

# STM\_Interrupt\_1 for KIT\_AURIX\_TC334\_LK

Interrupt generation via STM trigger

AURIX™ TC3xx Microcontroller Training  
V1.0.0



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## Scope of work

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**The STM is configured to trigger an interrupt every 500 ms. The interrupt toggles an LED.**

The System Timer (STM) module counts up to a configured compare value, when it reaches the specific value, it triggers an interrupt and resets its counter value. The value is set to trigger the interrupt every 500 ms; at each interrupt an LED is toggled.

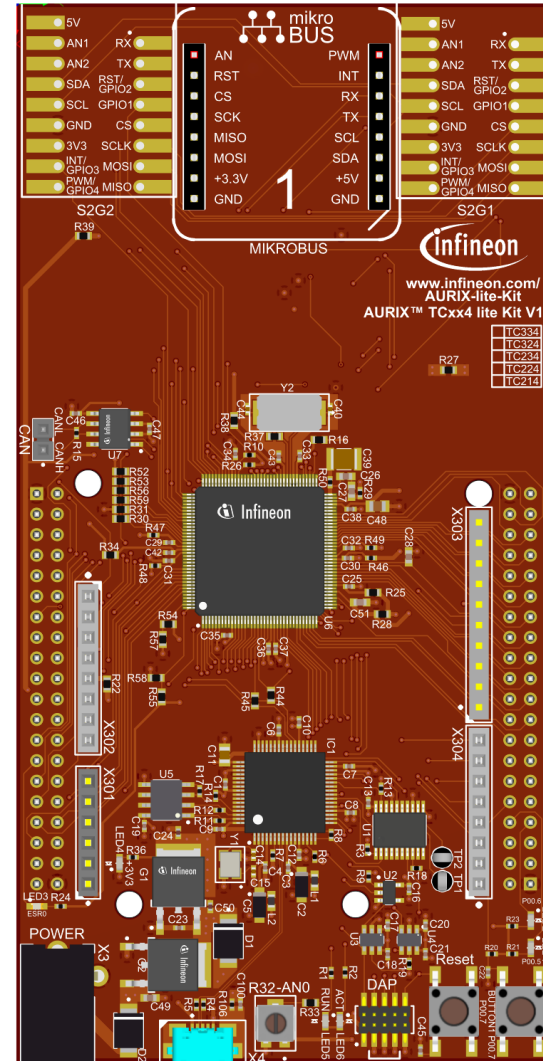
# Introduction

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- › The System Timer (STM) is a free running 64-bit counter that can be used for timing applications requiring both high precision and long period
- › Among other features, the STM has the capability to **generate interrupts** when its counter reaches a predefined **compare value**
- › The comparison is flexible in terms of bit sets.  
Any of the 64 bits of the STM can be selected for comparison

# Hardware setup

This code example has been developed for the board KIT\_A2G\_TC334\_LITE.



# Implementation

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## Configure and control the LED

The LED is toggled by controlling the port pin to which it is connected using functions from the iLLD header ***IfxPort.h***.

Inside the function ***initPeripherals()***, the port pin is configured to push-pull output mode using the function ***IfxPort\_setPinMode()***.

During program execution, inside the interrupt service routine ***isrSTM()***, the LED is switched on and off using the function ***IfxPort\_setPinState()***.

# Implementation

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## Configure the STM

Configuration of the STM is done inside the function ***initSTM()*** by initializing an instance of the ***IfxStm\_CompareConfig*** structure with default values through the function ***IfxStm\_initCompareConfig()***.

The following parameters are modified:

- › ***ticks*** – the total amount of ticks to count before the interrupt generation
- › ***triggerPriority*** – priority of the interrupt generated by the STM on compare match. It can be a value from 0 to 255, with 0 meaning interrupt is disabled and 255 is the highest priority
- › ***typeOfService*** – to define which service provider is responsible for handling the interrupt. This can be the CPU or the DMA

The configuration is then applied to the STM via the function ***IfxStm\_initCompare()***.

The above functions can be found in the iLLD header ***IfxStm.h***.

# Implementation

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## Configure the Interrupt Service Routine

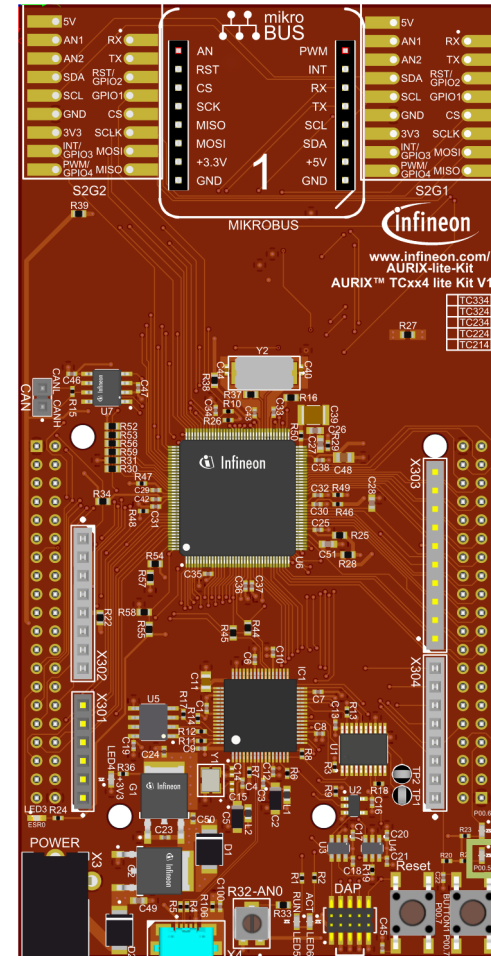
The function implementing the ISR (*isrSTM()*) needs to be assigned a **priority**. This is done with the macro ***IFX\_INTERRUPT(isr, vectabNum, priority)***.

When triggered, the ISR:

- › Instructs the STM to raise the next interrupt after a certain amount of time by **updating** its **compare register** with the function ***IfxStm\_increaseCompare()***
- › Toggles the LED by changing the state of the port pin using the function ***IfxPort\_setPinState()***

# Run and Test

After code compilation and flashing the device, observe the **LED1** (1), which should be blinking.



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# 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)



- › For additional trainings, visit our webpage:
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**Document reference**

**STM\_Interrupt\_1\_KIT\_TC334\_LK**

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