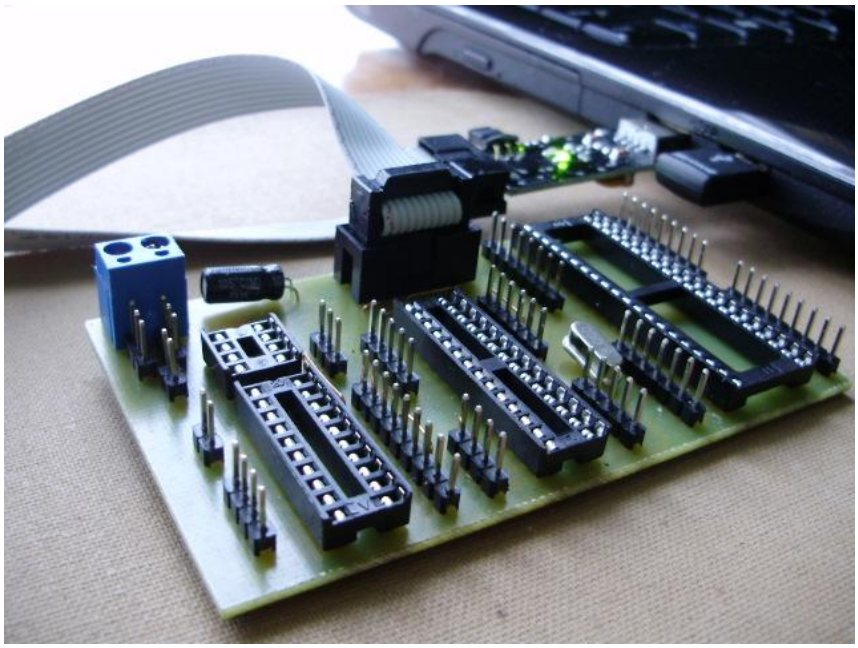
2011

Programmer AVR USBasp and Programmer's Socket



User Manual

2011-06-10

CONTENTS

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1. INTRODUCTION

1.1 What is USBasp?

USBasp is a USB in-circuit programmer for Atmel AVR controllers. It simply consists of an ATMega8 and a few passive components. The programmer uses a firmware-only USB driver, no special USB controller is needed.

1.2 Technical teature

Some of the features include:

- connect directly to port USB, can be use with PC or laptop, you don't need additional cable
- 10 pin ISP interface,
- Support for Linux, Windows XP, Windows Vista, Windows 7,
- Allows you to read or write the microcontroller EEPROM, firmware, fuse bits and lock bits,
- 5 kB/sec maximum write speed (microcontroller CPU> 1,5Mhz), for microcontroller with CPU<1,5MHz it's necessary to switch jumper,
- powered directly from USB port,
- 2 leds which tell: one for connecting to a computer and one of the programming process,
- Cooperate witch programs: BASCOM, AVRDUDE (with all GUI), WinAVR and more.

1.3 Supported microcontrollers

Table 1 Lists the microcontrollers supported by the USBasp

Mega Series	**ATmega8**, ATmega8515, ATmega8535, ATmega88, ATmega103, ATmega128, ATmega1280, ATmega1281, **ATmega16**, ATmega161, ATmega162, ATmega163, ATmega164 ATmega32, ATmega324, ATmega329, ATmega3290, **ATmega48**, ATmega64, ATmega640, ATmega644, ATmega649, ATmega6490
Classic Series	AT90S1200, AT90S2313, AT90S2333, AT90S2343, AT90S4414, AT90S4433, AT90S4434, AT90S8515, AT90S8535
Tiny Series	ATtiny12, **ATtiny13**, ATtiny15, **ATtiny2313**, ATtiny25, ATtiny26, ATtiny45, ATtiny85
PWM Series	AT90PWM2, AT90PWM3
CAN Series	AT90CAN128

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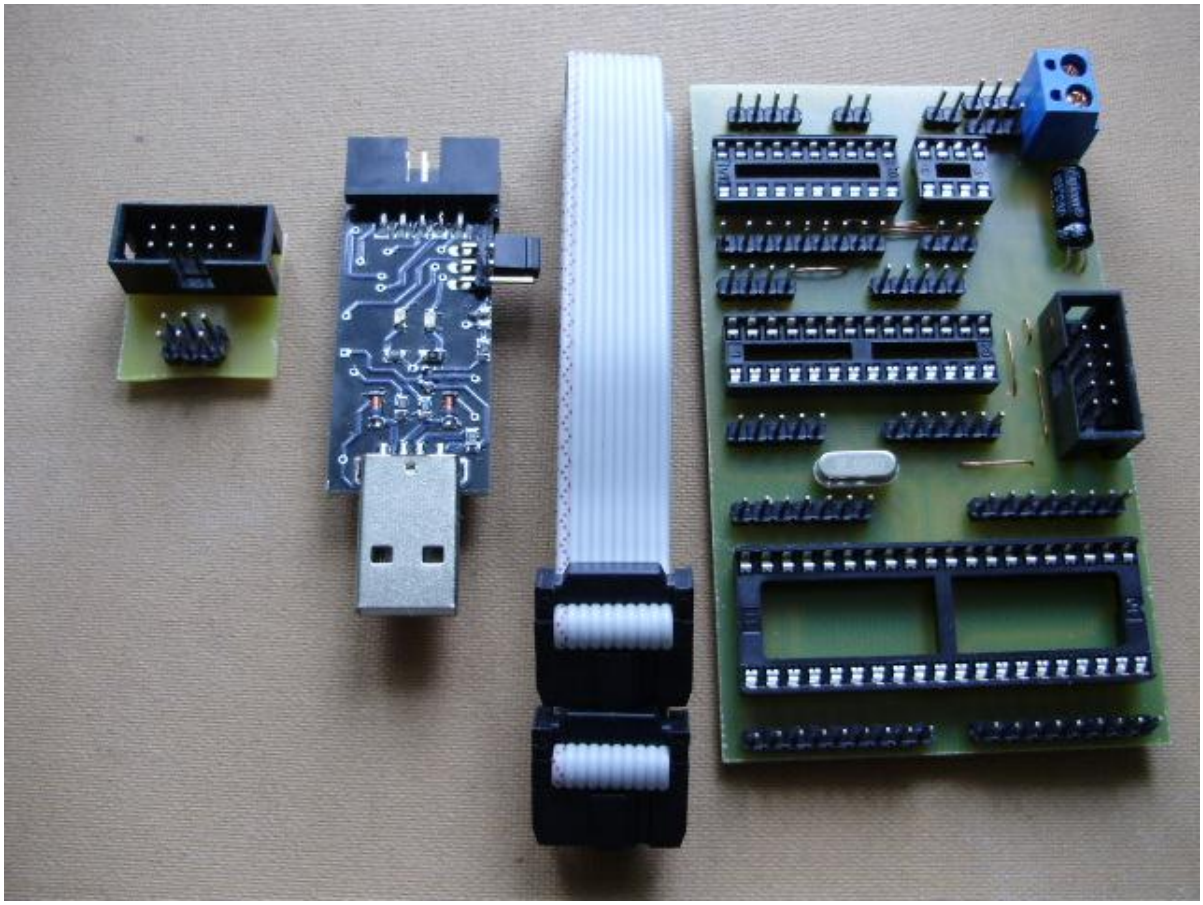
1.4 Kit contents

