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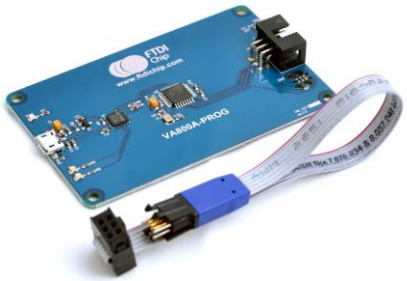
VA800A_PROG Datasheet
Version 1.0

Document Reference No.: FT_001029 Clearance No.: FTDI# 387

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

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3 Hardware Description

Please refer to section **3.2.2** for connector settings.

3.1 VA800A PROG module

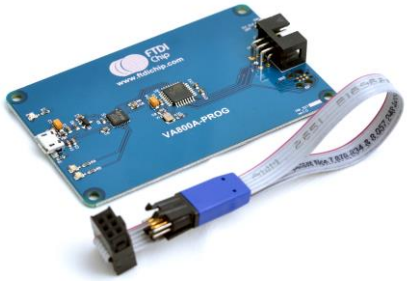

Figure 3-1 – VA800A PROG module

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.

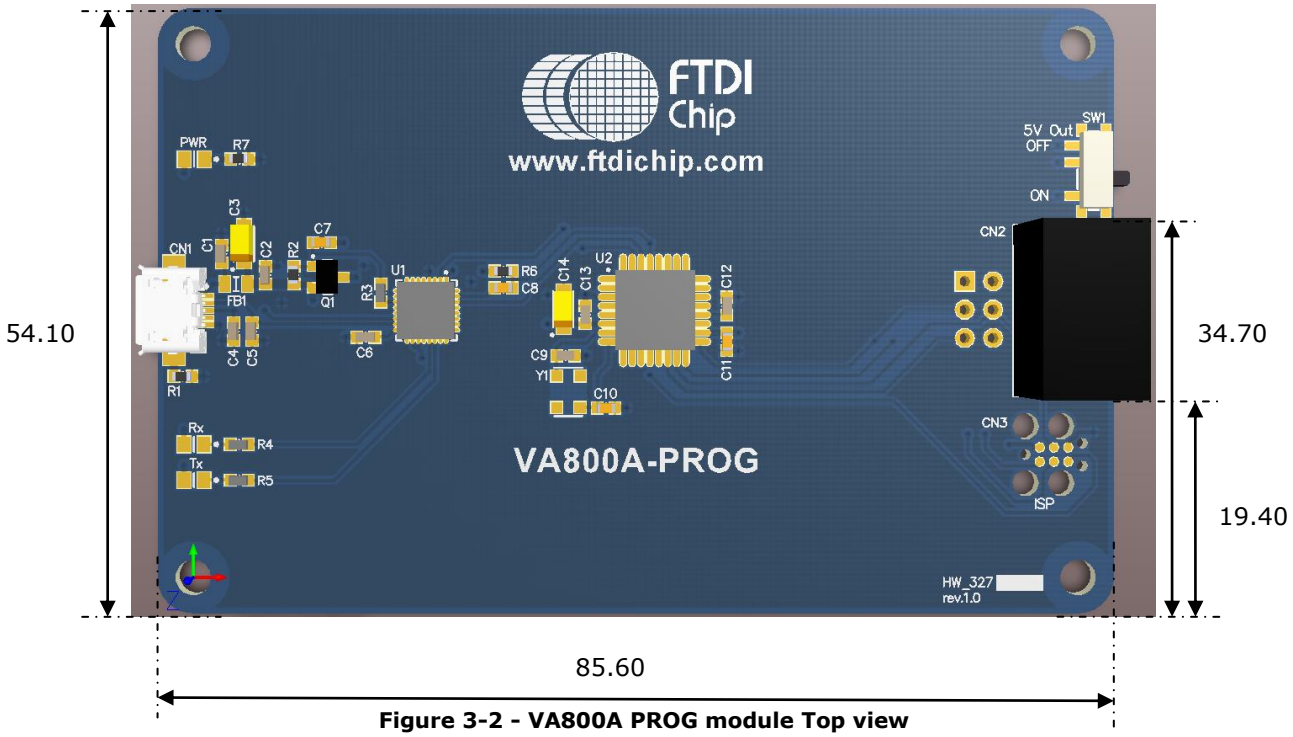

