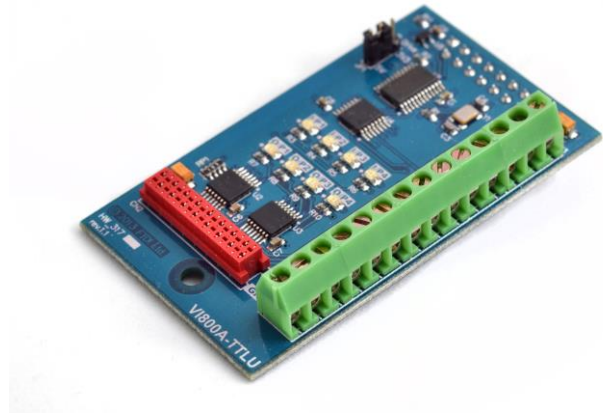


# FTDI Chip

## VI800A-TTLU Datasheet

### Plug in accessory for VM800P Embedded Video Engine Plus module



## 1 Introduction

The VI800A-TTLU is a plug in accessory for the VM800P Plus module, which expands the IO capabilities of the VM800P to include a TTL level UART.

This module behaves as an SPI to UART bridge to the VM800P Plus module.

### 1.1 Features

- Connects to the VM800P Plus module using an SPI slave interface
- SPI slave interface is converted to UART TTL interface
- 4 GPIO inputs and 4 GPIO outputs
- 8 LEDs to indicate the input and output status
- 5 V tolerant buffers
- Screw connector to connect the UART signals, GPIO inputs and GPIO outputs
- IO connector to connect the UART signals, GPIO inputs and GPIO outputs
- Powered from the VM800P module

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## 2 Ordering Information

Part No.	Description
VI800A-TTLU	VI800A UART TTL module, plug in accessory for the VM800P Plus module

**Table 2-1 – Ordering information**

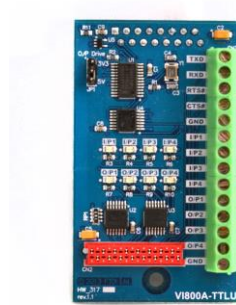
## Table of Contents

<b>1</b>	<b>Introduction .....</b>	<b>1</b>
1.1	Features.....	1
<b>2</b>	<b>Ordering Information .....</b>	<b>2</b>
<b>3</b>	<b>Hardware Description .....</b>	<b>4</b>
3.1	VI800A-TTLU module.....	4
3.2	Physical Descriptions .....	5
3.2.1	PCB Dimensions .....	5
3.2.2	VI800A-TTLU Connectors.....	6
3.2.3	VI800A-TTLU Components.....	8
<b>4</b>	<b>Board Schematics.....</b>	<b>9</b>
<b>5</b>	<b>Hardware Setup Guide .....</b>	<b>10</b>
5.1	Power Configuration .....	10
5.2	UART Interface connection .....	10
<b>6</b>	<b>Contact Information.....</b>	<b>11</b>
<b>Appendix A – References .....</b>		<b>12</b>
Document References .....		12
<b>Appendix B - List of Figures and Tables .....</b>		<b>13</b>
List of Figures .....		13
List of Tables .....		13
<b>Appendix C – Revision History .....</b>		<b>14</b>

### 3 Hardware Description

Please refer to section **3.2.2** for connector settings. Some VI800A-TTLU jumpers must be set to work properly with your system.

#### 3.1 VI800A-TTLU module



**Figure 3-1 – VI800A-TTLU module**

The VI800A-TTLU module is designed to connect directly with the VM800P Plus module.

