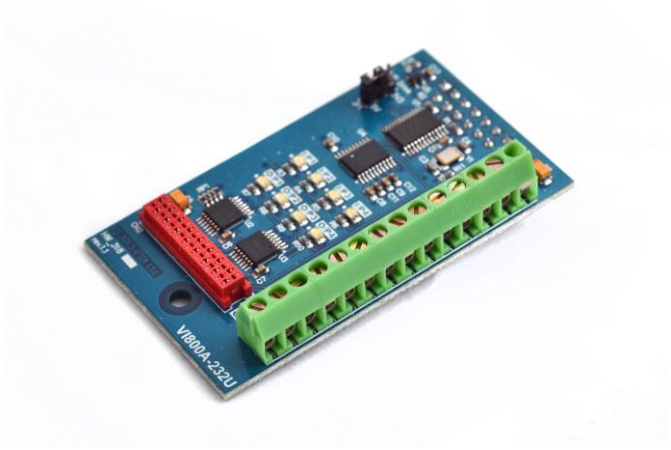
FTDI Chip

VI800A-232U Datasheet

Plug in accessory for VM800P Embedded Video Engine Plus module



1 Introduction

The VI800A-232U is a plug in accessory for the VM800P module, which expands the VM800P IO capabilities to include RS232.

This module behaves as an SPI to RS232 bridge on the VM800P Plus module.

1.1 Features

- Connects to the VM800P Plus module using an SPI slave interface
- SPI slave interface is converted to RS232 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 RS232 signals, GPIO inputs and GPIO outputs
- IO connector to connect the RS232 signals, GPIO inputs and GPIO outputs
- Powered from the VM800P module

2 Ordering Information

Part No.	Description
VI800A-232U	VI800A RS232 module, plug in accessory for the VM800P Plus module

Table 2-1 – Ordering information

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3 Hardware Description

Please refer to section **3.2.2** for connector settings. Some VI800A-232U jumpers must be set to work properly with your system.

3.1 VI800A-232U module

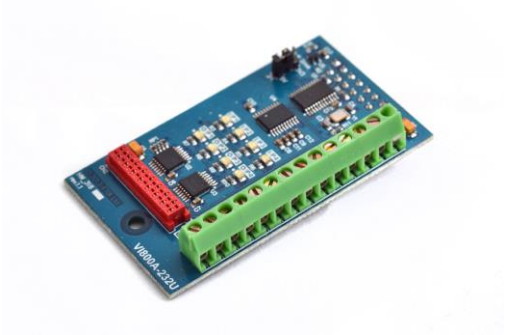

Figure 3-1 – VI800A-232U module

The VI800A-232U module is designed to connect directly with the VM800P Plus module.

The main functions of the VI800A-232U are as follows:

- Plug in accessory board for the VM800P Plus module.
- Interface to the VM800P Plus board as a SPI slave device.
- Connects with an external RS232 interface.
- Supports 4 GPIO inputs.
- Supports 4 GPIO outputs.
- Contains 8 LEDs, 4 represent input signal level and 4 represent output level.
- Powered by the VM800P Plus board.

3.2 Physical Descriptions

3.2.1 PCB Dimensions

The VI800A-232U module PCB layout is illustrated in Figure 3-2, Figure 3-3 and Figure 3-4.

