To our customers,

Old Company Name in Catalogs and Other Documents

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

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Renesas Electronics Corporation

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The semiconductor operations of Mitsubishi Electric and Hitachi were transferred to Renesas Technology Corporation on April 1st 2003. These operations include microcomputer, logic, analog and discrete devices, and memory chips other than DRAMs (flash memory, SRAMs etc.) Accordingly, although Hitachi, Hitachi, Ltd., Hitachi Semiconductors, and other Hitachi brand names are mentioned in the document, these names have in fact all been changed to Renesas Technology Corp. Thank you for your understanding. Except for our corporate trademark, logo and corporate statement, no changes whatsoever have been made to the contents of the document, and these changes do not constitute any alteration to the contents of the document itself.

Renesas Technology Home Page: http://www.renesas.com

Renesas Technology Corp.
Customer Support Dept.
April 1, 2003

Precautions on Using SH7729 E10A Emulator

Renesas Electronics
www.renesas.com

IMPORTANT INFORMATION

READ FIRST

READ this user's manual before using this emulator product.

• KEEP the user's manual handy for future reference.

Do not attempt to use the emulator product until you fully understand its mechanism.

Emulator Product:

Throughout this document, the term "emulator product" shall be defined as the following products produced only by Hitachi, Ltd. excluding all subsidiary products.

- Emulator
- User system interface cable

The user system or a host computer is not included in this definition.

Purpose of the Emulator Product:

This emulator product is a software and hardware development tool for systems employing the Hitachi microcomputer. This emulator product must only be used for the above purpose.

Limited Applications:

This emulator product is not authorized for use in MEDICAL, atomic energy, aeronautical or space technology applications without consent of the appropriate officer of a Hitachi sales company. Such use includes, but is not limited to, use in life support systems. Buyers of this emulator product must notify the relevant Hitachi sales offices before planning to use the product in such applications.

Improvement Policy:

Hitachi, Ltd. (including its subsidiaries, hereafter collectively referred to as Hitachi) pursues a policy of continuing improvement in design, performance, and safety of the emulator product. Hitachi reserves the right to change, wholly or partially, the specifications, design, user's manual, and other documentation at any time without notice.

Target User of the Emulator Product:

This emulator product should only be used by those who have carefully read and thoroughly understood the information and restrictions contained in the user's manual. Do not attempt to use the emulator product until you fully understand its mechanism.

It is highly recommended that first-time users be instructed by users that are well versed in the operation of the emulator product.

LIMITED WARRANTY

Hitachi warrants its emulator products to be manufactured in accordance with published specifications and free from defects in material and/or workmanship. Hitachi, at its option, will replace any emulator products returned intact to the factory, transportation charges prepaid, which Hitachi, upon inspection, shall determine to be defective in material and/or workmanship. The foregoing shall constitute the sole remedy for any breach of Hitachi's warranty. See the Hitachi warranty booklet for details on the warranty period. This warranty extends only to you, the original Purchaser. It is not transferable to anyone who subsequently purchases the emulator product from you. Hitachi is not liable for any claim made by a third party or made by you for a third party.

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Some states do not allow the exclusion or limitation of implied warranties or liability for incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may have other rights which may vary from state to state.

The Warranty is Void in the Following Cases:

Hitachi shall have no liability or legal responsibility for any problems caused by misuse, abuse, misapplication, neglect, improper handling, installation, repair or modifications of the emulator product without Hitachi's prior written consent or any problems caused by the user system.

All Rights Reserved:

Other Important Things to Keep in Mind:

1. Circuitry and other examples described herein are meant merely to indicate the characteristics and performance of Hitachi's semiconductor products. Hitachi assumes no responsibility for any intellectual property claims or other problems that may result from applications based on the examples described herein.
2. No license is granted by implication or otherwise under any patents or other rights of any third party or Hitachi.

Figures:

Some figures in this user's manual may show items different from your actual system.

Limited Anticipation of Danger:

Hitachi cannot anticipate every possible circumstance that might involve a potential hazard. The warnings in this user's manual and on the emulator product are therefore not all inclusive. Therefore, you must use the emulator product safely at your own risk.

SAFETY PAGE

READ FIRST

READ this user's manual before using this emulator product.

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DEFINITION OF SIGNAL WORDS

This is the safety alert symbol. It is used to alert you to potential personal injury hazards.
Obey all safety messages that follow this symbol to avoid possible injury or death.

DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

CAUTION used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

NOTE emphasizes essential information.

⚠ WARNING

Observe the precautions listed below. Failure to do so will result in a FIRE HAZARD and will damage the user system and the emulator product or will result in PERSONAL INJURY.

The USER PROGRAM will be LOST.

