

To our customers,

Old Company Name in Catalogs and Other Documents

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

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

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To all our customers

Regarding the change of names mentioned in the document, such as Hitachi Electric and Hitachi XX, to Renesas Technology Corp.

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

Connection of H8S/2168F with E10A Emulator

User's Manual

HS2168KCM01H

HS2168KCI01H with User System

1. Connecting the E10A Emulator with the User system

Before connecting an E10A emulator (hereafter referred to as emulator) with the user system, a connector must be installed in the user system so that an user I/F cable can be connected to the connector. When designing the user system, refer to the connector and recommended circuits shown below.

Before designing the user system, be sure to read the H8S/2168F E10A user's manual.

2. Installation of Connector in the User System

Table 2.1 shows the Hitachi-UDI port connector for the emulator.

Table 2.1 Recommended Connector

Type Number	Manufacturer	Specifications
2514-6002xx*	3M Limited	14-pin straight type

Note: xx means plated version.

Note: When the connector is used, do not install any components within 3 mm of the Hitachi-UDI port connector.

3. Pin Arrangement of the H-UDI Port Connector

Figure 3.1 shows the pin arrangement of the Hitachi-UDI port connector.

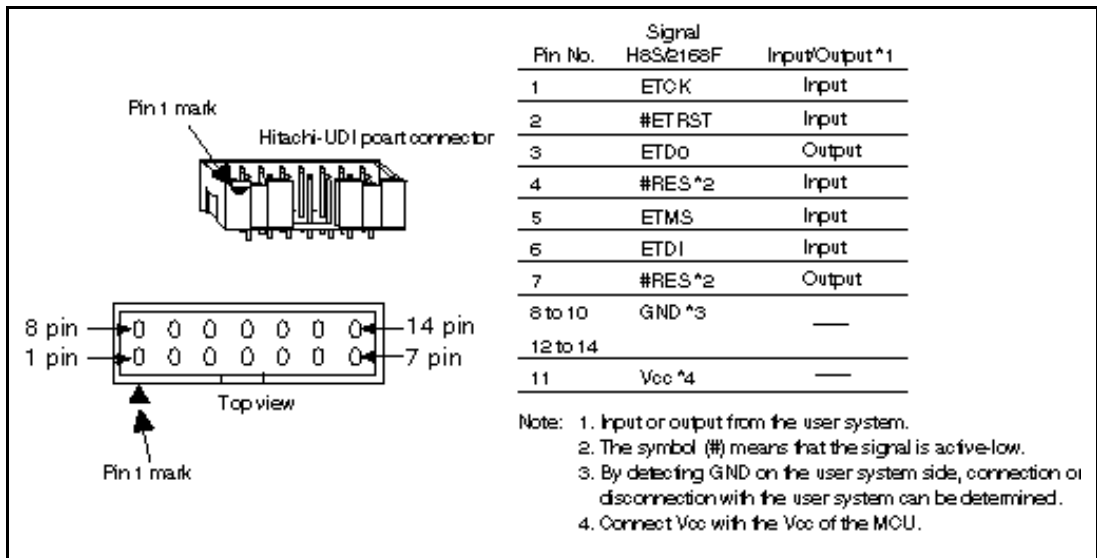


Figure 3.1 Pin Arrangement of the Hitachi-UDI Port Connector

4. Example of Emulator Connection

The following shows an example of connecting the user system to the emulator.

