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User's Manual

# H8S Family E10A Emulator

## Additional Document for User's Manual

H8S/2378F E10A HS2378KCM01HE-U2
Renesas Microcomputer Development Environment System
H8S Family / H8S/2300 Series
Specific Guide for the H8S/2378F, H8S/2377F, H8S/2367F, H8S/2368F, H8S/2378RF, H8S/2377RF E10A Emulator

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# Contents

Section 1 Connecting the Emulator with the User System ..... 1
1.1 Components of the E10A Emulator ..... 1
1.2 Connecting the E10A Emulator with the User System ..... 2
1.3 Pin Assignments of the E10A Connector ..... 3
1.4 Example of E10A Emulator Connection ..... 4

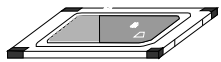
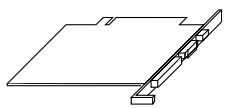
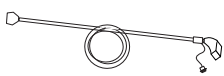
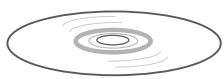
Section 2 Specification of the E10A Emulator's Software ..... 9
2.1 Differences between the H8S/2378F, H8S/2377F, H8S/2367F, H8S/2368F, H8S/2378RF, H8S/2377RF, and the E10A Emulator ..... 9
2.2 The H8S/2378F E10A Emulator Functions ..... 11
2.2.1 E10A Emulator Driver Selection ..... 11
2.2.2 Hardware Break Functions ..... 11
2.2.3 Notes on Setting the [Breakpoint] Dialog Box ..... 13
2.2.4 Note on Using the JTAG Clock (TCK) ..... 13
2.2.5 Trace Function ..... 13

# Section 1 Connecting the Emulator with the User System

## 1.1 Components of the E10A Emulator

The H8S/2378F E10A emulator supports the H8S/2378F, H8S/2377F, H8S/2367F, H8S/2368F, H8S/2378RF, and H8S/2377RF (hereafter referred to as the MCU unless the description is specific to any of them). Table 1.1 lists the components of the E10A emulator.

**Table 1.1 Components of the E10A Emulator (HS2378KCM01H or HS2378KCI01H)**

| Classi-fication | Component | Appearance | Quan-tity | Remarks |
|---|---|---|---|---|
| Hard-ware | Card emulator<br>HS2378KCM01H (Model: HS0005KCM05H),<br>HS2378KCI01H (Model: HS0005KCI05H) |  <br>(PCMCIA)<br>or<br>  <br>(PCI) | 1 | HS2378KCM01H (PCMCIA: 14-pin type):<br>Depth: 85.6 mm,<br>Width: 54.0 mm,<br>Height: 5.0 mm,<br>Mass: 30.0 g<br>HS2378KCI01H (PCI: 14-pin type):<br>Depth: 122.0 mm,<br>Width: 96.0 mm,<br>Mass: 80.0 g |
| | User system interface cable |  | 1 | HS2378KCM01H (PCMCIA: 14-pin type):<br>Length: 80.0 cm,<br>Mass: 46.0 g<br>HS2378KCI01H (PCI: 14-pin type):<br>Length: 150.0 cm,<br>Mass: 90.0 g |
| Soft-ware | H8S/2378F E10A emulator setup program,<br>H8S Family E10A Emulator User's Manual,<br>and<br>Specific Guide for the H8S/2378F, H8S/2377F, H8S/2367F, H8S/2368F, H8S/2378RF, H8S/2377RF E10A Emulator |  | 1 | HS2378KCM01SR,<br>HS0005KCM05HJ,<br>HS0005KCM05HE,<br>HS2378KCM01HJ-U2, and<br>HS2378KCM01HE-U2<br>(provided on a CD-R) |

## 1.2 Connecting the E10A Emulator with the User System

Before connecting an E10A emulator with the user system, a connector must be installed in the user system so that an user system interface cable can be connected. When designing the user system, refer to the connector and recommended circuits shown in this manual.
Before designing the user system, be sure to read the E10A emulator user's manual and the hardware manual for related MCUs.

Connect pins 8, 9, 10, 12, 13, and 14 of the user system connector to GND firmly on the PCB. These pins are used as electrical GND and to monitor the connection of the user system connector. Note the pin arrangement of the user system connector.

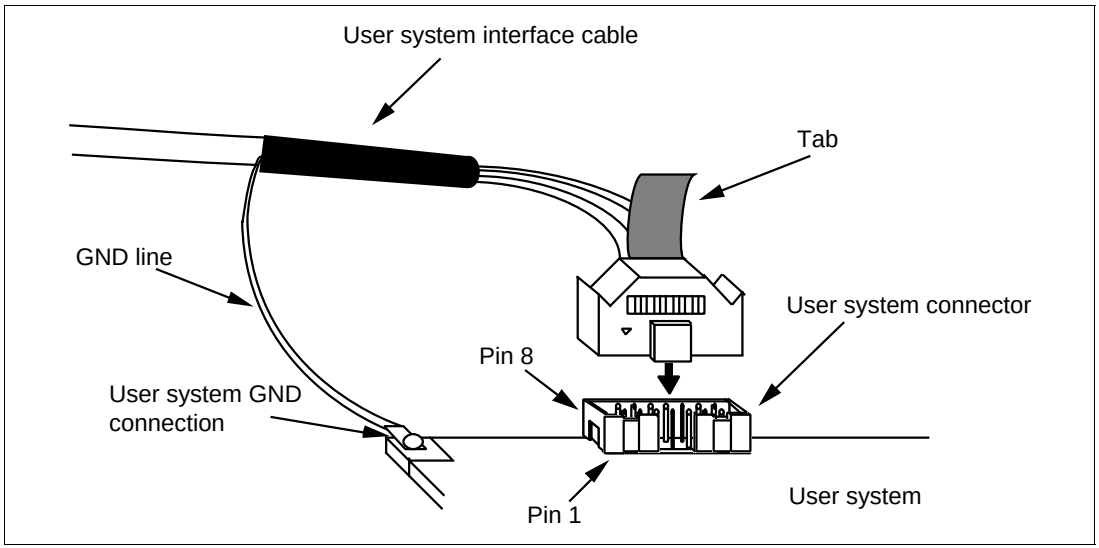
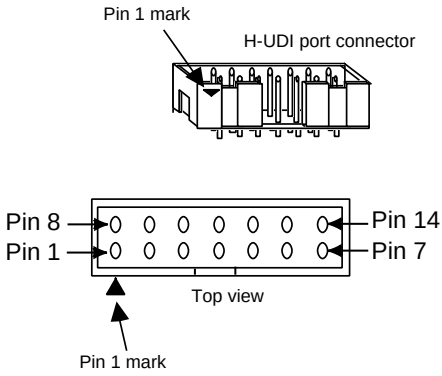



**Figure 1.1 Connecting the User System Interface Cable to the User System**

Notes:
1. The pin number assignment of the 14-pin connector differs from that of the E10T emulator; however, the physical location is the same.
2. When the connector is used, do not install any components within 3 mm of the connector.

## 1.3 Pin Assignments of the E10A Connector

Figure 1.2 shows the pin assignments of the H-UDI port connector.



