

**RC ROBO
CYLINDER**

E-Con

RCB-101-MW

PC Software
Operating Manual

8th Edition

IAI America, Inc.



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Supported Models

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

Table 1 List of Supported Models

Model name	Supported versions (For each model, all controllers of the specified version and later are supported.)
RCP	V1.0.0.0
RCS	V3.0.0.0
E-Con	V3.0.5.0
RCP2	V4.0.0.0
ERC	V4.0.0.0

* Please check the controller model and the version of this application. If the controller is not supported by the software, the actuator may behave erratically.

The software reset function and velocity/current monitor function are effective on the controllers of version 4.0.0.0 or later.

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1. Before You Begin

1-1 Items Supplied with This Software

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

- [1] Operating manual
- [2] 1 CD containing the software
- [3] Software license agreement (explanation sheet)
- [4] External connection unit (PC cable with RS485 adapter)

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 (DOS/V specification) running Windows and a compatible keyboard.
(*1: Personal computer. Abbreviated as "PC" throughout this manual.)
- [2] Memory
Enough memory to run Windows.
- [3] Monitor
A monitor *1 compatible with the PC.
(*1: May be referred to as "CRT" in this manual.)
- [4] Graphics board
A VGA graphics board or better. (Use of a XGA graphics board or better is recommended.)
- [5] Mouse or other pointing device and mouse driver
A mouse or other pointing device with which you can operate this software comfortably, and an applicable driver.
- [6] Windows
Windows 95, Windows 98, Windows NT, Windows Me, Windows 2000, or Windows XP
- [7] CD ROM Drive
A CD drive unit that reads compact disks.
- [8] Hard disk
The hard disk should have 4 MB or more of free disk space. (The software is run from the hard disk.)

[9] Serial port

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

[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] Insert the compact disk into the CD ROM drive.

[2] Double-click Setup.EXE in disk 1.

[3] The installation program will start. Follow the onscreen prompts to select the applicable installation options.

[4] When the installation program ends, an item named "RoboCylinder" will be created in the **Programs** list displayed from the **Start** menu. This software will launch when **RoboCylinder** is selected.

1-4 Starting the Software

[1] Turn off the power to the controller and connect the controller to the PC using the external connection unit that comes with the software.

[2] Turn on the power to the controller.

[3] Set the port switch on the controller to ON, and start the software.

* This software determines whether it is in the online mode or offline mode based on whether or not the controller and PC are connected when the software is started. The software will not switch to the online mode if the port switch on the controller is set to ON after the software has been started with the port switch set to OFF. To switch the software to the online mode when it is running in the offline mode, use the "Reconnect" function (refer to 3-1 (5) [2], "Controller Setup").

[4] When the "Check for connected axes" window appears, wait for the software to complete the check. Then, enter appropriate information to set up the software in accordance with the configuration of your system.

The "Setting of application" window (Fig. 1) is displayed only once after the software has been installed for the first time. (Refer to the next page.)

1-5 Setting of Application Window

The “Setting of application” window (Fig. 1) is displayed only once after the software has been installed for the first time. In this window, set the information the software needs to communicate with the controller.

