Atmel Microcontrollers

AT06015: Production Programming of Atmel Microcontrollers

APPLICATION NOTE

Description

Atmel® microcontrollers are flash based, and the program memory therefore needs to be programmed with a firmware image for the end-product to operate as desired. During *development* it is recommended to use the combined programming and debugging tools from Atmel, which integrate directly in the Atmel Studio IDE. For *production programming* it is however recommended to use 3rd party programming tools that are intended for industrial environments. Another option is to order the microcontrollers preprogrammed from Atmel or from a programming house.

Features

- Atmel programming solutions
- 3rd party programming solutions
- Programming services

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1. Atmel Development Programming Tools

To identify the right programming and debugging tool for a microcontroller from Atmel: Go to the microcontroller product page from e.g. the top menu, and on the product page select the “Tools” tab. This will show a list of development tools for the product. The **SAM-ICE™** supports programming and debugging of all Atmel SAM microcontrollers. The SAM devices can also be programmed through the **SAM-BA®** bootloader (various interface options). The **ATMEL-ICE** is a programming and debugging tool that support all of the Atmel AVR® microcontroller products and Atmel SAM microcontrollers. AVR microcontrollers can also be done using the **AVRISP mkII**. However, note that the **AVRISP mkII** do not support debugging.

Note that the programming tools from Atmel are not recommended for production programming: they are designed for development environments. SAM-BA can be considered an exception, as it does not depend on physical tool, but software only.

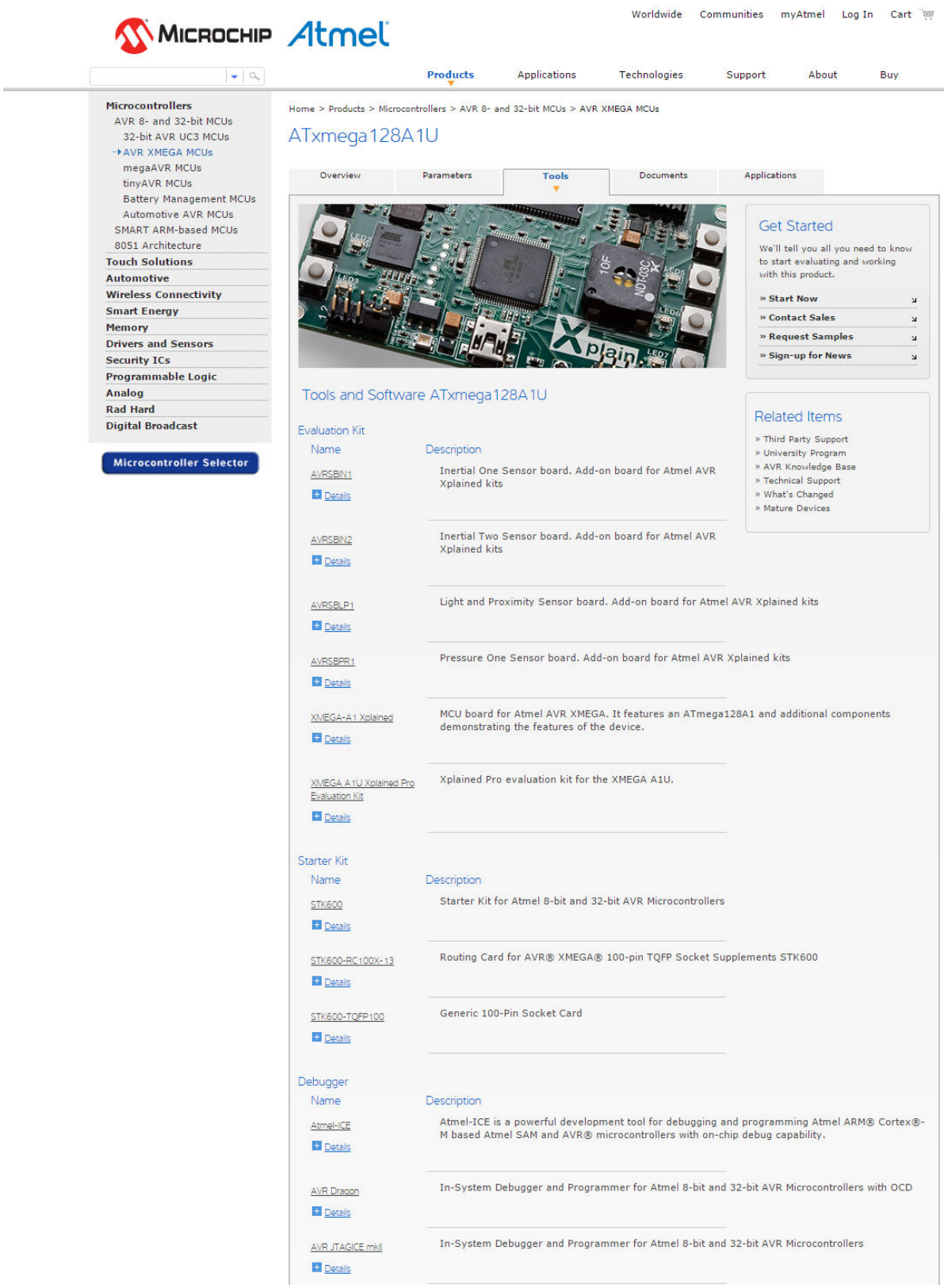
SAM-ICE: http://www.atmel.com/tools/ATMELSAM-ICE.aspx