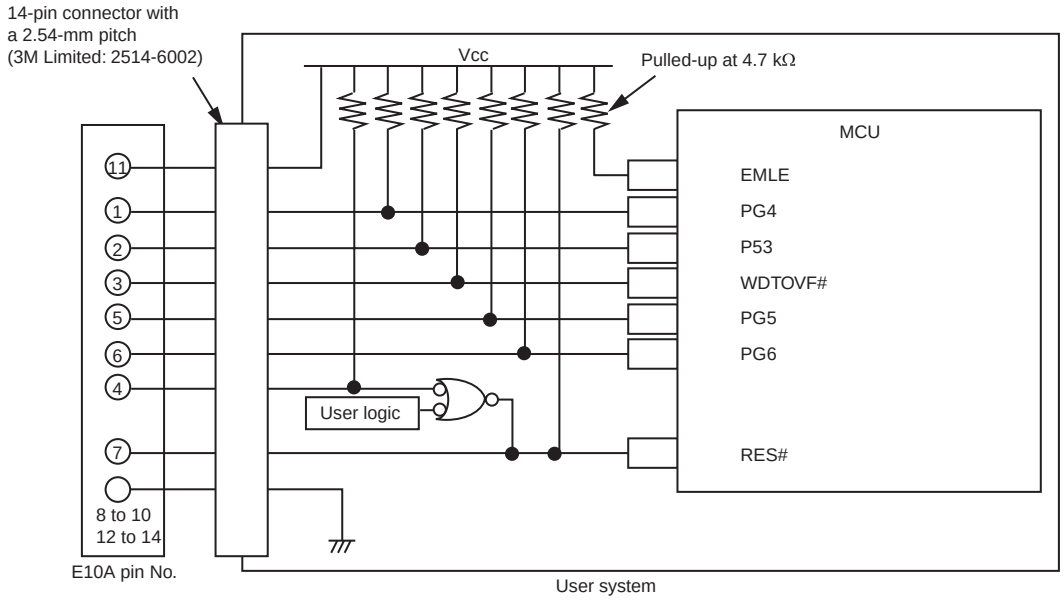

| Pin No. | MCU Pin Name | Input/Output *1 |
|---|---|---|
| 1 | PG4 | Input |
| 2 | P53 | Input |
| 3 | WDTOVF# | Output |
| 4 | RES# *2 | Input |
| 5 | PG5 | Input |
| 6 | PG6 | Input |
| 7 | RES# *2 | Output |
| 8 to 10<br>12 to 14 | GND *3 | — |
| 11 | Vcc *4 | — |

Notes: 1. Input to or output from the user system.
2. The symbol (#) means that the signal is active-low.
3. By detecting GND on the user system side, the E10A emulator decides whether the user system is connected or not.
4. Connect Vcc with the Vcc of the MCU.

**Figure 1.2 Pin Arrangement of the H-UDI Port Connector**

## 1.4 Example of E10A Emulator Connection

The figure shown below is an example of connecting the user system to the E10A emulator.




· RES# of pin 4 of the H-UDI port connector is a signal line in which the emulator outputs signals to the MCU. Connect RES# of pin 4 and the user system reset circuit to the MCU, as shown above.

· RES# 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 1.3 Example of E10A Emulator Connection**

Notes: 1. The E10A emulator uses WDTOVF#, P53, and PG4 to PG6 pins. Pull up the E10A emulator and MCU pins and connect them to the user system connector. Peripheral functions that are shared by those pins cannot be used.

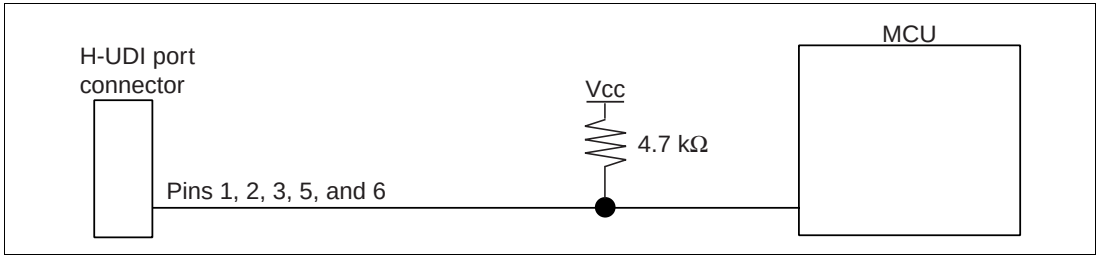



**Figure 1.4 Connection of E10A Emulator and the MCU**

2. The EMLE pin of the MCU must be pulled up when connecting with the E10A emulator, and connected to ground when not connecting with the E10A emulator.

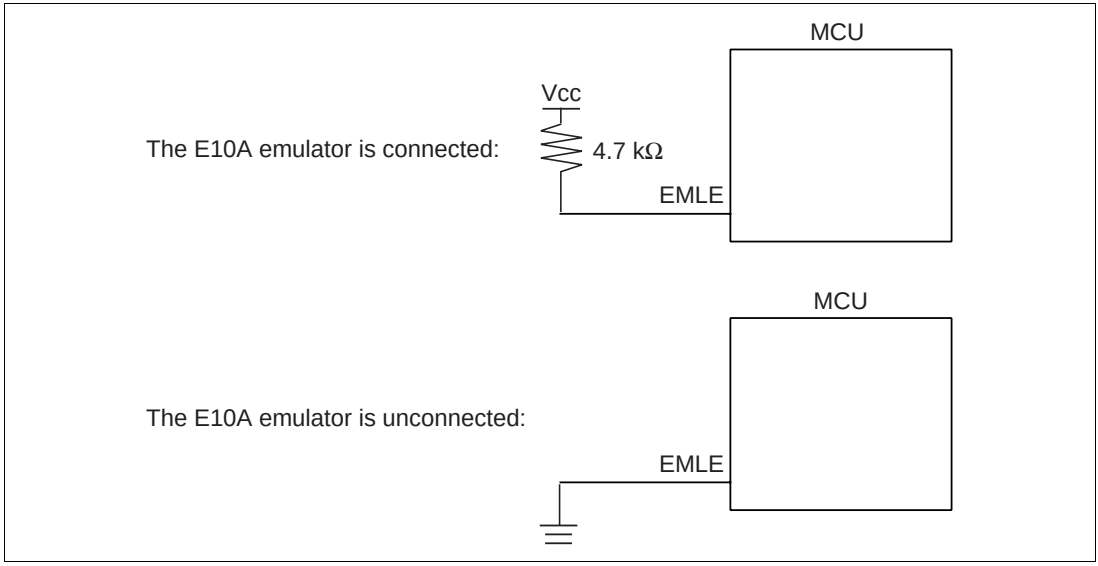



**Figure 1.5 EMLE pin and E10A Emulator**

3. RES# of pin 4 of the H-UDI port connector is a signal line in which the emulator outputs signals to the MCU. RES# of pin 4 and the user system reset circuit must be connected to the MCU, as shown in figure 1.6. RES# 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.

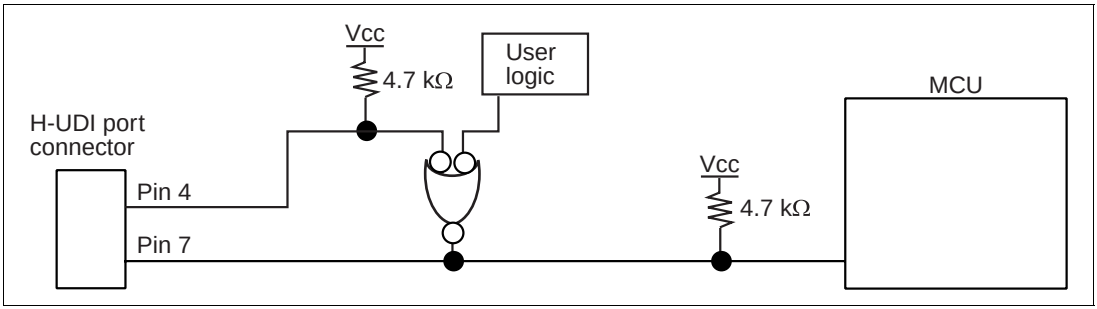



**Figure 1.6 Example of Reset Circuits**

4. Connect GND of pins 8 to 10 and 12 to 14 of the H-UDI port connector to ground in the user system.
5. Connect Vcc, pin 11 of the H-UDI port connector, to the power supply (Vcc) in the user system. The input voltage, Vcc, is within the range of guaranteed operation of the microcomputer.
6. Figure 1.7 shows the interface circuit in the emulator. Use this figure as a reference when determining the pull-up resistance value.

