

MICROCONTROLLER SIMULATION & CODE- GENERATION BLOCKSET FOR RA/RL78/RX

Date : July 15, 2026

Document No. : CAT4-26-0005

Renesas Electronics

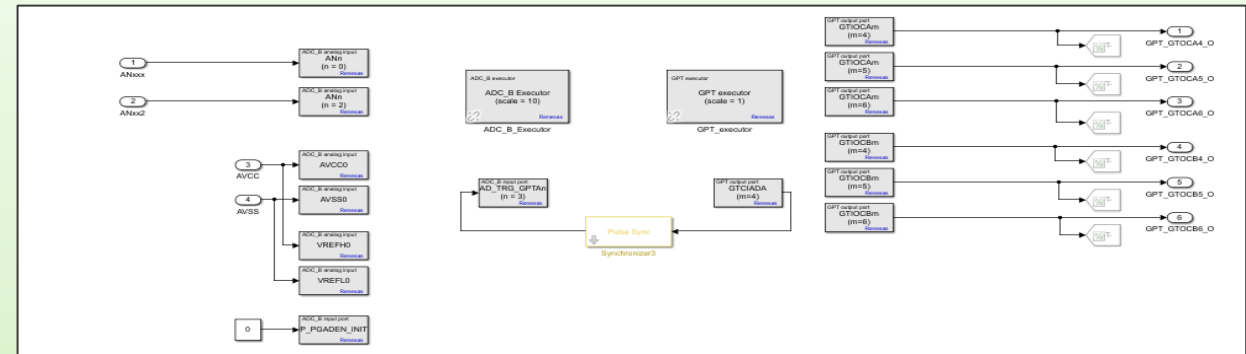
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WHAT IS THE MICROCONTROLLER SIMULATION & CODE-GENERATION BLOCKSET

Provides a Simulink® model that emulates actual peripherals behavior



Modeled
peripheral
functions

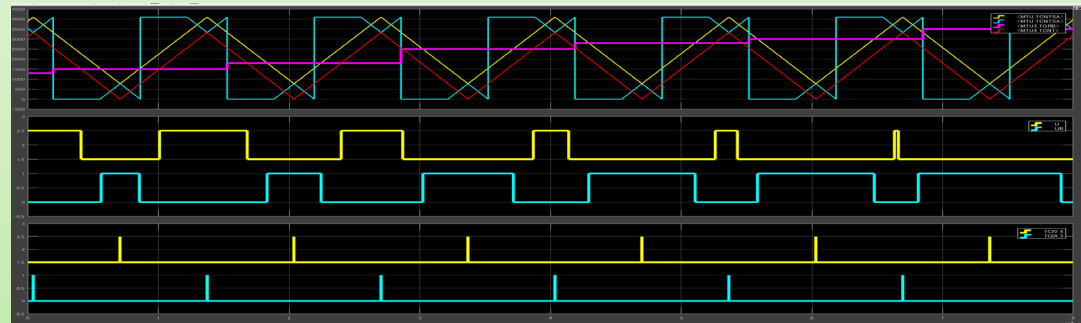


Blocksets(Simulink® Model)

Registers
(Counter value)

Output ports
(PWM signals)

Output ports
(Interrupt signals)



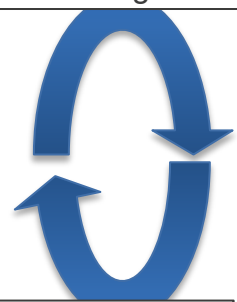
Simulate peripherals behavior and timing accurately

FEATURES : IMPROVING CONTROLLER DESIGN EFFICIENCY

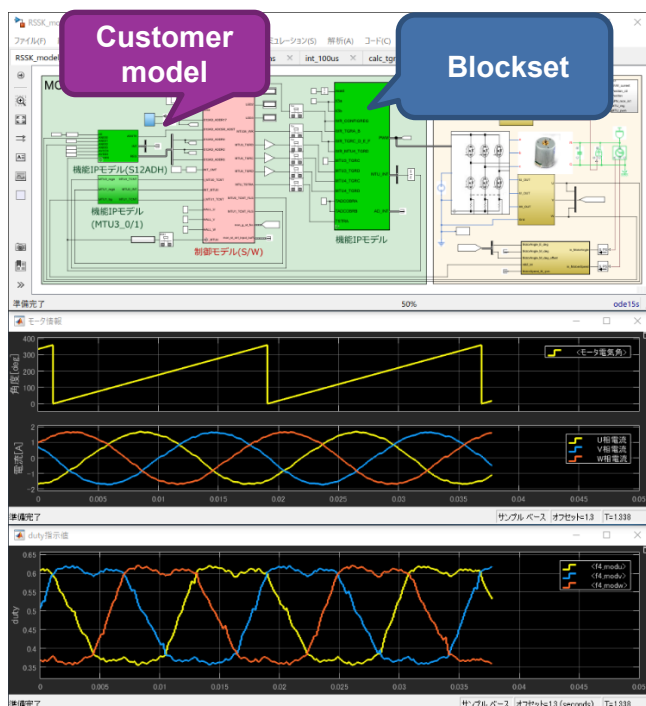
Enables Design Iteration on Model
Using Actual MCU Behavior

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.

