

# ***KIT-VR5400-TP***

**User's Manual**

***RealTimeEvaluator***

## Software Version Up

\* The latest RTE for Win32 (Rte4win32) can be down-loaded from following URL.

**[http://www.midas.co.jp/products/download/english/program/rte4win\\_32.htm](http://www.midas.co.jp/products/download/english/program/rte4win_32.htm)**

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Revision History

Rev.0.8	Jul. 19,1999	Preliminary 1st edition
Rev.0.81	Jul. 26, 1999	Modified
Rev.0.82	Aug. 11, 1999	Modification to description of pin mask
Rev.1.00	Sep. 24, 1999	Official 1st edition * Addition of parameter to env command * Addition of cacheinit and cacheflush
Rev.2.0	Mar.12,2000	2nd edition * Revised for supporting RTE-1000-TP
Rev.2.01	May.20,2000	Correction by the clerical error *Modification to description of pin mask
Rev.2.11	Oct. 20,2000	addition of some items to section of Precautions related to functions in Chapter 6
Rev.2.12	May 20, 2001	modified download site

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## **1. OVERVIEW**

**KIT-VR5400-TP** is the software to debug the system that has NEC RISC micro processor VR5432 by in-circuit emulation with RTE-100-TP or RTE-1000-TP.

This document describes how to use the KIT-VR5400-TP. Thus on using the product, please refer to the documents for RTE-100-TP or RTE-1000-TP also, that is main part of whole debugging system.

This product comes with the following components. First check that none of the components are missing.

- RTE for Win32 Setup Disk
- User's manual (This manual)
- License sheet

## 2. HARDWARE SPECIFICATIONS

### Emulation

Target device	VR5432
RTE-TP	RTE-1000-TP
Emulation functions	
Operating frequency	167 MHz (max.)
Interface	JTAG/N-Wire
*7 JTAG clk	100 KHz - 25 MHz
Break functions	
H/W break points(*1)	1
Breaks that can be set using access event(*2)	1
S/W break points	100
Step breaks	Supported
Manual breaks	Supported
Trace functions(*3)	
Trace data bus	4 bits
Trace memory	4 bits x 128K words
Trace delay	0 - 1FFFFh
*7 Trace clock	77 MHz (max.)
*7 Trace time tag	100 us - 30 h
Trigger setting	Supported
Trigger that can be set using an execution address(*1)	1
Trigger setting by access event(*2)	1
Trigger setting by external input	1
Disassembled trace data display function	Provided
ROM emulation functions	
*7 Memory capacity	8 M - 32 M-Byte
*7 Access time	40 ns (burst cycle:35ns)(*4)
*7 Operation voltage	1.8 - 5 V (*5)
*7 Electrical condition	LV-TTL (*6)
Number of ROMs that can be emulated	
DIP-32pin-ROM (8-bit ROM)	4 (max.)
DIP-40/42pin-ROM (16-bit ROM)	2 (max.)
*7 Extend STD-16BIT-ROM connector	2 (max.)
Types of ROMs that can be emulated	
DIP-32-ROM probe (8bits-bus)	1M, 2M, 4M, 8M (27C010/020/040/080)
DIP-40-ROM probe (16bits-bus)	1M, 2M, 4M (27C1024/2048/4096)
DIP-42-ROM probe (16bits-bus)	8M, 16M (27C8000/16000)
*7 Extend STD-16BIT-ROM (16bits-bus)	1M, 2M, 4M, 8M, 16M, 16M, 32M, 64M, 128M, 256M
Bus width specification (bits)	8/16/32
Pin mask functions	NMI, INT

\*1. The execution address event for a break and triggers is combination.

\*2. The access event for a break and triggers is combination.

\*3. Execution speed falls during trace.

\*4,5,6: These specifications are on the case using expansion 16bit standard ROM cable (CBL-STD16-32M) and DIP40/42 adapter.

\*7: These specifications are on the case using RTE-1000-TP. For RTE-100-TP, please refer to the document of RTE-100-TP, as the specifications might differ from above.

