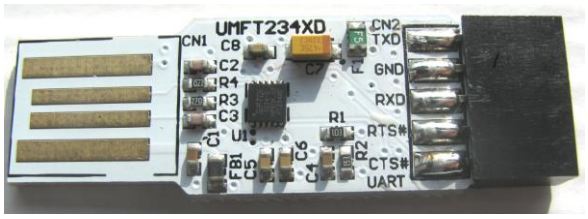
Future Technology Devices International

Datasheet

UMFT234XD Breakout Modules



UMFT234XD is a USB to UART breakout module

1 Introduction

The UMFT234XD breakout module utilizes FTDI's FT234XD IC to convert USB to UART.

1.1 Features

The UMFT234XD is a breakout board that converts USB2.0 Full-Speed to UART. These modules do not have a USB connector, instead, the modules plug directly into the USB host connector and the pads of the PCB makes electrical contact with the electrical contacts of the USB connector.

The UART interface operates at +3.3V voltage levels, however all I/Os are 5V tolerant.

1.2 Ordering Information

Module	Interface	Features
UMFT234XD-01	UART	USB to UART with four control bus lines, 3.3V power out limited to 50mA and 5V with as safety fuse. UART signals available via 8 pin female connector.
UMFT234XD-NC **(EOL)**	UART	USB to UART with four control bus lines, 3.3V power out limited to 50mA and 5V with as safety fuse. UART signals available via 8 pads on the PCB.
UMFT234XD-WE **(EOL)**	UART	USB to UART with four control bus lines, 3.3V power out limited to 50mA and 5V with as safety fuse. UART signals available via 8, 6" flying leads connected to the PCB pads.

Table 1.1 Ordering Information

2 Driver Support

Royalty free VIRTUAL COM PORT (VCP) and D2XX Direct Drivers are available for the following Operating Systems (OS):

- Windows
- Linux
- Mac
- Android (J2xx / D2xx only)

See the following website link for the full driver support list including OS versions and legacy OS.

https://ftdichip.com/drivers/

Virtual COM Port (VCP) drivers cause the USB device to appear as an additional COM port available to the PC. Application software can access the USB device in the same way as it would access a standard COM port.

D2XX Direct Drivers allow direct access to the USB device through a DLL. Application software can access the USB device through a series of DLL function calls. The functions available are listed in the D2XX Programmer's Guide document which is available from the Documents section of our website.

Please also refer to the Installation Guides webpage for details on how to install the drivers.

Table of Contents

3 UMFT234XD Signals and Configurations

CN1 connects directly to a USB host or HUB port, or can be connected to a USB extension cable. This connects to USB signals, 5V USB Bus power and GND. When connecting the module to a USB host or HUB the signal pads should be facing upwards when connecting to a horizontal connector and be facing right for vertical connectors. If the module is plugged in upside down no connectivity will be made between PCB and HUB, no damage will occur from plugging the module in the wrong way.

3.1 UMFT234XD CN1 Signal Descriptions

Pin No.	Name	Type	Description
1	VBUS	PWR	5V Power input USB port. For a low power USB bus powered design, up to 100mA can be sourced from the 5V supply on the USB bus. A maximum of 500mA can be sourced from the USB bus in a high power USB bus powered design.
2	D-	Signal	Negative USB data signal
3	D+	Signal	Positive USB data signal
4	GND	PWR	Module Ground

Table 3.1 USB Connector Pin Out Description

3.2 UMFT234XD CN2 Signal Descriptions

Pin No.	Name	Type	Description
1	TXD	Output	UART transmit data
2	VBUS	PWR Output	5V Power output USB port.
3	GND	PWR	Module Ground Supply
4	RESET #	Input	Can be used by an external device to reset the FT234XD.
5	RXD	Input	UART receive data
6	3V3	Output	3.3V output from FT234XD integrated LDO regulator. This pin is decoupled to ground on the module PCB with a 10nF capacitor and offers 3V3 at up to 50mA for external hardware.
7	RTS#	Output	UART Ready to Send handshake signal
8	GND	PWR	Module Ground Supply
9	CTS#	Input	UART Clear to Send handshake signal
10	CB0	I/O	Configurable CBUS0 I/O Pin. The function of this pin is configured in the device internal MTP ROM. See Table 3.3