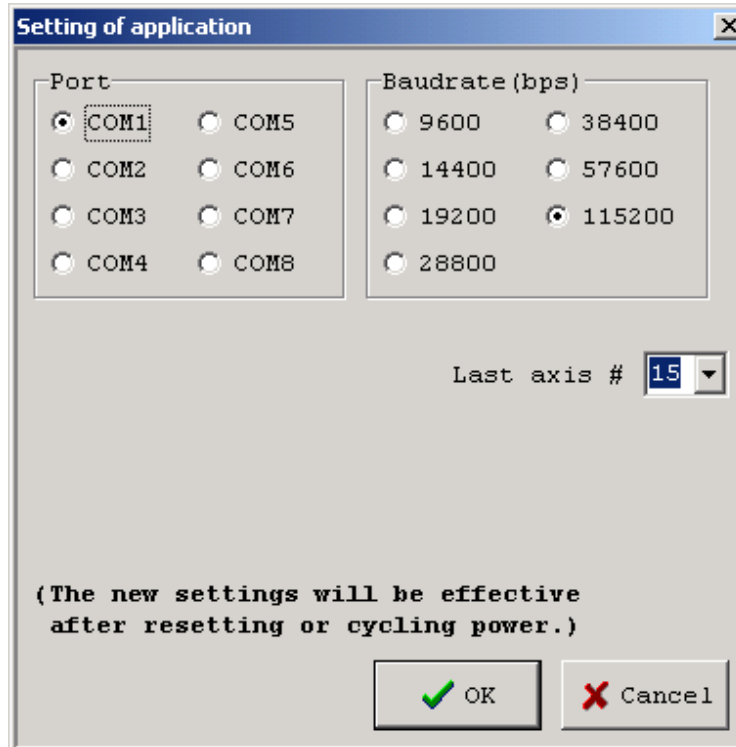


Fig. 1 Setting of Application Window

- [1] Port
From the list, select the serial port to be used to communicate with the controller.
- [2] Baudrate (bps)
From the list, select the baudrate the software will use when communicating with the controller.
* 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 #
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.

After setting the above items, click **OK**. The specified axes will be checked for connection. (The next time you start the software, connected axis check will be performed automatically based on the settings you have just specified.)

* These settings can be changed in the “Setting of application” window (Fig. 7.6). If **Cancel** is clicked, the application will end without checking for connected axes. (The next time you start the software, the “Setting of application” window will be displayed again.)

2. Checking for Connected Axes

The software checks for connection all axes up to the axis specified in the **Last axis #** box of the “Setting of application” window (Fig. 1 or 7.5).

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	Connected
4	-
5	-
6	-
7	-
8	-
9	-
10	-
11	-
12	-
13	-
14	-
15	-

