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User's Manual

RX78K0R Ver. 4.10

Real-Time Operating System

Task Debugger

Target Tool

Task Debugger Ver.4.10 for RX78K0R

Document No. U18454EJ2V0UM00 (2nd edition)

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INTRODUCTION

Readers This manual is intended for users who design and develop application systems using 78K0R microcontrollers products.

Purpose This manual is intended for users to understand the functions of the Task debugger Ver.4.10 for RX78K0R described the organization listed below.

Organization This manual consists of the following major sections.

- General
- Installation
- Starting and exiting
- Window reference
- Real-time OS trace function
- Error messages

How to read this manual It is assumed that the readers of this manual have general knowledge in the fields of electrical engineering, logic circuits, microcontrollers, C language, and assemblers.

To understand the hardware functions of the 78K0R microcontrollers
→ Refer to the **User's Manual** of each product.

To understand the instruction functions of the 78K0R microcontrollers
→ Refer to **78K0R Microcontrollers Instructions User's Manual (U17792E)**.

Conventions

| | |
|---|---|
| Data significance: | Higher digits on the left and lower digits on the right |
| Note: | Footnote for item marked with Note in the text |
| Caution: | Information requiring particular attention |
| Remark: | Supplementary information |
| Numerical representation: | Binary...XXXX or XXXXB |
| | Decimal...XXXX |
| | Hexadecimal...0XXXXX |
| Prefixes indicating power of 2 (address space and memory capacity): | |
| | K (kilo) $2^{10} = 1024$ |
| | M (mega) $2^{20} = 1024^2$ |

Related Documents

Refer to the documents listed below when using this manual.

The related documents indicated in this publication may include preliminary versions.

However, preliminary versions are not marked as such.

Documents related to development tools (User's Manuals)

| Document Name | | Document No. |
|-------------------------------------|--------------------|---------------|
| CC78K0R C Compiler | Operation | U17838E |
| | Language | U17837E |
| RA78K0R Assembler Package | Operation | U17836E |
| | Language | U17835E |
| SM+ System Simulator | Operation | U18010E |
| RX78K0R Real-Time Operating System | Functionalities | U18317E |
| | Internal Structure | U18318E |
| | Task Debugger | This document |
| AZ78K0R System Performance Analyzer | | U18802E |
| PM+ Project Manager | | U17990E |
| ID78K0R-QB Integrated Debugger | Operation | U17839E |

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CONTENTS

CHAPTER 1 GENERAL ... 13

- 1.1 Overview ... 13
- 1.2 Operating Environment ... 13

CHAPTER 2 INSTALLATION ... 15

- 2.1 Installing RD78K0R ... 15
- 2.2 Folder Configuration ... 15
- 2.3 Uninstalling RD78K0R ... 15

CHAPTER 3 STARTING AND EXITING ... 16

- 3.1 Starting ... 16
- 3.2 Exiting ... 17

CHAPTER 4 WINDOW REFERENCE ... 18

- 4.1 Explanation of RD78K0R Window's Each Area ... 18
 - 4.1.1 Title bar ... 19
 - 4.1.2 Real-time OS resource selection buttons ... 19
 - 4.1.3 Real-time OS resource list display area ... 19
 - 4.1.4 Detailed display area ... 19
 - 4.1.5 HLD check box ... 19
 - 4.1.6 Menu bar ... 20
 - 4.1.7 Status bar ... 21
- 4.2 Explanation of Display Contents ... 22
 - 4.2.1 Task information display ... 22
 - 4.2.2 Eventflag information display ... 25
 - 4.2.3 Semaphore information display ... 27
 - 4.2.4 Mailbox information display ... 28
 - 4.2.5 Fixed-sized memory pool information display ... 30
 - 4.2.6 Cyclic handler information display ... 32
 - 4.2.7 System queue information display ... 34
 - 4.2.8 System information display ... 36

CHAPTER 5 ERROR MESSAGES ... 38

- 5.1 Display Format ... 38
- 5.2 Error Messages ... 38
- 5.3 Warning Messages ... 39

INDEX ... 40

REVISION HISTORY ... 41

LIST OF FIGURES

| Figure No. | Title and Page |
|------------|---|
| 2-1 | Folder Configuration ... 15 |
| 3-1 | RD78K0R Startup Screen ... 16 |
| 4-1 | Display Example of the RD78K0R Window ... 18 |
| 4-2 | Example of Task Information Display ... 22 |
| 4-3 | Example of Eventflag Information Display ... 25 |
| 4-4 | Example of Semaphore Information Display ... 27 |
| 4-5 | Example of Mailbox Information Display: 1 ... 28 |
| 4-6 | Example of Mailbox Information Display: 2 ... 28 |
| 4-7 | Example of Fixed-Sized Memory Pool Information Display ... 30 |
| 4-8 | Example of Cyclic Handler Information Display ... 32 |
| 4-9 | Example of Timer Queue Information Display ... 34 |
| 4-10 | Example of Ready Queue Information Display ... 34 |
| 4-11 | Example of System Information Display ... 36 |
| 5-1 | Message Dialog Box ... 38 |

LIST OF TABLES

| Table No. | Title and Page |
|-----------|---|
| 4-1 | Real-Time OS Resource Selection Buttons ... 19 |
| 4-2 | Real-Time OS Resource List Display Area: Task Information ... 22 |
| 4-3 | Detailed Display Area: Task Information ... 23 |
| 4-4 | Statuses of Tasks ... 23 |
| 4-5 | Additional Task Information ... 24 |
| 4-6 | Real-Time OS Resource List Display Area: Eventflag Information ... 25 |
| 4-7 | Detailed Display Area: Eventflag Information ... 26 |
| 4-8 | Real-Time OS Resource List Display Area: Semaphore Information ... 27 |
| 4-9 | Detailed Display Area: Semaphore Information ... 27 |
| 4-10 | Real-Time OS Resource List Display Area: Mailbox Information ... 29 |
| 4-11 | Detailed Display Area: Mailbox Information ... 29 |
| 4-12 | Real-Time OS Resource List Display Area: Fixed-Sized Memory Pool Information ... 30 |
| 4-13 | Detailed Display Area: Fixed-Sized Memory Pool Information ... 31 |
| 4-14 | Real-Time OS Resource List Display Area: Cyclic Handler Information ... 32 |
| 4-15 | Detailed Display Area: Cyclic Handler Information ... 33 |
| 4-16 | Real-Time OS Resource List Display Area: Timer Queue Information ... 35 |
| 4-17 | Real-Time OS Resource List Display Area: Ready Queue Information ... 35 |
| 4-18 | Detailed Display Area: Timer Queue Information ... 35 |
| 4-19 | Detailed Display Area: Ready Queue Information ... 35 |
| 4-20 | Real-Time OS Resource List Display Area: System Information ... 36 |
| 4-21 | Detailed Display Area: System Information ... 37 |
| 5-1 | Error Message List ... 38 |
| 5-2 | Warning Message List ... 39 |

CHAPTER 1 GENERAL

1.1 Overview

The RD78K0R (Task Debugger for RX78K0R is referred to as RD78K0R in this user's manual) connects with a debugger using TIP (Tool Interface Protocol), and provides Powerful debugging functions for a application program in which the real-time OS (RX78K0R) is embedded.

The RD78K0R provides the following functions.

(1) The real-time OS resource display function

Displays the statuses of RX78K0R objects, such as tasks and semaphores, by executing a break at a certain point of the user program running in the debugger.

* 1.2 Operating Environment

The RD78K0R requires an environment in which a debugger supporting TIP is running.
The RD78K0R cannot be used just on its own.

(1) Hardware

- Host machine

The machine by which the target OS operates.

- In-circuit emulator

IECUBE series (from NEC Electronics)

[Caution] In-circuit emulators other than the above can be connected to the RD78K0R, as long as they support TIP.

- On-chip debug emulator

MINICUBE2 (from NEC Electronics)

[Caution] On-chip debug emulators other than the above can be connected to the RD78K0R, as long as they support TIP.

- Target system

Target system in which 78K0R is incorporated.

(2) Software

- OS (any of the following)

Windows® 2000 Professional, Windows XP Home Edition, Windows XP Professional

[Caution] It is recommended that the newest Service Pack be installed in any of the above OSs.

- C compiler

CC78K0R (from NEC Electronics)

- Assembler

RA78K0R (from NEC Electronics)

- Real-time OS

RX78K0R (from NEC Electronics)

- Debugger

ID78K0R-QB (from NEC Electronics)

[Caution] Debuggers other than the above can be connected to the RD78K0R, as long as they support TIP.

- Simulator

SM+ for 78K0R (from NEC Electronics)

SM+ for 78K0R/Kx3 (from NEC Electronics)

[Caution] Simulators other than the above can be connected to the RD78K0R, as long as they support TIP.

