R32C/100 E30A Emulator Debugger V.1.02.00

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Release Notes

This document describes the notes of this debugger, and please read before you start to use this debugger.

And also, please refer to the "High-performance Embedded Workshop Release Notes" about the notes of High-performance Embedded Workshop IDE.

Contents

1. Notes

1.1 Installation

When this emulator debugger is installed, the MCU files (*.mcu) underneath the McuFiles folder *1 are moved into the Old_McuFiles folder *2.

　*1: 　HEW installed folder\Tools\Renesas\DebugComp\platform\PDTarget\PD100E30A\McuFiles

　*2: 　HEW installed folder\Tools\Renesas\DebugComp\platform\PDTarget\PD100E30A\McuFiles\Old_McuFiles

1.2 Line Assembly

Regardless of the Radix setting, the default for line assembly input is decimal. Specify H as the radix for a hexadecimal input.

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1.4 Event Setting

1.　TAB order in Set Event Status dialog box
　　Even when you press [TAB] key, the next input control may not be focused on the Set Event Status dialog boxes opened from Event Setting Window.
2.　In-place-edit mode on event list
　　On event list in Event Setting Window, High-performance Embedded Workshop will not escape from in-place-edit mode even when you press the [ESC] key.
3.　Event Settings Unaccepted Area
　　Do not set events in the area given below.
　　01000000h - FEFFFFFFh

1.5 Trace

1.　Specifying function in SRC mode
　　In the SRC mode, when you specify a function to display it, if the current displayed source file includes the function, the top of the source file will be displayed.
2.　Saving of tracing result in text
　　When you save a tracing result in text with only "BUS" and "DATA" buttons ON, the vertical position of some headers will shifts from the corresponding data. Check "Tab Separated Format" and open it with spreadsheet applications to display them correctly.
3.　Time concerned data
　　Time display at each cycle is not supported.
4.　Loading the trace image file
　　Trace window can not load the trace image file saved by PDxx debuggers. And also, trace window can not load the trace image file saved by the different target from the current target.

1.6 RAM Monitor

1.　Proportional Fonts
　　When a proportional font is selected, a part of the characters in the view may be hidden. Fixed fonts are recommended.

1.7 Memory

1.　8 bytes data operations
　　To set, fill, and copy 8 bytes data are not supported.

1.8   Script

1.   Result of interactive command
    When you invoke an interactive command, for example, Assemble and setMemoryByte, the running dialog box will appear and may hide the view of the results.

2.   SCOPE Command
    When you refer current scope name with SCOPE command after program execution, the scope of the start-up module will be returned even if scope has been changed to the other.

3.   Script File Execution
    Stop executing the script file before you perform one of the following operations:
    - Closing the script window
    - Disconnecting the debugger
    - Switching sessions
    - Quitting High-performance Embedded Workshop

1.9   Real-time OS debugging functions

1.   When several labels are allocated to the entry address of the tasks or handlers, the task name or the handler name displayed in the windows may be different from the actual function name.

2.   When the terms of the uITRON3.0 are used in the debugger or help, substitute those with the terms of uITRON4.0. For example, substitute "system call" with "service call".

3.   When you use the feature to issue service-calls by the script command (MR SYS), the target program should be built with a specific option. For details, refer to the topic "Prepare the real-time OS debug" in the online help.

4.   The following functions are available for V.1.01 or later version of M3T-MR100/4. For details, refer to the description of each function in "E30A Emulator Debugger Help".
    - MR Trace Window
    - MR Analyze Window
    - MR SYS script command

5.   In the MR Trace window, the trace mode is set to Trace priority mode. Therefore, the MCU execution may be delayed. In the case of XIN 8MHz, PLL 128MHz(×16) and BASE 64MHz, for example, when a service call pair of 'wup_tsk' and 'slp_tsk' is issued from the task in an interval of average 55usec or shorter, the execution time of the target program will be delayed. Note that this interval includes OS processing time.

6.   Status of the following resources cannot be referred to.
    - Message buffer
    - Mutex

1.10   Using cast operators for the member variable

When you use cast operators for the member variable to refer to it as the pointer of the structure, you would not refer to it correctly.

1.11   Download module dialog box

This debugger does not support the setting of "Offset", "Memory verify on download", and "Access Size" in the download module setting dialog box. These are always treated as "Offset: 0", "Memory verify: off", and "Access Size: 1".

1.12   Real-time execution of the target program

If the following operations are invoked while the target program is running, the real-time execution capability will be lost. If you want the realtime capability of program execution to be maintained as you would when measuring the execution time, do not perform the operations listed below during program execution.

