Introduction

An easy and fast way to start developing and evaluating the ATmegaS128 device is to use the ATmega128A industrial version with the STK600 starter-kit. This document guides you step by step to setup the hardware and software, to program and run your first code with the ATmega128A device.

Requirements

To use this “Getting Started” document you need to gather the following materials:

- One STK600 evaluation kit (ATSTK600)
- One STK600-RC064M-9 Routing board (ATSTK600-RC09)
- One STK600-TQFP64 Socket Board with a ZIF socket. (ATSTK600-SC02)
- One ATmega128A in TQFP64 package
- Atmel Studio available from: http://www.atmel.com/Microsite/atmel-studio
- “ATmegaS128_led_chaser.zip” software File

Objective

The aim is prepare the hardware, program and run a short demo based on the “led chaser” software.
1 Hardware Configuration

1.1 Step 1.

Unpack the STK600 kit and install the RC064M-9 routing board as shown on the figure below.
1.2 Step 2.
Install the STK600-TQFP64 socket board as shown on the figure below.
1.3 Step 3.
Connect an USB cable between your workstation and the STK600 board and connect an 8-wires flat cable between the ports A(0-7) and LED(0-7) as shown in the figure below. Before connecting the USB cable, set the power switch to “Off” position. Those two cables are supplied in the STK600 kit.
1.4 Step 4.
Install the ATmega128A device into the TQFP64 socket being careful to insert it in the right direction by matching together the indexes of the package and the device as shown in the figure below.

1.5 Step 5.
Verify that the jumpers and the switch are configured as shown on the figure below. The jumpers VTARGET, RESET, AREF0, AREF1 must be set and the clock switch must be set to “INT” position.
1.6 **Step 6.**

Connect a 10-wires flat cable on the JTAG connector as shown on the figure below. The cable is supplied in the STK600 kit.

Move the power switch to “ON” position. The hardware configuration is now complete. The next step will consist to run the application software.
2 **Software Configuration**

This section guides you in few steps to prepare your workstation to program and run the “led chaser” demo.

**Prerequisite 1.** download Atmel Studio from the URL http://www.atmel.com/Microsite/atmel-studio and install it on your workstation.

**Prerequisite 2.** unzip the “led chaser” demo file.

2.1 **Step 7.**

Double click on the file “Led_Chaser.atsln”. It makes run Atmel Studio (if a window requesting an update appears, you can close it).

2.2 **Step 8.**

Click on the programming Icon as shown on the figure below.
2.3 **Step 9.**

A window should pop as shown on the figure below. Select STK600 as tools, ATmega128A as device and JTAG as Interface then click on the “Apply” button.

In return, the system should display the information shown on the figure below, meaning that the hardware configuration has been recognized by the system.
### 2.4 Step 10.

Click on the “Read” button to get the signature bytes of the ATmega128A.

![Device Programming Interface](image)

The voltage supply of the ATmega128A device can be adjusted from your workstation. If the voltage level is close to zero, it is not possible to read the signature bytes. Therefore the voltage supply must be tuned.

You should read the value 0x1E9702 meaning that the system is able to communicate with the ATmega128A device. If an error message comes up, check the device voltage by clicking on the “Read” button. If it is not possible, click on the “board settings” option from the left menu.

**Note:** The ATmegaS128 is a 3.3V device while the ATmega128A is a 2.7-5.5V device. Therefore, the ATmega128A lets you the choice between 3.3V or 5V. The pictures of this document are provided with the 5V option.
Adjust the voltage level by means of the cursor as shown on the figure below then click on the “Write” button. Verify the target voltage and the availability of the signature bytes (0x1E9702).

<table>
<thead>
<tr>
<th>Interface settings</th>
<th>Tool information</th>
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<tbody>
<tr>
<td>VTarget</td>
<td>ATmega128A</td>
<td>5.0 V</td>
</tr>
<tr>
<td>Measured</td>
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<td>Generated</td>
<td>ATmega128A</td>
<td>5.0 V</td>
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<tr>
<td>0.00 V</td>
<td>0.00 V</td>
<td>0.00 V</td>
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![Device Programming](image-url)
2.5 **Step 11.**

Configuring the fuse bytes of the ATmega128A. Click on the “Fuses” option from the left menu. Those fuse bytes enable to configure several device hardware parameters.

Verify that the M103C fuse is unselected, that the JTAGEN and SPIEN ones are selected, then click on the “Program” button.
2.6 Step 12.

Programming the code. Click on the “Memories” option from the left menu then click on “Erase now” button to erase the device. Find the file “Led_Chaser.elf” on your workstation from the path \led_chaser\GccBoardProject2\Debug, then click on the “Program” button.

The demo should start after few seconds.

Congratulations. You have now completely set up your hardware and software environment and programmed your first AVR based demo. Enjoy by changing the source code and reprogramming the chip.
## Revision History

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<th>Doc Rev.</th>
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<tr>
<td>B</td>
<td>05/2016</td>
<td>Page 1: corrected errors on the ordering numbers of the STK600-RC064M-9 routing card and the STK600-TQFP64 socket card</td>
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