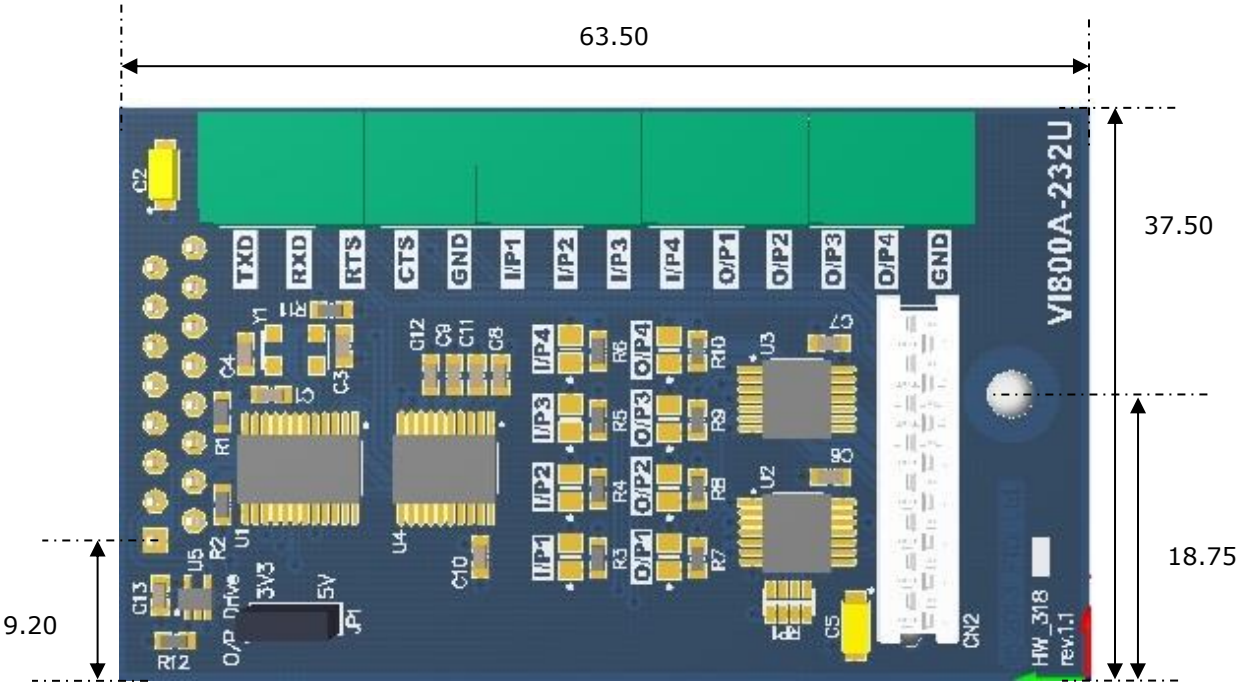

Figure 3-2 - VI800A-232U module PCB Top view

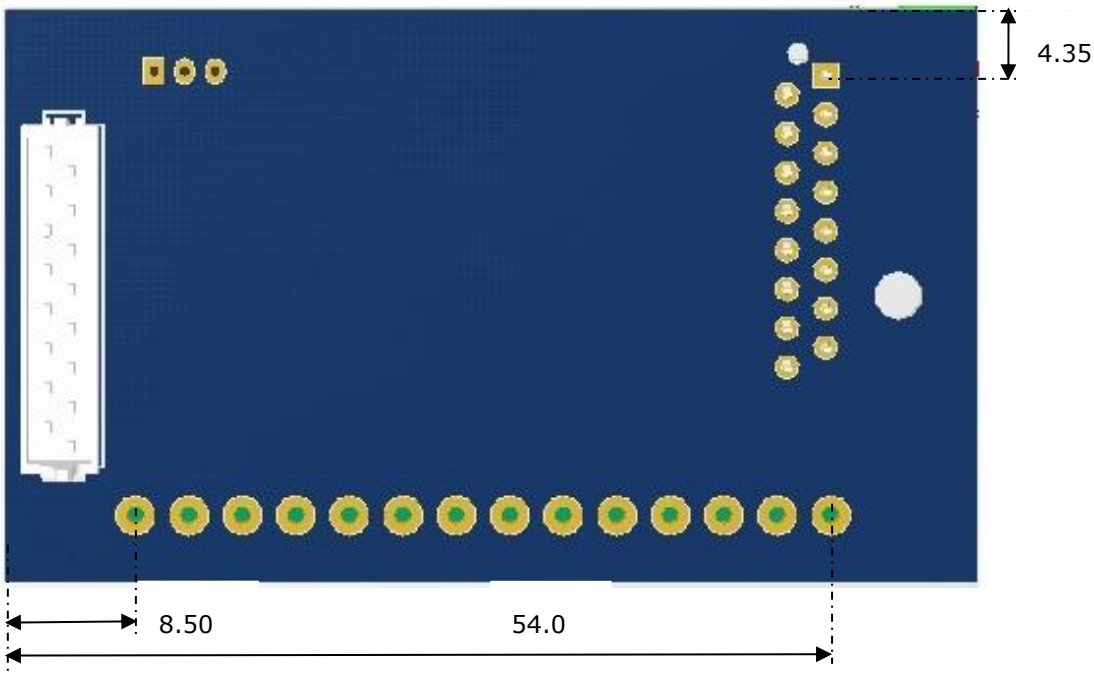

Figure 3-3 - VI800A-232U module PCB Bottom view

Figure 3-4 - VI800A-232U module PCB Side view

All dimensions are in mm

3.2.2 VI800A-232U 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-232U board to the VM800P Plus board.

  Note:

