

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	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	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.

2 Driver Support

Royalty-Free VIRTUAL COM PORT (VCP):

- Windows 8 32,64-bit
- Windows 7 32,64-bit
- Windows Vista
- Windows XP 32,64-bit
- Windows XP Embedded
- Windows CE.NET 4.2 , 5.0 and 6.0
- MAC OS OS-X
- Linux 3.0 and greater
- Android

Royalty-Free D2XX Direct Drivers:

- Windows 8 32,64-bit
- Windows 7 32,64-bit
- Windows Vista
- Windows XP 32,64-bit
- Windows XP Embedded
- Windows CE.NET 4.2, 5.0 and 6.0
- MAC OS OS-X
- Linux 3.0 and greater
- Android

The drivers listed above are all available to download for free from www.ftdichip.com. Various 3rd Party Drivers are also available for various other operating systems - visit www.ftdichip.com for details.

Use of FTDI devices in life support and/or safety applications is entirely at the user's risk, and the user agrees to defend, indemnify and hold harmless FTDI from any and all damages, claims, suits or expense resulting from such use.

Table of Contents

1	Introduction	1
1.1	Features.....	1
1.2	Ordering Information.....	1
2	Driver Support.....	1
3	UMFT234XD Signals and Configurations	3
3.1	UMFT234XD CN1 Signal Descriptions	3
3.2	UMFT234XD CN2 Signal Descriptions	3
3.3	CBUS Signal Options	4
3.4	Configuring the MTP ROM.....	5
4	Module Dimensions	5
5	Module Wire Connections	6
5.1	UMFT234XD-WE Wire Connections.....	6
5.2	UMFT234XD-WE	6
6	Module Circuit Schematic	7
6.1	UMFT234XD Schematic	7
7	Environmental Compliances	7
8	Internal MTP ROM Configuration	8
9	Contact Information	9
	Appendix A - List of Figures and Tables.....	9
	Appendix B: Revision History	10

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 [FT_PROG User Guide](#).