1. **Do not repair or remodel the emulator product by yourself for electric shock prevention and quality assurance.**
2. **Always switch OFF the host computer and user system before connecting or disconnecting any CABLES or PARTS.**
3. **Confirm the correct direction of the connectors before connecting them in the user system side and in the user interface cable side.**
4. **If the PCI interface board for the E6000 or E8000 emulator (HS6000EIC01H) and the E10A emulator PC card are mounted on the same host computer, the connectors may be illegally connected.**

CAUTION

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

READ this document before using this emulator.

KEEP the document handy for future reference.

1. Emulator Preparation Flow Chart

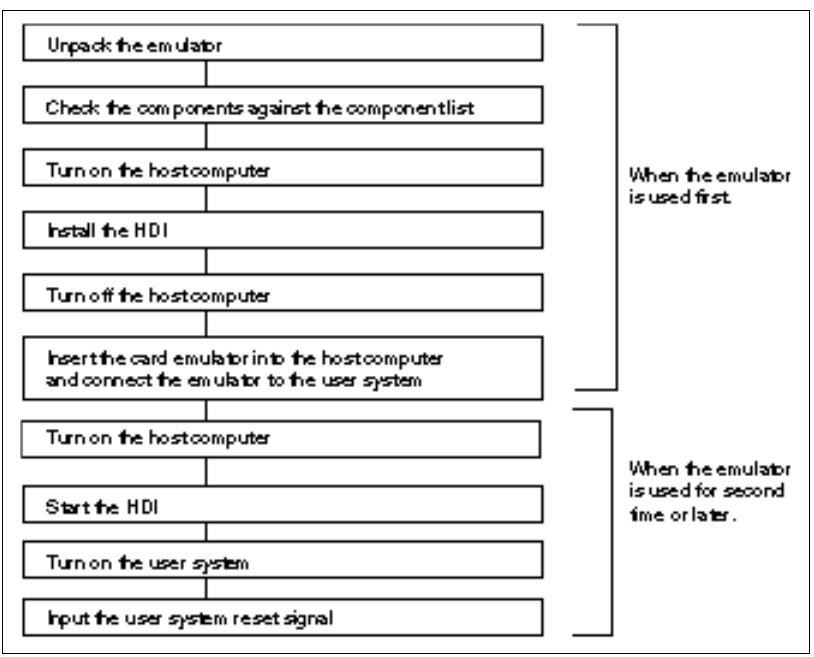

Figure 1 Emulator Preparation Flow Chart

2. HDI Installation

Run (double-click) setup.exe in the HDI installation CD-R (\SETUP directory). Installation will proceed in interactive mode.

Figure 2 [setup.exe] Icon

During installation, a message box indicating that installation cannot be carried on because Mfc42.dll, Ctl3d32.dll, or Msvcrt.dll is in use may be displayed. There are no problems in this case; click the [Ignore] button and continue installation.

3. System Check

Execute the HDI program and check that the emulator operates correctly according to the following procedure:

1. Insert the card emulator into the host computer.
2. Connect the user system interface cable to the connector of the card emulator.
3. Connect the user system interface cable to the Hitachi-UDI port connector.
4. Power on the host computer and double-click the HDI icon.

Figure 3 [HDI for SH7729 E10A Emulator] Icon

5. The HDI window is displayed, and the dialog box is displayed as shown in figure 4.

Figure 4 Dialog Box of the RESET Signal Input Request Message

6. Power on the user system.
7. Input the reset signal from the user system, and click the [OK] button.
8. When "Link Up" is displayed on the status bar, the HDI initiation is completed.

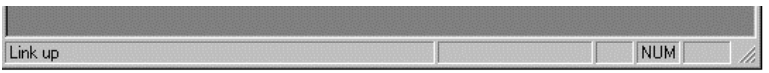

Figure 5 [HDI] Status Bar

Note: If an error message is displayed, refer to section 2.5, System Check, in the user's manual provided by the CD-R.

4. Environmental Conditions

Table 1 Environmental Conditions

Item	Specifications	
Temperature	Operating:	+10°C to +35°C
	Storage:	–10°C to +50°C
Humidity	Operating:	35% RH to 80% RH, no condensation
	Storage:	35% RH to 80% RH, no condensation
Vibration	Operating:	2.45 m/s^2 max.
	Storage:	4.9 m/s^2 max.
	Transportation:	14.7 m/s^2 max.
Ambient gases	There must be no corrosive gases present	