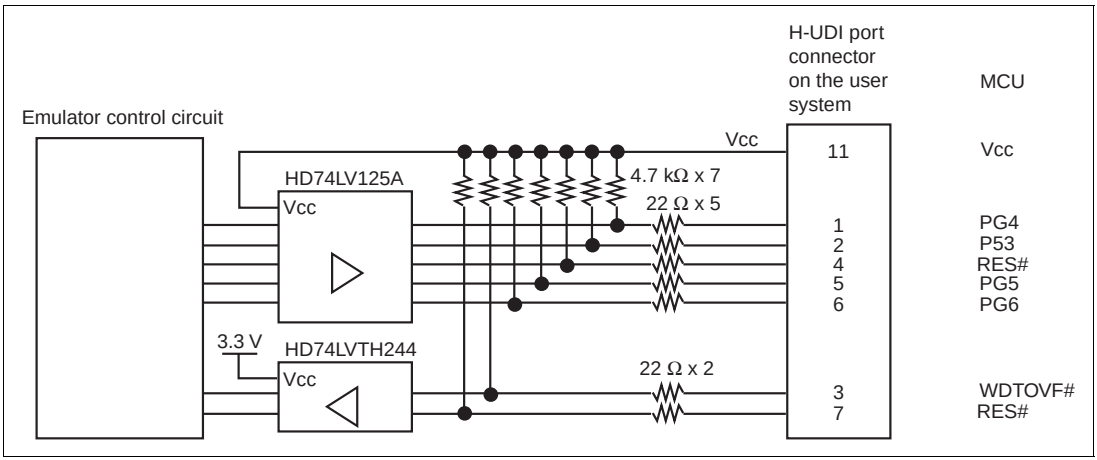



**Figure 1.7 Interface Circuit in the Emulator (Reference)**

7. When the MCU is connected to the E10A emulator, the functions listed below cannot be used.

**Table 1.2 Pin Functions Not Available**

| H8S/2378F, H8S/2377F, H8S/2378RF, and H8S/2377RF | H8S/2367F and H8S/2368F |
|---|---|
| P53 and PG4 to PG6 | P53 and PG4 to PG6 |
| WDTOVF# | WDTOVF# |
| IRQ3# | IRQ3# |
| ADTRG# | ADTRG# |
| BREQ#, BACK#, and BREQ0# | BREQ#, BACK#, and BREQ0# |
| — | CS4# |

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

# Section 2 Specification of the E10A Emulator's Software

## 2.1 Differences between the H8S/2378F, H8S/2377F, H8S/2367F, H8S/2368F, H8S/2378RF, H8S/2377RF, and the E10A Emulator

1. When the E10A emulator system is initiated, it initializes the general registers and part of the control registers as shown in table 2.1.

**Table 2.1 Register Initial Values at E10A Emulator Power-On**

| Register | Initial Value |
|---|---|
| PC | Reset vector value in the vector address table |
| ER0 to ER6 | H'0 |
| ER7 (SP) | H'10 |
| CCR | 1 for I mask, and others undefined |
| EXR | H'7F |

2. System Control Register

   In the E10A emulator, the internal I/O registers can be accessed from the [IO] window. However, be careful when accessing the system control register. The E10A emulator saves the register value of the system control register at a break and returns the value when the user program is executed. Since this is done during a break, do not rewrite the system control register in the [IO] window.

3. Memory Access during Emulation

   If the memory contents are referenced or modified during emulation, realtime emulation cannot be performed because the user program is temporarily halted.

4. The E10A emulator communicates with the H8S/2378F by using the PG4, P53, WDTOVF#, RES#, PG5, and PG6 pins. These pins cannot be used.

5. The power consumed by the MCU can reach several mA. This is because the user power supply drives one HD74LV125A to make the communication signal level match the user-system power-supply voltage.

6. Do not use an MCU that has been used for debugging.
   If the flash memory is rewritten many times, and the MCU is left for a few days, data may be lost due to retention problems.

If the flash memory is rewritten many times, the data will not be erased. If an error message is displayed, exchange the MCU for a new one.

7. MCU Operating Mode
   The E10A emulator does not support modes 1 and 2 (expanded mode with on-chip ROM disabled mode). Use the E10A emulator in mode 4 (expanded mode with on-chip ROM enabled) or mode 7 (single-chip mode).

8. Sum Data Displayed in the Writing Flash memory Mode
   Sum data, which is displayed in the ‘Writing Flash memory’ mode, is a value that data in the whole ROM areas has been added by bytes.

9. Note on Executing the User Program
   The set value is rewritten since the emulator uses flash memory registers during programming (Go, Step In, Step Out, or Step Over) of the flash memory.

10. Note on Using the WDT
    If a reset occurs by an overflow of the WDT during user program halting, the emulator will not operate correctly. Do not use the reset function by the overflow of the WDT.

## 2.2 The H8S/2378F E10A Emulator Functions

Notes: 1. Do not use an MCU that has been used for debugging.
2. If the flash memory is rewritten many times, and the E10A emulator is left for a few days, data may be lost due to retention problems.
3. If the flash memory is rewritten many times, the data will not be erased. If an error message is displayed, exchange the MCU for a new one.

### 2.2.1 E10A Emulator Driver Selection

Table 2.2 shows drivers which can be selected in the [E10A Driver Details] dialog box.

**Table 2.2 Type Name and Driver**

| Type Name | Driver |
|---|---|
| HS2378KCM01H | E10A PC Card Driver 5 |
| HS2378KCI01H | E10A PCI Card Driver 5 |

### 2.2.2 Hardware Break Functions

**Hardware Break Conditions:** In the H8S/2378F E10A emulator, conditions of Break Condition 1,2 can be set. Table 2.3 lists the items that can be specified.

**Table 2.3 Hardware Break Condition Specification Items**

| Items | Description |
|---|---|
| Address bus condition | Breaks when the MCU address bus value matches the specified value. |
| Data bus condition | Breaks when the MCU data bus value matches the specified value. High or low byte or word can be specified as the access data size. |
| Read or write condition | Breaks in the read or write cycle. |

Table 2.4 lists the combinations of conditions that can be set in the [Break condition] dialog box.

**Table 2.4 Conditions Set in [Break condition] Dialog Box**

| | Condition | | |
|---|---|---|---|
| **Dialog Box** | **Address Bus Condition** | **Data Condition** | **Read or Write Condition** |
| [Break condition 1] | O | O | O |
| [Break condition 2] | O | O | O |

Note: O: Can be set by checking the radio button in the dialog box.

Table 2.5 lists the combinations of conditions that can be set by the BREAKCONDITION_SET command.

**Table 2.5 Conditions Set by BREAKCONDITION_SET Command**

| | Condition | | |
|---|---|---|---|
| **Channel** | **Address Bus Condition (<addropt> option)** | **Data Condition (<dataopt> option)** | **Read or Write Condition (<r/wopt> option)** |
| Break condition 1 | O | O | O |
| Break condition 2 | O | O | O |

Note: O: Can be set by the BREAKCONDITION_SET command.

