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## **Upgrading the Atmel CryptoAuthentication/Tempsensor Kit Firmware Using FLIP**

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### **Overview**

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- 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**

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

- AT88Microbase
- AT30TK175STK
- AT88CK101STK3
- AT88CK109STK3
- AT88CK101STK8
- AT88CK109STK8
- AT88CK440RED
- AT88CK454BLACK
- AT88CK427GREEN
- AT88CK490
- AT88CK201STK
- T88SC-ADK2

# 1. Firmware Upgrade Procedures

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## Step 1 Install the *FL*exible *In*-system *Program*ming (FLIP) Software Utility

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

[http://www.atmel.com/dyn/products/tools\\_card\\_v2.asp?tool\\_id=3886](http://www.atmel.com/dyn/products/tools_card_v2.asp?tool_id=3886)

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

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

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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, AT88CK101STK3, AT88CK109STK3, AT88CK101STK8, AT88CK109STK8, AT88CK201STK, AT88CK490, 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



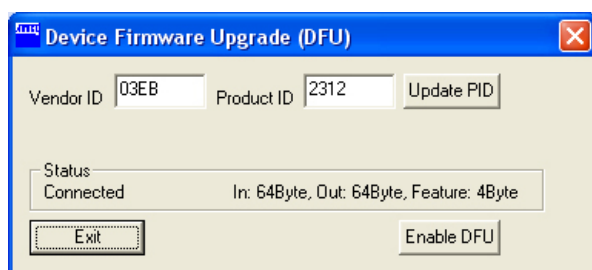
This method is the *only* way to place the AT88CK440RED, AT88CK454BLACK, and AT88CK427GREEN kits into the DFU mode as these kits do not have a **HWB** button.

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 [Figure 1-1](#).

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



The AT88CK440RED, AT88CK454BLACK, and AT88CK427GREEN kits will toggle between the red and blue LED three times before entering the DFU mode. Once in the DFU mode, both LEDs on these kits will dimly glow.

### Step 3 Install the Driver

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

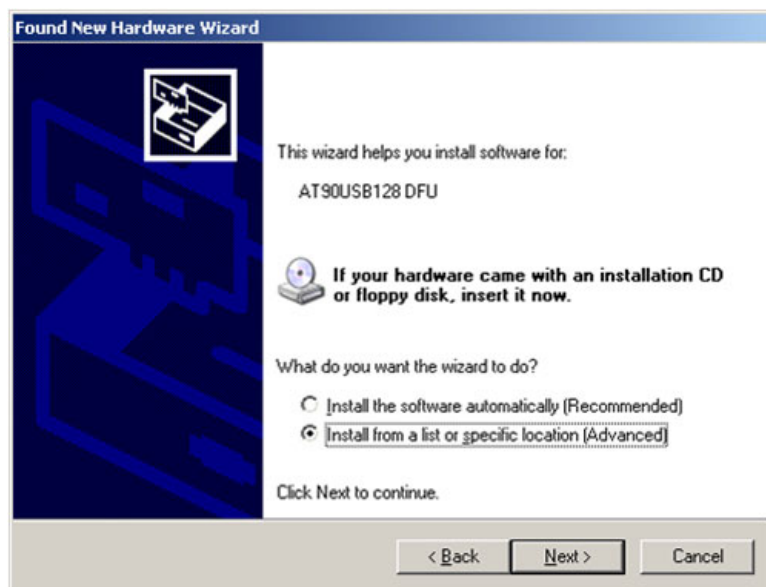
1. Select **Yes, this time only**, and then click **Next >** to continue.

Figure 1-2. Found New Hardware Wizard Notification



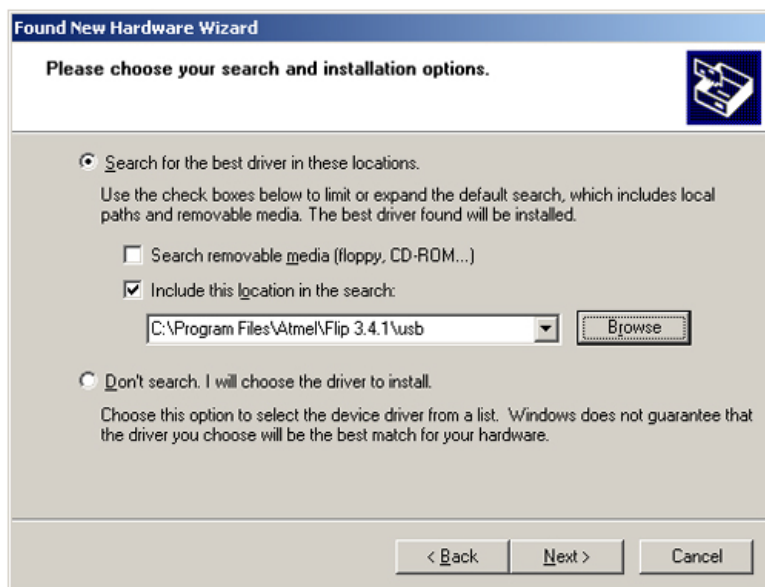
2. Select the **Install from a list or specific location (Advanced)**, and then click **Next >** to continue.