CHAPTER 2 INSTALLATION

2.1 Installing RD78K0R

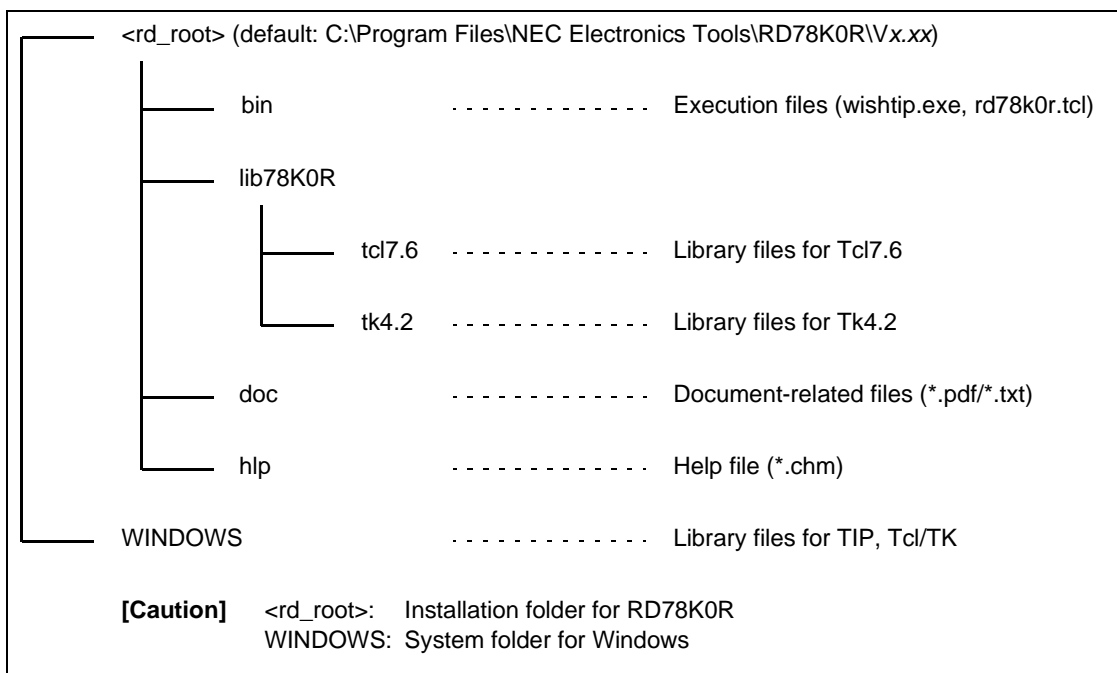
The RD78K0R is included with the real-time OS package (RX78K0R). When the RX78K0R is installed, the RD78K0R can be also installed if necessary, as it is supplied in the same package.

For the details on how to install the RX78K0R, refer to the RX78K0R user's manual.

2.2 Folder Configuration

After installing the RD78K0R, the configuration of the folders related to the RD78K0R is as follows:

Figure 2-1 Folder Configuration



[Note] A shortcut the RD78K0R (default: [Program] -> [NEC Electronics Tools] -> [RD78K0R] -> [Vx.xx]) is automatically added to the Windows start menu.

2.3 Uninstalling RD78K0R

For the details on how to uninstall the RD78K0R, refer to the RX78K0R user's manual.

CHAPTER 3 STARTING AND EXITING

3.1 Starting

The RD78K0R cannot be used just on its own. Since the RD78K0R operates by communicating with and obtaining information from a debugger, the debugger must operate at the same time. For the operation of the debugger, refer to the user's manual of the debugger.

The RD78K0R is described using the Tcl/Tk script language. Therefore, RD78K0R itself is not an execution file.

Moreover, since the RD78K0R operates while communicating with the debugger, it requires a Tcl/Tk that includes a communication mechanism. This expanded Tcl/Tk is called wishtip (wishtip.exe). The RD78K0R is executed by being interpreted with a wishtip.

To start the RD78K0R, use either or the following:

(1) Start from the [Start] menu of Windows

Select [Programs] -> [NEC Electronics Tools] -> [RD78K0R] -> [Vx.xx] -> [RD78K0R Vx.xx] (default).

(2) Start from the command line

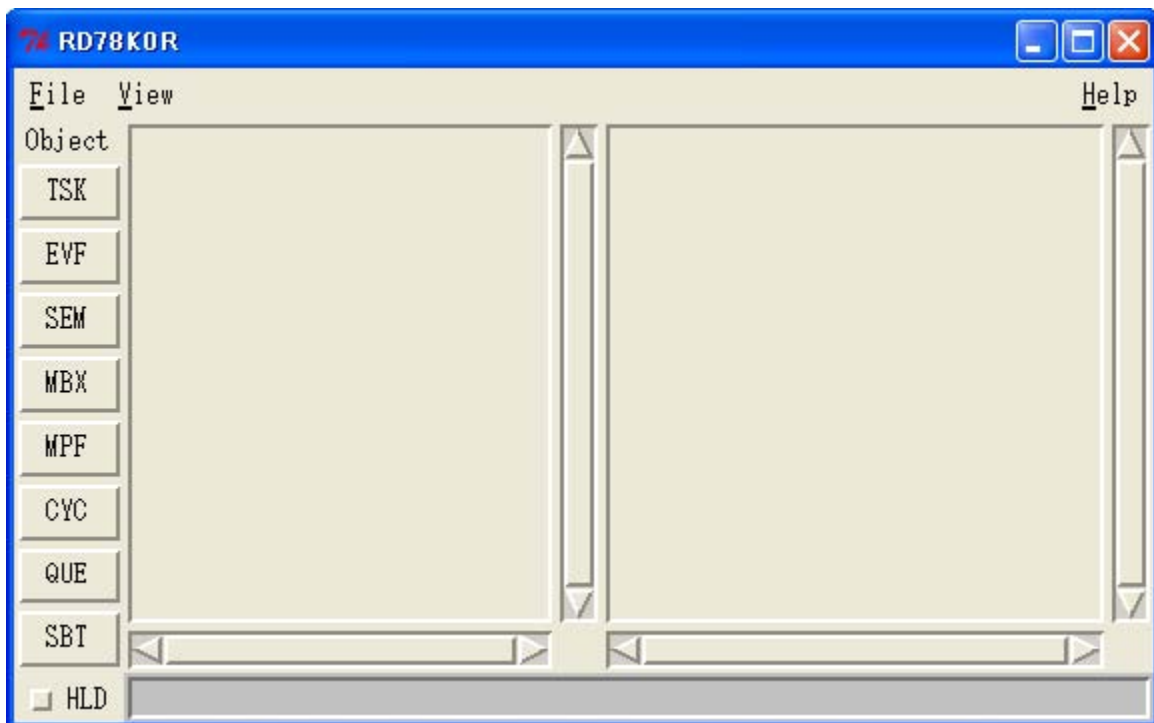
Execute the following commands as a startup parameter of wishtip (if the RD78K0R was installed with the default setting).

```
C:\Program Files\NEC Electronics Tools\RD78K0R\Vx.xx\bin\wishtip.exe  
C:\Program Files\NEC Electronics Tools\RD78K0R\Vx.xx\bin\RD78K0R.tcl
```

The following window will be displayed after the RD78K0R is started.

Figure 3-1 RD78K0R Startup Screen

*



3. 2 Exiting

To exit the RD78K0R, select [File] menu -> [Quit] on the RD78K0R window.

CHAPTER 4 WINDOW REFERENCE

4. 1 Explanation of RD78K0R Window's Each Area

Only the window shown below is available in the RD78K0R (multiple windows can be opened at the same time, however).

This section explains the function details in each area.