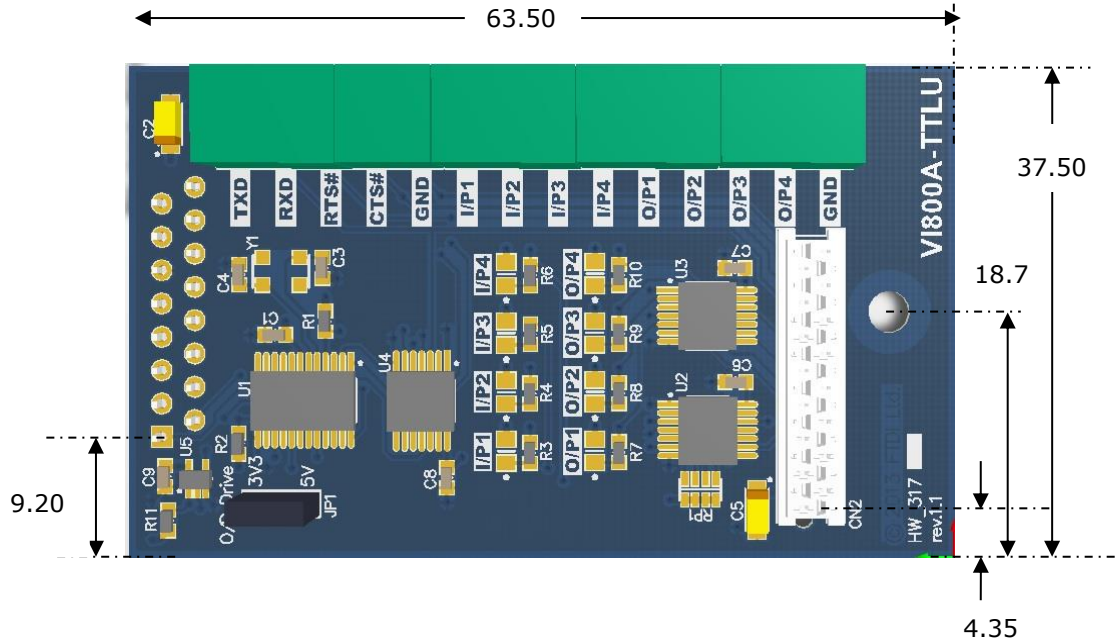
The main functions of the VI800A TTLU are as follows:

- Plug in accessory board for the VM800P Plus board.
- Interface to the VM800P Plus board as a SPI slave device.
- Connects to an external UART TTL interface.
- Supports 4 GPIO inputs.
- Supports 4 GPIO outputs.
- Contains 8 LEDs.
- Powered by the VM800P Plus board.

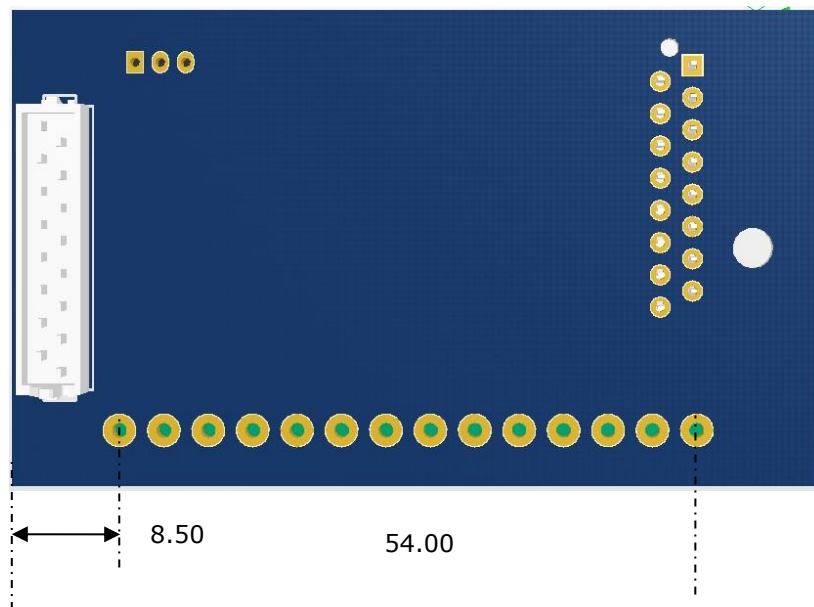
## 3.2 Physical Descriptions

### 3.2.1 PCB Dimensions

The VI800A-TTLU module PCB dimension is illustrated in Figure 3-2, Figure 3-3 and Figure 3-4.



**Figure 3-2 - VI800A-TTLU module PCB Top view**



**Figure 3-3 - VI800A-TTLU module PCB Bottom view**



**Figure 3-4 - VI800A-TTLU module PCB Side view**

All dimensions are in mm

### 3.2.2 VI800A-TTLU Connectors

Connectors and jumpers are described in the following sections.

- **CN1- SPI Interface**

This is the interface where the SPI control and data signals are routed. There are also power and ground pins on this interface. This interface is used to connect the VI800A-TTLU board to the VM800P Plus board.

**Note:**

**This should be connected to J6 of the VM800P plus board.**

Pin No.	Name	Type	Description
1	SCLK	I	SPI Clock input, 3.3V (5V tolerant)
2	MOSI	I	Master Out Slave in, 3.3V (5V tolerant)
3	MISO	O	Master In Slave out, 5V
4	SS#	I	SPI chip select, active low, 3.3V (5V tolerant)
5	INT0	O	Interrupt output active low, 3.3V
6	IO6	I	Daughter reset input, active low , 3.3V (5V tolerant)
7	AD4	IO	Address/Data Line 4
8	AD5	IO	Address/Data Line 5
9	3V3	P	3.3V power supply
10	5V	P	5V power supply
11	GND	P	Ground
12	RST#	I	Reset, active low
13	AD1	IO	Address/Data Line 1
14	NC	NA	Not Connected
15	AD3	IO	Address/Data Line 3
16	AD2	IO	Address/Data Line 2

**Table 3-1 – CN1 Pinout**

- **CN2- IO Interface (alternative to CN3)**

This is the interface where the UART TTL connections, GPIO input and outputs are connected. There are also power and ground pins on this interface.

