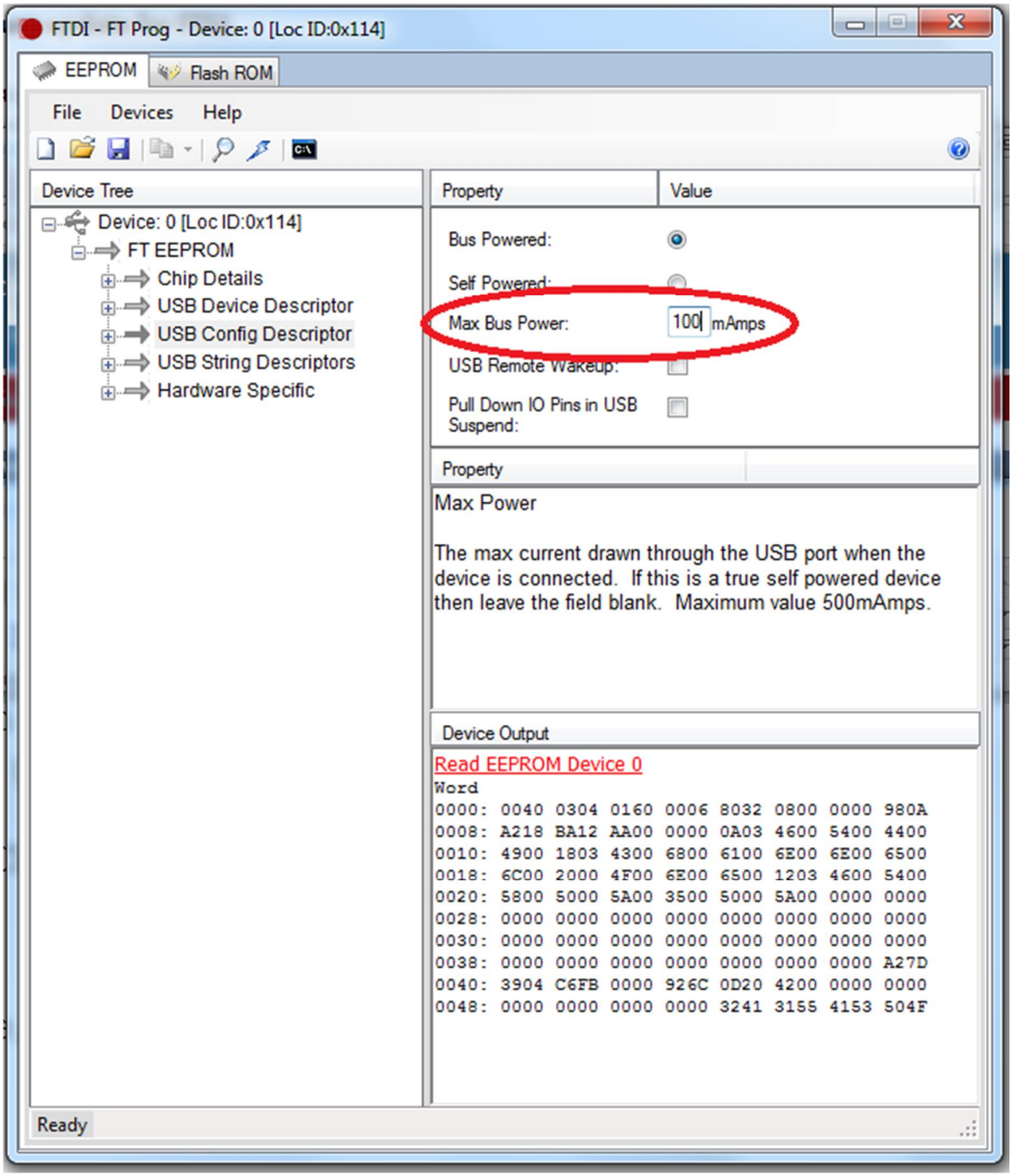
Programming the Device

The JR EasyUSBmini module, by default, will be limited to draw up to 90mA from the USB port. This can be changed to anything up to 500mA using FTDI Chip's free programming utility – FT PROG.

FT PROG can be found here;

http://www.ftdichip.com/Support/Utilities.htm

Once the device enumerates and is visible, you can scan for devices using the  icon. This will open the device where you can change the maximum bus power to the device;