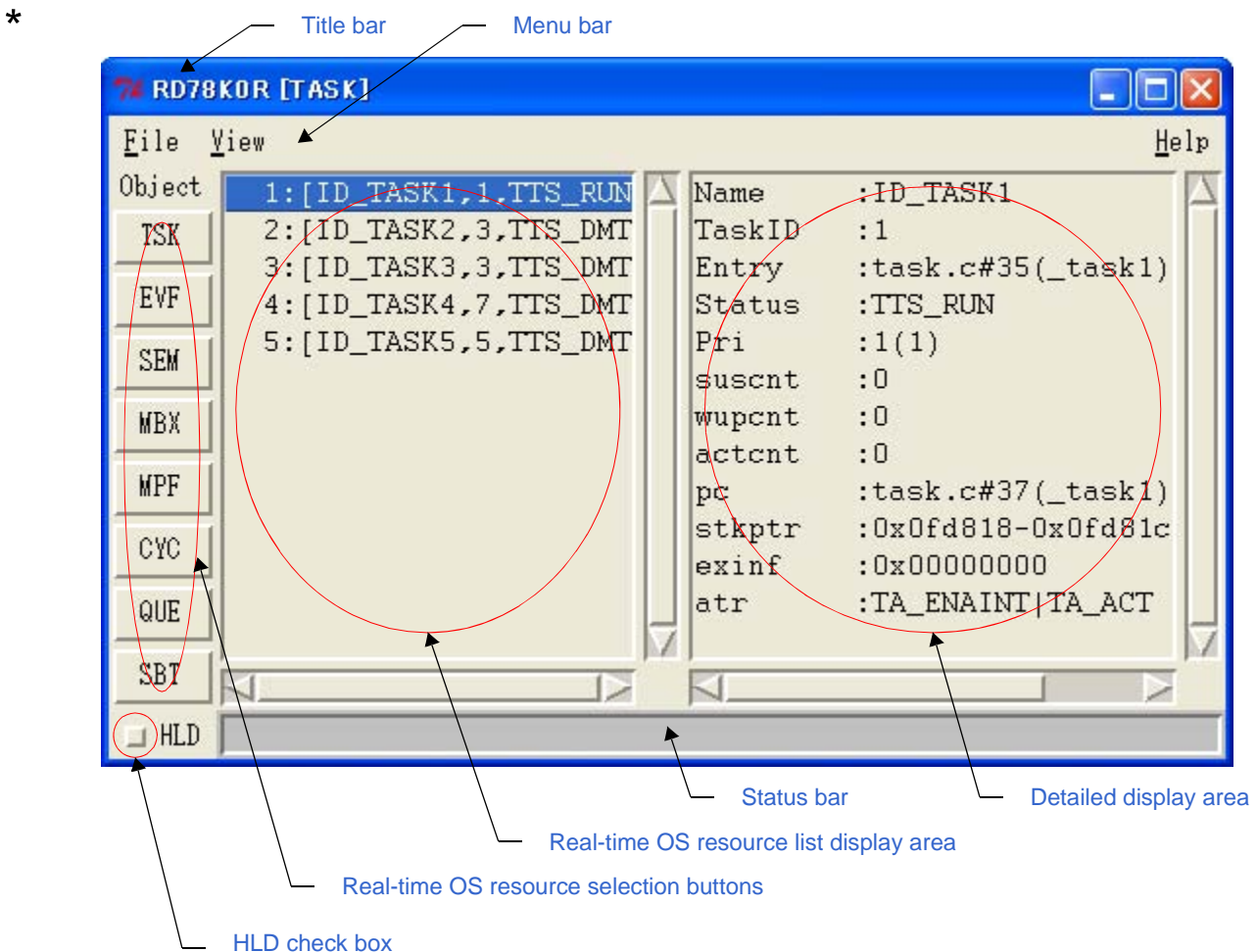
No information is displayed in the window when the RD78K0R is started. To display object information, the user must execute a break for the user program from the debugger and select the relevant object by using a real-time OS resource selection button.

[Caution] The following conditions must be satisfied to display object information.

- A load module linked with the RX78K0R has been downloaded to the debugger. (The RX78K0R including symbol information should have been loaded.)
- RX78K0R system initialization processing has been completed. (Control should have been transferred to the task that operates first.)

Operation is not guaranteed if a real-time OS resource selection button is clicked without the above conditions being satisfied.

Figure 4-1 Display Example of the RD78K0R Window



4. 1. 1 Title bar

The title bar displays the type of the object (task, event, etc.) selected by a real-time OS resource selection button, in the following format.

* - RD78K0R [Real-time OS resource Type]

* 4. 1. 2 Real-time OS resource selection buttons

These buttons are used to select the real-time OS resource to be displayed in the [Real-time OS resource list display area](#).

By clicking a button, the list of information of all the real-time OS resources generated/registered within the selected real-time OS resource is displayed in the [Real-time OS resource list display area](#).

Table 4-1 Real-Time OS Resource Selection Buttons

| Button | Function |
|--------|---|
| [TSK] | Displays task information. |
| [EVF] | Displays eventflag information. |
| [SEM] | Displays semaphore information. |
| [MBX] | Displays mailbox information. |
| [MPF] | Displays fixed-sized memory pool information. |
| [CYC] | Displays cyclic handler information. |
| [QUE] | Displays system queue (timer queue or ready queue) information. |
| [SBT] | Displays system information. |

[Caution] The selected object cannot be switched by clicking these buttons during application program execution. Clicking of these buttons is valid only when application programs are in the break state.

* 4. 1. 3 Real-time OS resource list display area

For the object selected by the [Real-time OS resource selection buttons](#), all the object information items that have been generated and registered are listed in the object ID order. ("NONE" is displayed if no relevant objects exist.)

For details on the contents of this area, refer to "4. 2 [Explanation of Display Contents](#)".

4. 1. 4 Detailed display area

This area displays the detailed information of a real-time OS resource selected with the [Real-time OS resource list display area](#).

For details on the contents of this area, refer to "4. 2 [Explanation of Display Contents](#)".

4. 1. 5 HLD check box

This check box is used to fix the status (hold status) currently displayed.

When this check box is checked, the display information is not updated until the check box is unchecked, regardless of whether program execution or breaks occur thereafter. This check box is not checked in the default condition.

By using this function, statuses at different times can easily be compared by starting up several RD78K0R.

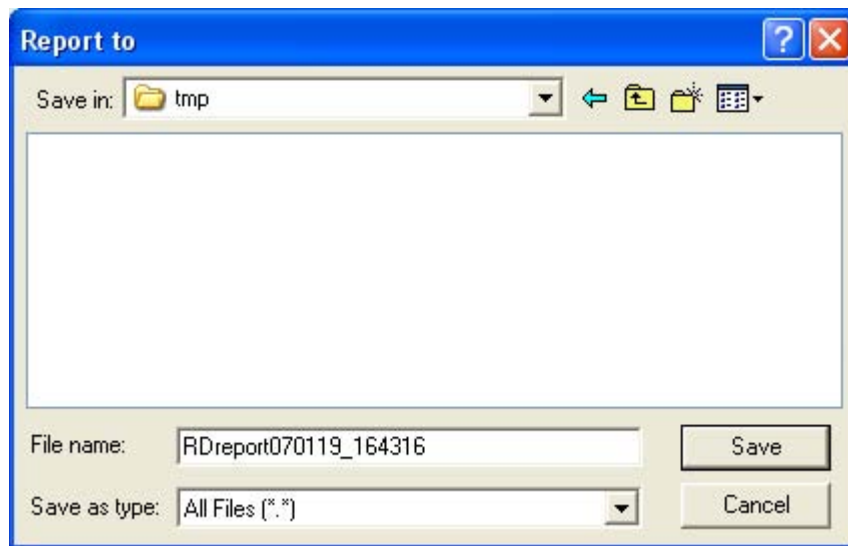
4. 1. 6 Menu bar

(1) [E] menu

| | |
|----------|--|
| [Report] | Outputs all kinds of object information to a text file (*.txt). [Note] |
| [Quit] | Terminates the RD78K0R. |

[Note] The output file name can be specified freely in the Report to dialog box opened automatically at this time. (The name consists of the current yy/mm/dd and time is set by default.)

The object information output here reflects the current object state, which has been sent from the debugger, regardless of selection of the [HLD check box](#).



(2) [V] menu

| | |
|----------------------------|---|
| [Task] | Displays task information. |
| [Eventflag] | Displays eventflag information. |
| [Semaphore] | Displays semaphore information. |
| [Mailbox] | Displays mailbox information. |
| * [Fixed-sized memorypool] | Displays fixed-sized memory pool information. |
| [Cyclic handler] | Displays cyclic handler information. |
| [System queue] | Displays system queue (timer queue or ready queue) information. |
| [System base table] | Displays system information. |

(3) [H] menu

| | |
|-----------------|--|
| [Contents] | Opens the help file for the RD78K0R. |
| [About RD78K0R] | Displays the version information of the RD78K0R. |

4. 1. 7 Status bar

The appearance of the status bar varies as follows, according to the RX78K0R status when receiving object information sent from the debugger.

[Normal state]

- * When processing of the user-coded application program (task, interrupt handler, cyclic handler, idle routine) is in progress.



[Real-time OS execution state]

When processing of an RX78K0R service call or a timer handler is in progress.



[Caution] Invalid object information may be displayed in the real-time OS execution state.

4. 2 Explanation of Display Contents

This section is described the contents of the real-time OS resource information selected with the [Real-time OS resource selection buttons](#).

4. 2. 1 Task information display

Task information items are displayed in the ID order by clicking the [TSK] button.

The following contents are displayed in the [Real-time OS resource list display area](#) and the [Detailed display area](#).

