ROBO
CYLINDER

PC Software
RCM-101-MW, RCM-101-USB

Operation Manual
2nd Edition

IAI America Inc.

Disconnection of the Teaching Pendant from the PCON, ACON, SCON or ERC2 Controller

* After disconnecting the Teaching Pendant from the PCON, ACON or SCON controller with the AUTO/MANU switch, always turn the AUTO/MANU switch to AUTO.

* For the PCON, ACON or ERC2 controller without AUTO/MANU switch, always set the TP Operation Mode to "Monitor 2" before disconnecting the Teaching Pendant from the controller.
  (Refer to "8.10 TP Operation Mode.")

  (Note) When the controller is set by connecting the Teaching Pendant to ERC2, the conditions shown below occur.
  When the controller is set by connecting the Teaching Pendant to the gateway unit/SIO converter, the conditions shown below occur.

  ● If the Teaching Pendant is disconnected while the setting of "Teach 1" or "Teach 2" remains, I/O will become invalid and control from PLC will become impossible.

  ● If the Teaching Pendant is disconnected while the setting of "Monitor 1" remains, the maximum speed will become the safety speed set for the parameter regardless of a command from PLC.

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Support Models

The PC software RCM-101-MW and RCM-101-USB supports the following controller models of the specified versions and later.

Table 1 List of Support Models

Model Name	Support Started Version
RCP *[1]	V1.0.0.0
RCS *[1]	V3.0.0.0
E-Con *[1]	V3.0.5.0
RCP2 *[1]	V4.0.0.0
ERC *[1]	V4.0.0.0
ERC2	V6.0.0.0
PCON	V6.0.0.0
ACON	V6.0.0.0
SCON	V6.0.0.0

*1: This PC software also supports the RCP, RCS, E-Con, RCP2, and ERC controllers.

* Confirm the connected model and version of this application (8.1 Initial Window During Power-UP). If any unsupported model is connected, it may operate unexpectedly.

* ERC2, PCON, ACON, or SCON cannot be used by linking to any model of those shown in *1.

* The software reset function is effective for models corresponding to 4.0.0.0 or later of the supported version.

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[6]   Please note that the version or edition number printed on the face of this manual does not correspond to the software version number.
[7]   The content of this manual is subject to change without notice.
[8]   This software runs on Windows shown below. This manual has been written on the assumption that the user already has a basic understanding of Windows operations.
      (However, this software does not contain Windows.)

Port used	Type	Operable Windows
RS-232C	RCM-101-MW	Windows 95, Windows 98, Windows NT, Windows Me, Windows 2000
USB	RCM-101-USB	Windows 98SE, Windows Me, Windows 2000

Table of Contents

1. Before You Begin

1.1 Items Supplied with This Software (Product Components)

Please check to make sure that the following items are included in your software package.

[1] Operation manual (1)

[2] CD-ROM containing the software (1)

[3] External connection cables

External connection cables vary depending on the PC interface software type.

The types and external connection cables are shown in the table below.

Type	External Connection Cable
RCM-101-MW	RS232C conversion unit (RCB-CV-MW): 1 cable Communication cable (CB-RCA-SIO050): 1 cable
Connection Configuration	 RS232C conversion unit RCB-CV-MW Compatible controller PCON, etc. Communication cable: CB-RCA-SIO050

Type	External Connection Cable
RCM-101-USB	USB conversion unit (RCB-CV-USB): 1 cable Communication cable (CB-RCA-SIO050): 1 cable USB cable (CB-SEL-USB010): 1 cable
Connection Configuration	 USB conversion unit RCB-CV-USB Compatible controller PCON, etc. USB cable CB-SEL-USB010 Communication cable CB-RCA-SIO050

ROBO CYLINDER

1.2 What You Will Need (System Requirements)

The following PC and peripherals will be necessary to run this software program.

[1] PC and compatible keyboard

A PC *1 running Windows and a compatible keyboard.

(*1: Personal computer. Abbreviated as "PC" throughout this manual.)

[2] Memory

Enough memory to run Windows.

[3] Display: VGA or higher-resolution monitor

(XGA or better is recommended)

[4] Mouse or other pointing device and mouse driver

The mouse or other pointing device with which you can operate this software comfortably, and an applicable driver.

[5] Windows

Windows 95, Windows 98, Windows NT, Windows 2000 or Windows Me.

[6] CD-ROM drive unit

[7] Hard disk

The hard disk should have 5 MB or more of free disk space. (The software is run from the hard disk.)

[8] Serial port: Type RCM-101-MW

An RS232C serial port. (Only a 9-pin port is supported.)

[9] USB port: Type RCM-101-USB

[10] Printer

A printer compatible with the PC.

1.3   Installing the Software

This software is run from the hard disk. This section explains how to install the software.

1.3.1   How to Install the PC Interface Software for RC

[1]   Insert the CD-ROM containing this software into your CD-ROM drive.

[2]   The installed data selection window (Fig. 1.1) will be displayed.
Select data among "PC Interface Software for RC (JAP)," "PC Interface Software for RC (ENG)" and "PC Interface Software for RC (EUR)" which you want to install, and click a corresponding button. (Some items are not indicated depending on the version.)
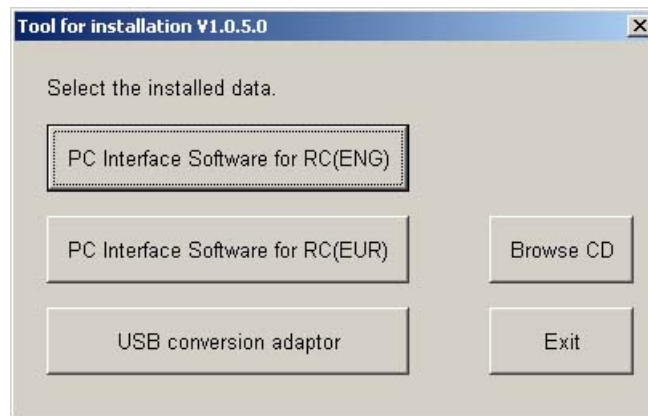
Fig. 1.1 Installed Data Selection Window
(The displayed window may vary depending on the version or other factor.)

[3]   A previous version install check window (Fig. 1.2) is displayed.
Click Yes if no previous version has been installed.
Click No if any previous version has been installed.
Install is interrupted, then uninstall using an icon [Program add/remove] on the control panel.

Fig. 1.2 Previous version install check window

* How to uninstall is described at the end of how to install PC Interface Software for RC. Refer to it.

[4] You can move to an install window (Fig. 1.3) for PC Interface Software for RC
Click Next >.

Fig. 1.3 Installation Window

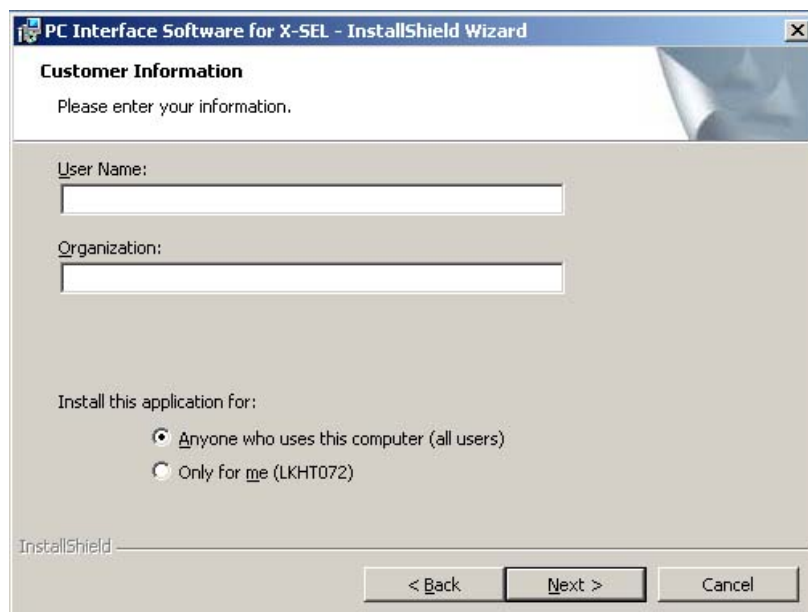[5] Customer information register window (Fig. 1.4) is displayed. Enter customer information and click Next >.

Fig. 1.4 Customer Information Registration

[6] Specify a destination folder to install the PC interface software for RC. (Fig. 1.5)
Normally, you can install it to the displayed folder.
After specifying it, click Next >.

Fig. 1.5 Specification of Destination Folder

[7] The wizard is ready to begin installation. Clicking Install will begin actual installation.
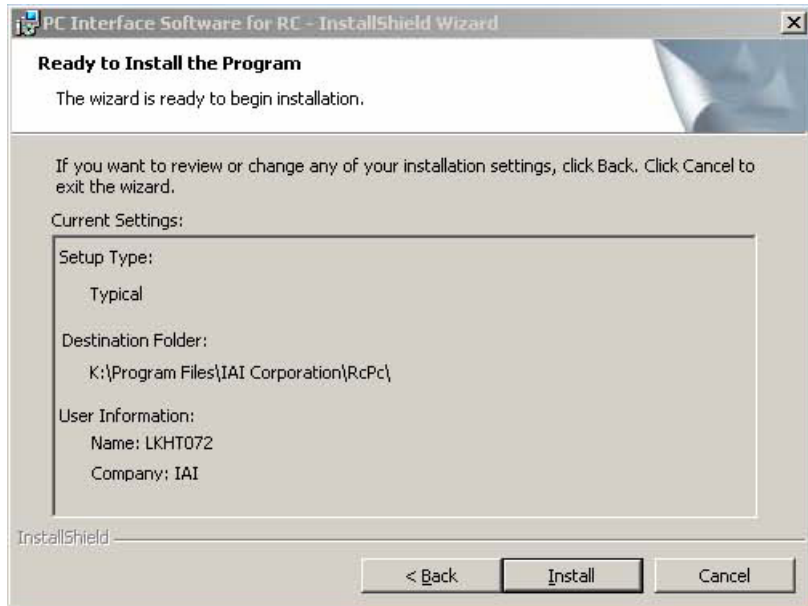
Fig. 1.6 Installation Preparation

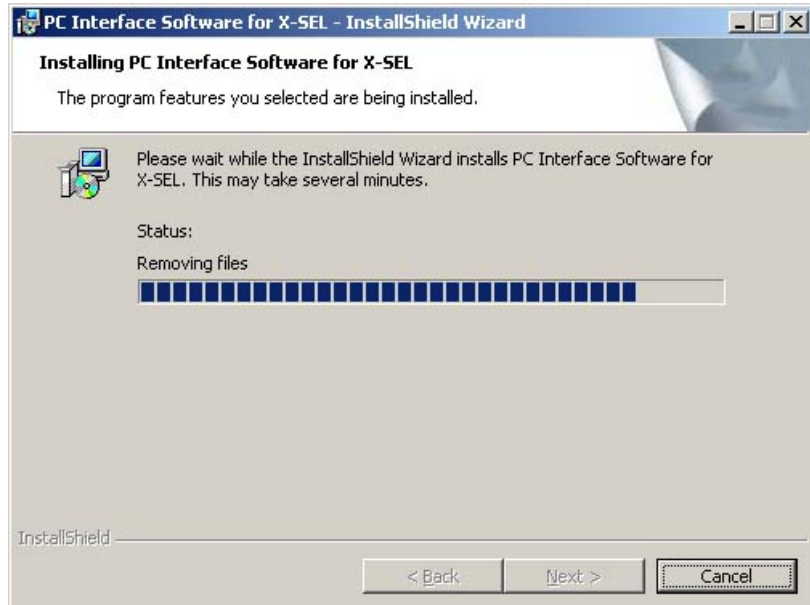The window shown in Fig. 1.7 will be displayed during installation.

Fig. 1.7 Installation Progress

[8]   When installation is completed, the window shown in Fig. 1.8 will be displayed.
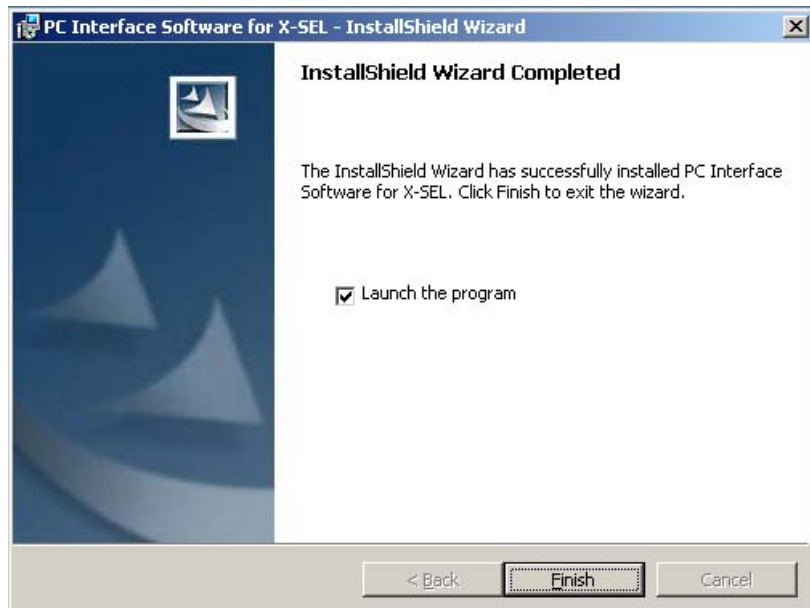

Fig. 1.8 Installation Completion

[9] When the install program is ended, an item of **Program → IAI → RoboCylinder → PC Interface Software for RC** is displayed on the start menu. This software starts by selecting those items.

[10] Remove the CD-ROM.
 * **If install is completed with the previous version installed, two kinds of shortcuts may be prepared in the item of Program → IAI → RoboCylinder on the start menu. In this case, only a short cut corresponding to the present version is deleted when uninstalled. Manually delete the short cut for the previous version (PC Interface software for RC&E-Con) by right clicking and clicking Delete.**
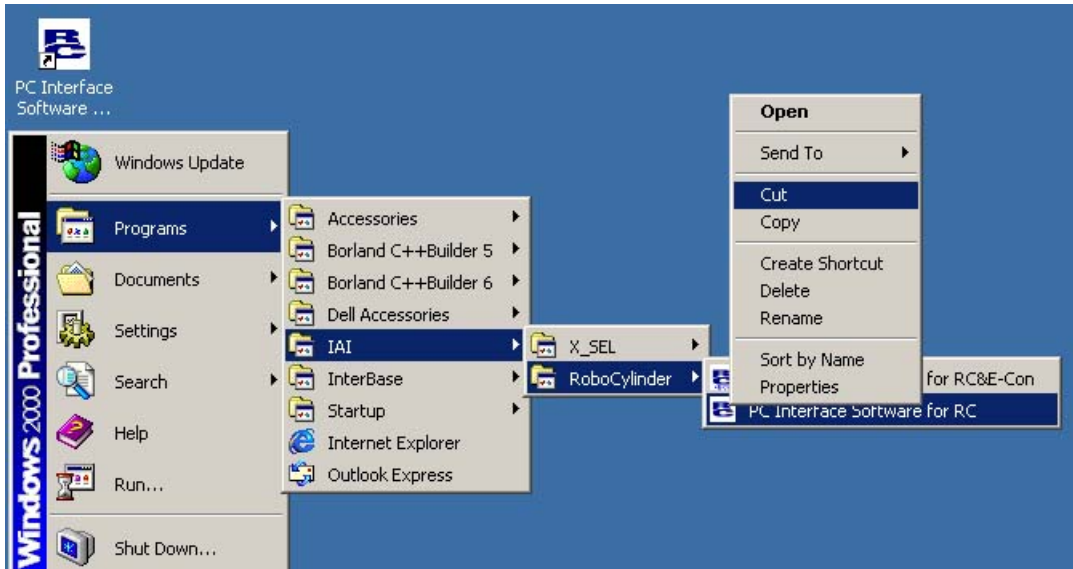

Fig. 1.9 Shortcut Delete Window for Previous Version

1.3.2 How to uninstall PC Interface Software for RC

[1] Open the application add and delete window on the control panel.
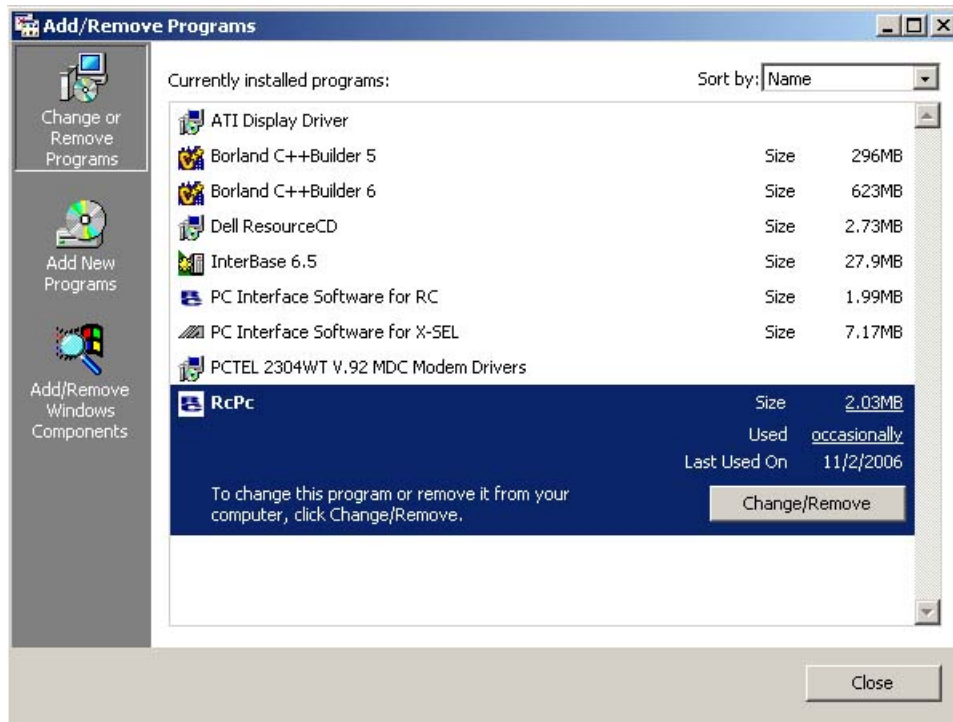[2] Select **RcPc** on the application add and delete window, and click Change/Remove .

