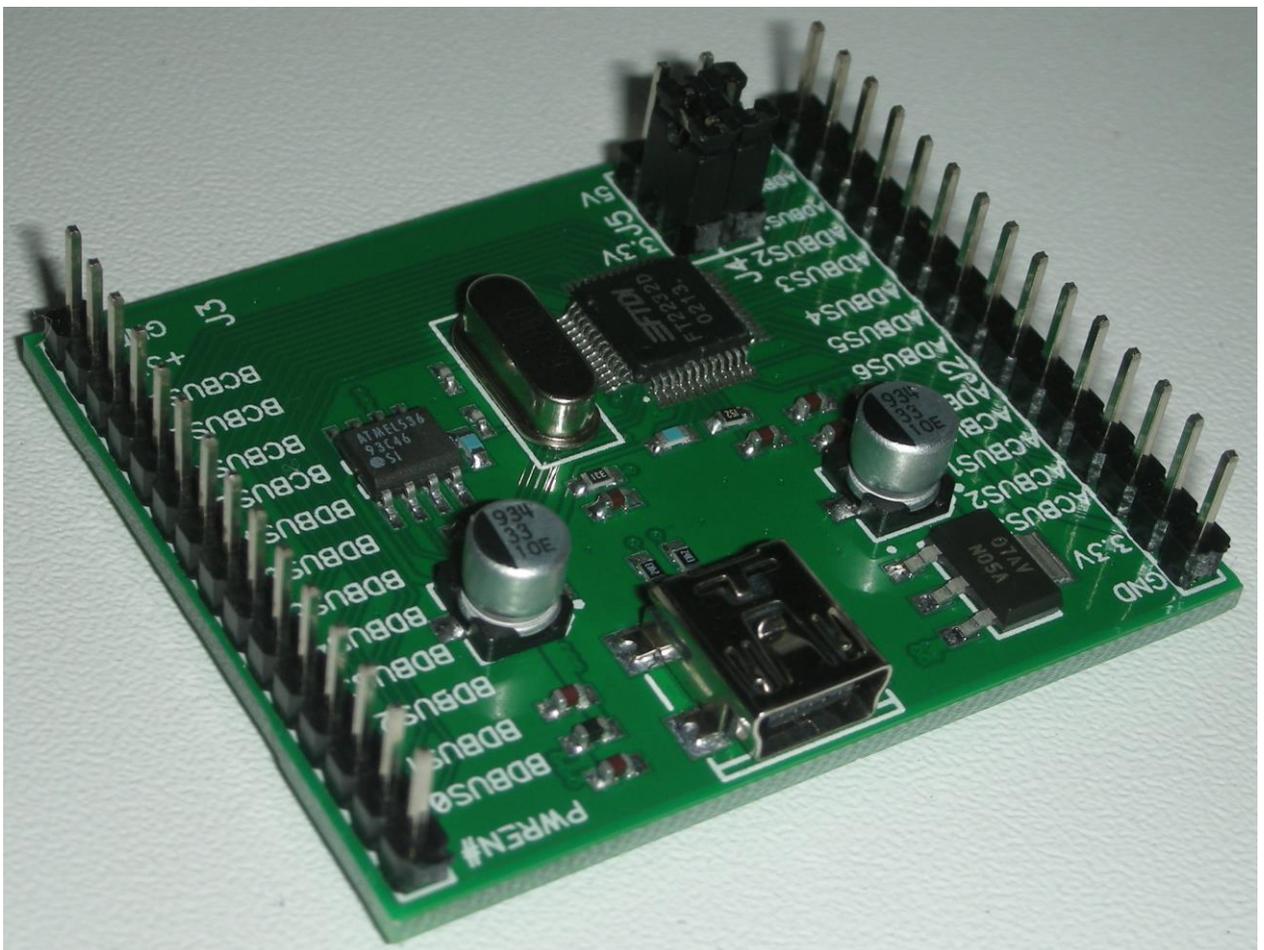# FT2232D MODULE

USER's GUIDE

MODEL: FT2232D MODULE   Revision B

Introduction

FT2232D MODULE is easy to use developer's board. It is designed to help study FTDI's FT2232D chip programming. It can be used as USB to UART/I2C/SPI/JTAG serial converter.

