Ladder Editor32 for YRC1000
OPERATOR’S MANUAL

Upon receipt of the product and prior to initial operation, read these instructions thoroughly, and retain for future reference.

Please have the following information available when contacting Yaskawa Customer Support:
- System
- Primary Application
- Software Version (Located on Programming Pendant by selecting: (Main Menu) - (System Info) - (Version))
- Robot Serial Number (Located on robot data plate)
- Robot Sales Order Number (Located on controller data plate)

Part Number: 179480-1CD
Revision: 0
This manual explains the Ladder Editor 32 for YRC1000. Read this manual carefully and be sure to understand its contents before operation.

General items related to safety are listed in the Chapter 1: Safety of Controller Instructions. To ensure correct and safe operation, carefully read Controller Instructions before reading this manual.

Some drawings in this manual are shown with the protective covers or shields removed for clarity. Be sure all covers and shields are replaced before operating this product.

The drawings and photos in this manual are representative examples and differences may exist between them and the delivered product.

YASKAWA may modify this model without notice when necessary due to product improvements, modifications, or changes in specifications. If such modification is made, the manual number will also be revised.

If your copy of the manual is damaged or lost, contact a YASKAWA representative to order a new copy. The representatives are listed on the back cover. Be sure to tell the representative the manual number listed on the front cover.

YASKAWA is not responsible for incidents arising from unauthorized modification of its products. Unauthorized modification voids your product's warranty.

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Notes for Safe Operation

Before using this product, read this manual and all the other related documents carefully to ensure knowledge about the product and safety, including all the cautions.

In this manual, the Notes for Safe Operation are classified as “DANGER”, “WARNING”, “CAUTION”, or “NOTICE”.

- **DANGER**
  Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. Safety Signs identified by the signal word DANGER should be used sparingly and only for those situations presenting the most serious hazards.

- **WARNING**
  Indicates a potentially hazardous situation which, if not avoided, will result in death or serious injury. Hazards identified by the signal word WARNING present a lesser degree of risk of injury or death than those identified by the signal word DANGER.

- **CAUTION**
  Indicates a hazardous situation, which if not avoided, could result in minor or moderate injury. It may also be used without the safety alert symbol as an alternative to “NOTICE”.

- **NOTICE**
  NOTICE is the preferred signal word to address practices not related to personal injury. The safety alert symbol should not be used with this signal word. As an alternative to “NOTICE”, the word “CAUTION” without the safety alert symbol may be used to indicate a message not related to personal injury.

Even items described as “CAUTION” may result in a serious accident in some situations. At any rate, be sure to follow these important items.

**NOTE**

To ensure safe and efficient operation at all times, be sure to follow all instructions, even if not designated as “DANGER”, “WARNING” and “CAUTION”.
Notation for Menus and Buttons

Descriptions of the programming pendant, buttons, and displays are shown as follows:

<table>
<thead>
<tr>
<th>Item</th>
<th>Manual Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Menu</td>
<td>The menus displayed on screen are denoted with { }. ex. {TOOL}.</td>
</tr>
<tr>
<td>Button</td>
<td>The buttons, check boxes, radio buttons displayed on screen are denoted with [ ]. ex. [Close]; [Sync] check box; [Fast] radio button.</td>
</tr>
</tbody>
</table>

Description of the Operation Procedure

In the explanation of the operation procedure, the expression "Select • • • " means the following operations:

- To move the cursor to the object item and left-click on it with the mouse.
- To pick out the object item by the tab key and press the Enter key.
  (In case of selecting a menu, use arrow keys instead of the tab key to pick out the object item, then press the Enter key.)

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In this manual, names of companies, corporations, or products are trademarks, registered trademarks, or bland names for each company or corporation. The indications of (R) and TM are omitted.
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1 INTRODUCTION

1.1 Ladder Editor 32 for YRC1000

1.1.1 What is Ladder Editor 32 for YRC1000?

The robot controller (YRC1000) has a concurrent I/O function that processes I/O related control independently from the manipulator, and in parallel with the manipulator operation. Ladder Editor 32 for YRC1000 software is used to graphically display ladder programs with the above function as a signal connection diagram, or to edit ladder programs easily such as pasting command parts by a drag-and-drop operation using the mouse.

1.1.2 Features of Ladder Editor 32 for YRC1000

Ladder mnemonic code can be edited with an image of a ladder diagram.

- With the "ladder preview" display, the entire line of the ladder program can be easily previewed.
- Simple drag and drop operation can edit connections between ladder parts.
- Cross reference function is enriched.
  Information such as relay No. use state or the place where an arbitrary relay No. is used can be referenced easily.
• History jump function is available.
  This function records the history of jumping to other lines, and easily returns to the previous line before jumping.

• Printing function is enriched.
  Cross reference information can also be printed, as well as ladder diagrams. This function is very useful when a created ladder is stored as reference material.

• Print images are stored in the text file.
  Print images obtained by printing ladder diagrams can be stored in the text file. This function is useful when the data is filed and stored as an electronic document.
1.2 Restriction

When using the Online function, pay attention to the following restrictions.

1.2.1 YRC1000 and Personal Computer Restrictions

- The port used for TCP/IP

The Online function uses UDP for the communication protocol. To communicate in UDP, the service identification numbers called "Port No" are used internally, while Online function uses the port numbers 10040 and 10041 for the host control function. When these numbers overlap with the numbers used for other network devices, correct communication cannot be performed.

To use the Online function, be sure in advance that any network device in the same network does not use the above explained port numbers.

1.2.2 Personal Computer Restrictions

- Same file access

The same file in the personal computer cannot be accessed from different robot controllers simultaneously.

In monitoring function, LadderEditor can connect to one controller only. LadderEditor cannot simultaneous monitoring of multiple controllers.
### 1.3 Hardware Requirements for Ladder Editor 32 for YRC1000

| OS                  | Microsoft Windows 10(64bit)  
|                     | Microsoft Windows 7 ServicePack1 (32bit / 64bit)  
|                     | JAPANESE and ENGLISH Windows version are supported only. |
| CPU                 | Pentium or Pentium compatible processor |
| Memory              | 16 Mbyte or more |
| Hardware Disk       | 10 Mbyte or more |
| Disk Drive          | Hard disk drive and CD-ROM drive |
| Display             | Supported by MS-Windows |
| Mouse               | Supported by MS-Windows |
| Robot Controller    | YRC1000 |
| Hardware Lock Key   | Used under single user environment.  
|                     | For details, refer to the following section " 1.4 Hardware Lock Key ". |

*1 MS-Windows 10 and MS-Windows 7 is a registered trademark of Microsoft Corporation, USA.

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**NOTE**

A personal computer and OS are not included with this software.

For YRC1000 concurrent I/O, refer to the YRC1000 Concurrent I/O
1.4 Hardware Lock Key

For proper operation, connect provided hardware lock key (USB type) to personal computer before using this software.

Check and execute <Check the computing environment> <Installation of driver> before connecting the key to USB port.

<Check the computing environment>
Multi-connection of USB type key is not available for one USB port because of hardware structure. Therefore, only one key should be connected to one USB port. When installing multiple offline software into one personal computer and multi-connectiong USB keys, use the personal computer which is provided same numbers of USB ports as the number of software to be installed.

<Installation of driver>

Please install the driver after detaching the all sentinel hardware key from the personal computer.

Execute "\SentinelDriver\Sentinel System Driver Installer 7.5.9.exe" of installation CD-ROM. Refer to"\SentinelDriver\Manual\Sentinel System Driver ReadMe.pdf" for the details of installation.

• Be sure to install the driver.
• When installing the driver, be sure to login in administrator mode in order to add files to system folder and input information in registry.
• If a key is connected to personal computer before installing the driver, the message concerning the driver is displayed. In this case, and detach the key from personal computer and then install the driver.

If a key is connected to personal computer before installing the driver under Windows 95/98/NT4.0/2000/XP environment, Windows wizard ([Add New Hardware] Wizard) starts up. In this case, push [cancel], and detach the key from personal computer and then install the driver.

• When installing the driver under Windows NT4.0 environment, please install the driver located in the folder "\SentinelDriver\SSD5411\SSD5411-32bit.EXE" of installation CD-ROM.

For the driver installation procedure, please consult the installation manual "\SentinelDriver\SSD5411\Manual\us\Readme.pdf".

Refer to "26.4 Frequently-asked questions" for other countermeasures concerning hardware lock key.
1.5 Installing Ladder Editor 32 for YRC1000

1. It is strongly recommended that you exit all applications before running the setup program.

   **NOTE** Be sure to login in administrator mode when installing the Ladder Editor 32 for YRC1000, or else the system related DLL files in Windows might not be updated.

2. When the install CD is inserted into the CD-ROM drive. When the [User Account Control] dialog appears automatically, click [Yes]. [Ladder Editor 32 for YRC1000 - Install-Shield Wizard] will be displayed.

3. Follow the on-screen instructions.

   **NOTE** If the following message appears during the installation, press [Yes] to continue installation.
   This message is displayed when the installation of redistribution package of Visual C++ 2012 has been executed but installation is required.
   If this message is displayed, run manually
   \ISSetupPrerequisites\BF2F04CD-3D1F-444e-8960-D08EBD285C3F\vcredist_x86.exe
   after installing Ladder Editor 32 for YRC1000, and install or repair the redistribution package of Visual C++ 2012.

4. When the setup is completed, Ladder Editor 32 for YRC1000 is registered under the \{Ladder Editor 32 for YRC1000\} folder that appears by clicking the [Start] button in the task bar and selecting \{Program\} and then \{Motoman\}. (In the case of Windows 10, all menu appears directly under \{Motoman\}.)

5. Connect the hardware key to the printer port or USB port.
   For details, refer to "1.4 Hardware Lock Key" in this chapter.
The following terms are frequently used in this manual.

<table>
<thead>
<tr>
<th>Terms</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ladder Parts</td>
<td>Object of matrix composing a ladder program such as STR, TMR or GRP</td>
</tr>
<tr>
<td>Set Value</td>
<td>Value set to ladder parts such as relay numbers, register numbers or constants</td>
</tr>
<tr>
<td>Line</td>
<td>One line indicates one section divided with OUT codes in a ladder mnemonic. Normally, there is one OUT part per line (excluding when GRP parts are used).</td>
</tr>
</tbody>
</table>
2 LADDER EDITOR 32 FOR YRC1000 BASIC DISPLAY

The following shows the "basic" display of Ladder Editor 32 for YRC1000. The "basic" display is divided into two displays: "ladder preview" display and "ladder editing" display. Editing is available as referring to the ladder image before and after the ladder diagram in the editing line.
The following shows the basic flowchart of ladder editing.

1. Get a ladder program file from the YRC1000
2. Start up the Ladder Editor for YRC1000
3. Open the ladder program from [file] - [Open] menu.
4. Editing the system ladder?
   - No: System ladder is displayed in [Option] - [Ladder Section] - [System Ladder].
5. Editing operations such as parts addition, parts connecting, relay No. setting, etc.
6. Select the editing line (ladder image list display).
7. Complete ladder diagram editing?
   - No: Editing another line?
8. Compile.
9. Store data.
10. Complete Ladder Editor for YRC1000
11. Load the ladder program file to the YRC1000.
4.1 How to Start

To start up Ladder Editor 32 for YRC1000, open the [Start] menu in the Windows tool bars, and select "Ladder Editor 32 for YRC1000" from [Program] - [Motoman] - [Ladder Editor 32 for YRC1000] (In the case of Windows10, [Motoman] - [Ladder Editor 32 for YRC1000]). When this application is initially started up or when the [Manage type] is set to "Easy Mode", the [Enter Password] dialog box for the Easy Mode appears. When the [Manage type] is set to "Standard Mode", the [Enter Password] dialog box for the Standard Mode appears. (For details on managing user accounts, refer to " 25 USER INFORMATION MANAGEMENT ".)
If the "Require Password to Start Ladder Editor" check box is cleared in the [User Manager] dialog box, these dialog boxes for inputting passwords do not appear. The "Default User Names and Password List" managed and stored by the software administrator describes the "Login Name" and "Password". This list is included with the shipment. Input the password, and the "Startup" display for Ladder Editor 32 for YRC1000 appears as shown following appears.