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

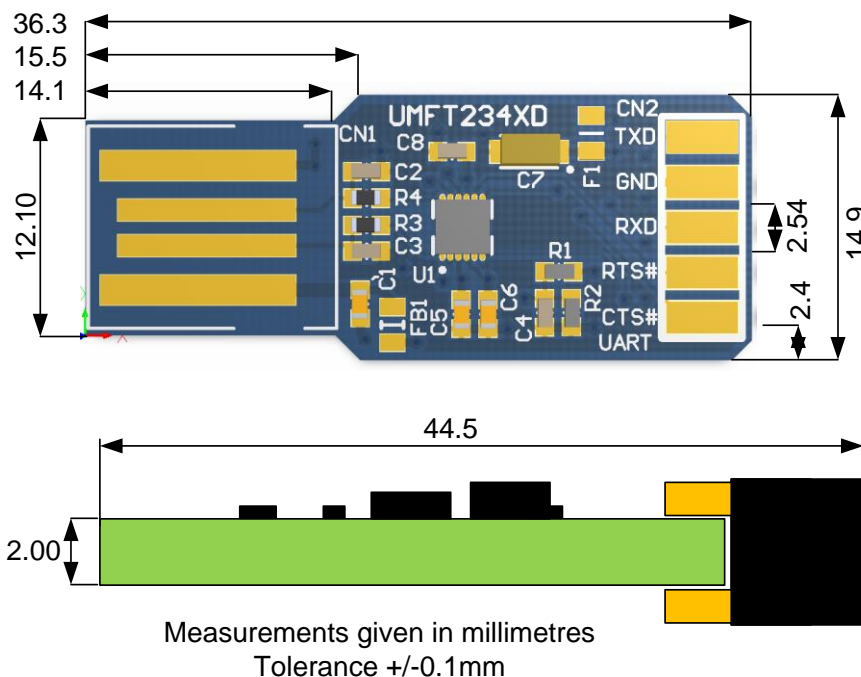


Figure 4.1 UMFT234XD-01 Module Dimensions

5 Module Wire Connections

5.1 UMFT234XD-WE Wire Connections

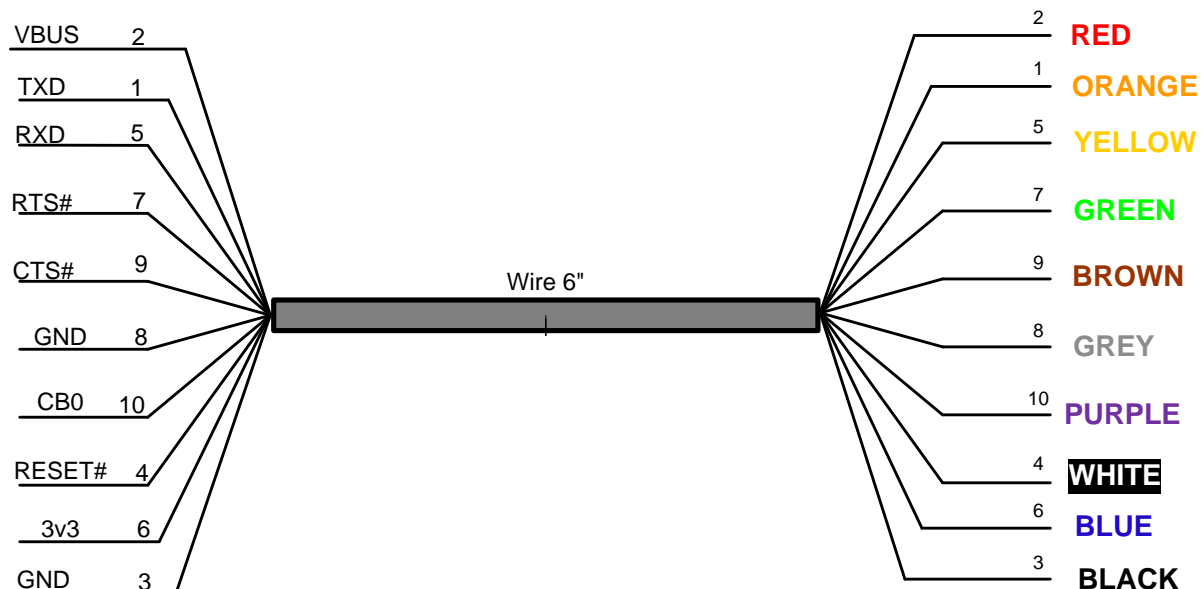


Figure 5.1 UMFT234XD-WE Wire Connections (numbers refer to pad numbers on the PCB)

