RX/RA FAMILY MOTOR CONTROL PERIPHERAL BLOCKSET

Date : May 30th, 2025
Document No. : CAT4-25-0002

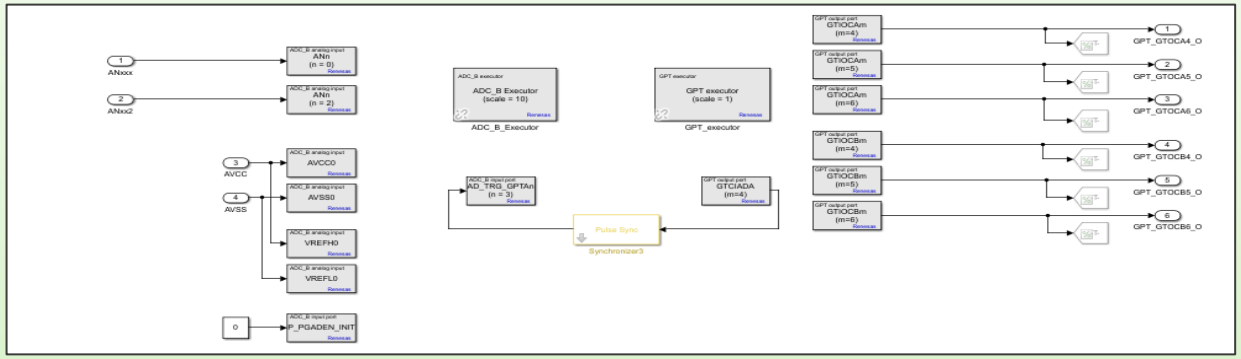
Renesas Electronics

This material includes information under development and consideration.
The information on this material is subject to change without notice.

WHAT IS THE MOTOR CONTROL PERIPHERAL BLOCKSET

Provides a Simulink® model that emulates actual peripherals behavior

Modeled peripheral functions

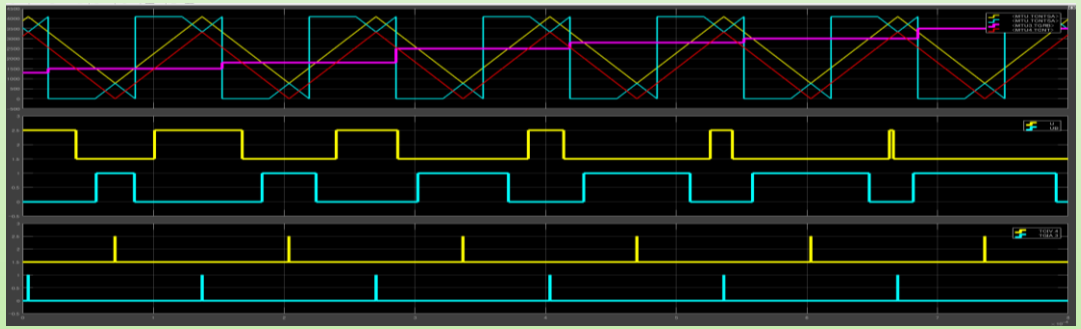


Peripheral Blocksets(Simulink® Model)

Registers (Counter value)

Output ports (PWM signals)

Output ports (Interrupt signals)



Simulate peripherals behavior and timing accurately

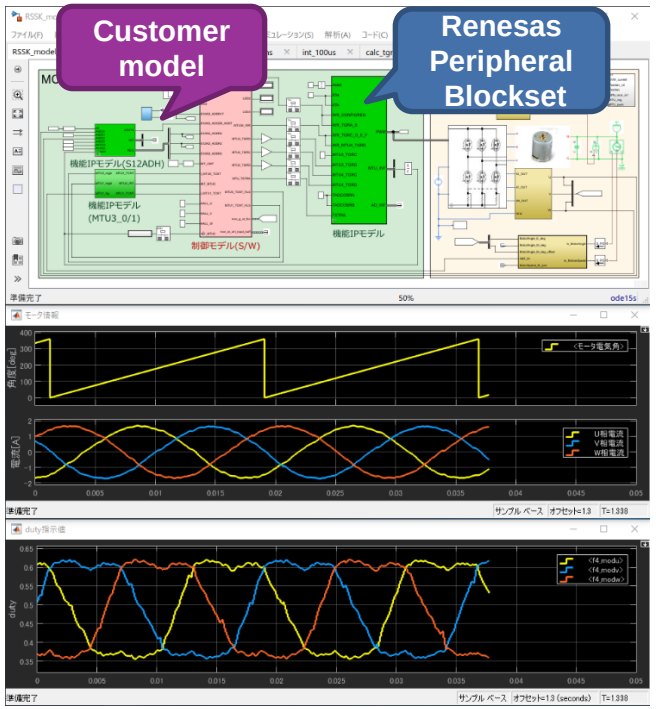
FEATURES : IMPROVING CONTROLER DESIGN EFFICIENCY