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

3. Main Window

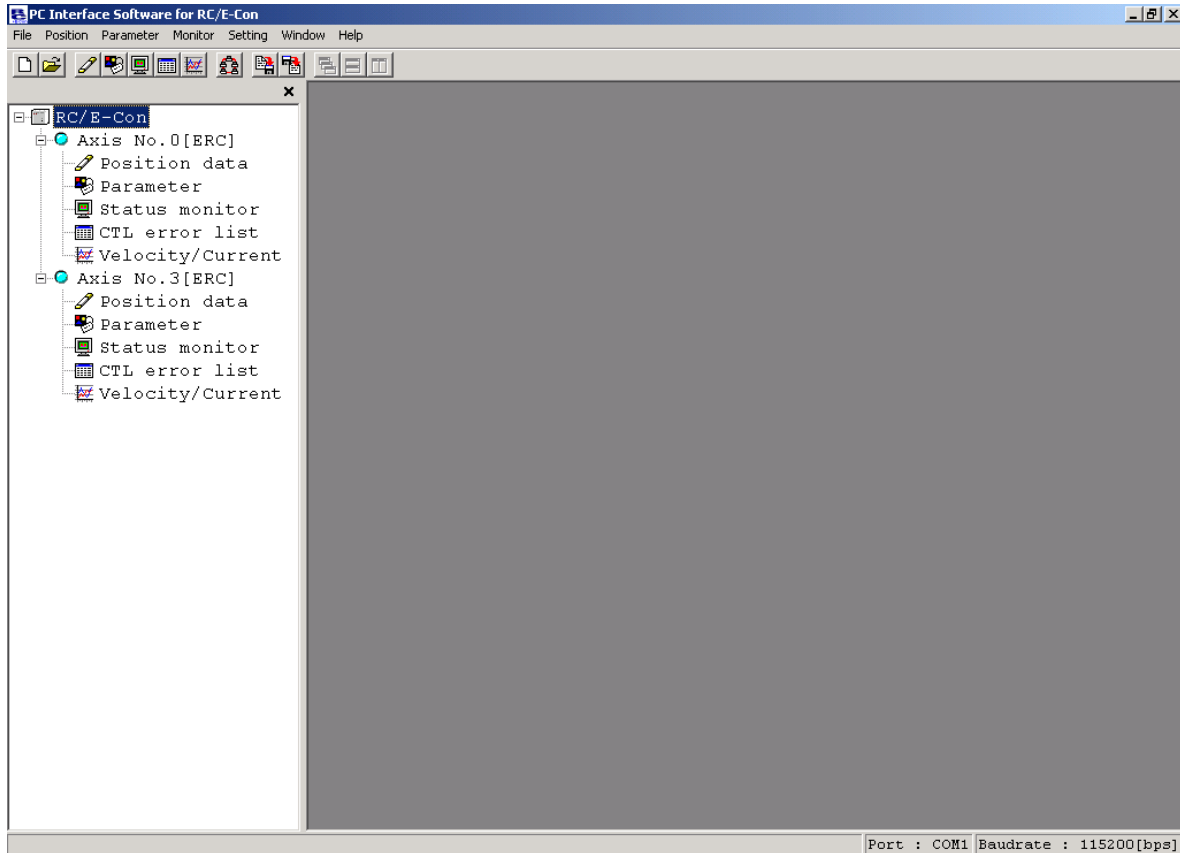


Fig. 3.1 Main Window

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

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.

- [6] [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.

 - [2] [Send to Controller]
Transfer (write) edited position data to the controller.

 - [3] [Print]
Print the position data you are currently editing.

- (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] [CTR Error List]
Display the CTR error 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 (baudrate 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: Set the axis number for an integrated controller. This menu item does not do anything for a separate controller.

Reset Software: Reset (restart) the software.

* This menu item is available only when the controller supports the software reset function.
Refer to "Supported Models."

(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).

(7) Help

- [1] [Help]
Display the help files.
- [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

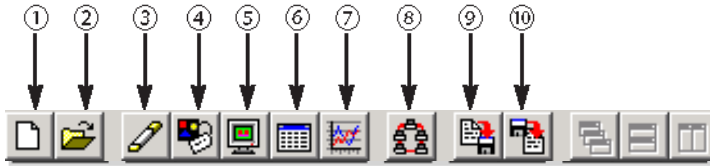


Fig. 3.2 Toolbar Buttons

- [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**.
- [4] Edit parameters
Same as clicking **Parameter**, and then selecting **Edit**.
- [5] Monitor
Same as clicking **Monitor**, and then selecting **Status**.
- [6] CTR Error list
Display the CTR Error list window.
Same as clicking **Monitor**, and then selecting **CTR Error List**.
- [7] Velocity/current
Display the velocity/current monitor window.
Same as clicking **Monitor**, and then selecting **Velocity/Current**.
- [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.

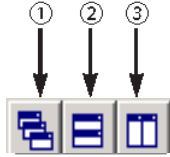


Fig. 3.3 Toolbar Buttons

- [1] Cascade windows
Same as clicking **Window**, and then selecting **Cascade**.
- [2] Tile windows vertically
Same as clicking **Window**, and then selecting **Tile Vertical**.
- [3] Tile windows horizontally
Same as clicking **Window**, and then selecting **Tile Horizontal**.

3-3 Tree View

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

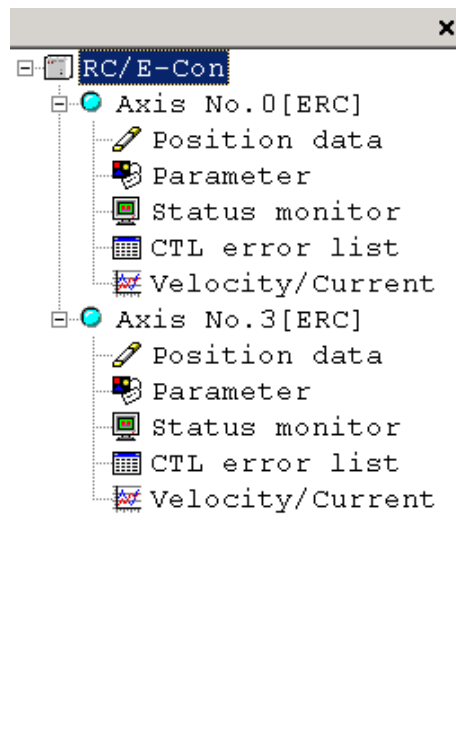







Fig. 3.4 Tree View

- [1] Axis No. 0 [ERC]
- Axis No. 8 [RCP]

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.
 - [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]  CTR error list
You can double-click this item to open the CTR error 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



Fig. 3.5 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. (Note)
- [2] Send position data edited in the offline mode to the controller. (Note)
- [3] Open the parameter edit window in the online mode. (Note)
- [4] Send parameters edited in the offline mode to the controller. (Note)
- [5] Open the monitor window from the main window.
- [6] Save all data. (Note)
- [7] Send all data (Note)
- [8] Open the controller error list window.
- [9] Open the velocity/current monitor window.
- [10] Reset the software.