**Notes on Setting the Break Condition:**

1. When [Go to cursor], [Step In], [Step Over], or [Step Out] is selected, the settings of Break Condition are disabled.
2. The settings of Break Condition are disabled when an instruction to which a BREAKPOINT has been set is executed.
3. When step over function is used, the settings of BREAKPOINT and Break Condition are disabled.

### 2.2.3 Notes on Setting the [Breakpoint] Dialog Box

1. When an odd address is set, the address is rounded down to an even address.
2. A BREAKPOINT is accomplished by replacing instructions. Accordingly, it can be set only to the flash memory or the RAM area. However, a BREAKPOINT cannot be set to the following addresses:
   - An area other than flash memory or RAM
   - An area occupied by the E10A emulator program
   - An instruction in which Break Condition is satisfied
3. During step execution, a BREAKPOINT is disabled.
4. A condition set at Break Condition is disabled immediately after starting execution when an instruction at a BREAKPOINT is executed. A break does not occur even if a condition of Break Condition is satisfied immediately after starting the execution.
5. When execution resumes from the breakpoint address after the program execution stops at the BREAKPOINT, single-step execution is performed at the address before execution resumes. Therefore, realtime operation cannot be performed.
6. Settings of BREAKPOINT and Break Condition are invalid while the STEP OVER function is being used.

### 2.2.4 Note on Using the JTAG Clock (TCK)

When the JTAG clock (TCK) is used, set the frequency to lower than that of the system clock.

### 2.2.5 Trace Function

The E10A emulator uses the branch-instruction trace and bus trace functions in the MCU, and acquires a trace by operating the user program in realtime. The branch-instruction trace function displays the branch-source address, the mnemonic, and the operand. The bus trace function displays and searches the information on the address bus, data bus, memory access, interrupt, and bus cycle, the mnemonic, and the operand. The acquisition conditions can also be set.

Note: The bus trace function is supported by H8S/2367F, H8S/2377F, and H8S/2377RF; it is not supported by H8S/2378F, H8S/2378RF, and H8S/2368F.

(1) Setting Acquisition

The acquisition condition on the trace information is set.

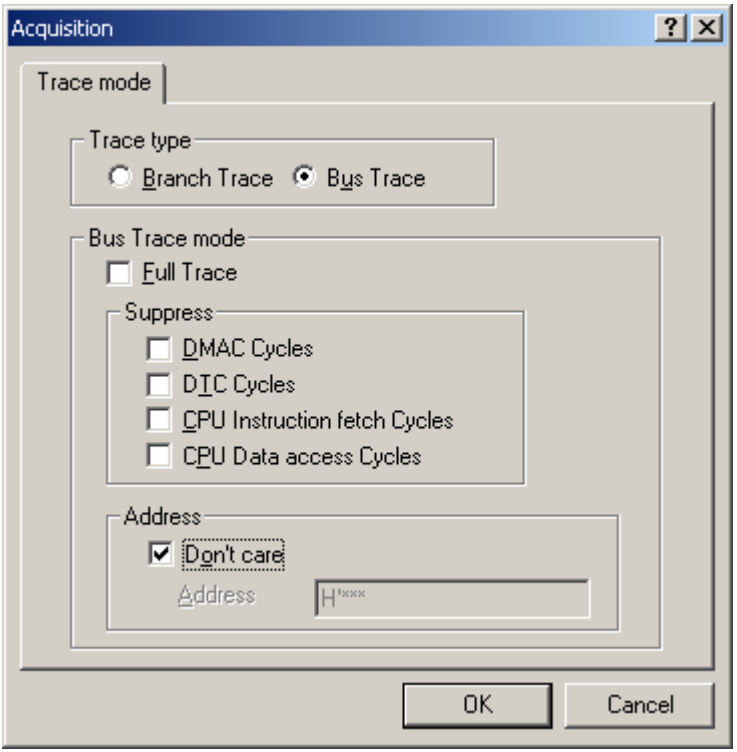


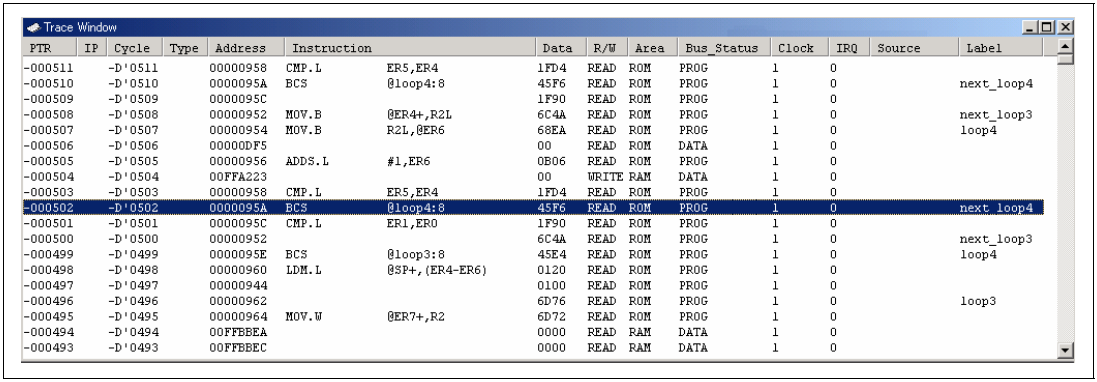

**Figure 2.1 [Trace mode] Page**

**Table 2.6 Setting Acquisition**

| Acquisition Condition | Description |
|---|---|
| Trace type | Sets the trace information for acquisition and display.<br>Branch trace: Acquires and displays the branch-instruction trace information.<br>Bus trace: Acquires and displays the bus trace information. |
| Bus Trace mode | Sets the trace acquisition condition when Bus Trace is selected as Trace type. This is not set when Branch Trace is selected.<br>• [Full Trace] check box<br>Indicates that all cycles are acquired.<br>• [Suppress] group box<br>Sets a cycle to suppress acquisition.<br>DMAC Cycles: Suppresses acquiring the DMAC cycle.<br>DTC Cycles: Suppresses acquiring the DTC cycle.<br>CPU Instruction fetch Cycles: Suppresses acquiring the CPU-instruction fetch cycle.<br>CPU Data access Cycles: Suppresses acquiring the CPU-data access cycle.<br>• [Address] group box<br>Sets the address condition to be acquired. |

(2) Displaying a Trace in the Bus Trace Function

The contents of the trace buffer in table 2.7 are displayed in the [Trace] window.




