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Renesas Electronics website: <http://www.renesas.com>

April 1st, 2010
Renesas Electronics Corporation

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(Note 2) “Renesas Electronics product(s)” means any product developed or manufactured by or for Renesas Electronics.

M3T-PD77 (Discontinued Product)

Emulator Debugger for 77xx Series [for PC4701 Emulators]

Target Devices

- 7700 Family 77xx Series (16-bit)

Overview

This product is an emulator debugger (software) included with a Renesas' full-featured emulator package. Easy-to-use GUI (Graphical User Interface) and many advanced debugging features improve the debugging efficiency of applications on your target system.

This debugger also allows you to customize with a programming tool such as Microsoft Visual C++ or Visual Basic (the PSDK COM kit required). For example, you can create a user-defined window and interface between the debugger and other COM-compliant applications.

Applicable Emulator

- [PC4701U](#) (Emulator for M16C,7700,740 Family)
- PC4701M (Discontinued product)
- PC4701HS (Discontinued product)

Notes

*Included with an applicable emulator. Not available alone.

Features

- Easy operations with overlapping multi-windows and GUI
- Comfortable debugging environment provided by drag & drop operation
- C language and assembly language source level debugging and many other basic debug features
- Real-time OS support
- Real-time RAM monitoring
- Real-time tracing, C0 coverage, Time measurement and other advanced features
- Creating user-defined windows and commands
- USB, Serial, parallel and LAN interfaces support^{*1}
- On-line help in HTML

*1. Available host computer interfaces depend on an emulator. (See PC Interfaces)

Operating Environment

- IBM PC/AT compatibles (Windows XP, Windows Me, Windows 98, Windows 2000, Windows NT 4.0)

PC Interfaces

	PC4701U	PC4701M (Discontinued product)	PC4701HS (Discontinued product)
LAN	LAN (10Base-T)	None	LAN (10Base-T, 10Base-5)
USB/Serial	USB (*1) (USB 1.1, Full-speed)	RS-232C (max. 38,400bps)	RS-232C (max. 38,400bps)
Parallel	LPT parallel (*2)	LPT parallel (*2)	Renesas proprietary parallel (*3)

*1. A USB I/F is available on Windows XP, Windows Me, Windows 98 and Windows 2000. It is unavailable under Windows NT 4.0.

*2. It is a printer port which supports ECP, EPP, Byte/Compatibility and Nibble/Compatibility modes.

*3. PCA4202G02 parallel interface board (optional) is required. On Windows XP, the Renesas proprietary parallel interface is not supported.

