H8S, H8/300 Series Simulator/Debugger V.5.09.00

Supplementary Information for User's Manual

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Introduction

This document describes how V.5.09.00 of the H8S, H8/300 Series Simulator/Debugger differs from V.5.06.00, V.5.07.00, and V.5.08.00. Before using the simulator/debugger, carefully read this document, the H8S, H8/300 Series Simulator/Debugger User's Manual, and the online help for the H8S, H8/300 Series Simulator/Debugger.

Contents

1. New Features in V.5.07.00

1.1 Settings for Simulation of Peripheral Functions

Settings for simulation of peripheral functions can be made on the [Peripheral Function Simulation] tabbed page of the [Set Simulator] dialog box.

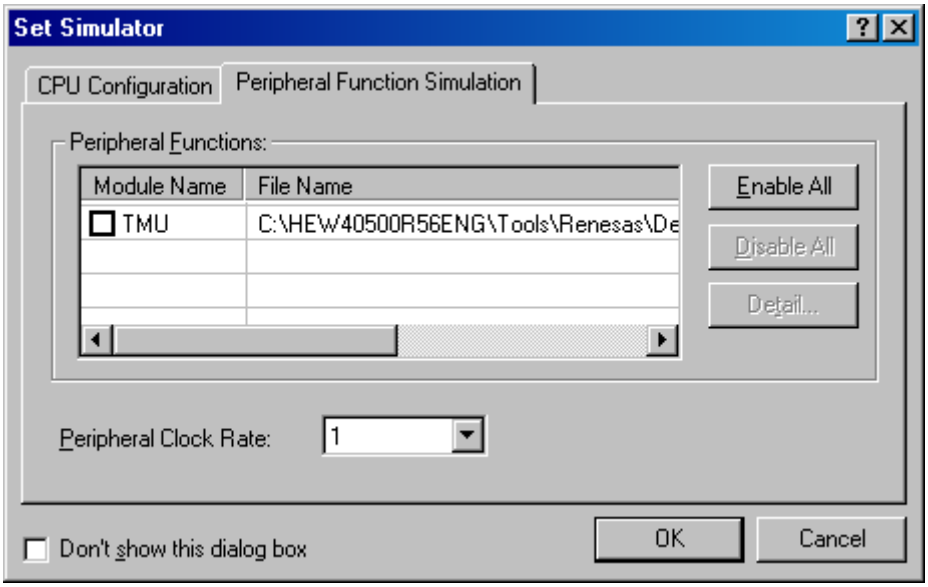

Figure 1.1 [Set Simulator] Dialog Box ([Peripheral Function Simulation] Page)

For details on simulation of peripheral functions, see section 3.3, Simulating Peripheral Functions, in the H8S, H8/300 Series Simulator/Debugger User's Manual.

1.2 Windows

Table 1.1 lists the windows that have been added. For details on these windows, refer to the online help for the H8S, H8/300 Series Simulator/Debugger.

Table 1.1 New Windows

Window Name	Description
OS Object	Shows the states of OS objects such as tasks and semaphores.
Task Trace	Shows the history of task execution in a program that uses a real time OS.
Task Analyze	Shows the current CPU occupancy.

1.3 Command Line

Table 1.2 lists the commands that have been added. For details on the command syntax, refer to the online help for the H8S, H8/300 Series Simulator/Debugger.

Table 1.2 New Commands

Command	Abbreviation	Description
OSOBJECT_ALL_ADD	OAA	Adds OS objects (of a specific object type)
OSOBJECT_ALL_DELETE	OAD	Deletes OS objects (in a specific sheet)
OSOBJECT_AUTO_UPDATE	OAU	Changes the automatic-update setting to "Auto" and "Break".
OSOBJECT_DATA_LOWLINE	ODU	Moves an OS object to the next line.
OSOBJECT_DATA_SAVE	ODS	Saves the information on an OS object to a file.
OSOBJECT_DATA_UPLINE	ODL	Moves an OS object to the previous line.
OSOBJECT_DISPLAY	OD	Shows the information on an OS object.
OSOBJECT_NO_UPDATE	ONU	Changes the automatic-update setting to "Lock".
OSOBJECT_ONE_ADD	OOA	Adds an OS object.
OSOBJECT_ONE_DELETE	OOD	Deletes an OS object.
OSOBJECT_ONE_EDIT	OOE	Edits an OS object.
OSOBJECT_SETTING_LOAD	OSL	Loads OS-object settings from a file.
OSOBJECT_SETTING_SAVE	OSS	Saves OS-object settings in a file.
OSOBJECT_STOP_UPDATE	OSU	Changes the automatic-update setting to "Break".

2. New Features in V.5.08.00

2.1 Support for the V2 Core of the H8SX Series

The V2 core of the H8SX series is newly supported. The target name for the V2 core is "H8SX(V2) Simulator".

2.1.1 Range of Simulation

The simulator/debugger for the H8SX V2 core supports the following CPU functions.