Table 3.2 UART Module Pin Out Description

3.3 CBUS Signal Options

CBUS Signal Option	Available On CBUS Pin	Description
Tristate	CBUS0	IO Pad is tri-stated
DRIVE_1	CBUS0	Output a constant 1
DRIVE_0	CBUS0	Output a constant 0
TXDEN	CBUS0	Enable transmit data for RS485
PWREN#	CBUS0	Output is low after the device has been configured by USB, then high during USB suspend mode. This output can be used to control power to external logic.
TXLED#	CBUS0	Transmit data LED drive – open drain pulses low when transmitting data via UART.
RXLED#	CBUS0	Receive data LED drive – open drain pulses low when receiving data via UART.
TX&RXLED#	CBUS0	LED drive – open drain pulses low when transmitting or receiving data via UART.
SLEEP#	CBUS0	Goes low during USB suspend mode. Typically used to power down external logic to RS232 level converter IC in USB to RS232 converter designs.
CLK24MHz	CBUS0	24 MHz Clock output.**
CLK12MHz	CBUS0	12 MHz Clock output.**
CLK6MHz	CBUS0	6 MHz Clock output.**
GPIO	CBUS0	CBUS bit bang mode option. Allows up to 4 of the CBUS pins to be used as general purpose I/O. A separate application note, AN232R-01, available from FTDI website (www.ftdichip.com) describes in more detail how to use CBUS bit bang mode.
BCD_Charger	CBUS0	Battery Charge Detect indicates when the device is connected to a dedicated battery charger host. Active high output. NOTE: Requires a 10K pull-down to remove power up toggling.
BCD_Charger#	CBUS0	Active low BCD Charger, driven by an open drain to ground with no internal pull-up.
BitBang_WR#	CBUS0	Synchronous and asynchronous bit bang mode WR# strobe output.
BitBang_RD#	CBUS0	Synchronous and asynchronous bit bang mode RD# strobe output.
VBUS_Sense	CBUS0	Input to detect when VBUS is present.
Time_Stamp	CBUS0	Toggle signal which changes state each time a USB SOF is received
Keep_Awake#	CBUS0	Active Low input, prevents the chip from going into suspend.

Table 3.3 CBUS Configuration Control

* PWREN# must be used with a 10kΩ resistor pull up.

**When in USB suspend mode the outputs clocks are also suspended.

3.4 Configuring the MTP ROM

The FT234XD IC on the module contains an embedded MTP ROM, this can be used to specify the functions of the CBUS0 pin, the current drive on each signal pin, current limit for the USB bus and the descriptors of the device. These features can be programmed using FTDI's programming utility FT_Prog. For details on using FT_Prog, please see the application note AN_124 User Guide for FTDI FT_Prog Utility.

When programming the MTP ROM please note:

i) The Max Bus Power setting of the MTP ROM should specify the maximum current to be drawn from the USB host/hub when enumerated. For high-powered USB devices the current limit when enumerated is between 100mA and 500mA, for low-powered USB devices the current limit is 100mA.

