

FTDI Chip

VA800A PROG Datasheet

Programmer for VM800P

Embedded Video Engine Plus module



1 Introduction

The VA800A PROG is a programmer for the VM800P module. This provides a USB to SPI bridge that will enable access to the ATMEGA328P on the VM800P module.

The module provides a suitable alternative to the inbuilt USB to UART programmer of the VM800P and may also be used to recover a damaged/corrupted MCU.

1.1 Features

- Connects to the VM800P Plus module using the SPI interface
- Micro-B USB connector
- 6-way IDC connector
- Powered from the PC USB port (5V)
- Power switch to control supply to the target
- Ribbon cable to connect to the VM800P "Tag_Connect" socket.

2 Ordering Information

Part No.	Description
VA800A_PROG	VA800A PROG module, programmer for VM800P Plus module

Table 2-1 – Ordering information

Table of Contents

1	Introduction	1
1.1	Features.....	1
2	Ordering Information	2
3	Hardware Description.....	4
	VA800A PROG module.....	4
3.2	Physical Descriptions	4
3.2.1	Dimensions.....	4
3.2.2	VA800A PROG Connectors	6
3.2.3	VA800A PROG Components	7
4	Board Schematics	8
5	Hardware Setup Guide.....	9
5.1	Power Configuration	9
5.2	SPI Interface connection	9
5.3	Programing the VM800P bootloader.....	9
6	Contact Information	13
	Appendix A – References.....	14
	Appendix B - List of Figures and Tables.....	15
	Appendix C – Revision History.....	16

3 Hardware Description

Please refer to section 3.2.2 for connector settings.

3.1 VA800A PROG module

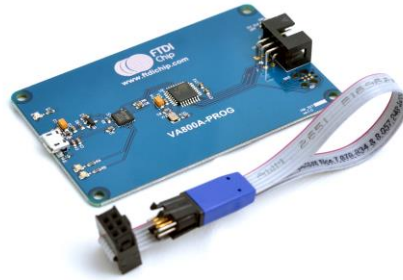


Figure 3-1 – VA800A PROG module

The VA800A PROG module is designed as an ISP programmer to the VM800P Plus module.

The main functions of the VA800A PROG are as follows:

- programmer for the VM800P Plus module.
- Interface to the VM800P Plus module using SPI interface.
- Micro-B USB connector
- 6-way IDC connector
- Powered from the PC USB port (5V)
- Power switch to control supply to the target
- Ribbon cable to connect to the VM800P “Tag_Connect” socket included.

3.2 Physical Descriptions

3.2.1 Dimensions

The VA800A PROG module dimensions is illustrated in Figure 3-2 and Figure 3-3.