The kit contents:

- Programmer compatible with usbasp
- Programmer's Socket
- The standard IDC 10-pin cable (40cm)
- 10 Pin to 6 Pin adapter



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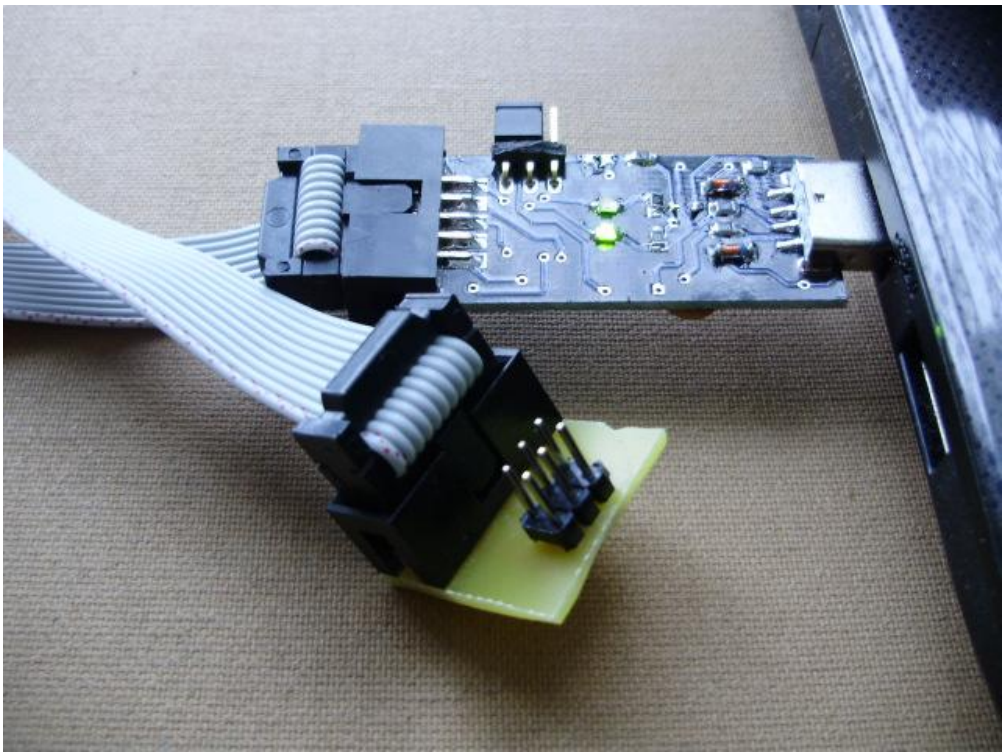
2. TECHNICAL DESIGN

2.1 Programmer connected to PC



The programmer can be connected to any computer with a USB 1.1 or USB 2.0. At the same time with the built-polymeric fuse 500mA is not possible to damage the port, even if the programmer is connected not to the end of the system tested.

The programmer has two programming modes. Jumper placed in position as the picture allows the programming of processors whose clock is set to> 1.5 MHz. Contrast ratio enables the programming jumper processors clocked <1.5 MHz (brand new processors should be programmed atmel this mode).