Enables Design Iteration on Model Using Actual MCU Behavior

MATLAB® and Simulink®

Controller model design

Simulation w/o device



- Build a virtual system quickly by connecting with the user model.
- Examine and confirm the operation assuming an actual MCU behavior on the model.

Auto Code Generation

Generate Code to Drive Peripherals — Simplify Board Implementation

IDE

Generated code by Embedded Coder

Peripheral Blockset ACG support code

Initial setting code from Smart configurator (Boot & Other settings)

Build & Download

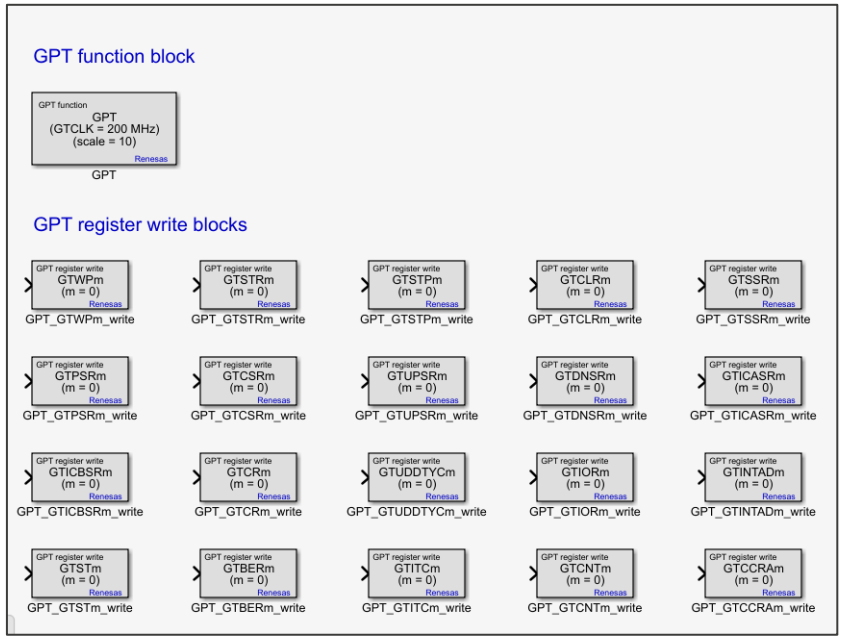
Actual device

- Enables model development including device driver (register I / F)
- By generating code that is easy to implement on the MCU, the man-hours for software implementation can be significantly reduced.

