

Release Note**Contents**

Chapter 1. Target Devices	2
Chapter 2. User's Manuals	3
Chapter 3. Key Word for Uninstallation	4
Chapter 4. Changes	5
4.1 Specifications changed	5
4.1.1 Simulation on CubeSuite+ V1.03.00.....	5
Chapter 5. Cautions.....	6
5.1 Differences between target devices and simulator	6
5.1.1 Simulation of ROM correction	6
5.1.2 Flash self programming function.....	6
5.1.3 Noise eliminators	6
5.1.4 Oscillation stabilization time for clock oscillator	7
5.1.5 IIC digital filter and arbitration functions	7
5.1.6 External bus interface functions.....	8
5.1.7 Simulation of PLL function in locked status	9
5.1.8 Simulation of DMA controller transfer time	9
5.1.9 Low-speed internal oscillator	9
5.1.10 Clock monitoring	9
5.1.11 CAN controller.....	9
5.1.12 Simulation of A/D converter	9
5.1.13 Accessing special function registers.....	10
5.1.14 Data protection and security	10
5.1.15 Noise filter on asynchronous serial interface (UARTD)	10
5.1.16 Baud rate of asynchronous serial interface (UARTD)	10
5.1.17 Baud rate clock input of asynchronous serial interface (UARTD0)	10
5.1.18 Constant 0/1 bits of I/O registers	11
5.1.19 Interrupt response time	11
5.1.20 Low-voltage detector	11
5.2 Cautions for using simulator GUI	12
5.2.1 Cautions for controlling each windows	12
5.2.2 Cautions for closing simulator GUI window	12
5.2.3 Cautions for showing help for the simulator GUI window	12
5.2.4 Cautions for disconnecting the debug tool	13
5.2.5 Cautions for setting the Host Machine's language and region	13

Chapter 1. Target Devices

Below is a list of devices supported by the V850ES/Fx3 simulator.

Nickname	Device name
V850ES/FE3	μPD70F3370A, μPD70F3371
V850ES/FF3	μPD70F3372, μPD70F3373
V850ES/FG3	μPD70F3374, μPD70F3375, μPD70F3376A, μPD70F3377A
V850ES/FJ3	μPD70F3378, μPD70F3379, μPD70F3380, μPD70F3381, μPD70F3382
V850ES/FK3	μPD70F3383, μPD70F3384, μPD70F3385
V850ES/FE3-L	μPD70F3610, μPD70F3611, μPD70F3612, μPD70F3613, μPD70F3614
V850ES/FF3-L	μPD70F3615, μPD70F3616, μPD70F3617, μPD70F3618, μPD70F3619
V850ES/FG3-L	μPD70F3620, μPD70F3621, μPD70F3622

Chapter 2. User's Manuals

Please read the following user's manuals together with this document.

Manual Name	Document Number
CubeSuite+ V1.03.00 V850 Debug	R20UT2144EJ0100
CubeSuite+ V1.03.00 Message	R20UT2147EJ0100

Chapter 3. Key Word for Uninstallation

To uninstall this product, use the integrated uninstaller (uninstalls CubeSuite+).

Chapter 4. Changes

This chapter describes changes from V3.00.01 to V3.00.02.

4.1 Specifications changed

4.1.1 Simulation on CubeSuite+ V1.03.00

Support simulation on CubeSuite+ V1.03.00. There is no functional change.

Chapter 5. Cautions

This section describes cautions for using the V850ES/Fx3 simulator. The following two types of caution are described:

- Differences between target devices and simulator : Differences from behavior of target devices due to simulator specifications
- Cautions for using simulator GUI : Cautions for using the simulator GUI window

5.1 Differences between target devices and simulator

5.1.1 Simulation of ROM correction

The simulator does not simulate ROM correction.

5.1.2 Flash self programming function

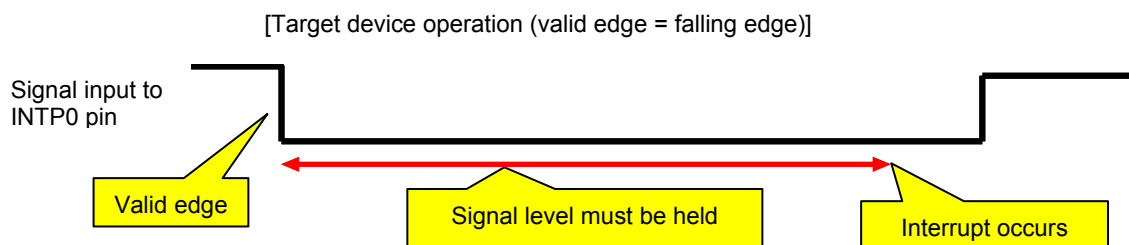
The following differences exist between the target device and simulator regarding the flash self programming function.

