1 Introduction

The UMFT260EV1A is a development module for FTDI’s FT260, HID-class USB to UART/I²C Bridge IC. The UMFT260EV1A is ideal for development purposes to quickly prove functionality of adding USB to a target design.

The UMFT260EV1A is a module which is designed to plug into a standard 0.8” wide 24 pin DIP socket. The USB connection to a host system is via a Micro USB-B connector.

All components used, including the FT260 are Pb-free (RoHS compliant).

1.1 Features

The UMFT260EV1A is built with a FT260; many of the features of the FT260 can be utilized with this module. For further details of FT260 features, please refer to the FT260 datasheet, DS_FT260, is available at http://www.ftdichip.com/FT260.

In addition to the features listed in the FT260 datasheet, the UMFT260EV1A has the following features:

- PCB assembly module is designed to fit a standard 20.32mm (0.8”) wide 24 pin DIP socket. Pins are on a 2.54mm (0.1”) pitch.
- An on-board Micro USB-B type connector allows modules to be connected to a host system via a standard USB A to Micro B cable.
- On-board I²C 2kbits EEPROM (address:0x50) to contain FT260 configuration settings and vendor specific parameters (I²C pull-high circuit is implemented as default)
- Jumpers for selecting the FT260 HID interfaces configuration
- Solder jumpers for configuring the FT260Q to be in USB Bus powered or Self powered modes.
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2 Driver Support

Standard Human Interface Device (HID) Driver support for the FT260 USB Device is available from the following OS:

- Windows 10 32,64-bit
- Windows 8.1 32,64-bit
- Windows 8 32,64-bit
- Windows 7 32,64-bit
- Windows Vista and Vista 64-bit
- Windows XP and XP 64-bit
- Windows Embedded Operating Systems
- Mac OS X
- Linux
### 3 Ordering Information

<table>
<thead>
<tr>
<th>Module Code</th>
<th>Utilised IC Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UMFT260EV1A</td>
<td>FT260Q</td>
<td>FT260Q Development module.</td>
</tr>
</tbody>
</table>
4 UMFT260EV1A Signals

4.1 UMFT260EV1A Pin Out

Figure 4.1 illustrates the signals available on the DIP pins. The information relating to the on-board jumpers will be described later in this chapter.
### 4.2 JP1/JP5/JP6 Signal Descriptions

<table>
<thead>
<tr>
<th>Connector Pin</th>
<th>Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>J1-1</td>
<td>GND</td>
<td>Ground</td>
<td>Ground 0 volts.</td>
</tr>
<tr>
<td>J1-2</td>
<td>FSOURCE</td>
<td>Power</td>
<td>FT260 FSOURCE Pin (input).</td>
</tr>
<tr>
<td>J1-3</td>
<td>GND</td>
<td>Ground</td>
<td>Ground 0 volts.</td>
</tr>
</tbody>
</table>

**Table 4.1 JP1 Pin Out Description**

<table>
<thead>
<tr>
<th>Connector Pin</th>
<th>Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>JP5-1</td>
<td>VBUS</td>
<td>Power</td>
<td>USB VBUS Power pin (output). The USB VBUS is connected to the FT260 VCCIN Pin through JP2 as default</td>
</tr>
<tr>
<td>JP5-2</td>
<td>VCCIN</td>
<td>Power</td>
<td>FT260 VCCIN Pin (input). The FT260 VCCIN is connected to the USB VBUS Pin through JP2 as default</td>
</tr>
<tr>
<td>JP5-3</td>
<td>GND</td>
<td>Ground</td>
<td>Ground 0 volts.</td>
</tr>
<tr>
<td>JP5-4</td>
<td>RESETN</td>
<td>Signal</td>
<td>FT260 RESETN Pin.</td>
</tr>
<tr>
<td>JP5-5</td>
<td>BCD_DET</td>
<td>Signal</td>
<td>FT260 DIO12 Pin.</td>
</tr>
<tr>
<td>JP5-6</td>
<td>TXACTIVE</td>
<td>Signal</td>
<td>FT260 DIO0 Pin.</td>
</tr>
<tr>
<td>JP5-7</td>
<td>GND</td>
<td>Ground</td>
<td>Ground 0 volts.</td>
</tr>
<tr>
<td>JP5-8</td>
<td>RTSN</td>
<td>Signal</td>
<td>FT260 DIO1 Pin.</td>
</tr>
<tr>
<td>JP5-9</td>
<td>CTSN</td>
<td>Signal</td>
<td>FT260 DIO2 Pin.</td>
</tr>
<tr>
<td>JP5-10</td>
<td>RXD</td>
<td>Signal</td>
<td>FT260 DIO3 Pin.</td>
</tr>
<tr>
<td>JP5-11</td>
<td>TXD</td>
<td>Signal</td>
<td>FT260 DIO4 Pin.</td>
</tr>
<tr>
<td>JP5-12</td>
<td>GND</td>
<td>Ground</td>
<td>Ground 0 volts.</td>
</tr>
</tbody>
</table>