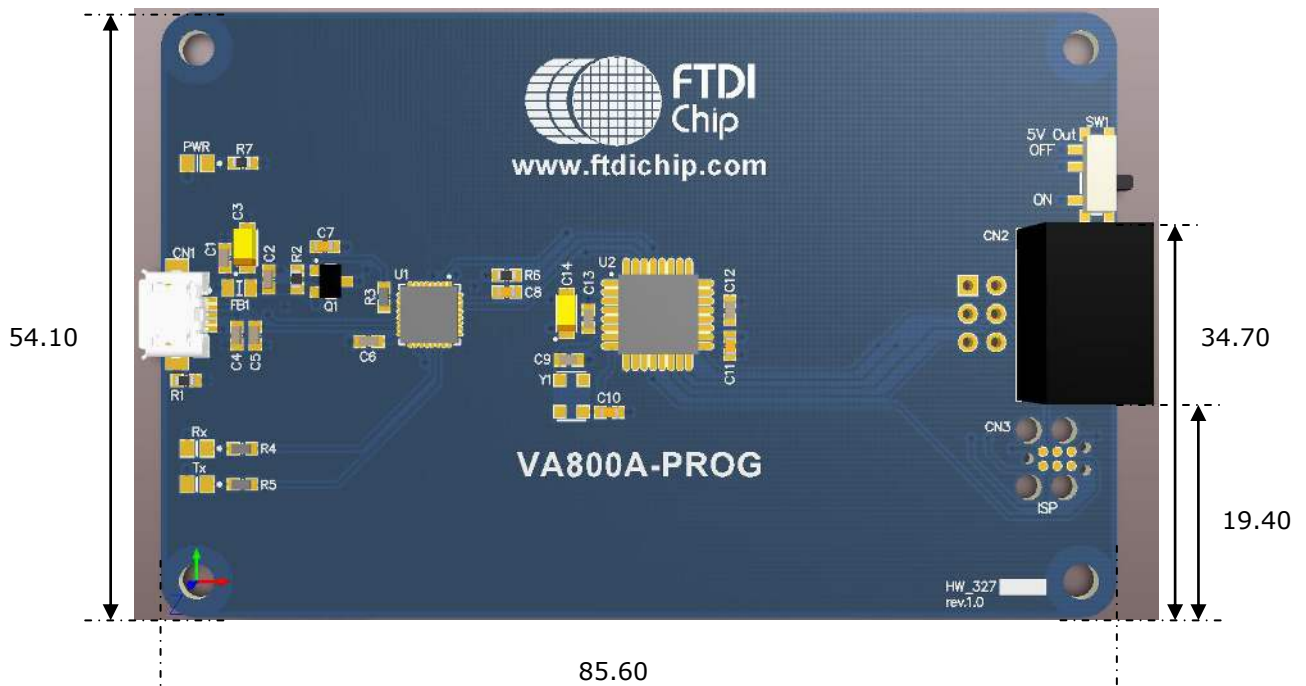


Figure 3-2 - VA800A PROG module Top view

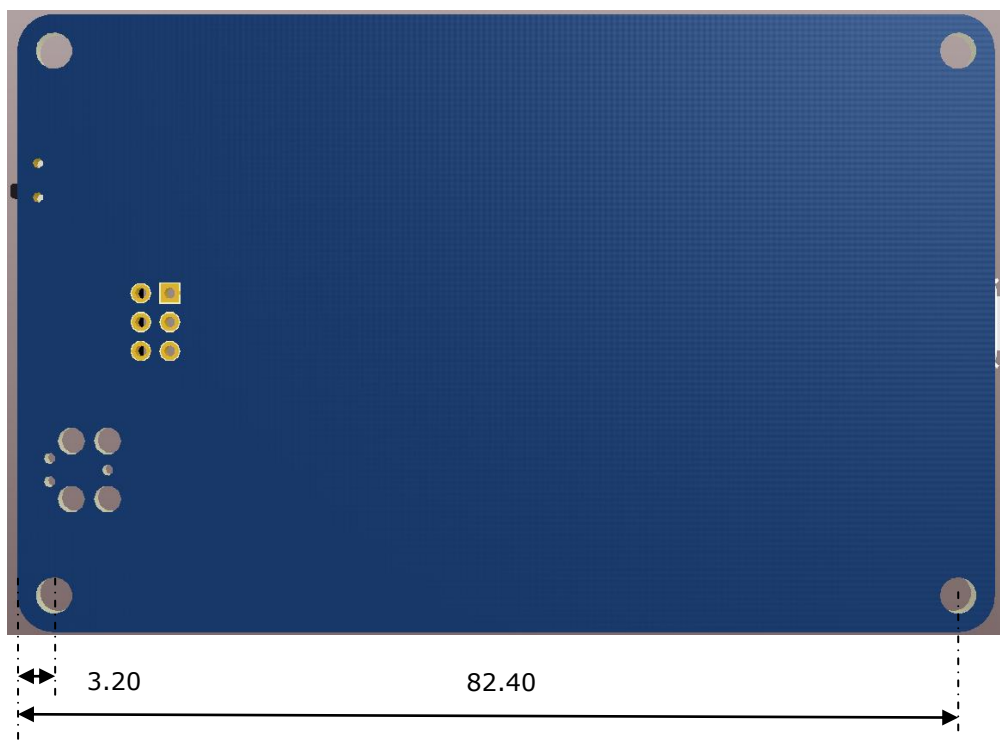


Figure 3-3 - VA800A PROG module Bottom view

All dimensions are in mm

3.2.2 VA800A PROG Connectors

Connectors are described in the following sections.

- **CN1- USB Connector**

This is the interface where the USB signals are routed. This interface is used to connect the VA800A PROG board to the PC.

Pin No.	Name	Type	Description
1	VBUS	P	VBUS, 5V Power Supply
2	D-	IO	D Minus
3	D+	IO	D Plus
4	ID	NA	Not Connected
5	GND	P	Ground

Table 3-1 – CN1 Pinout

- **CN2- SPI Connector**

This is the interface where the SPI signals are connected. There are also power and ground pins on this interface. The ISP cable is connected between this interface and the VM800P module ISP connector to program the VM800P board.

