AT88CK490 Evaluation Kit

CryptoAuthentication USB Dongle

HARDWARE USER GUIDE

Atmel® AT88CK490 CryptoAuthentication™ Evaluation Kit
Introduction

The Atmel® AT88CK490 CryptoAuthentication™ Evaluation Kit is the ideal way to evaluate the performance and applicability of the Atmel family of CryptoAuthentication devices. The kit contains three devices, namely the Atmel ATAES132, ATSHA204, and ATECC108. The AT88CK490 supplants the prior evaluation boards that only supported one device each. The kit is a USB dongle that allows the interested evaluator to plug it into a PC and use the evaluation and development software package called "ACES" (Atmel CryptoAuthentication Evaluation Studio) that is easily downloadable from the Atmel web site.

This kit includes an Atmel AT90USB1287 AVR® microcontroller which provides a convenient USB 2.0 Full Speed interface allowing users to understand and experiment with the CryptoAuthentication devices. Developers can use the provided 5-pin interface at the end of the board to directly connect the CryptoAuthentication device to their existing project, if so desired. Atmel also offers a socketed board called the Atmel AT88CK101 for the purpose of firmware development, which allows the user to try differently configured devices on a target system. Typically, users will start with the AT88CK490 for evaluation and part selection and then migrate to the AT88CK101 for the purpose of development. Both kits run the ACES configuration environment software package, which provides continuity from the evaluation to development stage.

Complete support for this kit is available at www.atmel.com/cryptokits.

Kit Contents

- Atmel AT88CK490 CryptoAuthentication Evaluation Kit USB Dongle

Kit Features

- Atmel ATSHA204 CryptoAuthentication IC: TWI (0xC8)
- Atmel ATECC108 CryptoAuthentication IC: TWI (0xC0)
- Atmel ATAES132 CryptoAuthentication IC: TWI (0xA0)
- Atmel AT90USB1287 AVR
  - 128KB of In-system Programmable Flash
  - 4KB EEPROM
  - 8KB Internal SRAM
- USB 2.0 Full Speed Device
- Power LED (Red)
- Three Status LEDs (Blue)
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Board Overview

Figure 1. Top Side Placement of Components

USB Type-A

16MHz Crystal

Atmel AT90USB1287 Microcontroller

Atmel ATAES132

Atmel ATSHA204

Atmel ATECC108
Getting Started

Step 1  Powering Up the Kit

The AT88CK490 is a USB-powered device kit. Simply insert the board into an open USB port. The following will then occur:

- The device will go through a self test,
- All three blue LEDs will illuminate, and
- The red power LED will illuminate.

Step 2  Download Atmel CryptoAuthentication Evaluation Studio Software

Atmel CryptoAuthentication Evaluation Studio ("ACES") is Windows-based application software for interfacing to the AT88CK490. ACES works with the Kit Protocol noted in Step 5. When the AT88CK490 is plugged into the USB port, ACES will automatically detect that the kit is attached and launch the Kit Detection dialog box.

Step 3  Select the Atmel CryptoAuthentication Device to Evaluate

The next step is to choose which CryptoAuthentication device to evaluate by using the Kit Detection dialogue box that will appear as shown below. Once the device is selected, then the blue LED corresponding to that device will flash. (Please note that the LED will also flash when traffic going to and from that device.)

Figure 2. Kit Detection

![Kit Detection Dialog Box]

Select Device

- AT88CK490STK - SHA204 2.0.0 I2C C8
- AT88CK490STK - AES132 1.1.0 I2C A0
- AT88CK490STK - ECC108 0.1.0 I2C C0

Select Device  Show Quick Start Guide
Step 4  Use ACES to Evaluate the Device

Please refer to http://www.atmel.com/tools/ATMELCRYPTOEVALUATIONSTUDIO_ACES.aspx for detailed information about using ACES. An example of the ACES configuration screen is shown below:

Figure 3.  ACES — Software Environment for Demo, Evaluation, and Design

- **Device Navigator**: Generates, Stores, and Reloads Configuration Files.
- **Tools**: Demos and Wizards Commands
- **Help**: Datasheet Explained via Help Screens
- **Configuration Zone**: Displays EEPROM Registers and Contents.

**Communication Log**
- Teaches Command, Structure, and Encoding.
- Displays Actions and Results.

Step 5  Optional: Protocol for Communicating with the AT88CK490

It is possible to obtain access to the communication protocol of the AT88CK490, which is designed to interface with either a Microsoft HID driver, or the Atmel AVR CDC driver. Both interfaces use the same Atmel CryptoAuthentication Kit Protocol, which is an ASCII-based interface to the AT90USB1287 AVR microcontroller on the kit. The protocol allows control of all devices on the TWI bus. Source code for the kit protocol is available for download at [www.atmel.com/cryptokits](http://www.atmel.com/cryptokits).
Firmware Upgrade

For firmware upgrades, please refer to the application note, "Upgrading the Atmel CryptoAuthentication/Tempsensor Kit Firmware Using FLIP", which is located at the following site: http://www.atmel.com/tools/AT88CK490.aspx?tab=documents.

References and Further Information

Schematics, Gerber files, Bill Of Materials (BOM), development, and demonstration software are conveniently downloadable from the Atmel website at www.atmel.com/cryptokits.

ATMEL EVALUATION BOARD/KIT IMPORTANT NOTICE AND DISCLAIMER

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Revision History

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<th>Doc Rev.</th>
<th>Date</th>
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<td>8891A</td>
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