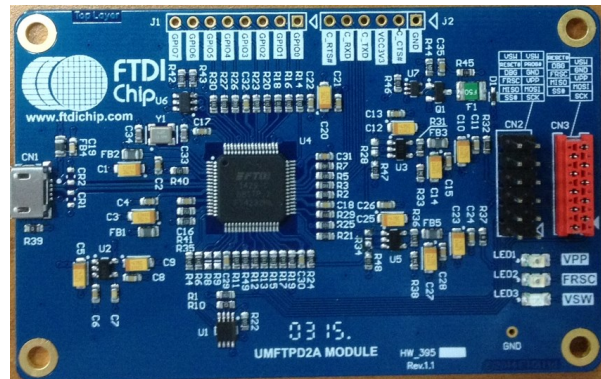


# Future Technology Devices International

## UMFTPD2A



UMFTPD2A is a module used for FT90x programming, debugging and EFUSE burning.

The UMFTPD2A is a module with an FT4232HL Hi-Speed USB2.0 to multipurpose UART/MPSSE converter. The UMFTPD2A module features a single line half-duplex UART signal with no handshake (One-Wire interface), one MPSSE interface, one UART interface and a Bit-Bang port.

The module has configured the FT4232HL Channel A as a UMFTPD2A one-wire interface for MM900EVxA evaluation board firmware / application download, or GDB debugging.

The FT4232HL Channel B is configured as a UMFTPD2A MPSSE interface with 4 GPIO control signals. This allows the UMFTPD2A to implement MM900EVxA evaluation board EFUSE program, or firmware / application upload as well.

The FT4232HL Channel C is optional. It is configured as a UART that can capture the messages from MM900EVxA evaluation board in software debugging.

The FT4232HL Channel D is reserved as a Big-Bang interface for generic GPIO purposes.

The FT90x program utility can activate the required channels corresponding to the operations.

The UMFTPD2A has the following features:

- Hi-Speed USB to one-wire interface converter
- Hi-Speed USB to MPSSE interface converter
- Hi-Speed USB to UART interface converter
- Provides H/W Reset# signal
- Provide multiple generic GPIO control signals
- PWREN# line to control +5V power supply
- Fuse protected with 0.5A hold current and schottky diode on the output power line.
- Two dedicated GPIOs to control VPP and FRSC power supplies
- Three LEDs for power supply indication
- 2X5 way 1.27mm pitch Micro-MaTch socket
- 2X6 way 2.54mm pitch through hole pin header
- Micro-B type USB port
- Micro-MaTch Male to Male 10 pin ribbon cable
- All components used are Pb-free (RoHS compliant)

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## 1 Driver Support

Royalty free D2XX Direct Drivers (USB Drivers + DLL S/W Interface)

- Windows 10 32, 64-bit
- Windows 8.1 32, 64-bit
- Windows 8 32, 64-bit
- Windows 7 32, 64-bit

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

For driver's installation, please refer to <http://www.ftdichip.com/Support/Documents/InstallGuides.htm>.

## 2 Programming Utility Support

The programming utility is provided as part of the free FT90x toolchain.