| PTR | IP | Cycle | Type | Address | Instruction | | Data | R/W | Area | Bus_Status | Clock | IRQ | Source | Label |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -000511 | | -D'0511 | | 00000958 | CMP.L | ER5,ER4 | 1FD4 | READ | ROM | PROG | 1 | 0 | | |
| -000510 | | -D'0510 | | 0000095A | BCS | @loop4:8 | 45F6 | READ | ROM | PROG | 1 | 0 | | next_loop4 |
| -000509 | | -D'0509 | | 0000095C | | | 1F90 | READ | ROM | PROG | 1 | 0 | | |
| -000508 | | -D'0508 | | 00000952 | MOV.B | @ER4+,R2L | 6C4A | READ | ROM | PROG | 1 | 0 | | next_loop3 |
| -000507 | | -D'0507 | | 00000954 | MOV.B | R2L,@ER6 | 68EA | READ | ROM | PROG | 1 | 0 | | loop4 |
| -000506 | | -D'0506 | | 00000DF5 | | | 00 | READ | ROM | DATA | 1 | 0 | | |
| -000505 | | -D'0505 | | 00000956 | ADDS.L | #1,ER6 | 0B06 | READ | ROM | PROG | 1 | 0 | | |
| -000504 | | -D'0504 | | 00FFA223 | | | 00 | WRITE | RAM | DATA | 1 | 0 | | |
| -000503 | | -D'0503 | | 00000958 | CMP.L | ER5,ER4 | 1FD4 | READ | ROM | PROG | 1 | 0 | | |
| -000502 | | -D'0502 | | 0000095A | BCS | @loop4:8 | 45F6 | READ | ROM | PROG | 1 | 0 | | next_loop4 |
| -000501 | | -D'0501 | | 0000095C | CMP.L | ER1,ER0 | 1F90 | READ | ROM | PROG | 1 | 0 | | |
| -000500 | | -D'0500 | | 00000952 | | | 6C4A | READ | ROM | PROG | 1 | 0 | | next_loop3 |
| -000499 | | -D'0499 | | 0000095E | BCS | @loop3:8 | 45E4 | READ | ROM | PROG | 1 | 0 | | loop4 |
| -000498 | | -D'0498 | | 00000960 | LDM.L | @SP+,(ER4-ER6) | 0120 | READ | ROM | PROG | 1 | 0 | | |
| -000497 | | -D'0497 | | 00000944 | | | 0100 | READ | ROM | PROG | 1 | 0 | | |
| -000496 | | -D'0496 | | 00000962 | | | 6D76 | READ | ROM | PROG | 1 | 0 | | loop3 |
| -000495 | | -D'0495 | | 00000964 | MOV.W | @ER7+,R2 | 6D72 | READ | ROM | PROG | 1 | 0 | | |
| -000494 | | -D'0494 | | 00FFBBEA | | | 0000 | READ | RAM | DATA | 1 | 0 | | |
| -000493 | | -D'0493 | | 00FFBBEC | | | 0000 | READ | RAM | DATA | 1 | 0 | | |

**Figure 2.2 [Trace] Window**

**Table 2.7 Items in the [Trace] Window**

| Item | Description |
|---|---|
| [PTR] | Pointer to a location in the trace buffer (+0 for the last executed instruction) (signed decimal) |
| [IP] | Instruction pointer |
| [Cycle] | Cycle |
| [Type] | Type of trace information<br>BRANCH: Branch source instruction |
| [Address] | Address value |
| [Instruction] | Instruction mnemonic |
| [Data] | Data value |
| [R/W] | Read or write access |
| [Area] | Access area |
| [Bus_Status] | Bus cycle states |
| [Clock] | Bus cycle counts |
| [IRQ] | IRQ pins |
| [Source] | The C/C++ or assembly-language source program in which the trace is acquired |
| [Label] | Label information |

For branch trace, items [Cycle], [Data], [R/W], [Area], [Bus_Status], [Clock], and [IRQ] are not displayed. For bus trace, items [IP] and [Type] are not displayed.

The column width of the [Trace] window can be adjusted by clicking and dragging the vertical separate line between columns. When the window is closed, the new column width is automatically saved.

The capacity of the trace buffer is limited. When the buffer becomes full, the oldest trace information is overwritten.

(3) Trace Filter Function

The E10A emulator displays all the information that matches the specified conditions for all the trace data. The information is displayed by selecting [Filter…] from the popup menu that is displayed with the right-hand mouse button on the [Trace] window.

The filter condition is set to restrict the cycle to be displayed on the trace buffer.

(i) [General] Page Options

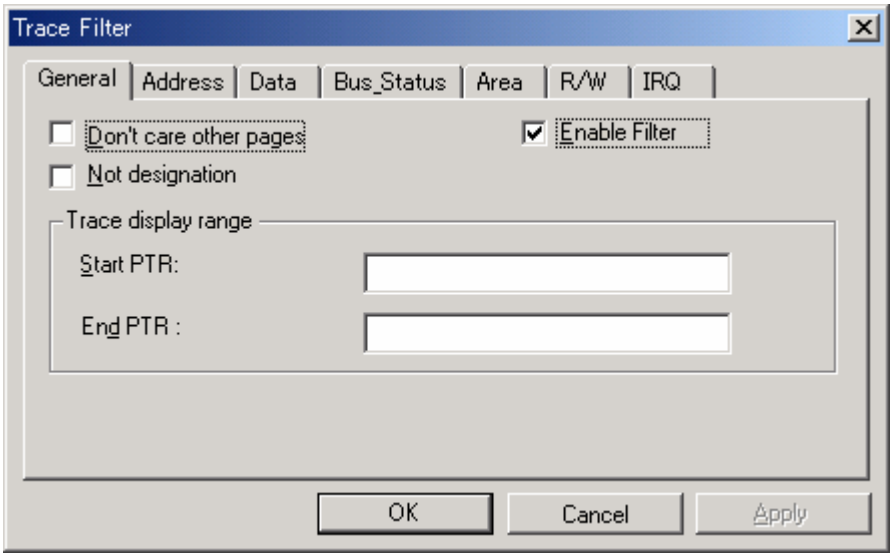



**Figure 2.3 [General] Page**

**Table 2.8 [General] Page Options**

| Option | Description |
|---|---|
| [Don't care other pages] check box | Disables settings on other pages than the [General] page. |
| [Enable Filter] check box | Enables filter conditions. |
| [Not designation] check box | Designates no conditions. |
| [Start PTR] edit box | Enters the start pointer in the range that is displayed on the [Trace] window. |
| [End PTR] edit box | Enters the end pointer in the range that is displayed on the [Trace] window. |

(ii) [Address] Page Options

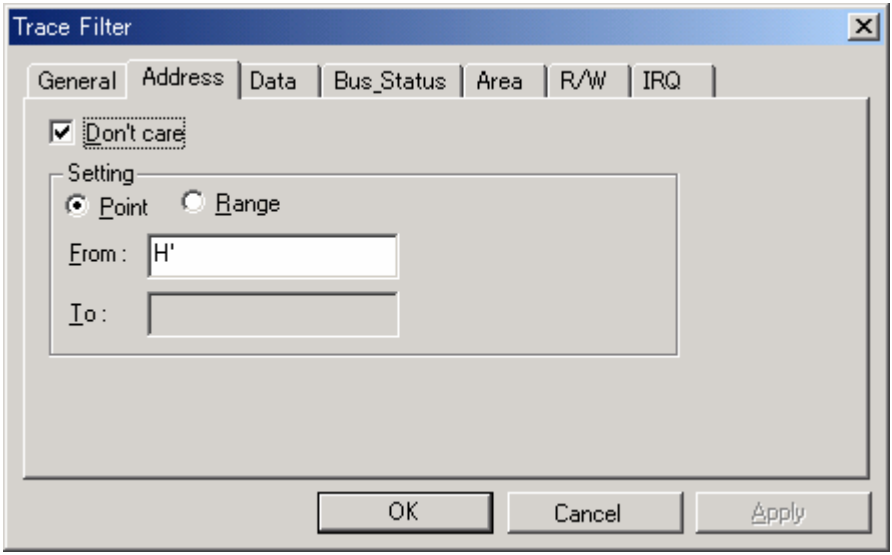



**Figure 2.4 [Address] Page**

**Table 2.9 [Address] Page Options**

| Option | Description |
|---|---|
| [Don't care] check box | Indicates that no address condition is set. |
| [Point] radio button | Specifies the single address. |
| [Range] radio button | Sets an address range as a display condition. |
| [From] edit box | Sets the start value of the address range. |
| [To] edit box | Sets the end value of the address range. |