Figure 4-2 Example of Task Information Display

*

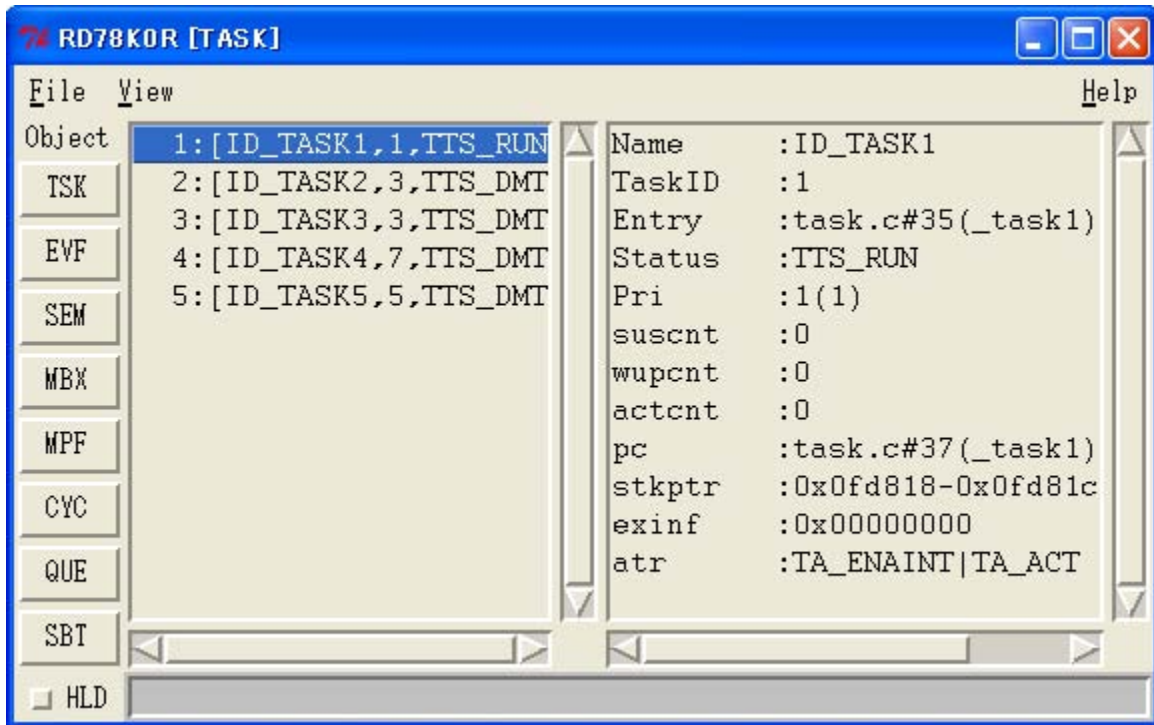


Table 4-2 Real-Time OS Resource List Display Area: Task Information

[Format] 1st item : [2nd item, 3rd item, 4th item]

| 1st Item | 2nd Item | 3rd Item | 4th Item |
|----------|-----------|------------------|--|
| ID | Task name | Current priority | Current state (refer to Table 4-4) |

Table 4-3 Detailed Display Area: Task Information

| Item | Contents |
|------------|---|
| Name | Task name |
| TaskID | ID |
| Entry | Start address File name # Line number (Symbol name) [Note] [Caution] The task source can be opened in the Source Window of the debugger by double-clicking this line. Refer to " Task source display ". |
| Status | Current state (refer to Table 4-4) |
| Pri | Current priority (initial priority) |
| suscnt | Suspension count |
| wupcnt | Wakeup request count |
| actcnt | Activation request count |
| pc | Current PC File name # Line number (Symbol name) [Note] [Caution] The task source can be opened in the Source Window of the debugger by double-clicking this line. Refer to " Task source display ". |
| stkptr | Task stack pointer (current task stack pointer - initial task stack pointer) [Caution] The task stack can be opened in the Memory Window of the debugger by double-clicking this line. Refer to " Task stack display ". |
| exinf | Extended information |
| atr | Attribute (initial interrupt status/initial activation status) [Task initial interrupt status] TA_ENAINT: Maskable interrupt acknowledgment enabled. TA_DISINT: Maskable interrupt acknowledgment disabled. [Task initial activation status] TA_ACT: Task is activated after the creation. |
| Stack Data | When a task has been executed and the stack area is in use, the stack contents from the initial stack pointer to the current stack pointer are displayed in 16-bit widths. |

[Note] A symbol of startup address is displayed as a symbol, but if symbol information does not exist, startup address is displayed in hexadecimal notation.

Task statuses of the tasks are as follows:

Table 4-4 Statuses of Tasks

| Status | Description |
|---------|-------------------------|
| TTS_RUN | RUNNING state |
| TTS_RDY | READY state |
| TTS_WAI | WAITING state |
| TTS_SUS | SUSPENDED state |
| TTS_WAS | WAITING-SUSPENDED state |
| TTS_DMT | DORMANT state |

If TTS_WAI or TTS_WAS is displayed as a task status, the wait cause is displayed as additional information.

Table 4-5 Additional Task Information

| Status | Description |
|---------|---|
| TTW_SLP | Sleeping state |
| TTW_DLY | Delayed state |
| TTW_FLG | Waiting state for an eventflag |
| TTW_SEM | Waiting state for a semaphore |
| TTW_MBX | Waiting state for a mailbox |
| TTW_MPF | Waiting state for a fixed-sized memory pool |

*

- Task source display

By double-clicking the [Entry] line in the [Detailed display area](#), the task source can be opened in the Source Window of the debugger, and by double-clicking the [pc] line, the task source at the pc location can be opened, if there is the debug information.

The Assembler Window of the debugger can be opened if there is no debug information.

- Task stack display

The contents of the memory area pointed to by a task stack pointer can be displayed in the Memory window of the debugger by double-clicking the [stkptr] line in the [Detailed display area](#).

4. 2. 2 Eventflag information display

Event flag information items are displayed in the ID order by clicking the [EVF] button.

The following contents are displayed in the [Real-time OS resource list display area](#) and the [Detailed display area](#).

Figure 4-3 Example of Eventflag Information Display

*

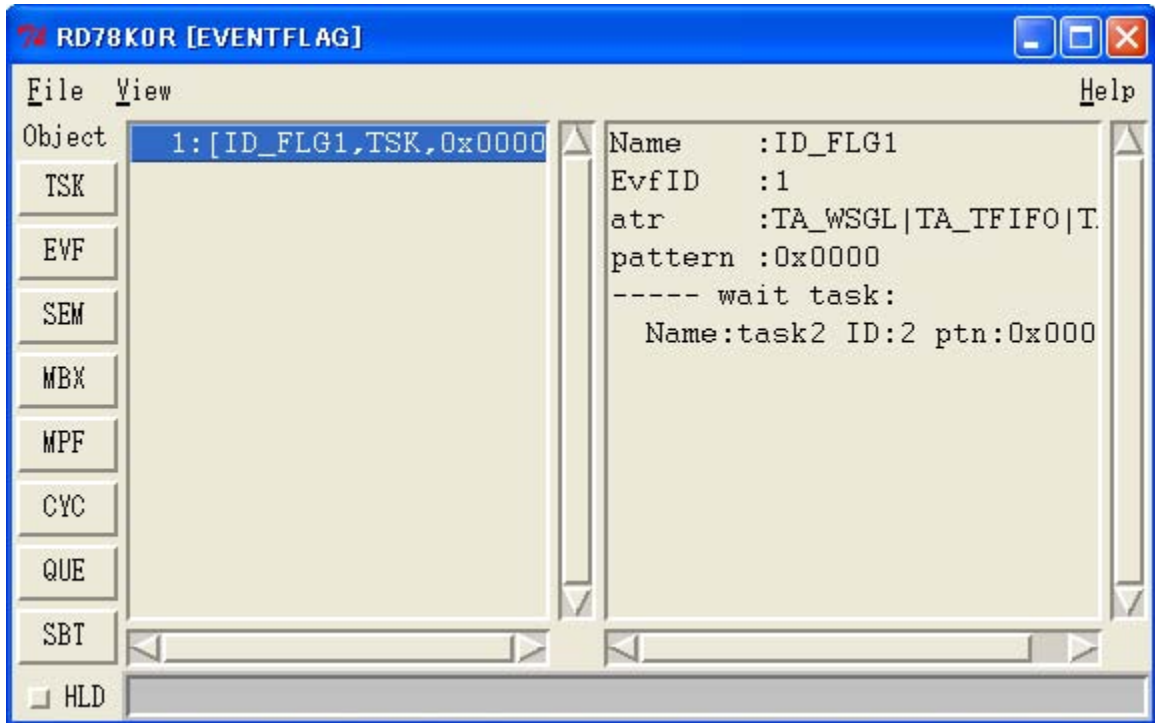


Table 4-6 Real-Time OS Resource List Display Area: Eventflag Information

[Format] 1st item : [2nd item, 3rd item, 4th item]

| 1st Item | 2nd Item | 3rd Item | 4th Item |
|----------|----------------|---|---------------------|
| ID | Eventflag name | Existence of wait task TSK: Wait task NON: No wait task | Current bit pattern |

Table 4-7 Detailed Display Area: Eventflag Information

| Item | Contents | |
|----------|--|--|
| Name | Eventflag name | |
| EvfID | ID | |
| atr | Attribute (Queuing method/number of queued tasks/bit pattern clear [Queuing method of task] TA_WSGL: Only one task is allowed to be in the waiting state for the eventflag. [Number of queued tasks] TA_TFIFO: Task wait queue is in FIFO order. [Bit pattern clear] TA_CLR: Bit pattern is cleared when a task is released from the waiting state for that eventflag. | |
| pattern | Current bit pattern | |
| wait tsk | This item is displayed when a task waiting for an eventflag exists. | |
| | Name | Wait task name |
| | ID | Wait task ID |
| | ptn | Wait bit pattern |
| | wfmode | Wait mode TWF_ANDW: AND waiting condition TTWF_ORW: OR waiting condition |

4. 2. 3 Semaphore information display

Semaphore information items are displayed in the ID order by clicking the [SEM] button.