**Table 4.2 JP5 Pin Out Description**
<table>
<thead>
<tr>
<th>Connector Pin</th>
<th>Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>JP6-1</td>
<td>VOUT3V3</td>
<td>Power</td>
<td>FT260 VOUT3V3 Pin (output). The FT260 VOUT3V3 pin is connected to the FT260 VCCIO pin through JP1 as default</td>
</tr>
<tr>
<td>JP6-2</td>
<td>VCCIO</td>
<td>Power</td>
<td>FT260 VCCIO Pin (input). The FT260 VCCIO pin is connected to the FT260 VOUT3V3 Pin through JP1 as default</td>
</tr>
<tr>
<td>JP6-3</td>
<td>DSRN</td>
<td>Signal</td>
<td>FT260 DIO13 Pin.</td>
</tr>
<tr>
<td>JP6-4</td>
<td>RI</td>
<td>Signal</td>
<td>FT260 DIO11 Pin.</td>
</tr>
<tr>
<td>JP6-5</td>
<td>DCD</td>
<td>Signal</td>
<td>FT260 DIO10 Pin.</td>
</tr>
<tr>
<td>JP6-6</td>
<td>DTRN</td>
<td>Signal</td>
<td>FT260 DIO9 Pin.</td>
</tr>
<tr>
<td>JP6-7</td>
<td>GND</td>
<td>Ground</td>
<td>Ground 0 volts.</td>
</tr>
<tr>
<td>JP6-8</td>
<td>IO3</td>
<td>Signal</td>
<td>FT260 DIO8 Pin.</td>
</tr>
<tr>
<td>JP6-9</td>
<td>IO2</td>
<td>Signal</td>
<td>FT260 DIO7 Pin.</td>
</tr>
<tr>
<td>JP6-10</td>
<td>IO1</td>
<td>Signal</td>
<td>FT260 DIO6 Pin. The on-board I²C bus pull-up circuit is connected as default (JP4 shorted)</td>
</tr>
<tr>
<td>JP6-11</td>
<td>IO0</td>
<td>Signal</td>
<td>FT260 DIO5 Pin. The on-board I²C bus pull-up circuit is connected as default (JP3 shorted)</td>
</tr>
<tr>
<td>JP6-12</td>
<td>GND</td>
<td>Ground</td>
<td>Ground 0 volts.</td>
</tr>
</tbody>
</table>

**Table 4.3 JP6 Pin Out Description**
4.3 Jumper Descriptions

UMFT260EV1A provides two kinds of jumper: Solder jumper and Shunt jumper.