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

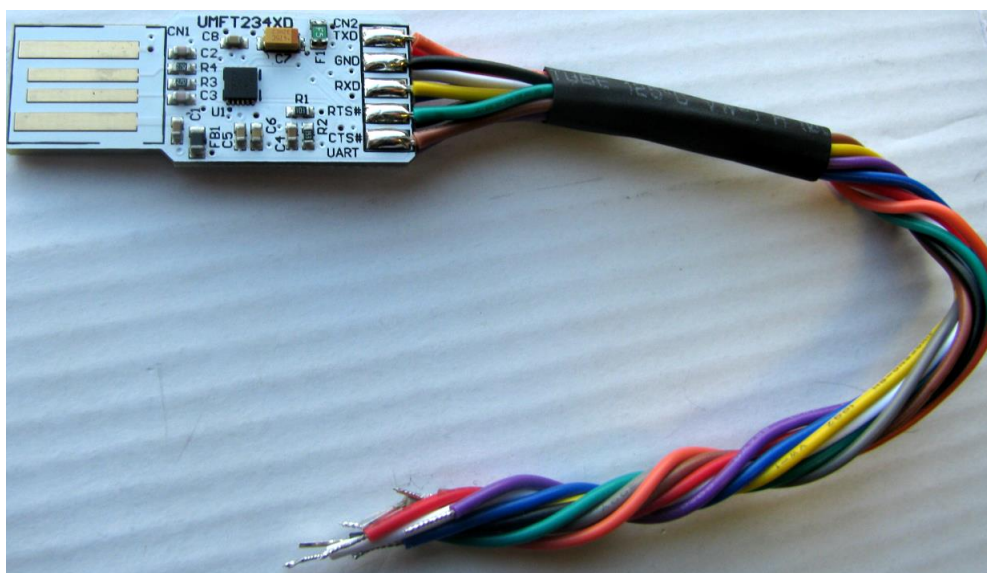


Figure 5.2 UMFT234XD-WE Image

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 ID (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	Enabled	Taking RI# low will wake up the USB host controller from suspend.
High Current I/Os	Disabled	Enables the high drive level on the serial and CBUS I/O pins.
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](mailto:support1@ftdichip.com) (support1@ftdichip.com) for this service.

9 Contact Information

Head Office – Glasgow, UK

Future Technology Devices International Limited
Unit 1, 2 Seaward Place, Centurion Business Park
Glasgow G41 1HH
United Kingdom
Tel: +44 (0) 141 429 2777
Fax: +44 (0) 141 429 2758

E-mail (Sales) sales1@ftdichip.com
E-mail (Support) support1@ftdichip.com
E-mail (General Enquiries) admin1@ftdichip.com

Branch Office – Taipei, Taiwan

2F, No. 516, Sec. 1, NeiHu Road
Taipei 114
Taiwan, R.O.C.
Tel: +886 (0) 2 8791 3570
Fax: +886 (0) 2 8791 3576

E-mail (Sales) tw.sales1@ftdichip.com
E-mail (Support) tw.support1@ftdichip.com
E-mail (General Enquiries) tw.admin1@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.

Branch Office – Hillsboro, Oregon, USA

7130 SW Fir Loop
Tigard, OR 97223-8160
USA
Tel: +1 (503) 547 0988
Fax: +1 (503) 547 0987

E-Mail (Sales) us.sales@ftdichip.com
E-Mail (Support) us.support@ftdichip.com
E-Mail (General Enquiries) us.admin@ftdichip.com

Branch Office – Shanghai, China

Room 1103, No. 666 West Huaihai Road,
Shanghai, 200052
China
Tel: +86 (0)21 6235 1596
Fax: +86 (0)21 6235 1595

E-mail (Sales) cn.sales@ftdichip.com
E-mail (Support) cn.support@ftdichip.com
E-mail (General Enquiries) cn.admin@ftdichip.com

System and equipment manufacturers and designers are responsible to ensure that their systems, and any Future Technology Devices International Ltd (FTDI) devices incorporated in their systems, meet all applicable safety, regulatory and system-level performance requirements. All application-related information in this document (including application descriptions, suggested FTDI devices and other materials) is provided for reference only. While FTDI has taken care to assure it is accurate, this information is subject to customer confirmation, and FTDI disclaims all liability for system designs and for any applications assistance provided by FTDI. Use of FTDI devices in life support and/or safety applications is entirely at the user's risk, and the user agrees to defend, indemnify and hold harmless FTDI from any and all damages, claims, suits or expense resulting from such use. This document is subject to change without notice. No freedom to use patents or other intellectual property rights is implied by the publication of this document. Neither the whole nor any part of the information contained in, or the product described in this document, may be adapted or reproduced in any material or electronic form without the prior written consent of the copyright holder. Future Technology Devices International Ltd, Unit 1, 2 Seaward Place, Centurion Business Park, Glasgow G41 1HH, United Kingdom. Scotland Registered Company Number: SC136640

Appendix A - List of Figures and Tables

List of Figures

Figure 4.1 UMFT234XD-01 Module Dimensions	5
Figure 5.1 UMFT234XD-WE Wire Connections (numbers refer to pad numbers on the PCB)	6
Figure 5.2 UMFT234XD-WE Image	6
Figure 6.1 UMFT234XD Circuit Schematic	7

List of Tables

Table 3.1 USB Connector Pin Out Description	3
Table 3.2 UART Module Pin Out Description	3
Table 3.3 CBUS Configuration Control.....	4
Table 8.1 Default Internal MTP ROM Configuration	8