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 select the axis, and then click **OK**. To select all axes, click,  and then click **OK**.

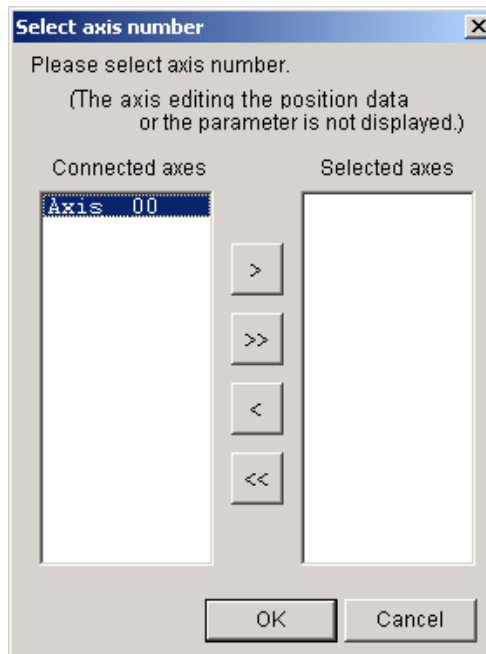


Fig. 4.1 Select Axis Number Window


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


In this mode, data can be loaded from the controller for editing. (Fig. 5.1)

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.”

