

OS Monitoring



Question:

How can I check the runtime behaviour of my model and all of its tasks?

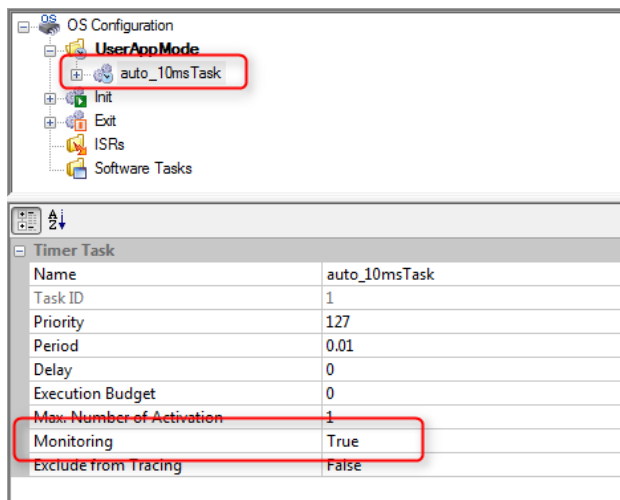


Answer:

Activation of the OS Monitoring and the meaning of the available measurement labels

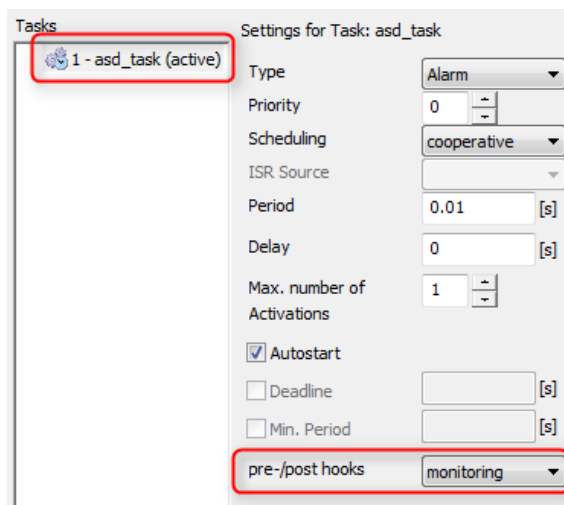
Within INTECRIO or ASCET you can enable the monitoring feature for OS tasks. This will result in additional variables giving you the information about the dT and the runtime of each monitored task. This is a very helpful feature in order to check the time behaviour in case the model is too complex and consumes too much calculation time, or if you have external triggered software tasks for CAN receive or the bypass communication.

The Monitoring option in ASCET or INTECRIO determines whether monitoring information is collected for a certain task (True) or not (False).



The screenshot shows a software configuration window. The top part is a tree view under 'OS Configuration' with 'UserAppMode' expanded to show 'auto_10msTask'. The bottom part is a 'Timer Task' table with the following data:

Timer Task	
Name	auto_10msTask
Task ID	1
Priority	127
Period	0.01
Delay	0
Execution Budget	0
Max. Number of Activation	1
Monitoring	True
Exclude from Tracing	False

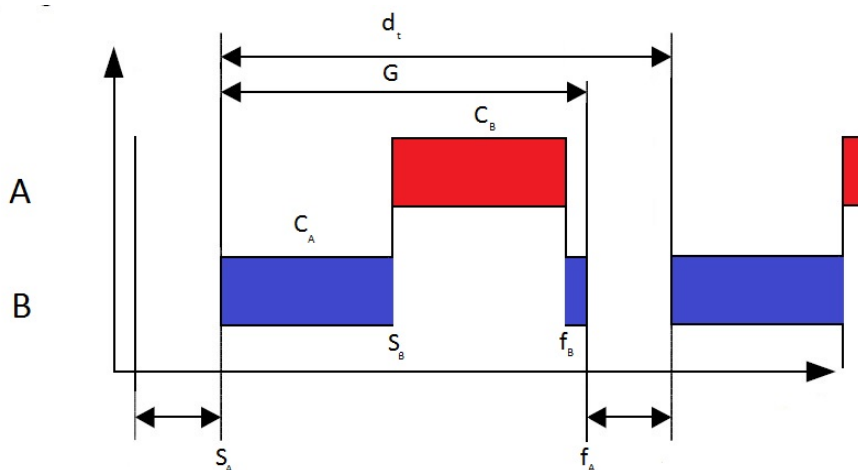


If the option is activated, additional signal sources, e.g. for the entire runtime of the task, are created. These labels are also part of the ASAM-MCD-2MC description and can be measured in the INTECRIO experiment environment or in INCA. Enabling the monitoring option creates the following monitoring variables for each task:

Real-time task scheduling

grossRunTime

This is the time difference between the start and the completion of a task execution. If the task is interrupted, this increases the gross runtime by the gross runtime of the interrupting task.



List of abbreviations	
Abr.	Description
C_A	runtime of task A
C_B	runtime of task B

dT	gross runtime
f _A	end time (task A)
f _B	end time (task B)
G	net runtime
S _A	starting time Task A
S _B	starting time Task B

startTime

Start time of the task. I.e. the actual time stamp the calculations starts

grossRunTime

Total runtime of the task is the time needed by the CPU to process al commands of one cycle of a task execution.

grossRunTime

This is the time difference between the start and the completion of a task execution. If the task is interrupted, this increases the gross runtime by the gross runtime of the interrupting task.

netRunTime

Net runtime of the task is the time needed by the CPU to process all commands that are part of one cycle of a task execution. If said task is interrupted by another task with higher priority, this does not influence the netRunTime, because the additional time required by the other task does not belong to the first task.

minRunTime

Minimum runtime of the task since the start of the model.

maxRunTime

Maximum runtime of the task since the start of the model.

dT

Time difference between the previous and the current activation of the task.



Additional information:

OS Monitoring for external bypass operation

For external bypass operation software tasks on the Rapid Prototyping hardware are triggered by the connected ECU via ETK. Sometimes there are communication issues which block these triggers. So if the bypass does not seem to work it might be a good idea to check the runtime behaviour of the software tasks on the Rapid Prototyping hardware with the OS Monitoring.



In case of further questions:

Please feel free to contact our Support Center, if you have further questions.

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