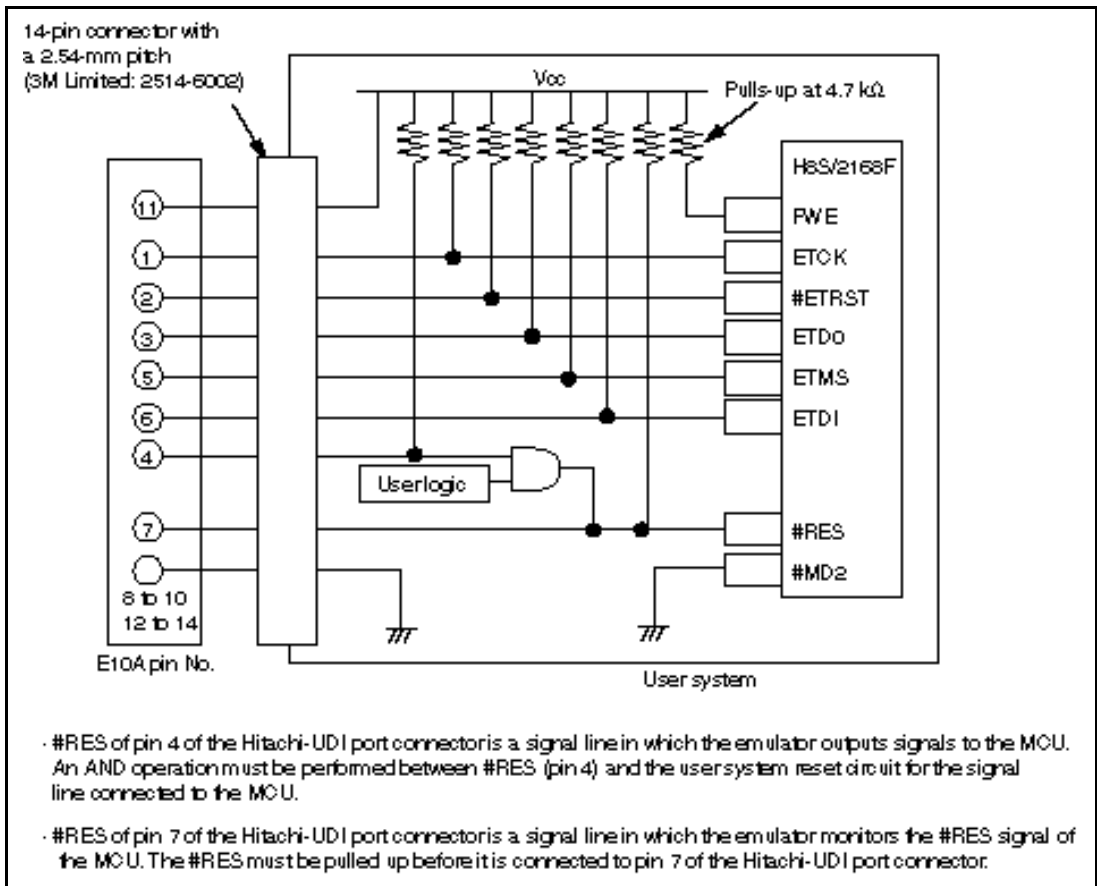


Figure 4.1 Example of Emulator Connection

Notes: 1. #ETRST, ETCK, ETMS, ETD0, and ETDI are used by the emulator for H8S/2168F. Pull up and connect the emulator and MCU pins.

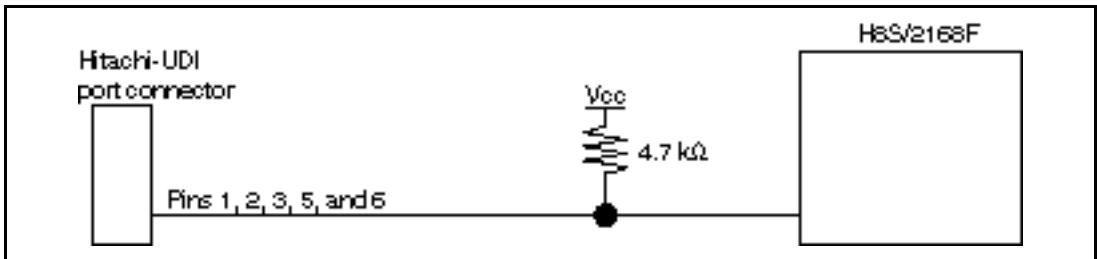


Figure 4.2 Connection of Emulator and MCU

2. Pin #MD2 of the H8S/2168F must be pulled up before connecting the emulator to the user system. If the emulator is not connected to the user system, ground pin #MD2.

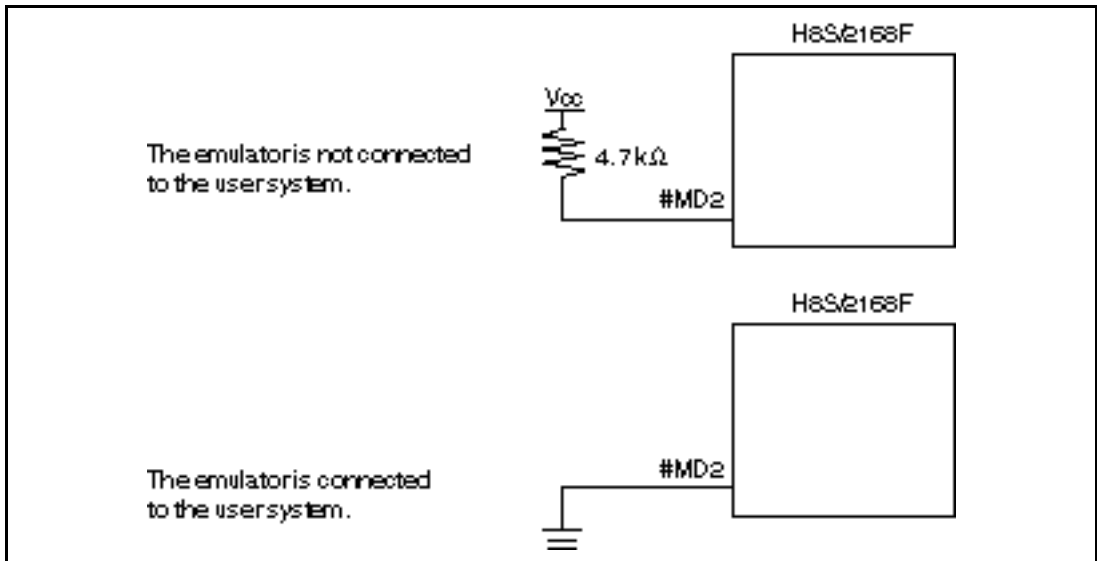


Figure 4.3 E10A Emulator and #MD2 Pin

3. #RES of pin 4 of the Hitachi-UDI port connector is a signal line in which the emulator outputs signals to the MCU. An AND operation must be performed between #RES (pin 7) and the user system reset circuit for the signal line connected to the MCU.