(iii) [Data] Page Options

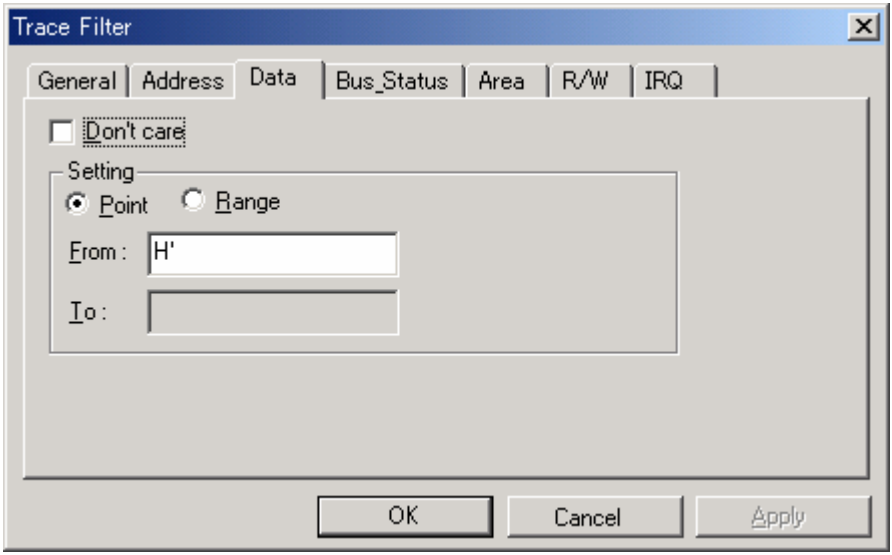



**Figure 2.5 [Data] Page**

**Table 2.10 [Data] Page Options**

| Option | Description |
|---|---|
| [Don't care] check box | Indicates that no data condition is set. |
| [Point] radio button | Specifies the single data value. |
| [Range] radio button | Sets a range of the data value as a display condition. |
| [From] edit box | Sets the start value of the data value. |
| [To] edit box | Sets the end value of the data value. |

(iv) [Bus_Status] Page Options

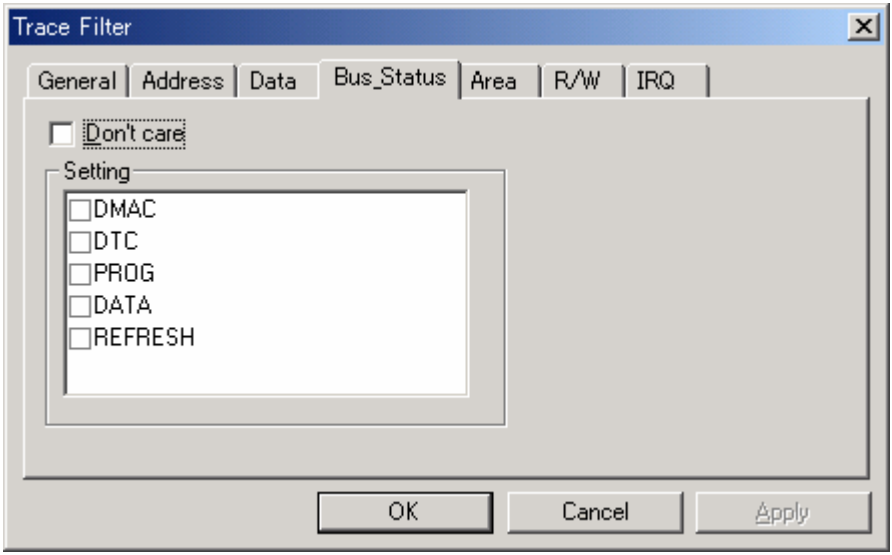



**Figure 2.6 [Bus_Status] Page**

**Table 2.11 [Bus_Status] Page Options**

| Option | Description |
|---|---|
| [Don't care] check box | Indicates that no bus-status condition is set. |
| [Setting] group box | Specifies the bus status.<br>DMAC: DMAC bus cycle<br>DTC: DTC bus cycle<br>PROG: CPU-instruction fetch cycle<br>DATA: CPU-data access cycle<br>REFRESH: Refresh cycle |

(v) [Area] Page Options

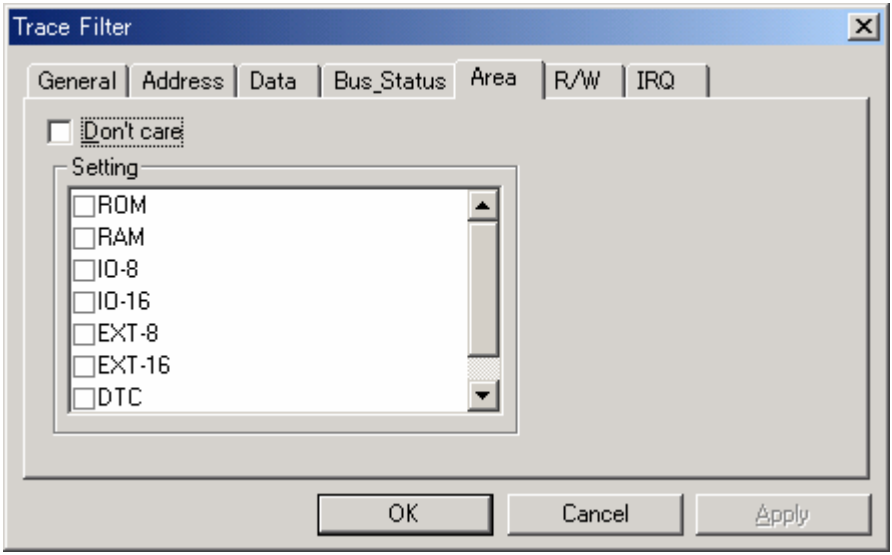



**Figure 2.7 [Area] Page**

**Table 2.12 [Area] Page Options**

| Option | Description |
|---|---|
| [Don't care] check box | Indicates that no area condition is set. |
| [Setting] group box | Specifies the area.<br>ROM: ROM area<br>RAM: RAM area<br>IO-8: IO-8 area<br>IO-16: IO-16 area<br>EXT-8: EXT-8 area<br>EXT-16: EXT-16 area<br>DTC: DTC area |

(vi) [R/W] Page Options

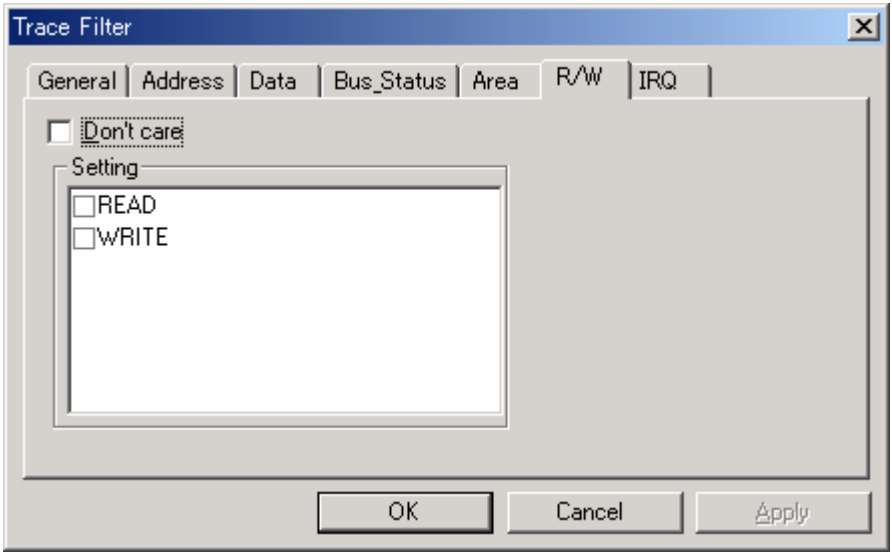



**Figure 2.8 [R/W] Page**

**Table 2.13 [R/W] Page Options**

| Option | Description |
|---|---|
| [Don't care] check box | Indicates that no read/write condition is set. |
| [Setting] group box | Specifies the read/write.<br>READ: Read cycle<br>WRITE: Write cycle |

