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April 1st, 2010
Renesas Electronics Corporation

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User's Manual

F-ZTAT™ Microcomputer On-Board Programming Adapter Board

HS0008EAUF1H User's Manual

HS0008EAUF1HE Renesas Microcomputer Development Environment System

Renesas Electronics
www.renesas.com

Rev.2.00 2003.07

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IMPORTANT INFORMATION

READ FIRST

• READ this user's manual before using this adapter board.

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

Do not attempt to use the adapter board until you fully understand its mechanism.

Adapter Board:

Throughout this document, the term "adapter board" shall be defined as the adapter board main unit and attached cables manufactured by Renesas Technology Corp.

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

Purpose of the Adapter Board:

The adapter board, which is connected between a host computer and the user system, has a function that can write/erase user application programs on the flash memory incorporated in the F-ZTAT microcomputer on the user system (on-board) when it is used with the FLASH Development Toolkit (PC interface software; hereinafter referred to as the FDT).

Therefore, the burden on the peripheral circuit required during on-board programming can be minimized. This board can be used for all F-ZTAT microcomputers incorporating a flash memory and cannot be used for those in which 12 V is applied to Vcc and PVcc.

This adapter board must only be used for the above purpose.

Limited Applications:

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

Improvement Policy:

Renesas Technology Corp. (including its subsidiaries, hereafter collectively referred to as Renesas) pursues a policy of continuing improvement in design, performance, and safety of the adapter board. Renesas 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 Adapter board:

This adapter board 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 adapter board 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 adapter board.

LIMITED WARRANTY

Renesas warrants its adapter boards to be manufactured in accordance with published specifications and free from defects in material and/or workmanship. Renesas, at its option, will repair or replace any adapter boards returned intact to the factory, transportation charges prepaid, which Renesas, upon inspection, determine to be defective in material and/or workmanship. The foregoing shall constitute the sole remedy for any breach of Renesas' warranty. See the Renesas 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 adapter board from you. Renesas is not liable for any claim made by a third party or made by you for a third party.

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Figures:

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

Limited Anticipation of Danger:

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

SAFETY PAGE

READ FIRST

• READ this user's manual before using this adapter board.

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

Do not attempt to use the adapter board 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 **DANGER** indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

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

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

CAUTION **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 adapter board or will result in PERSONAL INJURY. The USER PROGRAM will be LOST.

1. **Always switch OFF the adapter board and user system before connecting or disconnecting any CABLES, cable heads, or PARTS.**
2. **Always before connecting any CABLES, make sure that pin 1 on both sides are correctly aligned.**
3. **Use this adapter board only for the F-ZTAT microcomputer that is used for programming under the conditions Vcc = 2.7 V to 5.25 V and PVcc = 2.7 V to 5.25 V. Programming cannot be performed for F-ZTAT microcomputers in which 12 V is applied to Vcc and PVcc. Values of Vcc and PVcc must be within the guaranteed operation range.**

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Section 1 Overview

The F-ZTAT* microcomputer on-board programming adapter board HS0008EAUF1H (hereinafter referred to as the adapter board), connected between a host computer and the user system, can write and erase user application programs on the flash memory incorporated in the F-ZTAT microcomputer on the user system (on-board) when it uses FLASH Development Toolkit (hereinafter referred to as the FDT). Therefore, the burden on the peripheral circuit required during on-board programming can be reduced.

A system configuration using the adapter board is shown in figure 1.1.

Note: F-ZTAT (Flexible-Zero Turn Around Time) is a registered trademark of Renesas Technology Corp.