#RES of pin 7 of the Hitachi-UDI port connector is a signal line in which the emulator monitors the #RES signal of the MCU.

The #RES must be pulled up before it is connected to pin 7 of the Hitachi-UDI port connector.

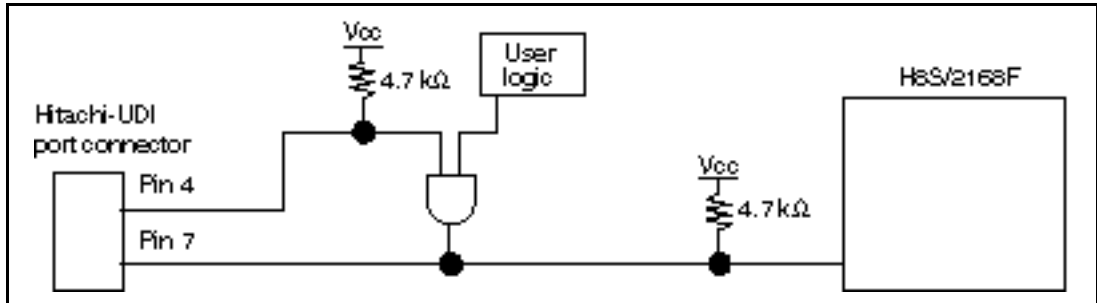


Figure 4.4 Examples of Reset Circuits

4. The FWE pin must be pulled up if the emulator is connected to the user system.

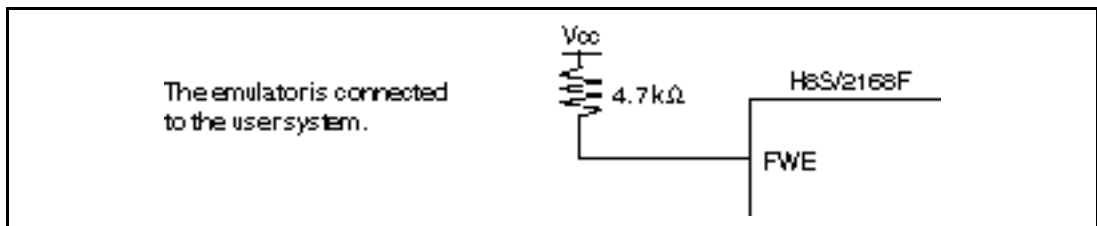


Figure 4.5 Connection of FWE Pin

5. Ground pins 8 to 10, and 12 to 14 of the Hitachi-UDI port connector.
6. Pin 11 of the Hitachi-UDI port connector must be connected to the user system Vcc (power supply). The amount of voltage permitted to input to the Hitachi-UDI port connector must be within the guaranteed range of the microcomputer.

7. Figure 4.6 shows the interface circuit in the emulator. Use this figure as a reference when determining the pull-up resistance value.

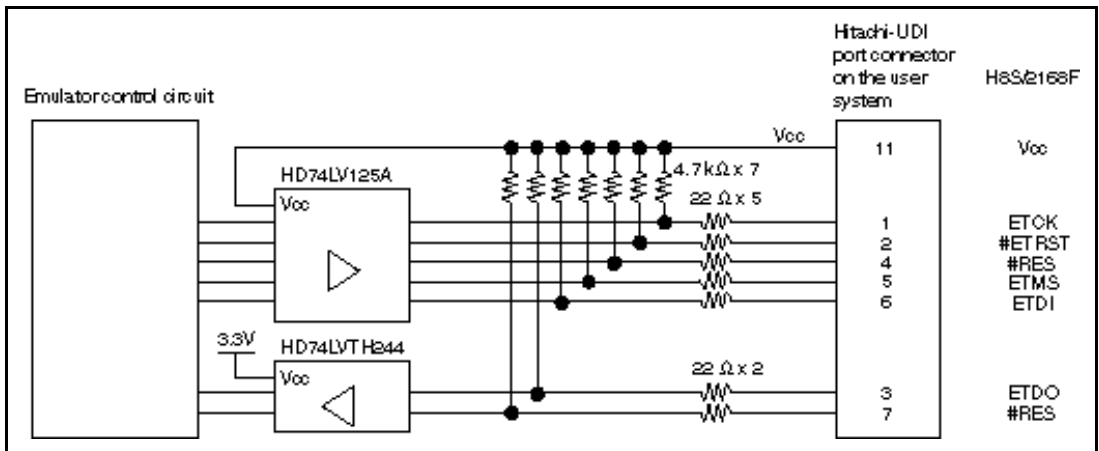


Figure 4.6 Interface Circuit in the Emulator (Reference)