Generate Code to Drive Peripherals
— Simplify Board Implementation



IDE

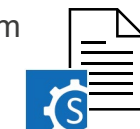
Generated code
by Embedded Coder



Blockset
ACG support code



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



Build & Download



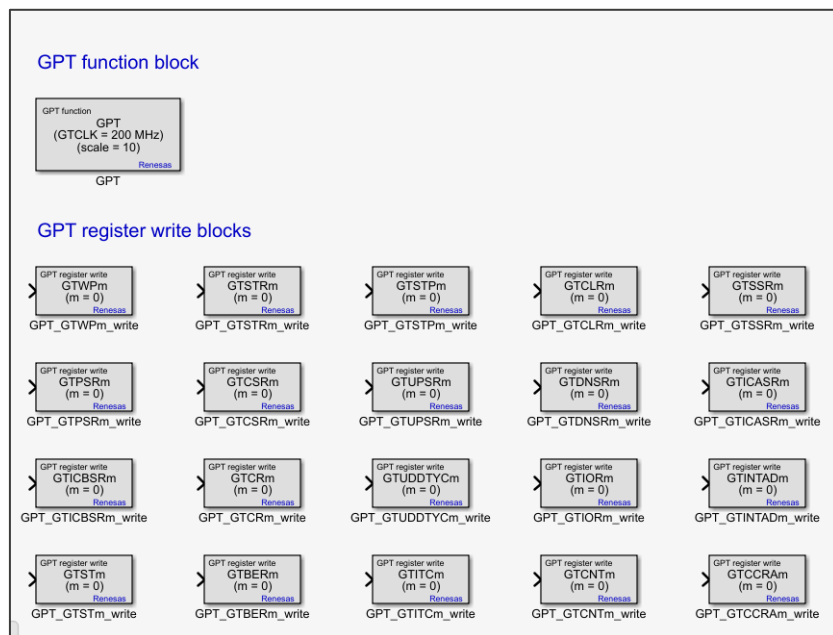
Actual device



- 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.

BLOCKSET DELIVERABLES AND USAGE EXAMPLES

- (1) **Accurate simulation of control timing and function flow**
- (2) **Automatic code generation for peripheral operations on actual device**

