CPU_Perf_Counters_1
CPU performance counters
Scope of work

**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

- 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_AURIX_TC297_TFT_BC-Step.
Implementing 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 (\texttt{g\_perfCounts}) to the Watch View of the debugger
› Check the performance of the function \texttt{loop()} through the values stored in the structure \texttt{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)
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

› For additional trainings, visit our webpage:
  › https://www.infineon.com/aurix-expert-training

› For questions and support, use the AURIX™ Forum:
  › https://www.infineonforums.com/forums/13-Aurix-Forum
IMPORTANT NOTICE

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics (“Beschaffenheitsgarantie”).

With respect to any examples, hints or any typical values stated herein and/or any information regarding the application of the product, Infineon Technologies hereby disclaims any and all warranties and liabilities of any kind, including without limitation warranties of non-infringement of intellectual property rights of any third party.

In addition, any information given in this document is subject to customer’s compliance with its obligations stated in this document and any applicable legal requirements, norms and standards concerning customer’s products and any use of the product of Infineon Technologies in customer’s applications.

The data contained in this document is exclusively intended for technically trained staff. It is the responsibility of customer’s technical departments to evaluate the suitability of the product for the intended application and the completeness of the product information given in this document with respect to such application.

For further information on the product, technology, delivery terms and conditions and prices please contact your nearest Infineon Technologies office (www.infineon.com).

WARNINGS

Due to technical requirements products may contain dangerous substances. For information on the types in question please contact your nearest Infineon Technologies office.

Except as otherwise explicitly approved by Infineon Technologies in a written document signed by authorized representatives of Infineon Technologies, Infineon Technologies’ products may not be used in any applications where a failure of the product or any consequences of the use thereof can reasonably be expected to result in personal injury.