4.2 How to End

Selecting [File] - [Exit] in the Ladder Editor 32 for YRC1000 menu can close the Ladder Editor 32 for YRC1000.
5 READING AND STORING EDITED LADDER FILES

5.1 Reading Ladder Data

To perform ladder editing, read in the ladder program to be edited by Ladder Editor 32 for YRC1000.

The following one types of files can be edited by Ladder Editor 32 for YRC1000:

- Ladder program file (text file)

[How to Operate]


2. To read in a ladder program file, select the ladder program file and click the [Open] button.
5.2 Reading Several Ladder Files

The Ladder Editor 32 for YRC1000 is an MDI (Multi Document Interface) application to read in several ladder program files simultaneously. To select the ladder program to be edited, select the file name displayed in the [Window] menu, or select the window with the targeted ladder program among overlapped windows by selecting [Window] - [Cascade].

In addition, the targeted ladder program can also be selected where several editing windows are displayed and overlapped by selecting [Window] - [Cascade] menu.
5.3  Storing Edited Data

When ladder editing is completed, store the information in a file. Before storing, compile the data when a ladder was edited by Ladder Editor 32 for YRC1000. Unless compiled, data may not be stored completely.

[How to Operate]

1. Selecting [File] - [Save] stores the overwritten data on an existing file.
2. Selecting [File] - [Save As] displays the [Save As] dialog box. Set an arbitrary file name to the data to be stored.

To store the file, the following two types of file forms are available, depending on the method used to read in a file.

5.3.1  Storing when a Ladder Program File (CIOPRG.LST) is Open

When a ladder program file is read in, only a ladder program file (text file) can be stored in an output file form.

5.3.2  Storing a Ladder Program that is Being Edited

A ladder program being edited cannot be stored if it has a detected error, even if compiled. The ladder program being edited can be stored as a work file. For details, refer to paragraph "23.6  Rough Draft File Forced Output Function ". 
6 CREATING A LADDER DIAGRAM

To create a new ladder program, use the standard ladder program as the base for editing. The standard ladder program is supplied as a template.

[How to Operate]

1. Select [File] - [New] to display the [Select Standard Ladder Template] dialog box. Select the template to be set and click the [Open] button.
7 EDITING A LADDER DIAGRAM

All ladder diagrams are edited in the "Basic" Display shown in "2 LADDER EDITOR 32 FOR YRC1000 BASIC DISPLAY ".

7.1 Ladder Parts Specifications

The Ladder Editor 32 for YRC1000 supports the ladder parts corresponding to the new ladder codes employed for the YRC1000.

For the details on such ladder parts, refer to the [Ladder Parts Specifications] of [Help] menu.

7.2 Selecting a Ladder Edited Line

A ladder diagram is edited in the "ladder editing" display, and the line to be displayed in the "ladder editing" display is selected in the "ladder preview" display. In the "ladder preview" display, images of the ladder diagrams of all the lines can be viewed set in the current ladder section (either system section or user section).

To refer to the ladder image of a line that is not displayed on the display, scroll using the scroll bar.

In the "ladder preview" display, right-click the mouse to select the line to be edited and the "ladder editing" display with the ladder diagram of the selected line will appear.
7.3 Adding New Ladder Parts

New ladder parts can be added when editing a ladder diagram. Add ladder parts in the following manner.

[How to Operate]

1. Enter the parts addition mode (select parts to be added).
   Selecting [Tool] - [Add Instructions] displays the list of ladder parts to be added. Then select the ladder parts. Or select the parts to be added from the ladder parts tool bar (refer to " 26.2.4 Ladder Parts Tool Bar ").

   Example) Adding the ladder parts of the NC contact
   Select [Tool] - [Add Instructions] - [STR-NOT], or tool bar.

2. Paste new parts on the matrix to be added in the "ladder editing" display.
   When the ladder parts to be added are determined, the mouse form changes in the "ladder editing" display. The selected ladder parts appear at the side of the mouse pointer. Left-click on the matrix location where the ladder parts are to be added.

   "????" may appear for the added ladder parts. This is because the relay No. or register No. is not set for these ladder parts, and it is not an error. Set the relay No. or register No.
   For the setting of the relay Nos. or register Nos., refer to the paragraph " 7.6 Setting Relay No., Register No. and Constants ".

![Ladder Diagram Example]
7.4 Deleting Ladder Parts

Delete the ladder parts in the following manner.

[How to Operate]
1. Enter the parts deletion mode.
   Select [Tool] - [Edit Instructions] - [Delete Instructions], or select \(\times\) from the parts control tool bar (refer to "26.2.2 Parts Control Tool Bar").
2. Select the ladder parts to be deleted in the "ladder editing" display.
   Left-click on the matrix location where the ladder parts are to be deleted in the "ladder editing" display.

7.5 Connecting and Disconnecting Lines between Ladder Parts

Ladder parts on a certain matrix are connected to ladder parts on another matrix with a line. The connection method of the line determines the ladder process. The following paragraph describes how to connect and disconnect the line between ladder parts.

7.5.1 Connecting with a Line

Connect ladder parts with a line in the following manner.

[How to Operate]
1. Left-click the mouse on the first ladder part.
2. While pressing the mouse, drag the mouse to the second ladder part.
3. Release the left button at the second ladder part.

Two parts are connected by a drag and drop operation.
7.5 Connecting and Disconnecting Lines between Ladder Parts

- Ladder Parts Connection Terminals
Ladder parts have IN and OUT terminals. A connecting line connects the IN and OUT terminals. A drop and drag operation determines which are IN and which are OUT terminals and connects them automatically. However, when two connection ladder parts are placed vertically as shown in the figure below, the user must decide to connect the IN or OUT side.

In the figure below, the mouse pointer is dragged from the center of a ladder part and dropped on the IN side of the other part, to make the connecting line on the IN side. Dropping on the IN side makes a line which connects to the IN side of the other ladder part. On the other hand, dropping on the OUT side makes a line which connects to the other OUT side.

7.5.2 Disconnecting Two Parts
Erase the line between ladder parts to disconnect them in the following manner.

[How to Operate]
1. Right-click the mouse on the first ladder part.
2. While pressing the mouse, drag the mouse to the second ladder part.
3. Release the right button at the second ladder part.

Two parts are disconnected by a right-click, drag and drop operation.
7.6 Setting Relay No., Register No. and Constants

Relay No., register No. and constants can be set for each ladder parts. Set these values in the following manner.

[How to Operate]

1. Enter the set value input mode.
   - Select [Tool] - [Edit Instruction] - [Edit Instruction Parameters], or select \( \text{No.} \) from the parts control tool bar (refer to "26.2.2 Parts Control Tool Bar").
2. Select the ladder parts to which the set values are input in the "ladder editing" display.
   - Left-click the mouse on the ladder parts in the "ladder editing" display, and the "set value input" dialog box appears.
3. Input the set values.
   - Select the type of the set value in the combo box of the [Input Value] dialog box, and then input a value suitable for the type of the set value.
   - Click the [OK] button to set the values.

7.6.1 Setting Values Using a Pop-up Menu

Set values can also be set in the following manner using a pop-up menu. The pop-up menu appears by right-clicking the mouse.

[How to Operate]

1. Right-click the mouse on the ladder parts to which the set values are input, and select the pop-up menu.
   - Right-click the mouse on the ladder parts to which the set values are input in the "ladder editing" display, and the pop-up menu appears. Select the [Edit Instruction Parameters], and the [Input Value] dialog box appears.
2. Input the set values.
   Input the set values in the [Input Value] dialog box.
7.7 Inputting Relay No. and Register No. Names

Names can be set for the relay Nos. and register Nos. When editing name, a new name can be input or name information read from the external name file can be edited. Set the name for a relay No. or a register No. in the following manner.

[How to Operate]

1. Enter the name input mode.
   Select [Tool] - [Edit Instruction] - [Edit Labels and Comments], or select \(\text{\textsuperscript{26.2.2 Parts Control Tool Bar}}\) from the parts control tool bar (refer to "26.2.2 Parts Control Tool Bar").

2. Select the ladder parts where the number of the name to be selected is set.
   Left-click the mouse on the ladder parts where the number of the name to be selected is set in the "ladder editing" display, and the [Edit Labels and Comments] dialog box appears.

   ![Edit Labels and Comments dialog box]

   The relay No. or register No. appears in the No. selection list box as shown below.
   - Relay No.: #xxxxx, W#xxxxx
   - Register No.: Mxxx

   Some ladder parts have several relay Nos. or register Nos. In such a case, several numbers appear in the No. selection list box.

3. Set the name.
   Two types of names, a short name and a long name can be used. They are treated as follows with Ladder Editor 32 for YRC1000.
   - **Short name**: Appears overlapped on the relay No. or register No. of the ladder diagram in the "ladder editing" display. (Refer to "23.8 Switching Short Name Display/Non-Display").
   - **Long name**: Appears in the column of OUT relay names in the "ladder editing" display, and in the row of output signal names in the "ladder preview" display.

   When setting is completed, be sure to click the [Update] button. This button records the setting information.
7.7.1 Setting Names Using a Pop-up Menu

Names can be also set in the following manner using the pop-up menu.

[How to Operate]

1. Select the ladder parts where the relay No. or register No. of the name to be edited is set.
   Right-click the mouse on the ladder parts where the relay No. or register No. of the name to be edited is set in the "ladder editing" display, and the pop-up menu appears. Select the [Edit Labels and Comments], the [Edit Labels and Comments] dialog box appears.

2. Edit the name.
   Edit the displayed name for a relay No. or register No. in the [Edit Labels and Comments] dialog box.
7.8 Inserting Editing Matrix Row and Line

Even though new ladder parts are to be inserted immediately before the ladder parts that have already been set, there may be no matrix for insertion as shown in the following diagram.

In this case, insert a line (or a row) to secure the matrix where the ladder parts are to be inserted.

7.8.1 Inserting a Row

Insert a row in the following manner.

[How to Operate]

1. Enter the row insertion mode.
   Or select  from the parts control tool bar (refer to " 26.2.2 Parts Control Tool Bar ").
2. Specify the matrix where a row is to be inserted.
   Left-click the mouse on the matrix where a row is to be inserted.
7.8 Inserting Editing Matrix Row and Line

Row Insertion Disabled Pattern

A row cannot be inserted if even one part exists in the column just before the last column on the right after the second line of the matrix in the "ladder editing" display.

<table>
<thead>
<tr>
<th>00</th>
<th>01</th>
<th>02</th>
<th>03</th>
<th>04</th>
<th>05</th>
<th>06</th>
<th>07</th>
<th>08</th>
<th>09</th>
</tr>
</thead>
<tbody>
<tr>
<td>#50099</td>
<td>#70062</td>
<td>#70068</td>
<td>#70124</td>
<td>#70021</td>
<td>#70064</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

7.8.2 Inserting a Line

Insert a line in the following manner.

[How to Operate]

1. Enter the line insertion mode.
   Select [Tool] - [Edit Instructions] - [Edit Entire Column] - [Insert Column]. Or select from the parts control tool bar ("26.2.2 Parts Control Tool Bar").
2. Specify the matrix where a line is to be inserted.
   Left-click the mouse on the matrix where a line is to be inserted.
7.8 Inserting Editing Matrix Row and Line

- Line Insertion Disabled Pattern

A line cannot be inserted if even one part exists in the lowest line of the matrix in the "ladder editing" display.

![Diagram showing line insertion disabled pattern]
7.9 Deleting Editing Matrix Row and Line

Unnecessary rows or lines can be deleted.

7.9.1 Deleting a Row

Delete a row in the following manner.

[How to Operate]

1. Enter the row deletion mode.
   
   
   Or select from the parts control tool bar (refer to "26.2.2 Parts Control Tool Bar ").

2. Specify the matrix where a row is to be deleted.
   
   Left-click the mouse on the matrix where a row is to be deleted.

Deletion of a row deletes all the ladder parts that are set to the row to be deleted.

7.9.2 Deleting a Line

Delete a line in the following manner.