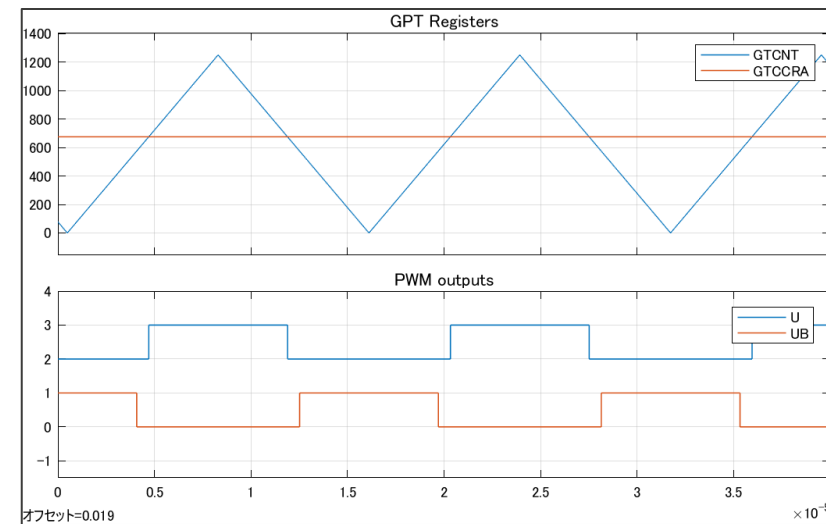


Deliverables: Blockset library

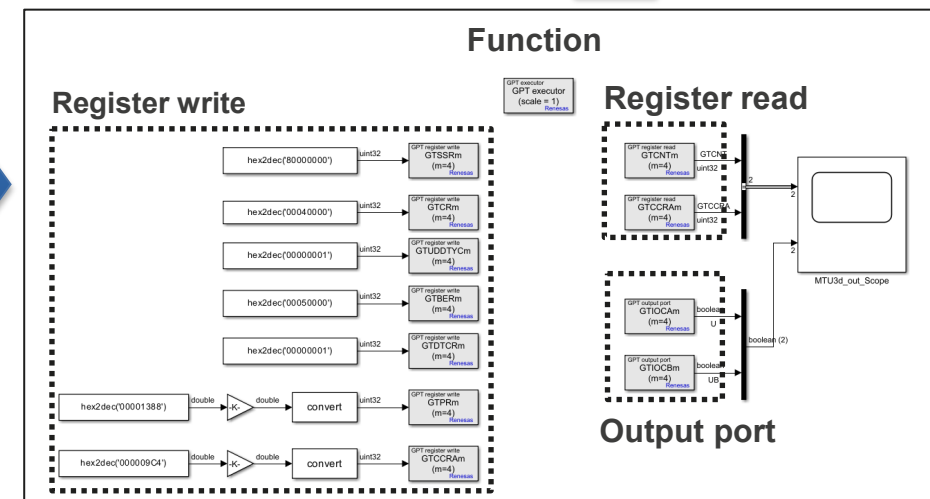
Select a block from the library for operation of peripheral functions.

Insert blocks to the model

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

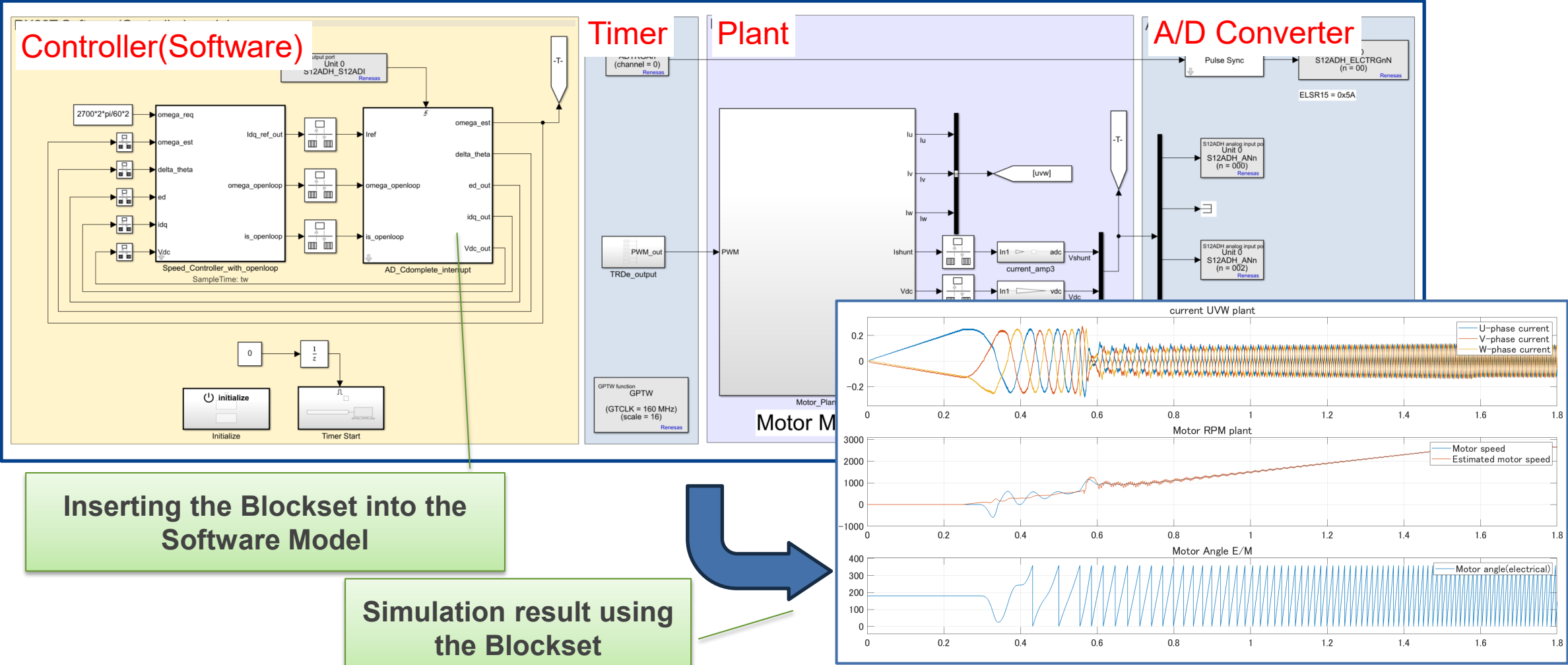


Simulation Results



Usage example

EXAMPLE OF A MOTOR CONTROL SYSTEM MODEL USING THE BLOCKSET



SYSTEM REQUIREMENTS

- Windows platform
- MATLAB® / Simulink® R2021b or later
- MATLAB® Coder™ / Simulink® Coder™ / Embedded Coder® (for code generation)

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