Fig. 1.10 Application Add and Delete

[3] When a file delete check window (Fig. 1.11) is displayed, click Yes .
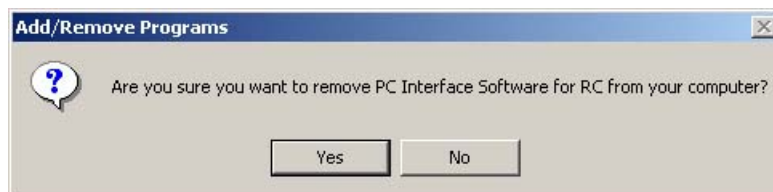

Fig. 1.11 File Delete Check

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1.3.3 How to Install the USB Conversion Adapter Driver Software

When a USB port is used, it is required to install USB conversion adapter driver software.
[Compatible software]
- RCM-101-USB (with USB conversion adaptor 2 + cable)

[1] Insert the CD-ROM of this software into your CD-ROM drive.
[2] The installed data selection window (Fig. 1.12) will be displayed.
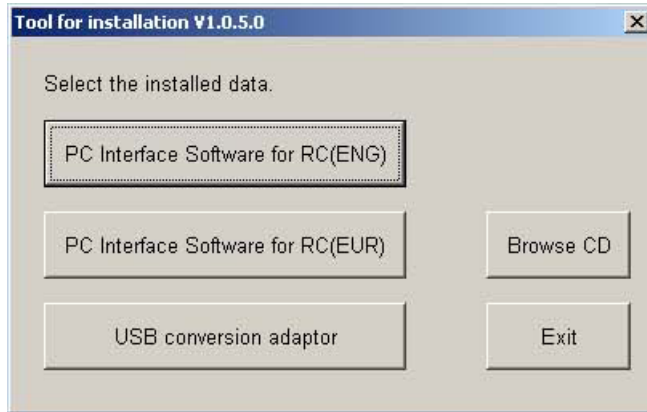Click USB conversion adapter.

Fig. 1.12 Installed Data Selection Window
(The displayed window may vary depending on the version, data in the CD or other factors.)

[3] You are prompted to set the folder of the copy destination. If you use the displayed folder as it is, click Copy. To change it, enter it manually or click Browse to set the folder of the copy destination.
On the browse for folder window (Fig. 1.14), click the folder of the copy destination to select it and then click OK. Once you have clicked OK, the browse for folder window (Fig. 1.14) will disappear and the selected folder path will be displayed on the window to specify the folder of the copy destination (Fig. 1.13).

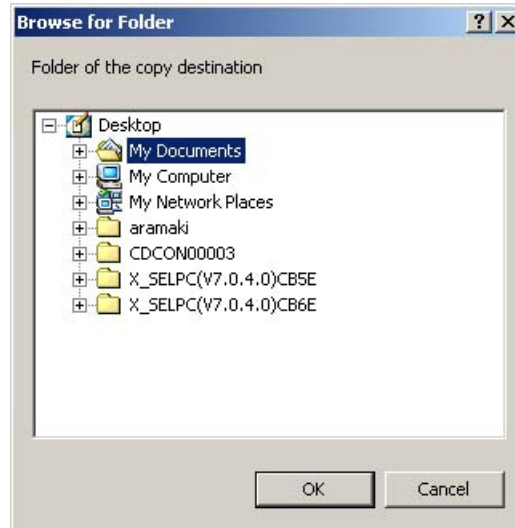Fig. 1.13 Window to Specify Folder of Copy Destination

Fig. 1.14 Browse for Folder Window

[4] When the folder of **IAI USB** (copy data) already exists in the copy destination, you are prompted to overwrite it. Click OK to overwrite it, or click Cancel to stop copying.

Fig. 1.15 Overwrite Confirmation Window

[5] The complete window (Fig. 1.16) will be displayed.

Fig. 1.16 Complete Window

[6] Once the complete window (Fig. 1.16) has been displayed, click OK. The complete window (Fig. 1.16) will disappear. Then, click Cancel on the window to specify the folder of the copy destination (Fig. 1.13). The window to specify the folder of the copy destination (Fig. 1.13) will disappear.
Finally, click Exit on the data selection window (Fig. 1.12). The data selection window (Fig. 1.12) will disappear.

[7] Remove the CD-ROM.

[8] Then, insert the USB conversion adapter (RCB-CV-USB) into the USB port of your PC.

[9] Windows will open the **Found New Hardware Wizard**.
     Click Next >.
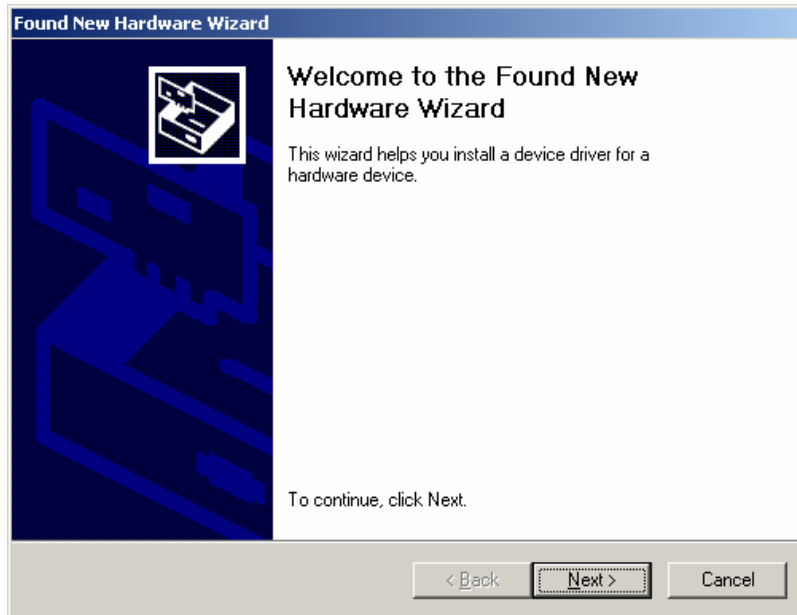
Fig. 1.17 Found New Hardware Wizard Start Window

[10] The driver search select window will open.
     Check the **Search for a suitable driver for my device (recommended)**.
     Click Next >.

Fig. 1.18 Driver Search Select Window

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[11] The locate driver files window will open.
Select **Specify a location**.
Click Next >.

Fig. 1.19 Specify the Locate Driver Files Window

[12] The copy manufacturer's files from window will open.
Click Browse… and find **K:¥iai usb** and set it.
Click OK.

Fig. 1.20 Specify the Copy manufacturer's files from Window

[13] The driver files search results window will open.
Click Next >.

Fig. 1.21 Driver Files Search Results Window

[14] When the **IAI USB Composite Device** driver installation finish is displayed, the installation of the driver is completed.
Click Finish.

Fig. 1.22 IAI USB Composite Device Installation Finish Window

[15] Subsequently, the found new hardware wizard window will open.
Click Next >.
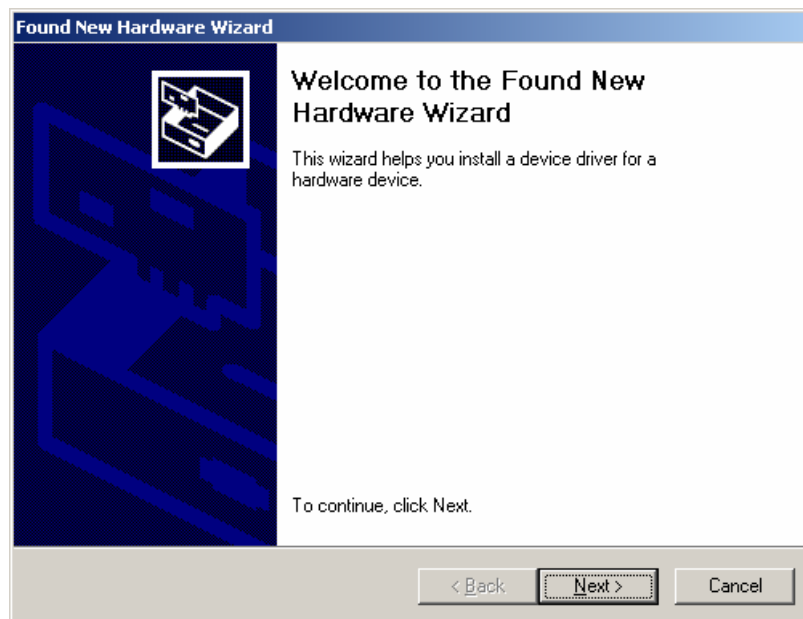
Fig. 1.23 Found New Hardware Wizard Window

[16] The install hardware device drivers window will open.
Select the **Search for a suitable driver for my device [recommended]**.
Click Next >.

Fig. 1.24 Install Hardware Device Drivers Window

[17] The locate driver files window will open.
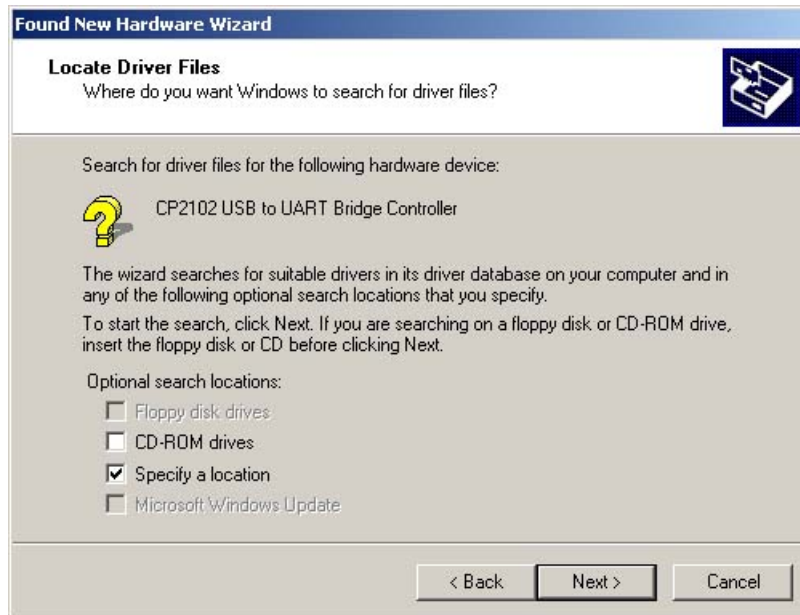   Select **Specify a location**.
   Click Next >.
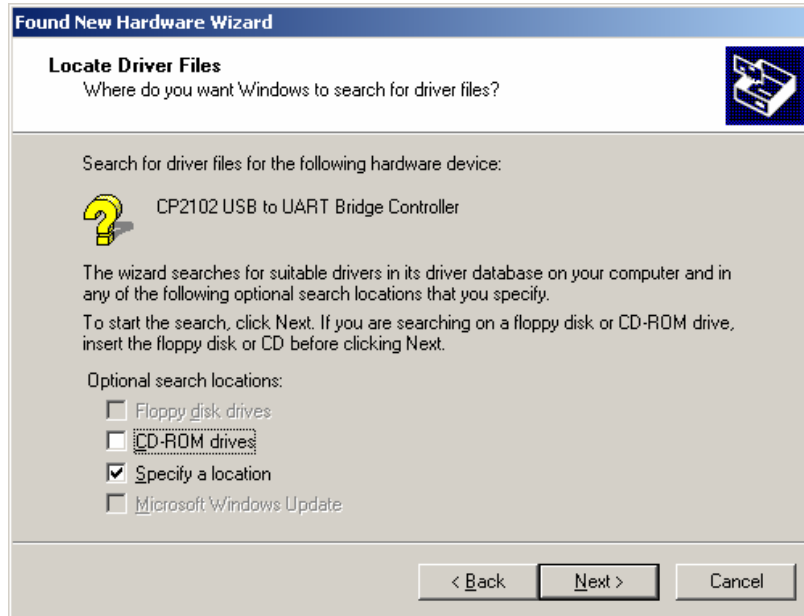
Fig. 1.25 Locate Driver Files Window

[18] The copy manufacturer's files from window will open.
   Click Browse… and find **K:¥iai usb** and set it.
   Click OK.

Fig. 1.26 Specify the Copy manufacturer's files from Window

15

[19] The driver files search results window will open.
Click Next >.
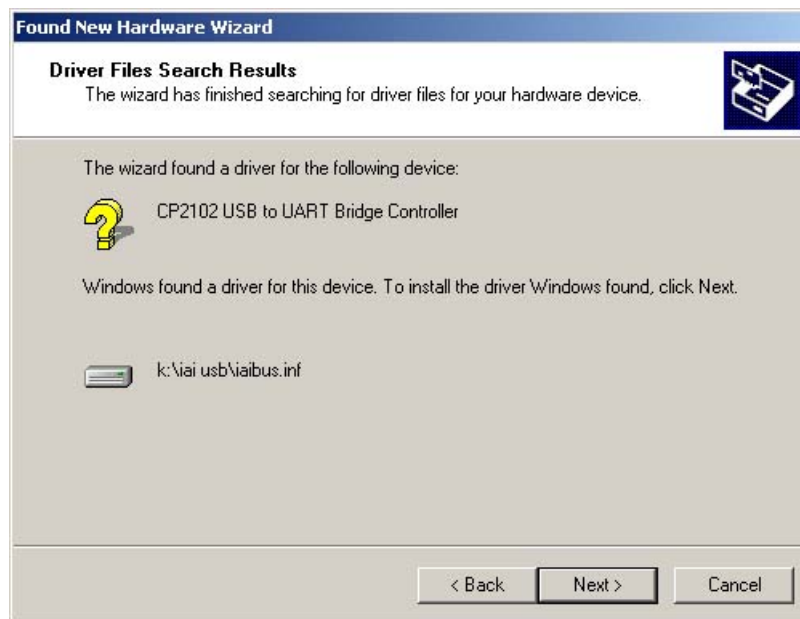
Fig. 1.27 Driver Files Search Results Window

[20] When the IAI USB to UART bridge controller driver installation finish window is displayed, the driver installation is completed.
Click Finish.
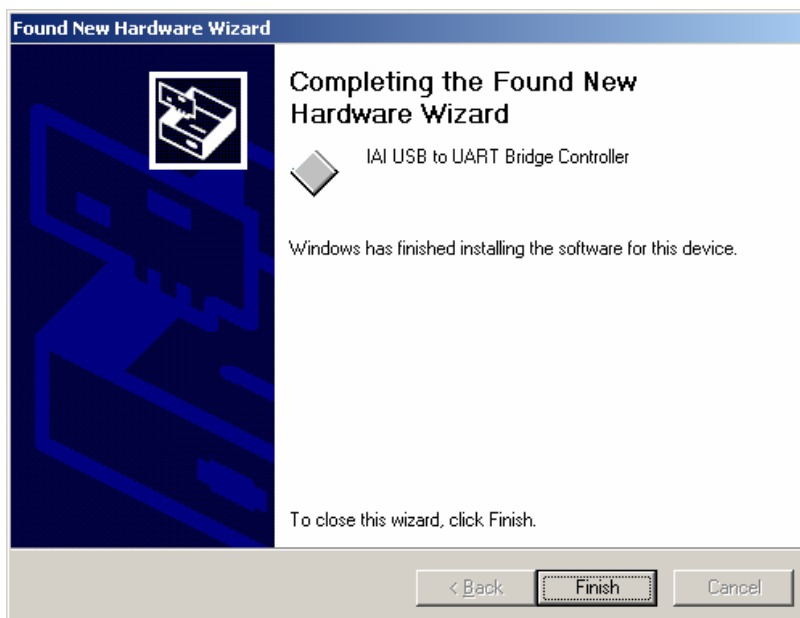
Fig. 1.28 IAI USB to UART Bridge Controller Installation Finish Window

[21] The installation of all drivers is completed.

[22] Click **Start** on the Windows taskbar, **Settings**, and then **Control Panel** to open the Control Panel.

Double-click **System** to open **System Properties**.

Click the **Hardware** tab in **System Properties** to open it.

Click **Device Manager** in **Hardware** to open it.

Double-click **Ports (COM & LPT)** in **Device Manager** to expand the folder tree.

If there is **IAI USB to UART Bridge Controller (COM?)** under **Ports (COM & LPT)** in **Device Manager**, the driver has normally been installed and operated.

(Note) The number added to the end of COM? becomes the number of the inserted COM port.

Fig. 1.29 Device Manager Window

1.4 Starting the Software

[1] Turn off the power to the controller and PC, and connect the controller to the PC using the standard RS232C cable or USB cable that comes with the software.
Set the mode switch on the controller to the MANU side.

[2] Turn on the power to the controller and PC, and start Windows.

[3] Start this software after turning ON the port switch of the controller.
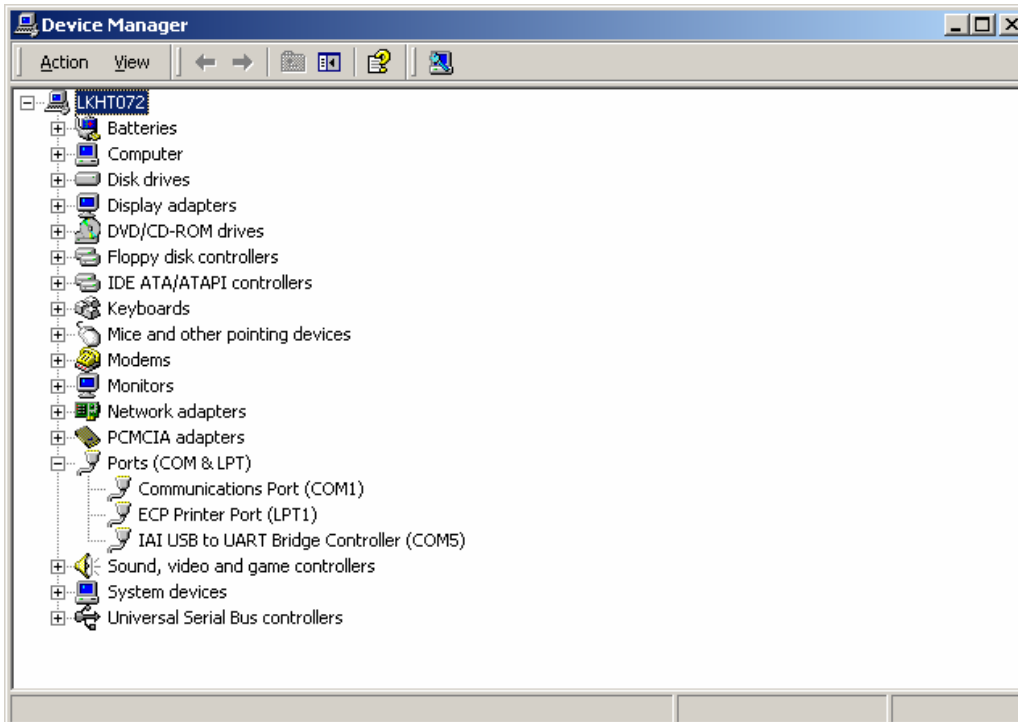* This software judges whether the mode is online or offline depending on whether the controller and personal computer are connected or not. A controller equipped with a PORT switch does not operate in the online mode even if the port switch of the controller is turned ON after this software is started. In this case, the online mode is turned on by performing [Reconnect] (Refer to 3.1 (5) [2] [Setting of controller]).

[4] A check for connected axis appears and a check for connected axis is started. (Refer to 2. Checking for Connected Axes).