The following contents are displayed in the [Real-time OS resource list display area](#) and the [Detailed display area](#).

Figure 4-4 Example of Semaphore Information Display

*

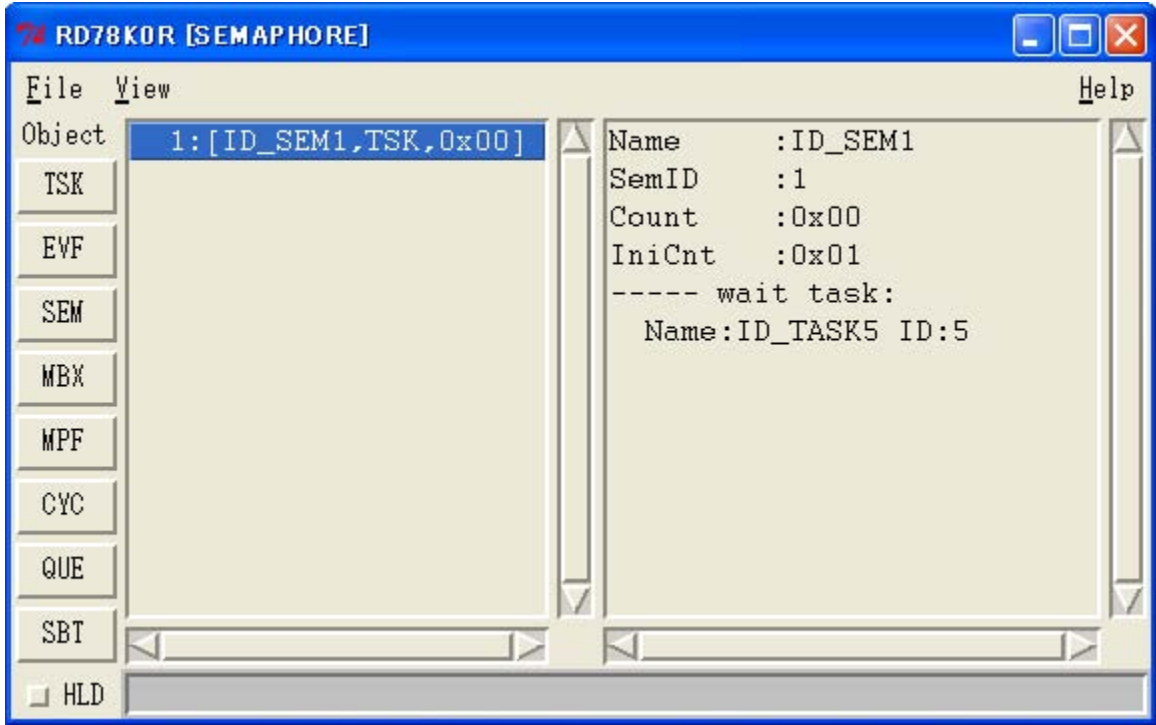


Table 4-8 Real-Time OS Resource List Display Area: Semaphore Information

[Format] 1st item : [2nd item, 3rd item, 4th item]

| 1st Item | 2nd Item | 3rd Item | 4th Item |
|----------|----------------|---|------------------------|
| ID | Semaphore name | Existence of wait task TSK: Wait task NON: No wait task | Current resource count |

Table 4-9 Detailed Display Area: Semaphore Information

| Item | Contents | |
|-----------|--|----------------|
| Name | Semaphore name | |
| SemID | ID | |
| Count | Current resource count | |
| IniCnt | Initial resource count | |
| wait task | This item is displayed when a task waiting for a semaphore exists. | |
| | Name | Wait task name |
| | ID | Wait task ID |

4. 2. 4 Mailbox information display

Mailbox information items are displayed in the ID order by clicking the [MBX] button.
 The following contents are displayed in the [Real-time OS resource list display area](#) and the [Detailed display area](#).

Figure 4-5 Example of Mailbox Information Display: 1

*

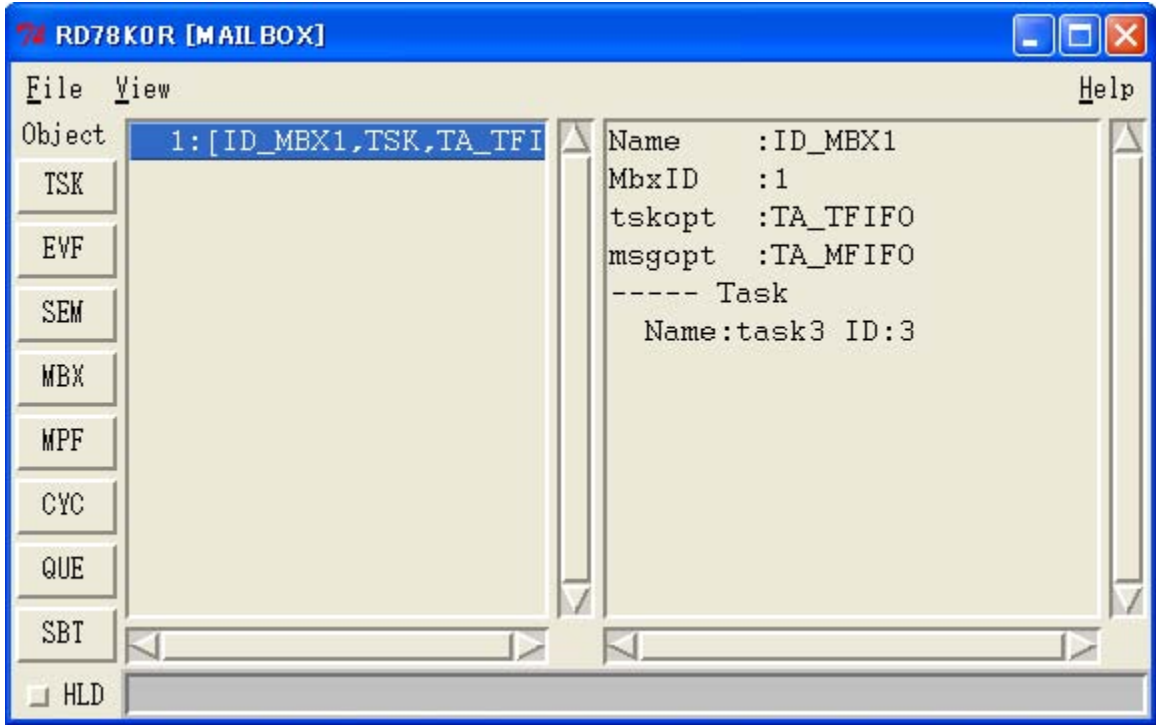


Figure 4-6 Example of Mailbox Information Display: 2

*

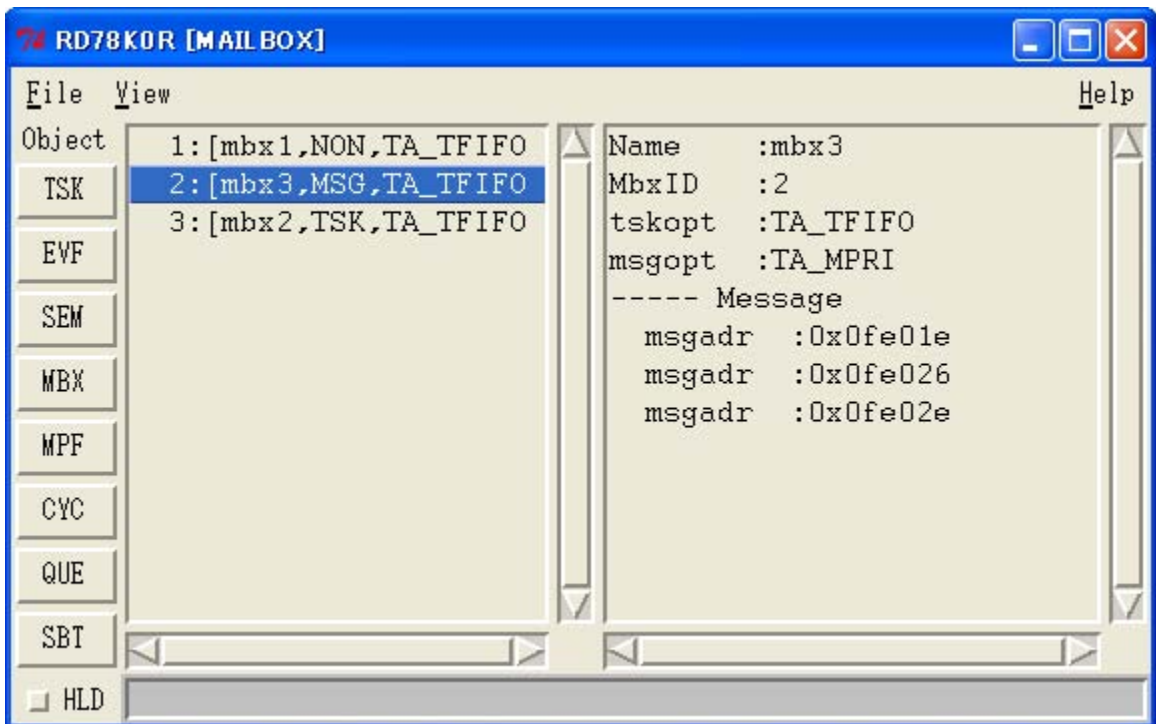


Table 4-10 Real-Time OS Resource List Display Area: Mailbox Information

[Format] 1st item : [2nd item, 3rd item, 4th item]

| 1st Item | 2nd Item | 3rd Item | 4th Item |
|----------|--------------|--|--|
| ID | Mailbox name | Existence of wait task/ message TSK: Wait task MSG: Wait message NON: No wait task/ message | Queuing method of task (refer to Table 4-11) |

