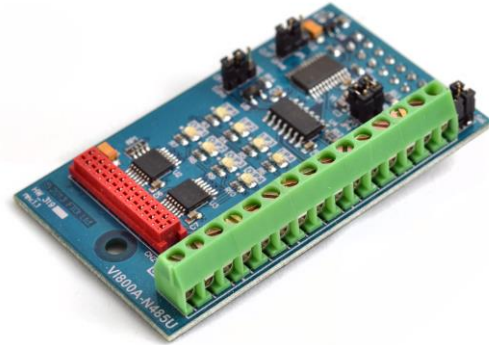


FTDI Chip

VI800A-N485U Datasheet Plug in accessory for VM800P Embedded Video Engine Plus module



1 Introduction

The VI800A-N485U is a plug in accessory for the VM800P Plus module, which is used to develop and demonstrate the functionality of the FT800 Embedded Video Engine, EVE.

This module behaves as an SPI to RS485 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 RS485 interface
- 4 GPIO inputs and 4 GPIO outputs
- 8 LEDs to indicate the input and output status
- 3.3 V IO with 5 V tolerant buffers
- Screw connector to connect the RS485 signals, GPIO inputs and GPIO outputs
- IO interface to connect the RS485 signals, GPIO inputs and GPIO outputs
- Powered from the VM800P module

2 Ordering Information

Part No.	Description
VI800A-N485U	VI800A RS485 module, plug 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-N485U jumpers must be set to work properly with your system.

3.1 VI800A-N485U module

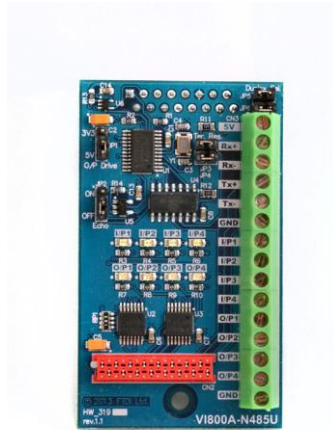


Figure 3-1 – VI800A-N485U module

The VI800A-N485U module is designed to connect directly with the VM800P Plus module.

The main functions of the VI800A N485U 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 RS485 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-N485U module PCB layout is illustrated in [Figure 3-2](#) and [Figure 3-3](#).