### 3. RTE FOR WIN32

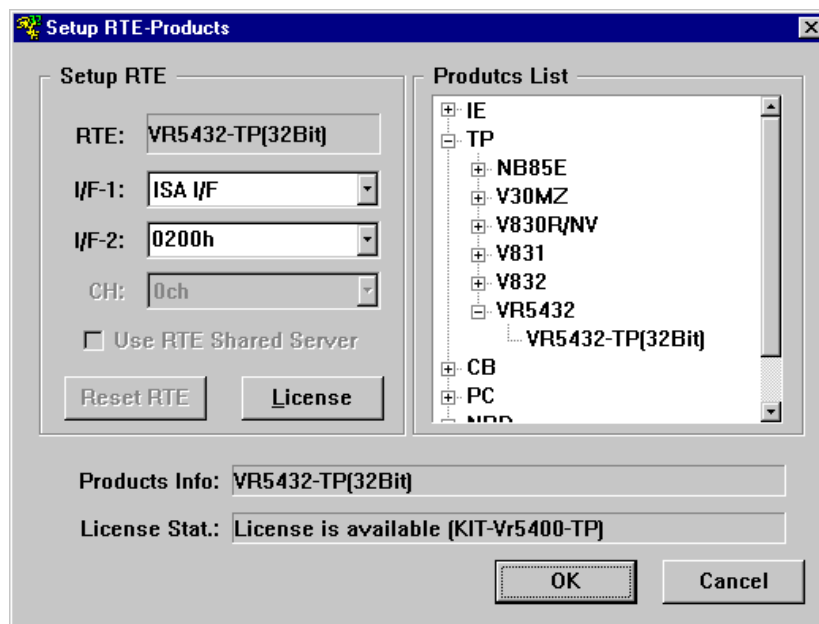
This chapter describes the setting of RTE for WIN32, with the focus on the aspects specific to KIT-VR5400-TP.

#### Invoking ChkRTE2.exe

After finishing to connect and apply the power supply for all equipments, invoke ChkRTE2.exe to setup the configuration of "RTEforWIN32".

Please setup the "RTEforWIN32" configuration at least one time for newly installed hardware.

<Setup RTE-Products>



<Selecting RTE>

From Product List, select the "VR5432-TP" located beneath the TP tree.

<Selecting I/F-1, I/F-2>

Select and specify the host interface that suitable for your system from pull-down menu. (The display in example shows that RTE-PCAT is assigned to address 200h)

<License>

Click the button to setup license checking with the license setup sheet attached to the KIT package. For detail, please refer to the document of "RTE for WIN32".

<Function test>

If RTE-1000-TP is properly connected to the user system and capable of debugging, the following dialog box appears upon the normal completion of the function test. In this state, control from the debugger is possible.



If an error occurs during the test, the N-Wire cable is not properly connected. Check its connection.



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**Perform the ChkRTE2.exe function test after the RTE-200-TP or RTE-1000-TP has been connected to the user system and the power to all the devices has been turned on.**

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## 4. INITIALIZATION COMMANDS

Before debugging can be started, system initialization is required.

The following commands are available for system initialization, be sure to setup correctly before start to use the system.

### To use Multi

Use following commands in Target window.

ENV command

- \* Setup port mask
- \* Specify JTAG clock
- \* Specify work area for cash processing
- \* Specify the high-speed download mode
- \* Others

ROM command

- \* Specify ROM emulation condition

NC/NCD command

- \* Specify data cache area for debugger software

NSPB/NSPBD command

- \* Specify forbid software break area

NROM/NROMD command

- \* Specify forced user area in rom emulation mapping area by ROM commad

### To use PARTNER

Use following dialog.

Set CPU Environ dialog

- \* Setup port mask
- \* Specify JTAG clock
- \* Specify work area for cash processing
- \* Specify the high-speed download mode
- \* Others

Set Emulation ROM dialog

- \* Specify ROM emulation condition

NC/NCD command

- \* Specify data cache area for debugger software

NSPB/NSPBD command

- \* Specify forbid software break area

NROM/NROMD command

- \* Specify forced user area in rom emulation mapping area by ROM commad

## 5. INTERFACE SPECIFICATIONS

This chapter describes the specifications of the connectors used for control that are required for the user system.