Table 4-11 Detailed Display Area: Mailbox Information

| Item | Contents | |
|---------|--|---|
| Name | Mailbox name | |
| MbxID | ID | |
| tskopt | Queuing method of task [Note] TA_TFIFO: Task wait queue is in FIFO order. | |
| msgopt | Queuing method of message TA_MFIFO: Message queue is in FIFO order. TA_MPRI: Message queue is in message priority order. | |
| Task | This item is displayed when a task waiting for a message exists. | |
| | Name | Wait task name |
| | ID | Wait task ID |
| Message | This item is displayed when a message exists. | |
| | msgadr | Message address [Caution] The memory list can be opened in the Memory Window of the debugger by double-clicking this line. Refer to " Message memory display ". |

[Note] In the RX78K0R, task queuing information is fixed to the FIFO order.

- Message memory display

The Memory Window of the debugger can be opened by double-clicking the [msgadr] line within the [Message] item in the [Detailed display area](#).

4. 2. 5 Fixed-sized memory pool information display

Fixed-sized memory pool information items are displayed in the ID order by clicking the [MPF] button.
 The following contents are displayed in the [Real-time OS resource list display area](#) and the [Detailed display area](#).

Figure 4-7 Example of Fixed-Sized Memory Pool Information Display

*

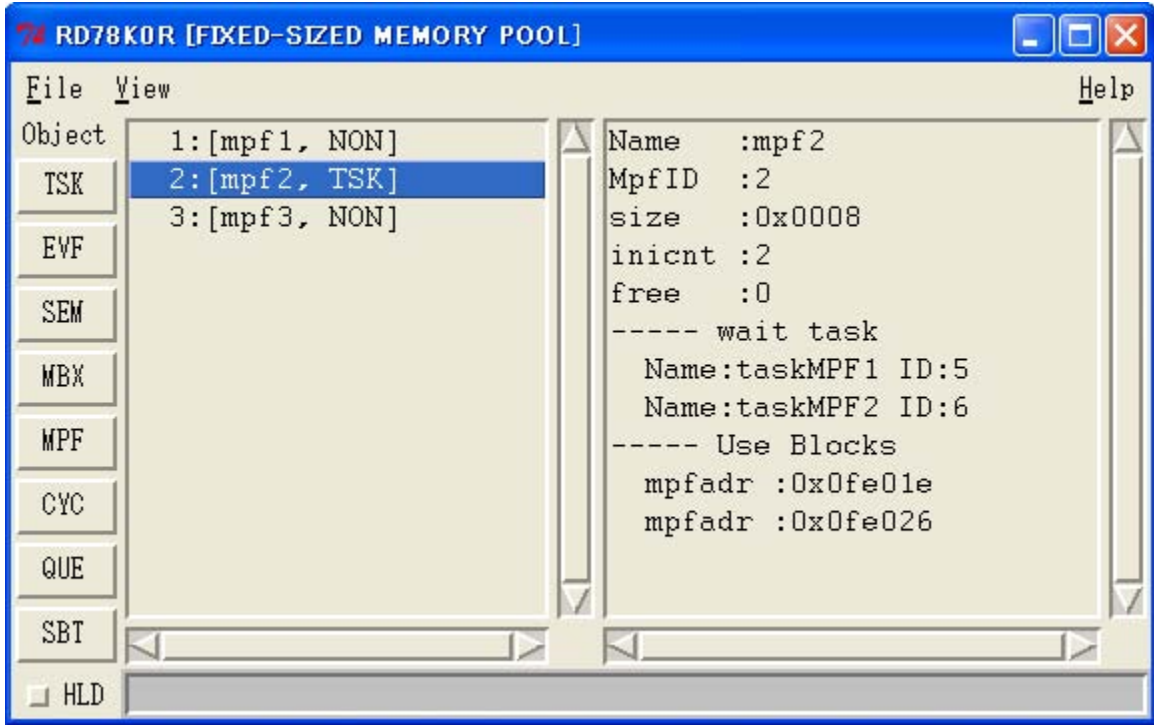


Table 4-12 Real-Time OS Resource List Display Area: Fixed-Sized Memory Pool Information

[Format] 1st item : [2nd item, 3rd item]

| 1st Item | 2nd Item | 3rd Item |
|----------|------------------------------|---|
| ID | Fixed-sized memory pool name | Existence of wait task TSK: Wait task NON: No wait task |

Table 4-13 Detailed Display Area: Fixed-Sized Memory Pool Information

| Item | Contents | |
|------------|---|---|
| Name | Fixed-sized memory pool name | |
| MpfID | ID | |
| size | Memory block size (in bytes) | |
| inict | Total number of memory blocks | |
| free | Number of free memory blocks | |
| wait task | This item is displayed when a task waiting for a memory block exists. | |
| | Name | Wait task name |
| | ID | Wait task ID |
| Use Blocks | This item is displayed when a memory block currently being used exists. | |
| | mpfadr | Start address of the memory block currently being used. |

4. 2. 6 Cyclic handler information display

Cyclic handler information items are displayed in the cyclic handler ID order by clicking the [CYC] button. The following contents are displayed in the [Real-time OS resource list display area](#) and the [Detailed display area](#).

Figure 4-8 Example of Cyclic Handler Information Display

*

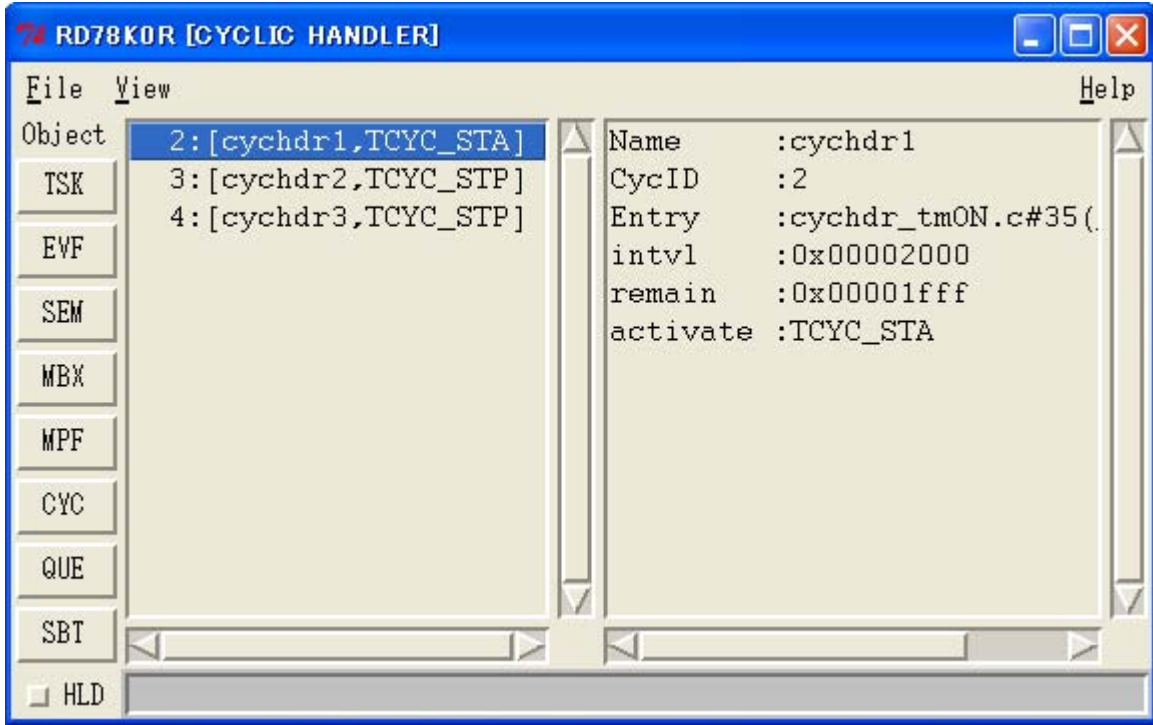


Table 4-14 Real-Time OS Resource List Display Area: Cyclic Handler Information

[Format] 1st item : [2nd item, 3rd item]

| 1st Item | 2nd Item | 3rd Item |
|----------|---------------------|--|
| ID | Cyclic handler name | Current state (refer to Table 4-15) |

Table 4-15 Detailed Display Area: Cyclic Handler Information

| Item | Contents |
|----------|--|
| Name | Cyclic handler name |
| CyclID | ID |
| Entry | Start address File name # Line number (Symbol name) [Note] [Caution] The cyclic handler source can be opened in the Source Window of the debugger by double-clicking this line. Refer to " Cyclic handler source display ". |
| intvl | Activation cycle (unit: ticks) |
| remain | Time left before the next activation (unit: ticks) |
| activate | Current state TCYC_STP: Non-operational state TCYC_STA: Operational state |

[Note] A symbol of startup address is displayed as a symbol, but if symbol information does not exist, startup address is displayed in hexadecimal notation.