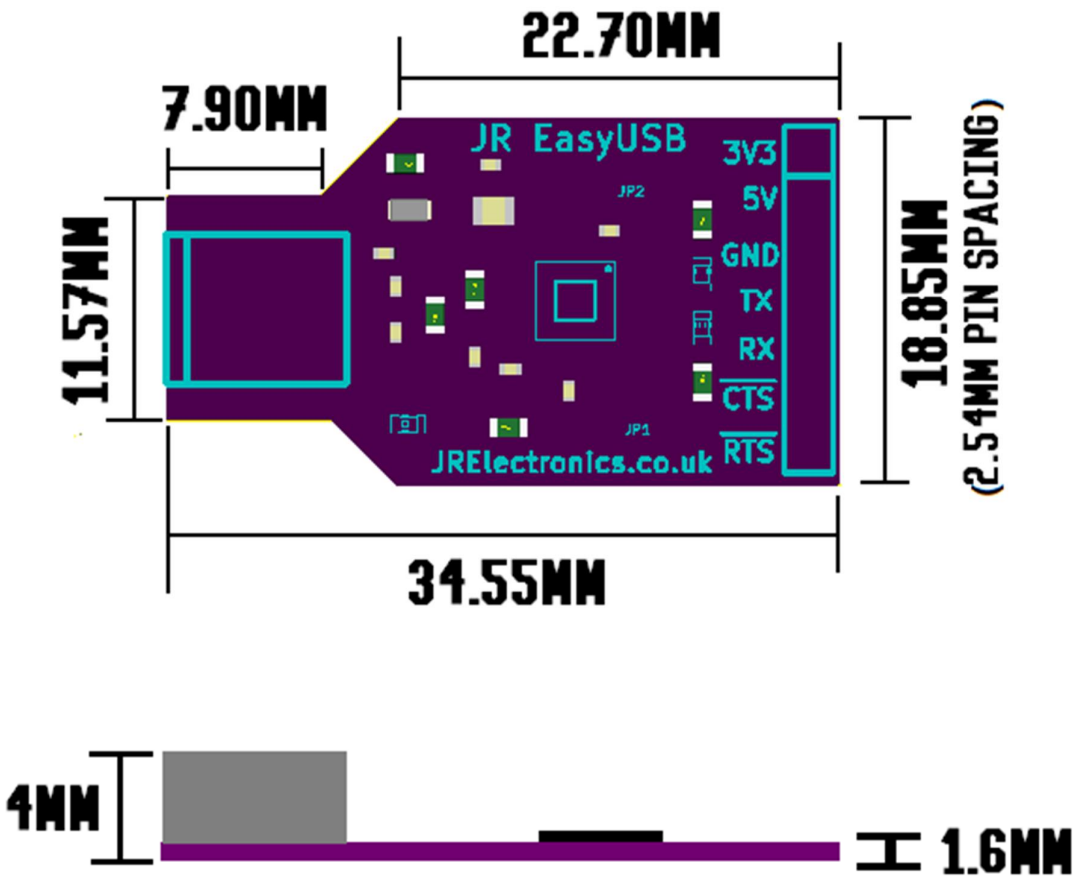


Once you have edited the Max Bus Power field, click the button to program the device.

Your device is now programmed with your new bus power and is ready to go.

The FT PROG utility can also be used to change the descriptors and affect how the device appears when plugged in to a PC.

Dimensions



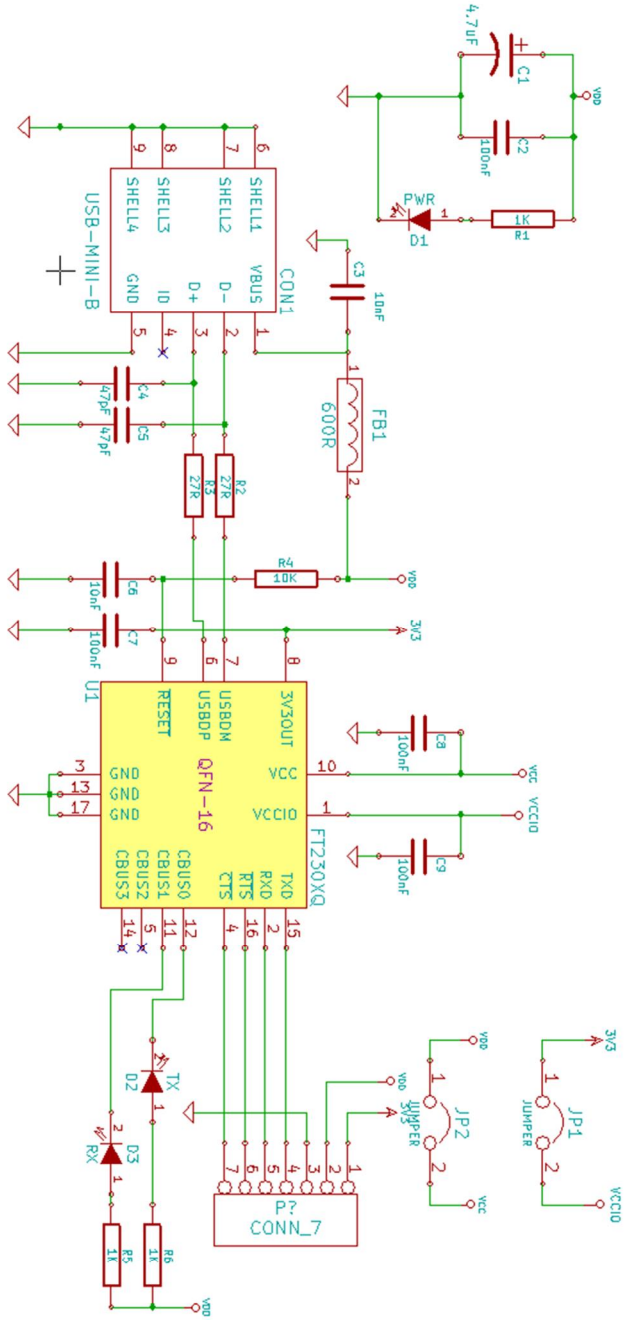
Notes:

The pins on this device are the standard 0.1” (2.54mm) spacing.

With JP1 closed I/O level is 3V3 and with JP1 open, I/O level can be powered from external circuitry to 1.8V – 3V3.

With JP2 Closed VCC is connected to VBUS and the device is bus powered. With JP2 open, the device can be powered from an external power supply (self powered).

Module Schematic



Summary of Use

To summarise setting up and beginning to use your device;

- Download FTDI Chip's Drivers from here; http://www.ftdichip.com/FTDrivers.htm
- If your device will draw more than 100mA, download FT_PROG here; http://www.ftdichip.com/Support/Utilities.htm
  Then change Max Bus Power field to your desired level and program the device.
- Connect your JR EasyUSBmini Module to your microcontroller and you're ready to start transmitting and receiving data. Just download a serial port emulator like the JR Electronics Module Tester from our website and you're ready to go!

If you have any questions or need any support, don't hesitate to email us at enquiries@jrelectronics.co.uk

Be sure to check out the example code on our website!

Thank you for using JR Electronics!