[How to Operate]

1. Enter the line deletion mode.
   
   
   Or select from the parts control tool bar (refer to "26.2.2 Parts Control Tool Bar ").
2. Specify the matrix where a line is to be deleted.
   Left-click the mouse on the matrix where a line is to be deleted.

![Diagram of matrix with lines before and after deletion]

**NOTE**
Deletion of a line deletes all the ladder parts set to the line to be deleted.

## 7.10 Clearing Displays

The contents of the "ladder editing" display can be cleared when editing. This function is useful when the current display is to be reedited from the beginning.

**[How to Operate]**

Select [Edit] - [Clear Current Rung]. Or select from the parts control tool bar (refer to "26.2.2 Parts Control Tool Bar ").
8 INSERTING A NEW LINE

A new line is inserted into an arbitrary line. Since default values are set to the new line, change the values to the correct ladder information. The new line is inserted into the next line of the line selected in the ladder preview display.

[How to Operate]

Select [Edit] - [Insert new Rung], or select  from the main tool bar (refer to "26.2.1 Main Tool Bar ").
9.1 Changing an Edited Ladder Line

Overwrite the contents edited in the "ladder editing" display on the line currently being edited, in the following manner.

[How to Operate]

Select [Edit] - [Save Current Rung] - [Overwrite], or select  from the main tool bar (refer to "26.2.1 Main Tool Bar ").

9.2 Inserting an Edited Ladder Line

Insert the contents edited in the "ladder editing" display into the next line of the line currently being edited, in the following manner. Therefore, the ladder data after the inserting line will be shifted backward.

[How to Operate]

Select [Edit] - [Save Current Rung] - [Insert], or select  from the main tool bar (refer to "26.2.1 Main Tool Bar ").
10 CUTTING, COPYING AND PASTING LINES

10.1 Cutting a Ladder Diagram Line

Cut the line selected in the "ladder preview" display. The ladder information of the cut line can be pasted to another line by pressing [Paste Rung] or [Insert Cut/Copied Rung].

[How to Operate]
1. Select the line to be cut in the "ladder preview" display, and select [Edit] - [Cut Rung].
   Or select \( \) from the main tool bar (refer to " 26.2.1 Main Tool Bar ").

   To select several lines simultaneously, hold down the [SHIFT] or [CTRL] key when selecting lines.

10.2 Copy a Ladder Diagram Line

Copy the line selected in the "ladder preview" display. The ladder information of the copied line can be pasted onto another line by pressing [Paste Rung] or [Insert Cut/Copied Rung].

[How to Operate]
1. Select the line to be copied in the "ladder preview" display. Then select [Edit] - [Copy Rung] menu. Or select \( \) from the main tool bar (refer to " 26.2.1 Main Tool Bar ").

   To select several lines simultaneously, hold down the [SHIFT] or [CTRL] key when selecting lines.
10.3 Pasting a Ladder Diagram Line

Paste the cut or copied contents of the line by pressing [Cut Rung] or [Copy Rung] over the line selected in the "ladder preview" display. When several ladder list files are open simultaneously, the ladder diagram can be pasted onto another ladder list file.

[How to Operate]

1. Select the line to be pasted in the "ladder preview" display, and select [Edit] - [Paste Rung]. Or select  from the main tool bar (refer to "26.2.1 Main Tool Bar ").

This function is disabled if several lines were cut or copied by pressing [Cut Rung] or [Copy Rung] in the operation immediately before. After selecting only one line and pressing [Cut Rung] or [Copy Rung], try pasting again.

10.4 Inserting and Pasting a Ladder Diagram Line

Insert the cut or copied contents of the line into the line selected in the "ladder preview" display. Therefore, the ladder data after the inserting/pasting line will be shifted backward. When several ladder list files are open simultaneously, the ladder diagram can be inserted and pasted onto another ladder list file.

[How to Operate]

1. Select the line to be inserted and pasted in the "ladder preview" display. Then select [Edit] - [Insert Cut/Copied Rung]. Or select  from the main tool bar (refer to "26.2.1 Main Tool Bar ").
11 COMPILING EDITED CONTENTS

Be sure to compile the ladder information of each line after editing. Compiling performs final checking such as the relay No. overlapping check, etc. to load the information to the controller.

**NOTE**
- Without this operation, the edited data cannot be correctly stored.
- Since compiling processes the system section and the user section of the ladder program, it is unnecessary to change to a system ladder or a user ladder.

**[How to Operate]**

1. Select [Tools] - [Check the Ladder], or select 🛠️ from the main tool bar (refer to "Fig. 26.2.1) Main Tool Bar ").
Print an image of a ladder diagram. For the ladder program to be printed, the line Nos. of other lines referring to the OUT terminal relay Nos. appear. The information of the reference lines appears as the system section and user section together.

[How to Operate]

1. Select [File] - [Print] - [Ladder Diagram] - [System Section (or User Section)].
Print the list of used relay Nos. and the line Nos. referring to each relay No. in a list. List information of the reference lines appears as the system section and user section together.

[How to Operate]

1. Select [File] - [Print] - [Relay List] - [System Section (or User Section)].
Print the list of used register Nos. and line Nos. referring to each register No. in a list. List information of the reference lines appears as the system section and user section together.

[How to Operate]

1. Select [File] - [Print] - [Register List] - [System Section (or User Section)].

<table>
<thead>
<tr>
<th>No</th>
<th>Symbol</th>
<th>Register Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>#11</td>
<td>THR</td>
<td>0:000</td>
</tr>
<tr>
<td>#12</td>
<td>THR</td>
<td>0:001</td>
</tr>
<tr>
<td>#13</td>
<td>THR</td>
<td>0:002</td>
</tr>
<tr>
<td>#14</td>
<td>THR</td>
<td>0:003</td>
</tr>
<tr>
<td>#15</td>
<td>SYSTEM RESERVED</td>
<td></td>
</tr>
<tr>
<td>#16</td>
<td>CFR</td>
<td>0:004</td>
</tr>
<tr>
<td>#17</td>
<td>ASC RESPONSE B020C (CURRENT)</td>
<td></td>
</tr>
</tbody>
</table>
### 12.4 Printing Relay No. Use State

Print the relay No. use state in the "matrix" display.

**[How to Operate]**

1. Select [File] - [Print] - [Relay State Table].

Relay Nos. for the system section and user section appear together, indicated by the following symbols:
- S: Relay Nos. used in a system section
- U: Relay Nos. used in a user section
- B: Relay Nos. used in both system and user sections

A relay No. in a matrix is regarded as YYYYYX when the vertical is "YYYYY" and the horizontal axis value is "X".

<table>
<thead>
<tr>
<th>Relay No. Use State List</th>
<th>Name: BOMELD</th>
<th>Date: Nov 22 2006 23:14</th>
<th>Relay No.: 50000 - 50059</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3 4 5 6 7 8</td>
<td>1 2 3 4 5 6 7 8 9</td>
</tr>
<tr>
<td>76542310</td>
<td>6543210</td>
<td>6543210</td>
<td></td>
</tr>
<tr>
<td>406120</td>
<td>406120</td>
<td>406120</td>
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<tr>
<td>406120</td>
<td>406120</td>
<td>406120</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Labels for relay Nos. are shown in the image. The actual relay Nos. are not specified in the image.
12.5 Printing User Alarms and User Messages

Print the lists of user alarms and user messages.

[How to Operate]
Select [File] - [Print] - [Alarms and Messages].
The following describes the items of printed information. User alarms and user messages can be printed. Since each display item is the same, this paragraph describes printing of the user alarm list as an example.

### User Alarm & User Message Information

#### User Message (System Section)

<table>
<thead>
<tr>
<th>No.</th>
<th>Message (1st Language)</th>
<th>No. Message (2nd Language)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>WIRE STICKING/SHORT</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>GAS FAILURE</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>WIRE FAILURE</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>RESTARTING FOR ABC</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>RESTARTING FOR GAS</td>
<td>6</td>
</tr>
<tr>
<td>6</td>
<td>RESTARTING FOR TUBE</td>
<td>7</td>
</tr>
<tr>
<td>7</td>
<td>END OF ABC RESTARTING</td>
<td>8</td>
</tr>
</tbody>
</table>

#### Request Signal Relay No.

<table>
<thead>
<tr>
<th>Relay No.</th>
<th>Rung No.</th>
<th>Ladder Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>402100</td>
<td>83</td>
<td>System Section</td>
</tr>
<tr>
<td>402111</td>
<td>84</td>
<td>System Section</td>
</tr>
<tr>
<td>402232</td>
<td>85</td>
<td>System Section</td>
</tr>
<tr>
<td>40233</td>
<td>86</td>
<td>System Section</td>
</tr>
<tr>
<td>40234</td>
<td>111</td>
<td>System Section</td>
</tr>
</tbody>
</table>

#### User Message (User Section)

<table>
<thead>
<tr>
<th>No.</th>
<th>Message (1st Language)</th>
<th>No. Message (2nd Language)</th>
</tr>
</thead>
<tbody>
<tr>
<td>65</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>66</td>
<td>66</td>
<td></td>
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<tr>
<td>67</td>
<td>67</td>
<td></td>
</tr>
<tr>
<td>68</td>
<td>68</td>
<td></td>
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<tr>
<td>69</td>
<td>69</td>
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<td>76</td>
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<td>78</td>
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<td>79</td>
<td>79</td>
<td></td>
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<tr>
<td>80</td>
<td>80</td>
<td></td>
</tr>
</tbody>
</table>

#### Request Signal Relay No.

<table>
<thead>
<tr>
<th>Relay No.</th>
<th>Rung No.</th>
<th>Ladder Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>402100</td>
<td>87</td>
<td>System Section</td>
</tr>
</tbody>
</table>
12.5.1 User Alarm System Section and User Section

A user alarm can be roughly classified as a system section that the system uses or a user section that the user can define freely. When printing, this information appears as the following word.

[User Alarm(***** Section) ]

12.5.2 User Alarm Selection Relay No. Information

Relay No. information is displayed to help select a used user alarm. A user alarm is specified by turning the following six relays ON/OFF.

40210, 40211, 40212, 40213, 40214, 40215

When printing, this information appears as the following word.

[Type Selection Signal Relay No.]

When each relay No. is actually used in a code, the line No. appears.

12.5.3 User Alarm Display Relay No. Information

Relay No. information which becomes a trigger to help display a user alarm appears. The relay No. that becomes a display trigger is 40010.

When printing, this information appears with the following word.

[Request Signal Relay No.]

When each relay No. is actually used in a code, the line No. appears.
13 TRANSFERRING PRINTING INFORMATION TO A TEXT FILE

13.1 Transferring Ladder Diagrams to a Text File

Transfers an image of a ladder diagram to a text file.

[How to Operate]
1. Select [File] - [Save As Text Files] - [Ladder Diagram] - [System Section (or User Section)].

13.2 Transferring Used Relay No. Lists to a Text File

Transfers the lists of relay Nos. used and the line Nos. referring to each relay No. to a text file. The system section and the user section are transferred together in the list of reference lines.

[How to Operate]
1. Select [File] - [Save As Text Files] - [Relay List] - [System Section (or User Section)].

13.3 Transferring Used Register No. Lists to a Text File

Transfers the lists of register Nos. used and the line Nos. referring to each register No. to a text file. The system section and the user section are transferred together in the list of reference lines.

[How to Operate]
1. Select [File] - [Save As Text Files] - [Register List] - [System Section (or User Section)].
13.4 Transferring Relay No. Use State to a Text File

Transfers the relay number use state to the text file in a "matrix" display.

[How to Operate]

1. Select [File] - [Save As Text Files] - [Relay State Table].

13.5 Transferring User Alarms and User Messages to a Text File

Transfers the user alarms and user messages to a text file.

[How to Operate]

1. Select [File] - [Save As Text Files] - [Alarms and Messages].
14 HEADER INFORMATION

14.1 Ladder Name and System Register Editing

Edit the ladder program names and system registers.

