*"Your Robotic Solution"*

www.mybotic.com.my

# AVR USBASP Programmer Module


# User's Manual V1.0

# Contents

# 1. Introduction

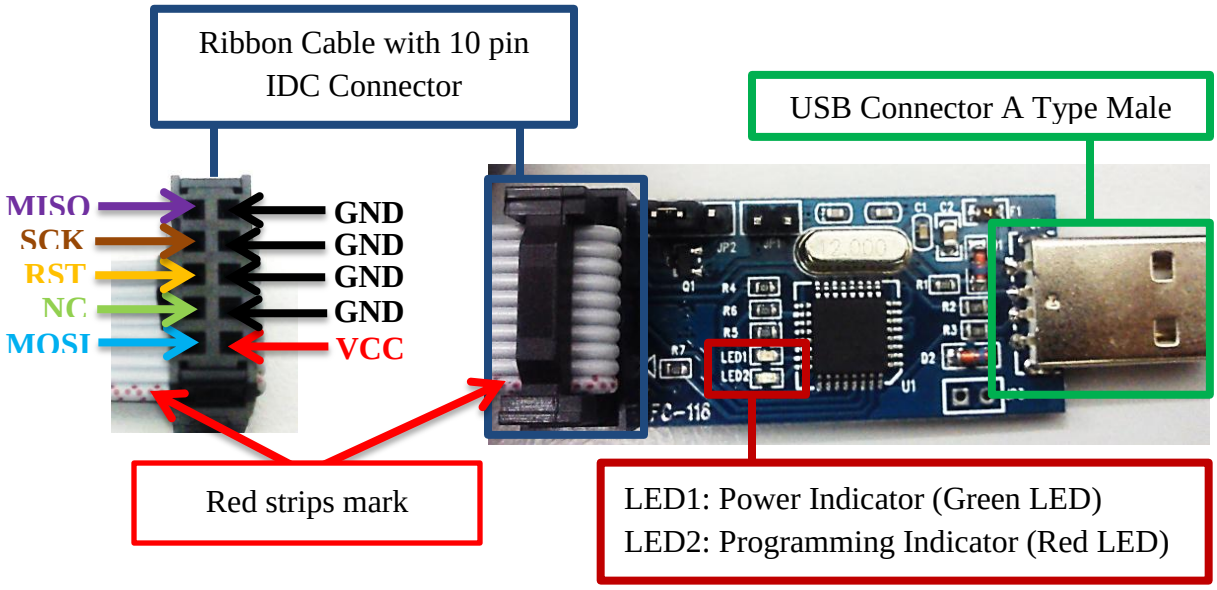
This AVR USBASP Programmer module is used to upload the source code from the computer into the ATMEL's microcontroller unit using standard USB port as input. This module comes with 10 on-board pins connected through the ribbon cable as the output. It can support a wide variety series of Atmel (AT) AVR microcontroller chip such as ATMEGA328P, ATmega128P, and etc. This module is compatible with the USBasp and fully supported by the Arduino IDE. It also allows programming a new bootloaders and firmware using the ICSP programmer whether on Arduino boards or on user's custom-made Arduino-compatible projects.

.

**Specification:**

- Input voltage : 3.3V or 5V
- 2 light indicator : Power (Green LED) and Programming (Red LED)
- 10 pin ISP (in-system-programmer) interface to microcontroller
- USB interface to computer
- On-board ATMega8A-AU
- Compatible with the Arduino IDE on Linux, Windows, and Mac.
- Compatible with a wide range of boards, including all Arduino boards.

