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Renesas Electronics Corporation

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User's Manual

8

Connection of H8S/2218F, H8S/2212F with E10A Emulator

and User System

HS2218KCM01H
HS2218KCI01H

Renesas Electronics
www.renesas.com

Version 1.70

1. Connecting the E10A Emulator with the User System

To connect the E10A emulator (hereafter referred to as emulator), an H-UDI port connector must be installed on the user system to connect the user system interface cable. When designing the user system, refer to the recommended circuit between the H-UDI port connector and the MCU. Before designing the user system, be sure to read the H8S/2218F E10A user's manual and the hardware manual of the related MCU.
The H8S/2218F and H8S/2212F supported by this emulator are referred to as the MCU unless the description is specific to either of them.

2. Installing the H-UDI Port Connector on the User System

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

Table 2.1 Recommended Connector

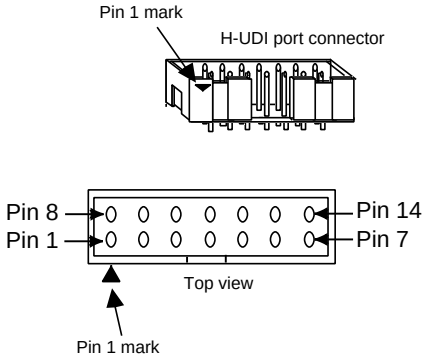
Type Number	Manufacturer	Specifications
2514-6002xx*	3M Limited	14-pin straight type

Note: xx means plated version.

Note: Do not install any components within 3 mm of the H-UDI port connector.

3. Pin Assignments of the H-UDI Port Connector

Figure 3.1 shows the pin assignments of the H-UDI port connector.



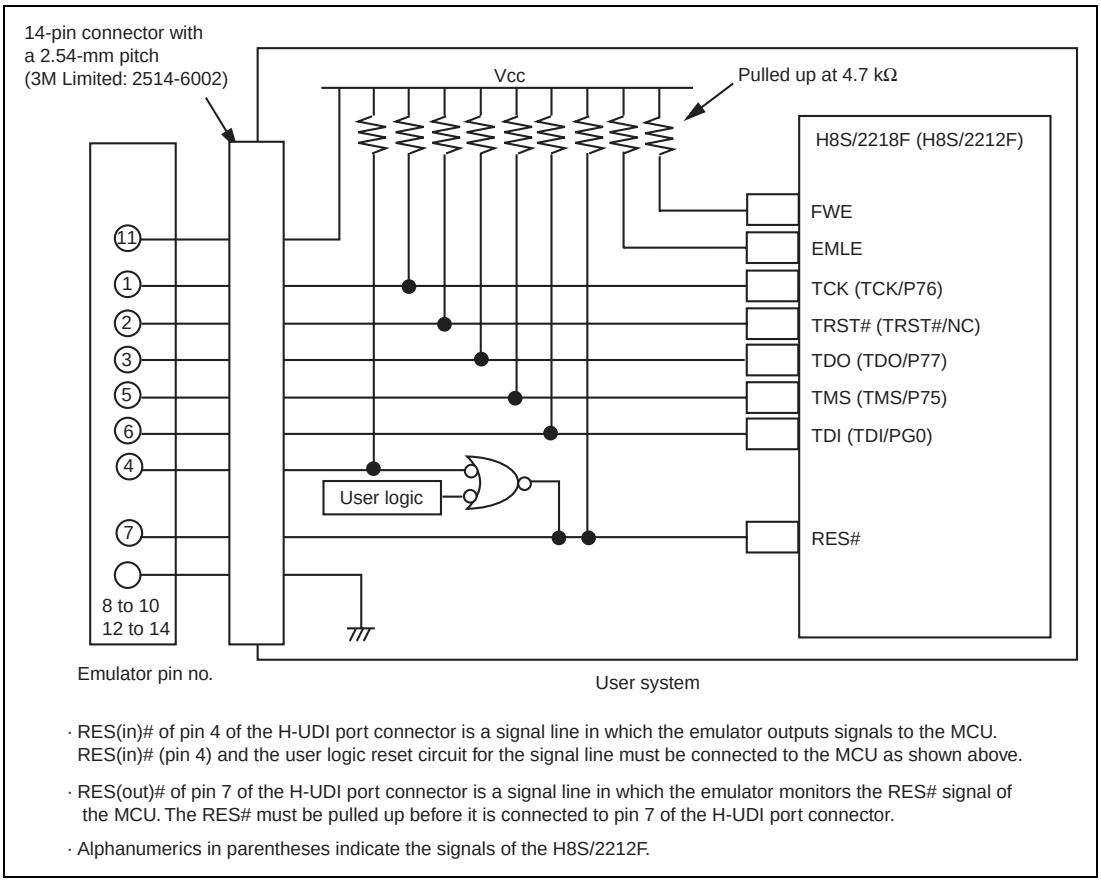
Pin No.	MCU Pin Name H8S/2218F	MCU Pin Name *5 H8S/2212F	Input/Output *1
1	TCK	TCK/P76	Input
2	TRST#	TRST#/NC	Input
3	TDO	TDO/P77	Output
4	RES(in)# *2 *6	RES(in)# *2 *6	Input
5	TMS	TMS/P75	Input
6	TDI	TDI/PG0	Input
7	RES(out)# *2	RES(out)# *2	Output
8 to 10 12 to 14	GND *3	GND *3	—
11	Vcc *4	Vcc *4	—

