ELEMENTZ ENGINEERS GUILD PVT LTD

Embedded Module Manufacturers and Distributors

USBASP SERIAL PROGRAMMER

USER GUIDE

Contents

Overview

USBasp serial programmer will allow you to painlessly transfer hex programs to most ATMEL AVR microcontrollers.

It is more reliable than most other AVR programmers available. Entire AVR programmer has been built with using common parts and fits in the case of the serial connector. The socket pcb has been created to fit a 28-DIP AVR ATmega8 microcontroller, but you can build a socket pcb for any other AVR microcontroller out there. This AVR programmer is compatible with AVRdude GUI software.

Features

- Microcontroller - ATmega8
- Operating Voltage - 5V

Module SnapShot

Following figure contains the Snapshot of the USBasp AVR serial programmer.

Figure 1: Front View

Connection Details

To connect the GSM modem with the pc, we have to know about the hardware and the software section used in this type of modem.

How to connect

Connect the USBasp serial programmer to the pc with male to male usb connector. +5V for the microcontroller chip will be provided directly from usb.

Connect the target board to the USBasp serial programmer using ICSP Connector.

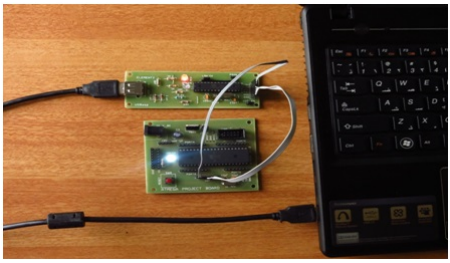

Figure 2: Connection through USB

Remarks While Programming, its better to use External Power Source, because USB port can only supply maximum current of 500mA. Short the pins VCC and EN for powering the target board.

Installing the drivers

Extract the software provided in the support CD to any preferred location in your computer.Select the driver for 32 bit/64 bit and install it or show the path.

On Windows7

- Right click on My computer
- Select **Manage** → **Device Manager** → **Other devices** → **Usbasp**.
- Right click on Usbasp and select **Properties** → **Update driver** → **Browse my computer for driver software**.
- Click on it and browse for the **win-driver** → **libusb_1.2.4.0**.

On Windows XP, the Add New Hardware wizard will open:

- When asked **Can Windows connect to Windows Update to search for software?** select **No, not this time**. Click next.
- Select **Install from a list or specified location(Advanced)** and click **next**.
- Make sure that **Search for the best driver in these locations** is checked; uncheck Se **arch removable media**; check, **Include this location in the search** and browse to the **windriver** → **libusb_1.2.4.0** directory extracted from the support CD. Click **Next**.

- The wizard will search for the driver and should install the drivers successfully.

You can check that the drivers have been installed by opening the Windows Device Manager (in the Hardware tab of System control panel). Look for "ELEMENTZ AVR-USB PROGRAMMER" in the LibUSB-Win32 Devices section.

Figure 3: Device Tree View

It should look like this, after installing the drivers successfully.

Configuring AVRdudeGUI

Connect the USBasp Serial Programmer to the pc using usb connector. Open AVRdudeGUI by double-clicking the “AVRDudeGUI” application.

- Select the **Configuration** tab.

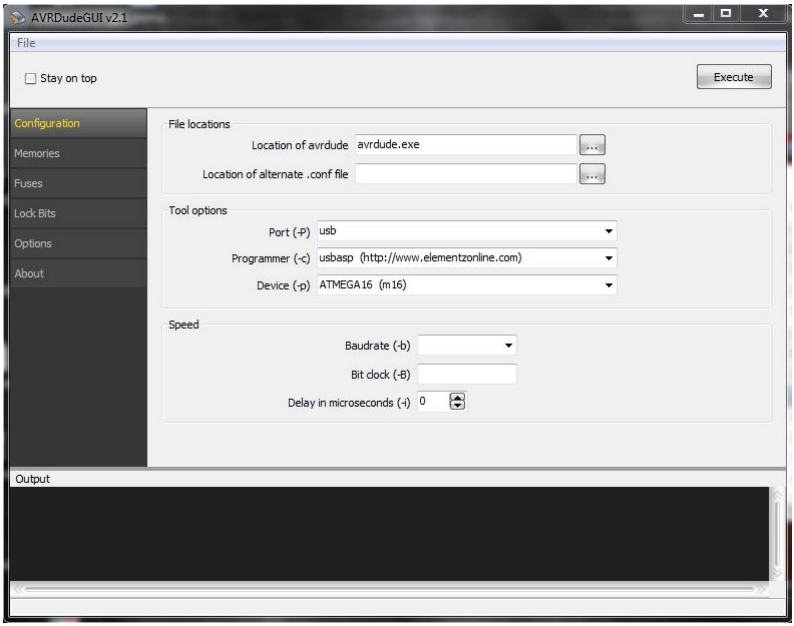

Figure 4: General Configuration

- In the **"Location of avrdude"**, browse and show the path where the avrdude application is located.

- In **Tool options>Port(-P)**>select **usb** from the dropdown menu. **libusb_1.2.4.0** directory extracted from the support CD. Click **Next**.
- In **Programmer(-c)**>select **usbasp(USBasp, http://www.elementzonline.com)**.
- In **Device(-p)**>select the microcontroller you are using in your target board.
- Now select the **Fuses** tab.

