Features

- Atmel® ATAES132 CryptoAuthentication™ IC
  - SWI (Single-wire interface)
- Atmel AVR® AT90USB162 MCU
  - 16KB ISP flash, 512B EEPROM, 512B SRAM
  - USB 2.0 full-speed device
- Power LED
- Two user-definable LEDs
- Six-pin interface header

Contents

- One Atmel AT88CK427GREEN USB dongle
- Quick start guide

Introduction

The Atmel AT88CK427GREEN is an Atmel CryptoAuthentication evaluation kit that can be used as a reference design for USB applications requiring the Atmel CryptoAuthentication product family. The kit includes an Atmel AT90USB162 microcontroller, which provides a convenient USB interface that allows users to understand and experiment with CryptoAuthentication technology using their personal computer. Developers can also use the provided six-pin interface header to directly connect the CryptoAuthentication device to an existing project. Complete source code for the AVR and CryptoAuthentication devices and documentation for the kit, as well as the schematic, Gerber files, and bill of materials, are all downloadable at www.atmel.com/cryptokits.

Figure 1. Atmel AT88CK427GREEN CryptoAuthentication evaluation kit
1. Board Overview

1.1. Component Placement

![Top side component placement](image1)

Figure 1-1.

1.2. Powering up the board

The Atmel AT88CK427GREEN is a USB-powered device.

- Simply insert the board into an open USB port on the PC

![Atmel AT88CK427GREEN USB-powered device](image2)

Figure 1-2.
1.3. User Definable LEDs

The AT88CK427GREEN includes two general-purpose, user-definable LEDs, which are connected to PD4 of the AT90USB162 MCU, as shown in Figure 1-3. Both LEDs will light when PD4 is configured as an input (hi-Z). Otherwise, the LEDs will toggle according to Table 1-1. This configuration also serves as a power indicator because at least one LED is always on when power is applied.

![LED implementation schematic](image)

#### Table 1-1. LED logic

<table>
<thead>
<tr>
<th>PD4</th>
<th>LED1 (blue)</th>
<th>LED2 (red)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>ON</td>
<td>OFF</td>
</tr>
<tr>
<td>1</td>
<td>OFF</td>
<td>ON</td>
</tr>
<tr>
<td>Hi-Z</td>
<td>ON</td>
<td>ON</td>
</tr>
</tbody>
</table>

1.4. Six-pin Test Header

Header H1 provides access to the ATAES132 control signals, as shown in Figure 1-4.

![Six-pin interface header schematic](image)
2. **Reset**

Although the Atmel AT90USB162 has its on-chip reset circuitry (see the Atmel AT90USB162 datasheet section, “System control and reset”), the AT88CK427GREEN provides an additional mean to reset the AT90USB162.

- **Power-on Reset**: The onboard RC network acts as power-on reset

3. **Debugging**

The AT90USB162 debugWIRE is not accessible on the AT88CK427GREEN, and, therefore, not suitable for code development. It is recommended that firmware development be done with the Atmel STK®526 or the Atmel STK600 routing card (STK600-RC032U-20) and the socket card (STK00-TQFP32).

The Atmel STK526 starter kit is dedicated to the AT90USB82/162 microcontrollers. It supports the Atmel JTAGICE mkII and Atmel AVRISP mkII debuggers via Atmel AVR Studio®. It includes a number demonstration programs with source and hex files. The parts can be directly programmed through the USB port with the Atmel FLIP (flexible in-system programmer) utility.

4. **Firmware Upgrade**

See the Atmel application note, “Upgrading Crypto/Tempsensor Kit Firmware.”

5. **References and Further Information**

Schematics, Gerber files, bill of materials (BOM), and development and demonstration software are conveniently downloadable from the Atmel website at [www.atmel.com/cryptokits](http://www.atmel.com/cryptokits).

6. **EVALUATION BOARD/KIT IMPORTANT NOTICE**

This evaluation board/kit is intended for ENGINEERING, DEVELOPMENT, DEMONSTRATION or EVALUATION PURPOSE ONLY. It is not a finished product and may not (yet) comply with some or any technical or legal requirements that are applicable to finished products, including, without limitations, directives regarding electromagnetic compatibility, recycling (WEEE), FCC, CE or UL (except as may be otherwise noted on the board/kit). Atmel® supplied this board/kit “AS IS,” without any warranties, with all faults, at the buyer’s and further users’ sole risk. The user assumes all responsibly and liability for proper and safe handling of goods. Further, the user indemnifies Atmel from claims arising from the handling or use of goods. Due to open construction of the product, it is the user’s responsibility to take any and all appropriate precautions with regard to electrostatic discharge and any other technical or legal concerns.

EXCEPT TO THE EXTENT OF INDEMNITY SET FORTH ABOVE, NEITHER USER NOR ATMEL SHALL BE LIABLE TO EACH OTHER FOR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES.

No license is granted under any patent right or other intellectual property right of Atmel covering or relating to any machine, process, or combination in which such Atmel product or services might be or are used.

Mailing Address:  Atmel Corporation  
2325 Orchard Parkway  
San Jose, CA 95131