Figure 3-2 - VA800A PROG module Top view

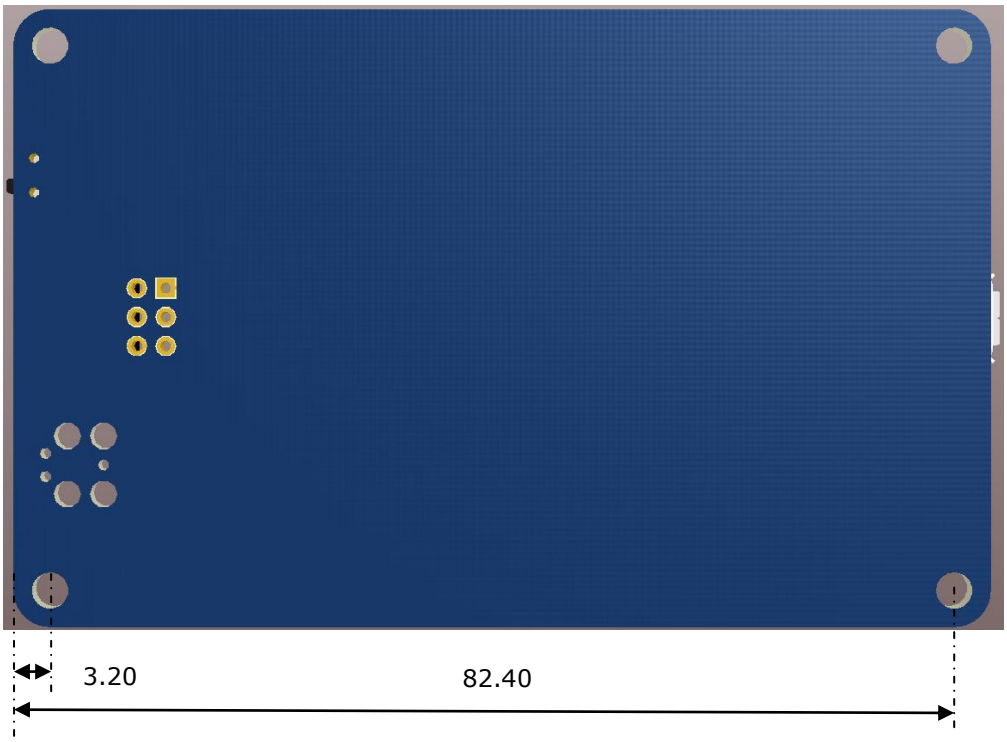

Figure 3-3 - VA800A PROG module Bottom view

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

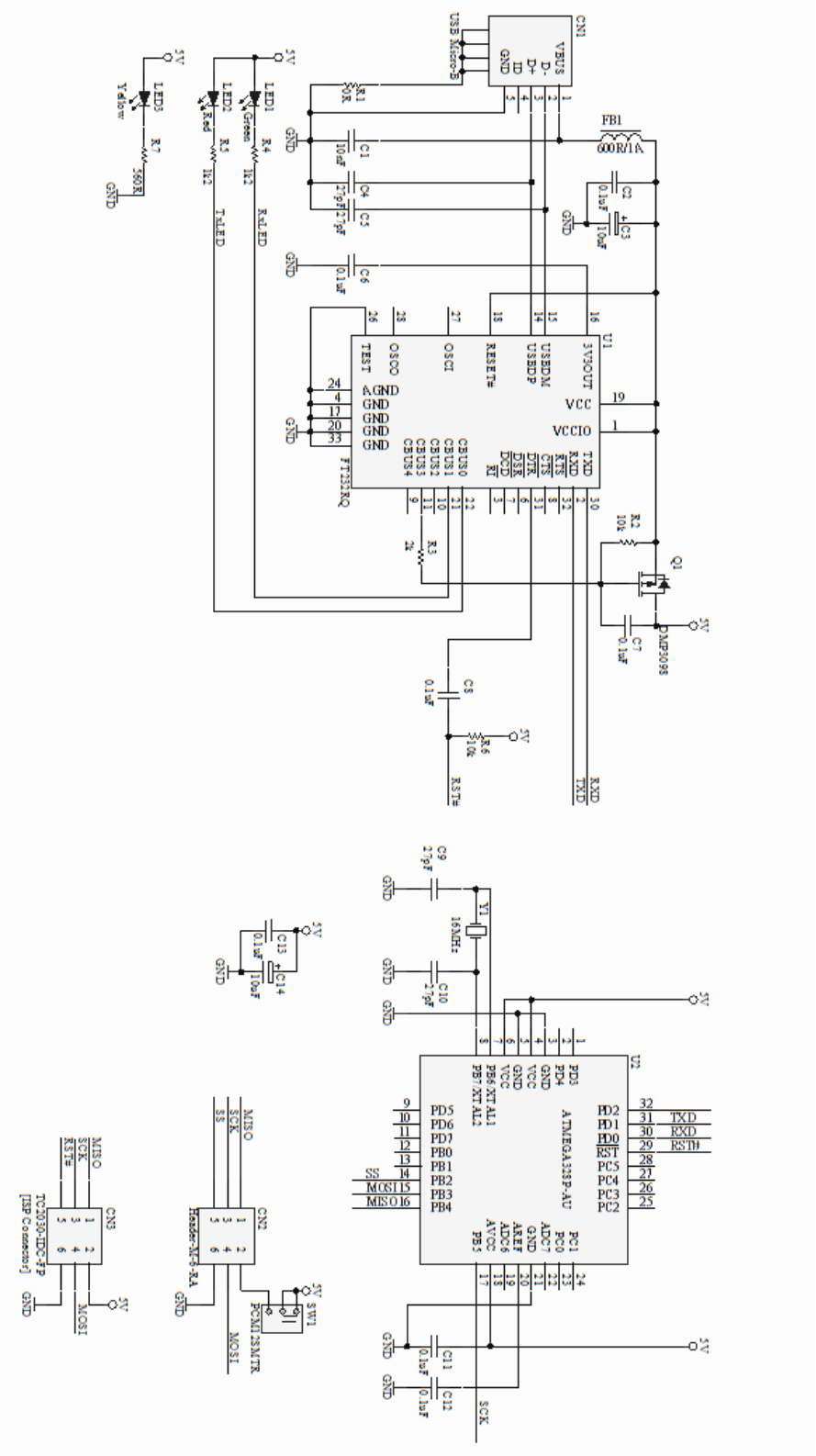

Figure 4-1 - VA800A PROG Schematics

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.