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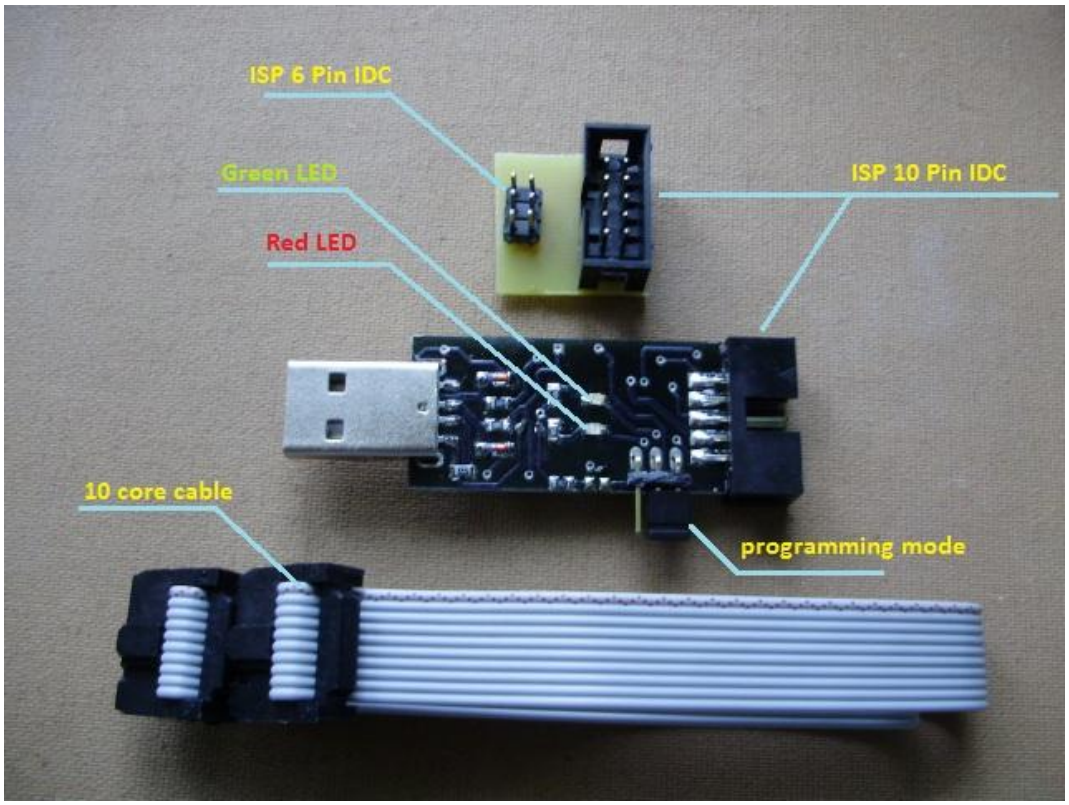
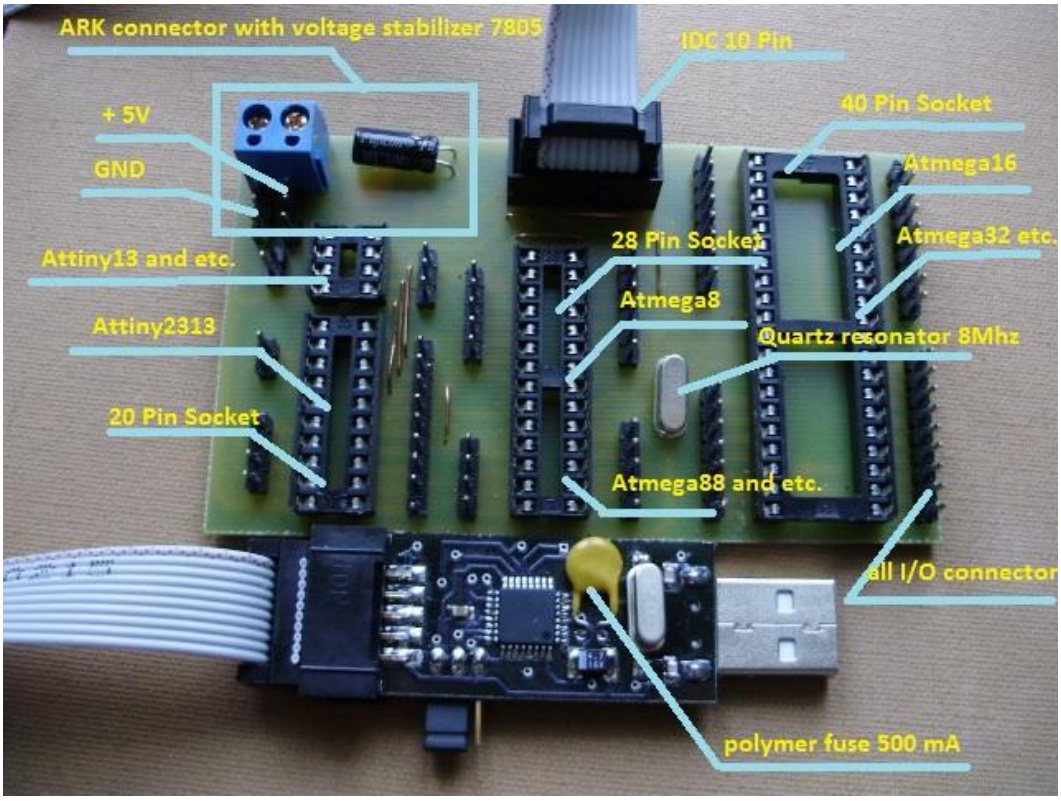
2.2 Layout