Figure 1-3. Install Software



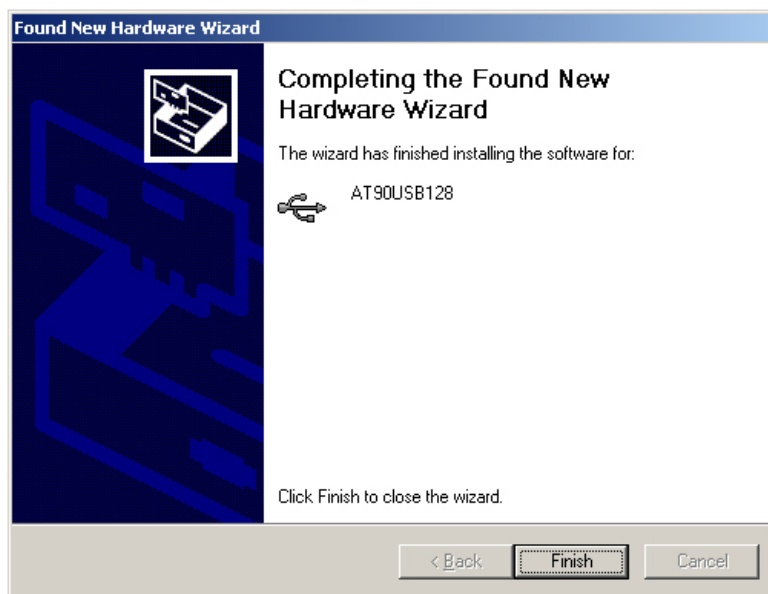
3. Select **Browse** and locate the most recent downloaded FLIP version, and then select the **usb** subdirectory. Click **Next >** to continue.