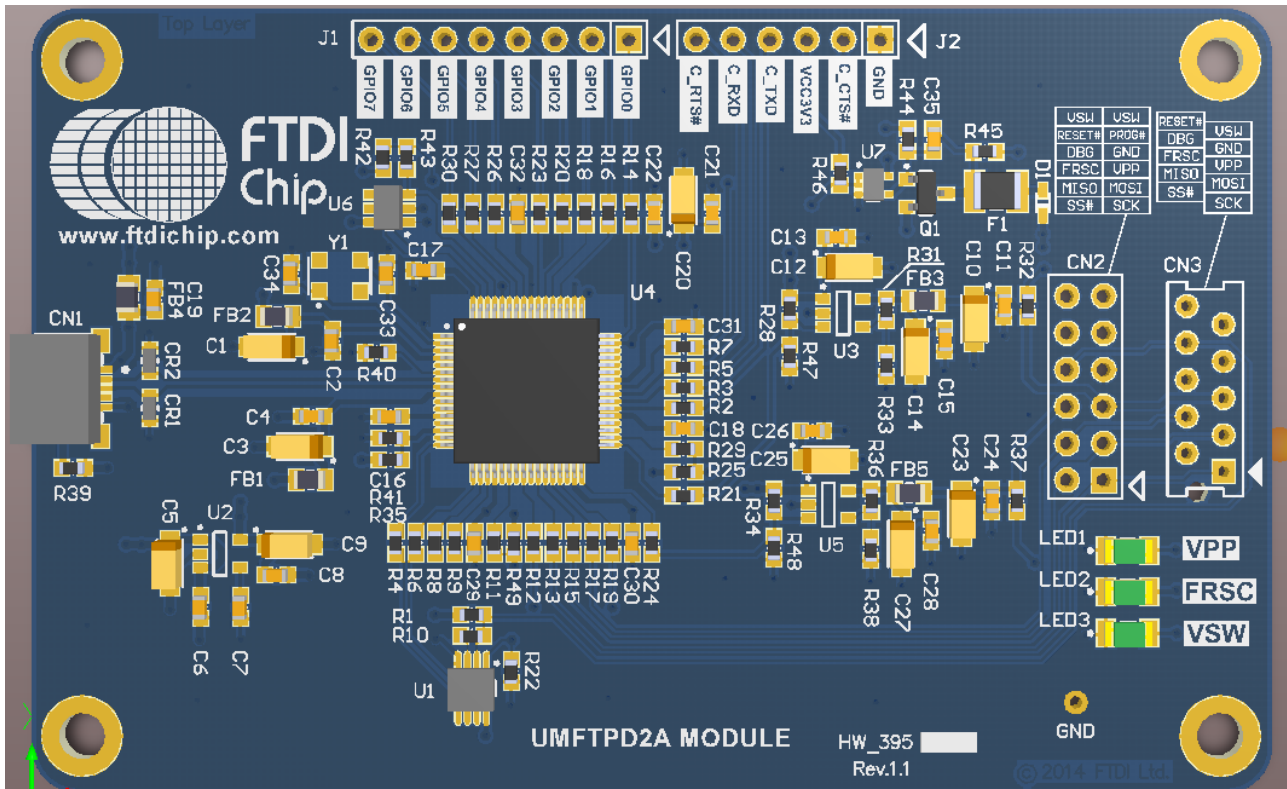
Visit FTDI's website at <http://www.ftdichip.com/Products/ICs/FT90x.html> for more information.

## 3 Ordering Information

Module Code	Description
UMFTPD2A	FTDI Programmer/Debugger Module

## 4 UMFTPD2A Signals

### 4.1 UMFTPD2A Pin Out



**Figure 4.1 – UMFTPD2A Module Pin Out**

Figure 1 illustrates the signals available on J1, J2 pin header and CN2, CN3 connector of the UMFTPD2A. There are 3 LED indicators for the different power supplies.

LED1 is for the VPP power supply.

LED2 is for the FRSC power supply.

LED3 is for the VSW (+5V) power output.

LED1 and LED2 only will be turned on when the system is programming the FT90x chip EFUSE.

## 4.2 Signal Descriptions

Pin No.	Name	Type	Description
CN2-1	SCK	Signal output	Serial clock output for SPI.
CN2-2	SS#	Signal output	Slave select output for SPI.
CN2-3	MOSI	Signal Output	Master out slave in for SPI.
CN2-4	MISO	Signal input	Master in slave out for SPI.
CN2-5	VPP	Power Out	Typically +1.85V power output when adjustable LDO is enabled.
CN2-6	FRSC	Power Out	Typically +3.7V power output when adjustable LDO is enabled.
CN2-7	GND	Ground	0V Ground.
CN2-8	DBG	Signal Input/Output	One-wire debugger interface input/output.
CN2-9	PROG#	Signal Output	Feature reserved for future use.
CN2-10	RESET#	Signal Output	Active low reset output.
CN2-11	VSW	Power Out	+5V power output. Outputs the power source from the USB bus when the FT4232HL has enumerated.
CN2-12	VSW	Power Out	+5V power output. Outputs the power source from the USB bus when the FT4232HL has enumerated.