2.2.1 Programmer



2.2.2 Programmer's Socket



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3. USING THE PROGRAMMER

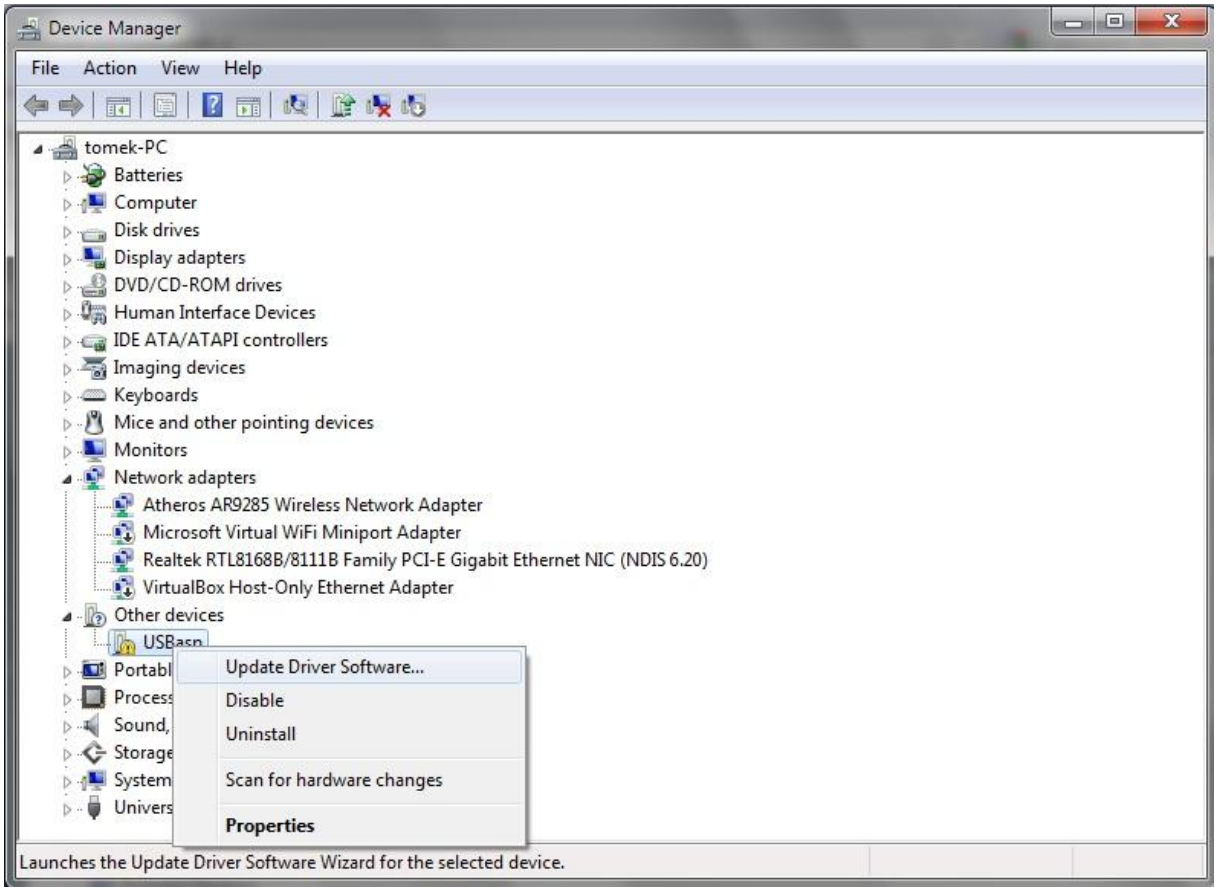
3.1 Connecting the programmer to the computer

If you want to connect the programmer to computer you must:

- Physically connecting the programmer to the USB port,
- Installing drivers in order for it work.

3.1.1 Windows 7 (64 bit)

1. Download drivers from http://www.fischl.de/usbasp/ (usbasp.2011-05-28.tar.gz) and unzip.
2. Insert programmer to USB port in your computer.
3. Open Device Manager, click right mouse button on Other Device -> USBasp and click on Update Driver Software…



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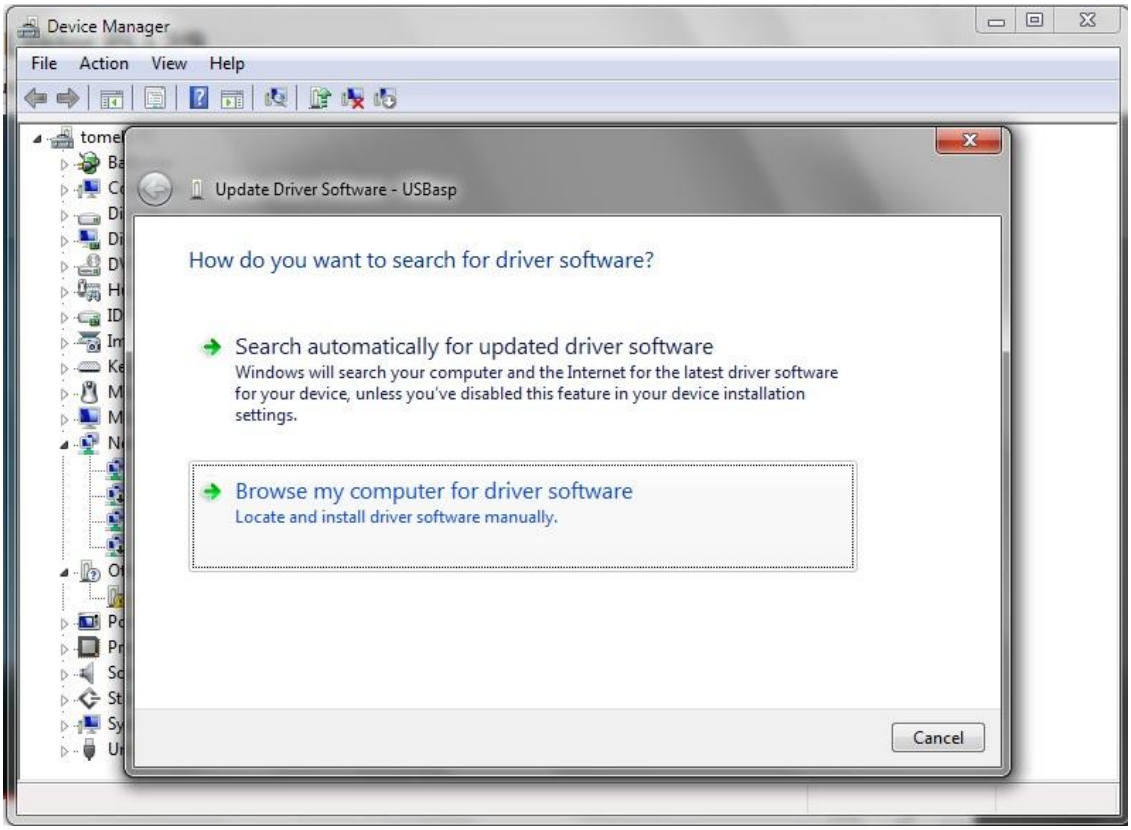
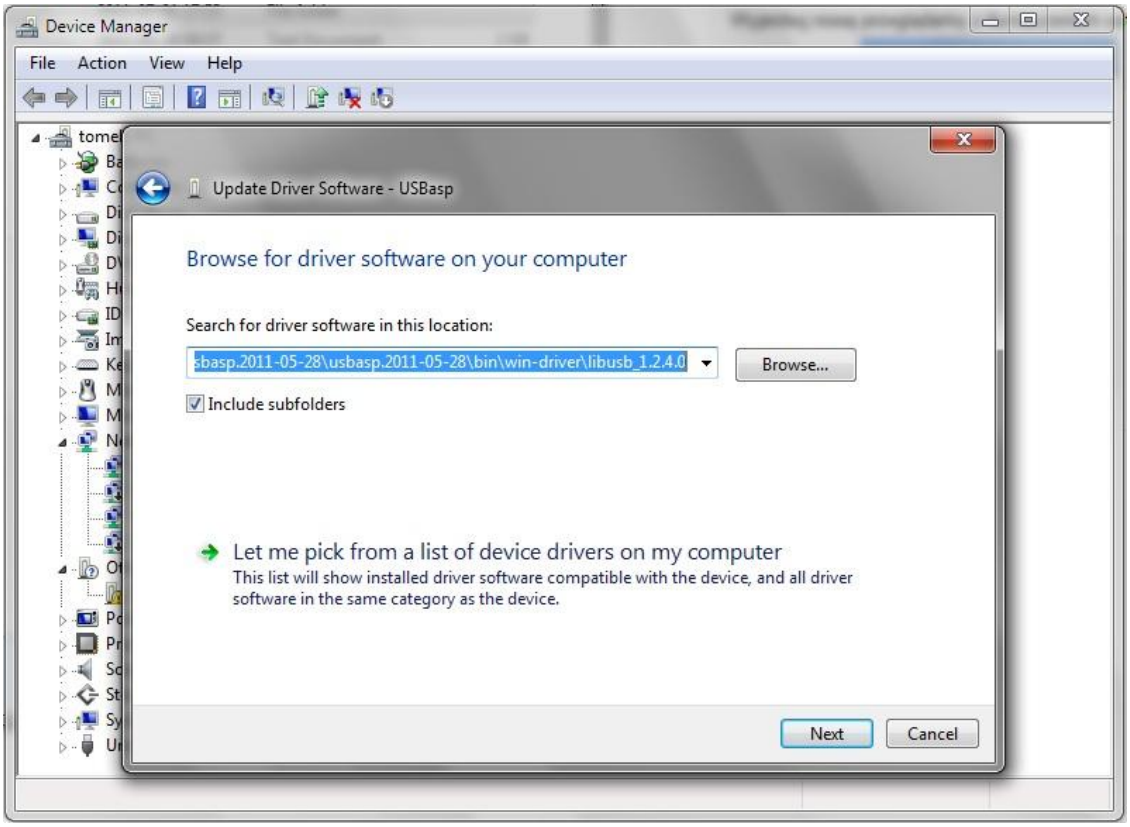
4. Choose "Browse my computer for driver software".