[How to Operate]

1. Select [Edit] - [Header Information], or select from the main tool bar (refer to "26.2.1 Main Tool Bar ").

[Name] combo box

Selects a ladder name. Normally, select one from the list in the combo box. A name can be entered directly. However, an improper name interrupts the loading to the controller.

System registers

Sets the number of system registers.
15 USER ALARM AND USER MESSAGE INFORMATION

Edit the user alarms and user messages.

[How to Operate]

1. Select [Edit] - [Alarams and Messages], or select from the main tool bar (refer to "26.2.1 Main Tool Bar ").

Click the tag to select the user alarm and user message.

Language combo box
Each message has a first and a second languages. Select your desired language from the language combo box.

Editing area
Click the message to be edited in the message list, and the same message appears in the editing area. Edit the message in this area. When editing is completed, press the [Change] button.

15.1 User Alarm and User Message in System Section

If the user account level does not reach the management level, only the information in the user section appears in the message list. To display or edit the information in the system section, change the user account level. (Refer to "25 USER INFORMATION MANAGEMENT ")
A ladder program has a system ladder in the system section and a user ladder in the user section. Because the manipulator may not move properly unless the system section is correctly edited, general users cannot edit the system section as well as the XRC. General users can edit only in the user ladder section. (Contact your Yaskawa representative when editing in the system section of the ladder program is required.)
17 NAME FILE

17.1 What is a Name File?

Name file is a name information file to add a name to a relay No. or register No. used in the ladder program. (For the format of the name file, refer to "26.3 Name File Format").

17.2 Reading Name File

Name file is read in at either one of the following cases.

(1) When a ladder program file is open
(2) When a name file is read in from the menu

When a ladder program file is open, the name file is read in at the same time as the ladder program file. When a name file is read in from the menu, any existing name file can be read in whenever necessary.
The name file is saved in the same folder as the ladder program file.
(Even if a name file has not been prepared, the ladder program can still be edited. Refer to "17.2.1 Reading Name File Automatically (With Name File)").

17.2.1 Reading Name File Automatically (With Name File)

When reading in a ladder program file, Ladder Editor 32 for YRC1000 automatically reads in the name file, too. The name file read in is determined by the ladder name of the ladder program used as a keyword (refer to "14.1 Ladder Name and System Register Editing"). Example)

Ladder program name: ARCWELD
Read in file name: ARCWELD.NAM

17.2.2 Reading Name File Automatically (Without Name File)

If the desired name file is not available when automatically reading the name file, Ladder Editor 32 for YRC1000 performs the operation in the following manner.

(1) Selects a file suitable for the desired ladder program from the name template file prepared in default.
(2) Copies the selected template file to the same directory as the ladder program file.
(3) Reads in the copied template file as a name file.
In this case, Ladder Editor 32 for YRC1000 refers to the ladder names to be read in to select the template file.

However, when the user changes the ladder name of the ladder program file, Ladder Editor 32 for YRC1000 may not find any file name that coincides with the ladder name template file. In such a case, the [Select name template] dialog box appears.

Select the template suitable for the desired ladder program. Clicking the [Cancel] button stops the automatic reading of the name file.

The following shows the simple flowchart of the automatic reading.
17.3 Storing Name File

Store the edited name information by one of the following two methods.

1. Stores it manually.

[How to Operate 1]
Select [File] - [Save Relay Label Files]. When the [Save As] dialog box appears, input an arbitrary name for the name file to store it. Normally, the file name is stored in the following format.
Ladder name. NAM
(Example)
ARCWELD. NAM

For the ladder names, refer to "14 HEADER INFORMATION ".

2. Stores it automatically.

[How to Operate 2]
Setting the option stores the name file automatically. Refer to "23.3 Automatic Storing Function of Name File ".

17.4 Name Template File

Name template file is installed automatically when Ladder Editor 32 for YRC1000 is setup. The following folder is created in the folder where the Ladder Editor 32 for YRC1000 execution module exists, and the name template file is stored in this folder.
"Template"
18 RELAY/REGISTER NAME LIST DISPLAY FUNCTION

The relay name list display function and register name list display function can display the name list for all relay Nos. and register Nos. All the data of the read-in name files can be cross referenced. This "list display" dialog box has the editing function. The name information of an arbitrary relay or register No. can be edited.

[How to Operate] ("Edit Relay Labels & Comments" Display)

1. Select [Edit] - [Relay Labels and Rung Comments]. The [Edit Relay Labels & Comments] dialog box appears. (Some machines take time to display it.)

By selecting any desired relay No. from the list, the currently set data appears in the [No.], [Label] and [Comment] columns. Edit the data here. After editing, click the [Update] button to register the edited data.

If the [Label] and the [Comment] are similar for two or more relay Nos., change only the [No.], and then click the [Update] button. The name previously entered will remain. Because the names are similar, change only the characters that are different. The entire name does not have to be re-entered.
[How to Operate] ("Edit Register Labels & Comments" Display)

1. Select [Edit] - [Register Labels]. The [Edit Register Labels & Comments] dialog box appears. (Some machines take time to display it.)

![Edit Register Labels & Comments dialog box]

Editing procedure is the same as that of "Edit Relay Labels & Comments" Display.

Normally, edit a relay or register name by opening the [Edit Relay Labels & Comments] dialog box on the ladder diagram. However, relay Nos. or register Nos. not used for ladder diagrams cannot be less of edited. These lists can be used to edit the names for all the relay or register Nos. regardless whether or not they are used on the ladder diagram.
19 LINE JUMP FUNCTION

The line jump function searches for and jumps to the line with the keyword.

19.1 Line No. Search Jump

This function jumps to the specified line No..

[How to Operate]

1. Select [Edit] - [Go to Rung.], or select (black) from the search jump tool bar (refer to "26.2.3 Search Jump Tool Barr ").
2. When the [Enter a Rung No.] dialog box appears, enter the line No. to jump and click the [OK] button.

19.2 Parts Set Value Search Jump

This function searches for values such as relay Nos., register Nos., and constants set to the ladder parts, and then jumps to the line with the set values.

[How to Operate]

1. Select [Edit] - [Find Input Relays, Registers or Constants] - [Specify Parameter], or select (brown) from the search jump tool bar (refer to "26.2.3 Search Jump Tool Barr ").
2. When the [Relay, Register or Constant] dialog box appears, enter the type of the value and the set value to be searched and click the [OK] button.
19.2.1 Previous/Next Search Jump

Previous search and next search functions can be used for searching for parts set values only.

[How to Operate]

1. For a backward search, select [Edit] - [Find Input Relays, Registers or Constants] - [Backward], or select (brown) from the search jump tool bar (refer to "26.2.3 Search Jump Tool Barr "). For forward search, select [Edit] - [Find Input Relays, Registers or Constants] - [Forward], or select (brown) from the search jump tool bar.

Backward
Backward search is a function to search for the set value in front of the current line (in the direction of smaller line No.).

Forward
Forward search is a function to search for the set value behind the current line (in the direction of greater line No.).

Unless new set values are entered by pressing [Edit] - [Find Input Relays, Registers or Constants]-[Backward search] or [Forward search], the set values to be searched for do not change.
This function can be used to easily know where and how the set values are used.

19.3 OUT Parts Relay No. Search Jump

The OUT parts relay No. search jump function searches only for the relay No. set to the OUT parts of the ladder parts and jumps there. Other ladder parts cannot be searched for.

[How to Operate]

1. Select [Edit] - [Find Output Relays]. Or select (brown) from the search jump tool bar (refer to "26.2.3 Search Jump Tool Barr ").
2. When the [Input Value] dialog box appears, input the relay No. to be searched for and click the [OK] button.

This function can be used to analyze the conditions in which the relay used in the line turns ON retroactively.
19.4 History Jump

The history jump function stores the line jump functions used in the past as the history and easily returns to the previous jump source.

This function does not exist as a menu item; Only available as a tool bar button.

[How to Operate]

1. Select ▶ or ◀ from the search jump tool bar (refer to "26.2.3 Search Jump Tool Barr ").

Using this history jump button, you can freely move to the line registered in the jump history. Normally, this function is disabled. When jumps are performed, this function becomes enabled.

[Application]

An example of its most useful application is used together with "OUT parts relay No. search jump". When searching for certain relay No. ON/OFF conditions using the "OUT parts relay No. search jump", a search jump may also be performed in the further advanced lines for retroactive analyses. After completion of analysis, this history jump function can easily return to the previous line.
20.1 Ladder Parts Set Value and Reference Line List Display Function

The ladder parts set value and reference line list display function displays on which line and for which ladder parts the specified set values are used.

[How to Operate]
1. Select [Tools] - [Instruction Use Table]. The dialog box shown in the figure below appears.

2. After inputting the targeted set value type and the value, click the [OK] button. The [Instruction Use Table] dialog box appears.

[Relay, Register or Constant] (Reference Data) List Box
The list contains the set values to be searched for. Normally, there is only one item. However, since more than two items may appear occasionally, select one.

[Instruction Type] Tree
The tree consists of ladder parts. Selecting this tree item can limit the line Nos. displayed in the [Rang Containing Item] matrix.
For example, selecting "STR" item displays only the line Nos. with the set values for "STR" parts.
20.2 Function to Display the Relay No. Use Table and Register No. Use Table

[Rang Containing Item] Matrix
Displays the line Nos. referring to the set values selected in the [Relay, Register or Constant] (reference data) list box. The line No. appears in red if the detected line No. is within the system ladder area, and in blue if it is within the user ladder area.

[Application]
Set values in the ladder parts may be referenced by several other lines. In such cases, this function is useful to analyze where it is used or to know how it is used in other lines.

20.1.1 Line Jump from [Instruction Use Table] Dialog Box

The line jump from [Instruction Use Table] dialog box function can jump to an arbitrary line from the [Instruction Use Table] dialog box. As shown the figure below, double-clicking the desired line No. on the [Rang Containing Item] matrix moves to the targeted line.

Even if a line jump is performed by double-clicking, the [Instruction Use Table] dialog box does not disappear. Another jump to another line can be performed.

20.2 Function to Display the Relay No. Use Table and Register No. Use Table

This function displays which relay Nos. or register Nos. are used or not used in the ladder program that is being edited.
[How to Operate]

1. Select [Tools] - [Relay Use Table]. The figure below appears. Select [Tools] - [Register Use Table]. The figure below appears.

Use State Display Matrix

<table>
<thead>
<tr>
<th>Relay Nos. (Register Nos.) used are displayed in the following colors:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red: Used in a system ladder.</td>
</tr>
<tr>
<td>Blue: Used in a user ladder.</td>
</tr>
<tr>
<td>Purple: Used in both system and user ladders.</td>
</tr>
</tbody>
</table>
In the matrix, the vertical axis displays the 10th or higher digits of the relay Nos. (Register Nos.) in units of 10, while the horizontal axis displays the 1st digit of the relay Nos. Therefore, in the case of the use state display matrix in the figure above, the left top matrix is the relay No. 40007.

Clicking the colored matrix displays the list of used line Nos. in the [Use in Rang] list box.

[1St Digit] Combo box
The use state appears in the "Use Table matrix" in units of 10000. Select the unit in the [1St Digit] combo box.

[Enter Number] Input Box
Inputting the relay No. (Register Nos.) in this input box and clicking the [Find] button displays the specified relay No. in the matrix display.

[Use in Rang] List Box
In the [Use in Rang] list box, the line information referring to the relay No. (Register Nos.) selected in the "use state display matrix" appears in the format shown in the figure below.

[S:0008 - / / -]

[Application]
When various relay Nos. are to be added or changed, this function is useful to use any unused relay Nos. (Register Nos.).
20.2.1 Line Jump from [Relay Use Table] Dialog Box

The line jump from [Relay Use Table] ([Register Use Table]) dialog box function can jump to an arbitrary line from the [Relay No. Use State] ([Register Use Table]) dialog box. As shown in the figure below, double-clicking an item in the [Use in Rang] list box moves to the targeted line.

Even if a line jump is performed by double-clicking an item, the [Relay Use Table] dialog box does not disappear. Another jump to another line can be performed.
21 Mnemonic Display Function

Mnemonic display function allows displaying the ladder diagrams, which are selected in the "ladder preview" display, in mnemonic codes.