## 2. Pin Definition

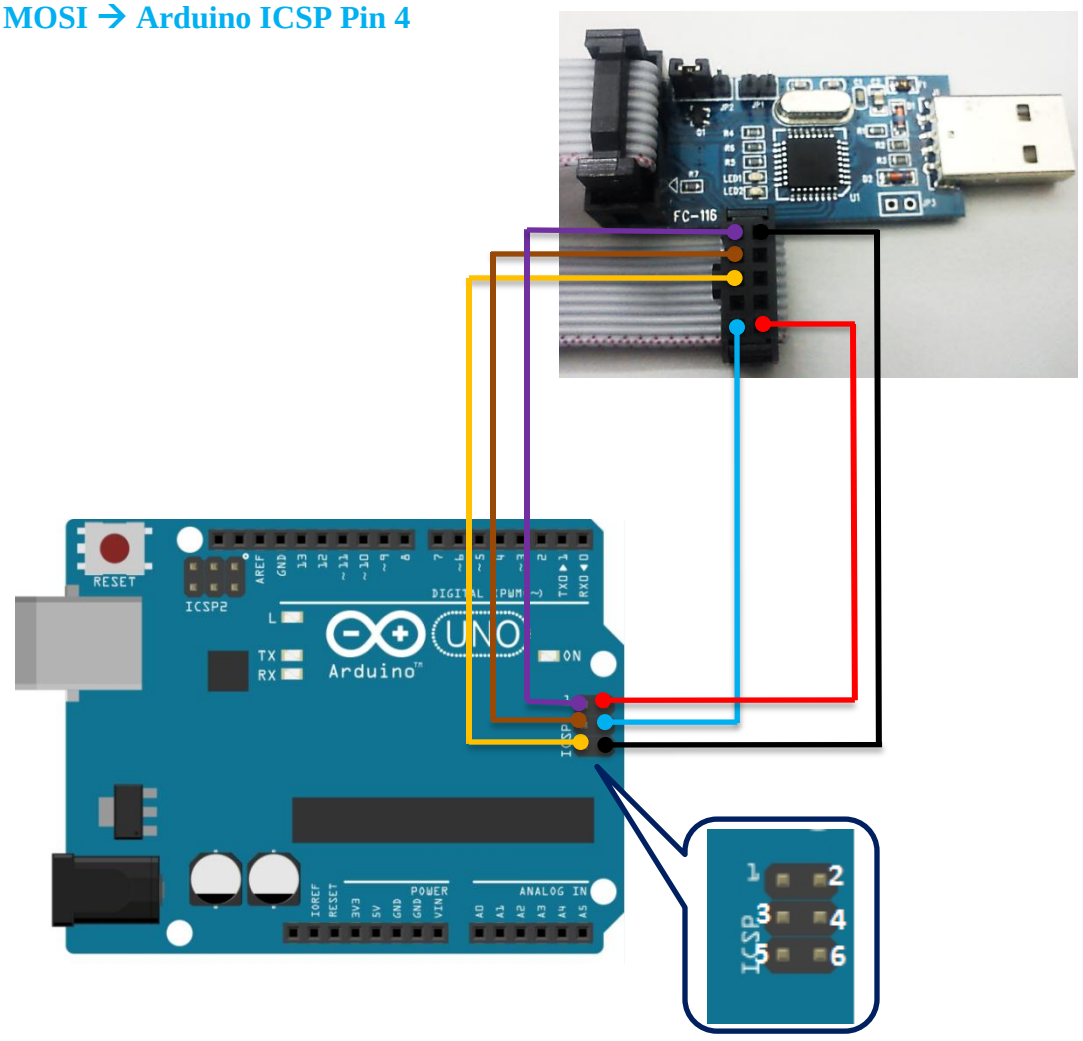



| Pin | Description | Function |
|---|---|---|
| VCC | +3.3V or +5V | Connect to either +3.3V or +5V. (position is at the red stripes mark ribbon cable) |
| GND | Ground | Connect to Ground. |
| RST | Target AVR MCU Reset | The reset pin for the AVR microcontroller must be put in active low in order for programming to occur. |
| MOSI | Master Out Slave In | Allows the master device (the USBASP) to send data to the slave device (AVR microcontroller). |
| SCK | Serial Clock | A mutual clock shared between the master and slave device for synchronized communication |
| MISO | Master In Slave Out | Allows the slave device (AVR microcontroller) to send information to the master device (the USBASP programmer). |
| NC | No connect | This pin is left unconnected. |

## 3. Sample Hardware Installation

Diagram below shows the hardware connection between AVR USBASP Programmer Module and Arduino UNO. Besides Arduino, it may interface with other Atmel's microcontroller such as Atmel AVR Microcontroller, and etc.