5.Select the folder that contains the previously downloaded files



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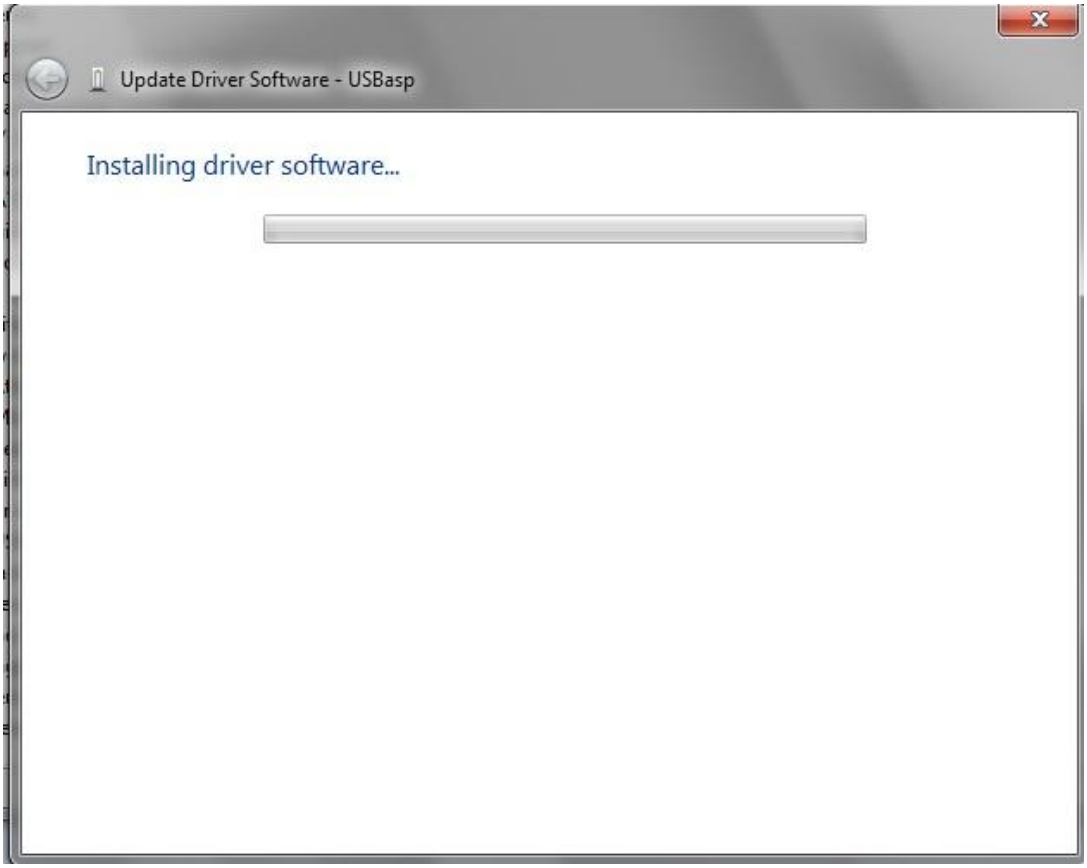
6. Choose "Install this software anyway" .