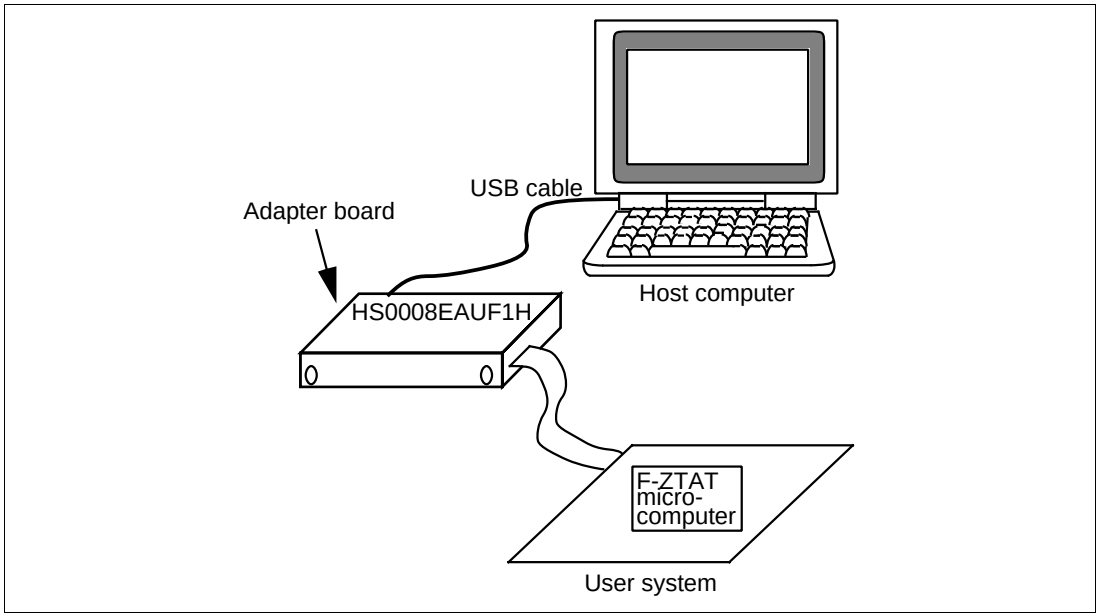

Figure 1.1 System Configuration Using Adapter Board

1.1 Environmental Conditions

Table 1.1 Environmental Conditions for HS0008EAUF1H

Item Name	Description	
Temperature	Operating:	+10 to +35°C
	Storage:	-10 to +50°C
Humidity	Operating:	35 to 80% RH, no condensation
	Storage:	35 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.	

1.2 Specifications

Table 1.2 Operating Environments

Item	Operating Environment
Host computer	IBM PCs and compatible machines that contain Pentium® III processors (500 MHz or faster is recommended)
USB interface	Complied with USB Specification Rev. 1.1
Operating system	Windows® 98SE, Windows® Me, Windows® 2000, or Windows® XP
Minimum memory capacity for operation	32 Mbytes (more than twice the size of the load module is recommended)
Empty space in a hard disk	Disk capacity required for installation: 10 Mbytes or more Take the swap area into account when ensuring that there is enough space on your system (more than twice (four times recommended) the size of the memory).
Pointing device such as a mouse	A pointing device such as a mouse, which can be connected to the host computer and is supported by Windows® 98SE, Windows® Me, Windows® 2000, and Windows® XP
CD-ROM drive	Required for installing the FDT or referring to the user's manual
Target F-ZTAT microcomputer	Supports all types of F-ZTAT microcomputer incorporating the flash memory (including products that have both Vcc and PVcc except for the 12-V programming specifications), excluding the F-ZTAT microcomputer that is not supported by the FDT
Input power	Supplied from the USB interface (operating with the bus power of the host computer) Voltage: 4.75 to 5.25 V Current: 500 mA max.
User Vcc, PVcc	Follows the power specification of each MCU within the range of 2.0 to 5.5 V

Section 2 Configuration

The configuration and components of the adapter board are shown in figure 2.1 and table 2.1, respectively.