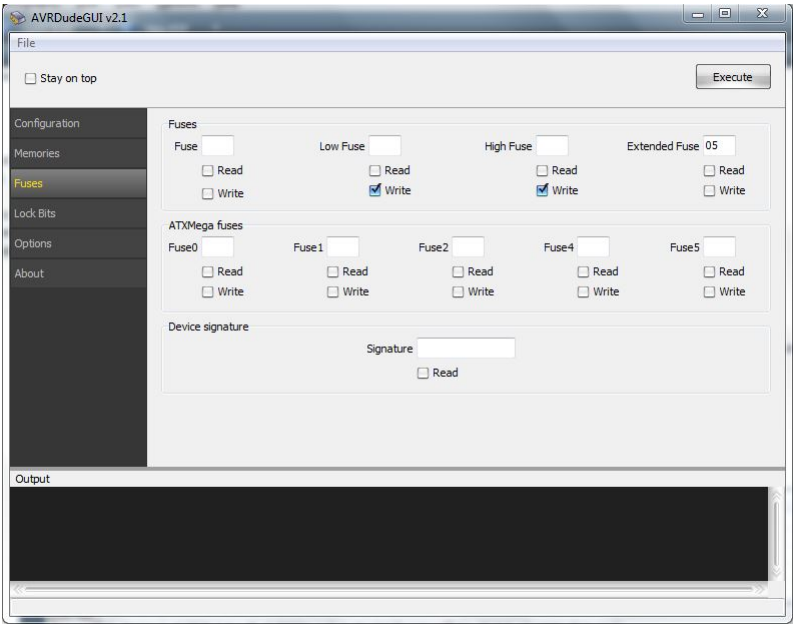

Figure 5: Fuse Configuration

- Enter the following settings
- Low Fuse - **XX** High Fuse - **XX**
- Tick the **Write** boxes below Low Fuse & High Fuse.
- Click the **Execute** button.

- Output will show
  avrdude.exe: verifying ...
  avrdude.exe: 1 bytes of hfuse verified
  avrdude.exe done. Thank you.

- After execution **remove** the ticks from the **Write** boxes.

Device	**Osc Freq**	**Additional Settings**	**Low Fuse**	**High Fuse**
ATMEGA8	8-16 MHz		FF	D9
ATMEGA328	8-16 MHz		EF	D9
ATMEGA16	8-16 MHz	JTAG enabled	EF	89
ATMEGA16	8-16 MHz	JTAG disabled	EF	C9
ATMEGA162	8-16 MHz	JTAG enabled	FF	99
ATMEGA162	8-16 MHz	JTAG disabled	FF	D9

Refer the above table for selecting Fuse Settings for popular ICs[1]

Be careful to select the fuses for your target IC, otherwise it can brick your IC forever.
User may use the online tool in *http://www.engbedded.com/fusecalc* for finding the fuse bits for your Target.

[1]Please refer yourself with the device datasheet

Downloading hex code to the target board

Connect the USBasp Serial programmer to the pc using usb connector. Connect the target board which is to be programmed to the USBasp Serial programmer. Now open the AVRDudeGUI application.

- Select the **Memories** tab.

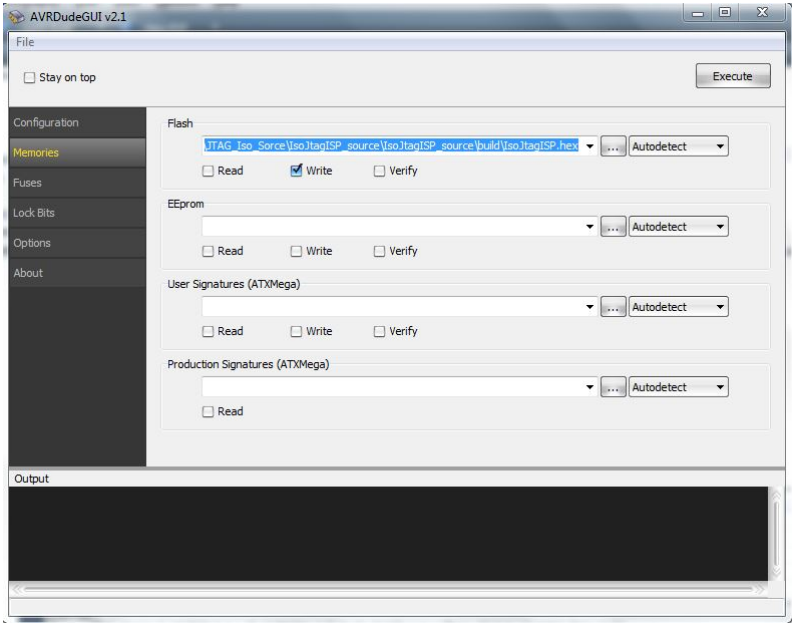

Figure 6: Program Configuration

- In **Flash**, browse for the hex code to be dumped to the target board.
- Tick the **write** box.
- Click **Execute**.
- Output will show
  avrdude.exe: verifying ...
  avrdude.exe: xxx bytes of flash verified
  avrdude.exe done. Thank you.
- After execution **remove** the tick from the **Write** box.
- During execution the led will blink and that's it.