7. You must wait until a few moments pass, the installation process.



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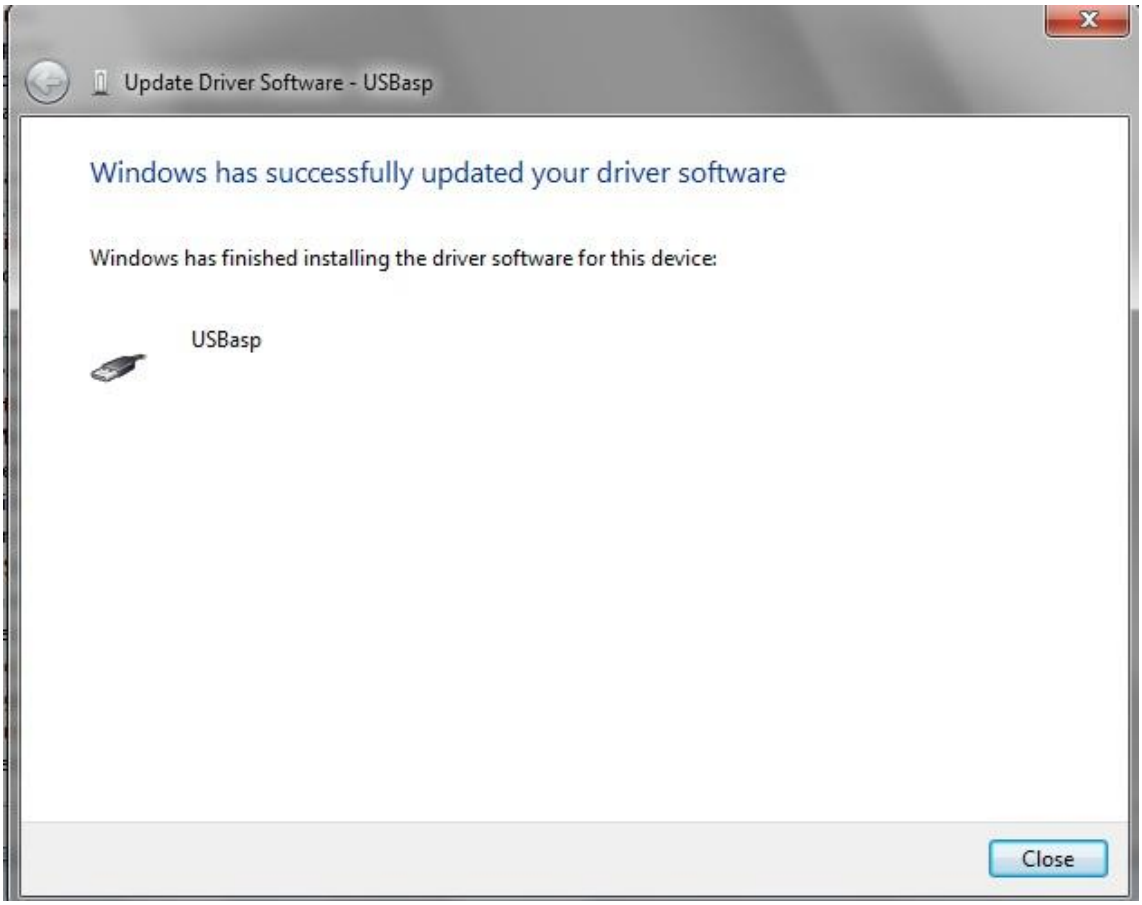
8. If you see this window it means that the driver installation process was successful and you can start using your programmer.



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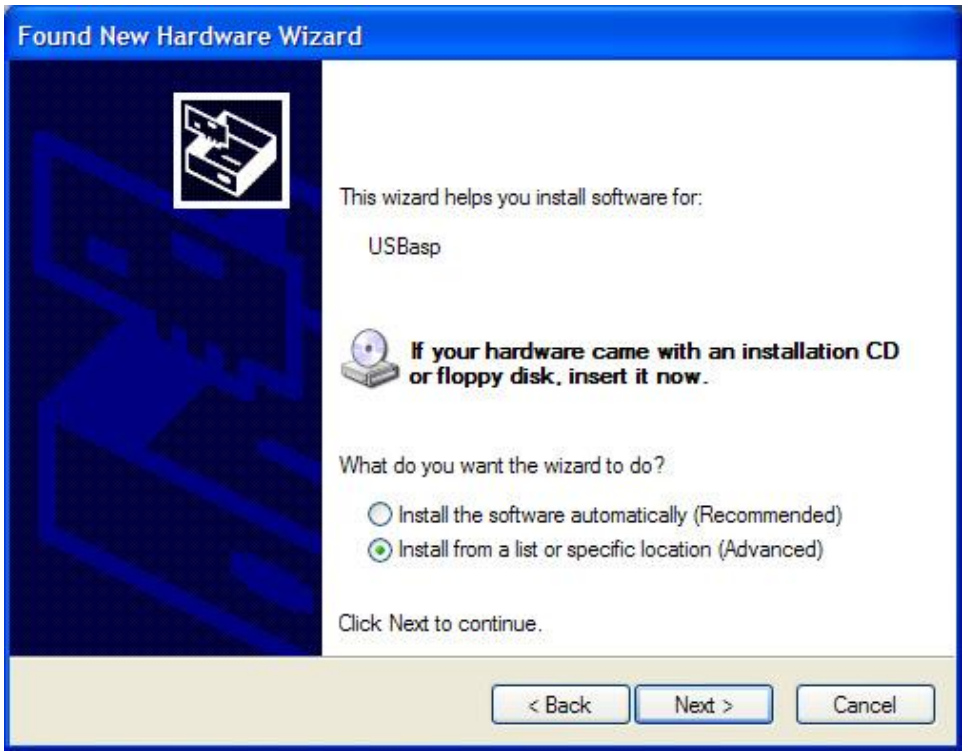
3.1.2 Windows XP (32 bit)