- **VCC → Arduino ICSP Pin 2**
- **GND → Arduino ICSP Pin 6**
- **MISO → Arduino ICSP Pin 1**
- **SCK → Arduino ICSP Pin 3**
- **RST → Arduino ICSP Pin 5**
- **MOSI → Arduino ICSP Pin 4**



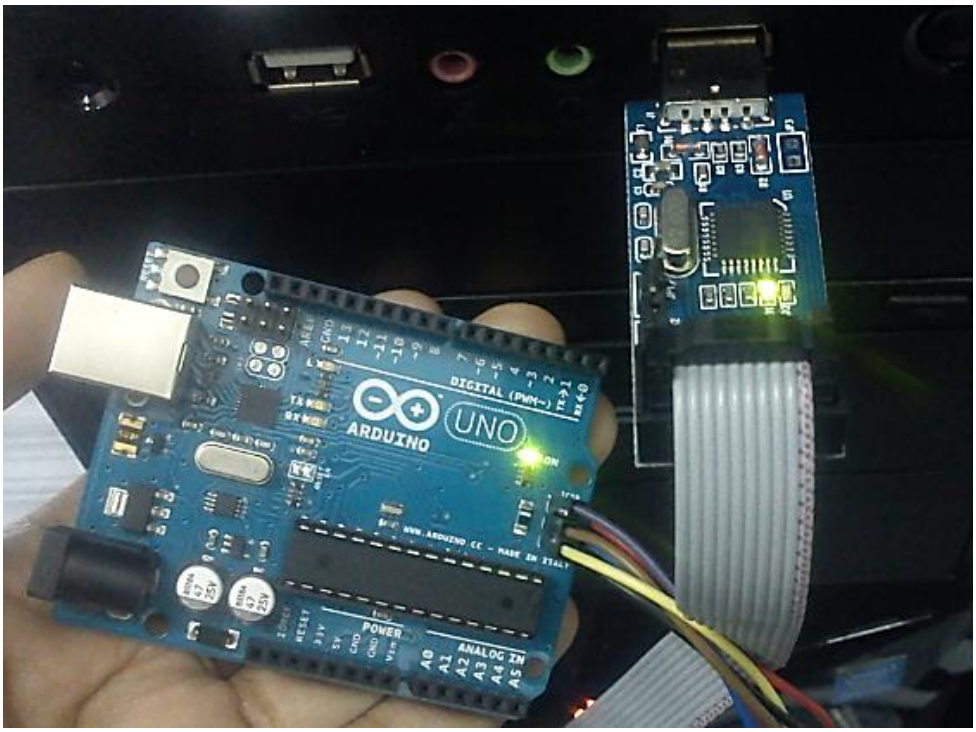

Please install the [USBasp Windows Driver] to your personal computer (PC) in order to use the AVR USBASP Programmer Module.

## 4. Result

The example is done by programming the ATMEGA 328P Integrated Chip (IC) using the AVR USBASP Programmer Module. Before programming the IC, you have to download the USBasp Windows Driver into your computer. Extract the *WinZip File* into folder. Then, open the *File folder* and double click on the *InstallDriver.exe* to run the application. After the installation, your module now is ready to be used.

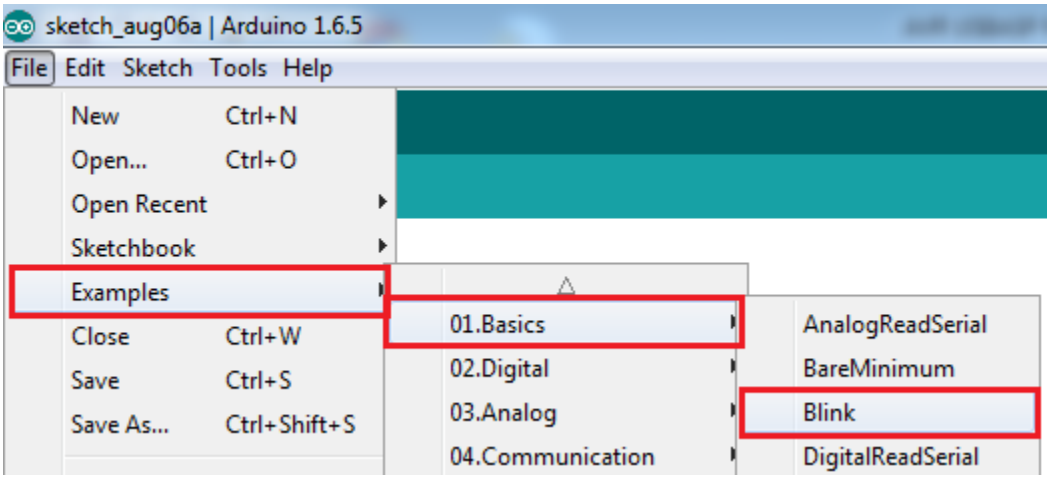
**1. Upload Program via AVR USBASP Programmer**

The USB type A of the AVR USBASP Programmer module is connected to the PC. LED1 on the module's board will ON to indicate that the module is power on. The Arduino board is turned ON as well.