- Dump memory
    - update the display of Memory Window
    - update the display of ASM Watch Window or C Watch Window
    - update the display of Source Window (DIS or MIX mode)
    - display the value of variables in Source Window
- Change the ram monitor area in RAM Monitor Window
- Change the status of hardware break points

1.13   Debugging for assembler macros

When the break points are set at the assembler macro codes, the break points would be set at the different address or not be displayed as the PC line.

1.14   The option "Always treat variables of enumerator type with unknown size as 1 byte"

The "Always treat variables of enumerator type with unknown size as 1 byte" option is effective after downloading the program. When the option status is changed, target program should be downloaded again.

And also, this option is effective for all variables of enumerator type in the program, even if the compiling options are different for each file.

1.15   Debugging for inline functions

When stepping the function including the call for a inline function, local variables would not be able to be referred.

1.16   Automatic target connection on changing the session

When the target connection is not performed on changing the session, select the menu [Debug] -> [Connect]. To perform automatic target connection, remove the check from the option "Do not perform automatic target connection" in the Option tab on Debug Setting dialog box which is invoked by the menu [Debug] -> [Debug Settings…].

1.17   Run program option

The "Run Program" dialog box enables to specify several temporary PC breakpoints, but this debugger only supports one breakpoint which is listed first in the "Temporary PC breakpoints" list box.

1.18   Selection of the object format for download module

When the specified file format in the debug setting dialog box is different from the format of the object module file, downloading the file may cause a freeze of the debugger. Please select the correct object format. And also, when selecting the object format for download module file, if there are two or more object format, whose name includes the vender name another ones do not include it, prioritize the file whose name includes vender name leading the object format name.

1.19   Break function

When the execution of the target program halts by the breakpoint, the debugger might not change the display to the halt condition. In this case, please push the Halt Program button.

This problem occurs when the debugger started on the following conditions.

- When the Trace mode is selected in the Mode tab of the Init dialog, and the Trace Execution is selected in the Trace Mode of the Event Setting window.
- When you set the condition branch trace.
- When the Time Measurement mode is selected in the Mode tab of the Init dialog, and the Time Measurement event is used.

The debugger might not change the display to the halt condition because the following debugging functions use the break function. In this case, please push the STOP button of the Running dialog.

- Go To Cursor
- Step Over
- Step Out
- Run…
- Run to main function on reset

1.20 Windows Vista® or Windows® 7 Computer in the Sleep or Hibernating State

If a Windows Vista® or Windows® 7 host computer enters the sleep or hibernating state during debugging, debugging will not resume even after the host computer leaves that state. Settings for the host computer must be made in advance so that it does not enter the sleep or hibernating state.

1.21 E^{2}dataFlash

1. When processing the access to the E^{2}dataFlash, do not halt the target program execution. If the target program is stopped during accessing the E^{2}dataFlash, the operation to the E^{2}dataFlash will be suspended. Therefore, when the target program is restarted from the debugger, the access to the E^{2}dataFlash may not be processed properly.
2. If you refer to the E^{2}dataFlash area in the Memory window, etc., of the debugger during a target program execution, all bits of the area are displayed as 1.

1.22 Low power mode

Debugging in low power mode is not supported.

1.23 Low speed mode

When a low speed clock is selected as the base clock source, please note the following points.

1. Programs cannot be downloaded to the internal ROM.
2. Software break points cannot be set to/deleted from the internal ROM.
3. The execution time measurement function cannot be used.
4. If an error occurs when using the RAM monitor function, adjust the data acquisition interval specified in the Emulator tab of the Init dialog box. The number of consecutive blocks in the RAM monitor area should be set to 10 blocks or less.

1.24 Time Measurement

The execution time measurement function and the interval time measurement function cannot be used at the same time.

1.25 Image window

Do not select the "Real time" menu in the list box on the toolbar.

1.26 Downloading a program to external flash memory

1. Registering USD files created by the "External Flash Definition Editor" to the [External flash memory] tab of the [Emem] dialog box enables you to download a program to the external flash memory. You can download the "External Flash Definition Editor" from the following URL.
   http://www.renesas.com/efe
2. When setting up the work RAM for creating the USD file, specify the address that does not overlap with the interrupt stack area and the target area of DMA. Note that the emulator sets the interrupt stack pointer (ISP) to 0500h when resetting the target program. The area specified for the work RAM can overlap with the work area for the monitor program specified in the [MCU] tab of the [Init] dialog box.
3. To download a program to the external flash memory, it is necessary to switch to the memory expansion mode or set the external bus. Write these settings into a script file, and specify it as a pre-download execution script when you create a USD file. The script file will be automatically executed before the download and the settings written in the script will be established.
4. When the [Resetting CPU after download module] checkbox in the [Options] tab of the [Debug Settings] dialog box is selected, the CPU will be reset after the download and the external bus setting will be initialized. This means that after the download, you cannot check the contents of the area where the program was downloaded. To retain or restore the external bus setting, deselect the [Resetting CPU after download module] checkbox before the download or execute the script file specified as a pre-download execution script from the Command Line Window after the download. The [Debug Settings] dialog box can be opened by selecting menu [Debug] -> [Debug Settings...].

