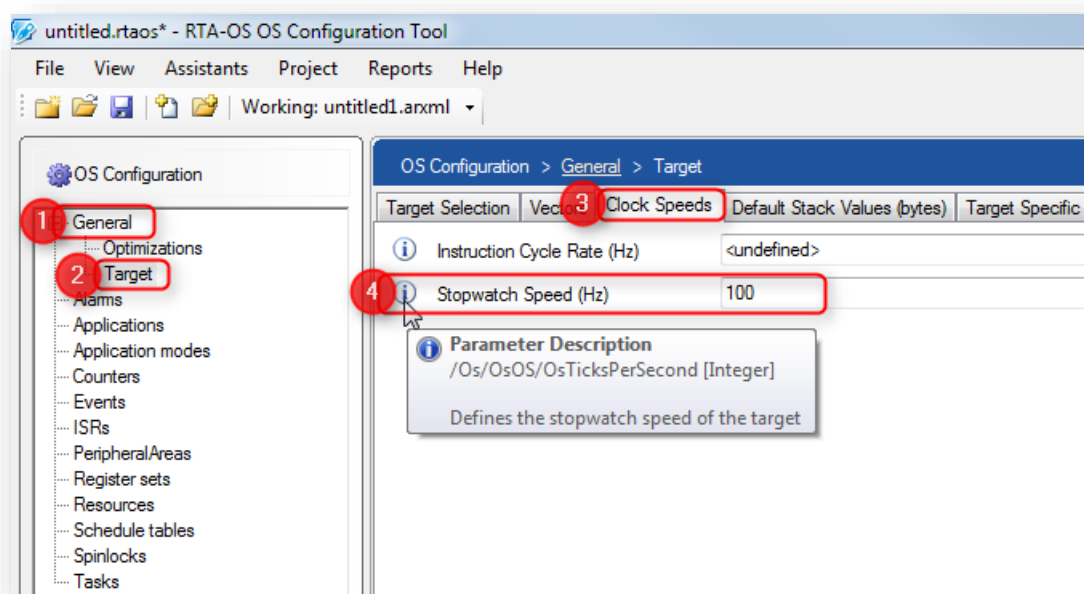


## RTA-OS: Convert the rate of change for ticks to time units



### Question

- How to convert the rate of change for ticks to time units
- I am trying to use the `Os_GetExecutionTime()` function to measure the execution time of an os TASK().
- I have read the **RTA-OS User Guide: Chapter 15 Measuring and Monitoring Execution Time**
  - The function that returns the current stopwatch value in `Os_StopwatchTickType`
- What I am trying to confirm is the rate of change for the ticks is decided by the parameter in **RTA-OS Configuration Tool: Stopwatch Speed (Hz)**, currently set to 100 Hz.



- I need to convert the tick counter to time units.



Answer

- It is possible to use a macro to make the conversion from ticks into "clock" time.
- See as well in the **RTA-OS User Guide** on page 252:
  - *"The stopwatch returns ticks and any values reported by RTA-OS are in terms of ticks on the stopwatch time base. You can use the macros provided by RTA-OS to convert stopwatch measurements into 'clock time' units like milliseconds, microseconds etc."*

**Integration Guidance 15.2:** Files injected to the build via the `--using` command-line option appear before all other OS header files, so you may need to provide a hard-coded peripheral address rather than addressing the peripheral by name. See the Reference Guide for more details.

The stopwatch returns ticks and any values reported by RTA-OS are in terms of ticks on the stopwatch time base. You can use the macros provided by RTA-OS to convert stopwatch measurements into 'clock time' units like milliseconds, microseconds etc.

**15.1.2 Scaling the Stopwatch**

In most cases your `Os_Clk_GetStopwatch()` will return a value read directly from a hardware timer and you will convert timing measurements into 'real' time after measurement.

**Measuring and Monitoring Execution Time 253**

- The macros itself are listed on page 251: **Macro Description**

Macro	Description
<b>OSCYCLEDURATION</b>	The duration of a CPU instruction in nanoseconds.
<b>OSCYCLESERSECOND</b>	The number of CPU instructions in a second.
<b>OSSWICKDURATION</b>	The duration of a stopwatch tick in nanoseconds.
<b>OSSWICKSERSECOND</b>	The number of stopwatch instructions in a second.

RTA-OS generates a set of macros that encapsulate this information to allow you to scale timing measurements:

Macro	Description
OSCYCLEDURATION	The duration of a CPU instruction in nanoseconds.
OSCYCLESPERSECOND	The number of CPU instructions in a second.
OSSWICKDURATION	The duration of a stopwatch tick in nanoseconds.
OSSWICKSPERSECOND	The number of stopwatch instructions in a second.



252 Measuring and Monitoring Execution Time



Do you still have questions?

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