4 Module Dimensions

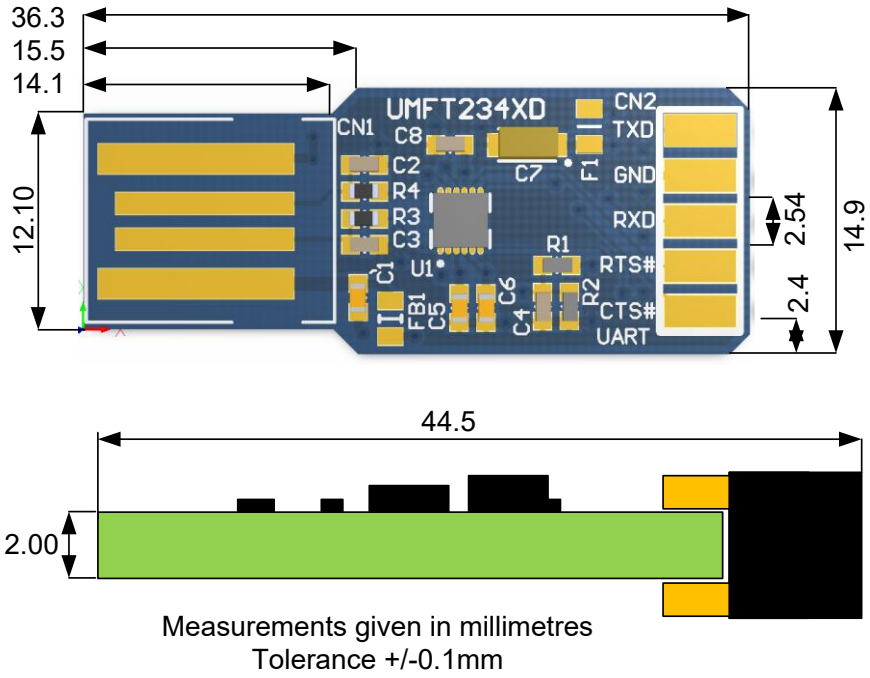


Figure 4.1 UMFT234XD-01 Module Dimensions

5 Module Wire Connections

5.1 UMFT234XD-WE Wire Connections

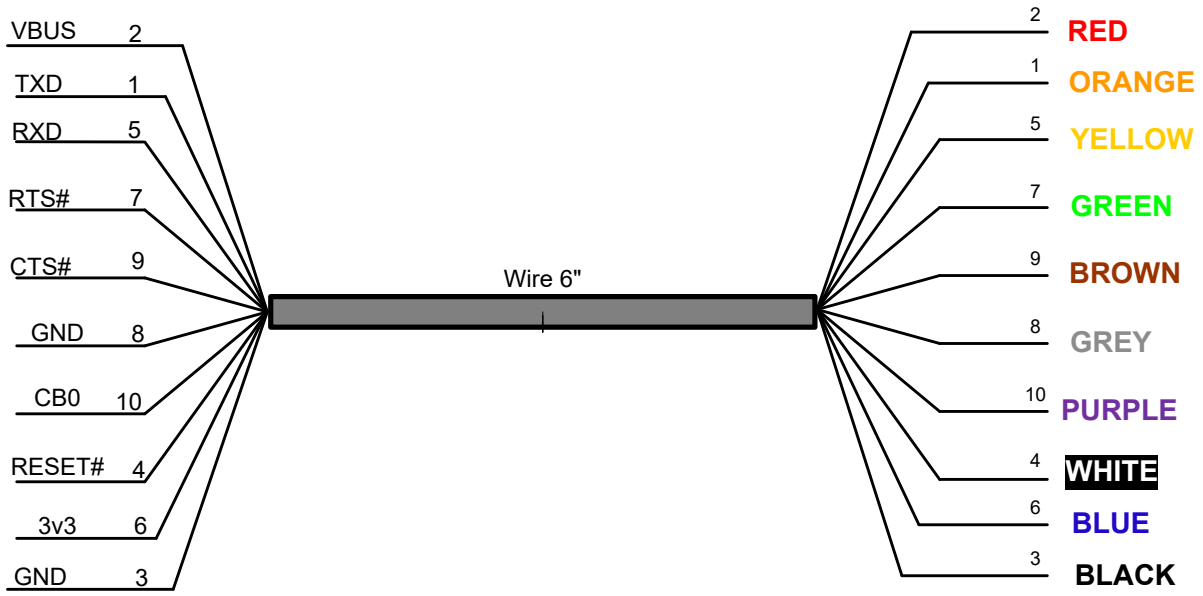


Figure 5.1 UMFT234XD-WE Wire Connections (numbers refer to pad numbers on the PCB)

Figure 5.1 illustrates the –WE product as a cable. This is only for illustration purposes. The wire ended product consists of individual wires – not a cable

