APPLICATION NOTE

Upgrading the Atmel CryptoAuthentication/Tempsensor Kit Firmware Using FLIP

Overview

Atmel

- Demonstrates how to upgrade the Atmel[®] CryptoAuthentication[™] and Atmel Tempsensor kit firmware via USB.
- Demonstrates the Atmel FLexible In-system Programming (FLIP) software utility.

Introduction

This document describes the steps required to program the following Atmel CryptoAuthentication and Atmel Tempsensor kits:

- AT88Microbase
- AT30TK175STK
- AT88CK101STK8
- AT88CK201STK
- AT88SC-ADK2
- AT88CK490
- AT88CK590

Atmel SMART

Firmware Upgrade Procedures

Step 1 Install the *FL*exible *I*n-system *P*rogramming (FLIP) Software Utility

The FLIP software utility can be downloaded at the following link:

www.atmel.com/tools/flip.aspx?tab=overview

Alternatively, if the Atmel Crypto Evaluation Studio (ACES) software is already installed, the FLIP installer is available in one of the following directories:

C:\Program Files\Atmel\Crypto Solutions\Firmware\Flip or

C:\Program Files (x86)\Atmel\Crypto Solutions\Firmware\Flip

Step 2 Place the Atmel AVR[®] AT90USBxxx into the Device Firmware Upgrade (DFU) Mode

All Atmel AVR AT90USBxxx-based kits are shipped with a default factory preprogrammed USB boot loader located in the on-chip boot section. There are two methods to enable the DFU mode on the crypto kits:

Method 1: AT88Microbase Board's HWB and RESET buttons

This method uses the *HWB* and *RESET* buttons on the AT88Microbase board. The AT88Microbase serves as the base module for the AT30TK175STK, AT88CK101STK8, AT88CK201STK, and AT88SC-ADK2 kits.

Enable DFU mode with the *HWB* and **RESET** buttons by following the next three steps:



These steps *must* be completed in the exact sequence.

- 1. Press and hold the HWB button.
- 2. **Press** and **release** the **RESET** button.
- 3. Release the *HWB* button.

The kits which incorporate the AT88Microbase board as the base module will toggle all three LEDs prior to entering the DFU mode.



Method 2: DFU Enabling Application



This method is the *only* way to place the AT88CK490/590 kit into the DFU mode as these kits do not have a *HWB* button.

This method involves a small DFU enabling application which is installed with ACES and CMES (Crypto Memory Evaluation Studio). The application is located at:

C:\Program Files\Atmel\Crypto Solutions\Firmware\DFU or

C:\Program Files (x86)\Atmel\Crypto Solutions\Firmware\DFU.

- 1. Using this DFU enabling application, insert the kit into an available USB port.
- 2. Wait for enumeration, and then click the *Enable DFU* button as shown in the figure below.

Figure 1-1. Device Firmware Upgrade (DFU) Window

⁴⁴ Device Firmwa	are Upgrade (DFU)	
Vendor ID 03EB	Product ID 2312	Update PID
Status Connected	In: 64Byte, Out: 64I	Byte, Feature: 4Byte



Step 3 Install the Driver

After placing the kit into DFU mode, the Found New Hardware Wizard notification will appear.

1. Select **Yes, this time only**, and then click **Next >** to continue.

Figure 1-2. Found New Hardware Wizard Notification

Found New Hardware Wizard	
	Welcome to the Found New Hardware Wizard Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission). Read our privacy policy
	Can Windows connect to Windows Update to search for software?
	Click Next to continue.
	<u> </u>

2. Select the Install from a list or specific location (Advanced), and then click Next > to continue.



Figure 1-3. Install Software



3. Select *Browse* and locate the most recent downloaded FLIP version, and then select the *usb* subdirectory. Click *Next* > to continue.

Figure 1-4. Browse for Driver

ind New	Hardware Wizard
Please	choose your search and installation options.
¢	Search for the best driver in these locations.
1	Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.
	Search removable media (floppy, CD-ROM)
	✓ Include this location in the search:
	C:\Program Files\Atmel\Flip 3.4.1\usb
C	Don't search. I will choose the driver to install.
ļ	Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.
	< <u>B</u> ack <u>N</u> ext> Cancel

4. The driver installation is now complete. Click *Finish*.

Figure 1-5. Wizard Complete

Found New Hardware Wizard	
	Completing the Found New Hardware Wizard The wizard has finished installing the software for: AT90USB128
	Click Finish to close the wizard.



5

Step 4 Load New Firmware

- 1. Launch the FLIP utility, and then click on the *Device Selection* icon.
- 2. In the *Device Selection* pop-up window, select the target device, i.e. AT90USB1287, and then click the *OK* button.

Atmel Flip ile Buffer Device Se	ttings Help	
operations Flow	FLASH Buffer Information AT90USB1287	
 Blank Check Program 	Rat ? Select a device AT89564 AT90CAN128 AT90CAN32 Ret AT90CAN64 AT90USB1286 AT90USB1287 HE AT90USB162 AT90USB646	
🖉 🗹 Verify	AT90US8647 AT90US882 OK Cancel	
Run	Select EEPROM Start Application Reset	

Figure 1-6. Device Selection

Table 1-1.Kit Device Selection

Atmel Kit	Atmel AVR Device Selection
AT88Microbase AT30TK175STK AT88CK101STK8 AT88CK201STK AT88CK490 AT88CK590	AT90USB1287
AT88SC-ADK2	AT90USB647

3. Click on the Communication Medium icon. Then, from the pop-up window, select USB.



e Buffer Device Set	tings Help	
R5232 perations Fil	Ctrl+R	🔌 🏄 🚣 🔗
LPC	120 KB	Signature Bytes
	Range 0x0 - 0x0	Device Boot Ids
Blank Check	Checksum 0xFF Reset Before Loading	Bootloader Ver.
Program	HEX File:	
🕒 🔽 Verify	AMEL.	
Run	Select EEPROM	Start Application

Figure 1-7. Communication Medium Selection



7

- 4. On the toolbar, select *File* to select the hex file for downloading.
- 5. Click the *Run* button to download the hex file.
- 6. After a successful download, all the checked options in the **Operations Flow** column will change to green check marks.
- 7. Click the Start Application button.

🖾 Atmel Flip		
<u>File Buffer Device Settin</u>	igs <u>H</u> elp	
- 5 🎸	i 🕹	🐚 🖄 🍲
Operations Flow	FLASH Buffer Information	AT90U5B1287
Erase	Size 120 KB	Signature Bytes 58 1E 97 82
	Range 0x0 - 0x0	Device Boot Ids 00 00
	Checksum 0xFF	
Blank Check	Reset Before Loading	Bootloader Ver. 1.0.1
Program	HEX File:	
Verify	<u>AIMEL</u>	
Run	Select EEPROM	Start Application Reset
		USB ON

Figure 1-8. Start the Application

2 Revision History

Doc Rev.	Date	Comments
8726C	11/2015	Corrected FLIP link address and hyperlink. Removed the AT88CK101STK3, AT88CK109STK3, AT88CK109STK8, AT88CK440RED, AT88CKBLACK, and AT88CK427GREEN. Added the AT88CK590 kit.
8746B	01/2014	Added the AT88CK490 kit and update document template.
8746A	05/2011	Initial document release.





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