SAM-BA programming: http://www.atmel.com/tools/ATMELSAM-BAIN-SYSTEMPROGRAMMER.aspx

AVRISP mkII: http://www.atmel.com/tools/avrispmkii.aspx

ATMEL-ICE: http://www.atmel.com/tools/ATATMEL-ICE.aspx

Figure 1-1. Tools Tab on Microcontroller Product Page



2. Preprogrammed Microcontrollers

Atmel and many Atmel distributors offer preprogrammed microcontrollers. In this case the binary image is provided to Atmel or the distributor. This solution is obviously less flexible if changes are made frequently to the preprogrammed firmware and does have MOQ implications, but can have advantages related to reduced production time for the end-product.

To request preprogramming of Atmel microcontrollers contact Atmel Customer Service or your local Atmel sales office or your distributor. Note that preprogramming services may require orders of a certain size.

Find your local Atmel sales office on this Atmel web page:

http://www.atmel.com/buy/contact_us.aspx?contactType=Atmel%20Sales%20Office

3. Third Party Programming Tools

For production programming, and e.g. to perform in-system calibration or parameter customization for the end-product it is recommended to use professional programming tools from a third party.

Below you can find links to a updated list over third party programmings tools.

ARM: http://www.atmel.com/about/contact/default.aspx?contactType=Third+Party+Support+-+ARM&AreaOfExpertise=Programmers

AVR: http://www.atmel.com/about/contact/default.aspx?contactType=Third+Party+Support+-+AVR&AreaOfExpertise=Programmers

4. Programming Houses

Programming services are also available from distributors. Contact your distributor for more information about programming services.

Table 4-1. Other Programming Houses in Alphabetic Order (not limited to)

Company name	Products supported	Other devices
A&J Programming USA http://www.ajprogram.com/	AVR, ARM®	Ink and laser marking, coplainarity check and inspection, dry pack.
Falcon Denshi K.K. Japan, China http://www.falcon-denshi.co.jp/en	SAM3, SAM4, SAMA5, SAM9	
HI-LO Electronics AB Sweden www.hilo.nu	AVR, ARM	Laser and ink marking. Repacking according to the customer's needs.
HI-LO SYSTEMS Taipei, TAIWAN http://www.hilosystems.com.tw/	AVR, ARM	Programming of NAND, Nor flash, etc.
MDSemiconductor (Micro Delta System) KOREA www.mdsemi.co.kr	AVR, ARM, EEPROM	Programming of Memory and PLD.
MINATO ELECTRONICS INC. Japan, China http://www.minato.co.jp/en	SAM3, SAM4	
PROCHILD KOREA http://www.prochild.com	AVR, ARM	
Program Automation, Inc. USA http://www.progauto.com/	AVR, ARM	Programming of memories and FPGA.
Xeltek CHINA http://www.xeltek.com.cn/en	AT89C51, AVR, SAM7, SAM3, SAM4, SAM D20	Programming of PLD, GAL.

5. How to Register as a Third Party Vendor

To register programming tools for Atmel microcontroller products, contact Atmel technical support through the technical support portal: http://www.atmel.com/design-support.

6. Revision History

Doc. Rev.	Date	Comments
42215D	10/2016	A complete update with several changes in the application note
42215C	01/2015	SMH details added
42215B	01/2014	EE Tools, Dataman, and Segger added
42215A	11/2013	Initial document release

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Atmel Corporation 1600 Technology Drive, San Jose, CA 95110 USA **T:** (+1)(408) 441.0311 **F:** (+1)(408) 436.4200 | **www.atmel.com**