Simplifies complex driving control for the autonomous-driving era

RH850 Multicore Model-Based Environment
https://www.renesas.com/mbd-rh850-multicore

The model generates complex multi-core code automatically, which reduces the time required for design and allows for quick confirmation of performance.

Embedded Target for RH850 Multicore is a MATLAB® collaborative environment that automatically generates parallel codes and a Processor In the Loop Simulation (PILS) environment from a Simulink® model. This development environment also supports automatic multicore allocation in corporation with the model based parallelizer of eSOL Co., Ltd. In an engine/vehicle body control system, Embedded Target for RH850 for single core is provided in addition to Embedded Target for RH850 Multicore + Multirate for the development of systems that have general multiple control cycles (multirate).

Five capabilities to accelerate model-based development

1. Generates a scheduler of the type recommended by JMAAB / Automatically generates code for multi-core processors.

2. Enables core-based execution in units of subsystems of a Simulink® model.

3. Automatically searches core allocation best suited for control systems through collaboration with eMBP to enable parallelization.

4. Automatically generates parallel codes and a PILS environment and visualizes multicore performance in the modeling process.

5. Provides a cycle accuracy simulator that can measure time with an accuracy close to that of the actual machine.

Function details

1. Generating sequential codes - Measuring execution time
The single-core PILS can measure the execution time of each subsystem of a Simulink® model by using the software trace function of the CS+ debugger.

3. Generate parallel codes
Synchronous processing is automatically allocated among the cores in accord with the core allocation plan from the model-based parallelization tool or an allocation plan specified by the user, and parallel source code for the RH850 is generated by the Embedded Coder® from The MathWorks, Inc.

2. Analyzing model structure and searching core allocation - Transform model automatically
Through interlinked operation with the optional product "eMBP Adapter for Renesas PILS" of the eMBP Model Based Parallelizer of eSOL Co., Ltd., optimum core allocation is automatically searched and parallelization starts, based on the execution time obtained in step 1.

4. Displaying execution status
The CS+ debugger function acquires the execution time of each subsystem for which a core has been allocated, and then displays the execution status in graphs by core or rate (for the latter, when multirate is used).
Cycle-Accurate Simulator for RH850

The RH850 cycle precision simulator linked with an RH850 multi-core model-based development environment (Embedded Target for RH850 Multicore) can be used for verification of operation. It can also be used to pre-evaluate the performance of the RH850 without actual equipment or an emulator.

For further information on a product technology, to most up-to-date version of a document, or your nearest office, please visit www.renesas.com/contact/

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Supported MCUs

**Supported MCUs**

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* Only the main CPU is used.

Operating environment

Windows® 10 (64-bit version)

Available tools

MATLAB® R2016a - R2019b by MathWorks (64-bit edition only)

CS+ V8.05.00, V8.06.00

FAQ

en-support.renesas.com/knowledgeBase

Community

community.renesas.com

Video

www.renesas.com/mbd-rh850-multicore_videos

Supported functions by product

Select the license type applicable to the specifications of the microcontroller or model you use.

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*1 Supports multi-rate control *2 Support for multi-rate control is in planning.

Functions of the RH850 cycle precision simulator*

- The basic functions of some peripherals can also be simulated.
- Dummy interrupts can be generated by using Python functions.

* when used standalone