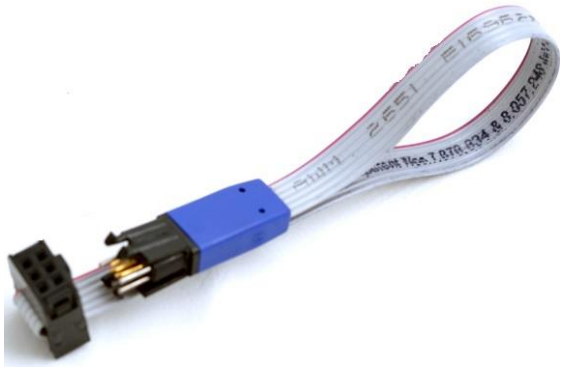

Figure 5-1 – ISP Cable

5.3 Programing 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.

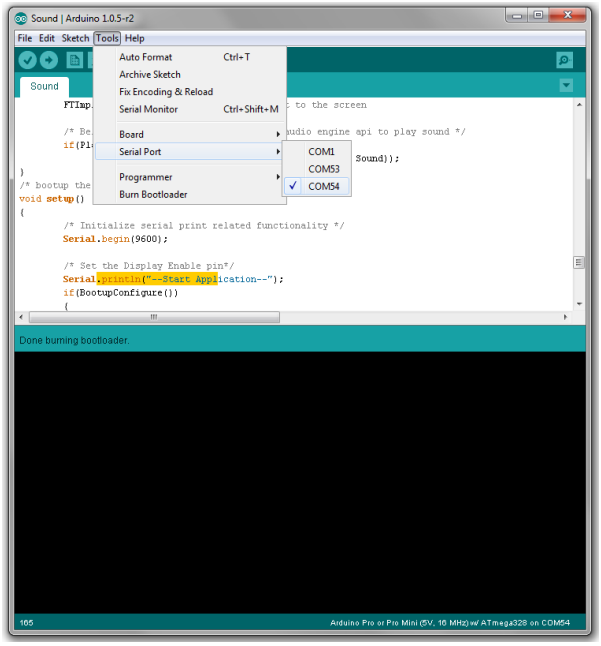

Figure 5-2 – Select the Serial Port

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

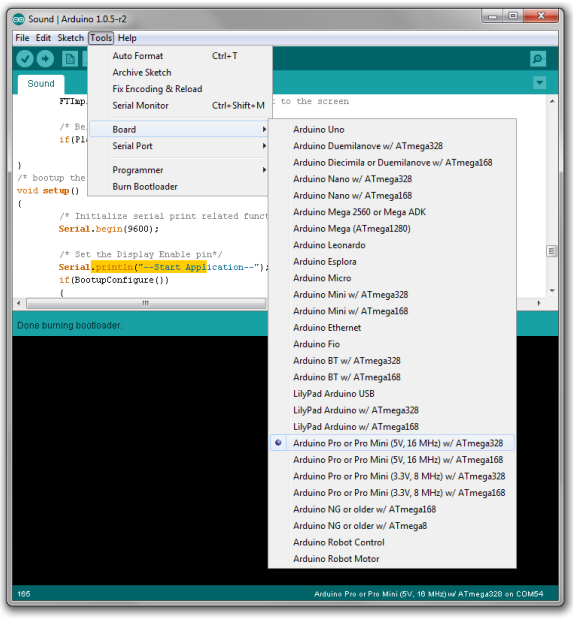

Figure 5-3 – Select the Board

Select the Tools->Programmer->Arduino as ISP

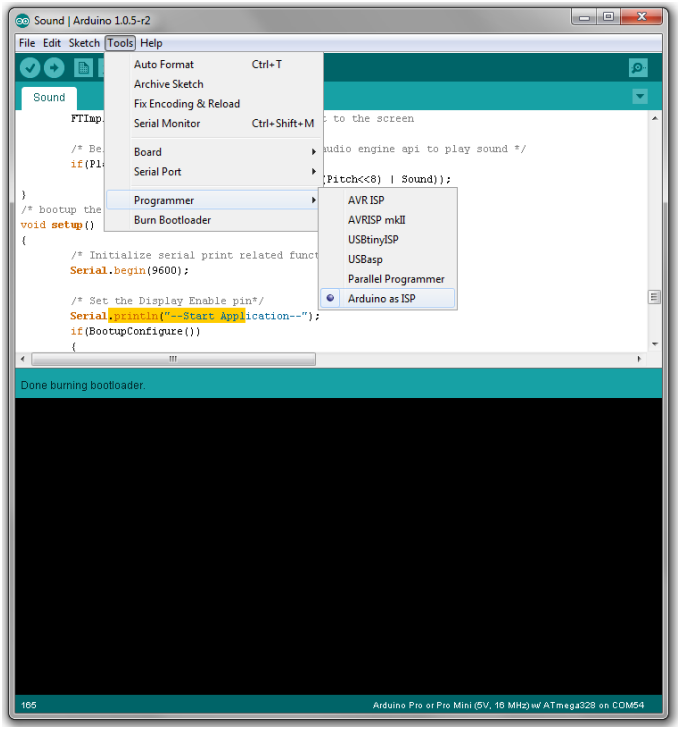

Figure 5-4 – Select the Programmer

Click on Tools->Burn Bootloader.