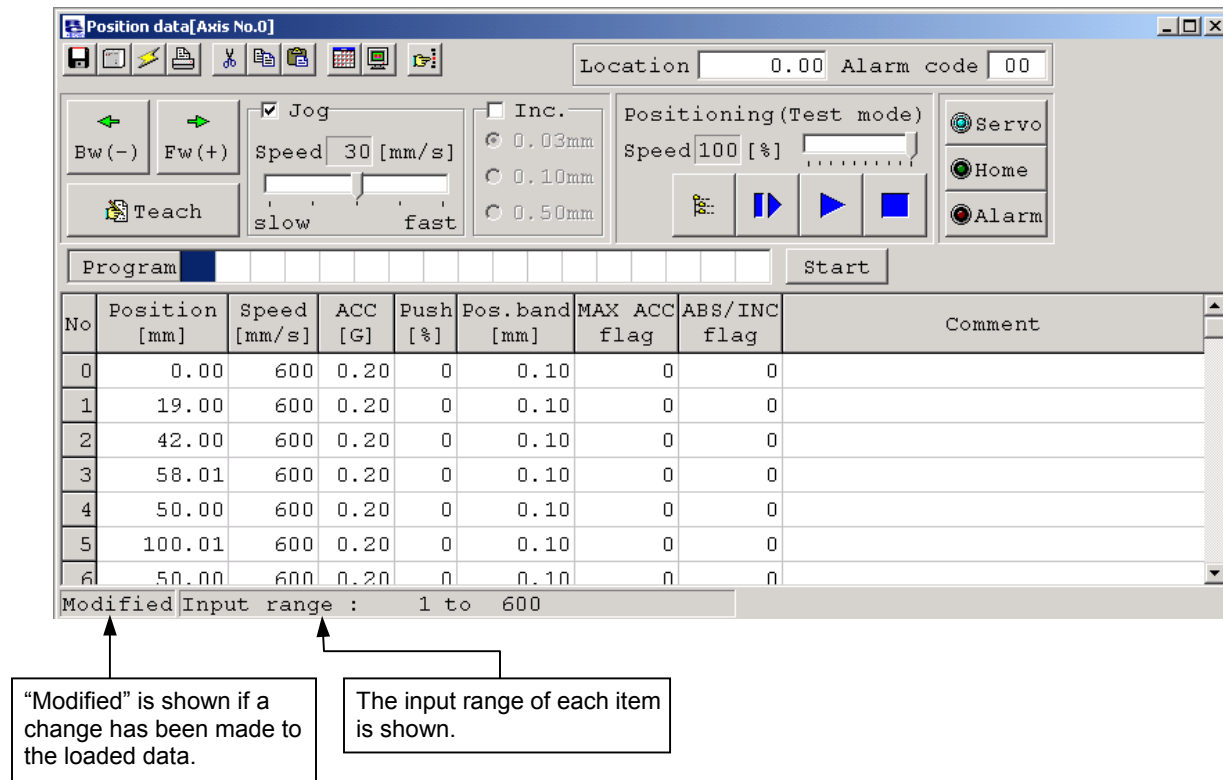


Fig. 5.1 Position Edit Window (Detail Window in Online Mode)

* 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.)

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

(1) Toolbar buttons

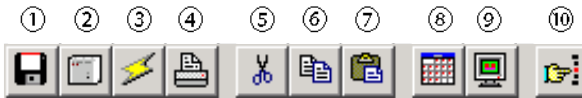


Fig. 5.2 Toolbar in Position Data Edit Window

[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 edit window (when “Modified” is shown in the status bar), clicking this button will display the warning message shown in Fig. 5.3.

* 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.

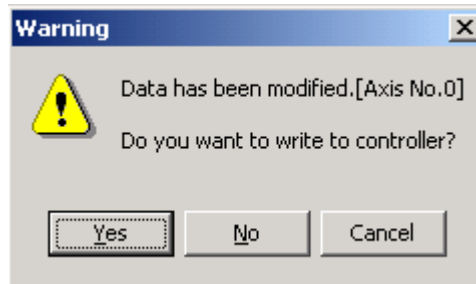


Fig. 5.3 Warning Message

[4] Print

Output position data to the printer.

[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. 5.14, Fig. 5.15)
- [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. 5.4.
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

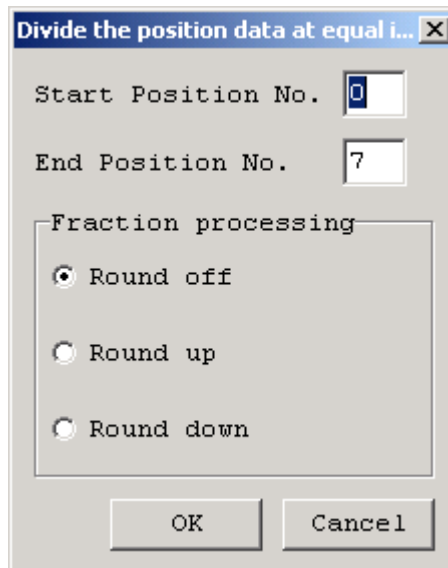


Fig. 5.4 Divide Position Data at Equal Intervals Window

If data has been input between the specified two positions, the warning message in Fig. 5.5 will be displayed.

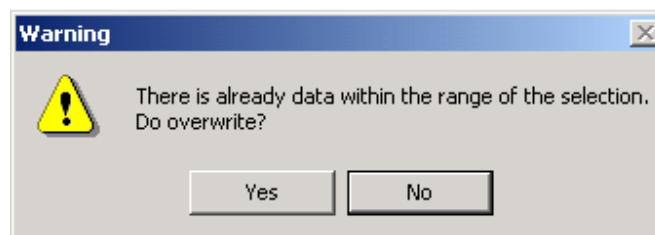


Fig. 5.5 Warning Message

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. 5.6) displayed by right-clicking the position data input area.

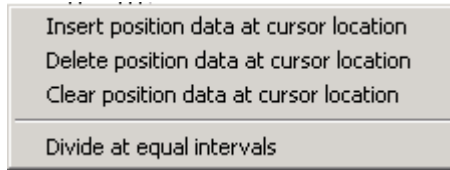


Fig. 5.6 Pop-up Menu

(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.

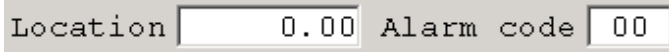


Fig. 5.7 Current Position/Alarm Code

(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 1 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**.