5.2 UMFT234XD-WE

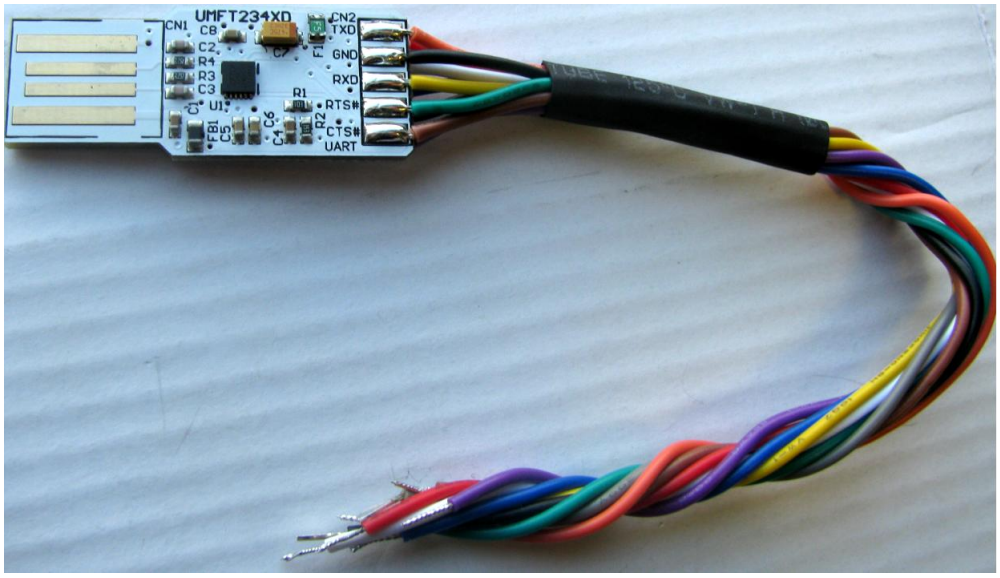


Figure 5.2 UMFT234XD-WE Image

6 Module Circuit Schematic

6.1 UMFT234XD Schematic

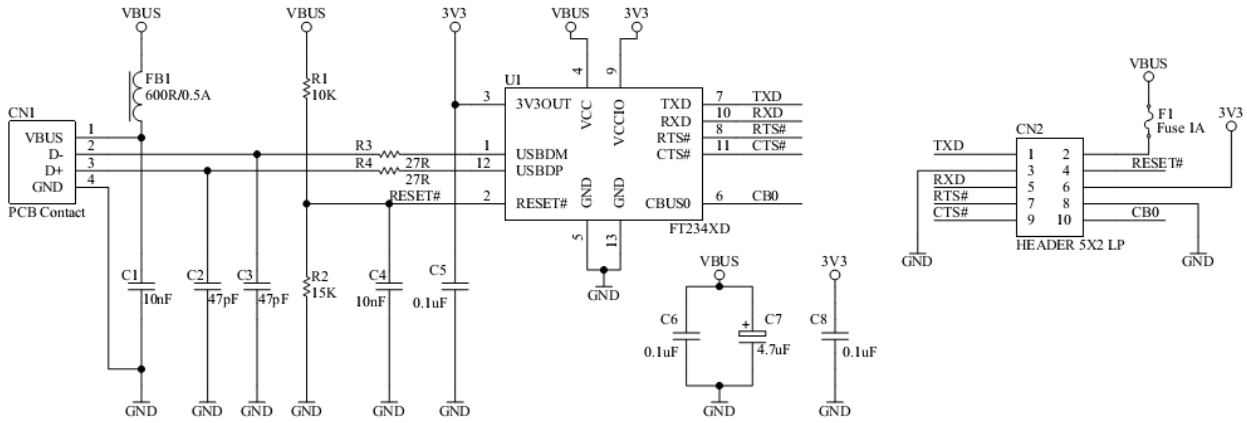


Figure 6.1 UMFT234XD Circuit Schematic

7 Environmental Compliances

The UMFT234XD modules exclusively use lead free components, and are fully compliant with European Union directive 2002/95/EC.

8 Internal MTP ROM Configuration

Following a power-on reset or a USB reset the FT234XD will scan its internal MTP ROM and read the USB configuration descriptors stored there. The default values programmed into the internal MTP ROM in the FT234XD used on the UMFT234XD are shown in Table 8.1.