Notes: 1. Input to or output from the H-UDI port connector on the user system.
2. The symbol (#) means that the signal is active-low.
3. By detecting GND on the user system, the emulator decides whether the user system is connected or not.
4. Connect Vcc with the Vcc of the MCU.
5. The P75 to P77 and PG0 port functions of the H8S/2212F cannot be used.
6. RES(in) is not the pin name of the MCU. It cannot be directly connected to the MCU pins.

Figure 3.1 Pin Assignments of the H-UDI Port Connector

4. Example of Emulator Connection

The figure shown below is an example of connecting the user system to the emulator.



· RES(in)# of pin 4 of the H-UDI port connector is a signal line in which the emulator outputs signals to the MCU. RES(in)# (pin 4) and the user logic reset circuit for the signal line must be connected to the MCU as shown above.

· RES(out)# of pin 7 of the H-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 H-UDI port connector.

· Alphanumerics in parentheses indicate the signals of the H8S/2212F.

Figure 4.1 Example of Emulator Connection

Notes: 1. TRST#, TCK, TMS, TDO, and TDI are used by the emulator for the H8S/2218F. TRST#/NC, TCK/P76, TMS/P75, TDO/P77, and TDI/PG0 are used by the emulator for the H8S/2212F. Pull up and connect the emulator and the MCU pins.

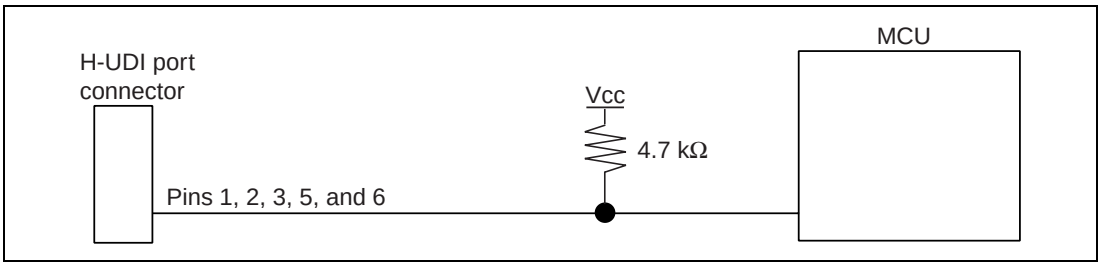


Figure 4.2 Connection of Emulator and MCU

2. Pin EMLE of the MCU must be pulled up before connecting the emulator to the user system. If the emulator is not connected to the user system, ground pin EMLE, and when the emulator is connected to the user system, pull up the EMLE.

