

# GTM\_TOM\_Interrupt\_1 for KIT\_AURIX\_TC375\_LK

## GTM TOM interrupt

AURIX™ TC3xx Microcontroller Training  
V1.0.0



## Scope of work

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

The Generic Timer Module triggers an interrupt every 500 ms.  
The state of the port pin, where the LED is connected, is toggled inside the Interrupt Service Routine (ISR).

# Introduction

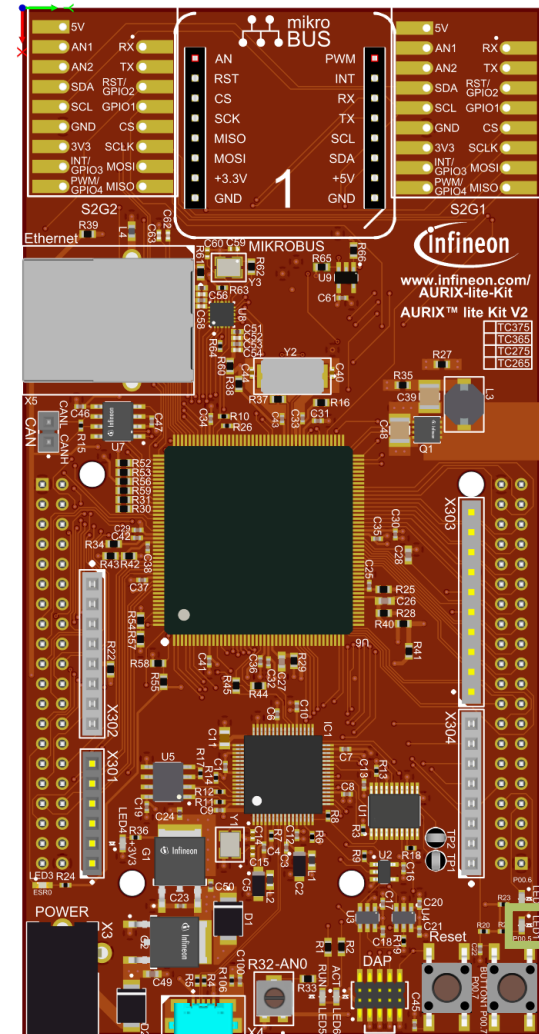
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- › The Generic Timer Module (GTM) is a modular timer unit designed to accommodate many timer applications
- › It has an in-built Timer Output Module (TOM) that offers up to 16 independent channels to generate output signals
- › The Clock Management Unit (CMU) is responsible for clock generation of the GTM. The Fixed Clock Generation (FXU) is one of its subunits and it provides five predefined non-configurable clocks for GTM modules, including the TOM

# Hardware setup

This code example has been developed for the board KIT\_A2G\_TC375\_LITE.

LED1 (1) is used for this example.



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# Implementation

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## Configuring the TOM

The configuration of the TOM is done once in the setup phase by calling the initialization function ***initGtmTom()*** with the following steps:

- › Enable the GTM by calling the function ***lfxGtm\_enable()***
- › The function ***lfxGtm\_Tom\_Timer\_initConfig()*** initializes an instance of the structure ***lfxGtm\_Tom\_Timer\_Config*** with its default values
- › The ***lfxGtm\_Tom\_Timer\_Config*** structure allows to set the following parameters to initialize the module:
  - ***tom*** – Set TOM 1
  - ***timerChannel*** – Set channel 0 of TOM 1
  - ***clock*** – Select CMU clock 0
  - ***base.frequency*** – Set timer frequency to 2 Hz (Interrupt every 500 ms)
  - ***base.isrPriority*** – Interrupt Service Routine priority
  - ***base.isrProvider*** – Interrupt Service Routine provider

# Implementation

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## Configuring the TOM

- › Select the FXU clock 3 to divide the clock source by 4096 (***timerConfig.clock = IfxGtm\_Tom\_Ch\_ClkSrc\_cmuFxclk3***)
- › Enable the FXU clocks by calling the function ***IfxGtm\_Cmu\_enableClocks()***
- › The function ***IfxGtm\_Tom\_Timer\_init()*** initializes and activates the TOM with the given configuration

All the functions used for the configuration of the TOM are provided by the iLLD header ***IfxGtm\_Tom\_Timer.h***.

# Implementation

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## Configuring the LED

The LED configuration is done once in the function ***initGtmTom()*** by setting the port pin mode to output and push-pull by calling the function ***IfxPort\_setPinModeOutput()***, provided by iLLD header ***IfxPort.h***.

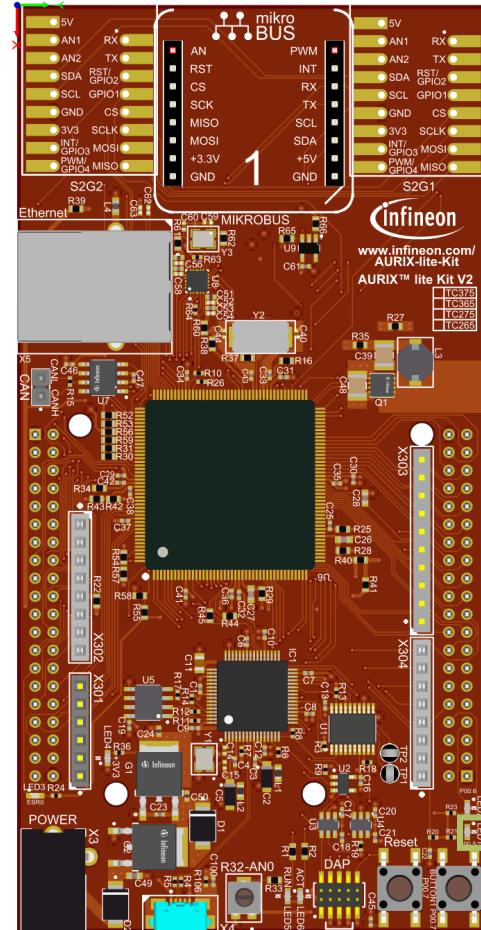
## Interrupt Service Routine (ISR)

The ISR implemented in this example contains the following steps:

- › Clear the timer event with the function ***IfxGtm\_Tom\_Timer\_acknowledgeTimerIrq()*** (iLLD header ***IfxGtm\_Tom\_Timer.h***)
- › Change the LED state by calling the function ***IfxPort\_togglePin()*** (iLLD header ***IfxPort.h***)

# 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**

**GTM\_TOM\_Interrupt\_1\_KIT\_TC375\_LK**

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