[How to Operate]

1. Select [Tools] - [Display Mnemonic].
   
   The dialog box shown in the figure below appears

   ![Mnemonic Code Dialog Box](image)

   The mnemonic code display does not show mnemonic codes which are being edited in the "ladder editing" display. It only shows the mnemonic codes of ladder diagrams which went through the process of [Edit] - [Save Current Rung] - [Overwrite] or [Edit] - [Save Current Rung] - [Insert].

21.1 Mnemonic Editing Function

If the following two conditions are fulfilled, mnemonic codes can be edited directly with the mnemonic code display as shown in the figure below appears.

Condition 1) Mnemonic codes (error codes) cannot be analyzed with Ladder Editor 32 for YRC1000.

Condition 2) The user account level is "Operator" and above.
Press [Update] when completing the editing.

If the edited mnemonic codes are recognized as correct codes after pressing [Update], the display screen returns to the normal mnemonic code, and the mnemonic codes become unable to be edited directly. When editing the codes again, display the mnemonic editing display on the screen.
22 Online Function

Ladder Editor32 for YRC1000 communicate with the connected robot controller (YRC1000). In online function, transmission, Reception, verification and monitoring are available.

22.1 Environmental Settings for Use of Ethernet

The following configurations are required for Ethernet transmission.

22.1.1 Personal Computer Settings

Set the settings related to Ethernet transmissions, to the personal computer with the software installed.

- **Hardware settings**
  
  Before using the Ladder Editor32 for YRC1000, connect the Ethernet board to the personal computer and check if the Ethernet board operates correctly.
  
  For connection methods, refer to the manual for the Ethernet board used.

- **Windows Network settings**
  
  To communicate via the Ethernet, set the settings related to the Windows network. (The example below is based on Windows XP.)

1. Click the [Start] button in the task bar, select [Setting] and click [Control Panel]. If the [Control Panel] is "Category View", double-click the [Network and Internet Connections] category, and double-click the [Network Connections]. If the [Control Panel] is "Classic View", double-click the [Network Connections].
2. Select the network connection to use for data transmission, and select the "Properties" from the right click menu.

3. To set the IP address and subnet mask for the personal computer, select [Internet Protocol (TCP/IP)] from the list and click the [Properties] button.
4. Input the value for the [IP address] and [Subnet mask] of the personal computer. For details of the settings of Default gateway and DNS server, refer to a Windows manual, to make proper settings for the application.

The above values are examples only. When setting the IP address and subnet mask, input the correct numbers as advised by the network manager. An incorrect setting such as assigning the same IP address to different personal computers may cause problems in communication.

22.1.2 Robot Controller Setting

- Hardware settings

To communicate using Ethernet, use the Ethernet connector on the ACP01 board.

"YRC1000 Options: Instructions for Binary Ethernet Server"
22.1 Environmental Settings for Use of Ethernet

## Communication parameter settings

Use the programming pendant in maintenance mode to set the communication parameters such as the IP address used by the controller. For details on the maintenance mode operations, refer to the following manuals.

**Ethernet**

- **Ethernet**: Used
- **IP address**: 192.168.10.10(*)
- **Subnet mask**: 255.255.255.0(*)
- **Default gateway**: 192.168.10.1(*)
- **Server address**: 0.0.0.0(*)

(*) The above values are examples only. Input the suitable values according to your network environment. There is no need to set the Server address. For details, refer to the following manuals.

"YRC1000 Options: Instructions for Binary Ethernet Server"

## Parameter settings

To establish communication between the robot controller and the personal computer, set the following parameters of the robot controller.

### Command Remote Setting

In order to transmit with the host control function, the remote command must be set to valid. Using the programming pendant, under [IN/OUT] a [PSEUDO INPUT] menu set the [CMD REMOTE SEL] to enabled or disabled.

For more details on these configurations, please refer to the following manual below.

"YRC1000 Options: Instructions for Data Transmission Function"

### Network Setting

To communicate with the robot controller using the Ethernet, the network must be set up correctly. For details on how to setup the network, refer to the following manuals.

"YRC1000 Options: Instructions for Ethernet Function"
22.1.4 LadderEditor Setting

- Information Setting of Target Controller

Select [Online] - [Controller Info] menu, Controller Info dialog is displayed.

- [ADD]

When click the [ADD] button, Controller Info dialog is displayed. Input KIND (Up to 32 characters), NAME (Up to 32 characters), and IP address. Then, click the [OK] button, the target controller is added.

- [EDIT]

When select the controller in the list and click the [EDIT] button, Controller Info dialog is displayed with the information of selected controller. After editing the item wanted to edit and click the [OK] button, the target controller information is modified.
■ [DELETE]

When select the controller in the list and click the [DELETE] button, the information of target controller is deleted.

■ Setting of Online Function

Select the [Online] - [Option] menu, Option Dialog is displayed.

- [Monitoring Cycle]
  Set the period of the monitoring function. Shortest period is 100ms.

- File comparison application
  Set the file comparison application to be used in the matching function.
  If the setting application startup options are required to fill in the Option column.
  Start-up is as follows.
  [File comparison application] [Option] [Ladder file] [Ladder file of target controller]
22.2 Reception

The ladder program is received from the controller.

[How to Operate]

1. Select the [Online] - [Receive] menu or select 📡 from the main tool bar. Then, Controller Selection dialog is displayed.

When changing the kind, the controller list is sorted by kind.

2. Select the target controller and click the [OK] button.
3. Confirm dialog is displayed. Check the controller name and click the [OK] button.

4. When press the OK button, ladder program is received from target controller. Then the opened ladder program is overwritten. When no ladder program is opened, save folder selection dialog is displayed after receiving the ladder program.

5.Received ladder program is displayed.
22.3 Verification

The currently opened ladder program is compared to the ladder programs of the specified controller.

[How to Operate]

1. Select the [Online] - [Compare] menu or select \[\] from the main tool bar. Then, Controller Selection dialog is displayed.
2. Select the target controller and click the [OK] button.
3. Confirm dialog is displayed. Check the controller name and click the [OK] button.
4. When press the OK button, ladder program is received from target controller. Then the received ladder program is saved in the below temporary folder for online function.

   Temporary folder: C:\Users\Public\Documents\MOTOMAN\LadderEditor32YRC1000\ONLINE\temp

5. The opened ladder program and the received a ladder program are compared with the specified application.
22.4 Transmission

The ladder program is transmitted to the controller.

[How to Operate]

1. Select the [Online] - [Send] menu or select 🔄 from the main tool bar. Then, Controller Selection dialog is displayed.
2. Select the target controller and click the [OK] button.

![Controller Selection Dialog](image)

3. Confirm dialog is displayed. Check the controller name and click the [OK] button.

![Confirm Dialog](image)

4. When press the OK button, ladder program is sent to target controller.
22.5 Monitoring

The ladder program of the specified robot controller is received, and the status of I/O is monitored on the LadderEditor. Only one robot controller can be monitored per one LadderEditor. It is not possible to monitor more than one robot controller at the same time.

[How to Operate]

1. When the ladder program is not opened, select the [Online] - [Monitor ON] menu or select in the main tool bar. Then, Controller Selection dialog is displayed.
2. Select the target controller and click the [OK] button.
3. Confirm dialog is displayed. Check the controller name and click the [OK] button.
4. When press the OK button, ladder program is received from target controller. Then the received ladder program is saved in the below temporary folder for online function. And, monitoring is started. Grayed out buttons cannot be used during monitoring.

5. When finish the monitoring, select the [Online] - [Monitor OFF] menu or select [Online] from the main tool bar.

6. In the following cases, monitoring function is stopped
   Communication error is occurred.

   The monitored ladder program is changed.
23 OTHER SETTINGS

23.1 Setting Color

Set the colors of the information displayed in the "ladder editing" display.

[How to Operate]

1. Select [Option] - [Color Schme]. The dialog box shown in the figure below appears.

   ![Color Scheme Dialog Box]

2. Select each item. The dialog box shown in the figure below appears. Select and set any desired color.

   ![Color Dialog Box]
23.2 Setting Font

Set the character font in the "ladder editing" display. Fonts can be set individually for the editing display and the preview display.

[How to Operate]

1. Select [Option] - [Font] - [Edit Window], or [Option] - [Font] - [Preview Window]. The dialog box shown in the figure below appears.

2. Select any desired font name, the font style and size. Then click the [OK] button.

23.3 Automatic Storing Function of Name File

Ladder Editor 32 for YRC1000 has a function to store the name information automatically. Validating this function updates the name files automatically when storing the ladder information.

[How to Operate]

Refer to "23.9 File Settings".

If a relay name or register name is changed with this function invalid, an alarm message appears when the "ladder editing" display is closed. Store the data by selecting [File] - [Save Relay Label File].
23.4 Automatic Rough Draft File Storing Function

If any interference occurs at editing and the application shuts down before storing the editing data, Ladder Editor 32 for YRC1000 has a function to create a Rough Draft file (data file being edited) automatically.

[How to Operate]
Refer to " 23.9  File Settings ".

With this function, the data in its current state is stored in a work file when a line is changed, inserted, or deleted in the "ladder editing" display. The stored file is saved with the following file name in the same folder as the ladder program file that is being edited.

Open file name + ". TMP"

**NOTE** The data that is being edited in the "ladder editing" display is not stored.

23.5 Automatic Backup Function of the Read-in File (Original File)

When storing edited data, Ladder Editor 32 for YRC1000 has a function to automatically back up the files before editing.

[How to Operate]
Refer to " 23.9  File Settings ".

The automatic backup function is available for the following files:

- Ladder files (*.LST)
- Name files (*.NAM)

A file name of one of these backup files has an "_" (under score) after each file extension in the same folder as the original files:

Relevant file name + extension + "_"
23.6 Rough Draft File Forced Output Function

Ladder Editor 32 for YRC1000 stores only the ladder programs in which compiling and grammatical checks, etc. are completed normally. However, the procedure may be interrupted temporarily during editing. To store a ladder program that cannot be compiled during editing, it can be forcibly stored as a rough draft file.

[How to Operate]
1. Select [File] - [Save As Rough Draft].
2. When the [Save File] dialog box appears, use an arbitrary file name to store it.

23.7 Automatic Updating Function

If an attempt to move to another line is made without selecting [Line Alt] or [Line Insert] when the data has been edited in the "ladder editing" display, one can select whether the [Verification] dialog box appears or the line is to be updated automatically.
For automatic updating, select either [Overwrite Current Rung] or [Insert New Rung].

[How to Operate]
1. Displaying the [Verification] dialog box
2. Updating automatically

23.8 Switching Short Name Display/Non-Display

Relay names and register names have information for short names. A short name can appear along with the relay No. or register No. corresponding to it in the "ladder editing" display.
[How to Operate]

1. Select [View] - [Relay Labels] to place checkmark in the box.

23.9 File Settings

Select the Ladder Editor 32 for YRC1000 optional functions.

[How to Operate]


![File Management dialog box](image1)

![File Management dialog box](image2)
23.9 File Settings

Auto Save Label File When Save Ladder File:
Automatically stores a name file at the same time as a ladder file.
Refer to "23.3 Automatic Storing Function of Name File".

Auto Save Rough Draft if Ladder Editor Unexpectedly Closes:
Automatically stores the existing data as a temporary file before editing when
overwriting a line or inserting a line.
Refer to "23.4 Automatic Rough Draft File Storing Function".

Automatic backup of reading file:
Creates a backup of an original file when storing a ladder file or name file.
Refer to "23.5 Automatic Backup Function of the Read-in File (Original File)".

Specify Default Path for Opening Ladder Files:
Sets the default folder of the [Open] dialog box which appeared when [File] -
[Open] were selected.
24 CHANGING USER ACCOUNT LEVEL

Change the user account level in the [Enter Password] dialog box.

[How to Operate]

1. Displays the [Enter Password] dialog box for logging in.
   Select [Option] - [Access Control] - [Enter Password].
2. Input the password.
   When a [Enter Password] dialog box appears, input the log-in name or the password, and click the [OK] button.

