2014

Programmer AVR MKII

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1. INTRODUCTION

1.1 What is AVR MKII?

AVR MKII is a USB in-circuit programmer for controllers: Attiny, Atmega and Xmega. It cooperate with Atmel Studio and AvrDude.

This AVR programmer is LUFA powered which is open source software that emulates AVRISP-MKII functionality, programmer is supported by ATMEL STUDIO 6 (and older AVR Studio v4 and v5) and by other compilers as AVRISP mkII.

1.2 Technical teature

Programmer AVR MKII (clone AVRI MKII):

- Cooperate with controllers: **Attiny**, **Atmega** oraz **Xmega**,
- Have programming interfaces: **ISP, PDI, TPI**,
- Cooperate with programs: **Atmel Studio** and **AvrDude**,
- Allow to powered microcontroller directly from USB: **5V** or **3,3V**,
- Have hardware USB interface (it let programming in very fast),
- 2 leds which tell: one for connecting to a computer and one of the programming process.
- 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.

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1.3 Supported microcontrollers

Table 1 List of the microcontrollers supported by the MKII

ATmega:

ATmega128	ATmega1280	ATmega1281	ATmega1284	ATmega1284P	ATmega128A	ATmega16	ATmega162
ATmega164A	ATmega164P	ATmega164PA	ATmega165	ATmega165A	ATmega165P	ATmega168	ATmega168A
ATmega168P	ATmega168PA	ATmega169	ATmega169A	ATmega169P	ATmega169PA	ATmega16A	ATmega16HVB
ATmega16U2	ATmega16U4	ATmega2560	ATmega2561	ATmega32	ATmega324A	ATmega324P	ATmega324PA
ATmega325	ATmega3250	ATmega3250A	ATmega3250P	ATmega325A	ATmega325P	ATmega328	ATmega328P
ATmega329	ATmega3290	ATmega3290A	ATmega3290P	ATmega329A	ATmega329P	ATmega329PA	ATmega32A
ATmega32C1	ATmega32HVB	ATmega32M1	ATmega32U2	ATmega32U4	ATmega32U6	ATmega48	ATmega48A
ATmega48P	ATmega48PA	ATmega64	ATmega640	ATmega644	ATmega644A	ATmega644P	ATmega644PA
ATmega645	ATmega6450	ATmega6450A	ATmega6450P	ATmega645A	ATmega645P	ATmega649	ATmega6490
ATmega6490A	ATmega6490P	ATmega649A	ATmega649P	ATmega64A	ATmega64HV	ATmega8	ATmega8515
ATmega8535	ATmega88	ATmega88A	ATmega88P	ATmega88PA	ATmega8A	ATmega8HVD	ATmega8U2

ATtiny:

ATtiny12	ATtiny13	ATtiny13A	ATtiny15	ATtiny167	ATtiny2313	ATtiny2313A	ATtiny24
ATtiny24A	ATtiny25	ATtiny26	ATtiny261	ATtiny261A	ATtiny4313	ATtiny43U	ATtiny44
ATtiny44A	ATtiny45	ATtiny461	ATtiny461A	ATtiny48	ATtiny84	ATtiny85	ATtiny861
ATtiny861A	ATtiny88						

Inne:

AT90CAN128	AT90CAN32	AT90CAN64	AT90PWM2	AT90PWM21	AT90PWM2B	AT90PWM3	AT90PWM316
AT90PWM3B	AT90USB1286	AT90USB1287	AT90USB162	AT90USB646	AT90USB647	AT90USB82	

ATxmega:

ATxmega128A	ATxmega128A1D	ATxmega128A1	ATxmega128A	ATxmega128D	ATxmega16A4	ATxmega16D4	ATxmega192D3
ATxmega256A	ATxmega256A3B	ATxmega256D3	ATxmega32D4	ATxmega64A1	ATxmega64A3	ATxmega64D3	

And all other microcontrollers which support **ISP or PDI or TPI**.