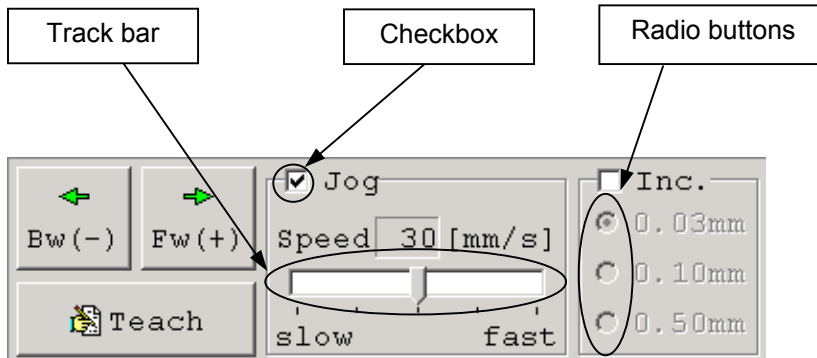


Fig. 5.8 Jogging/Inching Operation Controls

(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.)

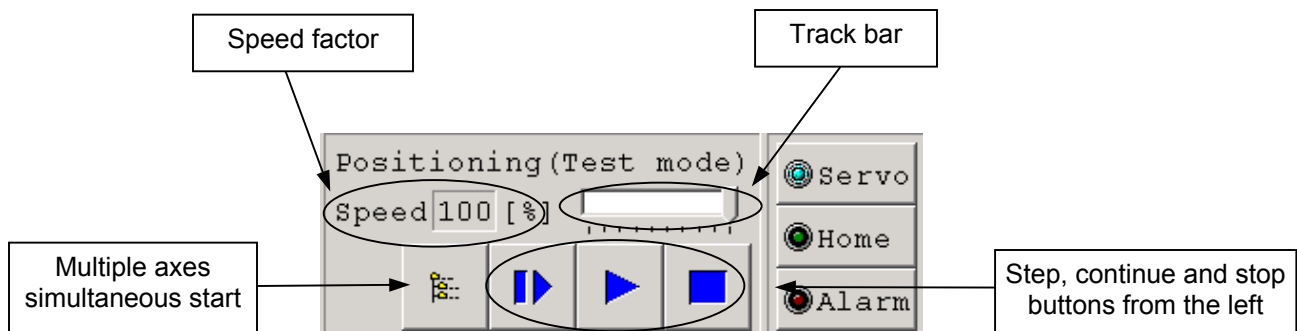






Fig. 5.9 Positioning

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.

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. 5.10 Multiple Axes Simultaneous Start Button

The “Start multiple axes simultaneously” window will open.