- Cyclic handler source display

By double-clicking the [Entry] line in the [Detailed display area](#), the Source Window of the debugger can be opened if there is debug information, and the Assembler Window of the debugger can be opened if there is no debug information.

4. 2. 7 System queue information display

As system queue information, timer queue and ready queue information items are displayed by clicking the [QUE] button.

The following contents are displayed in the [Real-time OS resource list display area](#) and the [Detailed display area](#).

Figure 4-9 Example of Timer Queue Information Display

*

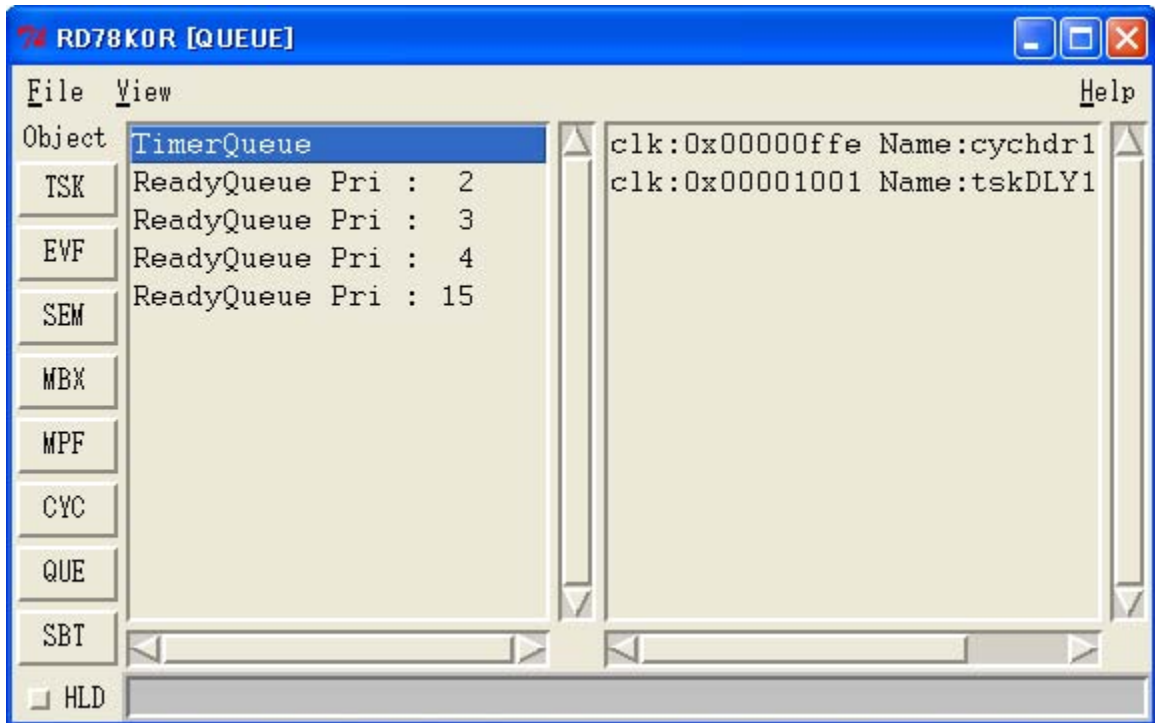


Figure 4-10 Example of Ready Queue Information Display

*

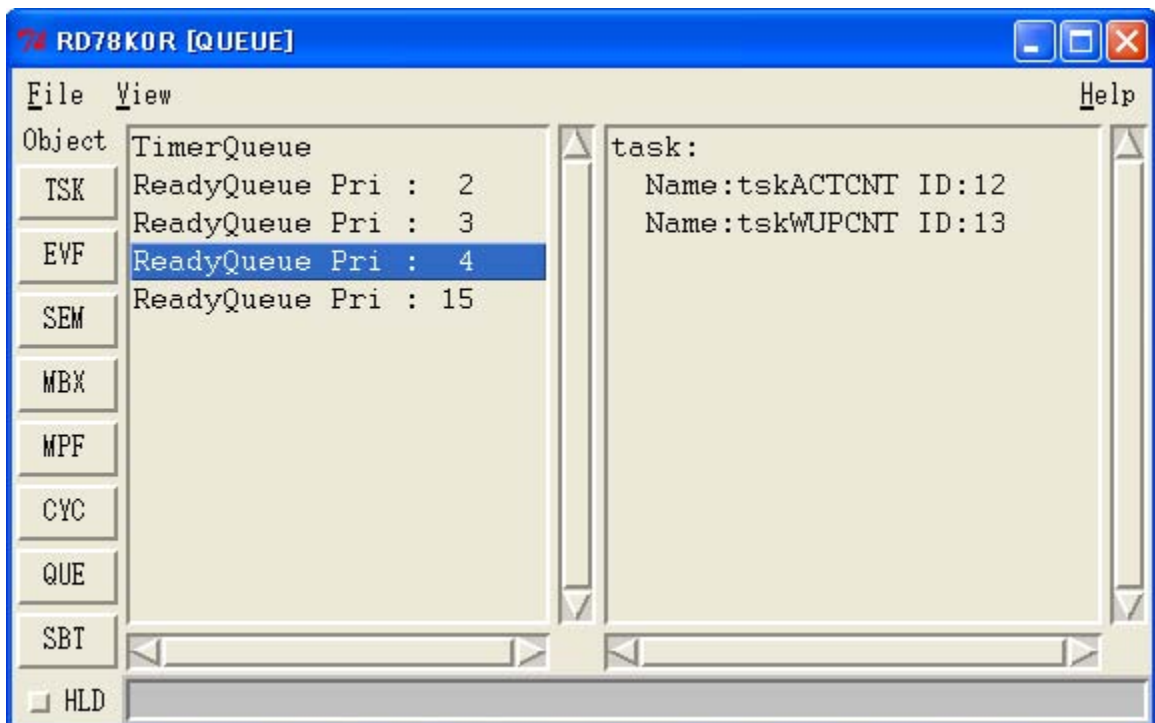


Table 4-16 Real-Time OS Resource List Display Area: Timer Queue Information

[Format] 1st item

| 1st Item |
|------------|
| TimerQueue |

Table 4-17 Real-Time OS Resource List Display Area: Ready Queue Information

[Format] 1st item : 2nd item

| 1st Item | 2nd Item |
|----------------|----------|
| ReadyQueue Pri | Priority |

Table 4-18 Detailed Display Area: Timer Queue Information

*

| Item | Contents |
|------|--------------------------------|
| clk | Wait clock count (unit: ticks) |
| Name | Task name/Cyclic handler name |
| ID | Task ID/Cyclic handler ID |

Table 4-19 Detailed Display Area: Ready Queue Information

| Item | Contents | |
|------|----------|-----------|
| task | Name | Task name |
| | ID | Task ID |

4. 2. 8 System information display

System information items are displayed by clicking the [SBT] button.

The following contents are displayed in the [Real-time OS resource list display area](#) and the [Detailed display area](#).

