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Be sure to read this note.

M3T-PD32RSIM V.3.01 Release 00

Release Notes

1st Edition

Renesas Solutions Corporation

October 1, 2006

Abstract

Welcome to M3T-PD32RSIM V.3.01 Release 00. (called PD32RSIM).

This material explains the contents of this software, installation procedure, and supplements to the user's manual and help. When using this software, please take a look at this release note as well as the user's manual.

* You can get the latest version of this document from our homepage: (<http://www.renesas.com/en/tools>)

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1. Components of the Product

The following files comprise the package of PD32RSIM V.3.01 Release 00(English version). The License ID Certificate/User Registration Sheet is not included in the package for upgrading.

■ Contents of the CD-ROM

1. Files of installer for PD32RSIM

The following files are installed after running the installer for PD32RSIM.

(1) Programs and concerned files

- PD32RSIM.EXE
- PD_LITE.EXE V. 8.50.01
- xxxxxx.dll

P32RSDLL.DLL	V. 1.10.01	P32RSRTOSWIN.DLL	V. 1.10.01
COMMUNI.DLL	V. 2.01.05	P32RSIMWIN.DLL	V. 1.10.01
P32RSGUI.DLL	V. 1.10.01	P32RSRRAMWIN.DLL	V. 1.10.01
P32RSCBENGINE.DLL	V. 1.10.01	MFC42.DLL	
P32RSEVENTSETTING.DLL	V. 1.10.01	ATL.DLL	
P32RSRESOURCE.DLL	V. 1.10.01	MSVCRT.DLL	
P32RSGUIHOWIN.DLL	V. 1.10.01	MSVCP60.DLL	

- SIM32R.EXE Ver.2.00.02
- PDHELP.CHM
- PD32RSIMDLL.DEF
- R.RDF
- RF.RDF
- RV.RDF
- RX.RDF
- PD32RSIM.FEF
- DEFAULT.SCK
- I/O Script sample programs

(2) Documents

Descriptions	File Names
Introducing I/O Script Sample Programs	PD32RSSE.PDF

2. HTML Help Update Component

You may need HTML Help Update Component (Microsoft Incorporated products) to browse HTML Help Files (.CHM). Install and update this component in your system, if you can't open help for PD32RSIM.(NOTE: You need restart your system after the installing)

- Release Note for PD32RSIM V.3.01 Release 00 (It's this note, which contains "Software User License Agreement".)
- License ID Certificate/User Registration Sheet

- If any of the above is missing, contact either Renesas Technology Corporation's office or its distributor from which you purchased the product.
- Please read a License Agreement before using. By using the software, you are accepting and agreeing to such terms.
- The S/W Tool User Registration Sheet is used for maintenance service for you.

2. Operating Environment

PD32RSIM runs on the host machine environments given below.

Table 1:Host Machine Environments

Host Machine	IBM PC/AT compatibles
Operating System	Windows Me Windows 98 Windows XP Windows 2000 Windows NT 4.0
CPU	Pentium III 500MHz or higher CPU is recommended.
Memory	192MB or more system memory is recommended.

3. Installation

The following shows installation procedure of PD32RSIM.

[Notes for Windows XP/2000/NT 4.0]

Make sure that installer is executed by one who is authorized as an Administrator. No one but the user who has the authority of an Administrator can install the PD32RSIM.

3.1. To install PD32RSIM

Please install the Installing the debugger according to the following procedures.

1. Start of installer
Please execute "Setup.exe" which is in the ¥PD32RSIM¥W95E folder of the product CD-ROM, from Explorer or any other launcher program.
2. License ID
In "License ID" dialog box, please select the "Normal License" and input the license ID. License ID(xxxx-xxxx-xxxx-xxxx-xxxx) is described in license ID Certificate. (appended to the product package)
3. Display of product license
The "Software License Agreement" dialog box displays the content of the license agreement. Please read the content of the contract.
4. Input of user information
In "Customer Information" dialog box, please input customer information (License User, Belong To, Your Addresses, and PC types). Input information becomes a format of a customer support by mail.
5. Selection of component
In "Select Components" dialog box, please select the installed component. This dialog box can change the directory the installation ahead.
6. End of installer
The installation of PD32RSIM is complete, when the dialog box which indicates "Setup is complete".