PERIPHERAL BLOCKSET DELIVERABLES AND USAGE EXAMPLES

(1) Accurate simulation of control timing and function flow

(2) Automatic code generation for peripheral operations on actual device

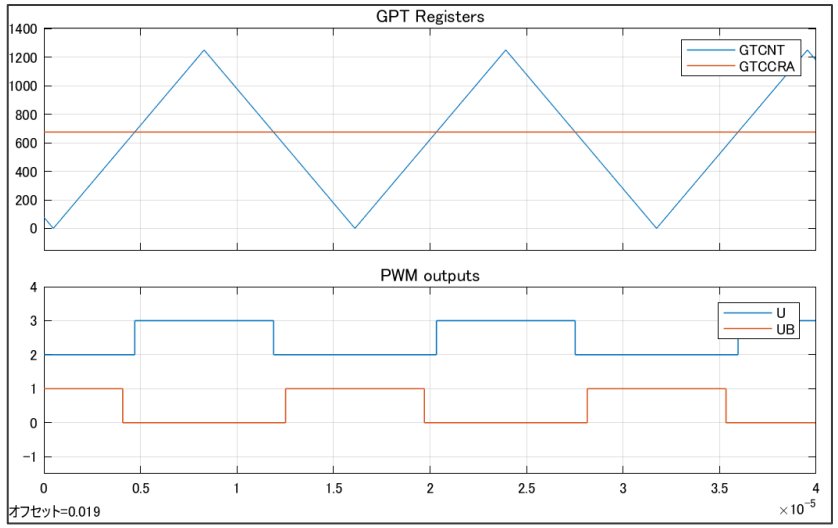


Deliverables: Peripheral Blockset library

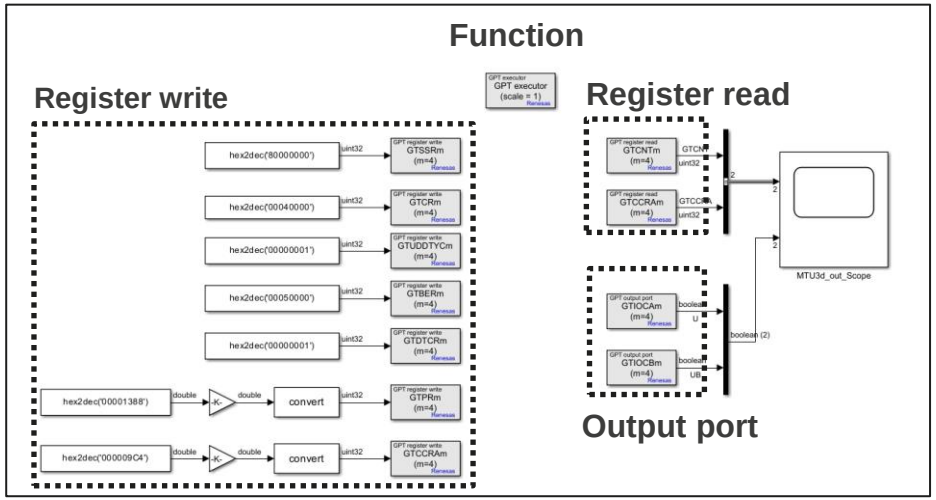
Select a block from the library for operation of peripheral functions.

Insert blocks to the model

- Function block
- Register write block
- Register read block
- Input port block
- Output port block