[In the case of PCON, ACON, SCON, ERC2]

[5] When a check for the connected axis is completed, the main window is displayed, and at the same time, a window to select manual operation mode shown in Fig. 1.30 is displayed.
Select the operation mode according to the purpose and press OK.
Hereinafter, perform correct input while following the indication on the window according to the purpose of operation.
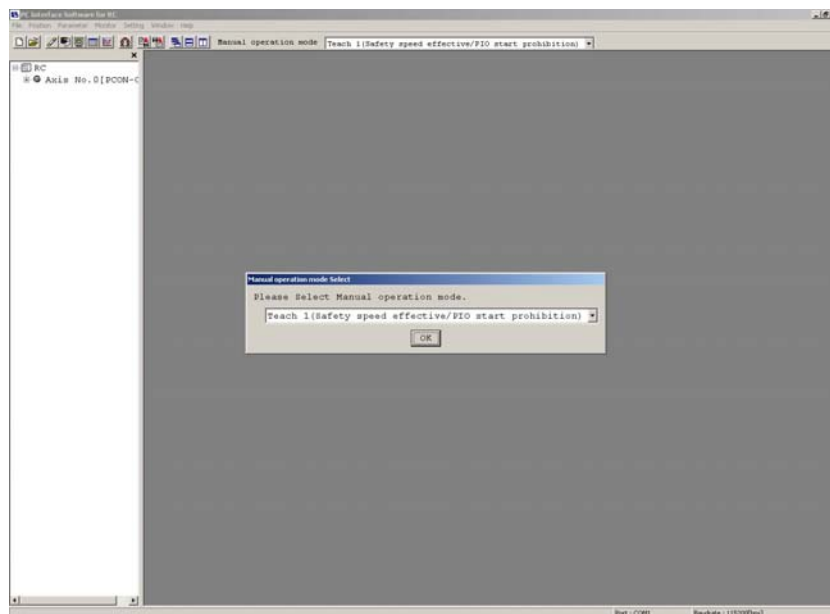
Fig. 1.30 Manual Operation Mode Select Window

Select the manual operation mode from the following four menus.
- Teach mode 1 (Safety speed effective/PIO start prohibition)
  PIO start prohibition: Position data and parameter, etc., are allowed to be written in the controller and actuator operation system is commanded.
  Safety speed effective: Maximum speed becomes safety speed set to the parameter regardless of speed designation of position data.

- Teach mode 2 (Safety speed ineffective/ PIO start prohibition)

PIO start prohibition: Position data and parameter, etc., are allowed to be written in the controller and actuator operation system is commanded.

Safety speed ineffective:Allows to operate at a speed described on the speed designation of the position data (safety speed or higher).

- Monitor mode 1 (Safety speed effective/PIO start permission)

PIO start permission: Monitoring is only allowed. Position data and parameter, etc., are not allowed to be written in the controller and actuator operation system is not commanded. Operation command (jog, homing, etc.) cannot be performed from the PC Interface software.

Safety speed effective: Maximum speed becomes safety speed set to the parameter regardless of speed designation of position data.

- Monitor mode 2 (Safety speed ineffective/PIO start permission)

PIO start permission: Monitoring is only allowed. Position data and parameter, etc., are not allowed to be written in the controller and actuator operation system is not commanded. Operation command (jog, homing, etc.) cannot be performed from the PC Interface software.

Safety speed ineffective:Allows to operate at a speed (safety speed or higher) as commanded from the PLC.

A communication setting window (Fig. 1.32) is displayed only at a first start after the software is installed.
(Refer to next page)

If a warning of "Baudrate of personal computer is not supported" is given and connection with the controller cannot be performed, select other baudrate.
- Click setting of main menu, and select "Setting of application" (Fig. 7.9).
- Change baudrate on the "Setting of application" window (Fig. 7.9).

● When PCON, ACON, SCON and ERC2 are connected, the operation mode is in "Safety speed effective (with safety limit speed)" when this software is started. For this reason, the maximum speed by performing position move (test operation mode) from PC Interface Software is 250mm/sec or less.

To operate a speed command of 250mm/sec or more described on the position data, it is necessary to change the status to "Safety speed ineffective (without safety limit speed)."

For switching between with safety speed and without safety speed, refer to "3.2 Operations using toolbar buttons."

[In the case of RCP, RCS, E-Con, RCP2 and ERC2]
[5] When checking if the connected axis is completed, a warning window is displayed.
When OK is clicked, a main window is displayed.

Fig. 1.31 Warning

1.5 Setting of communication window

The "Setting of communication" window (Fig. 1.32) is displayed only at the initial start after the software has been installed. In this window, setting for communication with the controller is made.
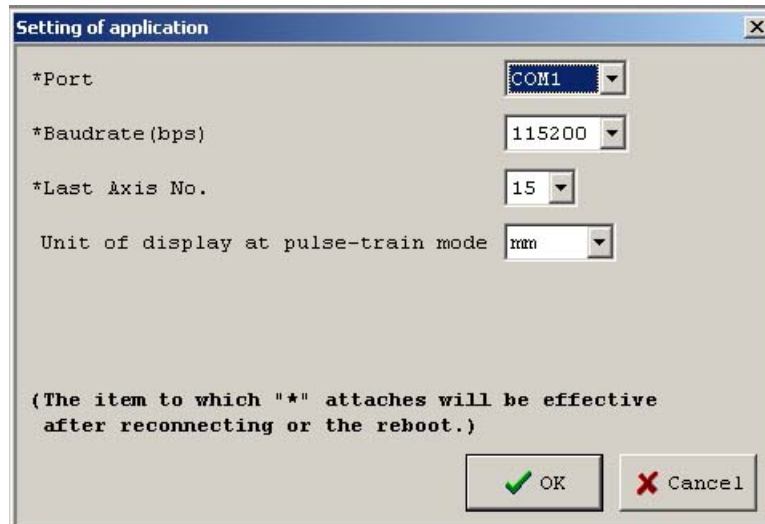

Fig. 1.32 Setting of Communication Window

[1] Port

From the list, select the serial port to be used to communicate with the controller.

[2] Baudrate

From the list, select the baudrate.

* **The baudrate selected here is used only in the communication between this application and controller. It does not affect the communication speed parameters of the controller.**
* **If baudrate is not supported by the port selected in [1], occurs when connection is checked.**

[3] Last axis No.

Select the axis number of the last axis to be checked for connection.

* **Axes of numbers greater than the value selected here will not be checked for connection. Select an appropriate axis number after checking the axis numbers of the connected axes.**

[4] Unit of display at pulse-train mode

Select unit of display (mm/pulse) for the current position, etc., when SCON pulse sequence mode, PCON-PL/PO, ACON-PL/PO are connected.

After setting the above items, click the OK button, then checking for connected axes is performed. (From the next start, checking for connected axes will be automatically performed by this setting.)

* **Contents set here can be changed on the setting of application window (Fig. 7.9).**

If the Cancel button is clicked, application is ended without performing checking for connected axes (this setting of communication window will be displayed again.)

2. Checking for Connected Axes

The software checks for connection of all axes up to the axis specified in the Last Axis NO. box of the "Setting of application" window (Fig. 1.32) or "Setting of application" window (Fig. 7.10).

After the check, "(Connecting)" will be shown for those axes whose connection has been confirmed, while "-" will be shown for all other axes.

Check for connected axes	
Axis No.	Status
0	(Connecting)
1	-
2	-
3	(Connecting)
4	-
5	-
6	-
7	-
8	-
9	-
10	-
11	-
12	(Checking)
13	(Checking)
14	(Checking)
15	(Checking)

Fig. 2.1 Check for Connected Axes Window (Checking for Connection)

Check for connected axes	
Axis No.	Status
0	Connected
1	
2	
3	
4	
5	
6	(Checking)
7	
8	
9	
10	
11	
12	
13	
14	
15	

Fig. 2.2 Check for Connected Axes Window (Connection Check Completed)

Check for connected axes can be cancelled by pressing the [ESC] key. (In this case, offline mode is set.)

3. Main Window

(1) PCON, ACON, SCON controllers and ERC2

As shown in Fig. 3.1, the main window consists of main menu, toolbar buttons, tree view and status bar. The tree view on the left side of the window can be displayed by operation of "Window" → "Tree view" on the menu. (Initial window: Main menu)

Main menu

Toolbar buttons

Tree view

Fig. 3.1 Main Window

Status bar

You can select the following items from the main menu or toolbar buttons available in the main window (Fig. 3.1).

(2) RCP, RCS, E-Con, RCP2 controller and ERC

As shown in Fig. 3.2, the main window consists of main menu, toolbar buttons, tree view, status bar. The tree view on the left side of the window can be displayed by operation of "Window" → "Tree view" on the menu. (Initial window: Main menu)
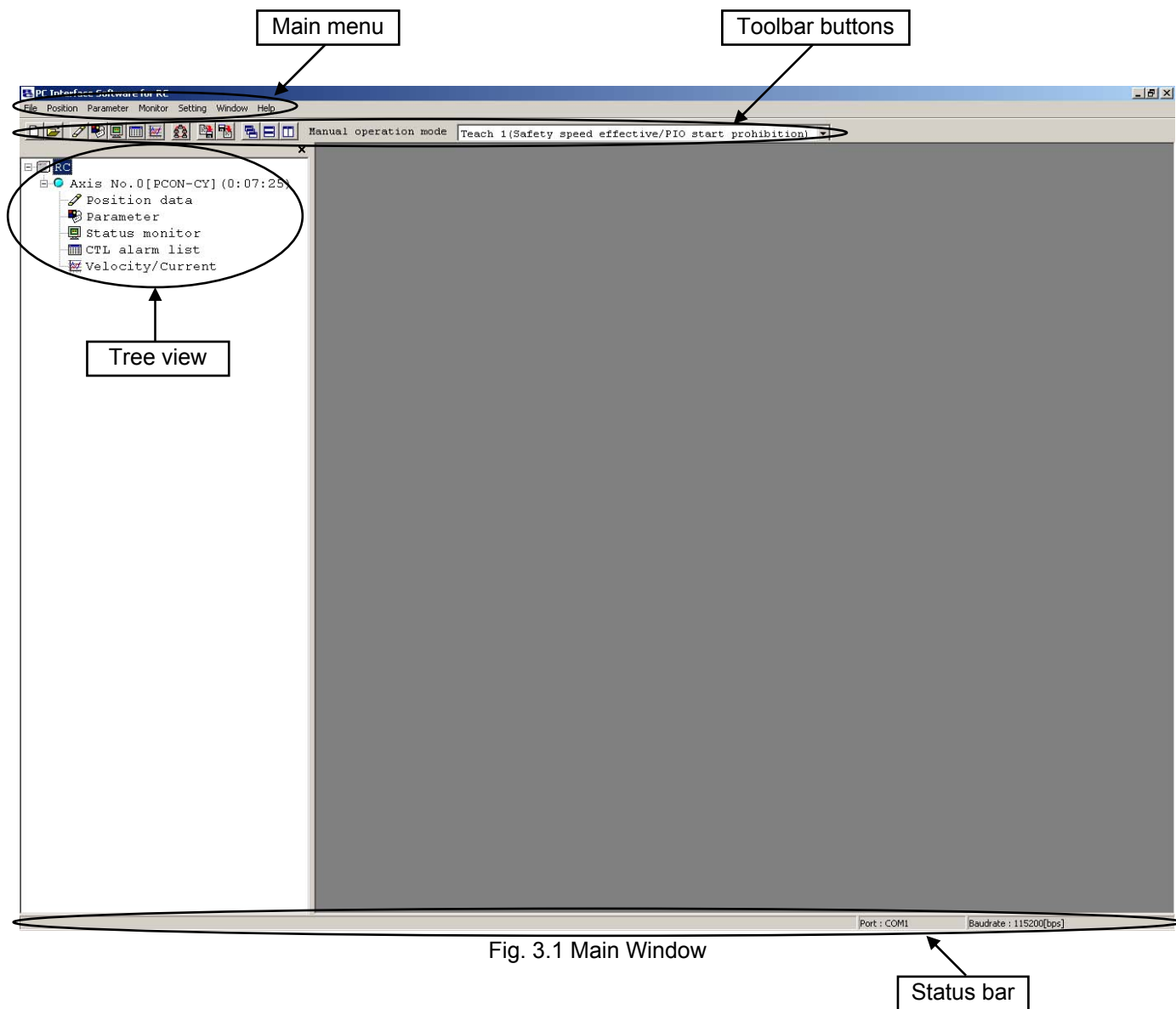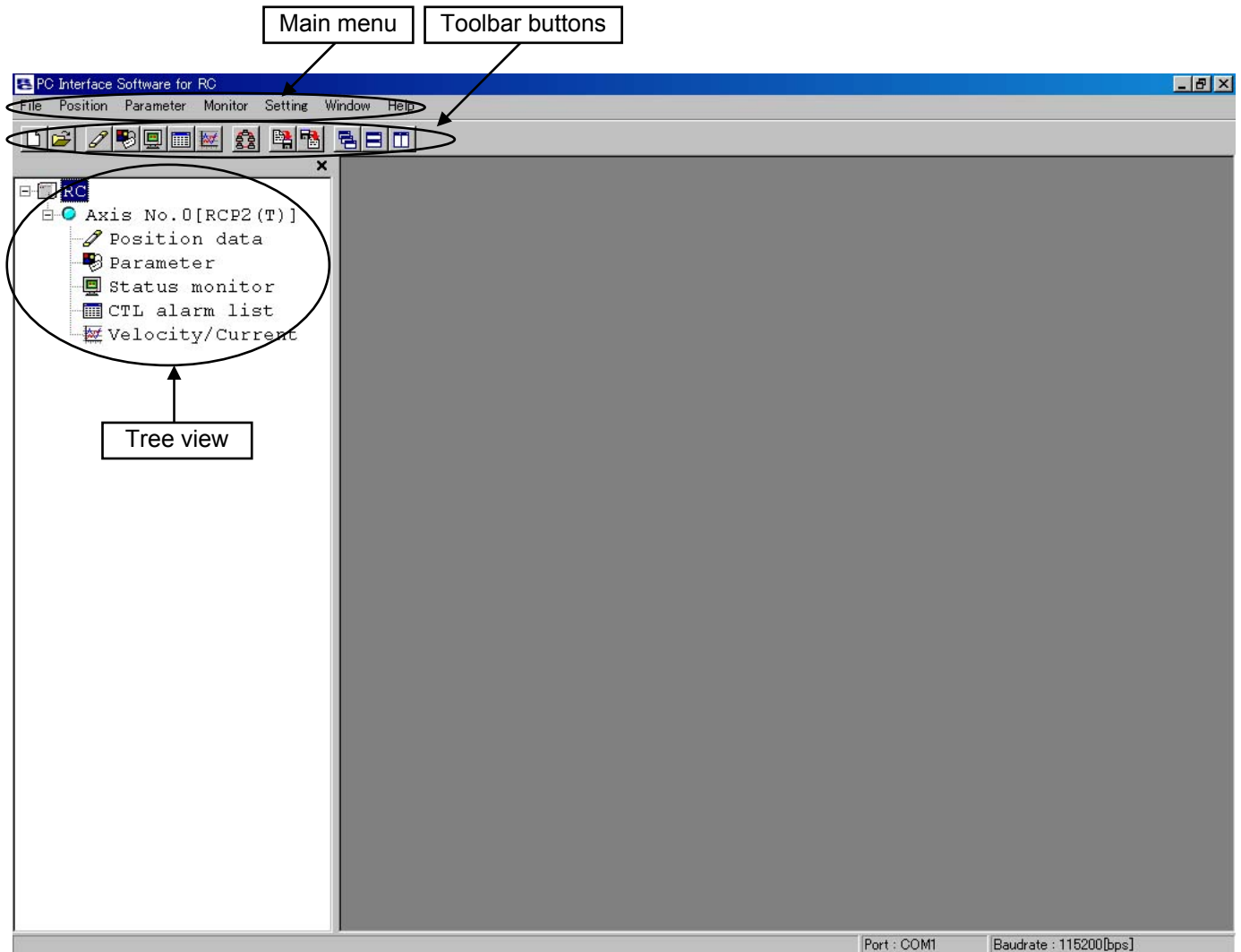

Fig. 3.2 Main Window

You can select the following items from the main menu or toolbar buttons available in the main window (Fig. 3.2).

3.1　Operating from the Main Menu

(1) File

[1]　[New]
　　　Create new position data.

[2]　[Open]
　　　Load position data or parameters from a file.

[3]　[Close]
　　　Close the active file.

[4]　[Send to Controller] (Available in the online mode)
　　　[Position Data]
　　　　Write position data in a file to the controller.
　　　[Parameter]
　　　　Write parameters in a file to the controller.

[5]　[Backup] (Available in the online mode)
　　　[Save from Controller to File]
　　　　Save all position data and parameters in the controller to a file.
　　　[Send from File to Controller]
　　　　Send all position data and parameters in a file to the controller.
　　　[Backup data print]
　　　　Print backup data.

[6]　[Recently used file]
　　　History of recently read files are displayed, and you can select file name from these to read.

[7]　[Exit]
　　　Exit this application.

(2) Position (Available in the online mode)

[1]　[Edit/Teach]
　　　Load position data from the controller for editing or use in teaching.
　　　*　In the case of pulse sequence mode of PCON-PL/PO, ACON-PL/PO and SCON, position data cannot be inputted. For this reason, jog window on which position input area, toolbar button and simple program are not displayed is displayed.

[2]　[Send to Controller]
　　　Transfer (write) edited position data to the controller.
　　　*　In the case of pulse sequence mode of PCON-PL/PO, ACON-PL/PO and SCON, position data cannot be sent to the controller.
　　　Even when you attempt to send position data to the controller, it is not displayed as select controller on the select axis number window.

[3]　[Print]
　　　Print the position data you are currently editing.
　　　*　In the case of pulse sequence mode of PCON-PL/PO, ACON-PL/PO and SCON, position data cannot be printed.

(3) Parameter (Available in the online mode)

[1] [Edit]
    Load parameters from the controller for editing.

[2] [Send to Controller]
    Transfer (write) edited parameter to the controller.

[3] [Print]
    Print the parameter you are currently editing.

(4) Monitor (Available in the online mode)

[1] [Status]
    You can check the various statuses of each axis (axis status, internal flags and I/O ports).

[2] [CTL Alarm List]
    Display the CTL alarm list window.

[3] [Velocity/Current]
    Display the velocity/current monitor window.
    *** This menu item is available only when the controller supports the velocity/current monitor function.
    Refer to "Supported Models."**

(5) Setup

[1] [Application Setup]
    Set up the application (baud rate and ports).

[2] [Controller Setup]
    Reconnect: Reconnect the axes.

> If the software connects to multiple controllers linked by controller link cables, always select **Reconnect** after turning off and then on again the power to a connected controller to which the teaching pendant is not connected directly.

    Assign Axis Number: Available only for types not equipped with axis number setup rotary SW.
    Reset Software: Reset (restart) the software.
    * RCP, RCS and E-Con cannot reset the software.

(6) Window

[1] [Cascade]
    Rearrange all open windows in such a way that they are cascaded (staggered) on top of each other.