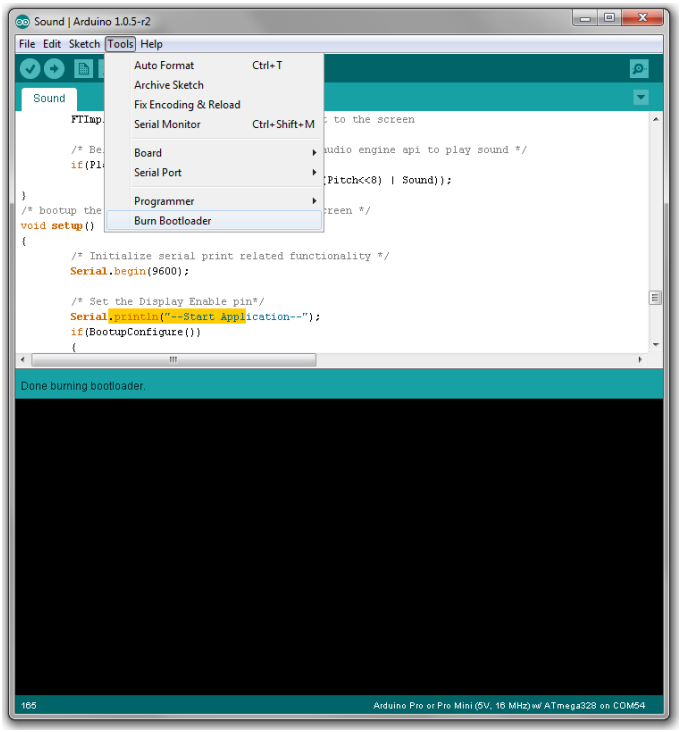

Figure 5-5 – Burn Bootloader

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

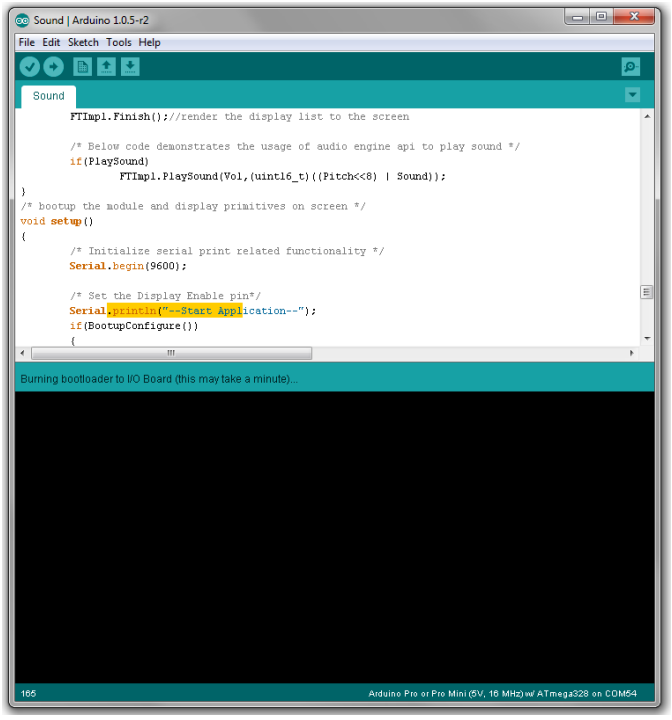

Figure 5-6 – Burning Bootloader

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

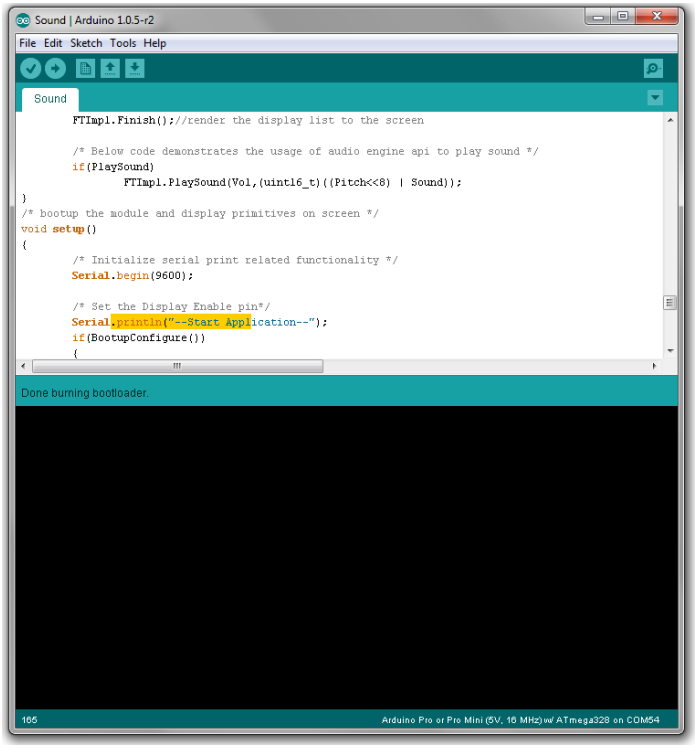

Figure 5-7 – Done Burning bootloader

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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

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

Appendix B - List of Figures and Tables

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Appendix C – Revision History

Document Title:	DS_VA800A_PROG
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