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2. TECHNICAL DESIGN

2.1 Configuration

ATTENTION!!! INSTRUCTION FOR OLDER VERSIONS OF THE PROGRAMMERS IS AVAILABLE AT http://barion-st.com/

Before programmer is used following jumpers have to be set:

- power supply (3,3V or 5V)

- programming interface (ISP/PDI/TPI) – microcontroller which is going to be programmed have to be connected to appropriate IDC pins
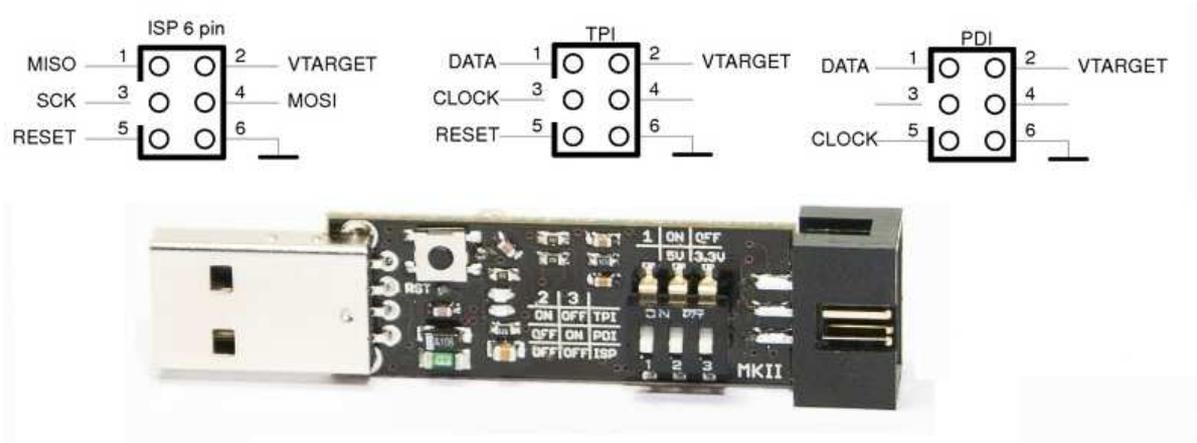
Programmer is set-up by switch:

Two tables below explains how to configure programmer (additionally they are placed on the device):

2	3	
ON	OFF	TPI
OFF	ON	PDI
OFF	OFF	ISP

1	ON	OFF
	5V	3.3V

For example microcontroller with PDI interface and 3.3 V supply set appropriately: 1: OFF , 2: OFF , 3: ON.

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3. PROGRAMMER MANUAL

3.1 Connection programmer and PC

To start use programmer you have to:

- Connect MKII programmer to PC USB ,
- Install drivers

BEFORE FIRST CONNECTION PROGRAMMER TO PC YOU HAVE TO INSTALL AVRJungoUSB DRIVERS

3.2 Driver instalation

Link to driver: **http://barion-st.com/doc/install/AVRJungoUSB.exe**

After installation AVRJungoUSB you can connect programmer to PC. In Device Manager you should have new device Jungo:
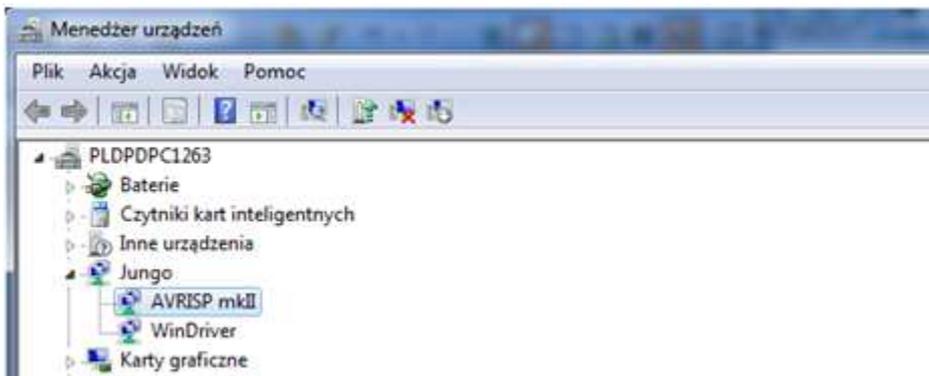
Atmel Studio

