OPTIGA™ Trust E Security Shield2Go
Quick Start
V1.0.0
Introduction

OPTIGA™ Trust E is a high-security solution for industrial automation systems, smart homes, consumer or medical devices, providing enhanced protection of services, business models and user experience. Based on its 1-way authentication mechanism, it uniquely identifies objects and protects PKI networks.

The turnkey set-up with full system integration and all key material preprogrammed aims to minimize your efforts in order to maintain a fast and easy integration. The high-end security controller comes with OS, embedded application and complete host side integration support and is moreover compliant to the new USB Type-C standard.

Features include a high-end security controller with advanced cryptographic algorithms implemented in hardware (ECC256), a turnkey solution with OS, Applet and complete host-side integration support as well as full system integration support with up to 3 kBytes user memory.

The communication interface is I2C and the device supports ECC 256 bit and SHA-256.

Link to Datasheet and Product Page
Evaluation Board Notes

Information

- Supply voltage VCC is max. 7 V, please refer to the OPTIGA™ Trust E datasheet for more details about maximum ratings
- Pin out on top (head) is directly connected to the pins of the OPTIGA™ Trust E
- If head is broken off, only one capacitor is connected to the OPTIGA™ Trust E
- Software compatible with Arduino and library fully integrated into the Arduino IDE
- Sales Name S2Go Security OPTIGA E and OPN S2GOSECURITYOPTIGAETOBO1

Ensure that no voltage applied to any of the pins exceeds the absolute maximum rating of VCC + 0.3 V
Evaluation Board PCB Details

OPTIGA™ Trust E Security Shield2Go

The

Legend

<table>
<thead>
<tr>
<th>Information</th>
<th>Labelling of Pins in Datasheet</th>
<th>Pin Number in Datasheet</th>
<th>Physical Pin Number</th>
<th>Warning</th>
<th>Additional Information</th>
<th>NC Not Connected</th>
</tr>
</thead>
</table>

- 10 VCC
- 02 SDA
- 08 SCL
- 01 GND
- 18
- 19
- 20
- 21

10.16 mm (0.4"")

OPTIGA™ Trust E

- 22 GND
- 23 RST
- 24 RST
- 25 VCC
- 01
- 09
- 09

1.01 mm (0.04"")

Red Power LED

- 11 NC
- 12 RST/GPIO2
- 13 NC
- 14 NC
- 15 NC
- 16 NC
- 17 NC

- 4 NC
- 5 NC
- 6 NC
- 7 NC
- 8 NC

Although labelled as NC, RST is connected to pin 12. This is a mistake of the labelling.

The maximum voltage on VCC pin is 7 V, any other pin VCC+0.3 V.

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I2C Pull Up

PWR_3V3
R1 10k/50V/1%

PWR_3V3
R2 10k/50V/1%

SDA
SCL

OPTIGA™ Trust E

Green area: circuit if head is broken off

Power Status Indication

PWR_3V3
R3 680R/50V/1%

D1 SML-211UT

not powered
powered
Arduino: The Arduino IDE

Arduino IDE

Arduino is a hardware-software prototyping environment IDE developed by arduino.cc:

• Installation Details for Windows:
  Click here
• Installation Details for Linux:
  Click here
• Installation Details for Mac OS:
  Click here
• Installation Details for Portable IDE:
  Click here

Arduino Quick Start

• What is Arduino? Click here
• Extended information about the Arduino environment. Click here
• How to import libraries? Click here
• How to install additional boards? Click here
• Problems related to Arduino? Click here for troubleshooting
How to download the library for Arduino - 1

Notes

• Open the Arduino IDE
• Navigate to Sketch – Include Library – Manage Libraries
• The Arduino library manager will be opened (see next slide for further instructions)
• Additional notes for installation can be found in the GitHub repository, e.g. if the library manager is not used

Notes

- The Arduino library manager is a comprehensive tool to install external libraries for Arduino.
- Search for **OPTIGA™ Trust E** in the Filter your search... field.
- Select as **Type: All** and **Topic: All** when searching for **OPTIGA™ Trust E**.
- As shown in the picture, please choose the respective library and install it.
- Regularly check your installed libraries for updates.
- In case of problems, please visit also our GitHub repository and open an issue to get further help.

**https://github.com/Infineon/OPTIGA-Trust-E-Security-Controller**
Example with XMC 2Go

Notes

• The Shield2Go form factor of the Shield2Go evaluation board is directly compatible with the XMC 2Go board
• Stack the OPTIGA™ Trust E Security Shield2Go board on top of the XMC 2Go as shown in the picture
• The additional pin on the left-top side (designated with NC) is left floating
• Using the XMC-for-Arduino Arduino integration, the Arduino library for the OPTIGA™ Trust E can be directly used

Steps

• Open one of the examples for the OPTIGA™ Trust E from File – Examples and select as board XMC1100 XMC2Go
• Connect the stacked boards to the PC and press the Upload button
• Select the related COM port from Tools – Port and open the serial monitor with the set baud rate (see sketch/code with Serial.begin(<BAUDRATE>);)

https://github.com/Infineon/XMC-for-Arduino
Important Note

- The OPTIGA™ Trust E has a maximum rating of 7 V on the VCC supply pin.
- The input voltage on any pin should not exceed VCC+0.3 V.
- Third party boards with 5 V logic, e.g. the Arduino Uno, can be connected to the OPTIGA™ Trust E Security Shield2Go directly.
Part of your life. Part of tomorrow.