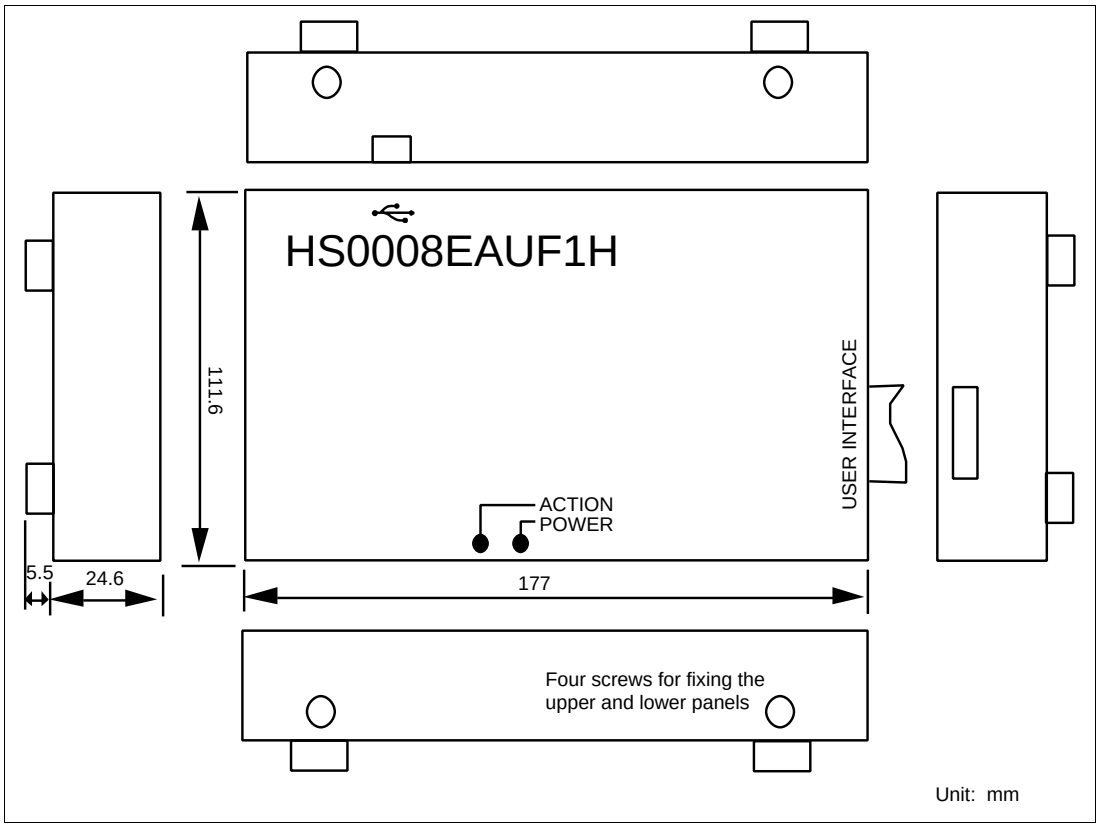

Figure 2.1 Adapter Board

Table 2.1 Components

Item Name	Description	Quantity
Adapter board	Main unit	1
User system interface cable*	Connection between main unit and user system (290 mm)	1
User system interface cable connector	Connection between main unit and user system	1
USB cable	Connection between main unit and host computer (2000 mm)	1
FDT setup program and user's manual (provided on a CD-R)	HS6400FDIW2SR	1
Adapter board user's manual	HS0008EAUF1HE (this manual)	1
Description Notes on Handling Control Pins with the Adapter Board Connected	HS0008EAUF1HE-N	1

Note: At shipment, the user system cable is connected to the main unit.

Section 3 Connectors and LEDs

3.1 Connectors

This adapter board has two connectors; user interface connector and USB port connector.

3.1.1 User Interface Connector (USER INTERFACE)

⚠ WARNING

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

1. **Always switch OFF the adapter board and the user system before connecting or disconnecting ANY CABLES or PARTS.**
2. **Before connecting, always make sure that the polarity of pin 1 (indicated on the USER INTERFACE connector part) and the signal name on both sides are correct.**
3. **When disconnecting cables, take care not to put excessive stress on the cables.**

The signals required for writing to flash memory are shown in figure 3.1. Connect the adapter board and the user system using the user system interface cable provided (with a 20-pole connector on each end) and a user system interface cable connector (used for connecting the cable to the user system). The user system interface cable provided straight-matches the pins in the adapter board to those in the user system, as shown in figure 3.1.

3428-6002LCSC (manufactured by Sumitomo 3M Ltd.) is used as a user system interface cable connector.