Programmer is ready to work with AvrSrudio. In AvrStudio you can choose option: **Tools/AVR Programming**, there should be available programmer:
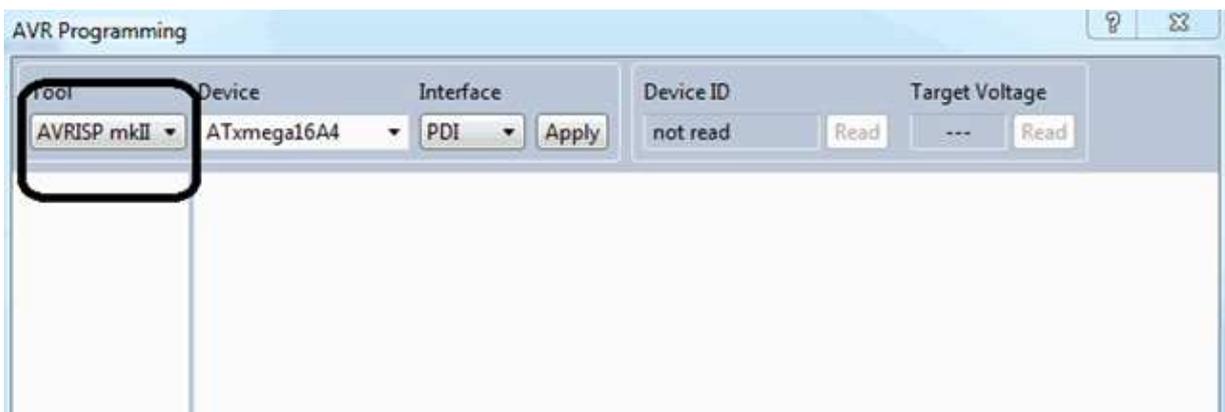
Atmel Studio 7.0

Cooperating with Atmel Studio 7.0 requires more steps:

1. Download Zadig: http://zadig.akeo.ie/. Zadig is a USB driver manager for Windows
2. Open Zadig, Options, List All Devices. The AVRISP mkII device should appear in the list.
3. Replace its current driver by libusb-win32 (v1.2.6.0)

AvrDude

If you want to work with AvrDude, programmer software have to be changed (pt. 3.3)
When programmer software is changed, you have to install: LibUsbDotNet_Setup.2.2.8

Link: barion-st.com/doc/install/LibUsbDotNet_Setup.2.2.8.exe

During installation the option: Source and Example Code should be unchecked:
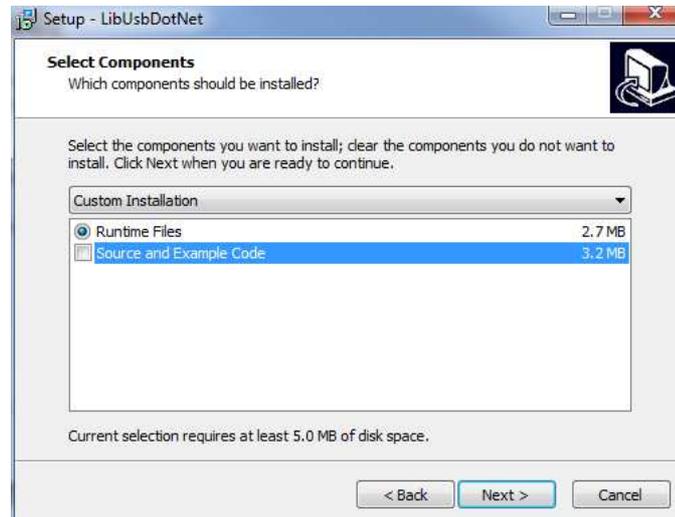
Rest of the option stay default.

Run installed software: **Start/Programs/LibUsbDotNet/libUsb-win32/Filter Wizard.** (or run automatically after installation)

Choose **Next:**

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Pay attention: In this moment programmer have to be connected to USB (if it isn't, connect it now).