5.1.3 Noise eliminators

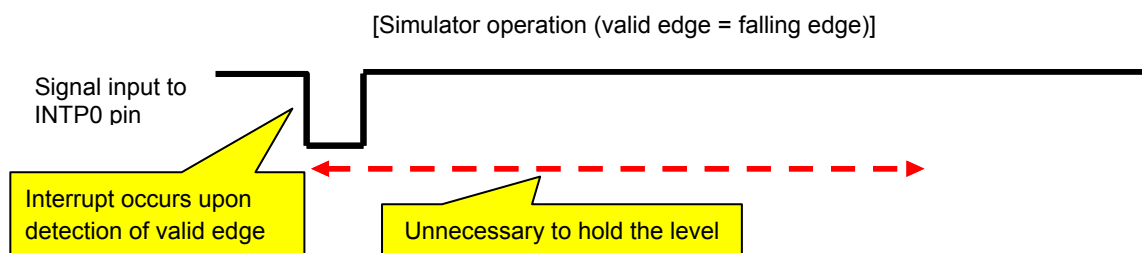
The simulator does not simulate noise eliminators. Consequently, when an active level is input to an external interrupt pin via a noise eliminator, for example, the interrupt is acknowledged even if the active-level width is not sufficient.

The following shows an example whereby a signal is input to the INTP0 pin.

The INTP0 pin of the target device is equipped with a noise eliminator. To generate an interrupt, the signal level must therefore be held after a valid edge is input to the target device. (The hold time is prescribed in the user's manual of the target device.)



Since the simulator does not simulate this noise eliminator, an interrupt occurs when a valid edge is detected. (It is unnecessary to hold the signal level.)



5.1.4 Oscillation stabilization time for clock oscillator

The simulator does not simulate the oscillation stabilization time for a clock oscillator.

5.1.5 IIC digital filter and arbitration functions

The digital filter function and arbitration function of the IIC bus are not supported.

[Digital filter function]

The IIC bus equipped in the target device has a digital filter ON/OFF function for the purpose of eliminating noise during high-speed transfer, but the simulator does not simulate this function. (The operation is not affected by switching ON or OFF.) The simulator does not support this function because noise will never be applied to signals in the simulator.

[Arbitration function]

The IIC bus equipped in the target device has the arbitration function that arbitrates communication requests simultaneously sent from multiple masters, which are connected to one communication line.

5.1.6 External bus interface functions

Some of the external bus interface functions can be simulated, and some cannot.

[Functions that can be simulated]

- * ROM and RAM connection
- * Access to connected ROM/RAM

[Functions that cannot be simulated]

- * External bus-related SFR simulation (External bus access is possible even without configuring SFR.)
- * Check signal input to external bus pins in the Timing Chart window
(It will appear as high impedance.)
- * Input to WAIT or HLDRQ pin (It will be ignored.)
- * Access Speed (always 0 clock)