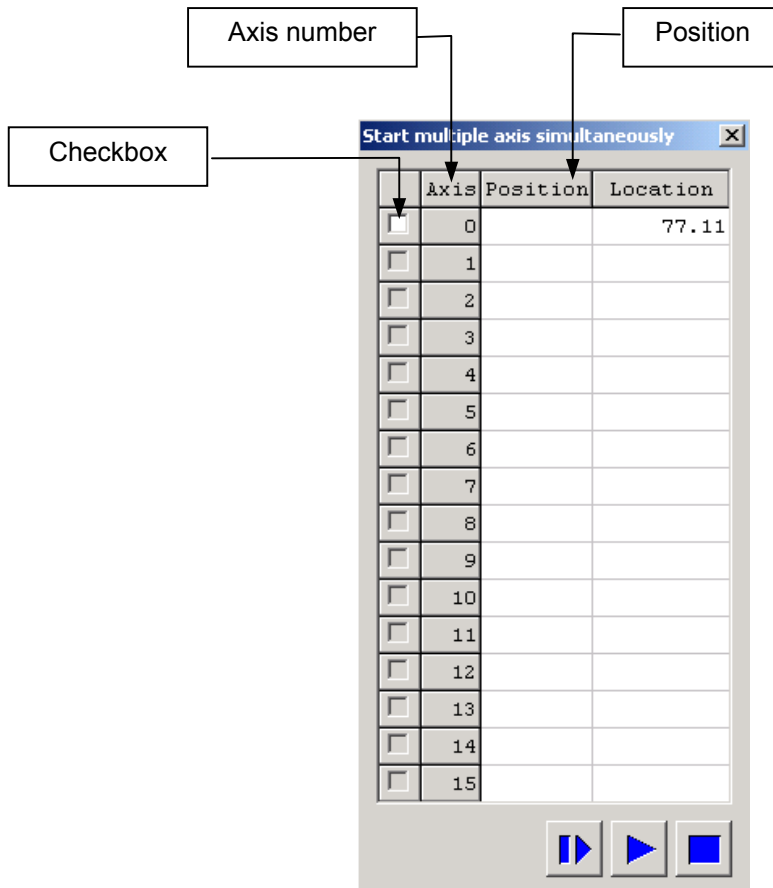



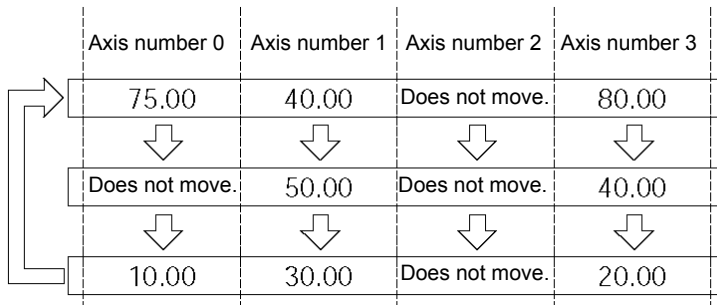
Fig. 5.11 Start Multiple Axes Simultaneously Window

- 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.

Example of use) When the "Start multiple axes simultaneously" window is set as shown in Fig. 5.11 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 move) will move the actuators as follows.



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.

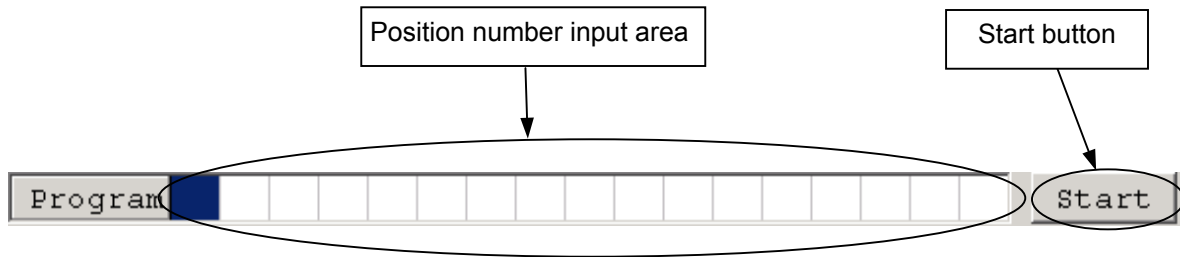


Fig. 5.12 Program Mode

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. 5.13 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

Enter position data in this area.

Normally, you can enter in the **Position**, **Speed**, **ACC** and **Comment** fields. By switching to the detail mode by clicking the display switching button (), the **Push**, **Pos. band**, **MAX ACC flag** and **ABS/INC flag** fields will appear where you can enter the applicable data.

No	Position [mm]	Speed [mm/s]	ACC [G]	Comment
0	5.00	125	0.30	
1	50.00	125	0.30	
2	10.00	50	0.30	
3				
4				
5				
6				

Fig. 5.14 Position Data Input Area (Normal Mode)

No	Position [mm]	Speed [mm/s]	ACC [G]	Push [%]	Pos. band [mm]	MAX ACC flag	ABS/INC flag	Comment
0	10.00	125	0.30	0	0.10	0	0	
1	50.00	125	0.30	50	5.00	0	0	
2	10.00	50	0.30	0	0.10	0	1	
3								
4								
5								
6								

Fig. 5.15 Position Data Input Area (Detail Mode)

- * ABS/INC flag: Select absolute coordinate specification or incremental coordinate specification.
 0: Absolute coordinate specification
 1: Incremental coordinate specification

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 screen controls relating to axis operation are grayed out, and only the toolbar and point data input area become active.

Once data has been edited, you can save the data to a file or send it to the “connected” 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.”)