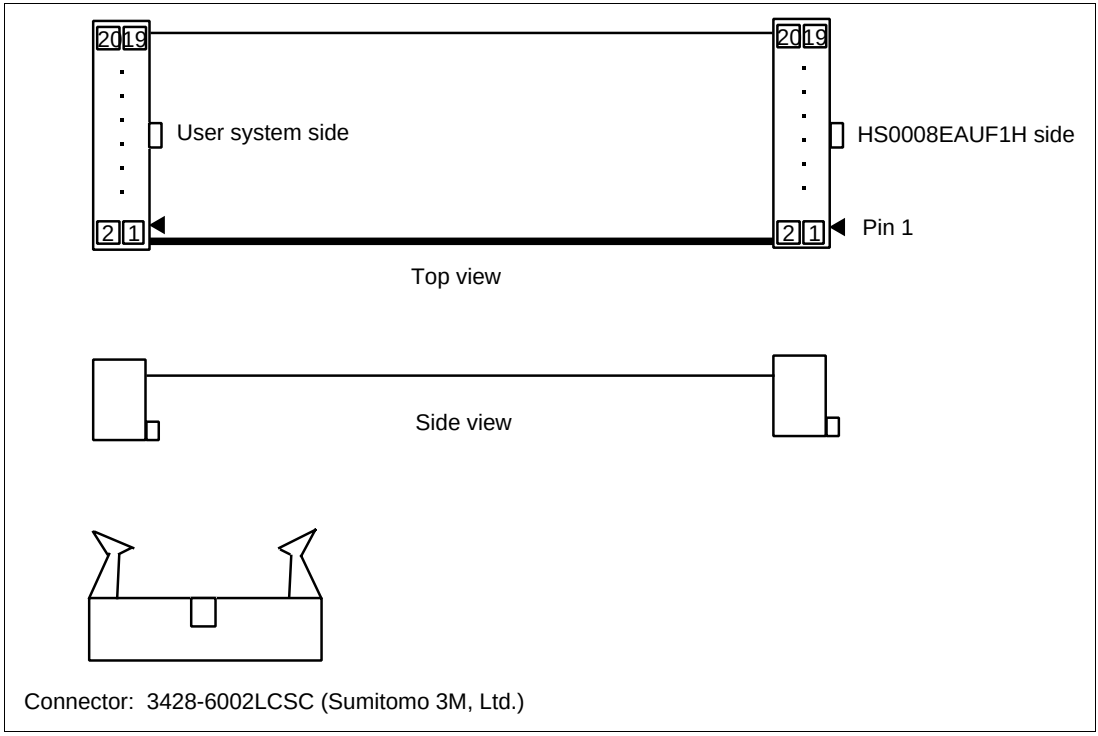

Figure 3.1 User System Interface Cable for HS0008EAUF1H

Table 3.1 Correspondence between Signals and Numbers Indicated on the User System Interface Cable

Number on Cable	Signal Name
1	$\overline{\text{RES}}$
2	GND
3	FWx
4	GND
5	MD0
6	GND
7	MD1
8	GND
9	MD2
10	GND
11	MD3
12	GND
13	MD4
14	GND
15	RXD (TXD for the user system)
16	GND*1
17	TXD (RXD for the user system)
18	VIN (Vcc or PVcc)*2
19	NC
20	VIN (PVcc)*2

Notes: 1. This pin must be connected to GND to recognize whether the user system is correctly connected to.

2. For the device that has Vcc and PVcc, be sure to provide Vcc or PVcc (pin 18) and PVcc (pin 20) to the VIN pin of the user interface connector. Furthermore, when the user system interface cable is used under the condition of Vcc = PVcc and when the device only has either of Vcc or PVcc, be sure to provide Vcc to both Vcc or PVcc (pin 18) and PVcc (pin 20) of the VIN pin.

When the target microcomputer requires port control during on-board programming, connect necessary port signals. For details, refer to the Description Notes on Handling Control Pins with the Adapter Board Connected.

3.1.2 USB Port Connector

Connect the USB port connector of the adapter board and the USB connector on the host computer using the USB cable provided.

3.2 LEDs

3.2.1 POWER: Red

This LED is turned on when it recognizes that the power is supplied after the adapter board and the host computer have been connected using the USB cable.

3.2.2 ACTION: Green

This LED is blinked when the USB interface has been correctly connected to and the driver software has been found. The blinking interval is described below:

(1) When the USB cable is connected to the adapter board and the host computer (the user system is not connected):
Repetition of '——Δ——Δ——Δ' (—: turned on, Δ: turned off)

(2) When the user system is connected in addition to the configuration of (1) above (the power supply of the user system is not input):
Repetition of '——Δ—Δ——Δ—Δ' (—: turned on, Δ: turned off)

(3) When the power supply of the user system is input in addition to the configuration of (2) above:
Repetition of '——Δ—Δ—Δ—Δ——Δ—Δ—Δ—Δ' (—: turned on, Δ: turned off)

If the communication states other than above are displayed (e.g., the LED is not turned on), turn off the power supply of the user system. Then, the USB cable must be removed from and connected to again the adapter board.