[2] [Tile Vertical]
    Rearranges all open windows as vertical tiles.

[3] [Tile Horizontal]
    Rearranges all open windows as horizontal tiles.

[4] [Arrange Icons]
    Arrange all window icons (minimized windows).

[5] [Minimize All]
Minimize all open windows.

[6] [Maximize All]
Restore all window icons (minimized windows) to their original size.

[7] [Tree View]
Show/hide the tree view (Fig. 3.4).

[8]   [Font size]
Change font size on the position edit window (Fig. 5.1, Fig. 5.3) and the editing parameters window (Fig. 6.3), etc.
Select font size from largest, large, medium, small and smallest.

(7) Help
[1] [Help]
Display the help file.

[2] [About]
Display the version information of this application.

* The menu items shown in gray cannot be selected.

3.2   Operations Using the Toolbar Buttons
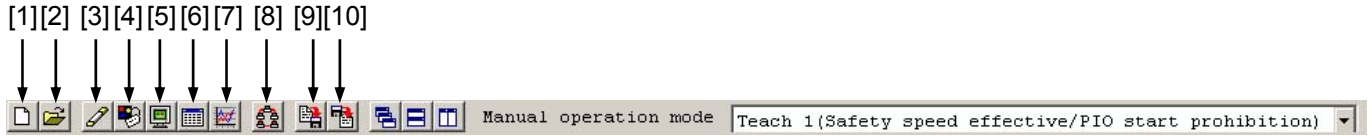
[1] [2] [3] [4] [5] [6] [7] [8] [9] [10]

Fig. 3.3 Toolbar Buttons

[1]   New position data
Same as clicking **File**, pointing to **New**, and then selecting **Position Data**.

[2]   Open file
Same as clicking **File**, and then selecting **Open**.

[3]   Edit/teach position data
Same as clicking **Position**, and then selecting **Edit/Teach**.
*   **In the case of pulse sequence mode of PCON-PL/PO, ACON-PL/PO and SCON, position data cannot be inputted. For this reason, jog window on which position input area, toolbar button and simple program are not displayed is displayed.**

[4]   Edit parameters
Same as clicking **Parameter**, and then selecting **Edit**.

[5]   Monitor
Same as clicking **Monitor**, and then selecting **Status**.

[6]   CTL alarm list
Display the CTL alarm list window.
Same as clicking **Monitor**, and then selecting **CTL Alarm List**.
Content of CTL alarm list is stored by battery backup.
Even if power is turned off, content of controller alarm list is not erased.
(ERC2, SCON, ACON and PCON)

[7]   Velocity/current
Display the velocity/current monitor window.
Same as clicking **Monitor**, and then selecting **Velocity/Current**.
*   **RCP, RCS and E-Con cannot use this function.**

[8]   Reconnect
Same as clicking **Setup**, pointing to **Controller Setup**, and then selecting **Reconnect**.

[9]   Save all data
Same as clicking **File**, pointing to **Backup**, and then selecting **Save from Controller to File**.

[10] Send all data
Same as clicking **File**, pointing to **Backup**, and then selecting **Send from File to Controller**.

*   **The menu items shown in gray cannot be selected.**
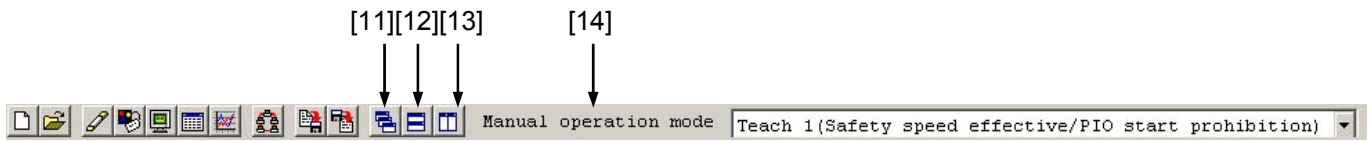
[11][12][13]   [14]

Fig. 3.4 Toolbar Buttons

[11] Cascade windows
Same as clicking **Window**, and then selecting **Cascade**.

[12] Tile windows vertically
Same as clicking **Window**, and then selecting **Tile Vertical**.

[13] Tile windows horizontally
Same as clicking **Window**, and then selecting **Tile Horizontal**.

[14] Select manual operation mode. Select from the following four menus.
* **Menus are not displayed in case of RCP, RCS, E-Con, RCP2 controllers and ERC.**
- Teach mode 1 (Safety speed effective/PIO start prohibition)
  PIO start prohibition: Position data and parameter, etc., are allowed to be written in the controller and actuator operation system is commanded.
  Safety speed effective: Maximum speed becomes safety speed set to the parameter regardless of speed designation of position data.
- Teach mode 2 (Safety speed ineffective/ PIO start prohibition)
  PIO start prohibition: Position data and parameter, etc., are allowed to be written in the controller and actuator operation system is commanded.
  Safety speed ineffective: Allows to operate at a speed described on the speed designation of the position data (safety speed or higher).
- Monitor mode 1 (Safety speed effective/PIO start permission)
  PIO start permission: Monitoring is only allowed. Position data and parameter, etc., are not allowed to be written in the controller and actuator operation system is not commanded. Operation command (jog, homing, etc.) cannot be performed from the PC Interface software.
  Safety speed effective: Maximum speed becomes safety speed set to the parameter regardless of speed designation of position data.
- Monitor mode 2 (Safety speed ineffective/PIO start permission)
  PIO start permission: Monitoring is only allowed. Position data and parameter, etc., are not allowed to be written in the controller and actuator operation system is not commanded. Operation command (jog, homing, etc.) cannot be performed from the PC Interface software.
  Safety speed ineffective: Allows to operate at a speed (safety speed or higher) as commanded from the PLC.

If the controller has an MANU/AUTO switch, the menus become available when the switch is set to the MANU.

3.3 Tree View

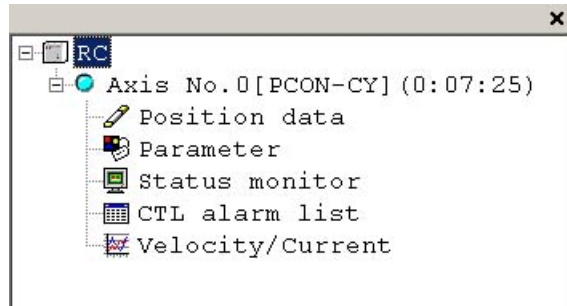From the main menu, click **Window**, and then select **Tree View**.

Fig. 3.5 Tree View

[1] ⃝ Axis No. 0 [PCON-CY]

The axis number of each axis and the corresponding controller model are shown.

A light blue icon is shown if the controller is normal. If the controller is in an error state, a red icon is shown.

[2] ✎ Position data

You can double-click this item to open the position data edit window.

* **In the case of pulse sequence mode of PCON-PL/PO, ACON-PL/PO and SCON, position data cannot be inputted. For this reason, jog window on which position input area, toolbar button and simple program are not displayed is displayed.**

[3] 🗃 Parameter

You can double-click this item to open the parameter edit window.

[4] 🖥 Status monitor

You can double-click this item to open the status monitor window.

[5] ▦ CTL alarm list

You can double-click this item to open the CTL alarm list window.

[6] 📉 Velocity/Current

You can double-click this item to open the velocity/current monitor window.

* **The specific tree view will vary depending on the model of the connected controller.**

3.4 Status Bar

[1]   [2]   [3]

Edit position data	Port : COM1	Baudrate : 115200[bps]

Fig. 3.6 Status Bar

[1] Tool tip

Bringing the mouse cursor over a toolbar button will display the tool tip on the button.

[2] Port name

The serial port currently in use is indicated.

[3] Baudrate

The baudrate (bps) of the current communication is indicated.

4. Selecting an Axis

To perform any of the following operations, select the axis number of the target axis in the "Select axis number" window (Fig. 4.1).

[1] Open the position data edit window in the online mode. Refer to 5.1 (Note)
[2] Send position data edited in the offline mode to the controller. Refer to 5.2 (Note)
[3] Open the parameter edit window in the online mode. Refer to 6 (Note)
[4] Send parameters edited in the offline mode to the controller. Refer to 6 (Note)
[5] Collectively save all data from the main window: Refer to 3.1 (Note)
[6] Collectively send all data from the main window: Refer to 3.1 (Note)
[7] Open the status monitor window of the monitor from the main window: Refer to 3.1
[8] Open the CTL alarm list window of the monitor from the main window: Refer to 3.1
[9] Open the velocity/current monitor window of the monitor from the main window: Refer to 3.1
[10] Reset the software: Refer to 3.1

Before the software switches to the applicable mode in each of the above operations, the "Select axis number" window appears.
The axis numbers corresponding to the operable axes are shown in the box under **Connected axes**.
Move the cursor to the axis you want to operate, click to $\boxed{>}$ select the axis, and then click $\boxed{OK}$. To select all axes, click $\boxed{>>}$, and then click $\boxed{OK}$.
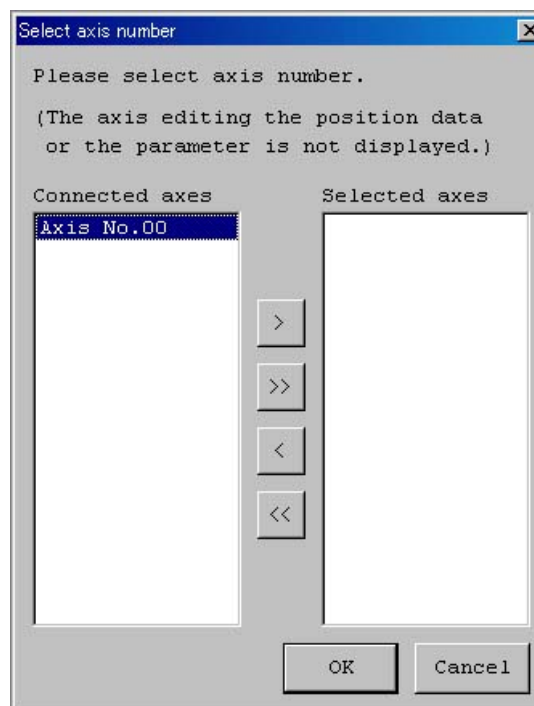

Fig. 4.1 Select Axis Number Window

Note: The axes for which the "Position data edit window" or "Parameter edit window" is currently open in the online mode are not shown. To select any such axis, close the applicable edit window first.

5. Editing Position Data

You can edit position data in the online or offline mode.

5.1 Online Mode

This mode reads data from the controller to edit.

For PCON, ACON, SCON and ERC2, Fig. 5.1 is displayed.

However, for pulse sequence mode of the PCON-PL/PO, ACON-PL/PO and SCON controller, position data cannot be inputted.

This is a jog window (Fig. 5.2) on which the position input area, toolbar button and simple program are not displayed.

For RCP, RCS, E-Con, RCP2 and ERC, Fig. 5.3 is displayed.

Click **Position** and then select **Edit/Teach** from the main menu, or click 🖉 in the toolbar.

In the select axis number window, select the axis number corresponding to the axis whose position data you want to edit. Refer to 4, "Selecting an Axis."

In the online mode, you can create position data by "MDI (Mathematical Direct Input)," "Direct Teaching," "Jogging" or "Inching" operation.

Created/edited position data will become effective after it has been sent to the controller.

To send position data to the controller, click **Position** and then select **Send to Controller** from the main menu, or click ▣ in the position edit window.

You can also check the teaching positions in two test operation modes: "Positioning" and "Program."
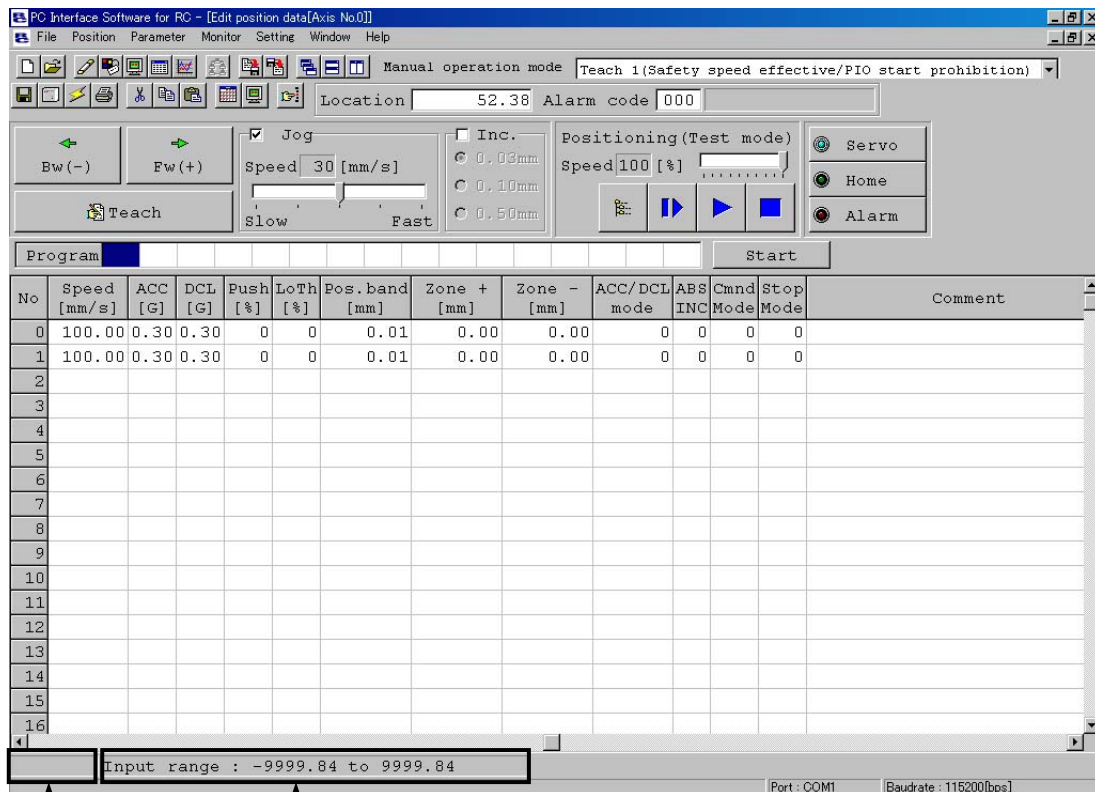
"Modified" is shown if a change has been made to the loaded data.

The input range of each item is shown.

The input range is determined by soft limit + side and soft limit – side of the parameter. (Refer to "6. Editing parameters.")

Fig. 5.1 Position Edit Window (Detail Window in Online Mode): PCON, ACON, SCON and ERC2
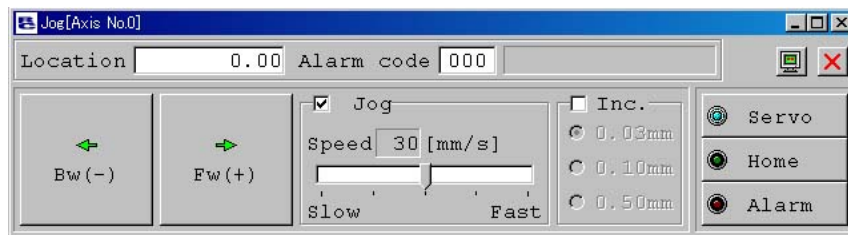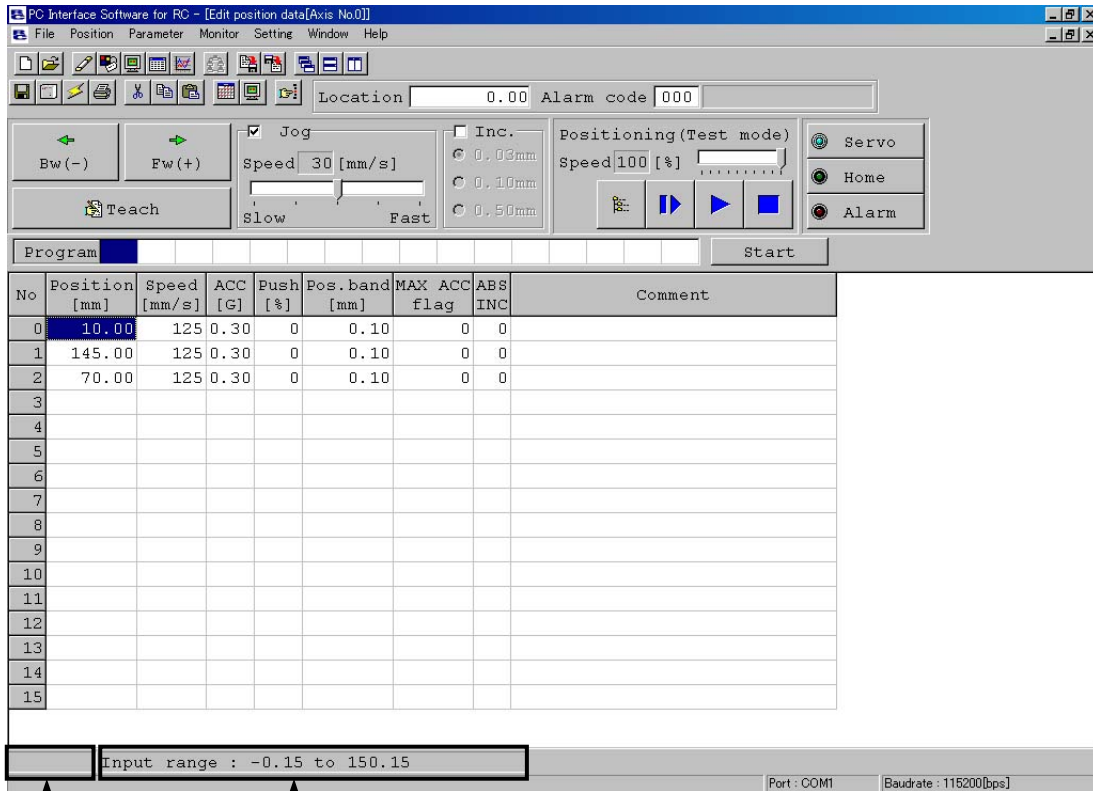

Fig. 5.2 Jog window (Online displaying)

"Modified" is shown if a change has been made to the loaded data.

The input range of each item is shown.

Fig. 5.3 Position Edit Window (Detail Window in Online Mode): PCON, ACON, SCON and ERC2

* While the position edit window of a given axis is open in the online mode, the parameter edit window of the same axis cannot be opened. (You can open the parameter edit window of any other axis.)
* When the MANU operation mode on the main window is monitor mode 1 or monitor mode 2, this online mode cannot be executed.
  Operations of writing into the controller, jog and homing cannot be performed.

The operating methods of buttons and input controls available in this window are explained below.
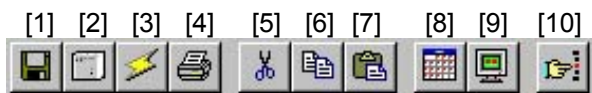
(1) Toolbar buttons

Fig. 5.4 Toolbar in Position Data Edit Window

[1] Save to file
     Save data to a file.