(vii) [IRQ] Page Options

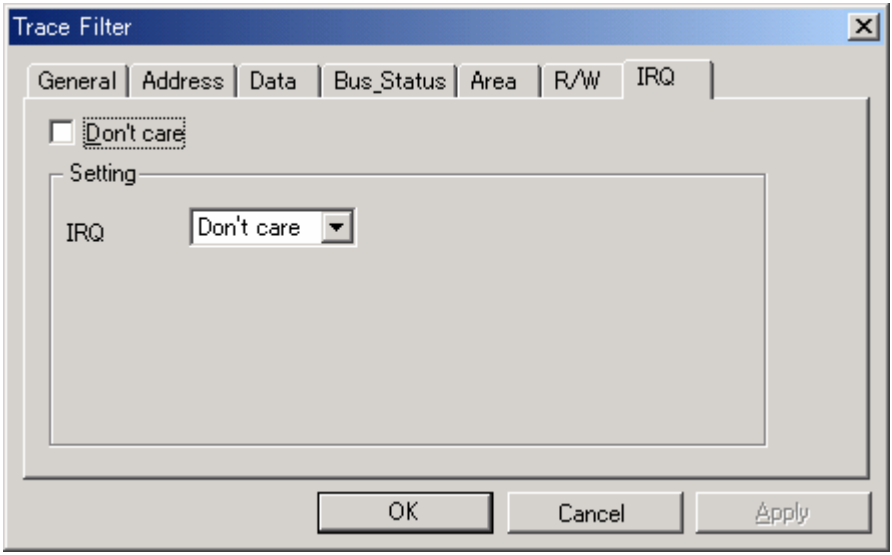



**Figure 2.9 [IRQ] Page**

**Table 2.14 [IRQ] Page Options**

| Option | Description |
|---|---|
| [Don't care] check box | Indicates that no IRQ condition is set. |
| [IRQ] drop-down list | Specifies the IRQ.<br>Don't care: Detects no IRQ.<br>High: IRQ is high.<br>Low: IRQ is low. |

(4) Trace Find Function

The E10A emulator jumps to the information that matches the conditions specified by all the trace data on the [Trace] window. The search condition is set in the [Trace Filter] dialog box. The information is displayed by selecting [Find…] from the popup menu that is displayed with the right-hand mouse button on the [Trace] window.

(i) [General] Page Options

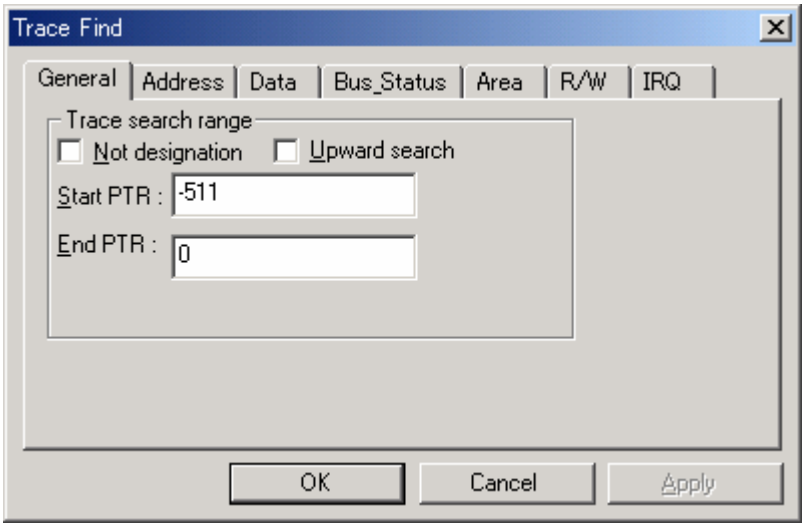



**Figure 2.10 [General] Page**

**Table 2.15 [General] Page Options**

| Option | Description |
|---|---|
| [Not designation] check box | Designates no conditions. |
| [Upward search] check box | Performs upward search. |
| [Start PTR] edit box | Enters the pointer to start searching conditions. |
| [End PTR] edit box | Enters the pointer to end searching conditions. |

(ii) [Address] Page Options

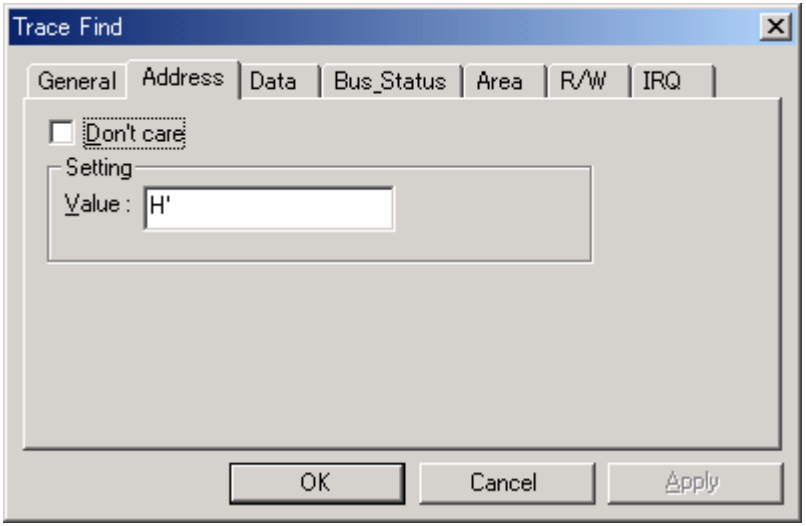



**Figure 2.11 [Address] Page**

**Table 2.16 [Address] Page Options**

| Option | Description |
|---|---|
| [Don't care] check box | Indicates that no address condition is set. |
| [Value] edit box | Enters the address value. |

(iii) [Data] Page Options

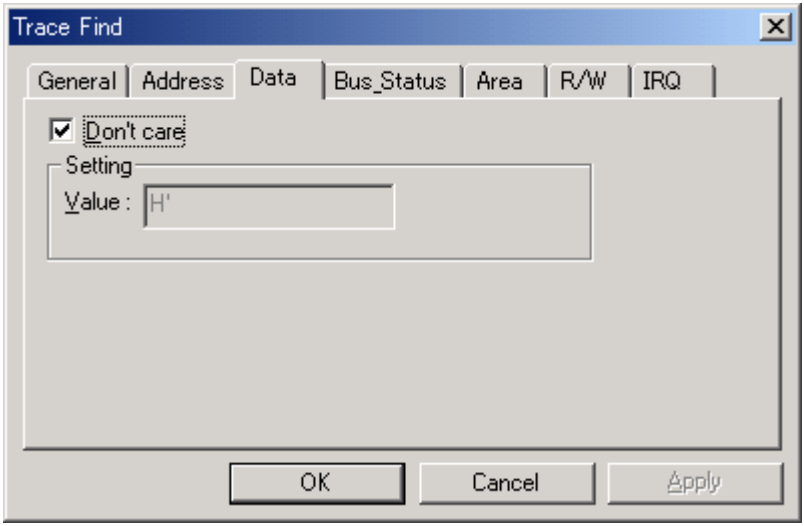



**Figure 2.12 [Data] Page**

**Table 2.17 [Data] Page Options**

| Option | Description |
|---|---|
| [Don't care] check box | Indicates that no data condition is set. |
| [Value] edit box | Enters the data value. |