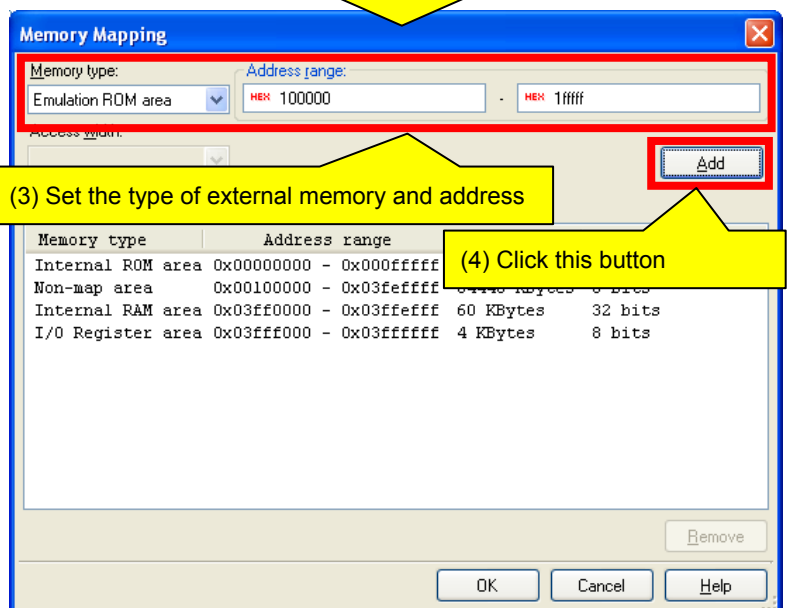
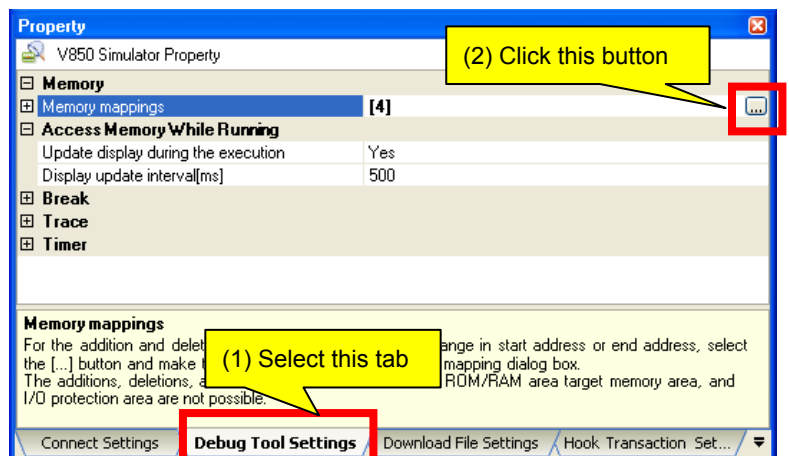
When connecting ROM or RAM to the external bus, perform configuration in the Property panel, from the Debugging Tool Setting tab.

Connect by entering:

- * Type of memory to connect to (emulation ROM area or emulation RAM area)
- * Memory address to connect to

This setting enables both:

- * Writing to external bus
- * Reading from external bus



5.1.7 Simulation of PLL function in locked status

The simulator does not simulate the PLL function in the locked status.

5.1.8 Simulation of DMA controller transfer time

When a DMA transfer request is issued, DMA transfer is executed even if the internal/external bus that will be used by the DMA controller is being used by the CPU. (Normally, the DMA controller waits for CPU access to the internal/external bus to end.)

In addition, DMA transfer ends as soon as transfer starts. (Normally, DMA transfer ends several clocks after DMA transfer has been started.) As a result, a transfer time difference occurs.

5.1.9 Low-speed internal oscillator

The low-speed internal oscillation clock (240 kHz) cannot be used for the CPU clock.

5.1.10 Clock monitoring

The simulator does not simulate clock monitoring.

5.1.11 CAN controller

The simulator does not simulate the following CAN controller functions.

Transfer speed (baud rate) setting, transmit/receive history, automatic block transmission, multi-buffer reception block, remote frame, receive-only mode, single-shot mode, shift to bus-off state, power saving modes, bus errors (stuff error, form error, ACK error, bit error, CRC error), error count, forced shutdown, automatic block transmission delay, receive status bit (RSTAT bit of CnCTRL register), CAN module last error information, CAN module information, interrupt status, wakeup interrupt, arbitration loss interrupt, CAN protocol interrupt, CAN error status interrupt, time stamping, diagnosis, self-testing mode.

5.1.12 Simulation of A/D converter

The simulator does not simulate the stabilization time of the A/D converter or diagnosis features (ADAnDIAG).

5.1.13 Accessing special function registers

A specific sequence must be executed to access special function registers such as PSC, CLM, and PCC. In the simulator, however, values are reflected in the above registers even if the specific sequence is not executed.

The special function registers shown below cannot be written. Therefore, the system register (SYS) is always set to 1 even if data is written to these registers.

- CLM
- SFC0
- SFC1
- DFLCTL
- RAMS
- OCDM

5.1.14 Data protection and security

Data protection (protection from reading from, writing to, and deleting flash memory) and security settings (boot swapping and secure self-programming) are not supported.

5.1.15 Noise filter on asynchronous serial interface (UARTD)

Although the target device's asynchronous serial interface (UARTD) has a noise filter to reduce noise on the input pin, the simulator does not simulate this. Since there is no noise in the simulator's signal, it would be meaningless to simulate this function.