[2] Send to controller
     Send (write) data to the controller.

[3] Reload position data

Reload position data from the controller and then refresh the displayed data.

If the position data has been changed in the position edit window (when "Modified" is shown in the status bar), clicking this button will display the warning message shown in Fig. 5.5.

* **Take note that if you select Yes in this window, data that have been edited but not yet been written to the controller will be lost.**
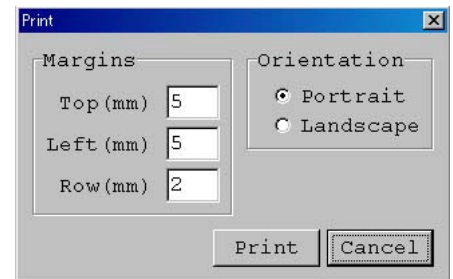

Fig. 5.5 Warning Message

[4] Print

Output position data to the printer.

Print setting window is displayed. Set top, left and row margins (mm) and printing orientation, and then print.

[5] Cut

Cut the range of data selected in the position data input area and save it to the clipboard.

* You can select data in units of rows.

[6] Copy

Copy to the clipboard the range of data selected in the position data input area.

* You can select data in units of rows.

[7] Paste

Paste the data in the clipboard to the selected position.

[8] Switch display

Change the display mode of the position data input area from normal to detail (or vice versa).

(Fig. 5.18, Fig. 5.19) or (Fig. 5.20, Fig. 5.21)

[9] Show monitor window

Display the status monitor window of the axis you are currently editing.

This window is the same as the one you can open by selecting **Status** from **Monitor** in the main menu of the main window.

[10] Divide position data equally

Clicking this button will display the window shown in Fig. 5.6.

Set appropriate values in **Start Position No.** and **End Position No.**, select an appropriate option under **Fraction processing**, and then click OK. The distance between the specified two positions will be divided equally. (This function is called "Equal division function")

* Clicking this button while multiple rows are selected in the position data input area will cause the software to automatically populate the **Start Position No.** and **End Position No.** field.

    Start Position No.:   First position in the selected range
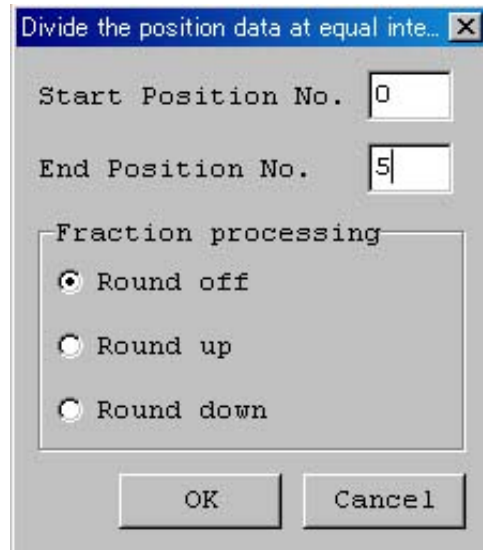   End Position No.:   Last position in the selected range

Fig. 5.6 Divide Position Data at Equal Intervals Window

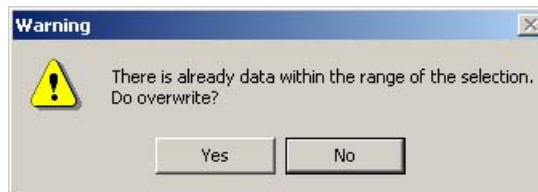If data has been input between the specified two positions, the warning message in Fig. 5.7 will be displayed.

Fig. 5.7 Warning Message

The input fields of position data generated by the equal division function, other than Position and Comment, will be populated by the corresponding values for the position specified in Start Position No. The Comment field will be cleared.

* The equal division function can also be implemented from the pop-up menu (Fig. 5.8) displayed by right-clicking the position data input area.
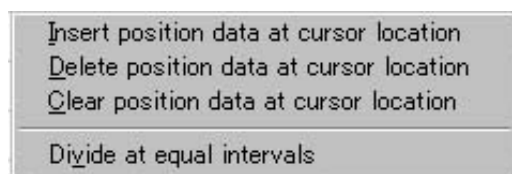

Fig. 5.8 Pop-up Menu

(2) Current position/alarm code

The current position of the axis you are editing (unit: mm) and the associated alarm code, if any, are shown.
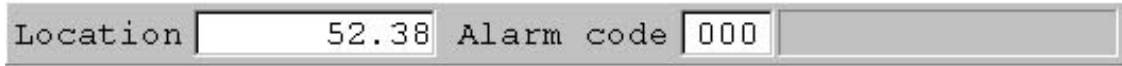

Fig. 5.9 Current Position/Alarm Code

For emergency stop, "Emergency stop" is displayed on the current position and alarm code displaying part.
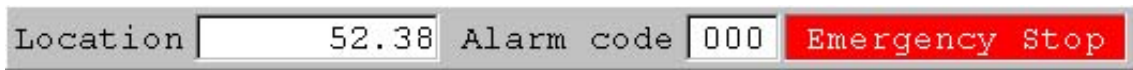

Fig. 5.10 Emergency stop indication

When motor voltage lowers, "Motor volt. low" is displayed on the current position and alarm code displaying part.
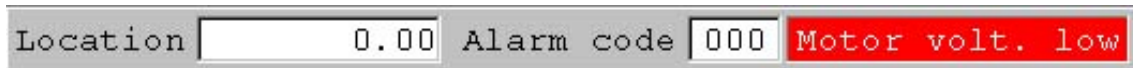

Fig. 5.11 Motor voltage low indication

* When the motor voltage low is displayed, it means a state that the motor drive power is shut off.

(3) Jogging/Inching operation controls

Select **Jog** or **Inc.** (by adding a check mark to the corresponding checkbox) and use the Fw (+)/Bw (-) buttons to move the axis.

Select the jogging speed from "1," "10," "30," "50" and "100" [mm/sec] using the track bar.

In the inching mode, select the feed pitch from "0.03," "0.10" and "0.50" [mm] using the applicable radio button.

A click will move the axis by the specified pitch, while holding down the mouse button will cause the axis to jog at 1 mm/sec after 2 second. If the mouse button is held continuously, the jogging speed will increase from "10" to "30" and to "100" [mm/sec] every second.

If homing has been completed, clicking Teach will load the current position to the point data input area.

* In the position data input area, the loaded data will be input to the row where the cursor is located. Check the cursor position before clicking Teach.
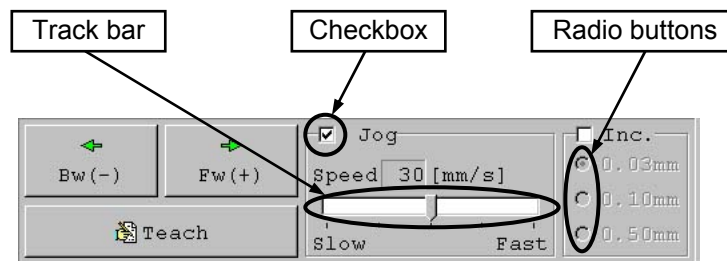

Fig. 5.12 Jogging/Inching Operation Controls

(4) Positioning (test operation mode)

You can move the axis to the position corresponding to the cursor row in the position data input area.

The moving speed is calculated by multiplying the speed set in the position data input area with the speed factor.
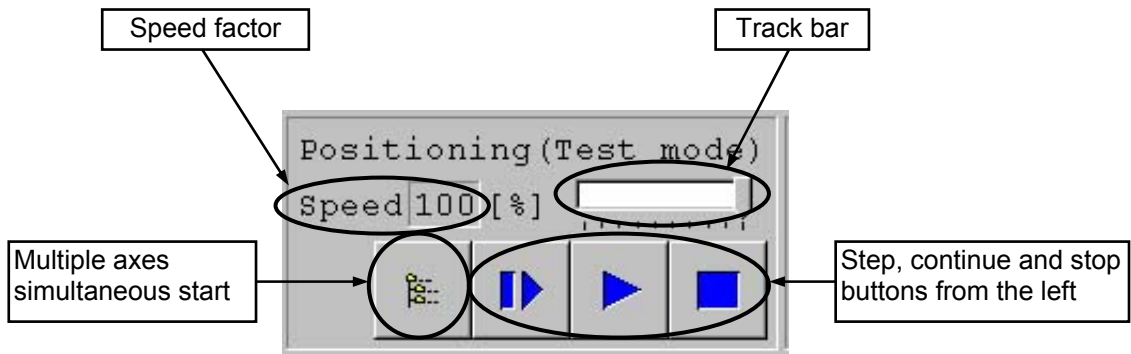
(The speed factor can also be set by the track bar.)

Speed factor

Track bar

Positioning(Test mode)

Speed 100 [%]

Multiple axes simultaneous start

Step, continue and stop buttons from the left

Fig. 5.13 Positioning

Clicking ▐▶ (step) will move the axis by one position, while clicking ▶ (continuous move) will cause the axis to move continuously by looping within the block of specified position data.

Clicking ▶ again while the axis is moving continuously will stop the axis when it reaches the next position.

Clicking ■ will stop the axis (the axis will start decelerating the moment the button is clicked and continue to decelerate until it finally stops.)

* If the data loaded from the controller has been changed, write the modified data again to the controller beforehand.
* While this mode is active, data cannot be entered in the jogging/inching control groups or point data input area.

● When PCON, ACON, SCON and ERC2 are connected, the maximum speed becomes the safety speed of 250mm/sec or less if the MANU operation mode is set to the teach mode 1 (safety speed effective).

Simultaneous movement of multiple axes

Multiple axes simultaneous start button

You can use this button to simultaneously move the selected axes, from among the multiple axes currently connected by link cables.

Click the multiple axes simultaneous start button in the positioning setting area.

Fig. 5.14 Multiple Axes Simultaneous Start Button

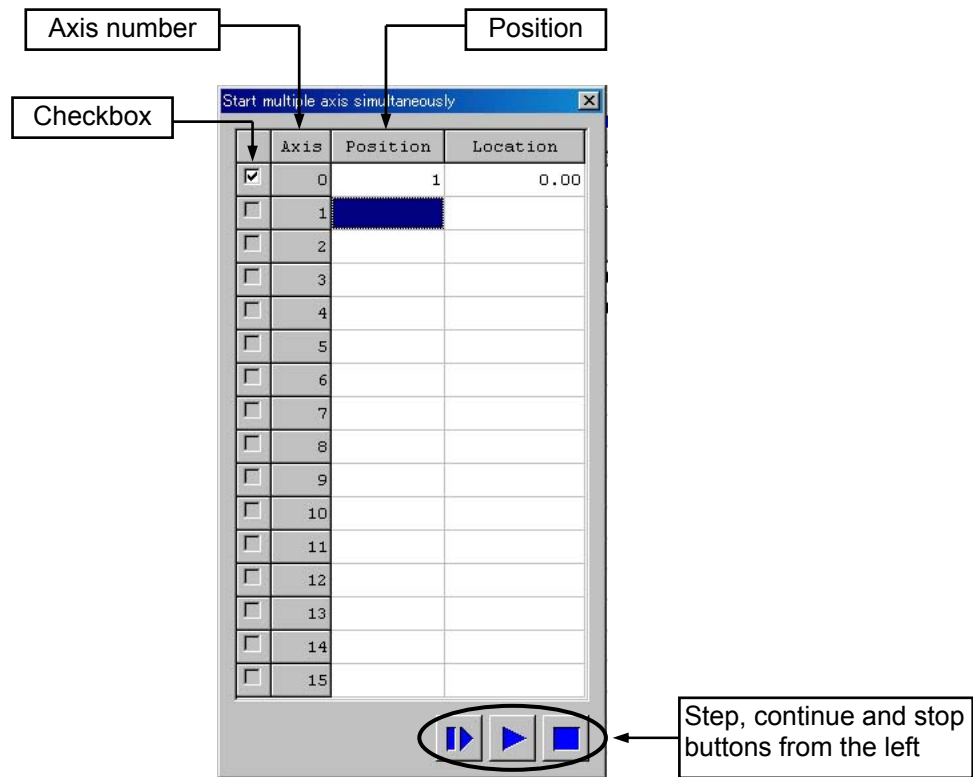The "Start multiple axes simultaneously" window will open.

| Axis number | Position |

| Checkbox |

	Axis	Position	Location
☑	0	1	0.00
☐	1		
☐	2		
☐	3		
☐	4		
☐	5		
☐	6		
☐	7		
☐	8		
☐	9		
☐	10		
☐	11		
☐	12		
☐	13		
☐	14		
☐	15		

Step, continue and stop buttons from the left

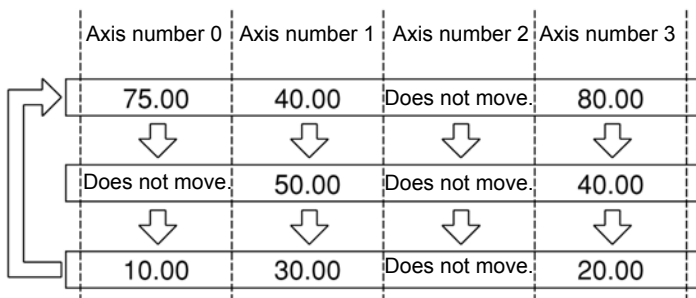Fig. 5.15 Start Multiple Axes Simultaneously Window

Checkbox:	The axes with a check mark in this box will move. The selectable checkboxes are those of axes whose point edit window is currently open.
Axis:	Axis number.
Position:	Set a position number in one field. This position determines the movement range for each specified axis based on a routine similar to continuous movement, and the axis will move over the determined range. All selected axes will move to this position. (If no position data is set, the axes will not move.)
Location:	The current position of each axis is shown.
Step movement button:	Clicking this button will move the axes to the next position and complete the movement.
Continuous move button:	Move the axes continuously. If this button is clicked during continuous movement, the axes will stop moving after they have reached the current positions.
Stop button:	Clicking this button will cancel the current movement and stop the axes on the spot.

* Step movement and continuous movement are activated at a speed set with the position data of each axis.

Example of use) When the "Start multiple axes simultaneously" window is set as shown in Fig. 5.15 and position data for each axis is set as follows

Axis number / Position	0	1	2	3
0	0.00	0.00	0.00	0.00
1	25.00	*	*	10.00
2	10.00	30.00	60.00	20.00
3	75.00	40.00	20.00	80.00
4	*	50.00	30.00	40.00
5	*	*	50.00	10.00
6	*	*	40.00	25.00

Clicking ▶ (continuous movement) will move the actuators as follows.

Axis number 0	Axis number 1	Axis number 2	Axis number 3
75.00	40.00	Does not move.	80.00
Does not move.	50.00	Does not move.	40.00
10.00	30.00	Does not move.	20.00

After all specified axes have completed their movement, they will move to the next positions.

- The actuator corresponding to axis number 2 does not move, because its checkbox is not selected.
- The actuators do not move if position data is not set for the corresponding axes.

(5) Program

Just like positioning, this is also a test operation mode. In the program mode, however, you can set a desired sequence of movement. In the position number input area, enter position numbers (0 to 15) or "R" (a symbol specifying a repeat of the preceding numbers), and then click Start.

Up to 17 steps can be specified, including "R."

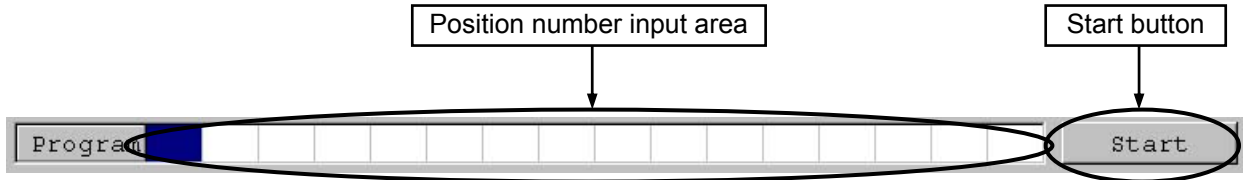If a blank field exists, all subsequent steps are considered invalid. All steps after "R" are also considered invalid.

Fig. 5.16 Program Mode

Clicking Start will start the specified movement, and the button text will change to Stop. The button text will change back to Start when the movement ends or the button is clicked again. The sequence set in the program mode will not be saved to the controller or a file.

(6) Servo, Home and Alarm buttons

Fig. 5.17 Servo, Home and Alarm Buttons

[1] Servo button

This button lets you turn on/off the servo.

When the servo is on, a blue lamp illuminates on the button.

After homing, you can turn off the servo, move the actuator manually and then click Teach to capture a desired position.

> **Note:** Closing the software when the servo is off will keep the servo in the off state, thus disabling the PIO operation.
> To reset the servo, restart the software with the controller connected, or reconnect the controller power.

[2] Home button

This button lets you perform homing.

Once homing is complete, a green lamp will illuminate on the button.

[3] Alarm button

This button lets you reset an alarm.

Note that an alarm can be reset only when the servo is off and the cause of the alarm has been removed.

While an alarm is present, a red lamp remains lit on the button.

(7) Position data input area: PCON, ACON, SCON and ERC2

Input the position data.

It is normally possible to input five items of "Position," "Speed," "Acceleration (ACC)," "Deceleration (DCL)" and "Comment," however, it becomes further possible to input items of "Push," "Threshold (LoTh)," "Range," "Zone+," "Zone-", "Acceleration and deceleration (Acc/Dcl) mode," "Incremental (ABS/INC)," "Command (Cmnd) mode" and "Stop mode" by switching to detailed indication with the "Indication switching" button 🖩.

As shown in the table, the zone+, zone-, threshold, acceleration and deceleration mode, stop mode are enabled or disabled depending on the type of controller.

List of ON/OFF of Position Table According to Model

Position Table		Zone +/-	AccDcl Mode			Stop Mode	
			Trapezoid	S-shape	First-order Delay	Full Servo	Auto Servo OFF
ERC2	○	PIO pattern: 3	○	×	×	○	○
ERC2-SE	○	-	○	×	×	○	×
PCON-C/CG/CF	○	PIO pattern: 0, 1, 2, 4, 5	○	×	×	○	○
-CY	○	PIO pattern: 1	○	×	×	○	○
-SE	○	-	○	×	×	○	×
ACON-C/CG	○	PIO pattern: 0, 1, 2, 4, 5	○	○	○		○
-CY	○	PIO pattern: 1	○	○	○		○
-SE	○	-	○	○	○		×
SCON positioner	○	PIO pattern: 0, 1, 2, 4, 5	○	○	○		○

No	Position [mm]	Speed [mm/s]	ACC [G]	DCL [G]	Comment
0	0.00	100.00	0.30	0.30	
1	50.00	100.00	0.30	0.30	
2					
3					
4					
5					
6					
7					
8					

Fig. 5.18 Position Data Input Area (Normal Mode)

No	Position [mm]	Speed [mm/s]	ACC [G]	DCL [G]	Push [%]	LoTh [%]	Pos.band [mm]	Zone + [mm]	Zone − [mm]	ACC/DCL mode	ABS INC	Cmnd Mode	Stop Mode	Comment
0	10.00	125	0.30	0.30	0	0	0.01	0.00	0.00	0	0	0	0	
1	145.00	125	0.30	0.30	0	0	0.01	0.00	0.00	0	0	0	0	
2	70.00	125	0.30	0.30	0	0	0.01	0.00	0.00	0	0	0	0	
3														
4														

Fig. 5.19 Position Data Input Area (Detail Mode)

[1] No.   Indicates the position data number.

