

# CPU\_Perf\_Counters\_1

## for KIT\_AURIX\_TC334\_LK

CPU performance counters

AURIX™ TC3xx Microcontroller Training  
V1.0.0



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# Scope of work

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## **Measure code performance via the CPU performance counters.**

The CPU performance counters are counting the number of instructions, clock ticks and multi counters ticks. They are used to measure the run-time of a c-function. The result is stored in a global variable.

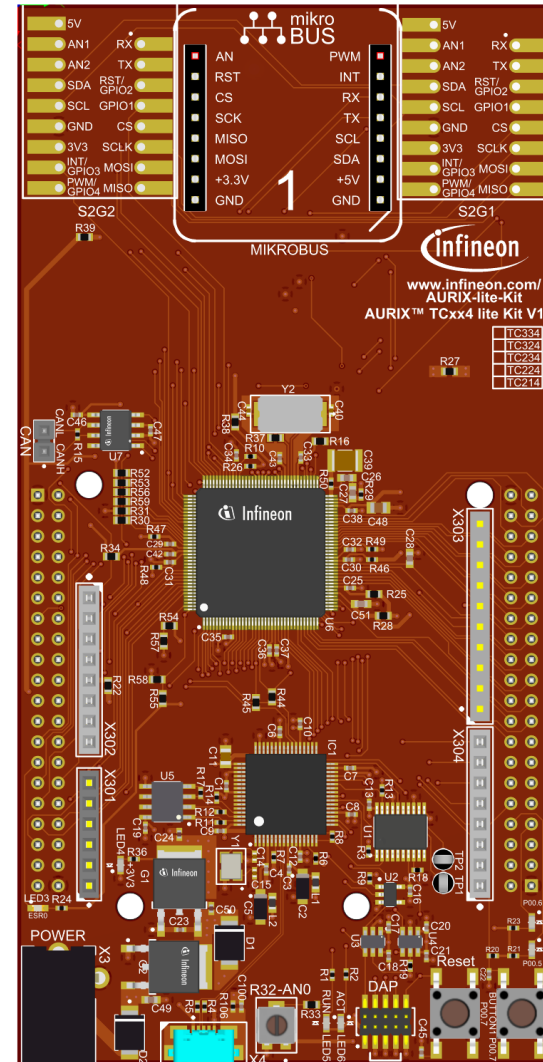
# Introduction

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- › The CPU performance counters are part of the TriCore™ CPU core and need to be accessed via the On-Chip Debug Support (OCDS) module, which is used for debugging and performance optimization

# Hardware setup

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



# Implementation

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## Running CPU performance counters

The function ***runCpuPerfCounters()*** measures the run-time of the function ***loop()***, which is placed between the ***lfxCpu\_resetAndStartCounters()*** and ***lfxCpu\_stopCounters()***:

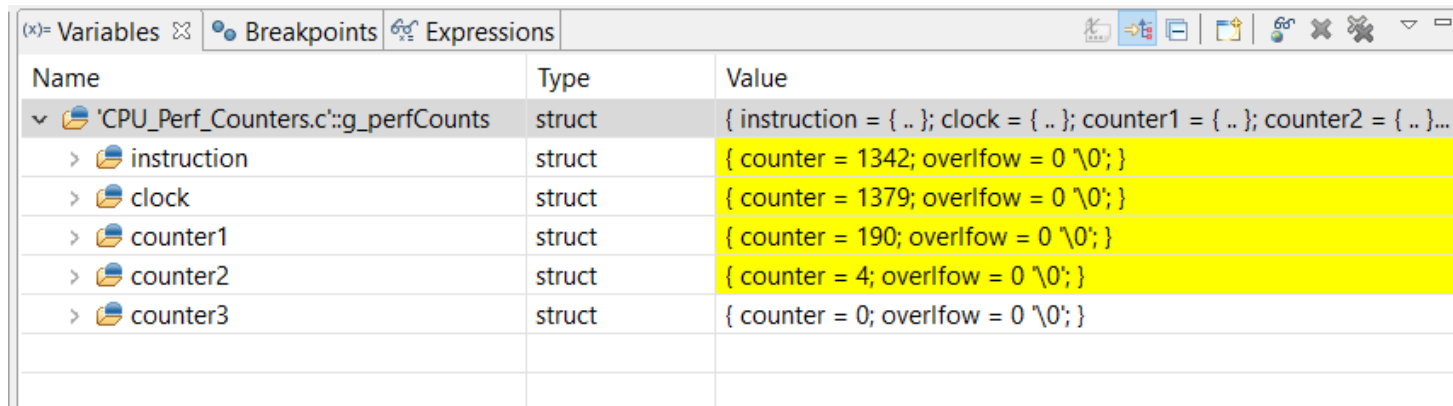
- › ***lfxCpu\_resetAndStartCounters()*** to start CPU performance counters. A parameter is specifying the counter mode:
  - **Normal** mode: The counters increment on their respective triggers
  - **Task** mode: Allow an additional gating from the debug unit which can filter data based on specific criteria
- › ***lfxCpu\_stopCounters()*** to stop and return counters values

**Note:** For using the performance counters, the On-Chip Debug System has to be enabled. This is ensured by the debugger itself, therefore the example has to be tested within an active debug session.

# Run and Test

After code compilation and flashing the device, perform the following steps:

- > Add the result of the measurement (***g\_perfCounts***) to the Watch View of the debugger
- > Check the performance of the function ***loop()*** through the values stored in the structure ***g\_perfCounts*** displayed in the Watch View:
  - Instruction Counter
  - CPU Clock Cycle Counter
  - Counter 1 (implementation specific)
  - Counter 2 (implementation specific)
  - Counter 3 (implementation specific)



Name	Type	Value
√ CPU_Perf_Counters.c::g_perfCounts	struct	{ instruction = { .. }; clock = { .. }; counter1 = { .. }; counter2 = { .. }...
> instruction	struct	{ counter = 1342; overflow = 0 \0; }
> clock	struct	{ counter = 1379; overflow = 0 \0; }
> counter1	struct	{ counter = 190; overflow = 0 \0; }
> counter2	struct	{ counter = 4; overflow = 0 \0; }
> counter3	struct	{ counter = 0; overflow = 0 \0; }

# 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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## Edition 2021-12

### Published by

**Infineon Technologies AG**  
81726 Munich, Germany

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### Document reference

**CPU\_Perf\_Counters\_1\_KIT\_TC334\_LK**

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