**Table 1 - CN2 Connector Pin Out Description**

Pin No.	Name	Type	Description
CN3-1	SCK	Signal Output	Serial clock output for SPI.
CN3-2	SS#	Signal Output	Slave select output for SPI.
CN3-3	MOSI	Signal Output	Master out slave in for SPI.
CN3-4	MISO	Signal Input	Master in slave out for SPI.
CN3-5	VPP	Power Out	Typically +1.85V power output when adjustable LDO is enabled.
CN3-6	FRSC	Power Out	Typically +3.7V power output when adjustable LDO is enabled.
CN3-7	GND	Ground	0V Ground.
CN3-8	DBG	Signal Input/Output	One-wire debugger interface input/output.
CN3-9	VSW	Power Out	+5V power output. Outputs the power source from the USB bus when the FT4232HL has enumerated.
CN3-10	RESET#	Signal Output	Active low reset output.

**Table 2 - CN3 Connector Pin Out Description**

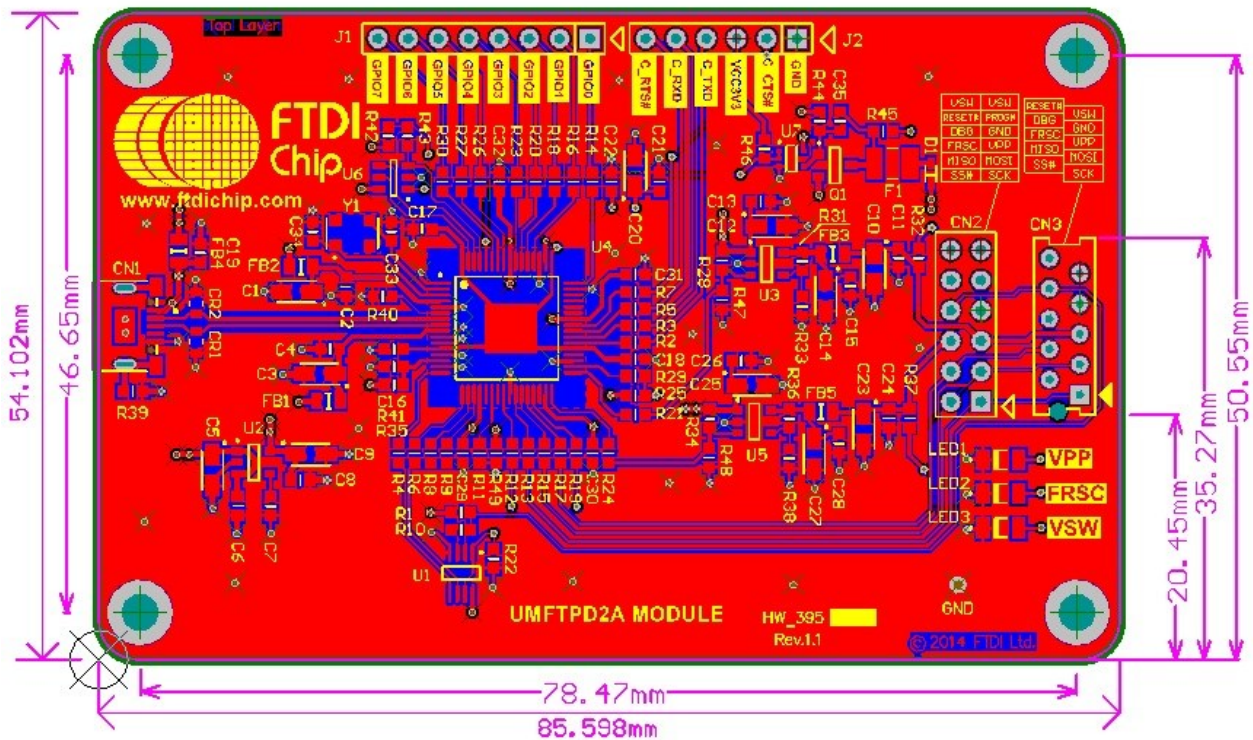
Pin No.	Name	Type	Description
J1-0	GPIO0	Signal Input/Output	Generic GPIO pin 0
J1-1	GPIO1	Signal Input/Output	Generic GPIO pin 1
J1-2	GPIO2	Signal Input/Output	Generic GPIO pin 2
J1-3	GPIO3	Signal Input/Output	Generic GPIO pin 3
J1-4	GPIO4	Signal Input/Output	Generic GPIO pin 4
J1-5	GPIO5	Signal Input/Output	Generic GPIO pin 5
J1-6	GPIO6	Signal Input/Output	Generic GPIO pin 6
J1-7	GPIO7	Signal Input/Output	Generic GPIO pin 7