[2] Position: Input the target position to move the actuator to, in [mm].
- Absolute Coordinates: Input the target location by determining the distance between the original point and target position. No negative value can be input.
- Relative Coordinates: Input the target location by determining the distance between the current position and target position. Any negative value can be input (if coordinates are in the negative direction).

Note: The input value may be rounded off to a multiple of minimum resolution of the controller. (When obtaining data from the controller)

[3] Vel: - Input the speed at which the actuator will be moved, in [mm/sec].
                   The initial value will depend on the actuator type.

[4] Acc/Dcl: Input the acceleration/deceleration at which the actuator will be moved, in [G].

Basically, use acceleration/deceleration within the catalog rated value range.

The input range allows larger value input than the catalog rated values, on the assumption that the tact time will be reduced if the transfer mass is significantly smaller than the rated value.

Make the numeric value smaller if transfer work vibrates and causes trouble during acceleration/deceleration.
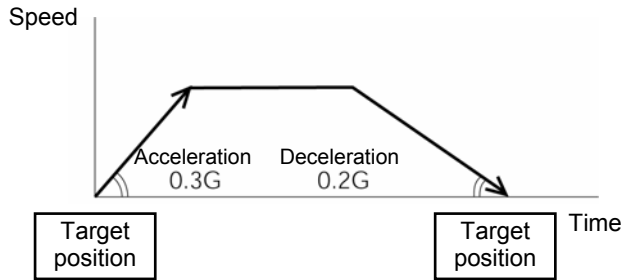
The acceleration will become sudden if the numeric value is made larger, and it will become gradual if the numeric value is made smaller.

Caution:	Enter appropriate values for Vel and Acc/Dcl in such a way as to prevent excessive impact or vibration from being applied to the actuator in consideration of the installation conditions and the shape of transferred work by referring to the "List of Actuator Specifications" in the Appendix. Increasing such values largely relates to the transfer mass and the actuator characteristics vary depending on the model, consult IAI regarding the input-limiting values.

[5] Push: - Select the positioning operation or push operation.

The default value is "0."

0:                Normal positioning operation

Other than 0:   Indicates the current-limiting value and indicates the push operation.

[6] LoTh: - This field is invalid.

The default value is 0.

[7] Range: - The "positioning operation" and "push operation" have different meanings.

Positioning operation:
However, it defines the width of the position complete signal for the 3-point type of PCON-C/CG, ACON-C/CG, and SCON and the proximity switch type of PCON-CY and ACON-CY.
It defines the distance to the target position from a position at which the position complete signal turns ON.
The default value is 0.1 mm.

3-point type and proximity switch type

Position complete signal

ON

OFF

Positioning width

Target position
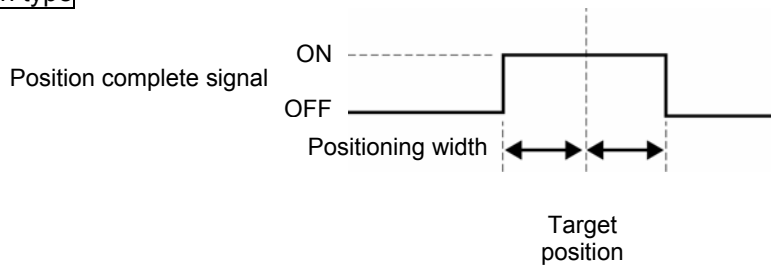
Standard type

Since increasing the positioning width value hastens the next sequence operation, it becomes a factor for tact time reduction. Set the optimum value by considering the balance of the entire equipment.

Timing of position complete signal turning ON

Positioning width
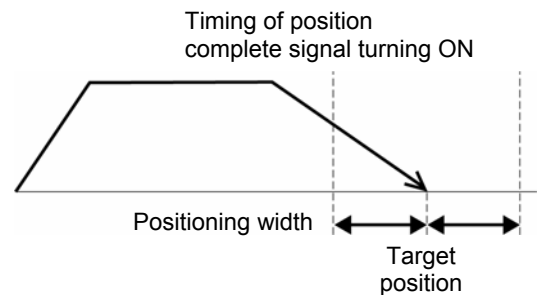
Target position

Push operation:
It defines the maximum push amount from the target position in the push operation.
Set the positioning width in such a way as to prevent positioning completion before the actuator contacts work by considering mechanical variations of work.

Position at which the position complete signal turns ON when the actuator contacts work and push completion is judged

Work

Positioning width (maximum push amount)
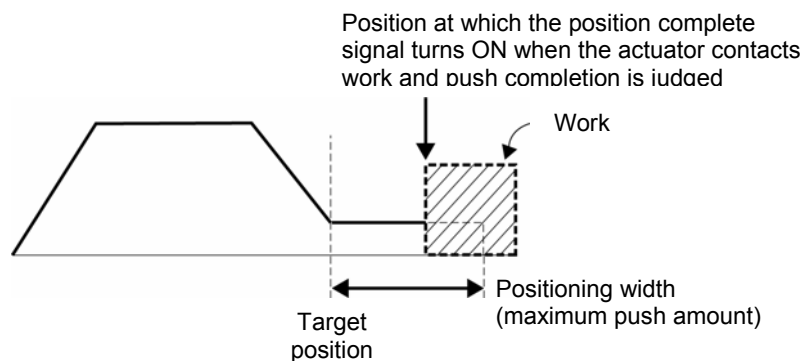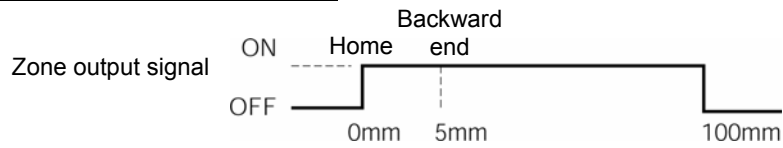
Target position

[8] Zone +:
[9] Zone -:

- It defines the zone where the zone output signal of the standard type turns ON.
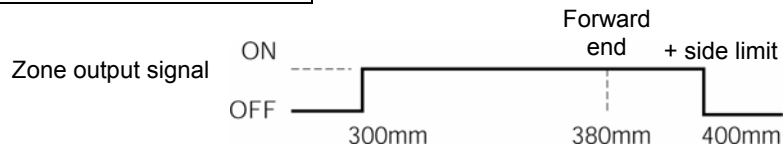 Individual setting is available for each target position to give flexibility.

[Setting example]

No.	Position [mm]	Zone+ [mm]	Zone- [mm]	Note
0	5.00	100.00	0.00	Backward end
1	380.00	400.00	300.00	Forward end
2	200.00	250.00	150.00	Midpoint

Movement command to backward end

Zone output signal

ON
OFF

Home Backward end

0mm 5mm 100mm

Movement command to forward end

Zone output signal

ON
OFF

Forward end + side limit

300mm 380mm 400mm

Movement command to midpoint

Zone output signal

ON
OFF

Midpoint

150mm 200mm 250mm
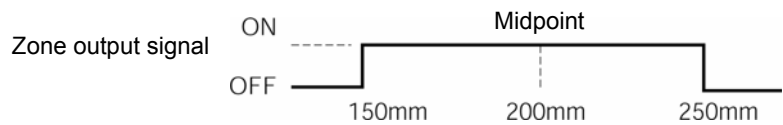
[10] Acc/Dcl Mode:

- It defines the acceleration/deceleration characteristics.
  The default value is 0.
  0: Trapezoid pattern
  1: S-shaped motion
  2: First-order delay filter

Trapezoid pattern

Speed

Acceleration Deceleration

Time

* Set the acceleration and deceleration in the "Acc" and "Dcl" fields of the position table.

S-shaped motion

A curve, which is gradual at the beginning of acceleration but rises sharply halfway, is drawn. Use it in the applications for which you want to set the acceleration/deceleration high due to tact time requirement but desire a gradual curve at the beginning of movement or immediately before stop.
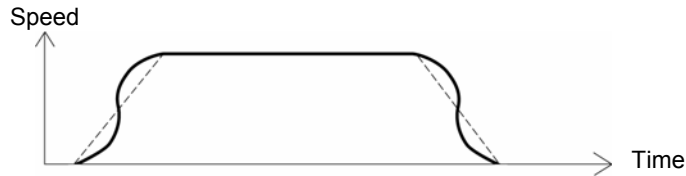
* Set the degree of the S-shaped motion with the parameter No. 56 [S-shaped motion ratio setting]. The setting unit is % and the setting range is between 0 and 100.
  (The above is the image graph when 100% setting is made.)
  If "0" is set, the S-shaped motion becomes invalid.
  However, it will not be reflected in jogging/increment movement by PC or Teaching Pendant operation.
  (Note) It cannot be set for the ERC2 or PCON controller. The parameter No. 56 is reserved.

First-order delay filter

More gradual acceleration/deceleration curves are drawn than the linear acceleration/deceleration (trapezoid pattern).
Use this in the applications by giving micro vibrations to work during acceleration/deceleration not desired.
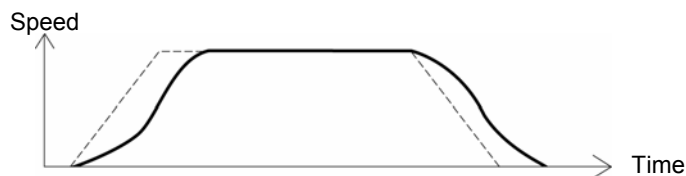
* Set the degree of the first-order lag with the parameter No. 55 (constant for the position command first-order filtering). The setting unit is 0.1 msec and the setting range is between 0.0 and 100.0.
  If "0" is set, the first-lag filter will become invalid.
  However, it will not be reflected in jogging/increment movement by PC or Teaching Pendant operation.
(Note)   It cannot be set for the ERC2 or PCON controller. The parameter No. 55 is reserved.

[11] ABS/INC   - Select either the absolute or incremental positioning.

The factory setting is 0.

0: Absolute positioning

1: Incremental positioning

> **Warning:** Always specify absolute coordinates for the 3-point type of PCON-C/CG, ACON-C/CG, and SCON-C and the proximity switch type of PCON-CY and ACON-CY.
> If you specify relative coordinates, a position data error will occur.

[12] Cmnd Mode: - This field is invalid.

The factory setting is 0.

[13] Stop Mode: - It defines the power saving method on standby after completion of positioning to the target position set in the "Position" field of the position number.

0: Invalid power saving method   * The default setting is 0 (invalid).

1: Auto servo OFF method. Delay time defined with the parameter No. 36

2: Auto servo OFF method. Delay time defined with the parameter No. 37

3: Auto servo OFF method. Delay time defined with the parameter No. 38

4: Full servo control method

Full servo control method

The holding current can be reduced by servo-controlling the pulse motor.

The degree of reduction varies depending on the actuator model, load condition, etc., but the holding current decreases approximately by a factor of 1/2 to 1/4.

No displacement occurs since this method maintains the servo ON status.

The actual holding current can be checked on the monitoring window of PC software.

Auto servo OFF method

When a given length of time has elapsed after completion of positioning, the servo OFF status is automatically entered.

(Since the holding current does not flow, the power consumption can be saved by the same amount.)

When a movement command is subsequently given from PLC, the status returns to the servo ON and the actuator starts to move.

T: Delay time (sec) until the servo OFF status is entered after completion of positioning
It is set with the parameter.
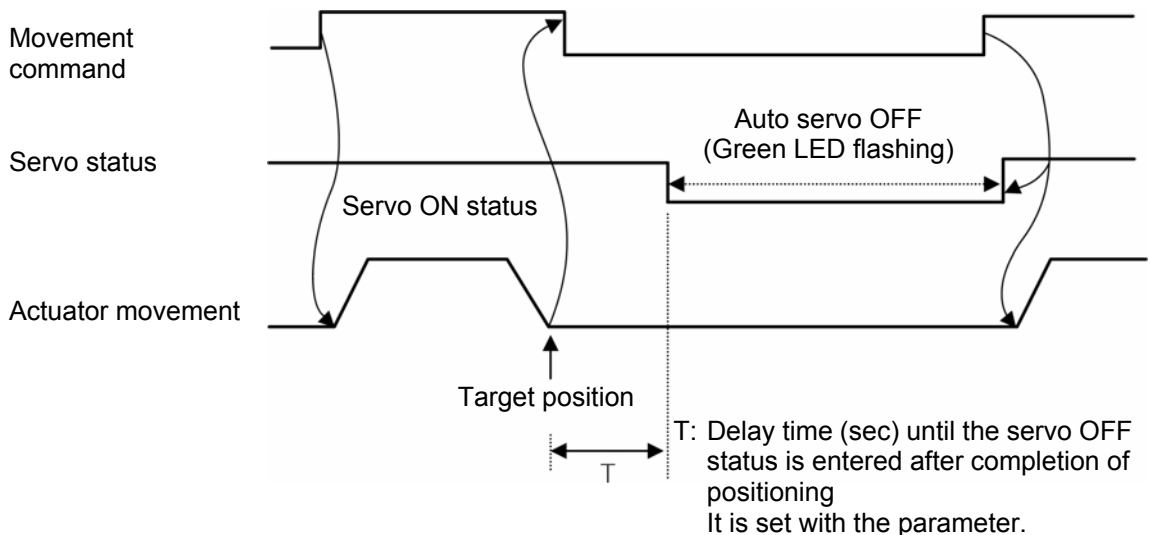
(8) Position data input area: RCP, RCS, E-Con, RCP2 and ERC

Enter position data in this area.

It is normally possible to input four items of "Position," "Speed," "ACC" and "Comment," however, it becomes further possible to input items of "Push," "Pos. band," "MAX ACC," "ABS INC" by switching to detailed indication with the "Indication switching" button ![button].

No	Position [mm]	Speed [mm/s]	ACC [G]	Comment
0	10.00	125	0.30	
1	145.00	125	0.30	
2	70.00	125	0.30	
3				
4				
5				
6				
7				
8				

Fig. 5.20 Position Data Input Area (Normal Mode)

No	Position [mm]	Speed [mm/s]	ACC [G]	Push [%]	Pos.band [mm]	MAX ACC flag	ABS INC	Comment
0	10.00	125	0.30	0	0.10	0	0	
1	145.00	125	0.30	0	0.10	0	0	
2	70.00	125	0.30	0	0.10	0	0	
3								
4								
5								
6								
7								
8								

Fig. 5.21 Position Data Input Area (Detail Mode)

[1] No.   Shows position data No.

[2] Position: The desired move location from home in millimeters.
- Absolute Positioning:
  Moves the actuator to the desired location in reference to the home location. Inputting negative values is not possible.
- Relative Positioning:
  Moves the actuator to the desired position in reference to the current position. Inputting negatives values is possible. (during negative direction of the display coordinate)

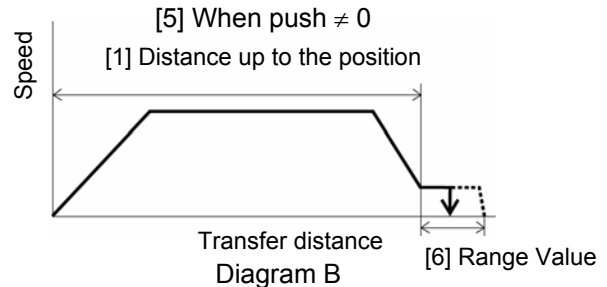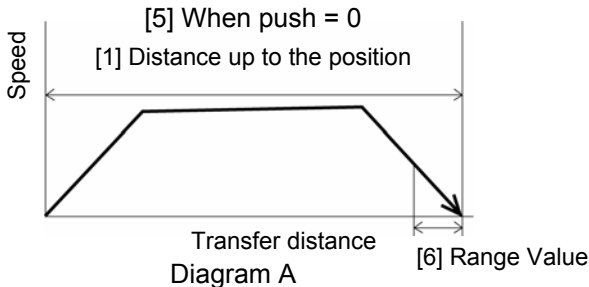| **Caution:**	There are cases when the input value may be rounded off to the least common denominator multiple of the controller.

[3] Vel   - The speed when moving the actuator (mm/sec).
                    The default value will depend on the actuator type.

[4] Acc/Dcl   - The acceleration/deceleration setting for the move to the corresponding position (in G's).
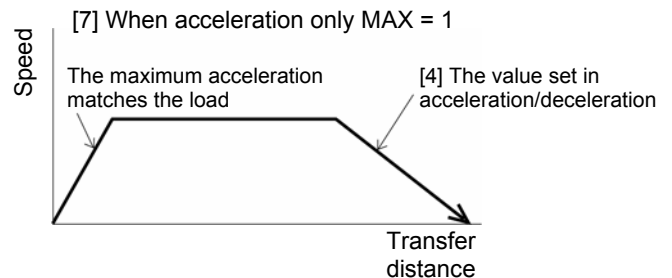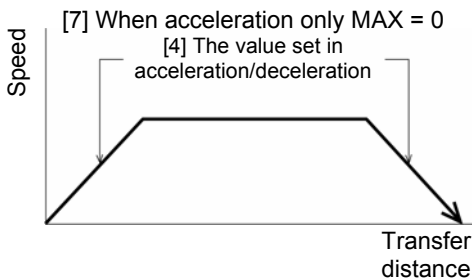   The default value will depend on the actuator type.

[5] Push   - Selects the positioning mode or push mode.

The default value is set as 0.

0:            Positioning Mode (normal movement)

Besides 0:   Push Mode (%)

- In the case of push mode, data number is the motor current control value during push.

Uses a value that matches the actuator type with a maximum value of 100%.

[6] Range   - As for the range, depending on the setting in the push as either 0 or other than 0, this function will vary. [mm]

- The positioning mode uses range value as a location to turn ON the position complete output prior to reaching the actual data.

The default value will depend on the actuator type. (see diagram A)

- The push mode uses the range value as the distance of the push. [mm] (see diagram B)

- When the push direction is towards home, a "minus" sign should be placed in the range column.

[5] When push = 0
[1] Distance up to the position
Transfer distance
Diagram A
[6] Range Value

[5] When push ≠ 0
[1] Distance up to the position
Transfer distance
Diagram B
[6] Range Value

[7] MAX Acceleration

- Selects either the assigned acceleration or the maximum acceleration. Inputs are either 1 or 0.

The default value is set as 0.

0: Assigned acceleration

The value placed in (4) will be used as the actual acceleration value and deceleration value.

1: Maximum acceleration

This will automatically utilize the maximum acceleration matched to the load.

Deceleration remains as the assigned value in (4).