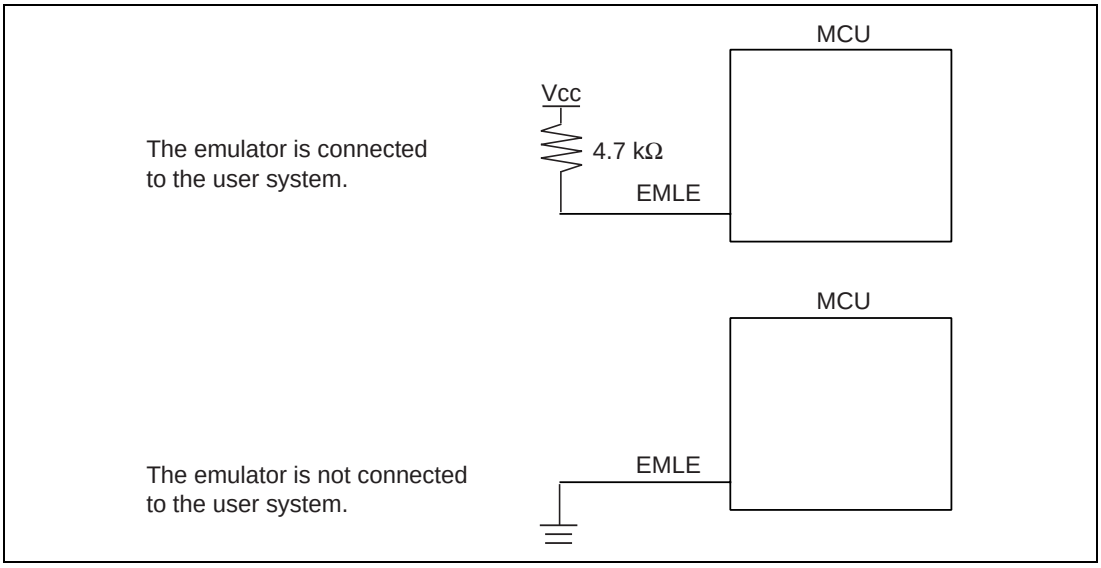


Figure 4.3 Emulator and Pin EMLE

3. **RES(in)# of pin 4 of the H-UDI port connector is a signal line in which the emulator outputs signals to the MCU. RES(in)# (pin 4) and the user logic reset circuit for the signal line must be connected to the MCU as shown in figure 4.4. RES(out)# of pin 7 of the H-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 H-UDI port connector.

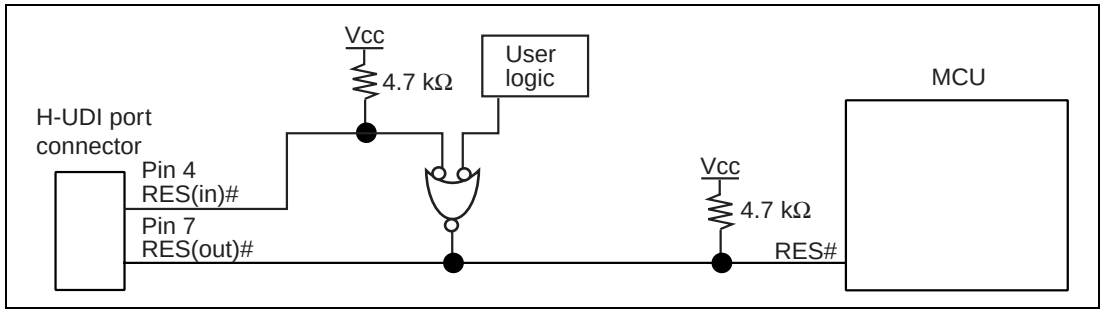


Figure 4.4 Example of Reset Circuits

4. **Pin FWE must be pulled up if the emulator is connected to the user system.**