1. Download drivers from http://www.fischl.de/usbasp/ (usbasp.2011-05-28.tar.gz) and unzip.
2. Insert programmer to USB port in your computer.
3. When the "New Hardware Wizard" dialog box is displayed, select "No, not this time" then click Next

4. On the next page select "Install from a list of specific location (Advanced)" then click Next



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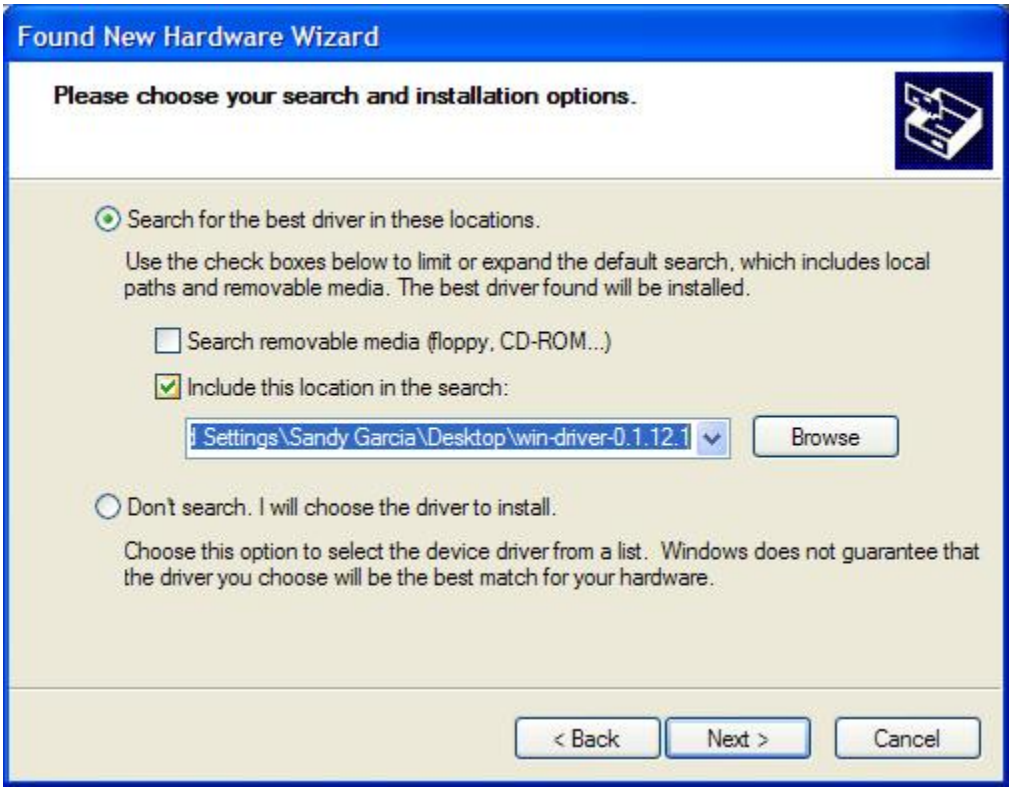
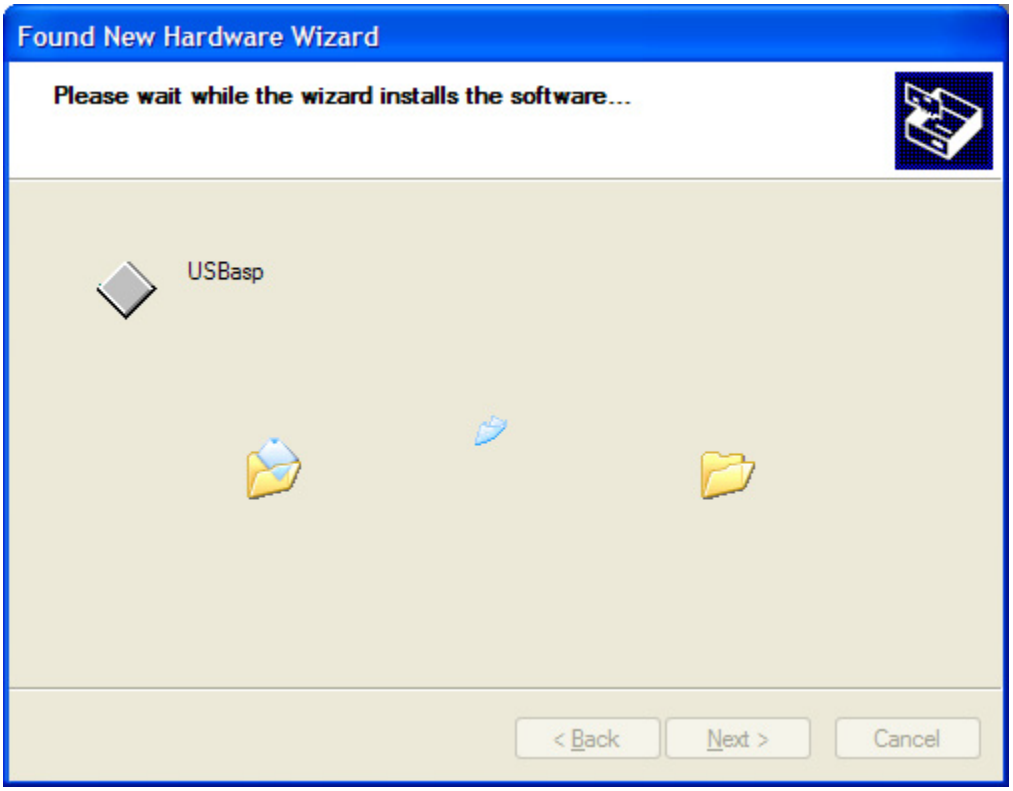
5. Select the folder that contains the previously downloaded files