Figure 4-11 Example of System Information Display

*

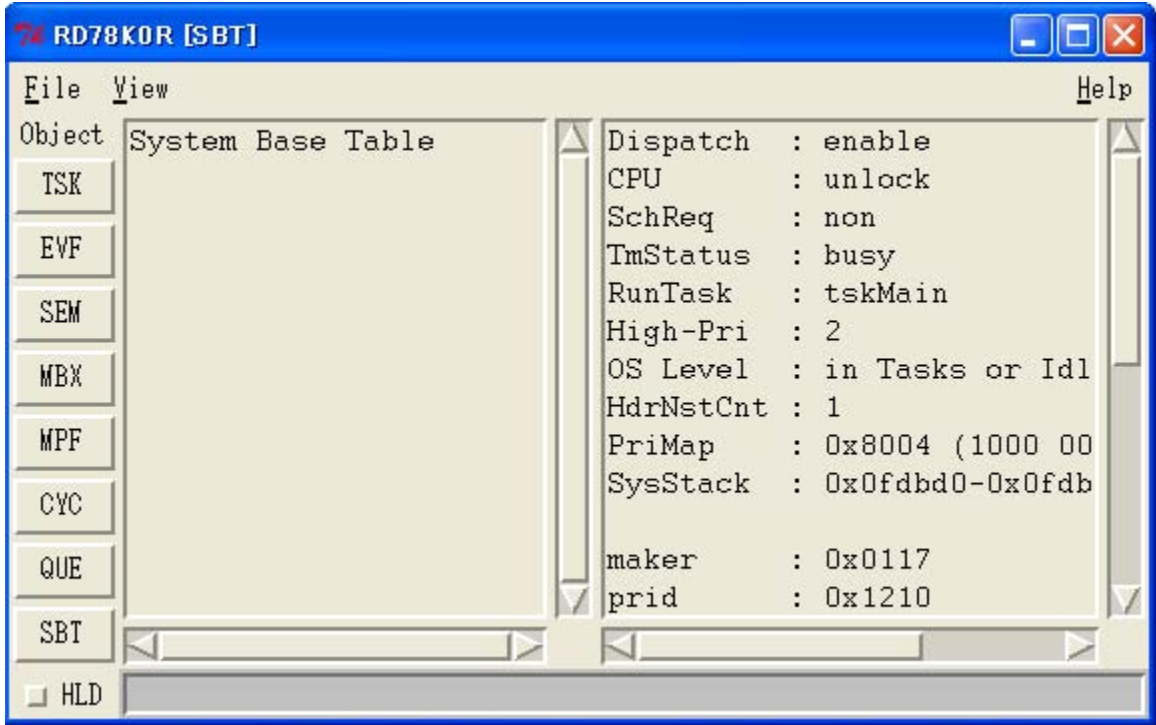


Table 4-20 Real-Time OS Resource List Display Area: System Information

[Format] 1st item

| 1st Item |
|-------------------|
| System Base Table |

Table 4-21 Detailed Display Area: System Information

| Item | Contents |
|--------------|---|
| Dispatch | Dispatching state disable: Dispatching disabled state enable: Dispatching enabled state |
| CPU | CPU state lock: CPU locked state unlock: CPU unlocked state |
| SchReq | Scheduler activation request non: No request for scheduler activation requested: Scheduler activation requested |
| TmStatus | Timer processing execution status busy: Timer processing execution in progress not busy: Timer processing execution not performed |
| RunTask | Name of task in the RUNNING state ("non" is displayed if no relevant tasks exist.) |
| High-Pri | Value of the highest priority among tasks in the RUNNING state and READY state ("-" is displayed if no relevant tasks exist). |
| OS Level | Real-time OS processing nest counter in Init: OS processing nest counter = -1 in Tasks or Idle: OS processing nest counter = 0 in OS service: OS processing nest counter > 0 |
| HdrNstCnt | Maskable interrupt nest counter |
| PriMap | Priority map (binary notation of priority map) |
| SysStack | System stack pointer (current system stack pointer - initial system stack pointer) [Caution] The system stack can be opened in the Memory Window of the debugger by double-clicking this line. Refer to " System stack display ". |
| maker | Kernel maker's code (0x117: NEC Electronics) |
| prid | Identification number of the kernel |
| spver | Version number of the ITRON Specification |
| prver | Version number of the kernel |
| prno | Management information of the kernel product |
| System Stack | When the system stack area is in use due to interrupt servicing, the system stack contents from the initial stack pointer to the current stack pointer are displayed in 16-bit widths. |

*

- System stack display

The contents of the memory area pointed to by a system stack pointer can be displayed in the Memory window of the debugger by double-clicking the [SysStack] line in the [Detailed display area](#).

CHAPTER 5 ERROR MESSAGES

5.1 Display Format

The messages output by RD78K0R are displayed in the message dialog box shown in [Figure 5-1](#).

There are two kinds of messages. When a message is displayed, a letter indicating the message type is prefixed to the error number.

Figure 5-1 Message Dialog Box



5.2 Error Messages

The following lists the error messages output from the RD78K0R, causes and countermeasures, in the error number order.

Table 5-1 Error Message List

*

| Error Number | Description | |
|--------------|----------------|---|
| 1000 | Message | Not connect. |
| | Cause | Displayed when the debugger is not connected. |
| | Action by User | Check the connection with the debugger. |
| 1100 | Message | Debugger running. |
| | Cause | Object information was opened (by clicking a real-time OS resource selection button) during user program execution. |
| | Action by User | Display object information only when the debugger is in the break state. |
| 1200 | Message | Maybe RX not loaded. |
| | Cause | No RX78K0R symbol information is included in the load module, or the RX78K0R has not been loaded. |
| | Action by User | Check if RX78K0R symbol information is included in the load module, or the RX78K0R has been loaded. |
| 1300 | Message | Can not Open Helpfile. |
| | Cause | Help file is not exist. |
| | Action by User | Check if the help file (*.chm) exists in the configuration (see " 2.2 Folder Configuration "). |
| 1400 | Message | Fail to write the file. |
| | Cause | Data was not written to the specified file correctly. |
| | Action by User | Check the available disk capacity, or the specified file attribute (if it is read-only, or the like). |

| Error Number | Description | |
|--------------|----------------|---|
| 1600 | Message | Maybe link is broken. |
| | Cause | The queue data in the RX78K0R kernel may be broken. |
| | Action by User | Check the RX78K0R. |

5.3 Warning Messages

The following lists the warning messages output from the RD78K0R, causes and their meanings.

Table 5-2 Warning Message List

*

| Error Number | Description | |
|--------------|----------------|---|
| - | Message | OS Running Status. |
| | Cause | This message is output when a break is executed during real-time OS processing. |
| | Action by User | Since a break occurs during real-time OS processing, invalid object information may be displayed. |

INDEX

C

Cyclic handler information ... 32

D

Detailed display area ... 19

E

Error messages ... 38

Eventflag information ... 25

Exiting ... 17

F

Fixed-sized memory pool information ... 30

Folder configuration ... 15

H

HLD check box ... 19

Hold status ... 19

I

Installing ... 15

M

Mailbox information ... 28

Menu bar ... 20

R

Resource list display area ... 19

Resource selection buttons ... 19

S

Semaphore information ... 27

Starting ... 16

Status bar ... 21

System information ... 36

System queue information ... 34

T

Task information ... 22

Tcl/Tk ... 16

The real-time OS resource display function ... 13

Title bar ... 19

U

Uninstalling ... 15

V

Version information ... 20

W

Warning messages ... 39

wishtip ... 16

REVISION HISTORY

The following table shows the revision history up to this edition. Page numbers in the “Applied to:” column indicate the pages of this edition in which the revision was applied.

The mark * shows major revised points in this edition.

| Applied to: | Description |
|-------------|---|
| - | 1.1 Overview Deletion of "(2) The real-time OS trace function". |
| - | 1.2 Operating Environment Modification of description. |
| p.16 | 3.1 Starting Figure 3-1 RD78K0R Startup Screen Modification of GUI image diagram. |
| - | CHAPTER 4 WINDOW REFERENCE Figure 4-1 to Figure 4-11 Modification of GUI image diagram. |
| p.19 | 4.1.1 Title bar Modification of description. [Before change] RD78K0R [Resource Type] [After change] RD78K0R [Real-time OS resource type] |
| p.19 | 4.1.2 Modification of title. [Before change] Resource selection buttons [After change] Real-time OS resource selection buttons |
| p.19 | 4.1.3 Modification of title. [Before change] Resource list display area [After change] Real-time OS resource list display area |

| Applied to: | Description |
|-------------|---|
| - | <p>4.1.5 RTOS trace buttons</p> <p>Deletion of this item.</p> |
| p.20 | <p>4.1.6 Menu bar (2) [View] menu</p> <p>Modification of description.</p> <p>[Before change] Fixed-size memorypool</p> <p>[After change] Fixed-sized memorypool</p> |
| - | <p>4.1.6 Menu bar</p> <p>Deletion of "(3) [Trace] menu".</p> |
| p.21 | <p>4.1.7 Status bar [Normal state]</p> <p>Modification of description.</p> <p>[Before change] ... of the user-coded application program is ...</p> <p>[After change] ... of the user-coded application program (task, interrupt handler, cyclic handler, idle routine) is ...</p> |
| p.24 | <p>4.2.1 Task information display Table 4-5 Additional Task Information</p> <p>Modification of description.</p> <p>[Before change] TTW_EVF</p> <p>[After change] TTW_FLG</p> |
| p.33 | <p>4.2.6 Cyclic handler information display Table 4-15 Detailed Display Area: Cyclic Handler Information</p> <p>Modification of description.</p> <p>[Before change] ID</p> <p>[After change] CyclID</p> |
| p.35 | <p>4.2.7 System queue information display Table 4-18 Detailed Display Area: Timer Queue Information clk</p> <p>Modification of description.</p> <p>[Before change] Wait clock count</p> |

| Applied to: | Description |
|-------------|---|
| | [After change] Wait clock count (unit: ticks) |
| - | CHAPTER 5 REAL-TIME OS TRACE FUNCTION Deletion of this chapter. |
| p.38 | 5.2 Error Messages Table 5-1 Error Message List Modification of description. [Before change] Number [After change] Error Number |
| - | 5.2 Error Messages Table 5-1 Error Message List Deletion of descriptions regarding error numbers 2000, 2100 and 2200. |
| p.39 | 5.3 Warning Messages Table 5-2 Warning Message List Unification of table format with that of "Table 5-1". |

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