5.1.16 Baud rate of asynchronous serial interface (UARTD)

If the baud rate of the asynchronous serial interface (UARTD) is set to 233 bps or lower, operation will be abnormal (it will operate at a higher baud rate than the one set). Do not specify a baud rate that is 233 bps or lower.

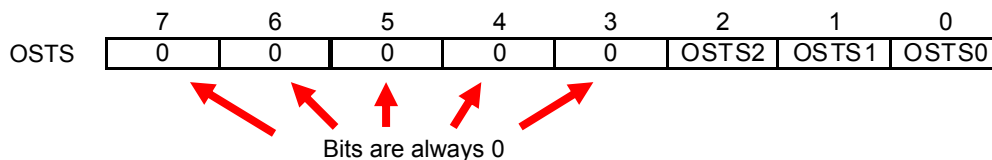
5.1.17 Baud rate clock input of asynchronous serial interface (UARTD0)

Although the target device's asynchronous serial interface (UARTD0) has an ASCKD0 pin as a baud rate clock input pin, the simulator does not simulate this. Inputs of baud rate clocks to this pin are ignored.

5.1.18 Constant 0/1 bits of I/O registers

The I/O register has bits that are always 0 or 1.

For example, bits 3 to 7 are always 0 for the oscillation stabilization time selection register (OSTS).



Although the values of these bits cannot be changed from the target device, the values can be changed from the simulator. Note that changing these values has no effect on behavior.

5.1.19 Interrupt response time

The interrupt response times of the target device and simulator differ.

[Target device]

It takes at least 4 clock cycles after an interrupt is generated until execution branches to the handler address.

[Simulator]

Execution branches to the handler address immediately upon the interrupt.

5.1.20 Low-voltage detector

The simulator does not simulate the internal RAM data status register (RAMS).

5.2 Cautions for using simulator GUI

5.2.1 Cautions for controlling each windows


The following keyboard operations are not available in the simulator windows (signal-data editor window, I/O panel window, and serial window).

- * Navigation via tab or arrow keys (←, ↑, →, ↓)
- * Deletion via the Del or Backspace keys
- * Copy & paste and other operations via the Ctrl + C, V, X, A, or Z keys.


Perform the above operations as follows.

- * Navigation: Navigate using the mouse.
- * Deletion: Right click and perform the action via the context menu.
- * Copy & paste, etc.: Right click and perform the action via the context menu.

5.2.2 Cautions for closing simulator GUI window

The simulator GUI window can only be closed by disconnecting from the debugging tool, or by closing CubeSuite+ proper. (The  button cannot be clicked.)

Note, however, that pressing Alt + F4 together in the simulator's GUI window will close it. Do not perform this operation.

Additionally, although it appears that the  button can be pressed if Aero is enabled in Windows Vista, pressing this button will not close the GUI window.

5.2.3 Cautions for showing help for the simulator GUI window

Pressing the F1 key in the simulator GUI window will not display the help if none of the internal windows are visible (e.g. the I/O panel window).

To display the help for the simulator GUI window, from the GUI window's menu, select [Help] > [Main Window].

5.2.4 Cautions for disconnecting the debug tool

CubeSuite+ may exit if the debugging tool is disconnected while any of the following dialog boxes is open from the simulator GUI window. Make sure that the following dialog boxes are closed before disconnecting the debugging tool.

- Save As
- Open
- New
- Color
- Font
- Customize
- Loop
- Select Pin
- Search Data
- Format (UART)
- Format (CSI)
- Message (e.g. Error)
- Parts Button Properties
- Analog Button Properties
- Parts Key Properties
- Parts Level Gauge Properties
- Parts Led Properties
- Parts Segment LED Properties
- Parts Matrix Led Properties
- Parts Buzzer Properties
- Pull up / Pull down
- Entry Bitmap
- Object Properties

5.2.5 Cautions for setting the Host Machine's language and region

If a Japanese OS is installed on your Host Machine, then if the language or region is set to other than Japanese/Japan, the menus and dialog-box names of the simulator GUI window will be shown in English. Similarly, if a non-Japanese OS is installed on your Host Machine, then if the language or region is set to Japanese/Japan, the menus and dialog-box names of the simulator GUI window will be shown in Japanese.

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