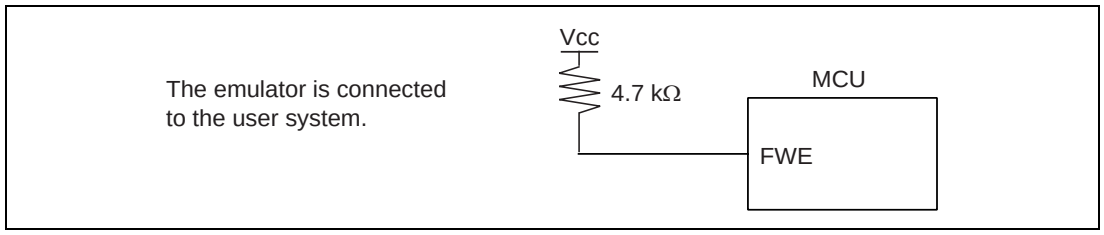


Figure 4.5 Connection of Pin FWE

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

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

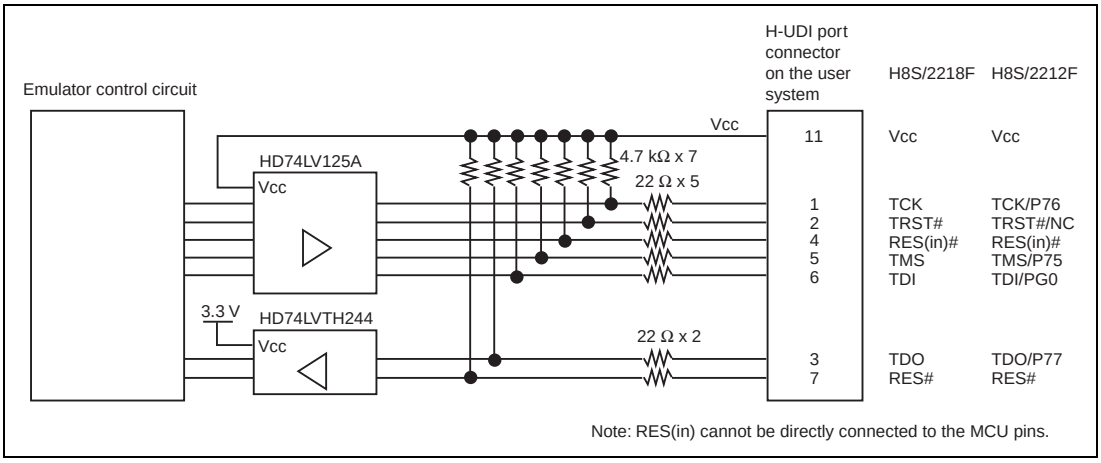


Figure 4.6 Interface Circuit in the Emulator (Reference)

8. **When the H8S/2212F in use is connected to the emulator, the pin functions listed below are not available.**

Table 4.1 Pin Functions Not Available

H8S/2212F
P75 to P77 and PG0

The symbol (#) means that the signal is active-low.

9. **The H8S/2218F has a boundary scan function. To use the H8S/2218F without connecting the emulator, refer to the description in section 13.5, Usage Notes, in the H8S/2218F group hardware manual, and connect the H8S/2218F to the emulator.**

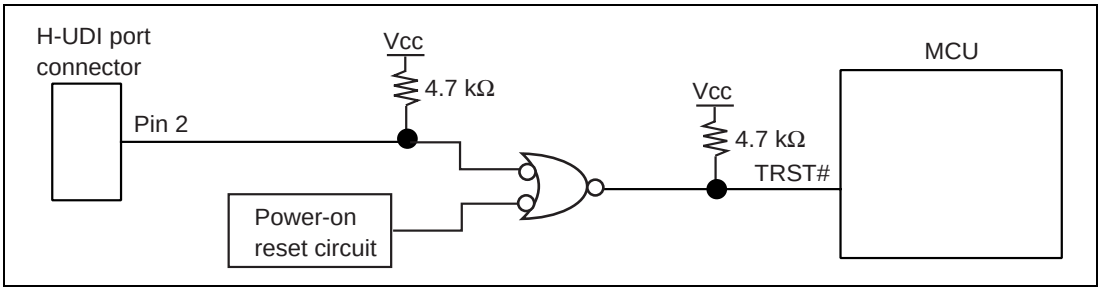


Figure 4.7 TRST# of the H8S/2218F (Reference)