Then, load sample program from the Arduino IDE:

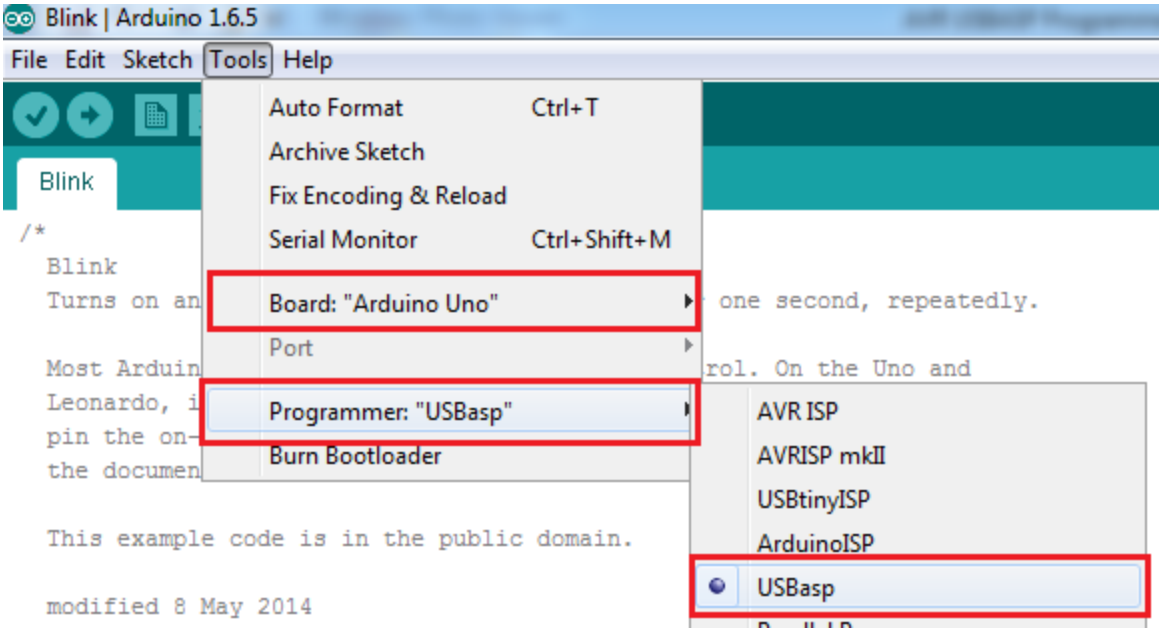
Open the Arduino IDE → Click [File] → [Examples] → [01.Basics] → [Blink]



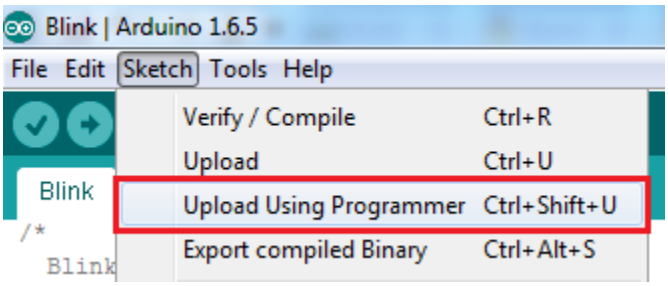

Next, choose the Arduino UNO board and USBasp programmer as in the picture below:

Click [Tools] → [Board] → [Arduino Uno]