Table 2 Operating Environments

Item	Description
Host computer	Built-in Pentium or higher-performance CPU (166 MHz or higher recommended); IBM PC or compatible machine with the PCMCIA TYPE II slot or PCI slot.
OS	Windows® 95, Windows® 98, or Windows NT® (Windows NT® is only available for the PCI card type.)
Minimum memory capacity	32 Mbytes or more (double of the recommended load module size)
Hard-disk capacity	Installation disk capacity: 5 Mbytes or more. Prepare an area at least double the memory capacity (four-times or more recommended) as the swap area.
Pointing device such as mouse	Connectable to the host computer; compatible with Windows® 95, Windows® 98, and Windows NT®.
Power voltage	5.0 ± 0.25 V
Current consumption	HS7729KCM01H: 110 mA (Max.) HS7729KCM02H: 230 mA (Max.) HS7729KCI01H: 340 mA (Max.) HS7729KCI02H: 480 mA (Max.)
CD-ROM drive	Required to install the emulator and to refer to the manual provided by the CD-R.

Notes:

1. **IBM PC is a registered trademark of International Business Machines Corporation in the United States.**
2. **Microsoft®, Windows®, Microsoft® Windows® 95 operating system, Microsoft® Windows® 98 operating system, and Microsoft® Windows NT® operating system are registered trademarks of Microsoft Corporation in the United States and/or other countries.**

5. Precautions on Using Emulator

5.1 Hitachi-UDI Pin and AUD Pin

The Hitachi-UDI pin and AUD pin are multiplexed as part of the I/O port.
When connecting the emulator, set the ASEMD0 pin to low and use these pins as the Hitachi-UDI pin and AUD pin. If necessary, only the AUD pin can be used as the I/O port by changing the pin function controller setting. However, in this case, the AUD trace function cannot be used.

5.2 Restrictions on AUD Trace Function

(1) For AUD trace, the difference from the previously output branch destination address is output as the branch destination address,and the difference from the previously output branch source address is output as the branch source address. If the upper 16 bits of the previously output branch destination/source address are the same, only the lower 17 bits are output. If the upper 24 bits are the same, only the lower 9 bits are output. If the upper 28 bits are the same, only the lower 5 bits are output.
From this output difference, the emulator reproduces the 32-bit address and displays it in the [Trace] window. However, some 32-bit addresses cannot be displayed. In such cases, the difference from the previously displayed 32-bit address will be displayed.

(2) When cache is ON (enabled), the CPU clock is 33 MHz, and the AUD clock is 30 MHz while Realtime trace is selected, trace information may not be completely acquired. Note that this phenomenon occurs at the following situation:

- 9 consecutive NOP instructions are followed by an infinite loop of the BRA instruction

5.3 Note on DSP Repeat Loop

A breakpoint is equal to a branch instruction.
In some DSP repeat loops, branch instructions cannot be set. For these cases, do not set breakpoints. Refer to the hardware manual for details.

5.4 Note on Execution of Find or Fill Function

In the Find or Fill function, the double-float-size access is disabled.

5.5 Note on Continuous Step Execution

When the step is continuously executed by selecting [Step...] from the [Run] menu, do not use the BREAKPOINT. The HDI will operate abnormally.

5.6 Note on Using the [Run program] Dialog Box

When [Run...] is selected from the [Run] menu to specify the stop address, there is thefollowing note:

- When the breakpoint that has been set as Disable is specified as the stop address, note that the breakpoint becomes Enable when the user program stops.

5.7 Note on Continuous Step Execution

Count Specification for the Break Condition Function When the Count specification is 1 or more and the following operations are performed on the set address, note that the count specification that has been set previously becomes 1.

- Sets the address as the stop position of the Go To Cursor function.
- Sets the address as the stop address in the [Run...] dialog box.

5.8 Notes on Using the MMU Function

In the E10A emulator, the MMU setting state is not changed during user program break. Therefore, when the MMU is on in the user program, it is still on after user program break.

In SH7729 E10A emulator V2.00, note that the operation will be as follows if there is an access that generates the TLB exception during break:

- An area where a routine to set the TLB is prepared and address conversion is enabled in the TLB exception processing routine in the user program:
  - The display is illegal in the [Memory] and [Disassemble] windows.
  - Do not set the software breakpoints for the target area. The memory contents will be changed as H'0000.
  - A TIMEOUT error will occur if the range of D'2000 bytes from the boundary of the logical address, which has been set in the TLB, is displayed in the window.

- An area where a routine to set the TLB is not prepared and address conversion is disabled in the TLB exception processing routine in the user program:
  - Restart the HDI after the E10A emulator has displayed a TIMEOUT error.

- No TLB exception processing routine in the user program or illegal operation:
  - Restart the HDI after the E10A emulator has displayed a TIMEOUT error.

5.9 Notes on Using the SH7709A

When the SH7709A is used, do not display or change the SR.CL bit in the [Register] window.