To our customers,

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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.

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

Precautions on Using SH7612 E10A Emulator

Renesas Electronics
www.renesas.com

IMPORTANT INFORMATION
READ FIRST

READ the 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 SH7729 and SH7709A. 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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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 the 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 the 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.

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

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

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.**

READ this document before using this emulator.

KEEP the document handy for future reference.

1. Emulator Preparation Flow Chart

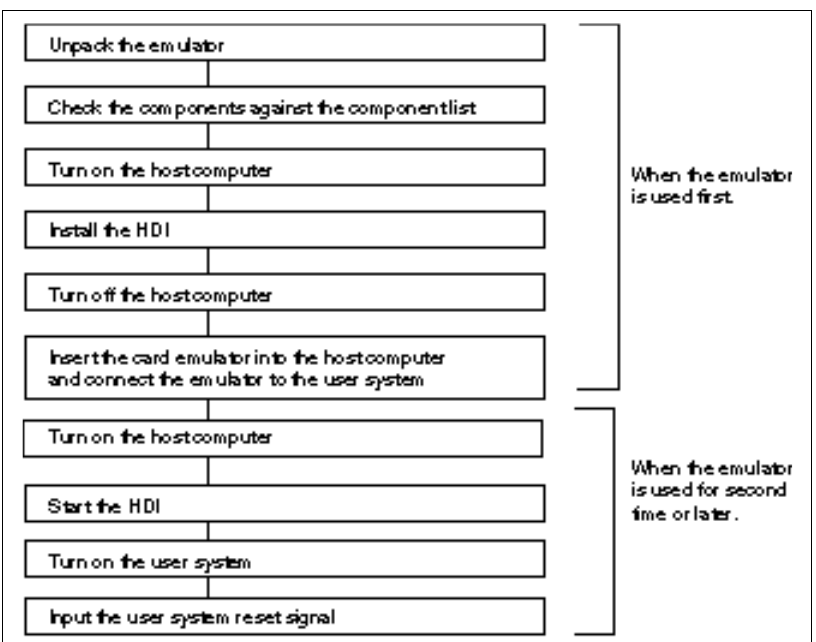


Figure 1 Emulator Preparation Flow Chart

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.

When Windows NT(R) is used, be sure to start in the administrator mode at installation. When the installation has been completed, power off the host computer and insert the card emulator. Then, select the [Start] menu -> [Program] -> [Hdi] (group box name that has been set at installation) -> [Setup PCI Card for SH7410 E10A Emulator].

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, select the [Start] menu -> [Program] -> [Hdi] (group box name that has been set at installation) -> [HDI for SH7410 E10A Emulator], and initiate the emulator.
5. The HDI window is displayed, and the dialog box is displayed as shown in figure 3.

Figure 3 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.

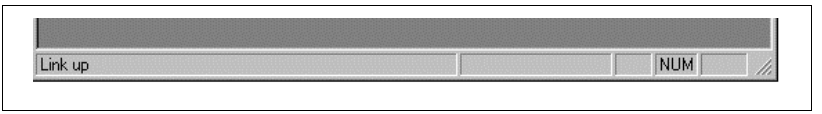


Figure 4 [HDI] Status Bar

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	HS7612KCM01H: 110 mA (Max.) HS7612KCI01H: 340 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 SH7612 E10A Emulator

5.1 Note on Jtag Clock (TCK)

When the [Jtag clock] option in the [Configuration] window is changed and the JTAG frequency is high, the transfer speed becomes high. However, when the SH7612 E10A emulator is used, note that the JTAG clock has the following limitations:

1. When the SH7410 is used, set the JTAG clock (TCK) frequency to 1/4 lower than the frequency of the peripheral module clock.

2. When the SH7612 is used, set the JTAG clock (TCK) frequency to lower than the frequency of the peripheral module clock.

