

# CPU\_Perf\_Counters\_1

## for KIT\_AURIX\_TC297\_TFT

CPU performance counters

AURIX™ TC2xx 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.



# Implementation

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## Initializing and running CPU performance counters

On-Chip Debug Support (OCDS) must be enabled to use the CPU performance counters. This is done by the ***initCpuPerfCounters()*** function.

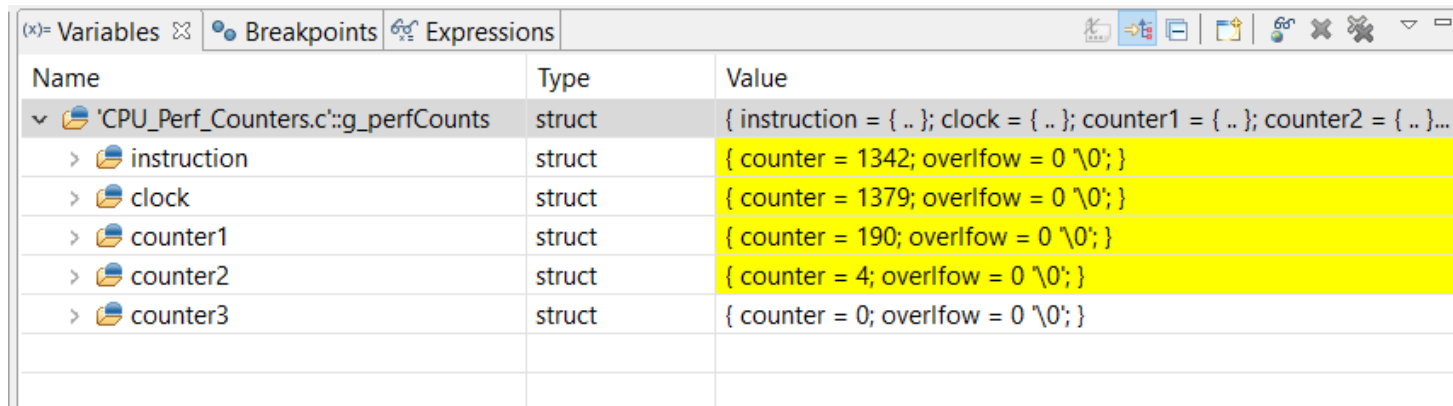
The function ***runCpuPerfCounters()*** measures the run-time of the function ***loop()***, which is placed between the ***IfxCpu\_resetAndStartCounters()*** and ***IfxCpu\_stopCounters()***:

- › ***IfxCpu\_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.
- › ***IfxCpu\_stopCounters()*** to stop and return counters values.

# 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)



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**Document reference**

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