3.2. User Registration

The text file for the user registration is created to the start menu. Please input a necessary matter to the text file and send it to the registration desk (regist@tool.maec.co.jp) in our company by e-mail. To open the text file for the user registration, please select the following menu:

Windows Menu [Start]->[Program]->[Renesas]->
[PD32RSIM V.3.01 Release 00]->[User Registration Sheet]

3.3. To install Acrobat Reader

The manual of PD32RSIM is offered as an electronic manual. Acrobat Reader is necessary to refer to an electronic manual. Please install Acrobat Reader if necessary. Acrobat Reader can be downloaded from the home page of the Adobe Systems Incorporated products.

URL for Adobe Systems Incorporated: <http://www.adobe.co.jp/>

3.4. To Install HTML Help Update Component

The Online Help for PD32RSIM is offered as a HTML Help file. Internet Explorer 4.0 or later is necessary to browse HTML Help files.

If you can't browse HTML Help files, you need install Internet Explorer 4.0 or later, or install HTML Help Update Component, or Install both of them.

HTML Help Update Component (HHUPD.EXE) is appended below "Utility" folder of this product disk. This component can be downloaded from the home page of Microsoft co.

URL for MSDN: <http://msdn.microsoft.com/>

4. A Request Concerning Technical Support

4.1. Technical support by E-mail

The text file for the technical support is created to the start menu. Please fill in it and send it to your nearest Renesas office or its distributor by E-mail. To open the text file for technical support, please select the following menu:

Windows Menu [Start]->[Program]->[Renesas]->
[PD32RSIM V.3.01 Release 00]->[Technical Support Sheet]

[Notes for technical support]

We appoint the types of host machines (IBM PC/AT compatibles, for example) as an operation environment for using our software tools. This does not guarantee operation on all the types of the host machines or in any environment of them (device drivers, peripheral units, etc.), but merely for indicating an operation environment we assume (to be put to our support). If a trouble should occur in using the software tools in the operation environment we appointed, we offer a technical support to solve the trouble (correct the defective condition, inform a way of avoiding the trouble, and so forth).

If a trouble that occurred in your environment cannot be reproduced in our operation environment, we may ask a favor of you to solve the trouble (we may borrow your equipment with your approval). We would like to obtain your prior approval.

4.2. Technical support by Homepage

Our homepage in the following URL provides datasheets, toolnews, FAQ and the other informations of our products.

Home Page: <http://www.renesas.com/en/tools>

Another access is:

Windows Menu [Start]->[Program]->[Renesas]
-> [(Link Page for) RENESAS Tool HomePage]

5. Notes

5.1. Debugging precautions

5.1.1. When using CC32R

- If the target program contains multiple object files with the same file name, debug information on those objects cannot be handled correctly.
- Variables that are named "bool" can be referred neither with C Watch Window nor with print command in Script Window.

5.1.2. When using D-CC

- If the target program has typedef declarations internally used, pay attention to the following:
 - (1) When displaying type definition names, respective tag names are displayed.
 - (2) When using type definition names to write C language expressions, be sure to use respective tag names.

5.1.3. Common items

- In the first line of a function, the stack frame for the function is not fully formed. When referencing function parameters or auto variables, execute as many lines in the function as can be executed.
- If a variable is declared with the same name as the type definition name declared by typedef, you cannot reference that variable.

5.2. Precautions when using TW32R (V.1.00 Release 1 to V.3.00 Release 1)

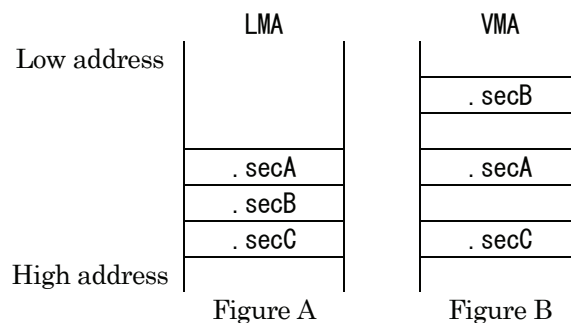
When you are using TW32R version from V.1.00 Release 1 to V.3.00 Release 1, the program header information of the load module created by the linker may not be correctly generated. This may cause a problem that a part of the section cannot be correctly downloaded by the emulator debugger.