Section 4 Notes on Using the Adapter Board

1. When exiting the FDT, be sure to select [Disconnect from Device] from the FDT's device menu [Connect to Device/Disconnect from Device]. If the FDT exits when selecting [Connect to Device], the next USB connection may not be correctly recognized. In this case, remove the USB cable from the adapter board, restart the FDT, and connect the USB cable again to the adapter board.
2. For details on the FDT, refer to the FLASH Development Toolkit User's Manual, and the Description Notes on Handling Control Pins with the Adapter Board Connected.
3. This adapter board cannot be connected to the host computer via the USB hub.
4. When control signals FWx, RES, MD4, MD3, MD2, MD1, and MD0 are connected to the F-ZTAT microcomputer on the user system, do not connect them directly to Vcc, PVcc, or GND; pull them up or down by a resistance of 4.7 kΩ or more. For the control signals that are not used for reprogramming, do not connect any pins. Figure 4.1 shows the specifications of the user system interface of this adapter board. The initial state of each pin is input. This also applies to the unused pins that are not connected.
   In table 3.1, Correspondence between Signals and Numbers Indicated on the User System Interface Cable, the voltage supplied to the VIN pin (Vcc or PVcc) (pin 18) is used to pull up the programming-control signals (FWx, RES, and MD0 to MD4). The voltage supplied to the VIN pin (PVcc) (pin 20) is used to pull up the serial signals (TXD and RXD). For example, when using the H8S/2643F, H8S/2633F, H8S/2626F, and H8S/2623F series of the H8S/2600 group, supply PVcc for pins 18 and 20 because both of programming-control and serial signals use PVcc. For details, refer to the DC characteristics described in the hardware manual for each device.

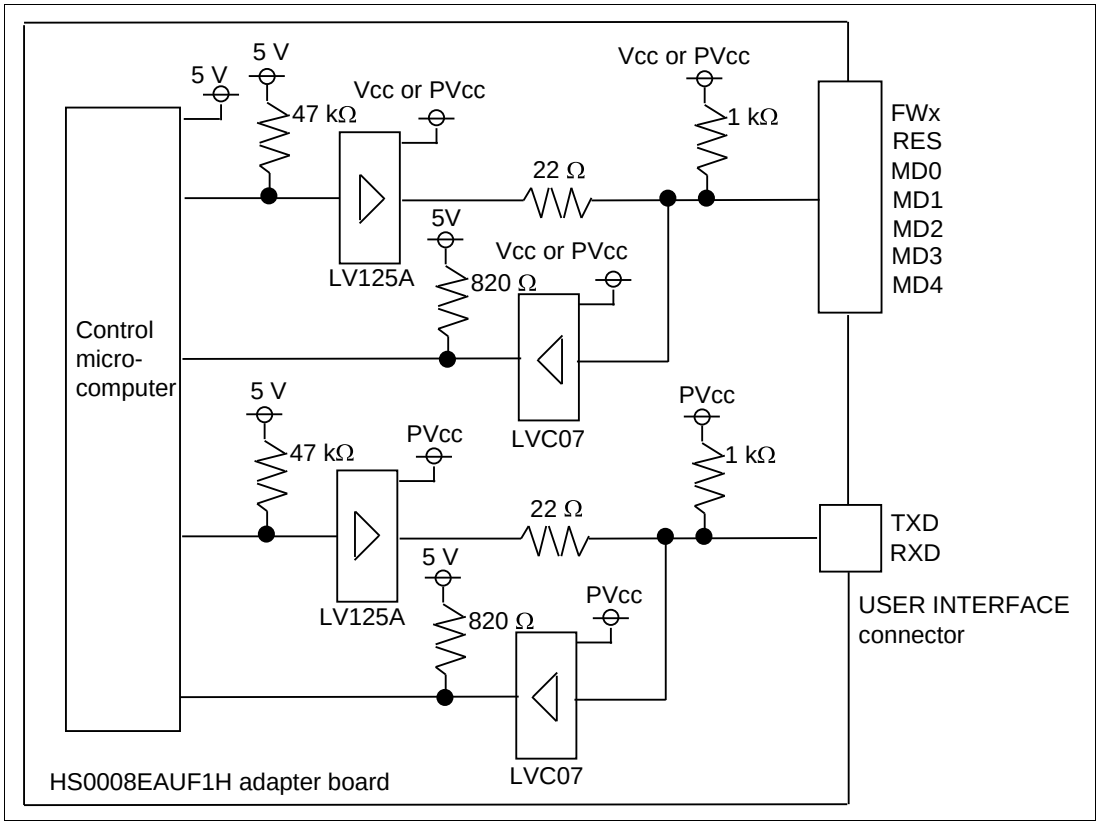

Figure 4.1 Control-Signal Circuit Example

F-ZTAT™ Microcomputer
On-Board Programming Adapter Board
HS0008EAUF1H User's Manual

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HS0008EAUF1H User's Manual

Renesas Electronics Corporation
1753, Shimonumabe, Nakahara-ku, Kawasaki-shi, Kanagawa 211-8668 Japan

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