Pin No.	Name	Type	Description
1	3V3	P	3.3V power supply
2	5V	P	5V power supply
3	I/P1	I	Input 1
4	I/P2	I	Input 2
5	I/P3	I	Input 3
6	I/P4	I	Input 4
7	O/P1	O	Output 1
8	O/P2	O	Output 2
9	O/P3	O	Output 3
10	O/P4	O	Output 4
11	GND	P	Ground
12	GND	P	Ground
13	TXD OUT	O	Transmit Data
14	RXD IN	I	Receive Data
15	RTS# OUT	O	Request to send
16	CTS# IN	I	Clear to send

**Table 3-2 – CN2 Pinout**

- **CN3- External Screw Connector (alternative to CN2)**

This is the interface where the UART TTL connections, GPIO input and outputs are connected. There are also power and ground pins on this interface.

Pin No.	Name	Type	Description
1	TXD_OUT	O	Transmit data
2	RXD_IN	I	Receive data
3	RTS#_OUT	O	Request to send
4	CTS#_IN	I	Clear to send
5	GND	P	Ground
6	I/P1	I	Input 1
7	I/P2	I	Input 2
8	I/P3	I	Input 3
9	I/P4	I	Input 4
10	O/P1	O	Output 1
11	O/P2	O	Output 2
12	O/P3	O	Output 3
13	O/P4	O	Output 4
14	GND	P	Ground

**Table 3-3 – CN3 Pinout**

- **JP1- Output Drive Select**

This jumper provides the option to select the power supply voltage for the inputs and outputs.

Jumper position	Description
Short pin 1-2	3.3V selected
Short pin 2-3	5V selected (default)

**Table 3-4 – JP1 Pin options**

### 3.2.3 VI800A-TTLU Components

- **U1 – SC16IS760**

This converts the SPI signals from the VM800P Plus board to UART signals.

- **LED1 – LED4**

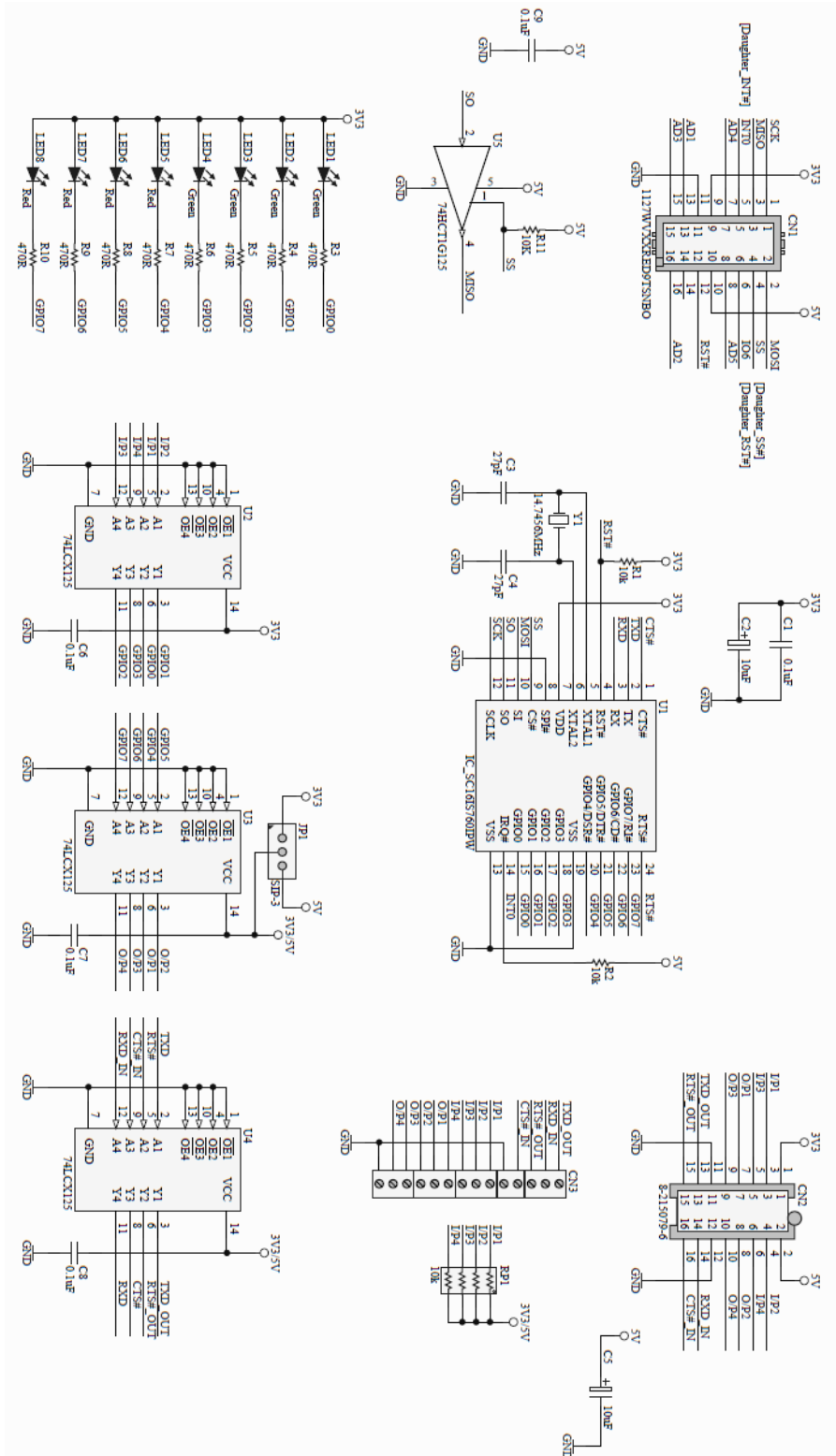
Indicates the status of GPIO inputs. Illuminate when the GPIO line is logic 0.