**Table 3 - J1 Header Pin Out Description**

Pin No.	Name	Type	Description
J2-1	GND	Ground	0V ground
J2-2	C_CTS#	Signal Input	Active low clear to send input for UART
J2-3	VCC3V3	Power out	+3.3V power output
J2-4	C_TXD	Signal Output	Active high transmitter output for UART
J2-5	C_RXD	Signal Input	Active high receiver input for UART
J2-6	C_RTS#	Signal Output	Active low request to send output for UART

**Table 4 - J2 Header Pin Out Description**

## 5 Module Dimensions



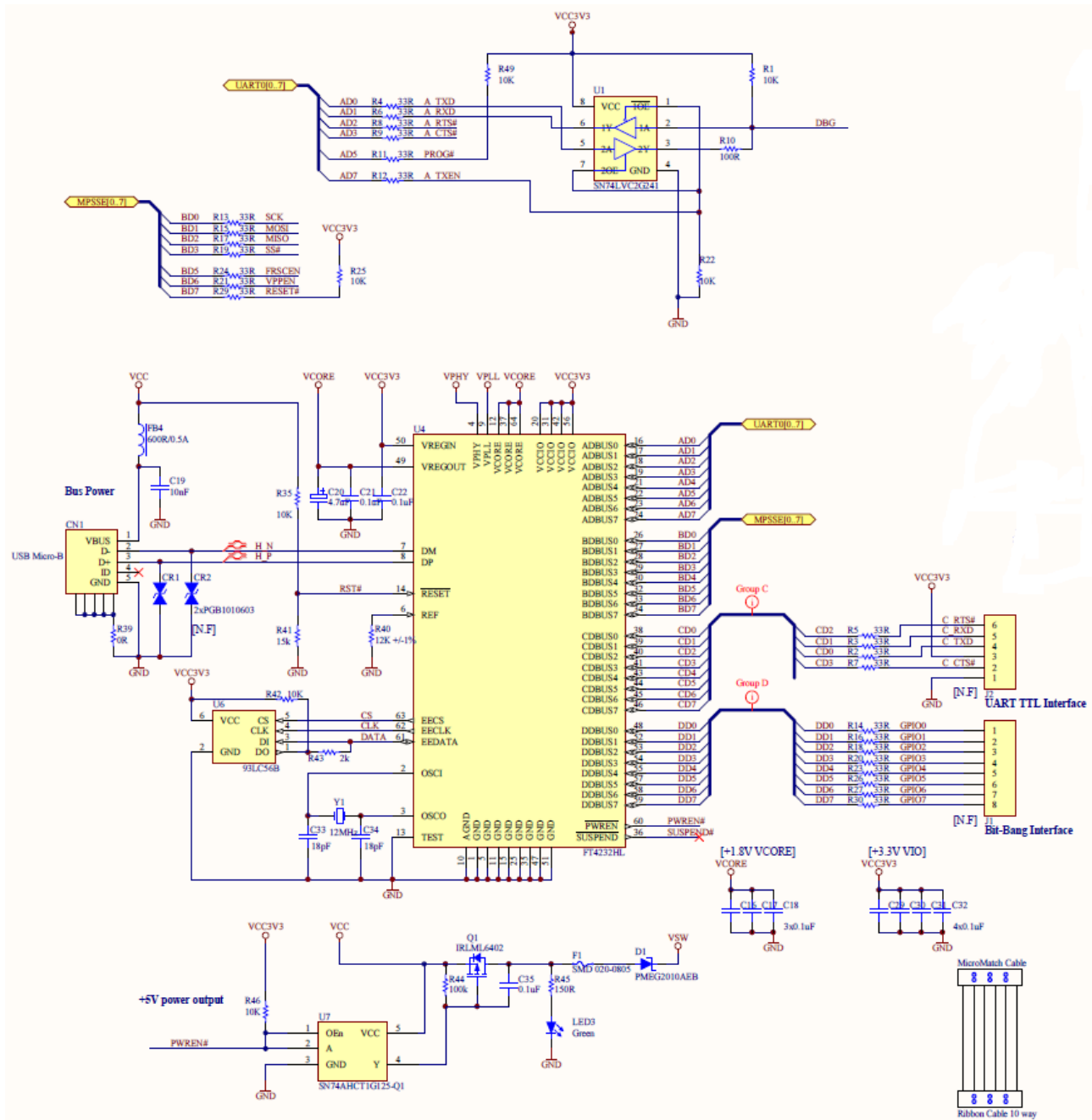
**Figure 5.1 – UMFTP2A Module Dimensions**

All dimensions are given in millimetres. Hole size diameter = 3.2mm.