Pin No.	Name	Type	Description
1	MISO	I	Master In Slave Out
2	5V	P	5V power supply
3	SCK	O	SPI Clock
4	MOSI	O	Master Out Slave In
5	SS	O	Slave Select
6	GND	P	Ground

Table 3-2 – CN2 Pinout

- **CN3- ISP Connector**

This is the interface where the SPI signals are connected. There are also power and ground pins on this interface. The ISP cable is connected to this interface to program the ATMEGA in this board.

Pin No.	Name	Type	Description
1	MISO	I	Master In Slave Out
2	5V	P	5V power supply
3	SCK	O	SPI Clock
4	MOSI	O	Master Out Slave In
5	RST#	O	Reset
6	GND	P	Ground

Table 3-3 – CN3 Pinout

Note: CN2 and CN3 should not be used at the same time.

Note: CN3 should not be used by customers. Using CN3 will make the module non-functional.

- **SW1- Power switch**

The power switch should be in ON position to supply external power to VM800P module.

3.2.3 VA800A PROG Components

- **U1 – FT232RQ**

This converts the USB signals from the PC to UART TTL signals.

- **U2 – ATMEGA328P**

This converts the UART signals to SPI signals.

- **LED1 – Green**

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

- **LED2 –Red**

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

- **LED3 –Yellow**

Indicates the status of power. Illuminate when the 5V power is ON.