**Figure 1-4. Browse for Driver**



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

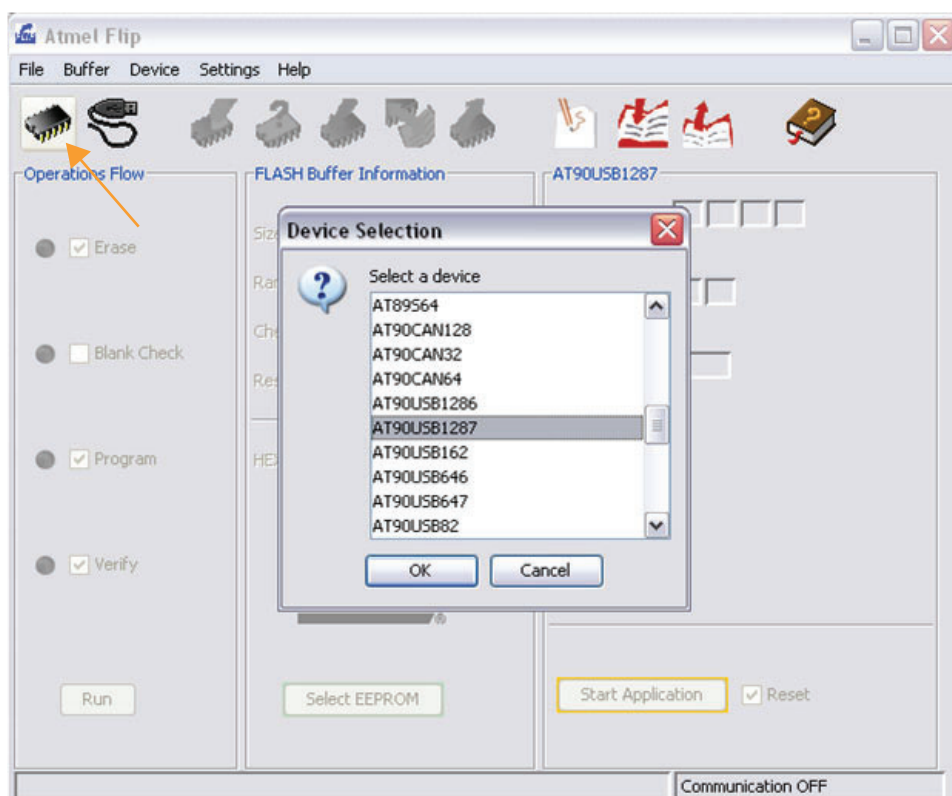
**Figure 1-5. Wizard Complete**



## 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.

**Figure 1-6. Device Selection**

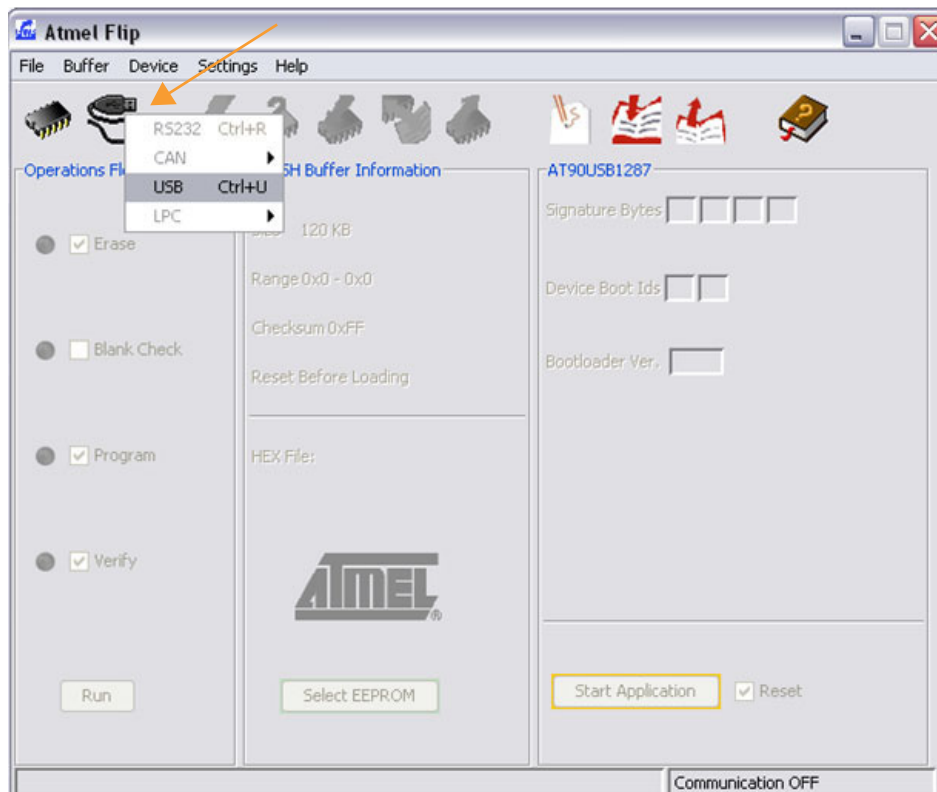


**Table 1-1. Kit Device Selection**

Atmel Kit	Atmel AVR Device Selection
AT88Microbase AT30TK175STK AT88CK101STK3 AT88CK109STK3 AT88CK101STK8 AT88CK109STK8 AT88CK201STK AT88CK490	AT90USB1287
AT88SC-ADK2	AT90USB647
AT88CK440RED AT88CK454BLACK AT88CK427GREEN	AT90USB162

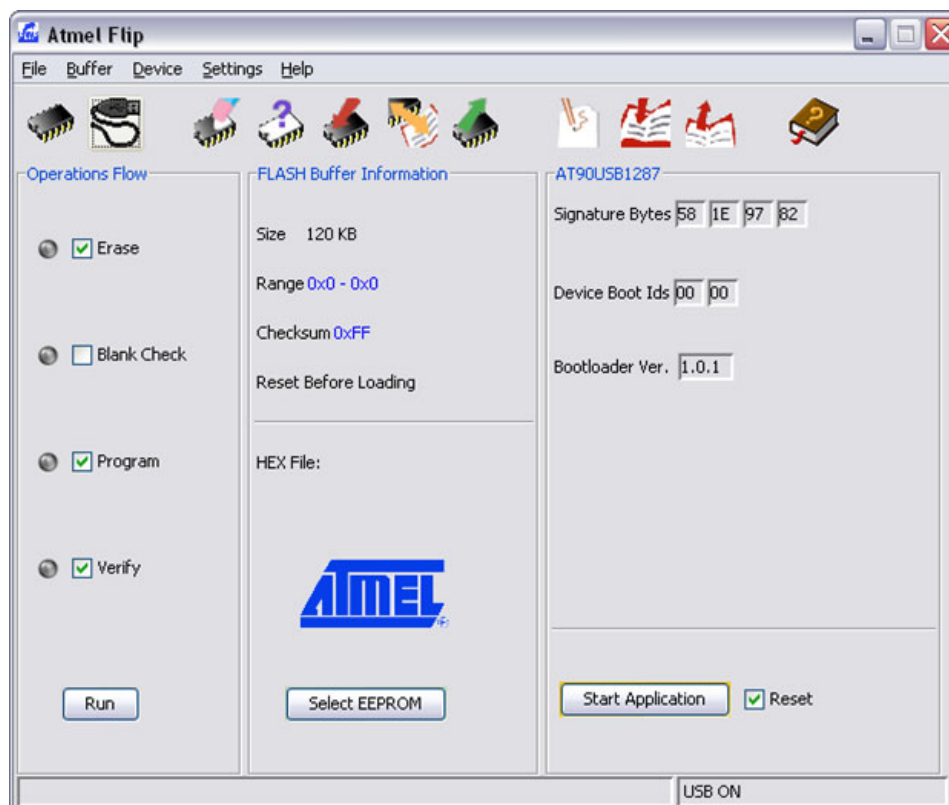
3. Click on the **Communication Medium** icon. Then, from the pop-up window, select **USB**.

**Figure 1-7. Communication Medium Selection**



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.

**Figure 1-8. Start the Application**



## 2. Revision History

Doc. Rev.	Date	Description
8746B	01/2014	Add the AT88CK490 kit and update document template.
8746A	05/2011	Initial document release.





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