Click Next. Choose AVRISP mkII from the list:
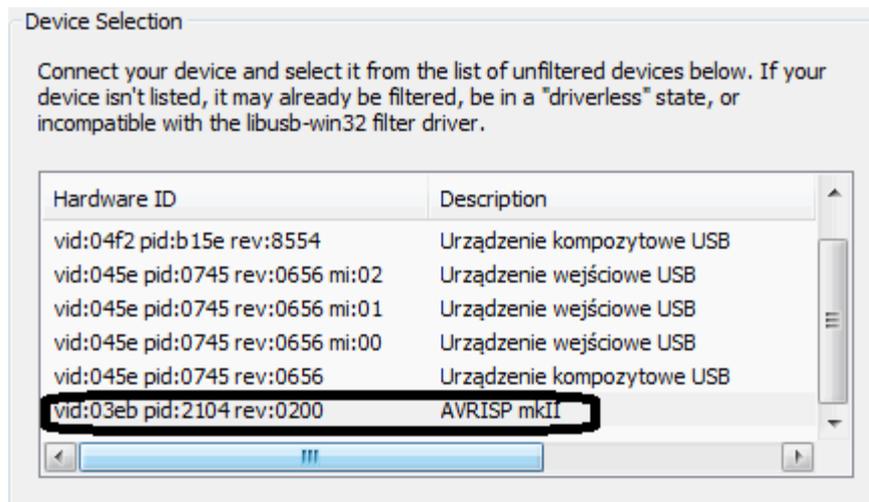
Click **Install,** and next OK.

Programmer is ready to work with **AvrDude** – also in BASCOM (during configuration should be chosen: Atmel AVR ISP mkII (avrispmkII), Port – usb).

3.3 Programmer's software change

Download program **FLIP**:

http://www.atmel.com/dyn/resources/prod_documents/Flip%20Installer%20-%203.4.5.106.exe

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This program is used to change the programmer's software. Download and install program FLIP.

Additionally download new programmer's software:

http://www.barion-st.com/doc/install/101116_AVRISP_avrdude.zip

When **FLIP** and new software is ready, you can start changing the software:

1. Disconnect programmer and PC, connect the SVC pins (marked on the picture)
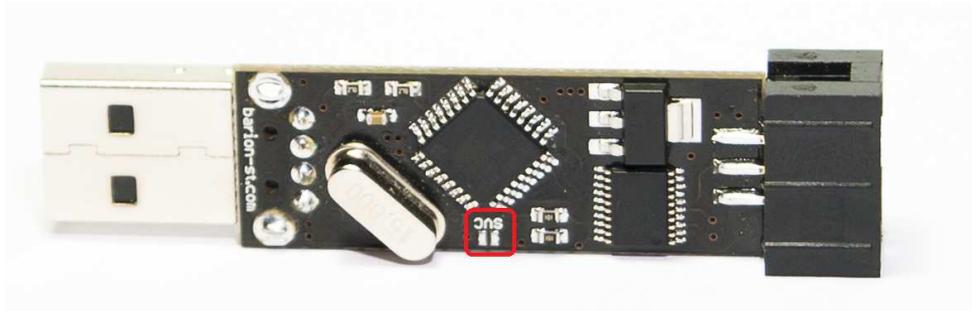
2. Connect programmer to USB
3. Press reset button on programmer (see picture in instruction's point 2.2) - green diode will turn off
4. System should find new device:
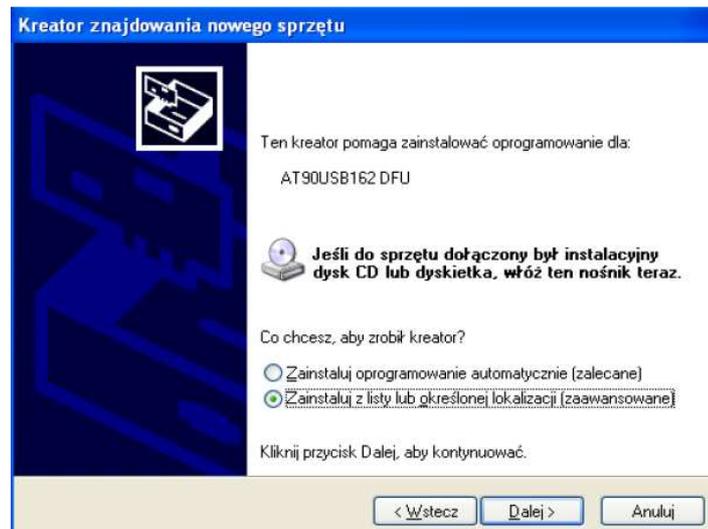
Choose second option: **Install from…(Advance)** and click NEXT. Choose folder **Program Files / Atmel / Flip 3.4.3 / usb**, click OK.