4 Board Schematics

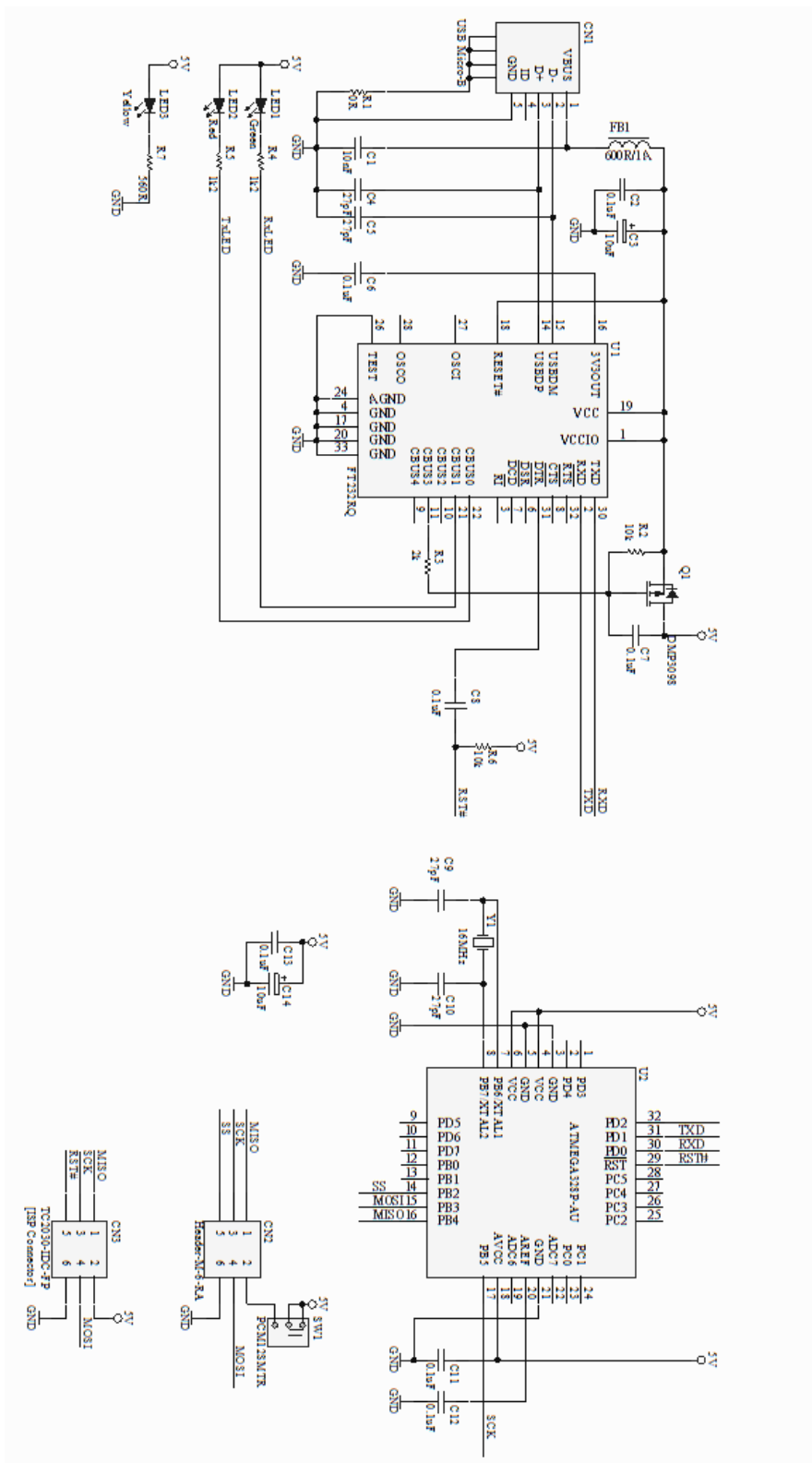


Figure 4-1 - VA800A PROG Schematics

5 Hardware Setup Guide

5.1 Power Configuration

The board is powered from the PC. The CN1 USB micro-B connector on the VA800A PROG board should be connected to the PC.

5.2 SPI Interface connection

The SPI interface is used to program the VM800P Plus module. The ISP cable shown in [Figure 5-1](#) is connected between the SPI interface on the VA800A-PROG module to the ISP connector on the VM800P module. The black colour connector on the ISP cable is connected to connector CN2 on the VA800A-PROG module and the blue colour connector on the ISP cable is connected to connector CN3 on the VM800P module.

The SCK signal on CN2 is connected to the SCK signal on the VM800P board.

The MOSI signal on CN2 is connected to the MOSI signal on the VM800P board.

The MISO signal on CN2 is connected to the MISO signal on the VM800P board.

The SS signal on CN2 is connected to the RST signal on the VM800P board.

The 5V signal on CN2 is connected to the 5V signal on the VM800P board.

The GND signal on CN2 is connected to the GND signal on the VM800P board.



Figure 5-1 – ISP Cable

5.3 Programming the VM800P bootloader

The bootloader is programmed to the VM800P in the factory using the VM800P ISP connector. This module is used to program the bootloader to the VM800P module.

Steps to program the bootloader to VM800P using Arduino IDE.

Open the Arduino IDE

Select the Tools->Serial Port->COMxx corresponding to the VA800A_PROG.