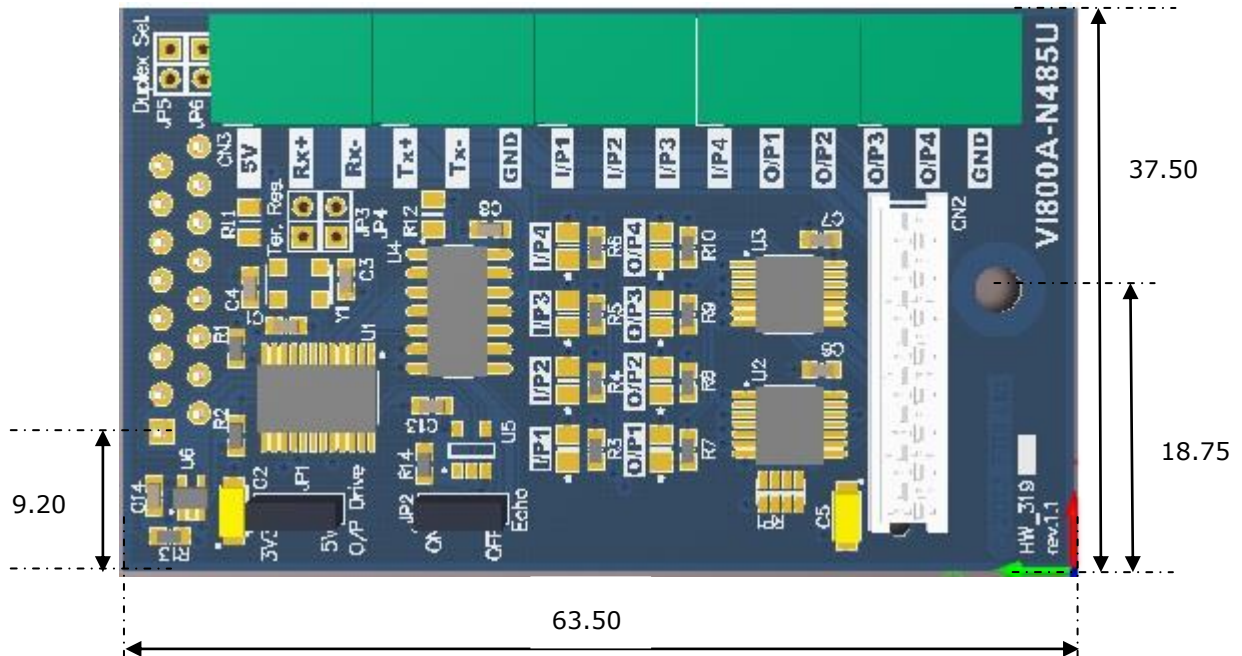


Figure 3-2 - VI800A-N485U module PCB Top view

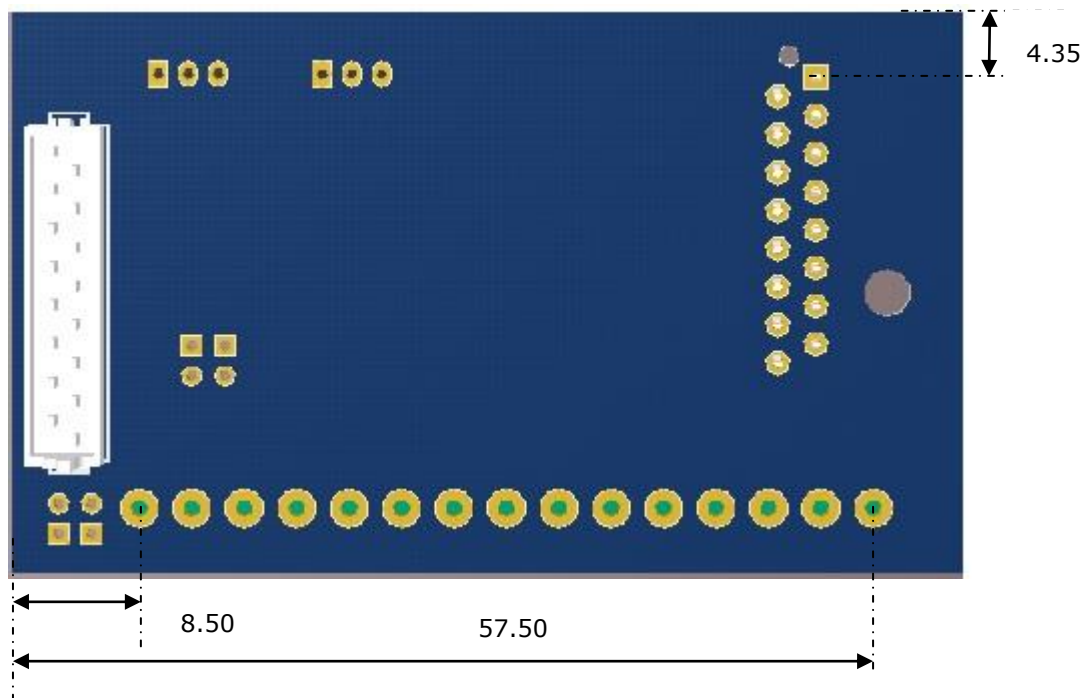


Figure 3-3 - VI800A-N485U module PCB Bottom view



Figure 3-4 - VI800A-N485U module PCB side view

All dimensions are in mm

3.2.2 VI800A-N485U 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-N485U 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	SCK	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 RS485 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

Pin No.	Name	Type	Description
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	Rx+	I	Receive Data non-inverting
14	Rx-	I	Receive Data inverting
15	Tx+	O	Transmit Data non-inverting
16	Tx-	O	Transmit Data inverting

Table 3-2 – CN2 Pinout

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

This is the interface where the RS485 connections, GPIO input and outputs are connected. There are also power and ground pins on this interface.