Features

- Single chip USB <=> dual channel serial/parallel ports with a variety of configurations
- Entire USB protocol handled on the chip: no USB-specific firmware programming required
- FT232B-style UART interface option with full handshaking & modem interface signals
- UART interface supports 7/8 data bits, 1/2 stop bits and Odd/Even/Mark/Space/No Parity
- Data transfer rate of 300 Baud => 1M Baud (RS232)
- Data transfer rate of 300 Baud => 3M Baud (TTL and RS422/RS485)
- Auto transmit enable control for RS485 serial applications using TXDEN pin
- In-built support for event characters and line break condition
- Transmit and receive LED drive signals on each channel
- FT245B-style FIFO interface option with bi-directional data bus and simple 4-wire handshaking interface
- Data transfer rate up to 1M Byte/second (Parallel FIFO)
- Enhanced Bit-Bang Mode interface option with RD# and WR# strobes
- New Synchronous Bit-Bang Mode interface option
- New Multi-Protocol Synchronous Serial Engine (MPSSE) interface option
- New CPU-style FIFO interface mode option (FT2232D only)
- New MCU Host Bus Emulation Mode option
- New Fast Opto-Isolated Serial Interface Mode option
- High I/O pin output drive option
- Interface mode and USB description strings configurable in external EEPROM
- EEPROM configurable on-board via USB
- Support for USB suspend and resume conditions via PWREN# and SI/WU pins
- Support for bus powered and high-power bus powered USB configurations
- Integrated Power-On-Reset circuit with optional reset input and reset output pins
- 5V and 3.3V logic IO interfacing with independent level conversion on each channel
- Integrated 3.3V LDO regulator for USB IO
- Integrated 6MHz - 48Mhz clock multiplier PLL
- USB Bulk data transfer modes
- 4.35V to 5.25V single supply operating voltage range
- Low operating and USB suspend current
- UHCI/OHCI/EHCI host controller compatible
- USB 2.0 Full Speed (12M bits/second) compatible
- Extended -40°C to 85°C industrial operating temperature range (FT2232D only)
- Compact 48-LD lead free LQFP package (RoHS compliant)
- FTDI's royalty-free VCP and D2XX drivers eliminate the requirement for USB driver development in most cases
- Dedicated Windows DLLs available for USB to JTAG, USB to SPI and USB to I2C applications

  To get more information about FT2232D, please go to:
  http://www.ftdichip.com/Products/ICs/FT2232D.htm

*Please note that, on this board, "RESET#" and "PWREN#", are always 5V level signals. Voltage levels for PORT A and PORT B can be selected between 3.3V and 5V with jumpers J4 and J5.

Quick start instructions for the first time user:

1) On arrival, EEPROM of the module will be blank. There will be no specific configuration stored. You can easily make your own configuration, and store it to EEPROM, with help of FTDI's program "FT prog":
http://www.ftdichip.com/Support/Utilities/FT_Prog_v2.8.2.0.zip
2) Zip archive with documentation, for this board, contains "example.xml". This file is example of EEPROM configuration. It configures port A and port B to UART. To store this configuration in to boards EEPROM, follow steps below.
3) Connect FT2232D MODULE to your PC
4) Wait until all the drivers are installed and device is ready to use
5) Run "FT_prog.exe"
6) Press "F5", or "Devices - scan and parse"
7) File -> Open template -> example.xml
8) Right click on "device" -> apply template -> example.xml
9) Press devices -> program, or ctrl+p
10) Press button "program"
11) Plug-unplug the module, wait until all the drivers are installed and device is ready to use
12) Follow steps below, to test PORT A.
13) Start "hyper terminal", or any other com port terminal.
14) Select your newly installed virtual com port. Set settings 9600-8-n-1, no flow control.
15) Connect J2-pin2(ADBUS0) to J2-pin3(ADBUS1). This will make RX-TX loop connection.
16) Now, when you type something in the console, you should receive same text back.
17) Follow steps below, to test port B.
18) Start "hyper terminal", or any other com port terminal.
19) Select your newly installed virtual com port. Set settings 9600-8-n-1, no flow control.
20) Connect J3-pin2(BDBUS0) to J3-pin3(BDBUS1). This will make RX-TX loop connection.
21) Now, when you type something in the console, you should receive same text back.
22) More detailed testing can be accomplished with FTDI's "FT2232H/D Factory Test Utility":
http://www.ftdichip.com/Support/Utilities/FT2232H_UART.rar

http://www.ftdichip.com/Support/Documents/AppNotes/AN_127_User_Guide_For_FT2232HD_Factory%20test%20utility.pdf