<table>
<thead>
<tr>
<th>Jumper</th>
<th>Setting</th>
<th>Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>JP1</td>
<td>Short</td>
<td>Default</td>
<td>VCCIO is connected to VOUT3V3. All I/O of the FT260 are working at 3.3V.</td>
</tr>
<tr>
<td></td>
<td>Open</td>
<td>Non-Default</td>
<td>VCCIO is disconnected from VOUT3V3. The VCCIO should be connected to external power source, e.g. 1.8/2.5V/3.3V.</td>
</tr>
<tr>
<td>JP2</td>
<td>Short</td>
<td>Default</td>
<td>Bus-Powered mode. This setting creates a connection between VBUS and VCCIN.</td>
</tr>
<tr>
<td></td>
<td>Open</td>
<td>Non-Default</td>
<td>Self-Powered mode. This setting removes the connection between VBUS and VCCIN. The VCCIN (JP5-2) should be connected to the external 5V source.</td>
</tr>
<tr>
<td>JP3</td>
<td>Short</td>
<td>Default</td>
<td>The on-board I²C bus pull-up circuit is connected to IO0 (JP6-11)</td>
</tr>
<tr>
<td></td>
<td>Open</td>
<td>Non-Default</td>
<td>The on-board I²C bus pull-up circuit is removed from IO0 (JP6-11)</td>
</tr>
<tr>
<td>JP4</td>
<td>Short</td>
<td>Default</td>
<td>The on-board I²C bus pull-up circuit is connected to IO1 (JP6-10)</td>
</tr>
<tr>
<td></td>
<td>Open</td>
<td>Non-Default</td>
<td>The on-board I²C bus pull-up circuit is removed from IO1 (JP6-10)</td>
</tr>
<tr>
<td>JP8</td>
<td>Short</td>
<td>Default</td>
<td>The on-board I²C EEPROM is enabled</td>
</tr>
<tr>
<td></td>
<td>Open</td>
<td>Non-Default</td>
<td>The on-board I²C EEPROM is disabled</td>
</tr>
</tbody>
</table>

Table 4.4 Solder Jumper Description

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>JP7-1</td>
<td>VCCIO</td>
<td>Power</td>
<td>Set DCNF0 High.</td>
</tr>
<tr>
<td>JP7-2</td>
<td>DCNF0</td>
<td>Signal</td>
<td>FT260 chip configuration selection bit 0. Refer to the FT260 datasheet</td>
</tr>
<tr>
<td>JP7-3</td>
<td>GND</td>
<td>Ground</td>
<td>Set DCNF0 Low (Default).</td>
</tr>
</tbody>
</table>

Table 4.5 JP7 Pin Description

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>JP9-1</td>
<td>VCCIO</td>
<td>Power</td>
<td>Set DCNF1 High.</td>
</tr>
<tr>
<td>JP9-2</td>
<td>DCNF1</td>
<td>Signal</td>
<td>FT260 chip configuration selection bit 1. Refer to the FT260 datasheet</td>
</tr>
<tr>
<td>JP9-3</td>
<td>GND</td>
<td>Ground</td>
<td>Set DCNF1 Low (Default).</td>
</tr>
</tbody>
</table>

Table 4.6 JP9 Pin Description
5 Module Configurations

5.1 Power Configuration

A. Bus Powered Configuration

Figure 5.1 illustrates the UMFT260EV1A module in a typical USB bus powered configuration. This is done by soldering the jumpers at JP1 and JP2. The UMFT260EV1A is shipped in this configuration as default.

B. Self Powered configuration

Figure 5.2 illustrates the UMFT260EV1A module in a typical USB self powered configuration. In this case, the solder at jumpers JP2 is removed and the external VCC (5V) is connected to module JP5 Pin2 (VCCIN).

Warning: There should never be more than one power output supplying power to the same net at any one time. Shorting JP2 will cause a direct connection between two different power supplies, when a self-powered set-up is applied and the USB bus is connected resulting in the potential for damage to the module and other connected circuitry.
5.2 I/O Voltage Level Configuration

A. Internal Regulator (3.3V) Configuration

![Figure 5.3 I/O voltage level with internal regulator: JP1 shorted](image)

Figure 5.3 shows a configuration of USB bus powered and using the internal regulator for I/O voltage levels. The solder jumper JP1 allows the FT260 to use the internal 3.3V regulator. The FT260 VCCIO pin is connected to the FT260 VOUT3V3 pin through JP1.

B. External Power Source Configuration

![Figure 5.4 I/O voltage level with external power source: JP1 opened](image)

Figure 5.4 shows a configuration of using an external power source for the FT260 IO supply voltage. After removing the solder at JP1 on the UMFT260EV1A module, the FT260 can apply the external power source to the FT260 VCCIO pin through JP6 Pin 1. FT260 VCCIO pin can accept 3.3V/2.5V/1.8V voltage levels for all the FT260 I/O pins.
5.3 I²C Bus Pull-up Configuration

Figure 5.5 Enable I²C interface pull high: JP3 shorted and JP4 shorted

Figure 5.5 illustrates the location of JP3 and JP4 (marked in red) for I²C bus pull-up configuration. Since the default function of IO0 and IO1 is the I²C bus, the UMFT260EV1A connects the pull-up circuit to the I²C bus as default. If the IO0 and IO1 are configured as GPIO features, the user needs to remove the pull-up circuit by unsoldering JP3 and JP4.