If new devices wouldn't be found:

- Open Devices manager
- In Unknown devices find: AT90USB162 DFU.
- Click right mouse button on it and choose: **Update Driver Software…**
- Choose **Browse my computer for driver software**
- Choose folder: **Program Files / Atmel / Flip 3.4.3 / usb**, click OK.

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If you get a warning, then you should choose: **Install this driver software anyway**
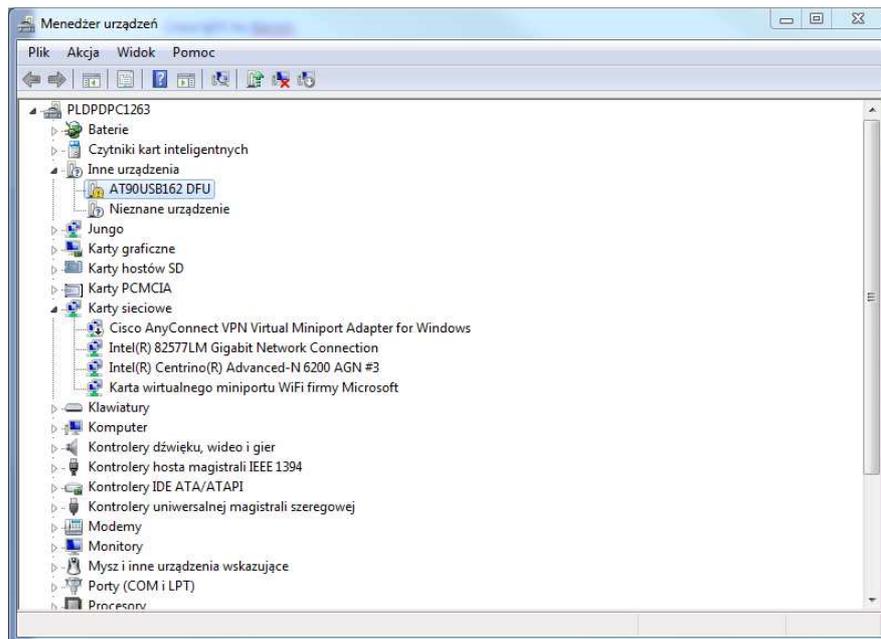
5. After installation open program **Flip**
6. In **Flip** choose processor (icon in the picture belowe):
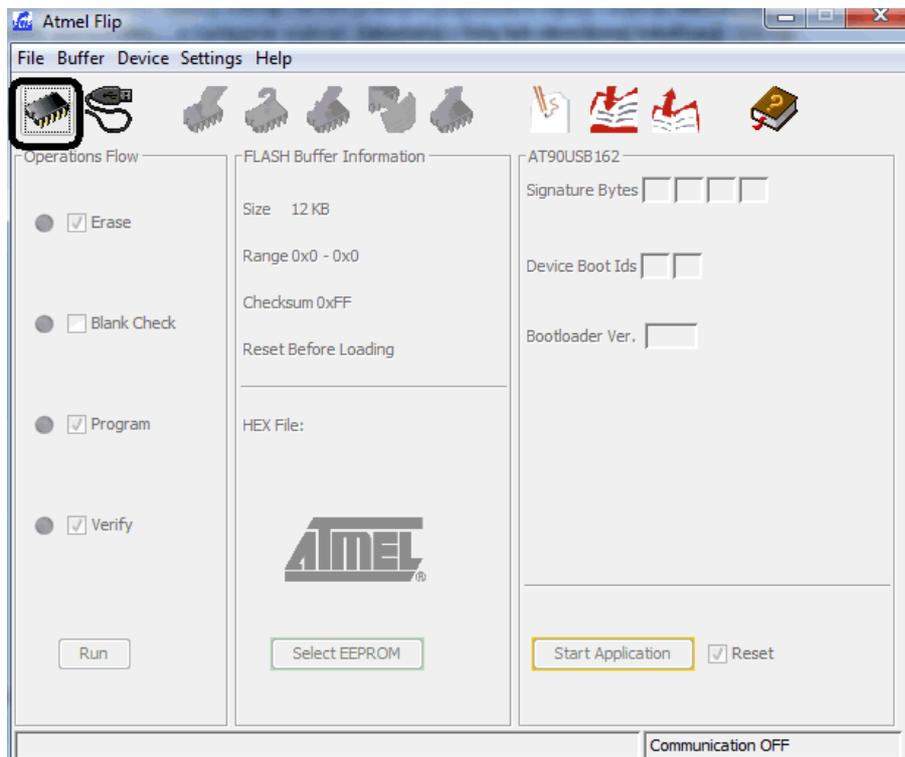
7.   Choose: **AT90USB 162**