[7] When acceleration only MAX = 0
[4] The value set in acceleration/deceleration
Transfer distance

[7] When acceleration only MAX = 1
The maximum acceleration matches the load
[4] The value set in acceleration/deceleration
Transfer distance

[8] ABS/INC   - Select either the absolute or incremental positioning.

0: Absolute positioning

1: Incremental positioning

5.2 Offline Mode

When editing data after creating new data or loading data from a file, you are editing the data in the offline mode.
In this mode, the window controls relating to axis operation are grayed out, and only the toolbar and point data input area become active.
To read position data from file, click **File** and then select **Open** to display a "File open" window. Or click **File**, point to **Send to controller** and then select **Position**, to display the "File Open" window.
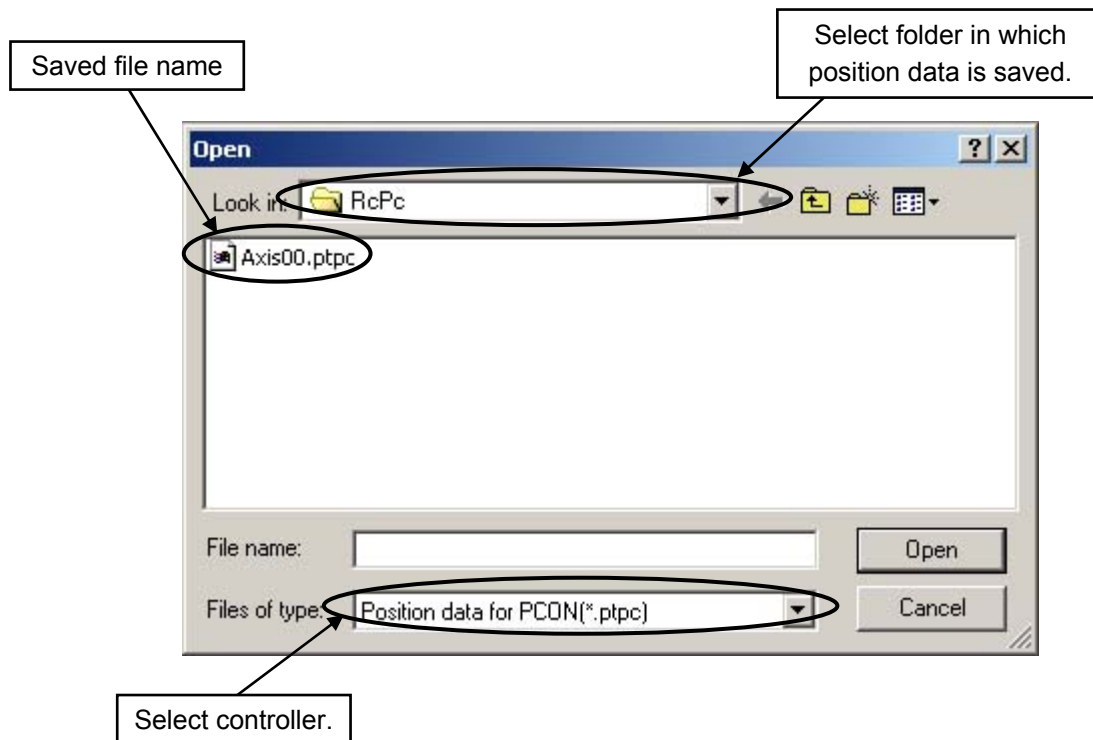
Saved file name

Select folder in which position data is saved.

Select controller.

Fig. 5.22 "File open" window

Select (click) the "File name" you want to open, and click **Open** on the "File Open" window, then the position edit window is displayed.
Once data has been edited, you can save the data to a file or send it to the "connected" controller.
To send the position data read from the file to a controller in "connect" status, click **Position** and then select **Send to controller**, or click the ▣ button on the position edit window.
Select axis number window is displayed, then select axis No. of the controller.
(Refer to 4. Selecting an axis.)
Click **OK** on the select axis number window, then the position data is sent to the controller.

* **The Comment field can only be saved to a file. It cannot be saved to the controller.**

6. Editing Parameters

To load parameter data from the controller, click **Parameter** and then select **Edit** from the main menu, or click 🖳
in the toolbar. In the "Select axis number" window, select the axis number corresponding to the axis whose
parameters you want to edit. (Refer to 4, "Selecting an Axis.")
To read a parameter from the file, click **File** and then select **Open** to display a "File open" window. Or click **File**,
point to **Send to controller** and then select **Parameter**, to display the "File Open" window.
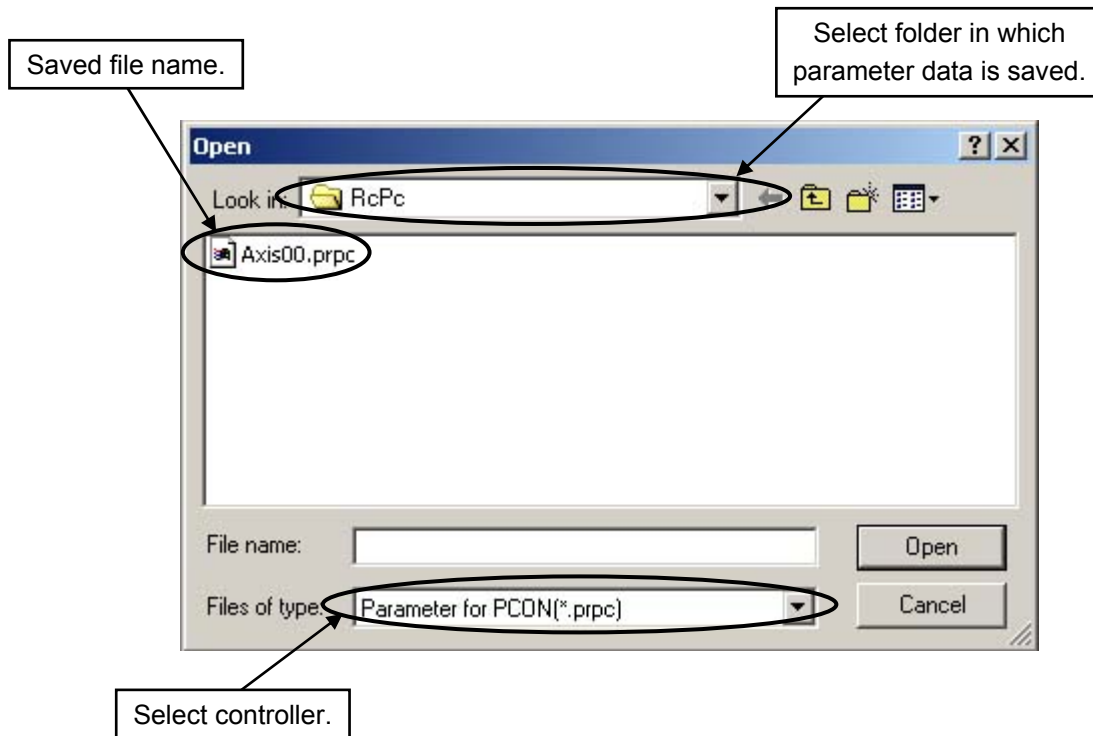
Fig. 6.1 "File open" window

Select (click) "File name" you want to open, and click **Open** on the "File Open" window, then the editing parameters
window is displayed.

You can load data from the controller or a file and edit the loaded data.

Fig. 6.3 is a display example when the PCON-CY controller is connected.

You can also print the loaded data.

Edited data can be sent to the controller or saved to a file.

Edited parameters that have been sent to the controller will become effective after the controller power is
reconnected.

To send data to the controller, click **Parameter** and then select **Send to Controller** from the main menu, or click 🔲
in the toolbar of the parameter edit window.

To send parameter read from the file to the controller, click **Parameter** and then select **Send to controller**, or click the ▣ button on the editing parameters window.

Select axis number window is displayed, then select axis No. of the controller.
(Refer to "4. Selecting an axis.")

Click **OK** on the select axis number window, then the following warning window is displayed. Click **Yes**, then the parameter is sent to the controller.
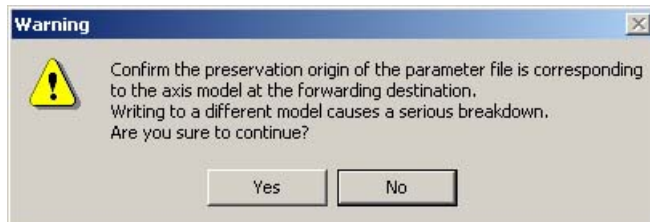
Fig. 6.2 Warning

Fig. 6.3 Editing parameters window

Note: While the position edit window is open, the editing parameters window cannot be opened.
When the ▣ button is clicked, the select axis number window is displayed, but axis to be selected is not displayed.

Depending on the controller model, a confirmation window (Fig. 6.4) may be displayed after parameters have been sent to the controller, asking if you want to restart the controller (reset the software).
(This window appears only when the controller to which data has been written supports the software reset function. (Except RCP, RCS and E-Con controllers.))
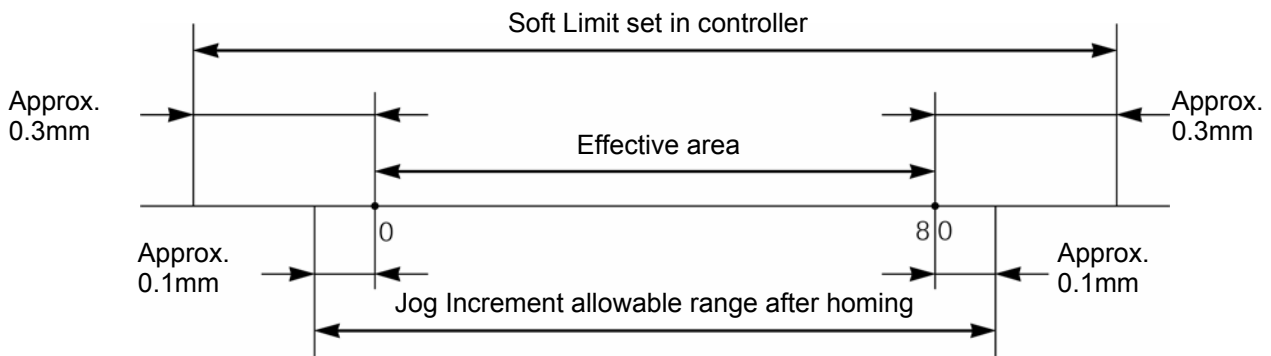

Fig. 6.4 Controller Restart Confirmation Window

- If you want to change the soft limits, set values corresponding to 0.3 mm outside of the desired effective range.

    Example) To set the effective range to 0 to 80 mm
            + soft limit: 80.3
            - soft limit: -0.3

- In the case of the RCP, RCS, E-Con, RCP2 and ERC controller, if the homing direction is changed, all position data currently input will be cleared. Before changing the homing direction, therefore, back up the data, if necessary.

- The homing direction cannot be reversed for rod-type actuators (RS/RM type) only.

Note: After parameters have been changed, reconnect the controller power or reset the software (if the controller supports the software reset function). Parameters will be rewritten simply by turning the emergency stop switch or PORT switch to OFF and then ON again, but the new value may not become effective depending on the parameter.

* **For detail of each parameter, refer to the controller operation manual.**

7. Monitoring

You can monitor various statuses, controller error list, and velocity/current waveforms (Except RCP, RCS and E-Con controllers).

7.1 Status Monitor Window

To monitor various statuses, click **Monitor** and then select **Status** in the main menu, or 🖥 click in the toolbar. In the "Select axis number" window, select the axis number corresponding to the axis whose statuses you want to monitor. (Refer to 4, "Selecting an Axis.") (Fig. 7.1 shows an example of the display when a PCON-CY controller is connected. Fig. 7.2 shows an example of the display when a RCP2 controller is connected. The displayed information will vary depending on the controller type.)

[In the case of P-CON, ACON, SCON and ERC2]

Axis status - Location - Speed (moving speed) - Alarm code	- MANU: Status (MANU or AUTO) of the manual switch is displayed. Even some machine types which are not equipped with manual switch, such as PCON-CY, indicate MANU.
Internal flags - Power: Main controller power ON/OFF status - Servo: Servo command status - Home Cmplt: Homing completion flag ON/OFF status - Run: Actual servo status - Home check sensor: Indicates that the home check sensor is ON. This is displayed when the actuator is provided with a home check sensor.	- Emergency stop, motor voltage low indication * As shown in Fig. 7.2 and 7.3, this is displayed in the case of emergency stop and motor voltage low. Motor voltage low means a status in which the motor drive source is shut off.

Inputs The ON/OFF status of each PIO input port is shown.	Outputs The ON/OFF status of each PIO output port is shown.

Indication ON/OFF button (axis status, internal flags, current, input, output, special input port)

Indicates ratio to the present current command and rated value.

Indicates status of mode SW etc. (Indicated content depends on machine type.)

Note) The following outputs are not shown even when the controller supports these functions:
- Emergency stop
- Moving
- Battery alarm

Fig. 7.1 Status Monitor

The currently selected PIO pattern number is displayed only when the controller supports the "PIO pattern selection function" (parameter).
* The displayed input and output port names will vary depending on the value set in the PIO pattern selection parameter.
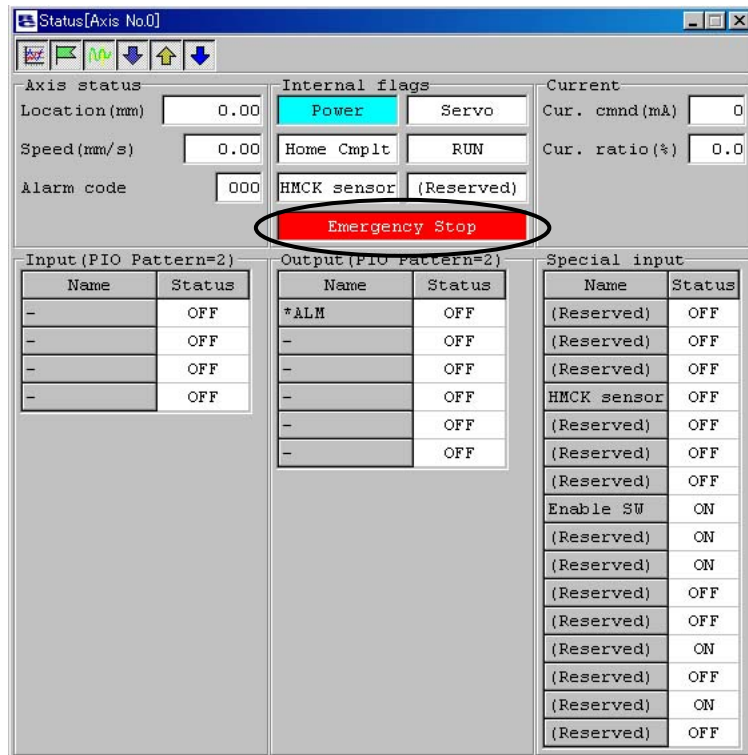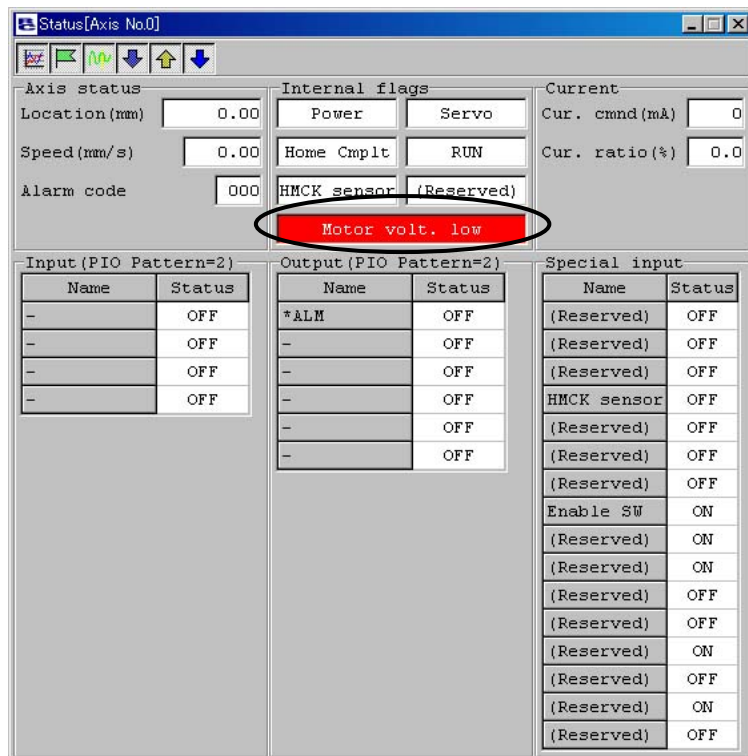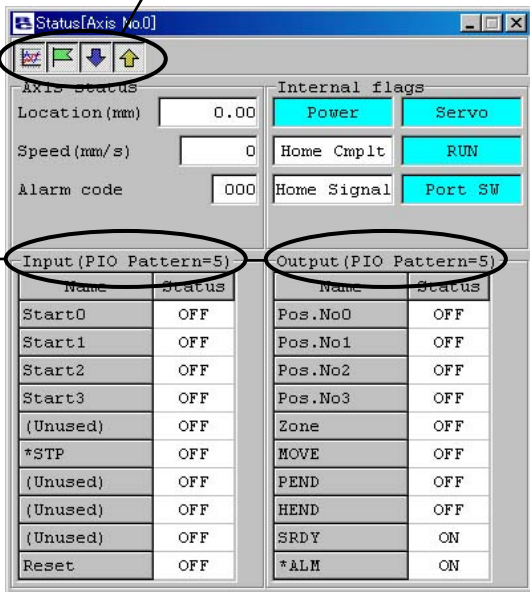
Fig. 7.2 Emergency stop indication

Fig. 7.3 Motor voltage low indication

[In the case of RCP, RCS, E-Con, RCP2 and ERC]

Axis status	Internal flags
- Location - Speed (moving speed) - Alarm code	- Power: Main controller power ON/OFF status - Servo: Servo command status - Home Cmplt: Homing completion flag ON/OFF status - Run: Actual servo status
Inputs The ON/OFF status of each PIO input port is shown.	Outputs The ON/OFF status of each PIO output port is shown.