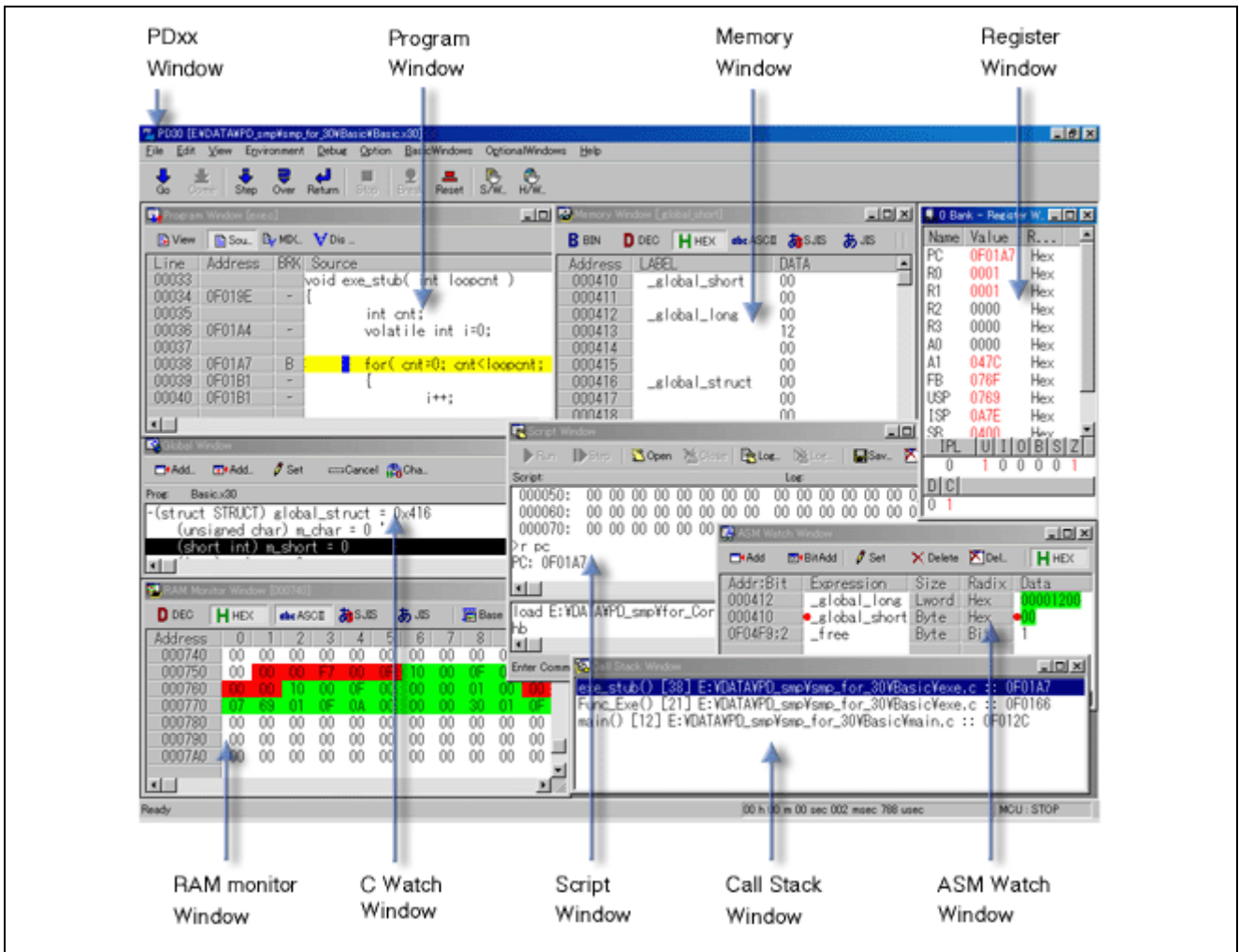
Specifications

Software break	64 points
Hardware break	6 points
Real-time trace	<ul style="list-style-type: none"> • 32K cycles • 6 trace points by events • Trace write condition can be specified.
Real-time RAM monitor	1024 bytes
Time measurement	Between from RUN to STOP / Other 4 points interval
C0 coverage	Available
Exception event detection	Access protect

Basic Functions

Window	Function
PD77 Window	Controls an entire debugger. You can perform the following basic debugging commands by using the tool bar buttons: program execution/stop, step execution, execution up to cursor position, and break point setting/cancel. You can also open various other windows from this window.
Program Window	Displays the program. Source code is editable here. Matching address line is displayed in color for the program counter (PC). You can select display format from among "source", "disassemble" or "mixed". You can also set or cancel break points.
Source Window	Displays the designated place of a program. Source code is editable here. Unlike the program window, you can open more than one window. The window is displayed continuing a certain function or task, and is convenient when break points have to be set and canceled repeatedly.
Register Window	Displays/changes content of flags and registers particular to the MCU.
Memory Window	Displays memory content together with the address and label. Display format can be selected from among binary, decimal, hexadecimal, ASCII, SJIS (for Japanese) or JIS (for Japanese) .
Dump Window	Displays memory content in dump format. Display format can be selected from among decimal, hexadecimal, ASCII, SJIS (for Japanese) or JIS (for Japanese) .
RAM Monitor Window	Displays memory content changed during target program execution. The area read during program execution is displayed in green, and the area written is displayed in red. (You can set colors of your choice.)
ASM Watch Window	Monitors changes of memory contents and variable contents declared on assembly language level. Display format can be selected from among binary, decimal, and hexadecimal. If the specified address is within the real-time RAM area, area read is displayed in green, and the area written is displayed in red. (You can set colors of your choice.)
C Watch Window	Displays C variable contents. In addition to a window that displays variable formula of your choice, there are windows that display external variables, local variables within a file, and local variables within a function.
Call Stack Window	Displays function call information of C language.
Script Window	The window for executing commands from the keyboard or script files. An area is provided for displaying command execution results and command history. Execution results can be output to a file.
S/W break point setting dialog	Dialog box for setting/clearing software break points. Can set 64 break points maximum (OR condition).