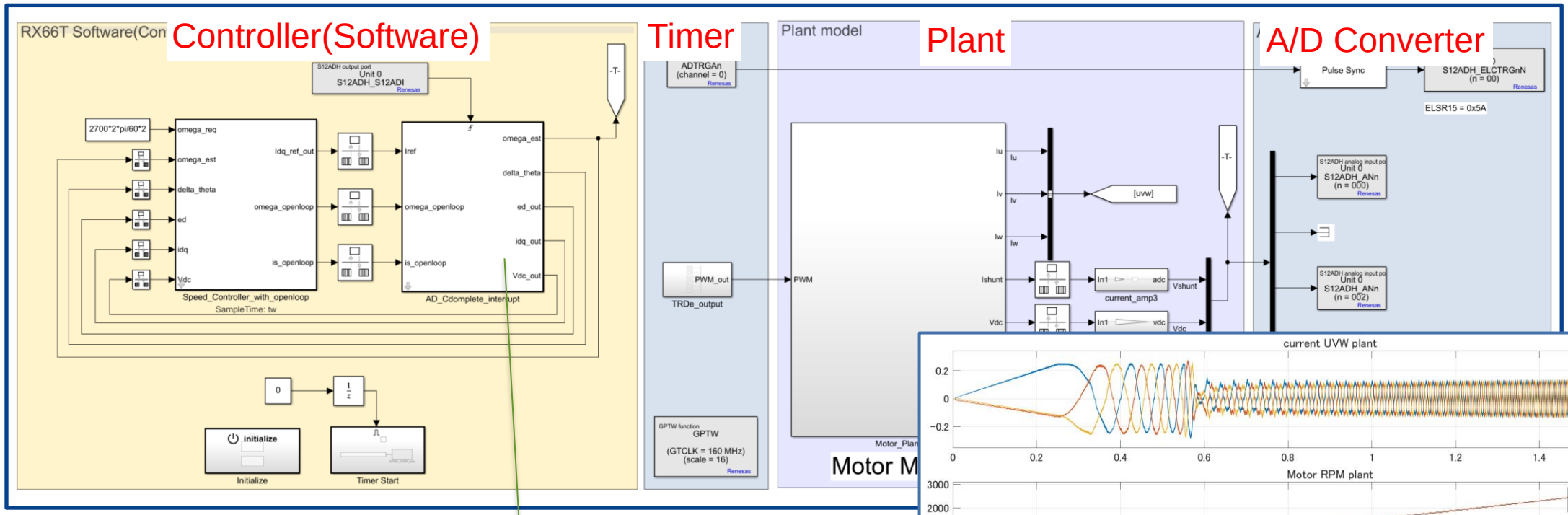


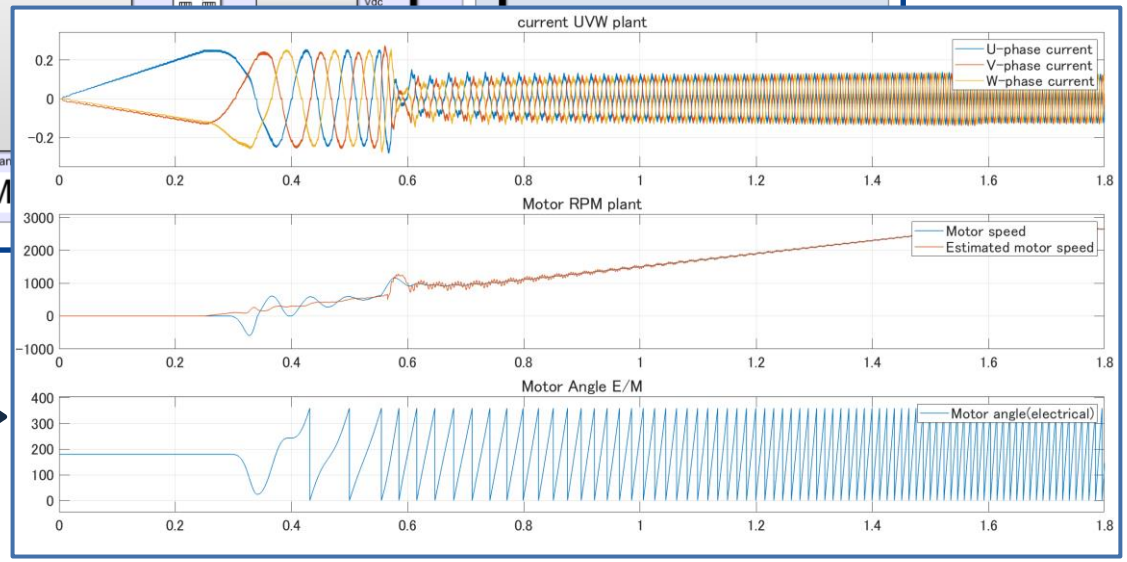
Simulation Results



Usage exsample

EXAMPLE OF A MOTOR CONTROL SYSTEM MODEL USING THE PERIPHERAL BLOCKSET





Inserting the Peripheral Blockset into the Software Model

Simulation result using the Peripheral Blockset

SUPPORTED DEVICE AND SYSTEM REQUIREMENTS

MCU Family	Device group	Available functions of Peripheral Blockset
RX family	RX66T	PWM timer (GPTW, MTU3d) Compare match timer (CMT) A/D converter (S12ADH)
RA family	RA6T2	PWM timer (GPT) A/D converter (ADC)
	RA6T3	PWM timter (GPT) A/D converter (ADC12)
	RA4T1	PWM timer (GPT) A/D converter (ADC12)

System Requirements

- Windows 10
- MATLAB® / Simulink® R2018b or lator
- MATLAB® Coder™ / Simulink® Coder™ / Embedded Coder® (for code generation)

Renesas.com