1.27 Other

Please refer to "Hardware specification" of E30A Emulator User's Manual for details.

2. System Requirements

2.1 Windows Vista® 32-bit editions, Windows® 7

Target host PC	
PC	IBM PC/AT compatible machine.(CPU: 1GHz or more)
Memory	1GB or more (and in addition, ten or more times as much size as the load module file).
HDD	Hard disk available capacity for installation: 100MB or more. Prepare an area at least double the memory capacity (four-times or more recommended) as the swap area.
Display Resolution	1024 x 768 or higher

The 64-bit editions of Windows Vista® have not been supported.

Windows Vista is either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.

2.2 Windows® XP 32-bit editions, Windows® 2000

Target host PC	
PC	IBM PC/AT compatible machine. (Pentium III 600MHz or more is recommended)
Memory	512MB or more (and in addition, ten or more times as much size as the load module file). When the MR Trace Window is used: 1GB or more (and in addition, ten or more times as much size as the load module file).
HDD	Hard disk available capacity for installation: 100MB or more. Prepare an area at least double the memory capacity (four-times or more recommended) as the swap area.
Display Resolution	1024 x 768 or higher recommended

The 64-bit editions of Windows® XP have not been supported.

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3.　　Version Report

This section describes the specification of the changed software.

3.1　　R32C/100 E30A Emulator Debugger V.1.02.00

In this version of the R32C/100 E30A emulator debugger, following changes of specifications have been made from the previous version V.1.01.00.

1.　Functional extensions, functional improvements, and specification changes
- Download into external flash memory is now supported.
- The number of breakpoints that can be set for software breaks has been increased from 64 to 256.
- It has been made possible to measure a cycle with which events occur during the section time measurement.
- The frequency input section on the Emulator tab of the Init dialog has been separated into a whole-number part and a fraction part.
- MCU files corresponding to the following MCUs have been added:
  - R32C/117 group
    R5F6417A and R5F6417B
  - R32C/116A Group
    R5F6416JA, R5F6416KA, R5F6416LA, and R5F6416MA
  - R32C/117A Group
    R5F6417JA, R5F6417KA, R5F6417LA, and R5F6417MA
  - R32C/118A Group
    R5F6418JA, R5F6418KA, R5F6418LA, and R5F6418MA
  - R32C/120 Group
    R5F64206, R5F64207, R5F6420A, and R5F6420B
  - R32C/121 Group
    R5F64216, R5F64217, R5F64218, R5F64219, R5F6421A, R5F6421B, R5F6421C, and R5F6421D
- IO files corresponding to the following groups have been added:
  - R32C/116, 117, and 118 groups
  - R32C/116A, 117A, and 118A groups
  - R32C/120, and 121 groups
  - R32C/145 group
  - R32C/151, 152, 153, 156, and 157 groups
  - R32C/160, and 161 groups
- The debugger response to step execution has been improved.
- When trace mode is selected, the debugger response to Step Over has been speeded up.

2.　Limitations solved
- A problem that if, while downloading a program, another application is activated, a state is entered where there are no debugger responses, has been corrected.
- A problem that if DMAC II of the microcomputer starts while a measurement is taken of the task execution history, interrupt processing history, etc. of a realtime OS-based program, no measurement results are displayed in the MR trace window, has been corrected.

3.2　　R32C/100 E30A Emulator Debugger V.1.01.00

In this version of the R32C/100 E30A emulator debugger, following changes of specifications have been made from the previous version V.1.00.00.

1.　Functional Extensions and Modifications
- The following windows and script command for the real-time OS debugging are added to this version.
  - MR Trace Window
  - MR Analyze Window
  - MR SYS script command
- The default setting of the trace mode is changed from Trace priority mode to MCU execution priority mode. On the next start-up of the debugger, the trace mode will be set to the last chosen one (at the last time when

closing the debugger) of the same workspace.
- Memory expansion mode has been supported.
- Debugging in low speed mode has been supported.
- MCU files corresponding to the following MCU Groups have been added.
  - R32C/111 Group
  - R32C/116 to 118 Groups
  - R32C/145 Group

2. Limitations solved
- The following problem has been fixed: When the load module created by IAR systems compiler is downloaded, the trace measurement results are not displayed correctly.

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