

# SMU\_Reset\_Alarm\_1

Reset triggered by an SMU alarm

AURIX™ TC2xx Microcontroller Training  
V1.0.0



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## Scope of work

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**The SMU triggers an alarm, which resets the device as preconfigured reaction.**

The Safety Management Unit (SMU) is configured to trigger a reset if an internal software alarm occurs.

# Introduction

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- › The Safety Memory Unit (SMU) is a central and modular component of the safety architecture providing a generic interface to manage the behavior of the microcontroller under the presence of faults.
- › The SMU centralizes all the alarm signals related to the different hardware- and software-based safety mechanisms.
- › Each alarm can be individually configured to trigger internal or external actions.
- › The SMU in combination with the embedded safety mechanisms, is able to detect and report more than 99% of the critical failure modes.
- › In this example, Software Alarm 0 is used to trigger a reset.

# Hardware setup

This code example has been developed for the board  
 KIT\_AURIX\_TC297\_TFT\_BC-Step.



# Implementation

## Configure the SMU module

- › To trigger a reset with an SMU alarm, a few steps are required:
  - To modify the SMU registers, the SMU module has to be unlocked with the function ***IfxSmu\_unlock()***. After modification, the SMU registers have to be locked again using the function ***IfxSmu\_lock()***.
  - To modify SMU configuration registers, it is required to clear and set the Safety ENDINIT protection. This is done with the functions ***IfxScuWdt\_clearSafetyEndinit()*** and ***IfxScuWdt\_setSafetyEndinit()***.
  - To enable the SMU reset, the SMU field of the Reset Configuration Register (**RSTCON**) has to be set to 0x1 for a system reset or 0x2 for an application reset (***SCU\_RSTCON.B.SMU = 0x1***).

# Implementation

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## Configure the SMU module (cont.)

- The function ***IfxSmu\_setAlarmConfig()*** configures the alarm's behavior by writing a 3-bit code to the three Alarm Configuration Registers associated to the specific alarm and its group. In this example, the software alarm 0 (***IfxSmu\_Alarm\_SoftwareAlarm0***) and the SCU reset (***IfxSmu\_AlarmConfig\_scuReset***) are selected. The iLLD function itself selects the group based on the above mentioned parameters.
- Start the SMU state machine (SSM) with the function ***IfxSmu\_cmd()*** and the parameter ***IfxSmu\_Cmd\_start***.

The functions above are provided by the iLLD headers ***IfxSmu.h*** and ***IfxSrc.h***.

# Implementation

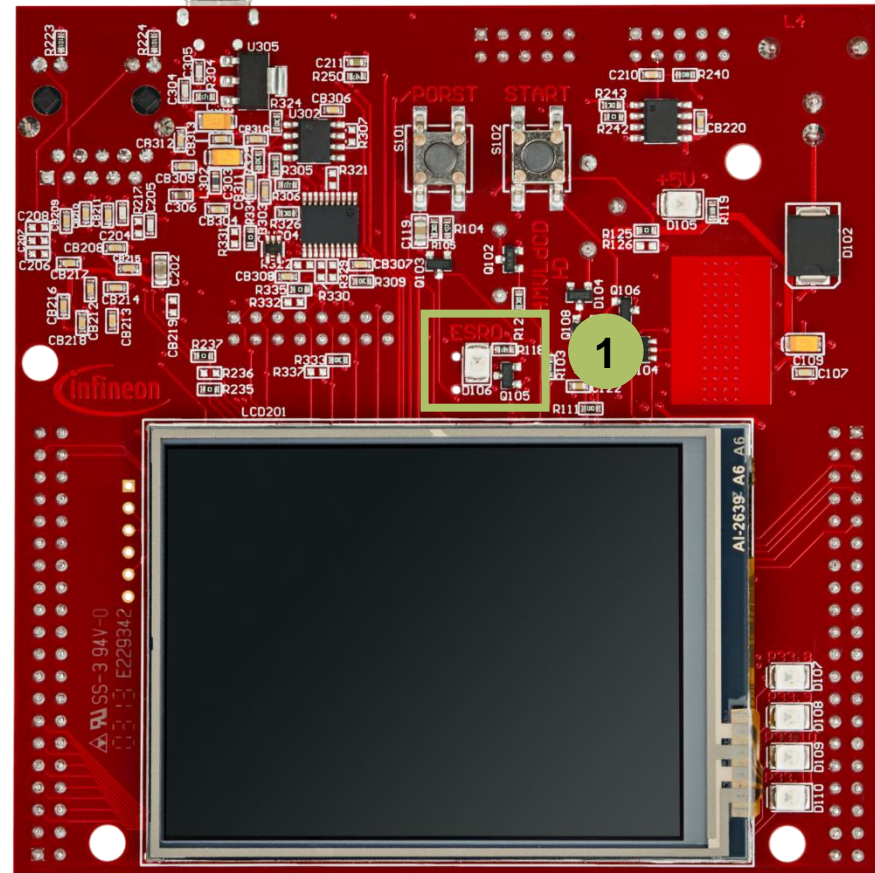
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## Triggering of the alarm

- › The Software Alarm 0 can be triggered with the function ***IfxSmu\_triggerAlarm()*** provided by the iLLD header ***IfxSmu.h***.

# Run and Test

After code compilation and flashing the device, check if LED D106 (1) is turned on.





# References



- > AURIX™ Development Studio is available online:
- > <https://www.infineon.com/aurixdevelopmentstudio>
- > Use the „*Import...*“ function to get access to more code examples.



- > More code examples can be found on the GIT repository:
- > [https://github.com/Infineon/AURIX\\_code\\_examples](https://github.com/Infineon/AURIX_code_examples)



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**Document reference**  
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