![Enter Password dialog box](image1)

![Enter Password dialog box](image2)
Ladder Editor 32 for YRC1000 manages the user accounts using the log-in names and the passwords to limit access to important data. The user accounts can be managed in "Easy Mode" and "Standard Mode". The administrator of the user account levels can change the management mode. For strict user management, select "Standard Mode". The table below describes the features of each management mode.

<table>
<thead>
<tr>
<th>Function</th>
<th>Easy Mode</th>
<th>Standard Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>User ID input at log-in</td>
<td>Not necessary. Only the password is necessary</td>
<td>Necessary</td>
</tr>
<tr>
<td>Password input at application startup</td>
<td>Selectable</td>
<td>Necessary</td>
</tr>
<tr>
<td>Registration, modification, and deletion of user</td>
<td>Not available</td>
<td>Available</td>
</tr>
<tr>
<td>User account level when the password input is not necessary at the startup</td>
<td>Backup user</td>
<td>Necessary</td>
</tr>
</tbody>
</table>

"Easy Mode" is the default management mode when Ladder Editor 32 for YRC1000 is initially started up, and an [Enter Password] dialog box appears at the startup.
25.2 Difference Depending of the Account Levels

The table below shows the authorized functions for each account level.

<table>
<thead>
<tr>
<th>Account Level</th>
<th>Function 1</th>
<th>Function 2</th>
<th>Function 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>Function 1</td>
<td>Function 2</td>
<td>Function 3</td>
</tr>
<tr>
<td>Level 2</td>
<td>Function 1</td>
<td>Function 2</td>
<td>Function 3</td>
</tr>
<tr>
<td>Level 3</td>
<td>Function 1</td>
<td>Function 2</td>
<td>Function 3</td>
</tr>
</tbody>
</table>

The default users as shown in the figure below have already been registered in the user accounts. Use the password assigned to each user.

For each default user's password, refer to the "Default User Names and Password List" included with the shipment. The software administrator is responsible for storage and management of this list.

Any user other than the default users can be registered in the [User Manager] dialog box. (However, it is needed to perform the log-in for the user account at the "administrator" level.)
25.2 Difference Depending of the Account Levels

[How to Operate]
1. Select [Option] - [Access Control] - [User Manager], and the [User Manager] dialog box appears as shown in the figure below.

[Add User] button:
   Adds a new user.
   Refer to "25.3 Adding/Changing the User".

[Edit User] button:
   Changes the password or account level of the existing user. The default user information cannot be changed. (However, only password can be changed for the "user").
   Refer to "25.3 Adding/Changing the User".

[Delete User] button:
   Deletes an existing user. The default users cannot be deleted.

Manage Type:
   Select one of two methods to manage user accounts: "Standard Mode" and "Easy Mode". Refer to "25.1 How to Manage User Account".

"Require Password to Start Ladder Editor" check box:
   Select this check box and the [Enter Password] dialog box will always appear the next time Ladder Editor 32 for YRC1000 is started up.
25.3 Adding/Changing the User

Click the [Add User] or [Edit User] button, and the [Regist new user] dialog box or the [Edit an exist user] dialog box appears.

![Register a New User](image1)

![Edit an Existing User](image2)

Input the [Login Name], [Password], [Confirm Password], and [Account Level], and then click the [OK] button. The log-in name cannot be changed in the [Edit an exist user] dialog box.
# 26 APPENDIX

## 26.1 Description of Menu

<table>
<thead>
<tr>
<th>Menu</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>File</td>
<td>-</td>
</tr>
<tr>
<td>New</td>
<td>Creates a new ladder program in default.</td>
</tr>
<tr>
<td>Open</td>
<td>Opens an existing ladder program.</td>
</tr>
<tr>
<td>Close</td>
<td>Closes the ladder program that is being edited.</td>
</tr>
<tr>
<td>Save</td>
<td>Saves an overwritten ladder program in which compiling after editing is completed successfully. To save a ladder program that is being edited and cannot be compiled, use [File] - [Save As Rough Draft].</td>
</tr>
<tr>
<td>Save As</td>
<td>Select the storage file name to save the ladder program in which compiling is completed successfully.</td>
</tr>
<tr>
<td>Save As Rough Draft</td>
<td>Outputs a rough draft file. Can be selected when [Overwrite] or [Insert] is selected.</td>
</tr>
<tr>
<td>Open Relay Label File</td>
<td>Reads in a name file for the ladder program that is being edited.</td>
</tr>
<tr>
<td>Save Relay Label File</td>
<td>Saves the relay name information. Can be selected when a relay name is edited.</td>
</tr>
<tr>
<td>Save As Text Files</td>
<td>-</td>
</tr>
<tr>
<td>Ladder Diagram</td>
<td>-</td>
</tr>
<tr>
<td>User Section</td>
<td>Save file ladder diagram images of the user ladder.</td>
</tr>
<tr>
<td>System Section</td>
<td>Save file ladder diagram images of the system ladder.</td>
</tr>
<tr>
<td>Relay List</td>
<td>-</td>
</tr>
<tr>
<td>User Section</td>
<td>Save file the relay No. list used in the user ladder.</td>
</tr>
<tr>
<td>System Section</td>
<td>Save file the relay No. list used in the system ladder.</td>
</tr>
<tr>
<td>Register List</td>
<td>-</td>
</tr>
<tr>
<td>User Section</td>
<td>Save file the register No. list used in the user ladder.</td>
</tr>
<tr>
<td>System Section</td>
<td>Save file the register No. list used in the system ladder.</td>
</tr>
<tr>
<td>Relay State Table</td>
<td>Save file the relay No. use state matrix.</td>
</tr>
<tr>
<td>Alarms and Messages.</td>
<td>Save file user alarms and user messages.</td>
</tr>
<tr>
<td>Print</td>
<td>-</td>
</tr>
<tr>
<td>Ladder Diagram</td>
<td>-</td>
</tr>
<tr>
<td>User Section</td>
<td>Prints ladder diagram images of the user ladder.</td>
</tr>
<tr>
<td>System Section</td>
<td>Prints ladder diagram images of the system ladder.</td>
</tr>
</tbody>
</table>
### 26.1 Description of Menu

<table>
<thead>
<tr>
<th>Menu</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relay List</td>
<td></td>
</tr>
<tr>
<td>User Section</td>
<td>Prints the relay No. list used in the user ladder.</td>
</tr>
<tr>
<td>System Section</td>
<td>Prints the relay No. list used in the system ladder.</td>
</tr>
<tr>
<td>Register List</td>
<td></td>
</tr>
<tr>
<td>User Section</td>
<td>Prints the register No. list used in the user ladder.</td>
</tr>
<tr>
<td>System Section</td>
<td>Prints the register No. list used in the system ladder.</td>
</tr>
<tr>
<td>Relay State Table</td>
<td>Prints the relay No. use state matrix.</td>
</tr>
<tr>
<td>Register State Table</td>
<td>Prints the register No. use state matrix.</td>
</tr>
<tr>
<td>Alarms and Messages</td>
<td>Prints user alarms and user messages.</td>
</tr>
<tr>
<td>Print Preview</td>
<td></td>
</tr>
<tr>
<td>Ladder Diagram</td>
<td></td>
</tr>
<tr>
<td>User Section</td>
<td>Previews ladder diagram images of the user ladder.</td>
</tr>
<tr>
<td>System Section</td>
<td>Previews ladder diagram images of the system ladder.</td>
</tr>
<tr>
<td>Relay List</td>
<td></td>
</tr>
<tr>
<td>User Section</td>
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</tr>
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<td>System Section</td>
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</tr>
<tr>
<td>Register List</td>
<td></td>
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<tr>
<td>User Section</td>
<td>Previews the register No. list used in the user ladder.</td>
</tr>
<tr>
<td>System Section</td>
<td>Previews the register No. list used in the system ladder.</td>
</tr>
<tr>
<td>Relay State Table</td>
<td>Previews the relay No. use state matrix.</td>
</tr>
<tr>
<td>Register State Table</td>
<td>Previews the register No. use state matrix.</td>
</tr>
<tr>
<td>Alarms and Messages</td>
<td>Prints user alarms and user messages.</td>
</tr>
<tr>
<td>Print Setup</td>
<td>Displays the &quot;printer setting&quot; dialog box.</td>
</tr>
<tr>
<td>Exit</td>
<td>Closes Ladder Editor 32 for YRC1000.</td>
</tr>
<tr>
<td>Edit</td>
<td></td>
</tr>
<tr>
<td>Undo</td>
<td>Returns the edited contents to the previous state.</td>
</tr>
<tr>
<td>Redo</td>
<td>Retries the operation that was returned to by [Return] operation.</td>
</tr>
<tr>
<td>Insert New Rung</td>
<td>Inserts a new line after the selected line.</td>
</tr>
<tr>
<td>Cut Rung</td>
<td>Deletes the ladder diagram information of the selected line.</td>
</tr>
<tr>
<td>Copy Rung</td>
<td>Copies the ladder diagram information of the selected line.</td>
</tr>
<tr>
<td>Paste Rung</td>
<td>Pastes the contents of [Cut Rang] or [Copy Rang] on the selected line.</td>
</tr>
<tr>
<td></td>
<td>The ladder information that existed before pasting disappears.</td>
</tr>
<tr>
<td>Insert Cut Copied Rung</td>
<td>Inserts the contents of [Cut Rang] or [Copy Rang] into the selected line.</td>
</tr>
<tr>
<td></td>
<td>All the lines after the selected line are moved backward.</td>
</tr>
</tbody>
</table>
### 26.1 Description of Menu

<table>
<thead>
<tr>
<th>Menu</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Save Current Rung</td>
<td>-</td>
</tr>
<tr>
<td>Overwrite</td>
<td>Overwrites and updates the ladder diagram information for the currently displayed line.</td>
</tr>
<tr>
<td>Insert</td>
<td>Inserts the currently edited ladder diagram information to the next line of the currently displayed line.</td>
</tr>
<tr>
<td>Clear Current Rung</td>
<td>Clears the ladder diagram information of the currently displayed line.</td>
</tr>
<tr>
<td>Header Information</td>
<td>Displays the header information of the ladder program in operation.</td>
</tr>
<tr>
<td>Alarms and Messages</td>
<td>Displays the message information of the ladder program in operation.</td>
</tr>
<tr>
<td>Relay Labels and Rung Comments</td>
<td>Displays the relay name list.</td>
</tr>
<tr>
<td>Register Labels</td>
<td>Displays the register name list.</td>
</tr>
<tr>
<td>Find Input Relays, Registers or Constants</td>
<td>-</td>
</tr>
<tr>
<td>Specify Parameter</td>
<td>Searches for relay Nos., register Nos. or set constants.</td>
</tr>
<tr>
<td>Backward</td>
<td>Searches for set values in the direction of the smaller line No..</td>
</tr>
<tr>
<td>Forward</td>
<td>Searches for set values in the direction of the greater line Nos..</td>
</tr>
<tr>
<td>Find Output Relays</td>
<td>Searches for relay Nos. used in the OUT terminal.</td>
</tr>
<tr>
<td>Go to Rung</td>
<td>Searches for the specified line and jumps there.</td>
</tr>
<tr>
<td>Go to First Rung</td>
<td>Moves to the first line.</td>
</tr>
<tr>
<td>Go to Last Rung</td>
<td>Moves to the last line.</td>
</tr>
<tr>
<td>View</td>
<td>-</td>
</tr>
<tr>
<td>Main Toolbar</td>
<td>Switches between display/non-display of the tool bar.</td>
</tr>
<tr>
<td>Navigation Toolbar</td>
<td>Switches between display/non-display of the search jump bar.</td>
</tr>
<tr>
<td>Instruction Toolbar</td>
<td>Switches between display/non-display of the parts selection bar.</td>
</tr>
<tr>
<td>Edit Toolbar</td>
<td>Switches between display/non-display of the parts control bar.</td>
</tr>
<tr>
<td>Status Bar</td>
<td>Switches between display/non-display of the status bar.</td>
</tr>
<tr>
<td>Relay Labels</td>
<td>Selects whether the relay short name is to be overlapped with the ladder diagram in the display.</td>
</tr>
<tr>
<td>Output Relay User Table</td>
<td>Selects whether the line No. using each relay No. on the ladder diagram for the OUT terminal is to be overlapped with the parts in the display.</td>
</tr>
<tr>
<td>Tools</td>
<td>-</td>
</tr>
</tbody>
</table>
### Menu Function