Table 2.1 CPU Functions Supported by the Simulator/Debugger for the H8SX V2 Core

Name of the Debugging Platform	Endian	Control Register	Timer
H8SX (V2)	—	○	△

[Note] ○: Supported
—: Not supported
△: Partly supported

Differences in the simulator/debugger operation compared to that for the other H8SX-series MCUs are given in the following sections.

2.1.2 Fetch Mode

The simulator/debugger for the H8SX V2 core supports the 32-bit fetch mode.

2.1.3 Endian

The simulator/debugger for the H8SX V2 core supports big endian.

2.1.4 Exception

The simulator/debugger for the H8SX V2 core supports neither the address error exception nor the trace exception.

2.2 Windows

Table 2.2 shows a window that has been modified. For details on these windows, refer to the online help for the H8S, H8/300 Series Simulator/Debugger.

Table 2.2 Modified Window

Window Name	Description
Memory	Modified to support the automatic update function.

3. New Features in V.5.09.00

3.1 Starting up the Simulator/Debugger

V.5.09.00 of the simulator/debugger can be connected or disconnected via the [Debug] menu or by clicking on a toolbar button. This section describes how to connect or disconnect the simulator/debugger in that way.

You can connect to the simulator/debugger by selecting a session file in which simulator/debugger settings have already been defined. When you have selected targets in the process of creating a project, the number of session files is the same as the number of selected targets. Select the session file that corresponds to the current target from the drop-down list shown in figure 3.1.

Figure 3.1 Selecting a Session File

If you have selected a session file with which the simulator/debugger has been registered but the simulator/debugger is disconnected, select [Debug -> Connect] or click on the [Connect] toolbar button .

To disconnect the simulator/debugger, on the other hand, select [Debug -> Disconnect] or click on the [Disconnect] toolbar button .

3.2 Modifying the Simulator/Debugger Settings

The way of setting the number of bits in the data space and program area by the H8S-series simulator/debugger has been changed. This section describes how to make these settings in V.5.09.00.

3.2.1 Setting the Number of Bits in the Data Space and Program Area

The number of bits in the data space and program area should be set on the [CPU Configuration] tabbed page in the [Set Simulator] dialog box, which is displayed on initiation of the simulator/debugger.

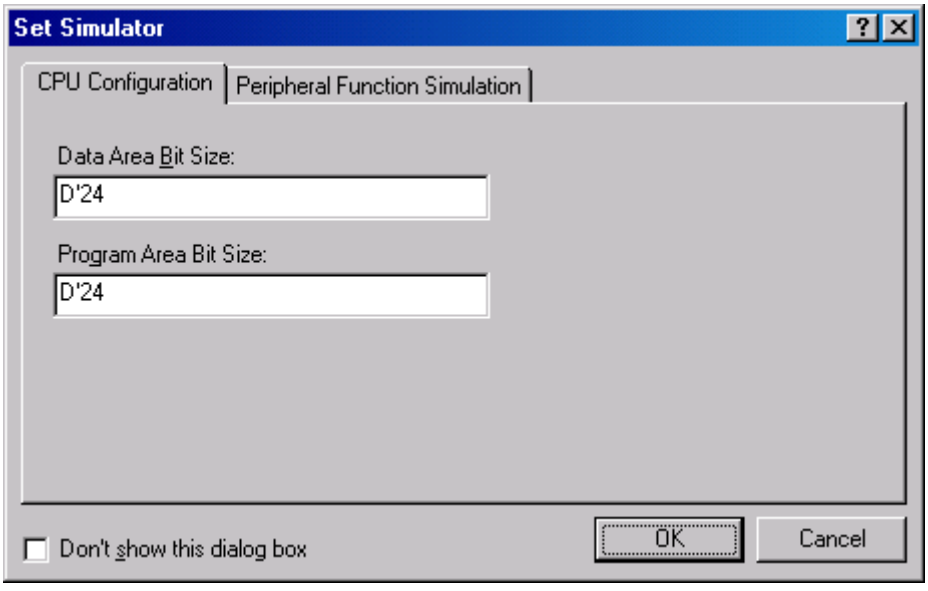

Figure 3.2 [Set Simulator] Dialog Box ([CPU Configuration] Page)

The following items can be specified on this page:

[Data Area Bit Size] Number of bits in the data space. The following values can be set for each CPU:
H8S/2600N and H8S/2000N: 16
H8S/2600A and H8S/2000A: 17 to 32

[Program Area Bit Size] Number of bits in the program area. The following values can be set for each CPU:
H8S/2600N and H8S/2000N: 16
H8S/2600A and H8S/2000A: 17 to 24

After setting [Data Area Bit Size], follow the procedure below to set [Memory Map], [Memory Resource], and [SYSCR Address] according to the device in use.