Pin No.	Name	Type	Description
1	5V	P	5V power supply
2	Rx+	I	Receive Data non-inverting
3	Rx-	I	Receive Data inverting
4	Tx+	O	Transmit Data non-inverting
5	Tx-	O	Transmit Data inverting
6	GND	P	Ground
7	I/P1	I	Input 1
8	I/P2	I	Input 2
9	I/P3	I	Input 3
10	I/P4	I	Input 4
11	O/P1	O	Output 1
12	O/P2	O	Output 2
13	O/P3	O	Output 3
14	O/P4	O	Output 4
15	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

- **JP2- Duplex/Simplex Enable**

This jumper provides the option to enable simultaneous transmit and receive of data.

Jumper position	Description
Short pin 1-2	Transmit and receive can be done simultaneously
Short pin 2-3	Transmit and receive cannot be done simultaneously

Table 3-5 – JP2 Pin options

- **JP3- connect Rx+ to Rx-**

Solder connection not fitted by default

- **JP4- connect Tx+ to Tx-**

Solder connection not fitted by default

- **JP5- connect Rx+ to Tx+**

Solder connection not fitted by default

- **JP6- connect Rx- to Tx-**

Solder connection not fitted by default

3.2.3 VI800A-N485U Components

- **U1 – SC16IS760**

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

- **U4 – ZT3073LEEN**

This converts the UART signals from the TTL level to RS485 signal.