<table>
<thead>
<tr>
<th>Menu</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check the Ladder</td>
<td>Compiles the currently displayed ladder program.</td>
</tr>
<tr>
<td></td>
<td>Compiling checks for mistakes in the edited ladder program (such as overlapped relay Nos., measurement of processing time).</td>
</tr>
<tr>
<td>Edit Instructions</td>
<td></td>
</tr>
<tr>
<td>Delete Instruction</td>
<td>Changes the edit mode to the deletion mode.</td>
</tr>
<tr>
<td>Edit Entire Row</td>
<td></td>
</tr>
<tr>
<td>Insert Row</td>
<td>Changes the edit mode to the line insertion mode.</td>
</tr>
<tr>
<td>Delete Row</td>
<td>Changes the edit mode to the line deletion mode.</td>
</tr>
<tr>
<td>Edit Entire Column</td>
<td></td>
</tr>
<tr>
<td>Insert Column</td>
<td>Changes the edit mode to the row insertion mode.</td>
</tr>
<tr>
<td>Delete Column</td>
<td>Changes the edit mode to the row deletion mode.</td>
</tr>
<tr>
<td>Edit Instruction Parameters</td>
<td>Changes the edit mode to the set value input mode.</td>
</tr>
<tr>
<td>Edit Labels and Comments</td>
<td>Changes the edit mode to the name input mode.</td>
</tr>
<tr>
<td>Quit the Editing Functions</td>
<td>Clears the edit mode.</td>
</tr>
<tr>
<td>Add Instructions</td>
<td></td>
</tr>
<tr>
<td>STR</td>
<td>Changes to the set mode of STR parts.</td>
</tr>
<tr>
<td>STR-NOT</td>
<td>Changes to the setting mode of STR-NOT parts.</td>
</tr>
<tr>
<td>GRP</td>
<td>Changes to the setting mode of GRP parts.</td>
</tr>
<tr>
<td>TMR</td>
<td>Changes to the setting mode of TMR parts.</td>
</tr>
<tr>
<td>CNT</td>
<td>Changes to the setting mode of CNT parts.</td>
</tr>
<tr>
<td>OUT</td>
<td>Changes to the setting mode of OUT parts.</td>
</tr>
<tr>
<td>ADD</td>
<td>Changes to the setting mode of ADD parts.</td>
</tr>
<tr>
<td>SUB</td>
<td>Changes to the setting mode of SUB parts.</td>
</tr>
<tr>
<td>MUL</td>
<td>Changes to the setting mode of MUL parts.</td>
</tr>
<tr>
<td>DIV</td>
<td>Changes to the setting mode of DIV parts.</td>
</tr>
<tr>
<td>MOD</td>
<td>Changing to the setting mode of MOD parts.</td>
</tr>
<tr>
<td>BIN</td>
<td>Changes to the setting mode of BIN parts.</td>
</tr>
<tr>
<td>BCD</td>
<td>Changes to the setting mode of BCD parts.</td>
</tr>
<tr>
<td>MOV</td>
<td>Changes to the setting mode of MOV parts.</td>
</tr>
<tr>
<td>WAND</td>
<td>Changes to the setting mode of WAND parts.</td>
</tr>
<tr>
<td>WOR</td>
<td>Changes to the setting mode of WOR parts.</td>
</tr>
<tr>
<td>WXOR</td>
<td>Changes to the setting mode of WXOR parts.</td>
</tr>
<tr>
<td>WNOT</td>
<td>Changes to the setting mode of WNOT parts.</td>
</tr>
</tbody>
</table>
## Menu Function

<table>
<thead>
<tr>
<th>Menu</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMOV</td>
<td>Changes to the setting mode of BMOV parts.</td>
</tr>
<tr>
<td>CMP</td>
<td>Changes to the setting mode of CMP parts.</td>
</tr>
<tr>
<td>SHL</td>
<td>Changes to the setting mode of SHL parts.</td>
</tr>
<tr>
<td>SHR</td>
<td>Changes to the setting mode of SHR parts.</td>
</tr>
<tr>
<td>ROL</td>
<td>Changes to the setting mode of ROL parts.</td>
</tr>
<tr>
<td>ROR</td>
<td>Changes to the setting mode of ROR parts.</td>
</tr>
<tr>
<td>PLS</td>
<td>Changes to the setting mode of PLS parts.</td>
</tr>
<tr>
<td>PLF</td>
<td>Changes to the setting mode of PLF parts.</td>
</tr>
<tr>
<td>Instruction User Table</td>
<td>Displays the list of lines which uses specified set values (relay Nos., register Nos., constants)</td>
</tr>
<tr>
<td>Relay Use Table</td>
<td>Displays the relay No. use state matrix.</td>
</tr>
<tr>
<td>Register Use Table</td>
<td>Displays the register No. use state matrix.</td>
</tr>
<tr>
<td>Display Mnemonic</td>
<td>Displays the Mnemonic.</td>
</tr>
<tr>
<td>Option</td>
<td>-</td>
</tr>
<tr>
<td>Access Control</td>
<td>-</td>
</tr>
<tr>
<td>Enter Password</td>
<td>Displays the &quot;password input&quot; display. Needed to edit in the system section.</td>
</tr>
<tr>
<td>User Manager</td>
<td>Displays the &quot;user manager&quot; dialog box.</td>
</tr>
<tr>
<td>Current Ladder Section</td>
<td>-</td>
</tr>
<tr>
<td>User Section</td>
<td>Changes a ladder to be edited into a ladder in the user section.</td>
</tr>
<tr>
<td>System Section</td>
<td>Changes a ladder to be edited into a ladder in the system section. Only users at the manager level can edit the ladders in the system section.</td>
</tr>
<tr>
<td>Color Scheme</td>
<td>Sets the graphic color displayed in the &quot;ladder editing&quot; display.</td>
</tr>
<tr>
<td>Font</td>
<td>-</td>
</tr>
<tr>
<td>Edit Window</td>
<td>Sets the character font displayed in the &quot;ladder editing&quot; display.</td>
</tr>
<tr>
<td>Preview Windows</td>
<td>Sets the character font displayed in the &quot;ladder preview&quot; display.</td>
</tr>
<tr>
<td>Auto Save Current Rung</td>
<td>-</td>
</tr>
<tr>
<td>Ask Before Saving</td>
<td>Detects modification to the ladder diagram when moving to another line during editing, and selects whether the message to verify modification is to be displayed or not.</td>
</tr>
<tr>
<td>Overwrite Current Rung</td>
<td>With [Verify at Editing] above OFF, detects modification to the ladder diagram when moving to another line, and overwrites and updates the current line automatically.</td>
</tr>
<tr>
<td>Insert New Rung</td>
<td>With [Verify at Editing] above OFF, detects modification to the ladder diagram when moving to another line, and inserts the current line automatically to the line to be jumped.</td>
</tr>
</tbody>
</table>
## 26.1 Description of Menu

<table>
<thead>
<tr>
<th>Menu</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>File Management</td>
<td>Display File Management Dialog.</td>
</tr>
<tr>
<td>Window</td>
<td>-</td>
</tr>
<tr>
<td>Cascade</td>
<td>Overlaps windows.</td>
</tr>
<tr>
<td>Tile</td>
<td>Displays windows side by side.</td>
</tr>
<tr>
<td>Arrange Icons</td>
<td>Arranges icons of iconized window.</td>
</tr>
<tr>
<td>Online</td>
<td>-</td>
</tr>
<tr>
<td>Receive</td>
<td>Receives the ladder program from robot controller.</td>
</tr>
<tr>
<td>Send</td>
<td>Sends the ladder program to robot controller.</td>
</tr>
<tr>
<td>Compare</td>
<td>Compares the opened ladder program and the ladder program of robot controller.</td>
</tr>
<tr>
<td>Monitor ON</td>
<td>Starts to monitor the I/O of robot controller.</td>
</tr>
<tr>
<td>Monitor OFF</td>
<td>Stops to monitor the I/O of robot controller.</td>
</tr>
<tr>
<td>Controller Info</td>
<td>Sets the connected robot controller information.</td>
</tr>
<tr>
<td>Open</td>
<td>Sets the optional items of online function.</td>
</tr>
<tr>
<td>HELP</td>
<td>-</td>
</tr>
<tr>
<td>Help Topics</td>
<td>Displays the contents of HELP.</td>
</tr>
<tr>
<td>Search Keyword</td>
<td>Displays the &quot;keyword search&quot; dialog box of HELP.</td>
</tr>
<tr>
<td>Using Help</td>
<td>Displays how to use HELP.</td>
</tr>
<tr>
<td>About Ladder Editor</td>
<td>Displays the version information.</td>
</tr>
</tbody>
</table>
## 26.2 Description of Tool Bars

### 26.2.1 Main Tool Bar

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
<th>Selection</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Icon" /></td>
<td>Creates a new ladder program file in default.</td>
<td>[File] - [New]</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td>Opens an existing ladder program.</td>
<td>[File] - [Open]</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td>Overwrites and saves a ladder program in which compiling after editing is completed successfully. To save a ladder program that is being edited and cannot be compiled, select [File] - [Save As Rough Draft].</td>
<td>[File] - [Save]</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td>Deletes the ladder diagram information of the selected line.</td>
<td>[Edit] - [Cut Rung]</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td>Copies the ladder diagram information of the selected line.</td>
<td>[Edit] - [Copy Rung]</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td>Pastes the contents of [Cut Rung] or [Copy Rung] on the selected line. The ladder information that existed before pasting disappears.</td>
<td>[Edit] - [Paste Rung]</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td>Inserts the contents of [Cut Rung] or [Copy Rung] into the selected line. All the lines after the selected line are moved backward.</td>
<td>[Edit] - [Insert Cut/Copied Rung]</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td>Returns the edited contents to the previous state.</td>
<td>[Edit] - [Undo]</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td>Retries the operation that was returned to by [Return].</td>
<td>[Edit] - [Redo]</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td>Inserts a new line after the selected line.</td>
<td>[Edit] - [Insert new Rung]</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td>Overwrites and updates the currently edited ladder diagram information for the currently displayed line.</td>
<td>[Edit] - [Save Current Rung] - [Overwrite]</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td>Inserts the currently edited ladder diagram information to the next line of the currently displayed line.</td>
<td>[Edit] - [Save Current Rung] - [Insert]</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td>Compiles the currently displayed ladder program. Compiling checks for mistakes in the edited ladder program (such as overlapped relay Nos., measurement of processing time).</td>
<td>[Tool] - [Check the Ladder]</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td>Displays the list of lines which uses specified set values (relay Nos., register Nos., constants).</td>
<td>[Tool] - [Instruction Use Table]</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td>Displays the header information of the ladder program in operation.</td>
<td>[Edit] - [Header Information]</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td>Displays the message information of the ladder program in operation.</td>
<td>[Edit] - [Alarms and Messages]</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td>Changes a ladder to be edited into a ladder in the system section. Only users at the manager level can edit the ladders in the system section.</td>
<td>[Option] - [Current Ladder Section] - [System Section]</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td>Changes a ladder to be edited into a ladder in the user section.</td>
<td>[Option] - [Current Ladder Section] - [User Section]</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td>Displays the contents of HELP.</td>
<td>[Help] - [Help Topics]</td>
</tr>
</tbody>
</table>
## 26.2.2 Parts Control Tool Bar