5.4 On-board I²C EEPROM Configuration

Figure 5.6 Enable on-board I²C EEPROM: JP8 shorted

Figure 5.6 illustrates the location of JP8 (marked in red) for I²C EEPROM configuration. The FT260 allows chip configuration settings and vendor specific parameters to be stored in an external EEPROM. The UMFT260EV1A populates the 2kbits EEPROM with address 0x50. If an on-board EEPROM is not required, de-solder JP8 to disable the EEPROM.

The EEPROM is programmed before shipping. Refer to the FT260 datasheet for default values.

5.5 Programming the FT260 On-Chip eFUSE

Figure 5.7 Apply external voltage 3.8V to J1 Pin 2

Apply external voltage 3.8V to J1 Pin 2.
The FT260 On-Chip eFUSE can be programmed through the USB HID interface. For the UMFT260EV1A module, UMFTPD3A is required to program the FT260 eFUSE. UMFTPD3A will supply the 3.8V programming voltage to the FT260 FSOURCE pin through UMFT260EV1A module J1 Pin 2.

The datasheet of UMFTPD3A module is available at this link.


### 5.6 Power consumption

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Mini.</th>
<th>Typical</th>
<th>Max.</th>
<th>Units</th>
<th>Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>$I_{\text{VBUS1}}$</td>
<td>VBUS Operating Current</td>
<td>-</td>
<td>24.2</td>
<td>-</td>
<td>mA</td>
<td>VBUS Powered, Function Mode</td>
</tr>
<tr>
<td>$I_{\text{VBUS2}}$</td>
<td>VBUS Operating Current</td>
<td>-</td>
<td>4.4</td>
<td>-</td>
<td>mA</td>
<td>VBUS Powered, IDLE Mode</td>
</tr>
<tr>
<td>$I_{\text{VBUS3}}$</td>
<td>VBUS Operating Current</td>
<td>-</td>
<td>400</td>
<td>-</td>
<td>μA</td>
<td>VBUS Powered, Suspend Mode</td>
</tr>
</tbody>
</table>

*Table 5.1 Power Consumption*
6 Module Dimensions

All dimensions are given in millimetres.

The UMFT260EV1A module exclusively uses lead free components, and is fully compliant with European Union directive 2002/95/EC.
7 UMFT260EV1A Module Circuit Schematic

Figure 7.1 Module Circuit Schematic
8 Contact Information

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Web Site
http://ftdichip.com

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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

Application Notes
AN_394 User Guide for FT260
AN_395 User Guide for LibFT260
AN_124 User Guide for FTDI FT_Prog Utility
AN_184 FTDI Device Input Output Pin States
AN_175 Battery Charger Detection Over USB with FT-X Devices

Technical Notes
TN_100 USB Vendor ID/Product ID Guidelines
TN_111 What is UART

Datasheets
DS_FT260
UMFTPD3A Program Module Datasheet

FT_PROG Utility
http://www.ftdichip.com/Support/Utilities.htm#FT_Prog

Related Document or Specification
http://i2c2p.twibright.com/spec/i2c.pdf

Acronyms and Abbreviations

<table>
<thead>
<tr>
<th>Terms</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>eFUSE</td>
<td>Electrical poly fuse</td>
</tr>
<tr>
<td>GPIO</td>
<td>General purpose I/O</td>
</tr>
<tr>
<td>HID</td>
<td>Human interface device</td>
</tr>
<tr>
<td>I²C</td>
<td>Inter integrated Circuit</td>
</tr>
<tr>
<td>UART</td>
<td>Universal Asynchronous Receiver/Transmitter</td>
</tr>
<tr>
<td>USB</td>
<td>Universal Serial Bus</td>
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</tbody>
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Appendix C – Revision History

Document Title: UMFT260EV1A Datasheet
Document Reference No.: FT_001277
Clearance No.: FTDI# 499
Product Page: http://www.ftdichip.com
Document Feedback: Send Feedback

<table>
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<th>Revision</th>
<th>Changes</th>
<th>Date</th>
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<tr>
<td>Version 1.0</td>
<td>Initial Release</td>
<td>2016-04-27</td>
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