- **LED5 –LED8**

Indicates the status of the GPIO outputs. Illuminate when the GPIO line is logic 0.



## 4 Board Schematics



**Figure 4-1 - VI800A-TTLU Schematics**

## 5 Hardware Setup Guide

### 5.1 Power Configuration

The board is powered from the VM800P Plus board. The CN1 connector on the VI800A-TTLU board should be connected to the J6 connector of the VM800P Plus board as shown in the Figure 5-1.



**Figure 5-1 - VI800A-TTLU module connected to VM800P Plus module**

### 5.2 UART Interface connection

The TX signal on CN3 is connected to the RX signal on the external UART device.

The RX signal on CN3 is connected to the TX signal on the external UART device.

The RTS signal on CN3 is connected to the CTS signal on the external UART device.

The CTS signal on CN3 is connected to the RTS signal on the external UART device.

The GND signal on CN3 is connected to the GND signal on the external UART device.

The output from the external device is connected to the inputs I/P1, I/P2, I/P3 and I/P4 on the CN3.

The outputs O/P1, O/P2, O/P3 and O/P4 on the CN3 are connected to the input on the external device.

The LEDs LED1 to LED8 are used to display the status of the inputs and outputs.

This interface is used to interface the VM800P Plus module to the devices have UART and GPIO interfaces.

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## Appendix A – References

### Document References

VM800P Datasheet: [VM800P Plus board](#)

FT800 datasheet: [FT800 Embedded Video Engine](#)

FT800 software programming guide: [FT800 Programmer Guide](#)

FT800 sample application notes:

[AN 246 VM800CB SampleAPP Arduino Introduction](#)

[AN 275 FT800 Example with Arduino.pdf](#)

[AN 318 Arduino Library for FT800 Series](#)

[AN 330 VI800A TTL 232U N485U ArduinoLibrary Sample](#)

## Appendix B - List of Figures and Tables

### List of Figures

Figure 3-1 – VI800A-TTLU module .....	4
Figure 3-2 - VI800A-TTLU module PCB Top view.....	5
Figure 3-3 - VI800A-TTLU module PCB Bottom view.....	5
Figure 3-4 - VI800A-TTLU module PCB Side view.....	6
Figure 4-1 - VI800A-TTLU Schematics .....	9
Figure 5-1 - VI800A-TTLU module connected to VM800P Plus module .....	10

### List of Tables

Table 2-1 – Ordering information.....	2
Table 3-1 – CN1 Pinout.....	6
Table 3-2 – CN2 Pinout.....	7
Table 3-3 – CN3 Pinout.....	7
Table 3-4 – JP1 Pin options .....	8

## Appendix C – Revision History

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Revision	Changes	Date
Version 1.0	Initial Release	2014-10-14
Version 1.1	Added height dimensions	2014-10-20
Version 1.2	Dual branding to reflect the migration of the product to the Bridgetek name – logo changed, copyright changed, contact information changed	2016-09-13

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