(iv) [Bus_Status] Page Options

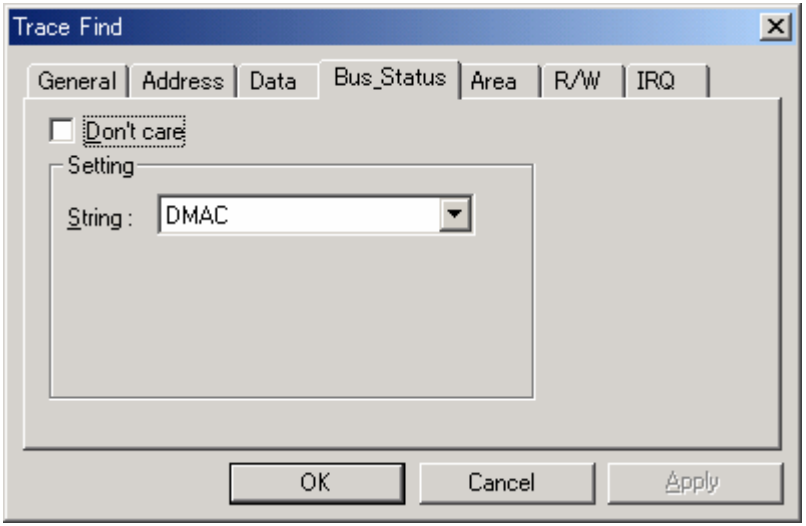



**Figure 2.13 [Bus_Status] Page**

**Table 2.18 [Bus_Status] Page Options**

| Option | Description |
|---|---|
| [Don't care] check box | Indicates that no bus-status condition is set. |
| [String] drop-down list | Specifies the bus status.<br>DMAC: DMAC bus cycle<br>DTC: DTC bus cycle<br>PROG: CPU-instruction fetch cycle<br>DATA: CPU-data access cycle<br>REFRESH: Refresh cycle |

(v) [Area] Page Options

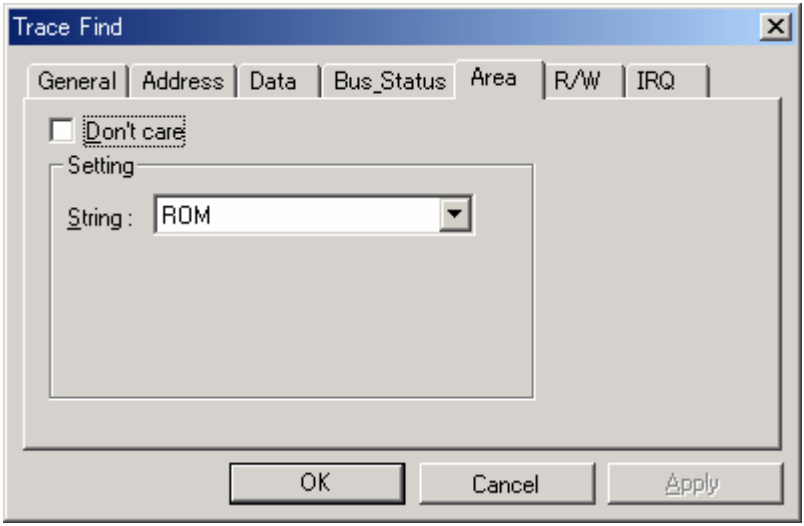



**Figure 2.14 [Area] Page**

**Table 2.19 [Area] Page Options**

| Option | Description |
|---|---|
| [Don't care] check box | Indicates that no area condition is set. |
| [String] drop-down list | Specifies the area.<br>ROM: ROM area<br>RAM: RAM area<br>IO-8: IO-8 area<br>IO-16: IO-16 area<br>EXT-8: EXT-8 area<br>EXT-16: EXT-16 area<br>DTC: DTC area |

(vi) [R/W] Page Options

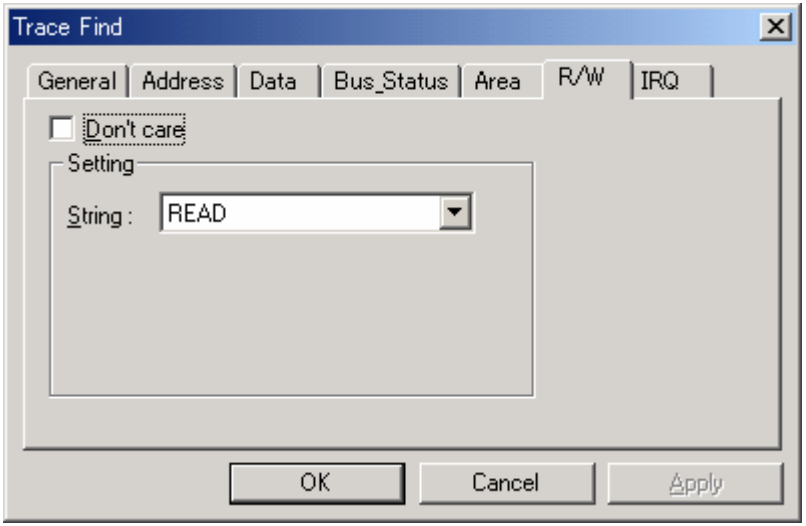



**Figure 2.15 [R/W] Page**

**Table 2.20 [R/W] Page Options**

| Option | Description |
|---|---|
| [Don't care] check box | Indicates that no read/write condition is set. |
| [String] drop-down list | Specifies the read/write.<br>READ: Read cycle<br>WRITE: Write cycle |

(vii) [IRQ] Page Options

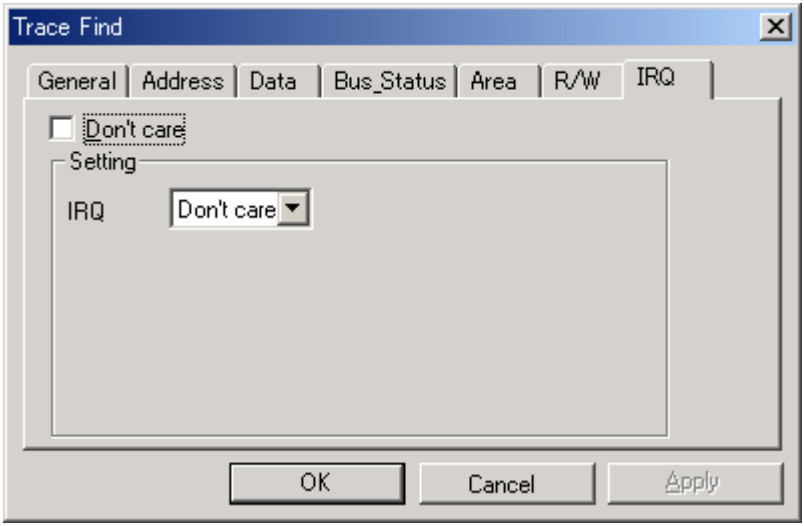



**Figure 2.16 [IRQ] Page**

**Table 2.21 [IRQ] Page Options**

| Option | Description |
|---|---|
| [Don't care] check box | Indicates that no IRQ condition is set. |
| [IRQ] drop-down list | Specifies the IRQ.<br>Don't care: Detects no IRQ.<br>High: IRQ is high.<br>Low: IRQ is low. |

**H8S Family E10A Emulator**
**Additional Document for User's Manual**
**Specific Guide for the H8S/2378F, H8S/2377F, H8S/2367F, H8S/2368F, H8S/2378RF, H8S/2377RF E10A Emulator**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# H8S Family E10A Emulator
# Additional Document for User's Manual

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