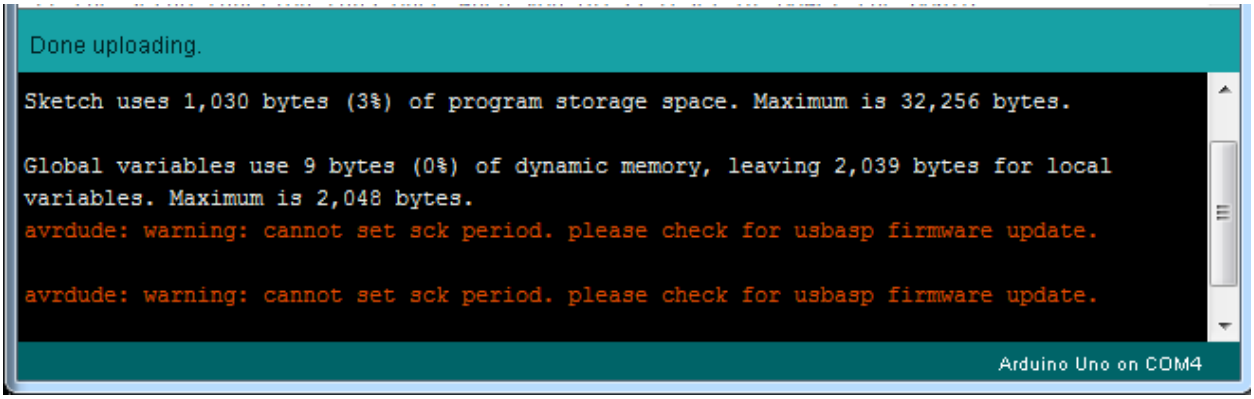
Click [Tools] → [Programmer: USBasp] → [USBasp]



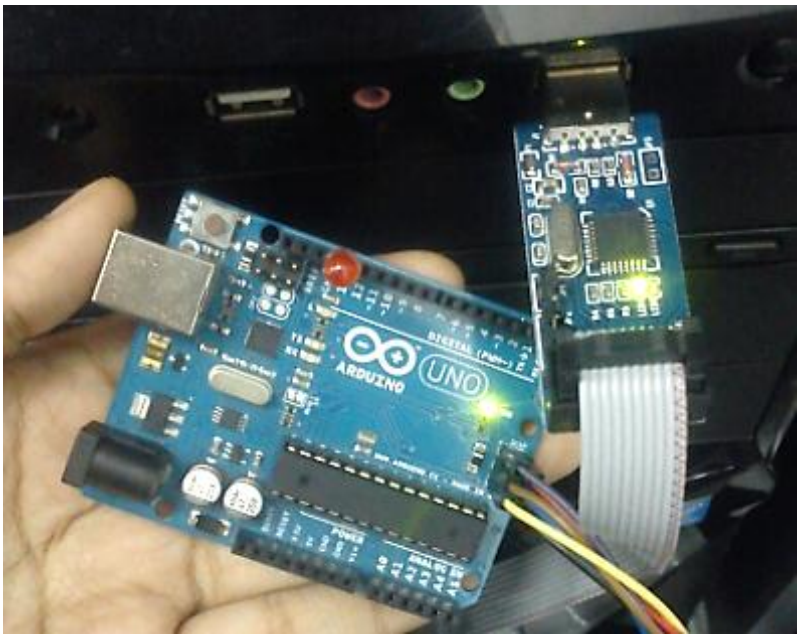
The example source code is uploaded into the IC by clicked on the *Upload Using Programmer*. The location of the *Upload Using Programmer* will be different with different version of Arduino IDE. In this example, the Arduino IDE with **version 1.6.5**, and the *Upload Using Programmer* is located under *Sketch*.

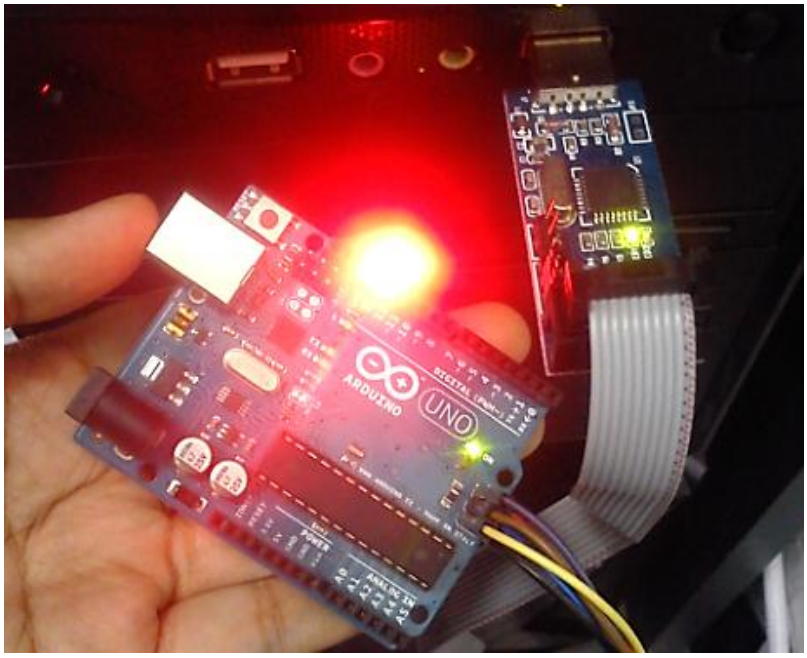



The LED2 on the AVR USBASP Programmer board will ON during the uploading process. After done uploading, there will be SCK warnings appeared at the bottom of the Arduino software. These warnings can be ignored due to the firmware version of AVR USBASP Programmer. It does not affect the result.