- **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

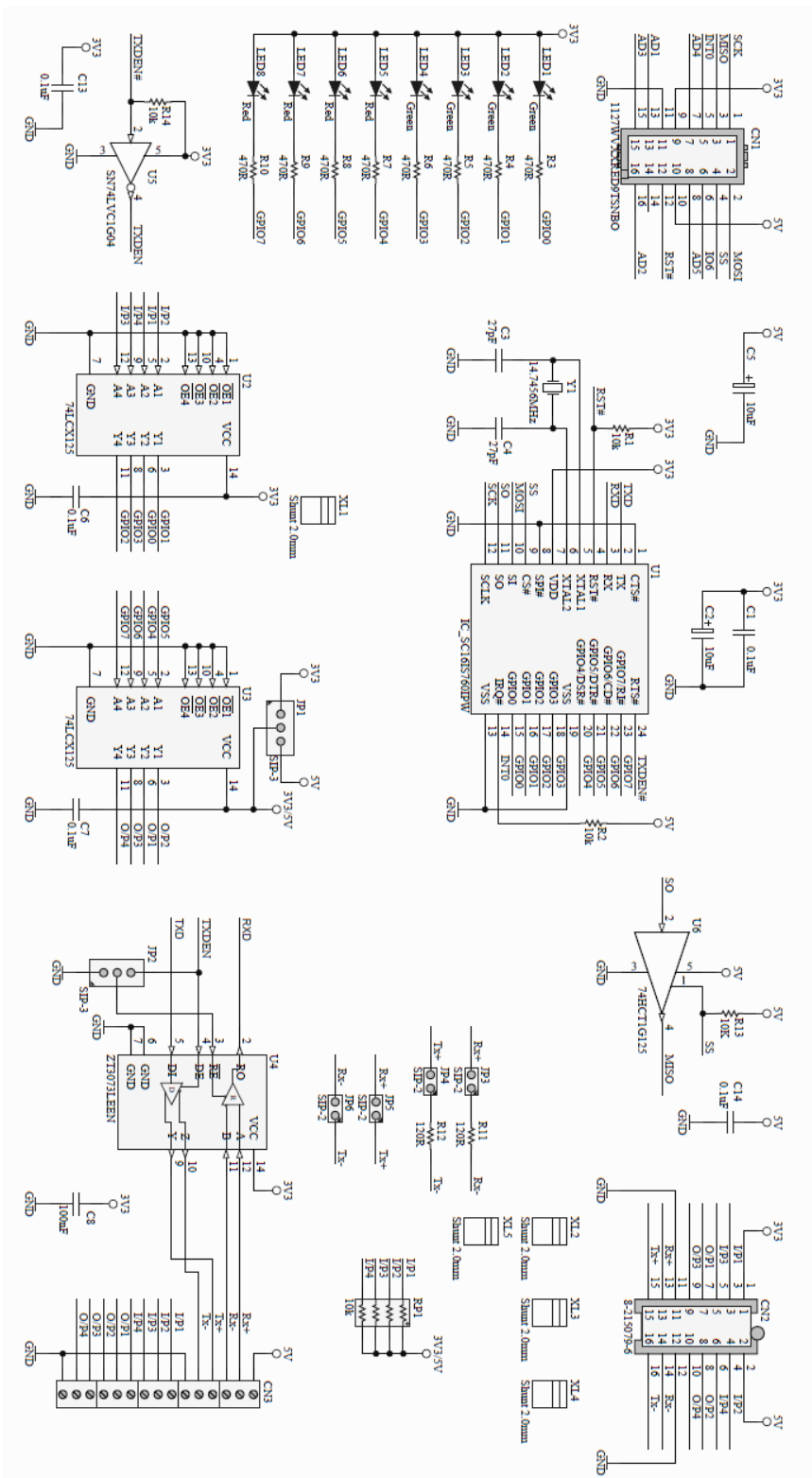


Figure 4-1 - VI800A-N485U Schematics

5 Hardware Setup Guide

5.1 Power Configuration

The board is powered from the VM800P Plus board. The CN1 connector on the VI800A-N485U board should be connected to the J6 connector of the VM800P Plus board as shown in the Figure 5-1.

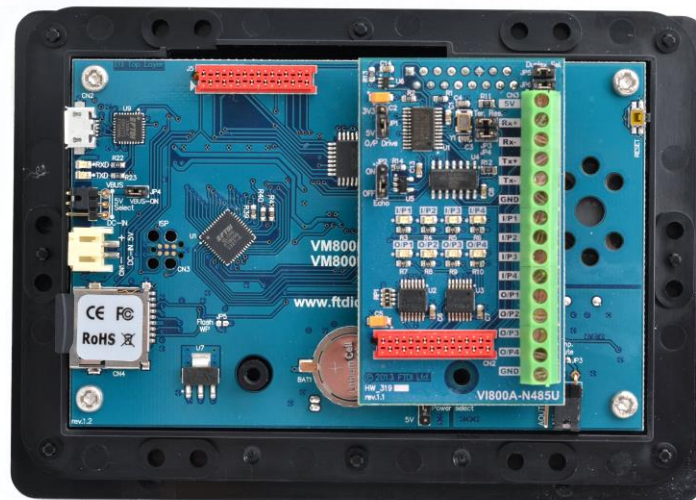


Figure 5-1 - VI800A-N485U module connected to VM800P Plus module

5.2 RS485 Interface connection

When the VI800A-N485U is connected to a RS485 device the following connection is used.

The Tx+ signal on CN3 is connected to the Rx+ signal on the external RS485 device.

The Tx- signal on CN3 is connected to the Rx- signal on the external RS485 device.

The Rx+ signal on CN3 is connected to the Tx+ signal on the external RS485 device.

The Rx- signal on CN3 is connected to the Tx- signal on the external RS485 device.

The GND signal on CN3 is connected to the GND signal on the external RS485 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 input from the external device is connected to the outputs O/P1, O/P2, O/P3 and O/P4 on the CN3.

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 RS485 and GPIO interfaces.

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Appendix A – 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

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Appendix C – Revision History

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Document Feedback: [Send Feedback](#)

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Version 1.1	Added height dimensions	20/10/14