[Condition which triggers this problem]

It has been proved that the problem occurs when a linker script is described where the relationship between the section execution address (VMA) and the load address (LMA) meets the two conditions given below. In the following example, section .secB is not downloaded correctly.

(1) Any three sections are allocated to the continuous load addresses (LMA) (Figure A).

(2) Only the execution address (VMA) of the section allocated in the middle (.secB) is allocated to the low address (Figure B).



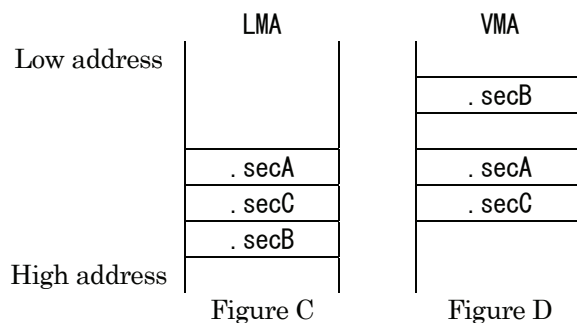
[Corrective action]

Try one of the following methods:

(1) Changing the section allocation sequence

When allocating the load address (LMA) of each section, change the linker script description so that a section whose execution address (VMA) is allocated to low address (.secB) will not be placed between the sections whose execution address is the same as the load address (.secA, .secC).

For example, change the section allocation sequence as shown in Figure C and Figure D.



(2) Creating a program header using the PHDRS instruction

As shown in the following example, change the linker script.

Then, the system will create the program header for each section.

[1] In each section definition, define the name to be referenced in the PHDRS instruction. Be sure to select the different name for each section. The defined name is used to be identified in the PHDRS instruction. You can specify any name. (It could be the same as the symbol name, file name or section name.) However, you cannot specify an instruction name (NETRY, STARTUP) for the name.

[2] Use the name defined in [1] to define the program header using the PHDRS instruction so that all the sections will be used as individual segments.

```

-----
/* [2] */
PHDRS
{
    secA PT_LOAD;
    secB PT_LOAD;
    secC PT_LOAD;
}
.secA Execution address : Load address
{
    ...
} :secA /* [1] */
.secB Execution address : Load address
{
    ...
} :secB /* [1] */
.secC Execution address : Load address
{
    ...
} :secC /* [1] */
-----

```

5.3. About the scope

The scope setting function is available only when the compiler CC32R is used. When D-CC or TW32R is used, the scope setting function is unavailable.

You can set the scope with the SCOPE script command or the following the PD32RSIM Window menu:
[Debug]-[Scope...]

5.4. About watching the local C variables

For the sake of optimization, the C compiler may place different variables at the same address. In this case, values of the C variable may not be displayed correctly on the c watch window or other function.

5.5. Regarding the number of data that can be acquired on virtual port output or output port windows

The maximum number of data that can be acquired on I/O window's virtual port output or output port windows can be specified in the Init dialog box. We recommend specifying a value less than 500,000 for this data count. Specifying any value greater than that may cause the performance of PD32RSIM or Windows to drop.

5.6. About Custom function using CB32R

PD32RSIM V.3.00 and later versions does not include CB32R. If you want to create custom windows, please use the custom function using COM interface. The custom windows and custom commands, which are created by CB32R attached with PD32RSIM V.2.10, are executable in PD32RSIM V.3.00 or newer version.

5.7. About 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.

6. Regarding I/O Script Sample Programs

PD32RSIM has a I/O script function as a means of simulating the operation of peripheral I/O.

Try using the I/O script sample program included with this product. It contains a description of peripheral I/O operation.

For details about specifications of and the method for using this I/O script sample program, refer to the electronic manual, "Introducing I/O Script Sample Programs."