Parameter	Value	Notes
USB Vendor ID (VID)	0403h	FTDI default VID (hex)
USB Product UD (PID)	6015h	FTDI default PID (hex)
Serial Number Enabled?	Yes	
Serial Number	See Note	A unique serial number is generated and programmed into the MTP ROM during final test of the UMFT234XD module.
Pull down I/O Pins in USB Suspend	Disabled	Enabling this option will make the device pull down on the UART interface lines when the power is shut off (PWREN# is high).
Manufacturer Name	FTDI	
Product Description	UMFT234XD	
Max Bus Power Current	90mA	
Power Source	Bus Powered	
Device Type	FT234XD	
USB Version	0200	Returns USB 2.0 device description to the host. Note: The device is a USB 2.0 Full Speed device (12Mb/s).
Remote Wake Up	N/A	FT234X does not have an RI# pin.
High Current I/Os	Disabled	Enables the high drive level on the serial and CBUS I/O pins.

Parameter	Value	Notes
Load VCP Driver	Enabled	Makes the device load the VCP driver interface for the device.
CBUS0	PWREN#	

Table 8.1 Default Internal MTP ROM Configuration

The internal MTP ROM in the FT234XD can be programmed over USB using the utility program FT_PROG. FT_PROG can be downloaded from www.ftdichip.com. Users who do not have their own USB vendor ID but who would like to use a unique Product ID in their design can apply to FTDI for a free block of unique PIDs. Contact FTDI Support for this service.

9 Contact Information

Europe, Middle East, Africa

Future Technology Devices International Limited (UK)
Unit 1, 2 Seaward Place, Centurion Business Park
Glasgow G41 1HH
United Kingdom
Tel: +44 (0) 141 429 2777

E-mail (Sales) sales1@ftdichip.com
E-mail (Technical Support) support1@ftdichip.com

Americas

Future Technology Devices International Limited (USA)
7130 SW Fir Loop
Tigard, OR 97223-8160
USA
Tel: +1 (503) 547 0988

E-mail (Sales) us.sales@ftdichip.com
E-mail (Technical Support) us.support@ftdichip.com

Asia Pacific

Future Technology Devices International Limited (Singapore)
1 Tai Seng Avenue, Tower A #03-06
Singapore 536464
Tel: (+65) 6841 1174
Tel (Technical Support): +886 (0) 2 8797 1330

E-mail (Sales) tw.sales1@ftdichip.com
E-mail (Technical Support) tw.support1@ftdichip.com

China

Future Technology Devices International Limited (China)
Room 1103, No. 666 West Huaihai Road,
Shanghai, 200052
China
Tel: +86 21 62351596

E-mail (Sales) cn.sales@ftdichip.com
E-mail (Technical Support) cn.support@ftdichip.com

Web Site

http://ftdichip.com

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.

Appendix A – References

Document/Web References

AN232R-01

D2XX Programmer's Guide

FT234XD Full Speed USB to UART IC Datasheet

FT_PROG User Guide

Acronyms and Abbreviations

Terms	Description
BCD	Battery Charger Detection
DLL	Dynamic Link Library
IC	Integrated Circuit
MTP	Multi-time Programmable memory
OS	Operating System
PCB	Printed Circuit Board
ROM	Read Only Memory
USB	Universal Serial Bus
UART	Universal Asynchronous Receiver/Transmitter
VCP	Virtual COM Ports

Appendix B - List of Figures and Tables

List of Figures

List of Tables

Appendix C - Revision History

Document Title: UMFT234XD
Document Reference No.: FT_000801
Clearance No.: FTDI# 327
Product Page: https://ftdichip.com/product-category/products/modules/
Document Feedback: Send Feedback

Revision	Changes	Date
1.0	Initial Release	31-01-2013
1.1	Corrected -01 part number	06-07-2015
1.2	Updated Table 8.1 Remote Wake Up. Updated Contact Information. Added EOL to parts in Ordering Information. Updated Driver Support.	26-06-2025