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
<th>Selection</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Delete" /></td>
<td>Changes the edit mode to the deletion mode</td>
<td>[Tools] - [Edit Instructions] - [Delete Instructions]</td>
</tr>
<tr>
<td><img src="image" alt="Insert" /></td>
<td>Changes the edit mode to the line insertion mode.</td>
<td>[Tools] - [Edit Instructions] - [Edit Entire Row] - [Insert Row]</td>
</tr>
<tr>
<td><img src="image" alt="Delete" /></td>
<td>Changes the edit mode to the line deletion mode.</td>
<td>[Tools] - [Edit Instructions] - [Edit Entire Row] - [Delete Row]</td>
</tr>
<tr>
<td><img src="image" alt="Insert" /></td>
<td>Changes the edit mode to the row insertion mode.</td>
<td>[Tools] - [Edit Instructions] - [Edit Entire Column] - [Insert Column]</td>
</tr>
<tr>
<td><img src="image" alt="Delete" /></td>
<td>Changes the edit mode to the row deletion mode.</td>
<td>[Tools] - [Edit Instructions] - [Edit Entire Column] - [Delete Column]</td>
</tr>
<tr>
<td><img src="image" alt="Set Value" /></td>
<td>Changes the edit mode to the set value input mode.</td>
<td>[Tools] - [Edit Instructions] - [Edit &amp; Instruction Parameters]</td>
</tr>
<tr>
<td><img src="image" alt="Name" /></td>
<td>Changes the edit mode to the name input mode.</td>
<td>[Tools] - [Edit Instructions] - [Edit Labels and Comments]</td>
</tr>
<tr>
<td><img src="image" alt="Clear" /></td>
<td>Clears the &quot;ladder diagram information&quot; display of the currently displayed line.</td>
<td>[Edit] - [Clear Current Rung]</td>
</tr>
<tr>
<td><img src="image" alt="Clear" /></td>
<td>Clears the edit mode.</td>
<td>[Tools] - [Edit Instructions] - [Quit the Editing Functions]</td>
</tr>
</tbody>
</table>

## 26.2.3 Search Jump Tool Barr

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
<th>Selection</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Search" /></td>
<td>Searches for relay Nos. used in the OUT terminal.</td>
<td>[Edit] - [Find &amp; Output Relays]</td>
</tr>
<tr>
<td><img src="image" alt="Search" /></td>
<td>Searches for relay Nos., register Nos., or set constants.</td>
<td>[Edit] - [Find Input Relays, Registers or Constants] - [Specify Parameter]</td>
</tr>
<tr>
<td><img src="image" alt="Search" /></td>
<td>Searches for set values in the direction of the smaller line Nos..</td>
<td>[Edit] - [Find Input Relays, Registers or Constants] - [Backward]</td>
</tr>
<tr>
<td><img src="image" alt="Search" /></td>
<td>Searches for set values in the direction of the greater line Nos..</td>
<td>[Edit] - [Find Input Relays, Registers or Constants] - [Forward]</td>
</tr>
<tr>
<td><img src="image" alt="Jump" /></td>
<td>Searches for the specified line and jumps there.</td>
<td>[Edit] - [Go to Rung]</td>
</tr>
<tr>
<td><img src="image" alt="Jump" /></td>
<td>Moves to the first line.</td>
<td>[Edit] - [Go to First Rung]</td>
</tr>
<tr>
<td><img src="image" alt="Jump" /></td>
<td>Moves to the last line.</td>
<td>[Edit] - [Go to Next Rung]</td>
</tr>
<tr>
<td><img src="image" alt="Jump" /></td>
<td>Jumps backward in the jump history.</td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Jump" /></td>
<td>Jumps forward in the jump history.</td>
<td></td>
</tr>
</tbody>
</table>
### 26.2.4 Ladder Parts Tool Bar

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
<th>Selection</th>
</tr>
</thead>
<tbody>
<tr>
<td>STR</td>
<td>Changes to the setting mode of STR parts.</td>
<td>[Tools] - [Add Instructions] - [STR]</td>
</tr>
<tr>
<td>NOT</td>
<td>Changes to the setting mode of STR-NOT parts.</td>
<td>[Tools] - [Add Instructions] - [STR-NOT]</td>
</tr>
<tr>
<td>GRP</td>
<td>Changes to the setting mode of GRP parts.</td>
<td>[Tools] - [Add Instructions] - [GRP]</td>
</tr>
<tr>
<td>TMR</td>
<td>Changes to the setting mode of TMR parts.</td>
<td>[Tools] - [Add Instructions] - [TMR]</td>
</tr>
<tr>
<td>CNT</td>
<td>Changes to the setting mode of CNT parts.</td>
<td>[Tools] - [Add Instructions] - [CNT]</td>
</tr>
<tr>
<td>OUT</td>
<td>Changes to the setting mode of OUT parts.</td>
<td>[Tools] - [Add Instructions] - [OUT]</td>
</tr>
<tr>
<td>ADD</td>
<td>Changes to the setting mode of ADD parts.</td>
<td>[Tools] - [Add Instructions] - [ADD]</td>
</tr>
<tr>
<td>SUB</td>
<td>Changes to the setting mode of SUB parts.</td>
<td>[Tools] - [Add Instructions] - [SUB]</td>
</tr>
<tr>
<td>MUL</td>
<td>Changes to the setting mode of MUL parts.</td>
<td>[Tools] - [Add Instructions] - [MUL]</td>
</tr>
<tr>
<td>DIV</td>
<td>Changes to the setting mode of DIV parts.</td>
<td>[Tools] - [Add Instructions] - [DIV]</td>
</tr>
<tr>
<td>MOD</td>
<td>Changing to the setting mode of MOD parts.</td>
<td>[Tools] - [Add Instructions] - [MOD]</td>
</tr>
<tr>
<td>BIN</td>
<td>Changes to the setting mode of BIN parts.</td>
<td>[Tools] - [Add Instructions] - [BIN]</td>
</tr>
<tr>
<td>BCD</td>
<td>Changes to the setting mode of BCD parts.</td>
<td>[Tools] - [Add Instructions] - [BCD]</td>
</tr>
<tr>
<td>MOV</td>
<td>Changes to the setting mode of MOV parts.</td>
<td>[Tools] - [Add Instructions] - [MOV]</td>
</tr>
<tr>
<td>WAND</td>
<td>Changes to the setting mode of WAND parts.</td>
<td>[Tools] - [Add Instructions] - [WAND]</td>
</tr>
<tr>
<td>WOR</td>
<td>Changes to the setting mode of WOR parts.</td>
<td>[Tools] - [Add Instructions] - [WOR]</td>
</tr>
<tr>
<td>WXOR</td>
<td>Changes to the setting mode of WXOR parts.</td>
<td>[Tools] - [Add Instructions] - [WXOR]</td>
</tr>
<tr>
<td>WNOT</td>
<td>Changes to the setting mode of WNOT parts.</td>
<td>[Tools] - [Add Instructions] - [WNOT]</td>
</tr>
<tr>
<td>BMOV</td>
<td>Changes to the setting mode of BMOV parts.</td>
<td>[Tools] - [Add Instructions] - [BMOV]</td>
</tr>
<tr>
<td>CMP</td>
<td>Changes to the setting mode of CMP parts.</td>
<td>[Tools] - [Add Instructions] - [CMP]</td>
</tr>
<tr>
<td>SHL</td>
<td>Changes to the setting mode of SHL parts.</td>
<td>[Tools] - [Add Instructions] - [SHL]</td>
</tr>
<tr>
<td>SHR</td>
<td>Changes to the setting mode of SHR parts.</td>
<td>[Tools] - [Add Instructions] - [SHR]</td>
</tr>
<tr>
<td>ROL</td>
<td>Changes to the setting mode of ROL parts.</td>
<td>[Tools] - [Add Instructions] - [ROL]</td>
</tr>
<tr>
<td>ROR</td>
<td>Changes to the setting mode of ROR parts.</td>
<td>[Tools] - [Add Instructions] - [ROR]</td>
</tr>
<tr>
<td>PLS</td>
<td>Changes to the setting mode of PLS parts.</td>
<td>[Tools] - [Add Instructions] - [PLS]</td>
</tr>
<tr>
<td>PLF</td>
<td>Changes to the setting mode of PLF parts.</td>
<td>[Tools] - [Add Instructions] - [PLS]</td>
</tr>
</tbody>
</table>
### 26.2.5 Online Tool Barr

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
<th>Selection</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Icon" /></td>
<td>Receives the ladder program from robot controller.</td>
<td>[Online] - [Receive]</td>
</tr>
<tr>
<td><img src="image2" alt="Icon" /></td>
<td>Sends the ladder program to robot controller.</td>
<td>[Online] - [Send]</td>
</tr>
<tr>
<td><img src="image3" alt="Icon" /></td>
<td>Compares the opened ladder program and the ladder program of robot controller.</td>
<td>[Online] - [Compare]</td>
</tr>
<tr>
<td><img src="image4" alt="Icon" /></td>
<td>Starts to monitor the I/O of robot controller.</td>
<td>[Online] - [Monitor ON]</td>
</tr>
<tr>
<td><img src="image5" alt="Icon" /></td>
<td>Stops to monitor the I/O of robot controller.</td>
<td>[Online] - [Monitor OFF]</td>
</tr>
</tbody>
</table>
The following shows the format of a name file.

```
ööěĠėČāĈęĊĞČēċç āçēĨīīĬĹçĵĨĴĬç
öööøøùÿ÷ç āçęĬijĨŀçĩijĶĪIJçĕĶõç
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ĨĨĨĨĨĨĨĨóĉĉĉĉĉĉĉĉç āçĕĨĴĬçĶĭçøøùÿþç
öööù÷÷ø÷ç āçĕĬĿĻçĹĬijĨŀçĩijĶĪIJçĕĶõç
ĨĨĨĨĨĨĨĨóĉ ĨĹĪç Ķĭĭç ĹĬĺĻĨĹĻç ķĹĶĪĬĺĺİĵĮç ĴĬĴĶĹŀç ĹĬĺĬĻ
cćĊĨijijçĴĨĺĻĬĹçıĶĩç
cčçčāç
ööęČĎĐĚěČęç āçĚķĬĪİŀçĹĬĮİĺĻĬĹçĵĨĴĬçĺĬīĬĻİĶĵ
Ĭù÷ĀĄĺĺĺĺĺĺĺĺóēēēēēēēēēēç āçęĬĮİĺĻĬĹçĵĨĴĬç
Ĭùø÷ĄĈĪĶĵĭİĹĴçĹĬijĨŀçĺĻİĪIJİĵĮóç
cççççççĨĹĪçĪĶĵĭİĹĴçĹĬijĨŀçĺĻİĪIJİĵĮç
ĬùøøĄĈĹĪçĺįĶĹĻĨĮĬęóç
cççççççĨĹĪçĺįĶĹĻĨĮĬçïĹĶĩĶĻçĺİīĬðç
ĬùøúĄęĬĻĹĨĪĻçĹĬĸļĬĺĻóçľİĹĬçĹĬĻĹĨĪĻçĹĬĸļĬĺĻç
çççāçç
ĢęĬĮİĺĻĬĹçĕĨĴĬāĤç
Ĕ÷÷÷çĄçĚįĶĹĻçĵĨĴĬóçijĶĵĮçĵĨĴĬçç
ĚįĶĹĻçĵĨĴĬç āçĞİĻįİĵçÿçĪįĨĹĨĪĻĬĹĺç
ēĶĵĮçĵĨĴĬç āçĞİĻįİĵçý÷çĪįĨĹĨĪĻĬĹĺç
č
ŬĔʡçĴļĺĻçĩĬçĨīīĬīçĻĶçĻįĬçĭİĹĺĻçĪįĨĹĨĪĻĬĹçİĵçĻįĬçĵĨĴĬõç
```

26.4 Frequently-asked questions

26.4.1 When the driver has been installed with USB type key connected to personal computer

1. Under the state that the USB type key is attached to personal computer, delete the item registered as "USB Token" in Device Manager.
2. Uninstalled the driver (Sentinel System Driver) with [Add/Remove Programs].
3. Install the driver with key detached from personal computer.
   With the procedure above, the driver can be performed normally.
   (For installation, refer to "1.4 Hardware Lock Key ".)

26.4.2 When the previous version driver has been installed after installing the driver

In this case, a problem may arise rarely. Therefore, uninstall the driver (Sentinel System Driver) by [Add / Remove Programs].
(For installation, refer to "1.4 Hardware Lock Key " in the following section.)