### Pin arrangement table

Pin number	Signal name	Input/output (user side)	Treatment (user side)
A1	CLKOUT	Output	22 - 33 $\Omega$ series resistor (recommended)
A2	TRCDATA0	Output	22 - 33 $\Omega$ series resistor (recommended)
A3	TRCDATA1	Output	22 - 33 $\Omega$ series resistor (recommended)
A4	TRCDATA2	Output	22 - 33 $\Omega$ series resistor (recommended)
A5	TRCDATA3	Output	22 - 33 $\Omega$ series resistor (recommended)
A6	TRCEND	Output	22 - 33 $\Omega$ series resistor (recommended)
A7	DDI	Input	4.7k - 10 k $\Omega$ pullup
A8	DCK	Input	4.7k - 10 k $\Omega$ pullup
A9	DMS	Input	4.7k - 10 k $\Omega$ pullup
A10	DDO	Output	22 - 33 $\Omega$ series resistor (recommended)
A11	DRST-	Input	Open or It connects ColdReset* via an external circuit. This signal is negative logic.
A12	Rmode*/ BkTGIO*	Input/Output	4.7k - 10 k $\Omega$ pullup
A13	NC.	-----	Open

Pin number	Signal name	Input/output (user side)	Treatment (user side)
B1-B10	GND	-----	Connection to the power GND
B11	NC.	-----	Open
B12	NC.	-----	Open
B13	+3.3V	-----	Connection to the power

### Connectors

Manufacturer: KEL

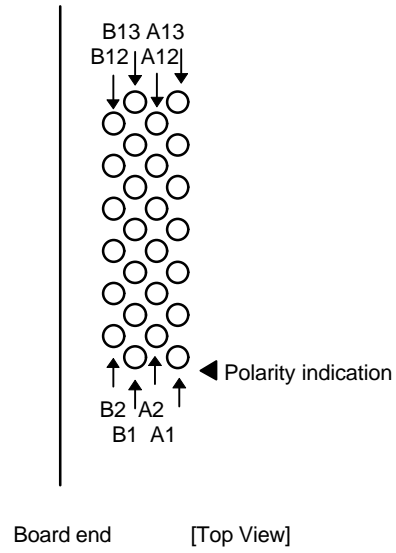
Models: 8830E-026-170S (straight)  
8830E-026-170L (right angle)  
8831E-026-170L (right angle, fixing hardware attached)

### Wiring on Target System

1. Keep the wire from the CPU to the connector as short as possible.  
>>100 mm or shorter is recommended.
2. Output signals from CPU are recommended to be connected to connectors, via high-speed CMOS buffers of which power supply is the same one with CPU I/O buffers.

**Layout of the connectors on the board**

The figure below shows the physical layout of the connectors on the board.



## 6. PRECAUTIONS

This chapter provides precautionary information on the use of KIT-VR5400-TP.

### Precautions related to operation

- 1) Do not turn on the power to the user system while the power to KIT-VR5400-TP is off. Doing so can cause a malfunction.
- 2) KIT-VR5400-TP externally controls the debugging control circuit built into the CPU. Consequently, KIT-VR5400-TP does not operate correctly unless the following conditions are satisfied:
  - \* KIT-VR5400-TP is properly connected to the user system using the N-Wire cable.
  - \* The power to the user system is on so that the CPU can run correctly.

### Precautions related to functions

- 1) It is related with real-time trace.
  - \* The disassemble display of real-time trace is performed by reading the contents of a memory on the basis of the branch information from CPU. Therefore, when the contents of a memory are changed after execution, the right execution history cannot be displayed. Moreover, when an error is in branch information, an analysis display cannot be done correctly.
  - \* When it runs from a break point one instruction of an execution start address does not write into trace.
  - \* Trace is automatically ended on condition that the following.
    - When the trigger point was passed and a break is taken.
    - When a break is taken in the state of the delay mode.
- 2) A hardware break point that break point of EVE command and break point set on ROM area functions on 8 bytes of boundary.
- 3) Don't LOCK cache. When it LOCKs, neither break in the area, nor step execution and rewriting of a memory can be performed normally.
- 4) For further information, be sure to refer to the Release Note of the KIT.