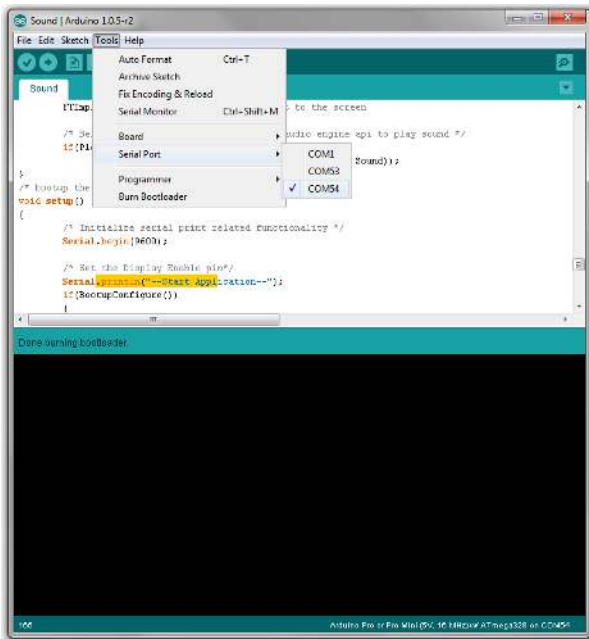


Figure 5-2 – Select the Serial Port

Select the Tools->Board->Arduino Pro or Pro Mini(5V, 16MHz) w/ATmega328

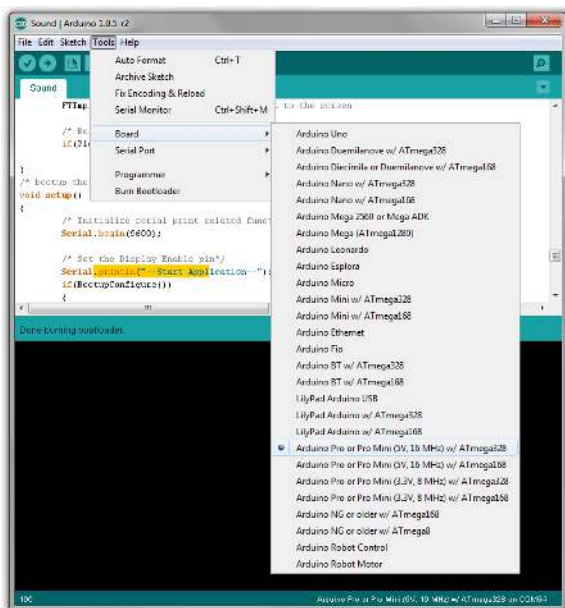


Figure 5-3 – Select the Board

Select the Tools->Programmer->Arduino as ISP

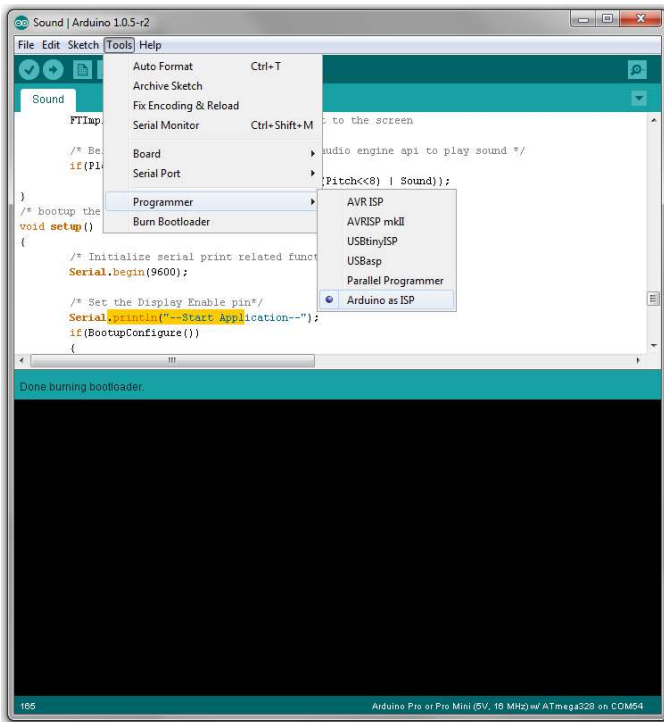


Figure 5-4 – Select the Programmer

Click on Tools->Burn Bootloader.

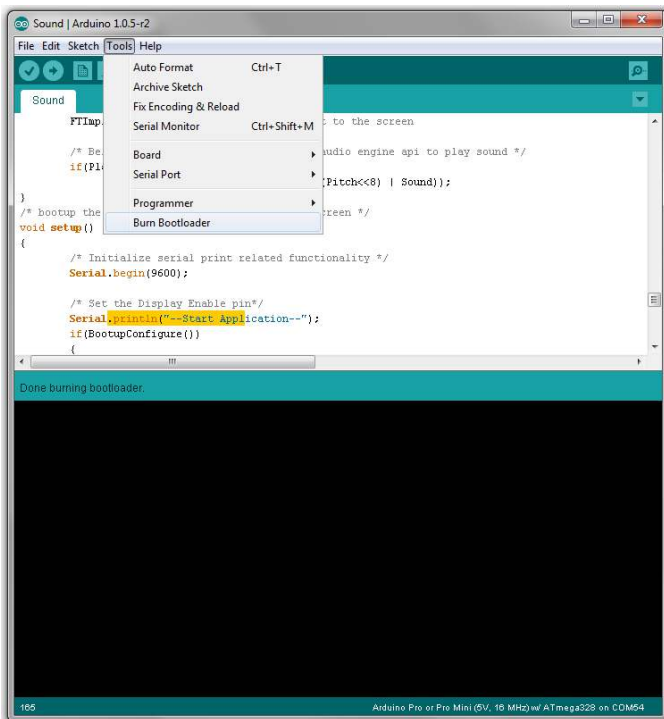


Figure 5-5 – Burn Bootloader

The status bar will display "Burning bootloader to IO board (This may take a minute)...".