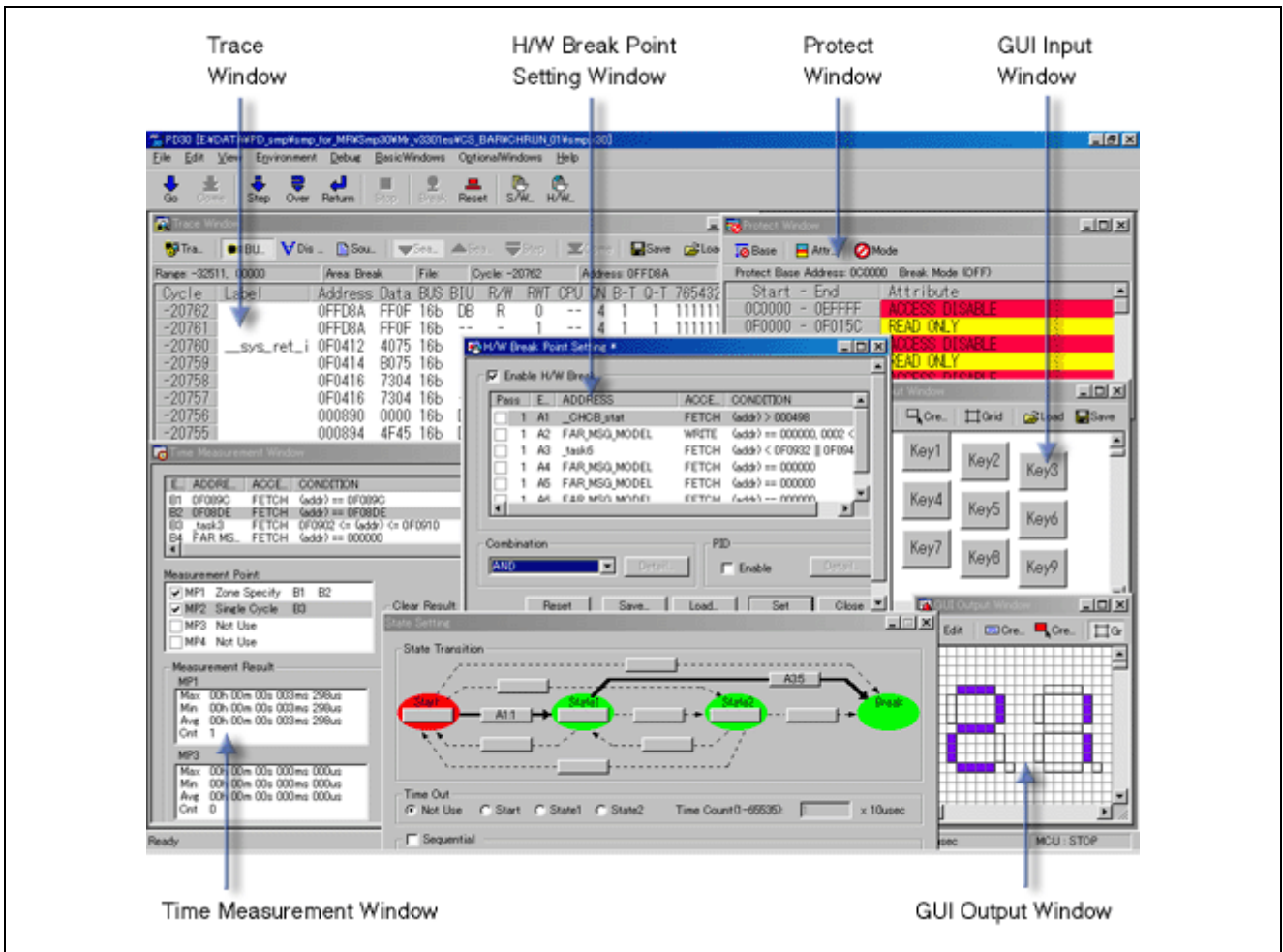
Screen Image: Basic Windows



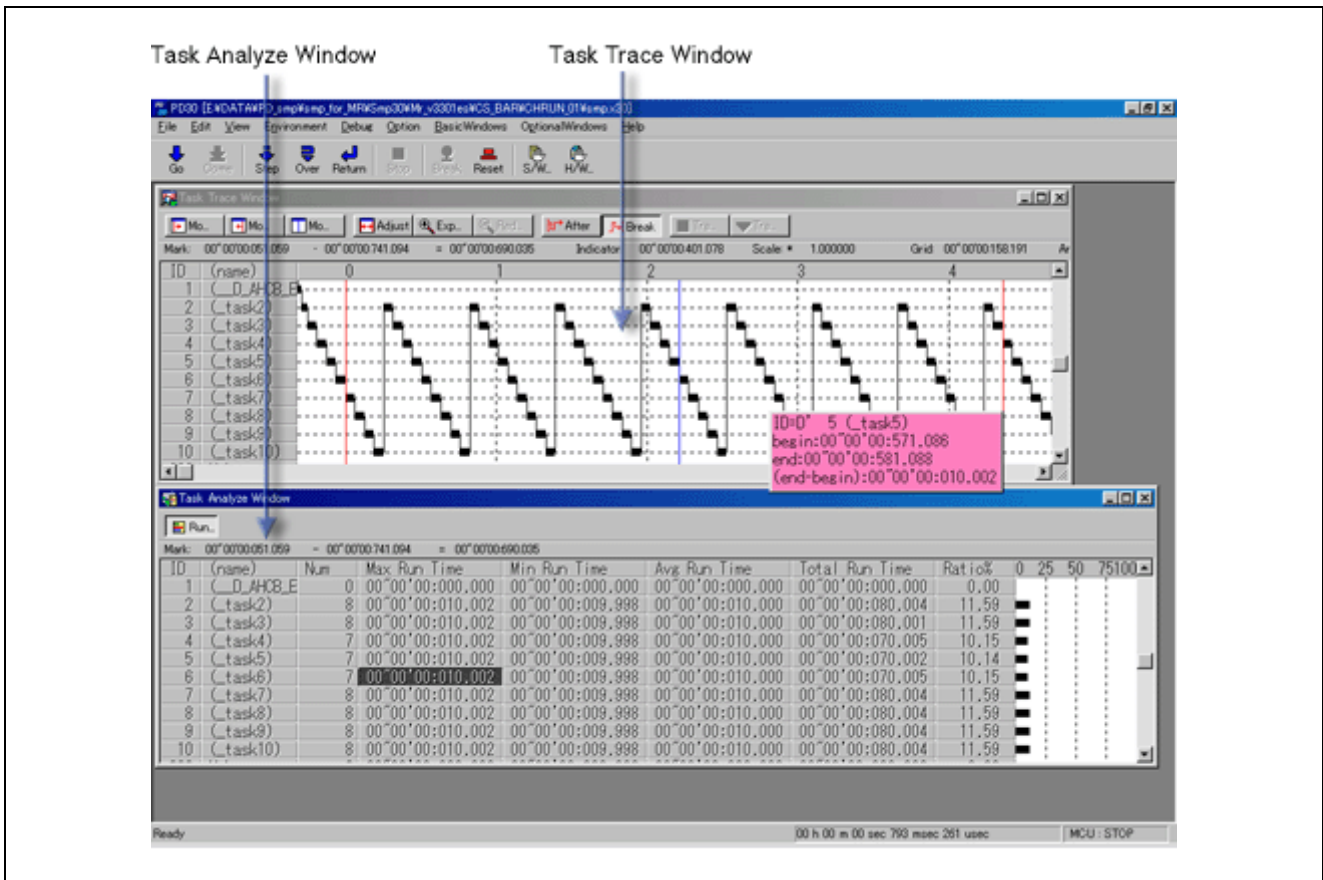
Advanced Functions

Window	Function
Protect Window	Sets the protect function that halts program execution when a reserved area is accessed. An access attribute (Access Disable, Read Only or R/W Enable) can be specified in one byte batch of memory.
H/W Break Point Setting Window	Sets/cancels hardware break points. Can set 6 break points maximum and specifies the combination condition of break events. As a combination condition, there is a choice of not only AND and OR but also state transition specification with a transition chart. Using this feature allows you to easily detect abnormalities caused by multiple interrupts and task status transition in a program with a real-time OS.
Trace Point Setting Window	Specifies conditions for trace events like the H/W Break Point Setting Window.
Trace Window	Displays the results of real-time tracing in the emulator. The following three display modes are supported: Bus mode, Disassemble mode and Source mode.
Task Trace Window	Graphically shows task execution histories of programs using real-time OS.
Task Analyze Window	Shows the results of statistical processing of measured data within the range specified with the Task Trace Window. This window shows the occupancies of tasks in a CPU.
Coverage Window	Shows coverage measurement results of C functions. Results can be checked in separate windows: "Coverage window" displaying coverage results and start and end addresses of each function, and "Coverage source window" used to see whether each source line has been executed.
Time Measurement Window	Displays the minimum/maximum/average execution time and measurement count at any measurement point. The execution time of up to 4 measurement points can be measured simultaneously.
GUI Input Window	Shows key input panels of user target system. You can make virtual key input buttons by simple mouse operation. While the program is running, pressing the button generates data input.
GUI Output Window	Shows output panels of user target system. You can make virtual output LEDs or labels by simple mouse operation.
Custom Window	User-developed new window (called "Custom window") that can be used by registering in the debugger. After registering, the "Custom window" can be opened from the menu just like other windows.

Screen Image : Advanced Windows for the Emulator (1/2)



Screen Image : Advanced Windows for the Emulator (2/2)



Upgrade Information

M3T-PD77 debugger was revised to V.4.20 Release 1 in April 1, 2004.

New feature(s) :

- Distributed without charge for users of every kind of PC4701 emulator including PC4701HS. (The latest version is available by online upgrade.)
- * See also the Apr. 1, 2004 issue of TOOL NEWS.

[Online-upgrading]

Users of an applicable emulator can download and use latest version (free-of-charge). For details, see "Download" of PC4701U site.

Website and Contact Information

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