6.1. On referencing member variables of a structure, union, or class

[Description]

When structure member variables, union member variables, or class member variables are displayed in such a window as the C Watch window, which is capable of referencing variables, a message may appear saying "not active", resulting in no variables being referenced.

[Conditions]

This problem occurs if member names of a structure, union, or class begin with a letter of 'e' or 'E' immediately followed by a numeral.

Example

```
-----  
typedef struct {  
    int e2;    /* Not referenced */  
    int e2p;  /* Not referenced */  
    int ee2;  /* Referenced */  
} STRUCT;  
STRUCT st;  
-----
```

In the above example, if structure object name st is registered with the C Watch window and then expanded, structure member variables st.e2 and st.e2p cannot be referenced.

[Workaround]

Before referencing any member variable concerned, enclose the member name with parentheses. For example, if you need to reference st.e2 and st.e2p described in the above example, register them with the C Watch window under the names of st.(e2) and st.(e2p).

7. Version Report

This section describes the specification of the changed software.

7.1. PD32RSIM V.3.01 Release 00

In this version, the following specifications were changed from former version PD32RSIM V.3.00 Release 00.

7.1.1. Revisions for Restrictions

- A limitation has been corrected: If a mixed representation of source and disassembled code is saved on a text file, a part of the disassembled code may not be saved on the file.

(for details, refer the RENESAS TOOL NEWS, June 16, 2006 (RSO-M3T-PD32RM-060616D))

- A limitation has been corrected: When structure member variables, union member variables, or class member variables are displayed in such a window as the C Watch window, which is capable of referencing variables, a message may appear saying "not active", resulting in no variables being referenced.

(for details, refer the RENESAS TOOL NEWS, January 16, 2006 (RSO-M3T-PD32RM-060116D))

7.1.2. Extended Functions and Modified Specifications

- Window-related Functions
 - Debugging Information tab of Init Dialog Box
 - Unsupported compiler Green Hills M32R has been unavailable on the Compiler's list box.

7.2. PD32RSIM V.3.00 Release 00

In this version, the following specifications were changed from former version PD32RSIM V.2.10 Release 1A.

7.2.1. Extended Functions and Modified Specifications

- Window-related Functions
 - Memory Window
 - Memory Window, RAM Monitor Window and Dump Window have been integrated into a new Window.
 - Memory contents can be modified by using In-Place edit function.
 - The modified data are displayed hi-lighted with color.
 - The splitter view has become available.
 - The column numbers can be modified (1-256).
 - Memory contents can be saved in the file as a text file.
 - ASM Watch Window
 - Memory contents, symbols, radices and data length can be modified by using In-Place edit function.
 - The modified data are displayed hi-lighted with color.
 - Data can be sorted by each column.
 - C Watch Window
 - C Watch Window, Local Window, File Local Window, and Global Window have been integrated into a new window.
 - The display style has changed to list variable names and values.
 - Memory contents can be modified by using In-Place edit function.
 - The modified data are displayed hi-lighted with color.
 - Program / Source Window
 - Back scroll in Dis-Assemble Mode has become available.
 - Trace Window
 - A function has been added which displays the trace measurement results in mixed format with two or more display modes.

- A function has been added which displays the trace measurement results distinguished by using different colors.
- MR Window
 - A function has been added which allows the state of the following objects to be displayed in the MR window.
Message buffers, Rendezvous ports, Mail-boxes with priority
 - A function has been added which allows the state of the objects to be displayed in the MR window during the target program running.
- Script Window
 - ADDPATH command is added. This command adds the search path.
- Renesas C/C++ Compiler for M32R Family Support
PD32RSIM newly supports ELF/DWARF2 format from M3T-CC32R, the Renesas C/C++ Compiler for M32R Family, V.5.00 Release 00 and the later versions. It makes source level debugging of C++ programs available.
To debug a target program in ELF/DWARF2 format from M3T-CC32R, operate that as follows.
 - (1) Init Dialog Box
Select “CC32R(M32R)” or “CC32R(M32Rx)” for “Compiler”, and ELF/DWARF2.0 for Object Format in the Debugging Information Tag.
 - (2) Specifying file when loading
Select an object file with “elf” extension.
- Renesas uTRON-specification V.4.0 real-time OS Support
PD32RSIM newly supports M3T-MR32R/4, the Renesas real-time OS for M32R Family, V.4.00 Release 00 and the later versions. It makes debugging of programs using M3T-MR32R/4 available.