Indication ON/OFF button (axis status, internal flags, current, input, output from left)

Status[Axis No.0]		
Axis status		**Internal flags**
Location(mm)	0.00	Power / Servo
Speed(mm/s)	0	Home Cmplt / RUN
Alarm code	000	Home Signal / Port SW

Input(PIO Pattern=5)

Name	Status
Start0	OFF
Start1	OFF
Start2	OFF
Start3	OFF
(Unused)	OFF
*STP	OFF
(Unused)	OFF
(Unused)	OFF
(Unused)	OFF
Reset	OFF

Output(PIO Pattern=5)

Name	Status
Pos.No0	OFF
Pos.No1	OFF
Pos.No2	OFF
Pos.No3	OFF
Zone	OFF
MOVE	OFF
PEND	OFF
HEND	OFF
SRDY	ON
*ALM	ON

Note) The following outputs are not shown even when the controller supports these functions:
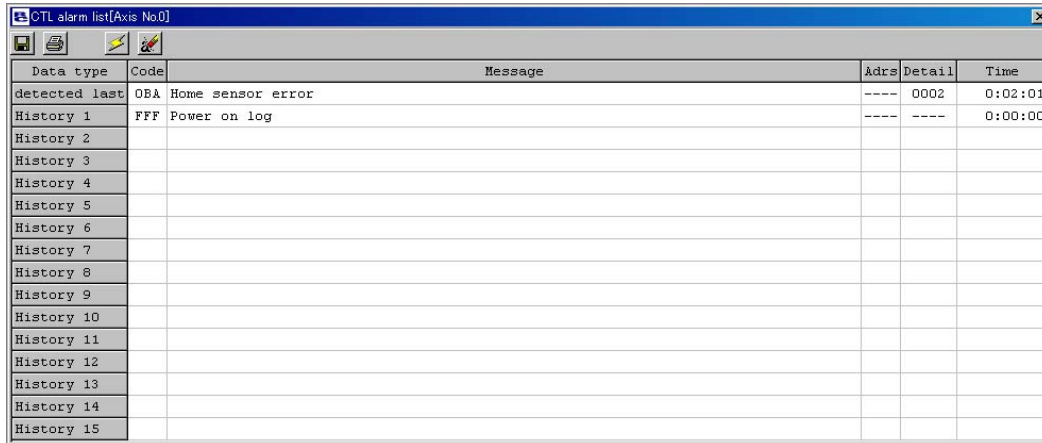- Emergency stop
- Moving
- Battery alarm

Fig. 7.4 Status Monitor

The currently selected PIO pattern number is displayed only when the controller supports the "PIO pattern selection function" (parameter).
* The displayed input and output port names will vary depending on the value set in the PIO pattern selection parameter.

7.2 CTL Alarm List

To monitor the controller error list, click **Monitor** and then select **CTL alarm list** from the main menu, or click [icon] in the toolbar. In the "Select axis number" window, select the axis number corresponding to the axis whose controller error list you want to monitor. (Refer to 4. Selecting an Axis.)

Data type	Code	Message	Adrs	Detail	Time
detected last	OBA	Home sensor error	----	0002	0:02:01
History 1	FFF	Power on log	----	----	0:00:00
History 2					
History 3					
History 4					
History 5					
History 6					
History 7					
History 8					
History 9					
History 10					
History 11					
History 12					
History 13					
History 14					
History 15					

Fig. 7.5 Controller Alarm List Window

(1) Error list

Indicates finally detected warning code, alarm codes for past 8 times and address in which data error occurred in execution (for maker investigation), detail code and occurred time.

(2) Toolbar

[1]　[2]　　　[3]　[4]

Fig. 7.6 Toolbar

[1] Save as
   Save the error list to a file (CSV format).
   * **The saved file cannot be read in this application.**
[2] Print
   Print the error list.
[3] Refresh
   Acquire the error list from the controller again to refresh the information displayed in the window.
[4] Alarm list clear
   Content of the alarm list is not deleted even if the power is turned OFF (ERC2, SCON, ACON and PCON). For this reason, content of the alarm list is deleted by using the alarm list clear. When the alarm list clear is pressed, a warning in Fig. 7.7 is displayed. When **Yes** is clicked, the content of the alarm list is deleted.

Warning

CTL alarm list will be cleared.
Are you sure to continue?

Yes   No

Fig. 7.7 Warning

7.3 Velocity/Current Monitor Window

To monitor velocity/current, click **Monitor** and then select **Velocity/Current** from the main menu, or click ![icon] in the toolbar. In the select axis number window, select the axis number corresponding to the axis whose velocity/current you want to monitor. (Refer to 4. Selecting an Axis.)

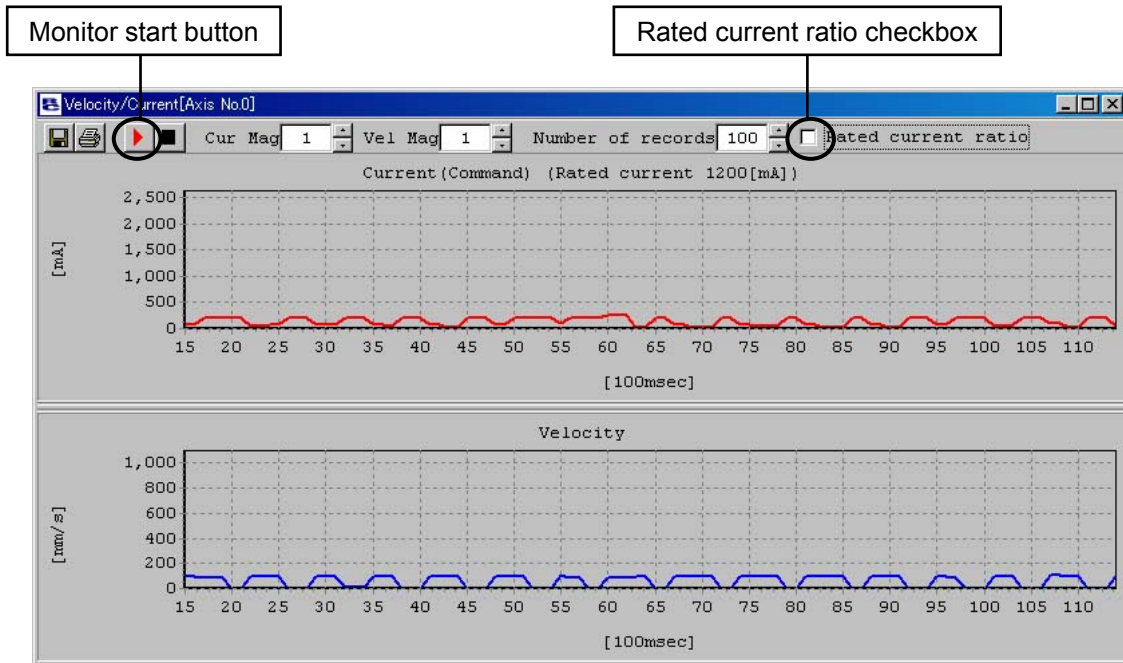The software will start monitoring velocity/current when is ![icon] clicked.

Monitor start button | Rated current ratio checkbox

Fig. 7.8 Velocity/Current Monitor Window

> * **The RCP, RCS and E-Con series do not support this function.**
> **It is supported by the RCP2, ERC, ERC2, ACON and SCON series.**

(1) Current data display
  [1] Current (command value) display (When the **Rated current ratio** checkbox is not selected)
  The vertical axis represents current (command value) [mA], while the horizontal axis represents elapsed time after the start of monitoring [100msec].

  [2] Rated current ratio display (When the **Rated current ratio** checkbox is selected)
  The vertical axis represents rated current ratio [%], while the horizontal axis represents elapsed time after the start of monitoring [100msec].

(2) Velocity data display
  The vertical axis represents velocity [mm/s], while the horizontal axis represents elapsed time after the start of monitoring [100msec].

  * Current data and velocity data are acquired from the controller at the intervals of approx. 100msec. Therefore, changes in current/velocity occurring within these intervals cannot be monitored accurately.
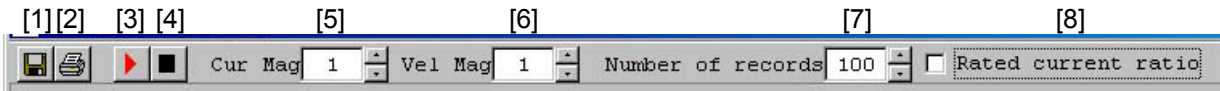
(3) Toolbar

Fig. 7.9 Toolbar

[1] Save as
Save the displayed current data and velocity data to a file (CSV format).
* **Only the range of data displayed in the data display area will be saved.**
* **The saved file cannot be read in this application.**

[2] Print
Print the displayed current and velocity data.

[3] Monitor start button
Start monitoring.

[4] Monitor stop button
Stop monitoring.

[5] Vertical axis magnification change button (current)
Change the vertical axis magnification in the current data display area.

[6] Vertical axis magnification change button (velocity)
Change the vertical axis magnification in the velocity data display area.

[7] Current/speed horizontal axis record number change button
Changes horizontal axis record number of current data indicating part and speed data indicating part.

[8] Rated current ratio indicating check box
Changes data type indicated on the current data indicating part.
- When checked   Rated current ratio indication [%]
- When not checked   Current value (Command value) [mA]

7.4 Setting of Application Window

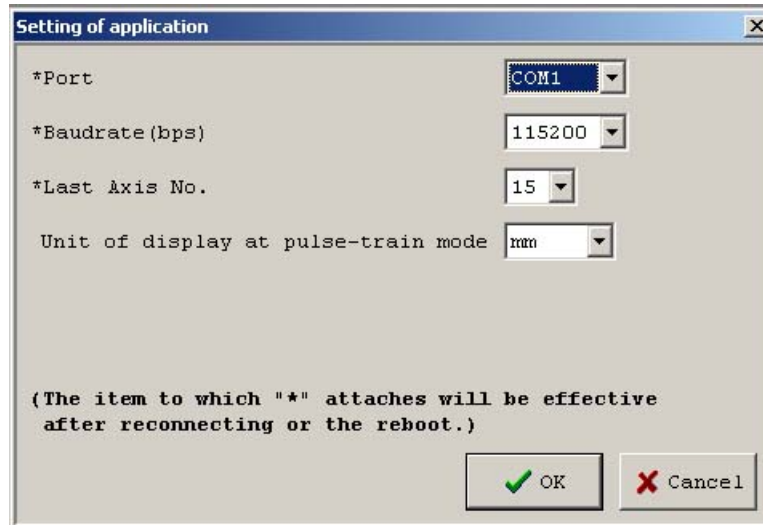Click **Setting** from the main menu, and then select **Application**.

Fig. 7.10 Setting of Application Window

[1] Port

When ▼ is clicked, the serial port list to communicate with the controller is displayed.
Select port from the list.

[2] Baudrate

When ▼ is clicked, the communication baudrate the serial port list is displayed. Select baudrate from the list.

* **The baudrate selected here is used only in the communication between this application and controller. It does not affect the communication speed parameters of the controller.**

[3] Last axis No.

When ▼ is clicked, the axis No. list is displayed. Select axis No. intended for connected axis check.

* **Axes of numbers greater than the value selected here will not be checked for connection. Select an appropriate axis number after checking the axis numbers of the connected axes.**

[4] Unit of display at pulse-train mode

When ▼ is clicked, units of display [mm], [pulse] in pulse-train mode are displayed.

For pulse sequence input controller such as PCON-PL/PO, units such as the current position on the status monitor window (Fig. 7.1) can be changed.

Changing any of the items in [1] to [4] and then clicking OK will display the re-connection confirmation window shown in Fig. 7.11. To reflect the change, click Yes to reconnect the axes.

* **The change will become effective once the application is restarted or the axes are reconnected.**

Fig. 7.11 Re-connection Confirmation Window
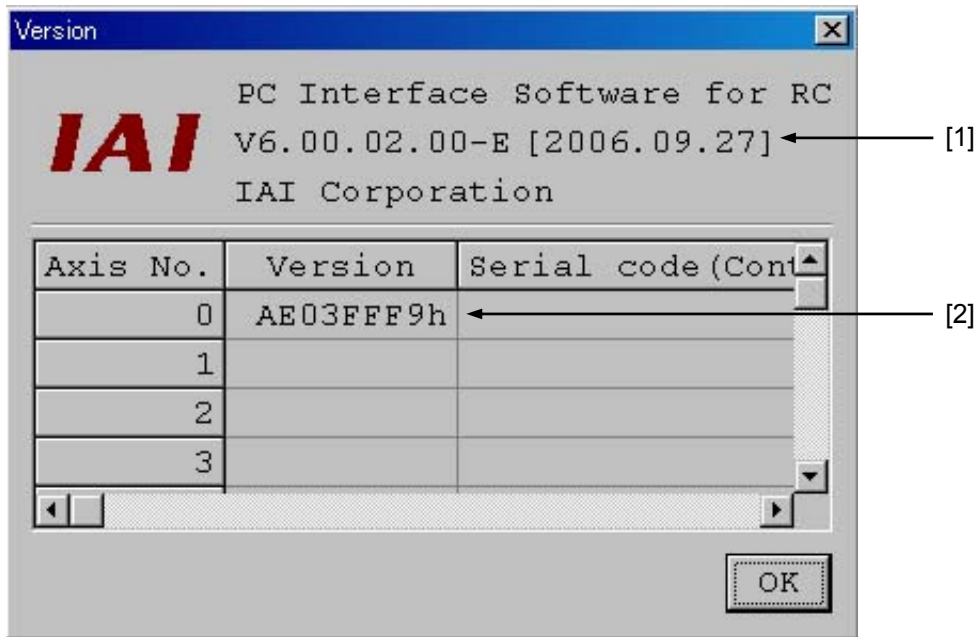
8. Version Information

Fig. 8.1 Version Information

[1] Application version
    The version of this application is shown.

[2] Controller version
    The software version and manufacturing information of each connected controller are shown.
    (Manufacturing information may not be displayed depending on the controller type.)

9. File Extensions

Table 2 List of File Extensions

Model name	Position data file	Parameter file	Backup file
RCP	*.ptr	*.pmr	*.bkr
RCS	*.ptr	*.prr	*.bur
E-Con	* pte	*.pre	*.bue
RCP2	*.ptr2	*.pmr2	*.bkr2
ERC	*.ptre	*.pmre	*.bkre
ERC2	*.ptre2	*.pmre2	*.bkre2
PCON	*.ptpc	*.prpc	*.bkpc
ACON	*.ptac	*.prac	*.bkac
SCON	*.ptsc	*.prsc	*.bksc

Appendix
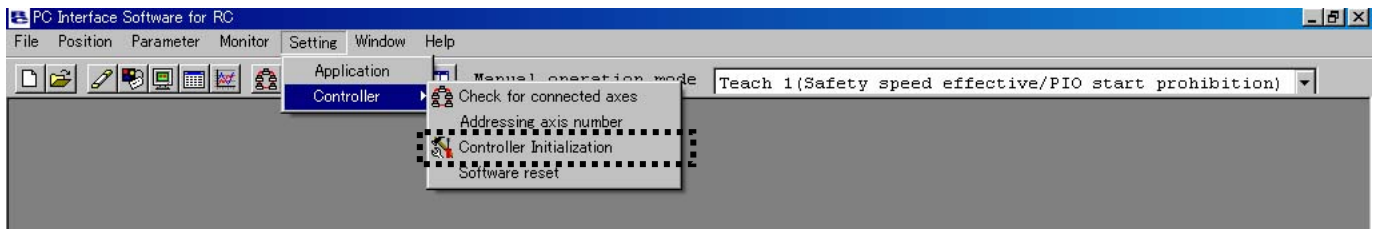## Parameter (factory default setting) initializing method

Note: Parameters (factory default setting) can be initialized only for PCON, ACON, SCON and ERC2 controller.
  : Note that parameters set by user are changed to the factory default parameters when parameters (factory default setting) are initialized.

(1) Click a blank part of the toolbar (Appendix Fig. 1) while pressing the Ctrl key, then password input window as shown in the Appendix Fig. 1 is displayed.


Appendix Fig. 1 Menu bar

Right-click the blank part of the tool bar while pressing Ctrl.
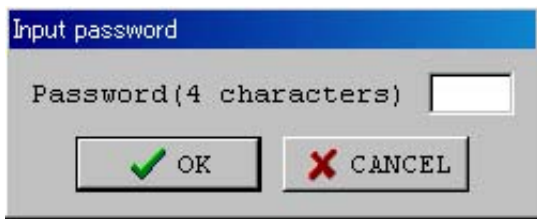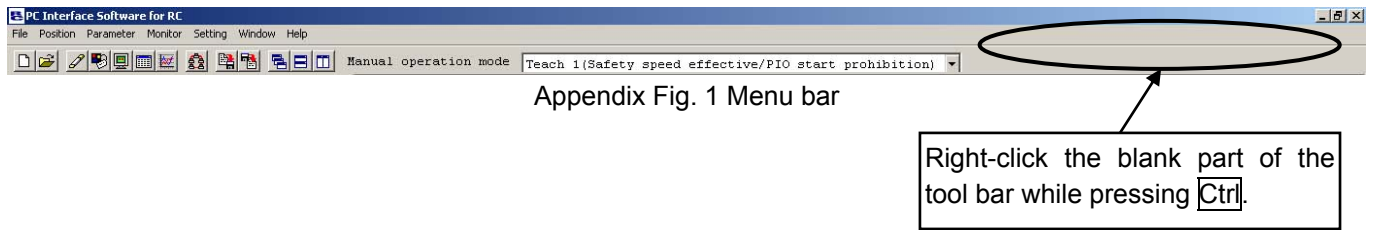
Appendix Fig. 2 Password input window

(2) Input the password (5119) on the displayed password input window, then the "Controller Initialization" (factory default setting) menu is displayed (Appendix Fig. 3).
  * The password inputted once is effective until the application ends.

Appendix Fig. 3 Menu bar (Controller Initialization) (factory default setting)

(3) When the menu "Controller Initialization" (factory default setting) displayed in (2) is selected, a dialog in appendix Fig. 4 is displayed. Click "OK" when one axis is connected. Set axis No. and click "OK" when multiple axes are connected.
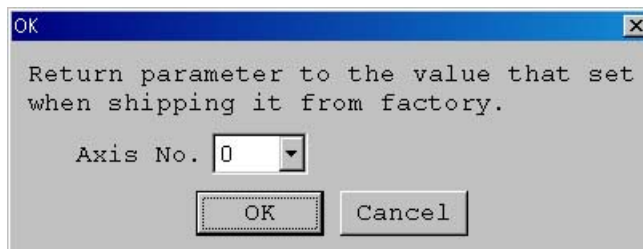
Appendix Fig. 4 Initialization dialog

(4) Then, a warning dialog in appendix Fig. 5 is displayed. If there is no problem, click Yes.

Appendix Fig. 5 Warning dialogs

A warning dialog in appendix Fig. 6 is further displayed when the servo is ON.
If there is no problem, click Yes.

Appendix Fig. 6 Warning dialog

Note:	The encoder parameters cannot be initialized. For this reason, if any actuator different from the factory default setting is connected, an unexpected error may be detected.

IAI
Quality and Innovation

IAI America Inc.

Head Office: 2690W 237th Street Torrance, CA 90505
TEL (310) 891-6015   FAX (310) 891-0815
Chicago Office: 1261 Hamilton Parkway Itasca, IL 60143
TEL (630) 467-9900   FAX (630) 467-9912

Home page: www.intelligentactuator.com

IAI Industrieroboter GmbH

Ober der Röth 4, D-65824 Schwalbach am Taunus, Germany
TEL 06196-88950   FAX 06196-889524