The UMFTP2A module exclusively uses lead free components, and is fully compliant with European Union directive 2002/95/EC.

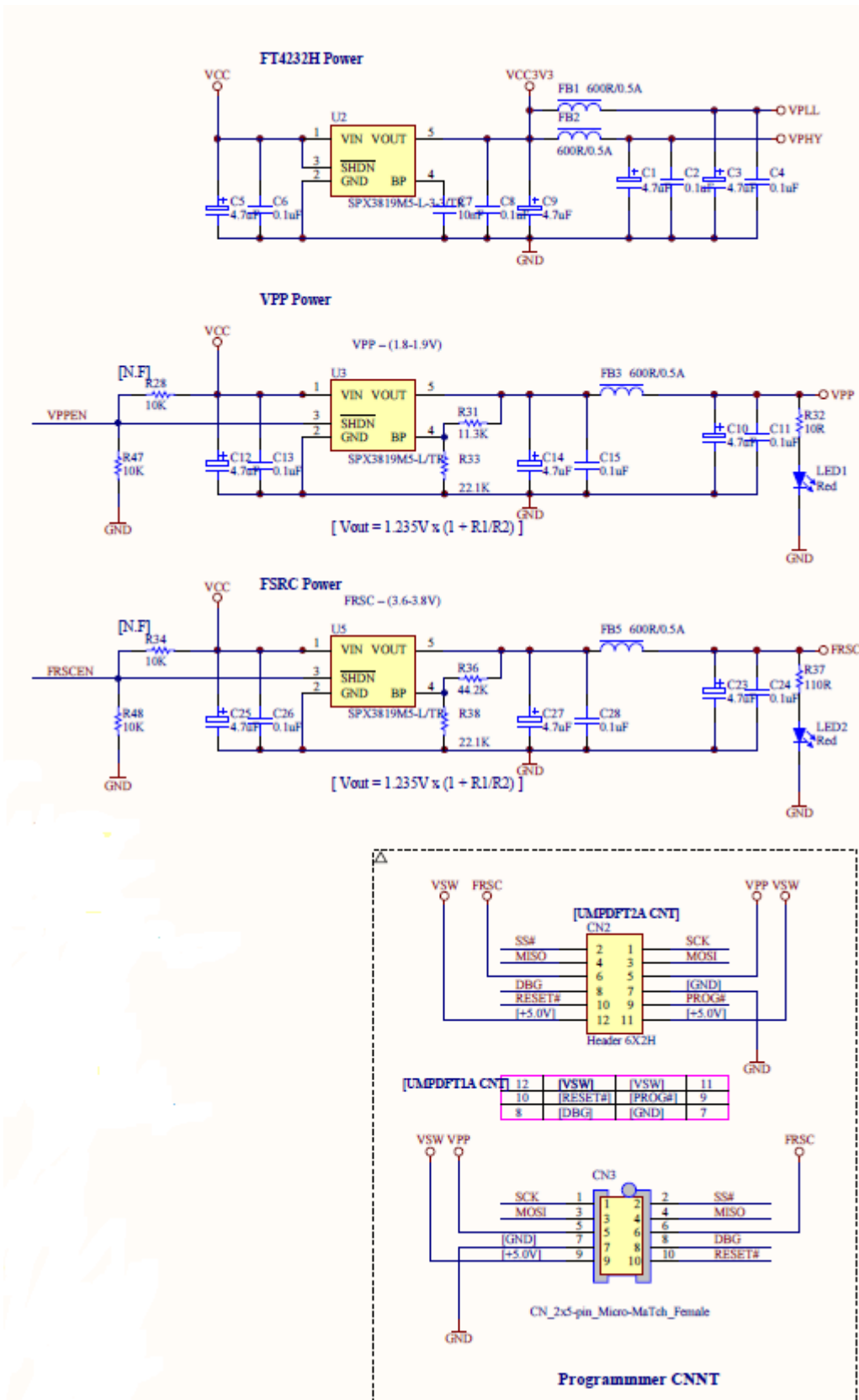


## 6 UMFTP2A Module Circuit Schematic



**Figure 6.1 - Schematic part 1**





**Figure 6.2 - Schematic part 1**

## 7 Hardware Setup Guide

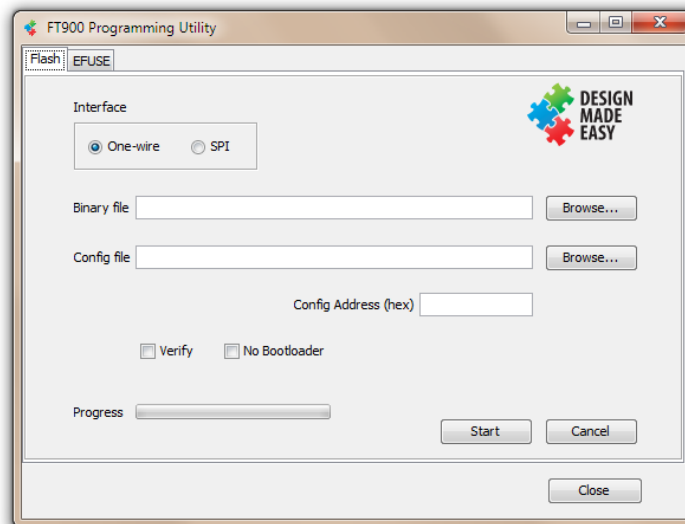
### 7.1 Module Connect to PC

The first time the UMFTP2A module is connected to a Windows OS PC, the USB device drivers need to install. This should happen automatically if you are connected to a network but you can also download from the [FTDI Website](#).

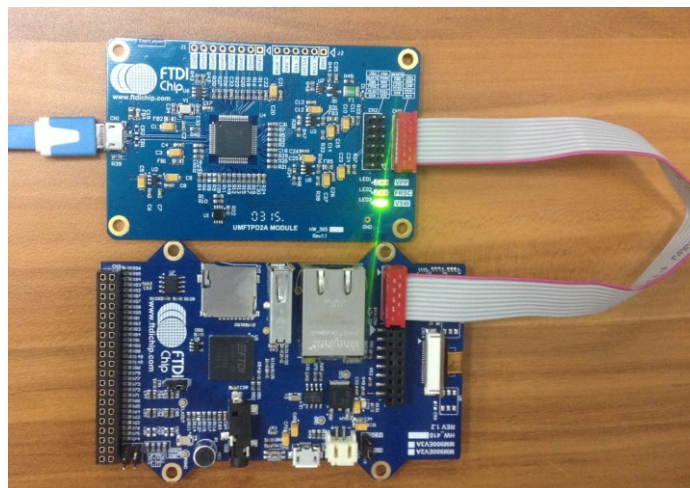
Before the FT900 programming utility uses this module, make sure the D2xx device driver installation completes successfully.

### 7.2 FT900 Programming Utility

Run the FT90x programming utility (Figure 4) to download firmware / application after the whole setup (Figure 5) is ready. Please refer to [AN\\_325\\_FT90X\\_Toolchain\\_Guide](#) for tool operation.



**Figure 7.1 – FT90x Programming Utility**



**Figure 7.2 – MM900EVxA Module Connection**

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### Distributor and Sales Representatives

Please visit the Sales Network page of the [FTDI Web site](#) for the contact details of our distributor(s) and sales representative(s) in your country.

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## Appendix A – References

### Document References

FT90x datasheet: [FT900/FT901/FT902/FT903 Datasheet](#)

FT900 tool chain installation guide document: [AN\\_325 FT900 Tool Chain Installation Guide](#)

### Acronyms and Abbreviations

Terms	Description
DLL	Dynamic Link Library
GPIO	General Purpose Input/Output
LED	Light Emitting Diode
MPSSE	Multi-Protocol Synchronous Serial Engine
OS	Operating System
PC	Personal Computer
RoHS	Restriction of Hazardous Substances
UART	Universal Asynchronous Receiver Transmitter
USB	Universal Serial Bus

## Appendix B – List of Figures and Tables

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## Appendix C – Revision History

Document Title: UMFTPD2A Program Module  
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Product Page: <http://www.ftdichip.com>  
Document Feedback: [Send Feedback](#)

Revision	Changes	Date
1.0	Initial Release	2015-09-21
1.1	Updated schematic image	2015-09-30