7.3. PD32RSIM V.2.10 Release 1, PD32RSIM V.2.10 Release 1A

In this version, the following specifications were changed from former version PD32RSIM V.2.00 Release 1A.

7.3.1. Revisions for Restrictions

- A limitation has been corrected that comparisons using the FCMP or FCMPE instruction may yield incorrect results.
(for detail, refer the MAEC TOOL NEWS, Feb. 1, 2003)
- A limitation has been corrected that a member of a struct or union may not correctly be referenced.
(for detail, refer the RSO TOOL NEWS, Nov. 1, 2003)

7.3.2. Functional Extensions

- The file, which is opened in Program window and Source window, can be opened with HEW, when PD32RSIM started up by the external debugger of HEW.

7.4. PD32RSIM V.2.00 Release 1, PD32RSIM V.2.00 Release 1A

In this version, the following specifications were changed from former version PD32RSIM V.1.10 Release 1.

7.4.1. Revisions for Restrictions

- A limitation has been corrected that if you try to open dialog boxes (for setting breakpoints and changing windows etc.) during execution of target programs, those dialog boxes may not appear, and the subsequent operations become frozen.
(for detail, refer the MAEC TOOL NEWS, May. 16, 2001)
- A limitation has been corrected when variables are entered in the C watch window, debuggers may be terminated forcibly.
(for detail, refer the MAEC TOOL NEWS, August. 1, 2001)

- A limitation has been corrected that if a Windows application is launched or any of the other already-opened Windows applications is made active while you are downloading a target program (a load module), the debugger may freeze suddenly.
(for detail, refer the MAEC TOOL NEWS, December. 16, 2001)
- A limitation has been corrected that the Source window may not be opened or not display materials normally if opened.
(for detail, refer the MAEC TOOL NEWS, December. 16, 2001)
- A limitation has been corrected that if the downloading of target programs (load modules) described in ELF/DWARF format is canceled in progress, the debugger may be terminated forcefully.
(for detail, refer the MAEC TOOL NEWS, July. 16, 2002)

7.4.2. Functional Extensions

- Window-related Functions
 - Trace Window
 - A window has been added that records and references the history of target program execution.
 - Trace Point Setting Window
 - A window has been added that sets conditions under which to start or finish tracing.
 - Output Port Window
 - A window has been added that outputs the data which normally are forwarded to ports to a window or file.
 - GUI Input Window
 - Bit inputs and multi-byte inputs are now accepted.
 - A part has been added that shows strings.
 - GUI Output Window
 - The number of addresses that can be set in a created part has been increased to a maximum of 200.
 - A part has been added that shows strings.
 - I/O Window
 - A dialog box has been added that helps to set simple timer interrupts.
 - Virtual port inputs, virtual interrupts, and I/O script procedures can now be registered in up to a maximum of 50 in total.
 - Init dialog box
 - Tabs have been added to the Init dialog box, and size of the dialog box has been reduced.
 - A function has been added that allows you to specify the CPU's operating clock frequency. The CPU's operating clock frequency is used in execution time measurements, simple timer interrupts, MR Trace Window and Task Trace Window.
 - A function has been added that allows you to specify the number of cycles for which time the trace results can be recorded.
 - A function has been added that allows you to specify the maximum number of data that can be acquired on I/O window's virtual port output or output port windows
 - Program/Source Windows
 - Source file editing function has been added.
 - It has been available to save the MIX mode display to text files.
 - It has been available to input source files' names in the Source Dialog Box immediately.
 - Memory Window
 - The following function has been added; the beginning of the display are changed to the position which corresponds to stack pointers.
 - ASM Watch Window
 - The following functions have been added.
 - Watch points are also displayed in signed decimal