(a) Select [Setup -> Simulator -> Memory Resource] or click on the [Simulator Memory Resource] toolbar button ( ) to open the [Simulator System] dialog box. Open the [Memory] page and set up the memory map and resources.

(b) Open the [System] page of the [Simulator System] dialog box and set the SYSCR address.

For details on setting [Memory Map], [Memory Resource], and [SYSCR Address], see section 3.2, Modifying the Simulator/Debugger Settings, in the H8S, H8/300 Series Simulator/Debugger User's Manual.

When there is a linkage list file (.map) output by the linkage editor, the memory resource can be automatically allocated according to the memory map and linkage map information. Note, however, that the memory map and SYSCR address must be set before the memory resource is automatically allocated.

For details on allocating the memory resource, refer to section 13.1.10, Automatically Allocating the Memory Resource, in the High-performance Embedded Workshop V.4.07 User's Manual.

After the simulator/debugger has been started up, the current settings of [Data Area Bit Size] and [Program Area Bit Size] are shown on the [System] page of the [Simulator System] dialog box. However, these settings cannot be changed in the [Simulator System] dialog box. If you wish to change the settings, restart the simulator/debugger and open the [Set Simulator] dialog box.

3.3 Using the Simulator/Debugger Breakpoints

New items have been added to options for comparing data. This section gives the new specifications for [Break Data].

3.3.1 Setting a Breakpoint

- [Break Data]

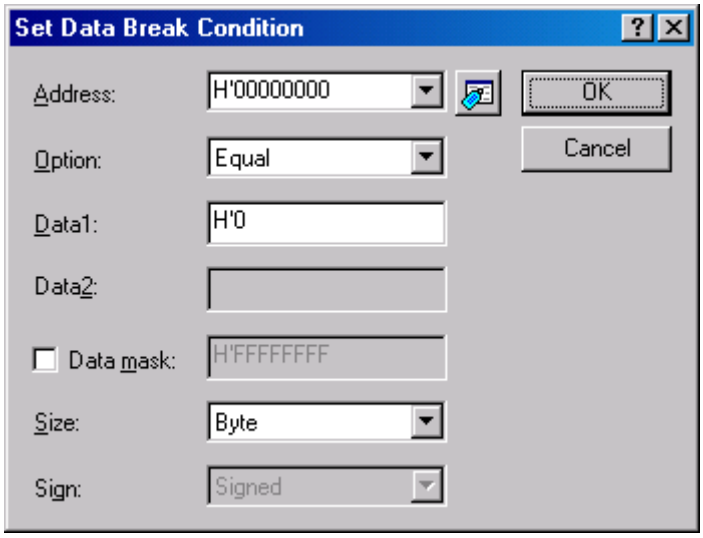

Figure 3.3 [Set Data Break Condition] Dialog Box

Data break conditions should be set as follows.

Up to 1024 data break conditions can be specified.

[Address]: Address in memory for which the break condition is specified

[Option]: How the data value is used to form the condition that must be satisfied for break generation

- [Equal]: The value written to memory matches [Data 1].
- [Not equal]: The value written to memory does not match [Data 1].
- [Inverse sign]*: The sign of the value written to memory is the inverse of that for the previous value.
- [Difference]*: The difference between the current and previous values written to memory exceeds [Data 1].
- [GT(>)]: A value written to memory is greater than [Data 1].
- [LT(<)]: A value written to memory is less than [Data 1].
- [GE(>=)]: A value written to memory is greater than or equal to [Data 1].
- [LE(<=)]: A value written to memory is less than or equal to [Data 1].
- [In]: A value written to memory is within the range between [Data 1] and [Data 2] ([Data 1] <= value written to memory <= [Data 2]).
- [Out]: A value written to memory is outside the range between [Data 1] and [Data 2] (value written to memory < [Data 1] | [Data 2] < value written to memory).

[Data 1]: Data value used in the break condition. When [In] or [Out] has been selected, [Data 1] is the beginning of a range for use in the break condition.

[Data 2]: Data value that is the end of a range for use in the break condition.
This option is only available when [In] or [Out] has been selected.

[Data mask]: Mask condition (specifying 0 for a bit masks the bit). This option is not available when [Inverse sign] or [Difference] has been selected.

[Size]: Data size

[Sign]: Sign of the data. This option is only available in the following cases.
- The selection for [Option] is [Difference].
- The selection for [Option] is [GT(>)], [LT(<)], [GE(>=)], [LE(<=)], [In], or [Out] and the selection for [Size] is [Byte], [Word], or [Long word].

Note: Since [Inverse sign] and [Difference] require comparison of the data with the value previously written to memory, the break will never occur on the first test after a reset or break generation when either of these conditions has been selected.

3.4 Command Line

Table 3.1 shows the command that has been added. For details on the command syntax, refer to the online help for the H8S, H8/300 Series Simulator/Debugger.

Table 3.1 New Command

Command	Abbreviation	Description
BREAK_DATA_RANGE	BDR	Specifies a range of values in memory as a break condition

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