As the result, the LED on the Arduino UNO board is blinking. In this example, additional Red LED is attached on the pin 13 and GND of Arduino UNO in order to see the clearer result.



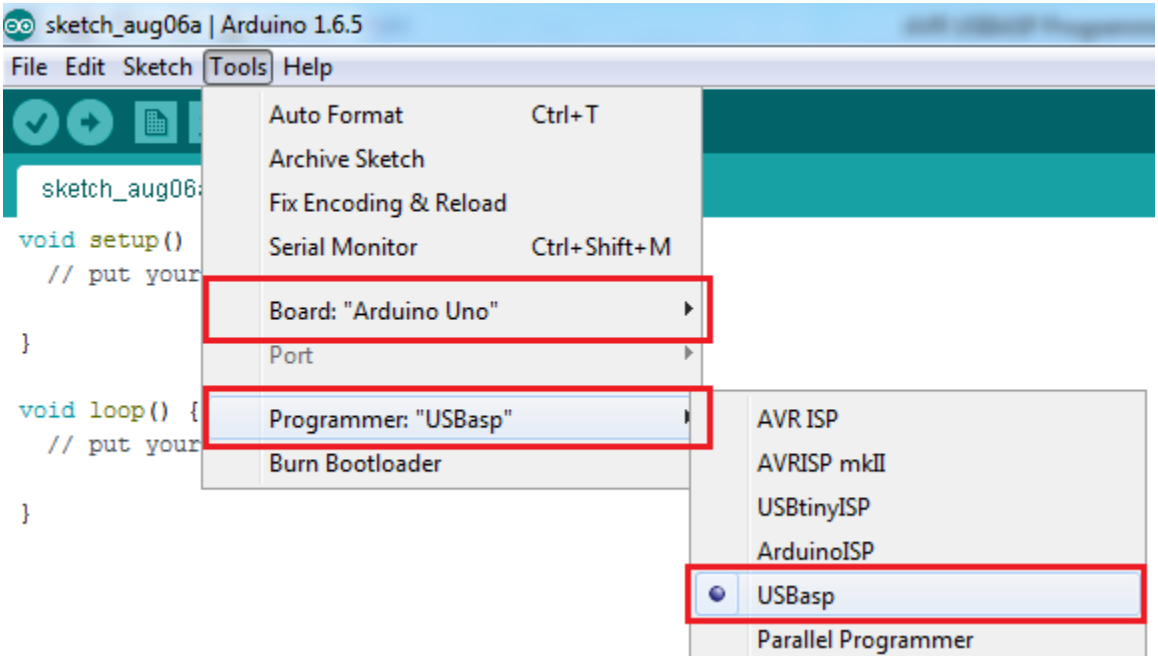
## 2. Burning Arduino Bootloader via AVR USBASP Programmer

For the ATMEGA 328P IC that does not have the bootloader firmware, in this example, the Arduino IDE software and Arduino UNO board is used to burn the Arduino Bootloader firmware into the IC.

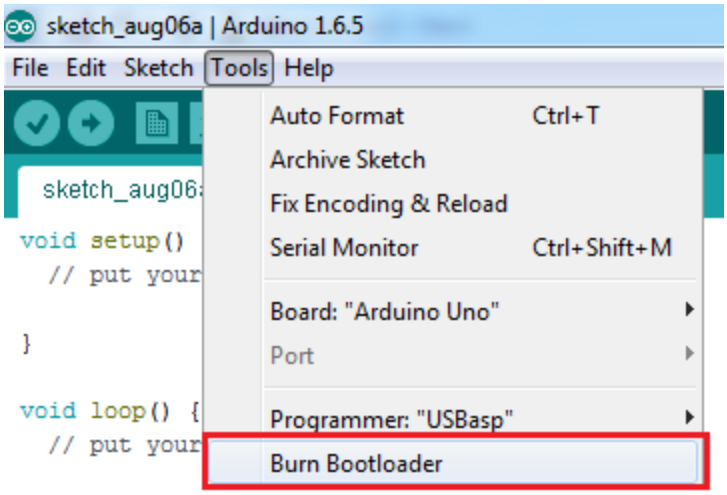
Before uploading the Bootloader, follow the *Sample Hardware Installation* to make the connection between programmer and Arduino UNO. After that, connect the AVR USBASP Programmer module to the PC. Next,