- The Refresh Button is added. You can update the display of the memory contents.
- Call Stack Window
 - Call Stack Window has been added. This window displays function call information of C language.
- Dump Window and Memory Window
 - You can specify a start address for display, when you open a Dump Window or a Memory Window.
 - The start address of the Dump Window or the Memory Window is displayed on the title bar.
- RAM Monitor Window
 - The start address of the RAM Monitor Window is displayed on its title bar.
- C Watch Window and ASM Watch Window
 - You can specify where C and ASM watch point file is saved.
 - You can save C and ASM watch points in project-wise.
- Script Window
 - Command history is saved. When you type up-arrow or down-arrow key on the input field in focus, commands in the history appear in order.
 - RELOAD command is added. This command loads your last target program again.
- PD Window
 - You can switch the display of the toolbar on or off.
 - The execution time of a program was displayed on the status bar.
- Find dialog box
 - History of searching key words becomes to be held.
- Script commands
 - TraceData (TD) command
 - A command has been added that displays access information on trace result memory.
 - TraceList (TL) command
 - A command has been added that displays the disassembled result of trace results.
 - TracePoint (TP) command
 - A command has been added that sets conditions under which to start or finish tracing.
- The Others
 - The 32104 groups and 3218x groups of Renesas 32-bit microcomputers are supported.
 - Support the Drag-and-drop Operations.

With the drag-and-drop operations, you can load files, set events, set beginnings of displays, add watch points, set or move data, and so on.
 - Auto Completion for the Address Setting.

When you input some characters for the label string in the address setting combo-boxes, the characters are completed to a label string that corresponds.
 - Buttons on the Toolbars
 - The buttons on the toolbars has been resized smaller and changed to the icons.
 - You can switch styles of buttons.
 - Customizing of User Interfaces

Shortcut key assignment and toolbar customizing functions have been added.
 - Shortcut menu

Right click on each window displays its own option menu as shortcut menu.
 - Supplemental Download Function for Binary Data

After downloading of an absolute module file, You can download supplemental binary data (MOT files) with keeping symbol debugging information.
 - Saving window information and Resuming

Size, location and the other information of each window resumes at opening each window. This resuming function had worked only at starting PD32RSIM.

- Listing of All Labels in Address Setting Fields
All labels are listed in each address setting fields. When you set a label for an address, you can select it from the list.
- Online Help
Online help has been changed to HTML Help.
- C++ debugging functions are now supported.

7.4.3. Specification Changes

- Window-related Functions
 - Source Window
 - Source windows can be opened up to 30.
 - Dump Window and Memory Window
 - Dump Windows can be opened up to 30. And Memory Windows have also.
 - Script Window
 - Script files can be nested to 10.
 - 256 macro defines a script file has available.
 - Customize Dialog Box
 - Customize Dialog Box has changed to Property sheet. Settings for customizing (settings of shortcut keys, download, fonts, path, tools and the others) are unified into one dialog box.
- Script commands
 - CYcle (CY) command
 - This command now displays the number of execution cycles and the execution time.
- The Others
 - I/O Script file
 - The default extension for I/O script files has been changed from ".scr" to ".ios."
 - Download History Function
 - You can specify the number of remembering files, which have been downloaded, from 1 to 16.
 - Changes of Appearances
 - Appearances of the buttons on the toolbar of PD Window have been changed.
 - Arrangements of a part of the menu items have been changed.
 - Appearances of Upload dialog box and Save Disasm Dialog box have been changed.
 - CB
 - A part of functions added to PD has available.

7.5. PD32RSIM V.1.10 Release 1

In this version, the following specifications were changed from former version PD32RSIM V.1.00 Release 1.

7.5.1. Revisions for Restrictions

- The following problem has been fixed: During display of the Source dialog box in the Program or Source window (opened by using View -> Source button or menu), Windows' error message appears, forcing termination of the program.
(for detail, refer the MESC TOOL NEWS, June. 16, 2000)
- A limitation has been corrected that if any structure whose member names exceed 1,024 characters in total is displayed on the C Watch, Global, File Local, or Local window, the debugger may be forcibly terminated.
(for detail, refer the MESC TOOL NEWS, October 1, 2000)

7.5.2. Function Extension

- The enhanced #pragma of the C compiler CC32R V.3.00 has been supported.