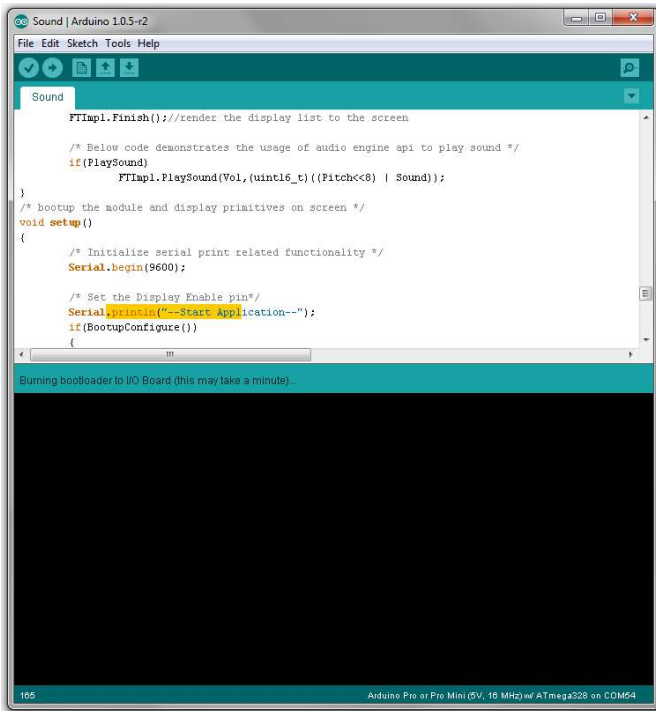


Figure 5-6 – Burning Bootloader

When the bootloader has burned successfully the status message will change to “Done burning bootloader.”.

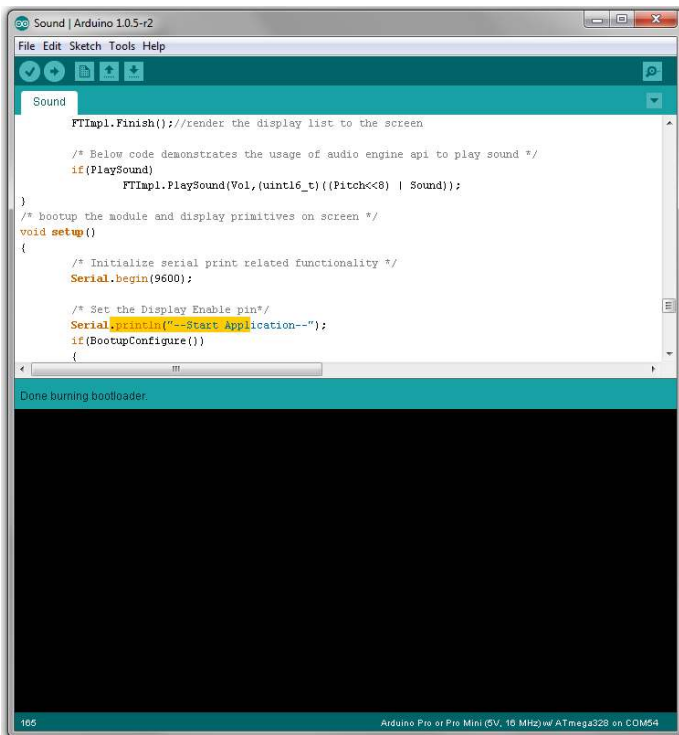


Figure 5-7 – Done Burning bootloader

6 Contact Information

Head Office – Glasgow, UK

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 – Tigard, Oregon, USA

7130 SW Fir Loop
Tigard, OR 97223
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 – Taipei, Taiwan

2F, No. 516, Sec. 1, NeiHu Road
Taipei 114
Taiwan, R.O.C.
Tel: +886 (0) 2 8797 1330
Fax: +886 (0) 2 8751 9737

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

Branch Office – Shanghai, China

Room 1103, No. 666 West Huaihai Road,
Changning District, 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

Web Site

<http://www.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.

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 – 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](#)

http://www.ftdichip.com/Support/Documents/AppNotes/AN_275_FT800_Example_with_Arduino.pdf

Appendix B - List of Figures and Tables

List of Figures

Figure 3-1 – VA800A PROG module	4
Figure 3-2 - VA800A PROG module Top view.....	5
Figure 3-3 - VA800A PROG module Bottom view.....	5
Figure 4-1 - VA800A PROG Schematics	8
Figure 5-1 – ISP Cable	9
Figure 5-2 – Select the Serial Port	10
Figure 5-3 – Select the Board	10
Figure 5-4 – Select the Programmer	11
Figure 5-5 – Burn Bootloader	11
Figure 5-6 – Burning Bootloader.....	12
Figure 5-7 – Done Burning bootloader	12

List of Tables

Table 2-1 – Ordering information	2
Table 3-1 – CN1 Pinout.....	6
Table 3-2 – CN2 Pinout.....	6
Table 3-3 – CN3 Pinout.....	6

Appendix C – Revision History

Document Title: DS_VA800A_PROG
Document Reference No.: FT_001029
Clearance No.: FTDI# 387
Product Page: <http://www.ftdichip.com/EVE.htm>
Document Feedback: [Send Feedback](#)

Version 1.0 Initial Datasheet released

14/05/14