  This connector 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 RS232 connections, GPIO inputs 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 RS232 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-232U Components

- **U1 – SC16IS760**

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

- **U4 – ZT3222F**

  This converts the UART signals from the TTL level to RS232 level.

- **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

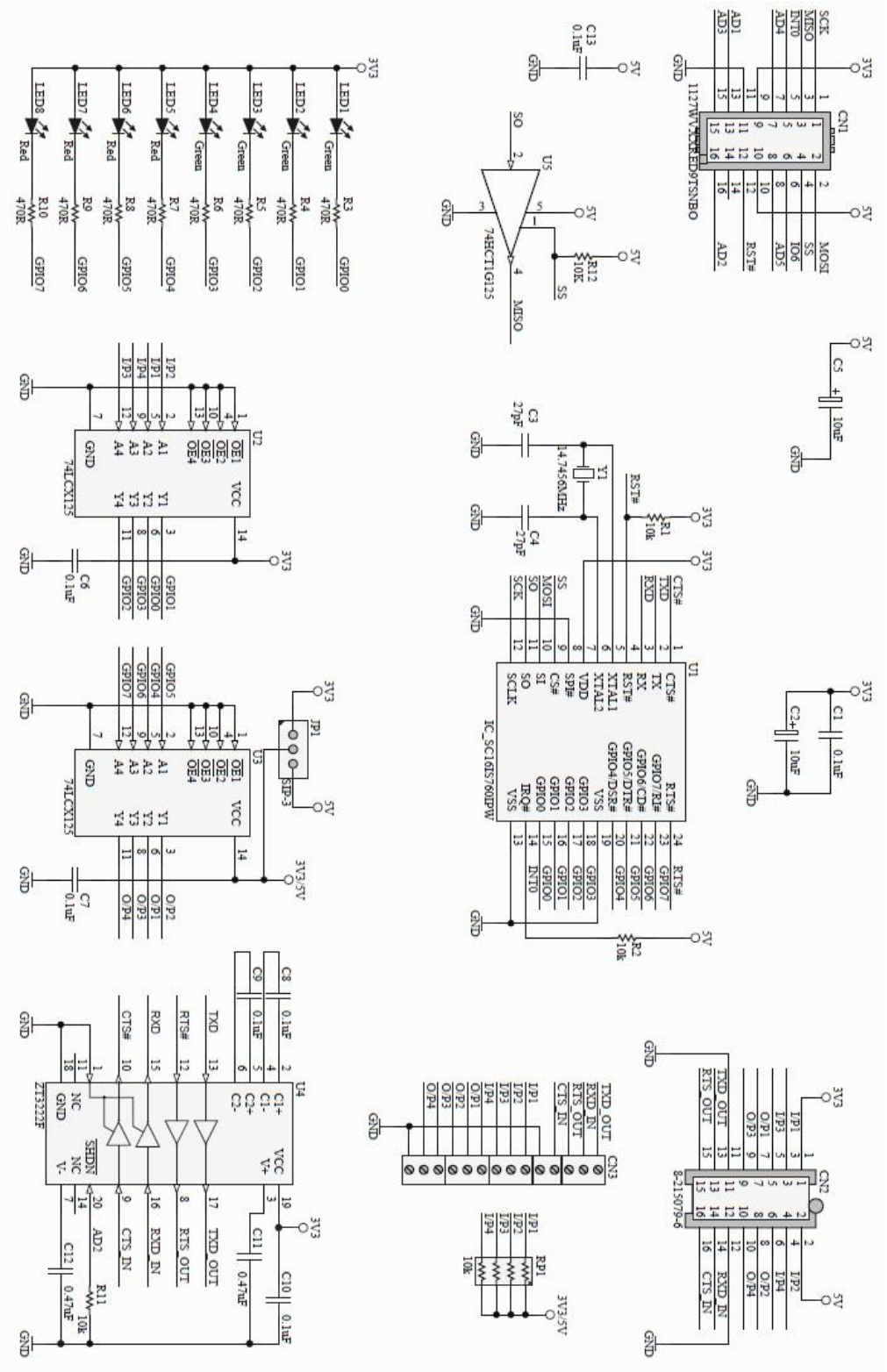

Figure 4-1 - VI800A-232U Schematics

5 Hardware Setup Guide

5.1 Power Configuration

The board is powered from the VM800P Plus board. The CN1 connector on the VI800A-232U board should be connected to the J6 connector of the VM800P plus board as shown in the Figure 5-1.

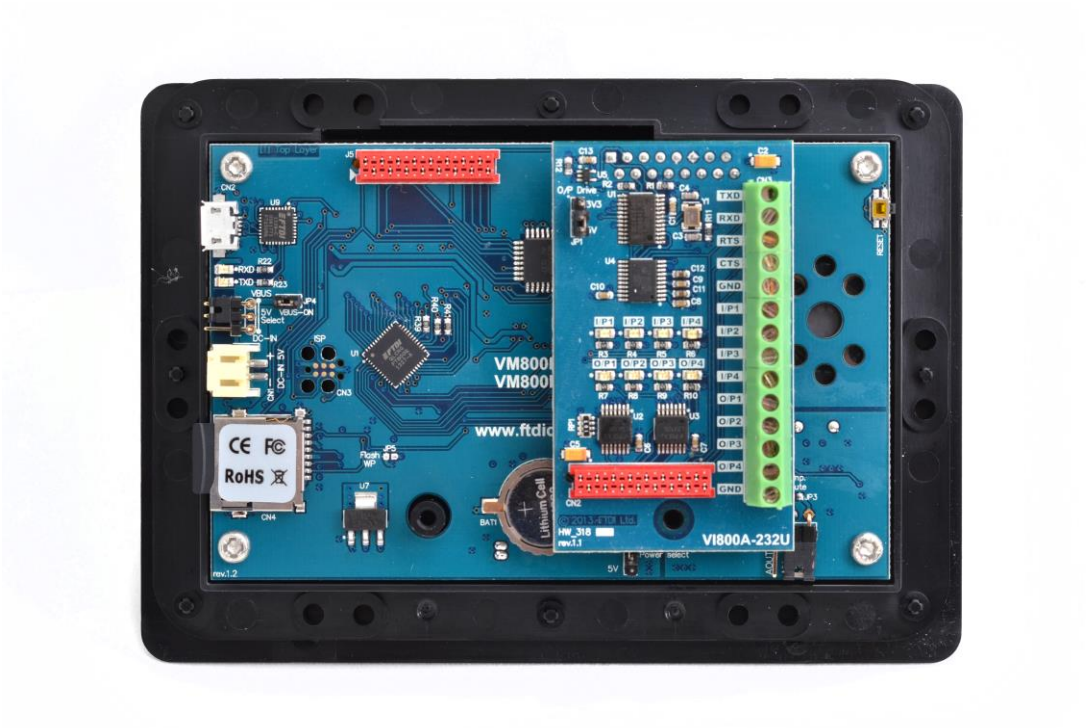

Figure 5-1 - VI800A-232U module connected to VM800P Plus module

5.2 RS232 Interface connection

The TXD_OUT signal on CN3 is connected to the RXD signal on the external RS232 device.

The RXD_IN signal on CN3 is connected to the TXD signal on the external RS232 device.

The RTS_OUT signal on CN3 is connected to the CTS signal on the external RS232 device.

The CTS_IN signal on CN3 is connected to the RTS signal on the external RS232 device.

The GND signal on CN3 is connected to the GND signal on the external RS232 device.

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

The outputs O/P1, O/P2, O/P3 and O/P4 on CN3 are connected to the input of 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 having RS232 and GPIO interfaces.

6 Contact Information

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Distributor and Sales Representatives

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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

AN_318 Arduino Library for FT800 Series

AN_330 VI800A_TTL_232U_N485U_ArduinoLibrary_Sample

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Appendix C – Revision History

Document Title: VI800A_232U Datasheet
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Document Feedback: Send Feedback

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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