6. You must wait until a few moments pass, the installation process.



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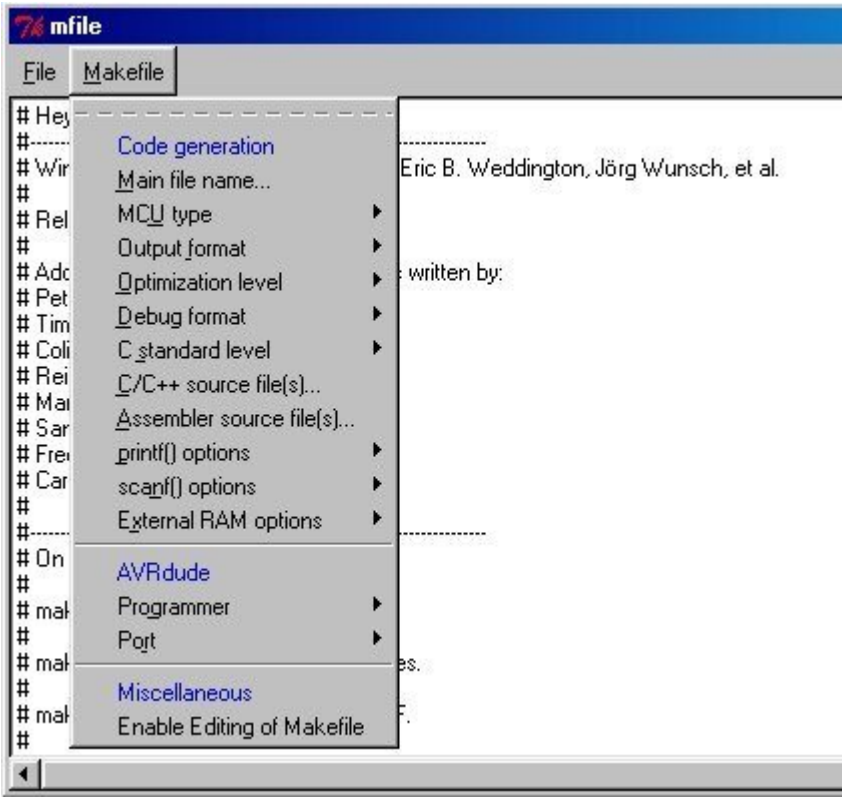
4. SAMPLE PROGRAMMING ENVIRONMENT

4.1 WinAvr

1. Download WinAvr from http://sourceforge.net/projects/winavr/files/WinAVR/ and install In your computer.

2. First, create a Makefile with rules for make. The make program automates the process of compiling the application. For this purpose we will use the program MFile WinAVR package. MFile is a convenient wizard-editor files "Makefile", with it quickly and easily create the appropriate Makefile.
   So run the program MFile.

   Start >> Programs>> WinAVR>> MFile



3. In the menu choose the option MFile:
   Makefile-> Main file name

   Then choose the type of system (I use ATmega8):
   Makefile-> MCU type-> ATmega-> atmega8;

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4. For USBasp programmer, you have the Makefile manually enter the type of programming, the programmer does not know MFile USBasp. The following line, enter the type of programming "usbasp"
   AVRDUDE_PROGRAMMER = usbasp

   And in the menu choose:
   Makefile-> port-> usb

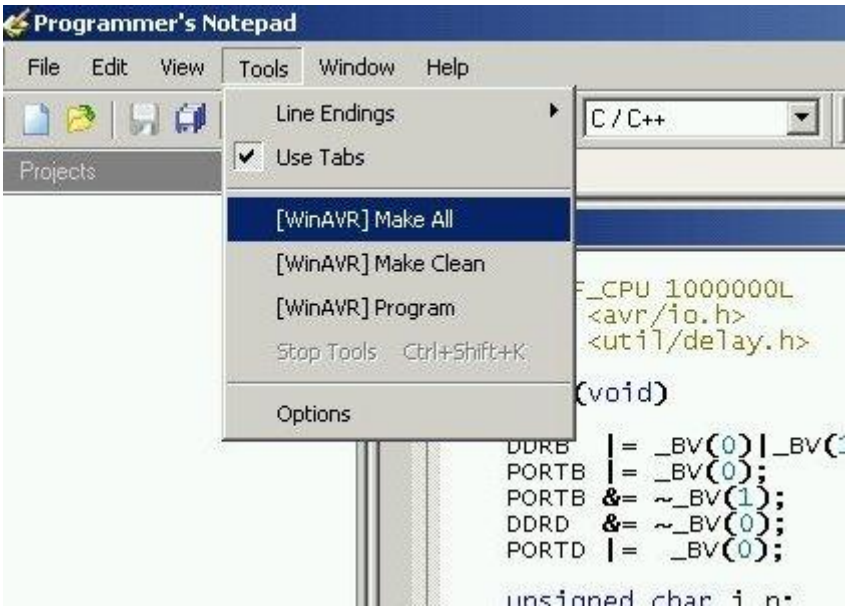
   Then save the file Makefile in some directory
   File->Save As

   and close the program MFile.

5. Next run came with WinAVR editor "Programmers Notepad":

   Start >> **Programy** >> **WinAVR** >> **Programmers Notepad**

   And in it create a new file with a. C
   File-> New-> C / C + +
   Write it into your program and save the file with the name "mian.c" in the folder where you saved earlier makefile:
   File-> Save as
   Next run the program builds the editor by selecting the option
   Tools-> Make All
   Program by calling make avr-gcc compiler and other utilities, the program will compile the source file "main.c" and create in the project directory output file "main.hex" which can no longer send to the program that supports the programmer, or You can send by clicking [WinAvr] Prog



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