Open Arduino IDE → Click [Tools] → [Board] → [Arduino Uno]

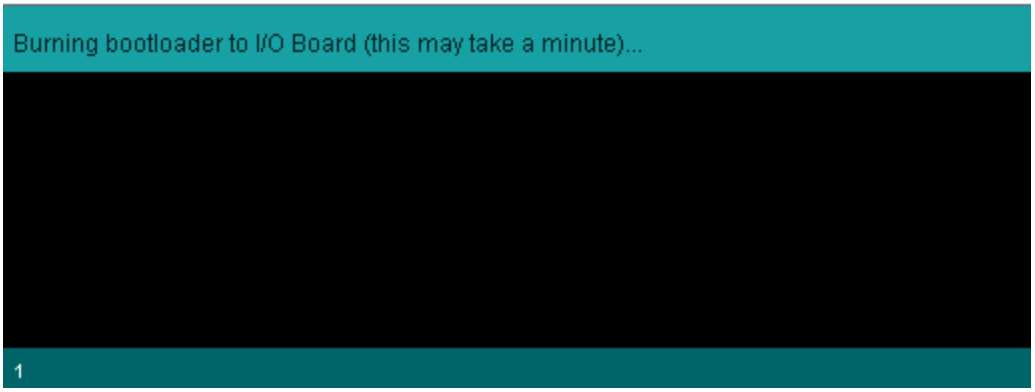
Click [Tools] → [Programmer: USBasp] → [USBasp]



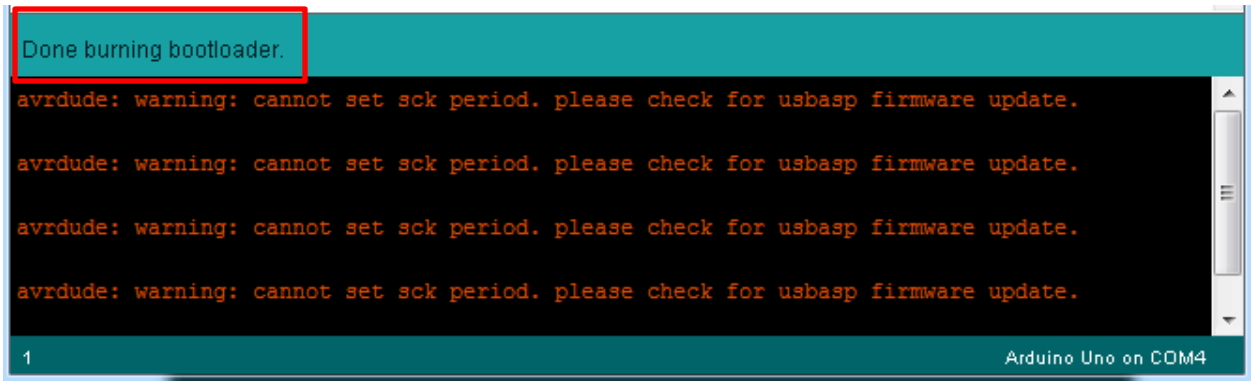
After that, click on the *Burn Bootloader* under the *Tools*.




During the burning bootloader progress, it may take a few minutes to complete.



After the burning progress is done, the Arduino IDE will display “Done burning bootloader”. There will be SCK warnings appeared at the bottom of the Arduino software as in the picture below. These warnings can be ignored.



## 5. Warranty

- Product warranty is valid for 1 month.
- Warranty only applies to manufacturing defect.
- Damaged caused by misuse is not covered under warranty.
- Warranty does not cover shipping cost for both ways.

Prepared by Mybotic

47, Jalan Universiti 1,
Taman Universiti,
86400, Parit Raja, Johor

Tel: +6016-7170703 / +6018-9510703

URL : www.mybotic.com.my
Email : support@mybotic.com.my
sales@mybotic.com.my