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8. Now choose S**elekt communication** (icon on the right of that you selected in step 6) and choose USB. In new window choose: Open.
9. Buttons in FLIP should be active now:
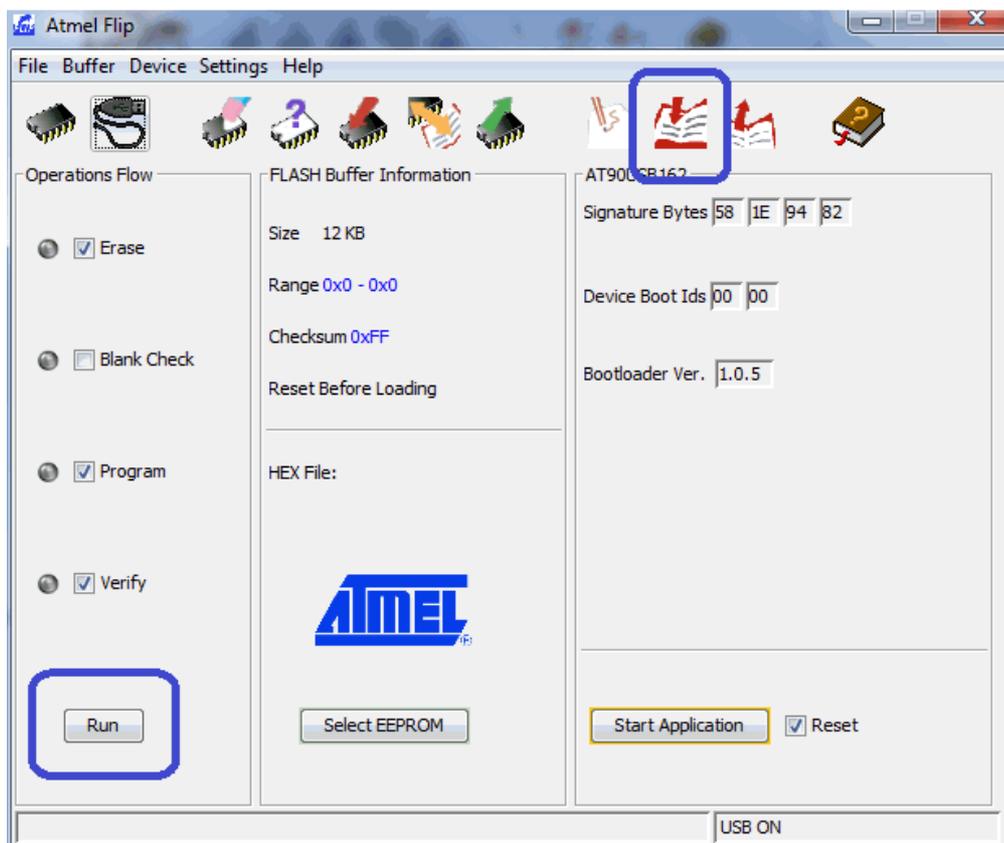
10. Click button: Load HEX File... (marked above) and choose software which you want to load to programmer (downloaded in first step: *101116_AVRISP_avrdude.zip* - first unpack it).
11. Click button Run. New software is now in programmer.
12. Disconnect HWB (switch 1 – OFF), push button on the programmer: RESET (see picture in instruction's point 2.2) - green diode will turn off.

Programmer is ready to work with **AVRDUDE! (pt. 3.2 -> AvrDUDE)**

If you want to use programmer with Atmel Studio again, you have to do all steps again (3.3 instruction's point), but you have to load to programmer file:

http://barion-st.com/doc/install/MKII_AvrStudio_LUFA.rar

THE END

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