5.2 Note on Use

When the emulator is used with the SH7612, note the followings:

Table 3 Notes on Use

No.	Phenomenon	Classification	Note
1	In a cycle-steal mode, when an external request is set as the DREQ edge detection at 16-byte transfer, a DMA transfer occurs if a new edge is input in a blind sector.	DMAC	Described in the hardware manual as a limitation.
2	In cache using, a write-back mode cannot be set.	Cache	Described in the hardware manual as a limitation.
3	A DSP cannot be stopped.	Others	
4	When an NMI is used to detect Vcc down, a manual reset occurs even if a power-on reset is needed.	Others	Described in the hardware manual as a limitation.
5	When a cycle-steal mode, 16-byte transfer, and dual-address transfer are set, the emulator operates successively like a burst operation.	DMAC	Described in the hardware manual as a limitation.
6	Do not access successively the registers in the internal peripheral modules.	Others	Described in the hardware manual as a limitation.
7	Use a burst-write mode for a SDRAM when a clock ratio is I∅:E∅ = 1:1, the DMAC is used in the dual-address mode, and the SDRAM is to be accessed.	Others	
8	When the SDRAM, set to the bank-active mode, is accessed with the DMA, set a wait (idling) between cycles to 1 or higher in the burst-write mode.	Others	

No.	Phenomenon	Classification	Note
9	The 16-bit bus width (SZ = 0) cannot be set by the 64-Mbit SDRAM product (4 M x 16 bits).	BSC	Refer to the following countermeasure.

Countermeasure for No.9 in table 5:

In the SH7612 debug chip, when the 64-Mbit SDRAM product (4 M x 16 bits) is used, the 16-bit bus width (SZ = 0 in BSC and AMX2 = 1, AMX1 = 0, and AMX0 = 0) cannot be set. If set, the SDRAM cannot be accessed.

Countermeasure examples for connecting the 64-Mbit SDRAM product are shown in the following page. Note them when a substrate is created.

CASE 1: When address connection is considered on the user system:

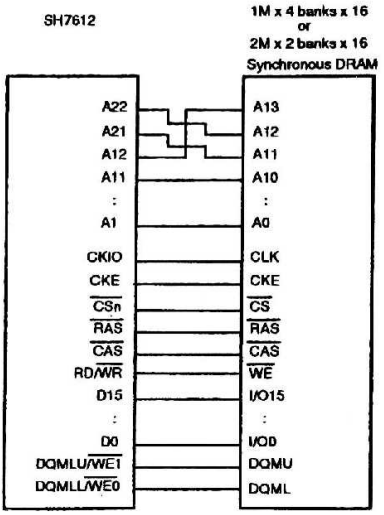
When the debug chip or actual chip (product chip) is mounted, the emulator can operate in the same BSC setting.

CASE 2: When address connection is not considered on the user system:

The BSC settings need to be changed in the debug chip and actual chip. In addition, there are limitations in the accessible space when the debug chip is used.

Connection of 64-M SDRAM x 16 Product

CASE1: When address connection is considered on the user system:



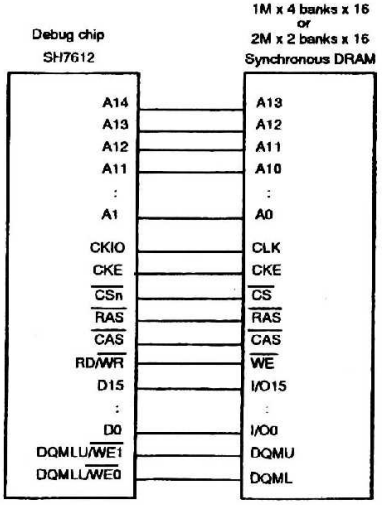
BSC setting

SZ	AMX2	AMX1	AMX0
0	0	0	0

Accessible space

H'000000 to H'7FFFFF (all spaces)

CASE2: When address connection is not considered:



Debug chip setting

BSC setting

SZ	AMX2	AMX1	AMX0
0	0	0	0

Accessible space

H'0X0000 to H'0X1FFF
H'0X8000 to H'0X9FFF
H'1X0000 to H'1X1FFF
H'1X8000 to H'1X9FFF
X = H'0 to H'F

A22, A21, A14, and A13 need to be accessed by 0.

Product chip setting

BSC setting

BASE	SZ	AMX2	AMX1	AMX0
0/1	0	1	0	0

Accessible space

H'000000 to H'7FFFFF (all spaces)