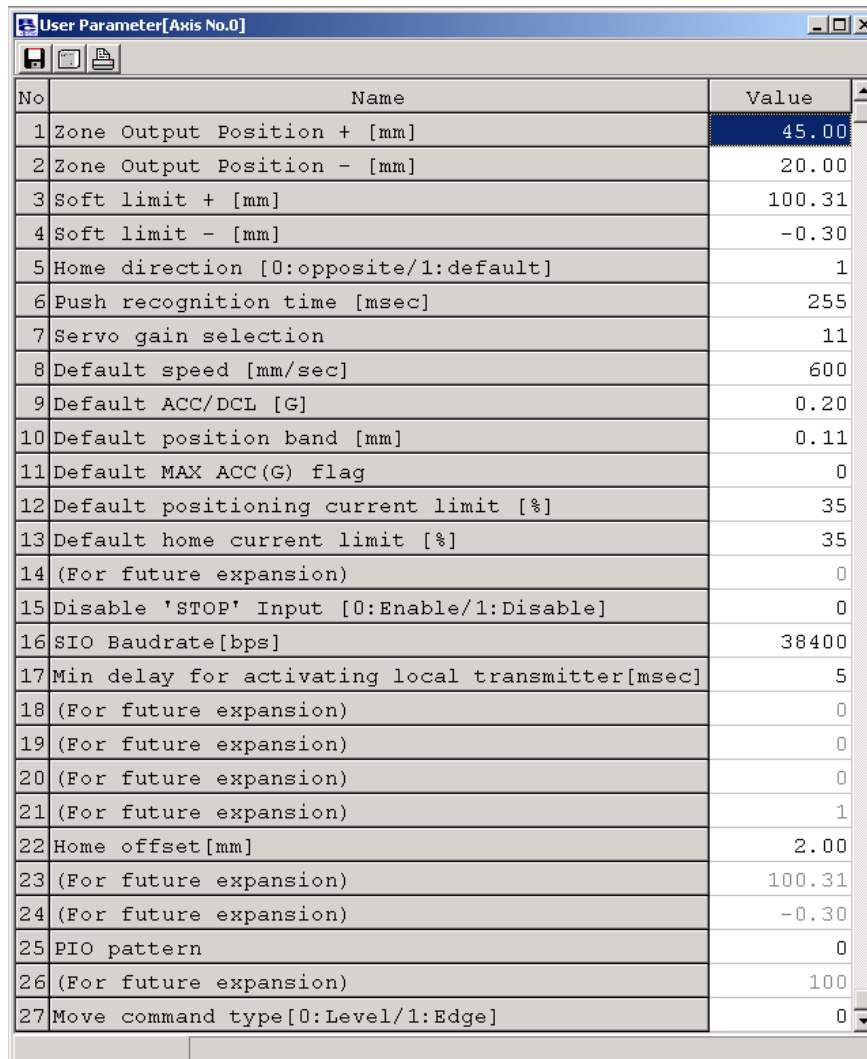
You can load data from the controller or a file and edit the loaded data.

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.



No	Name	Value
1	Zone Output Position + [mm]	45.00
2	Zone Output Position - [mm]	20.00
3	Soft limit + [mm]	100.31
4	Soft limit - [mm]	-0.30
5	Home direction [0:opposite/1:default]	1
6	Push recognition time [msec]	255
7	Servo gain selection	11
8	Default speed [mm/sec]	600
9	Default ACC/DCL [G]	0.20
10	Default position band [mm]	0.11
11	Default MAX ACC(G) flag	0
12	Default positioning current limit [%]	35
13	Default home current limit [%]	35
14	(For future expansion)	0
15	Disable 'STOP' Input [0:Enable/1:Disable]	0
16	SIO Baudrate[bps]	38400
17	Min delay for activating local transmitter[msec]	5
18	(For future expansion)	0
19	(For future expansion)	0
20	(For future expansion)	0
21	(For future expansion)	1
22	Home offset[mm]	2.00
23	(For future expansion)	100.31
24	(For future expansion)	-0.30
25	PIO pattern	0
26	(For future expansion)	100
27	Move command type[0:Level/1:Edge]	0

Fig. 6.1 Parameter Edit Window

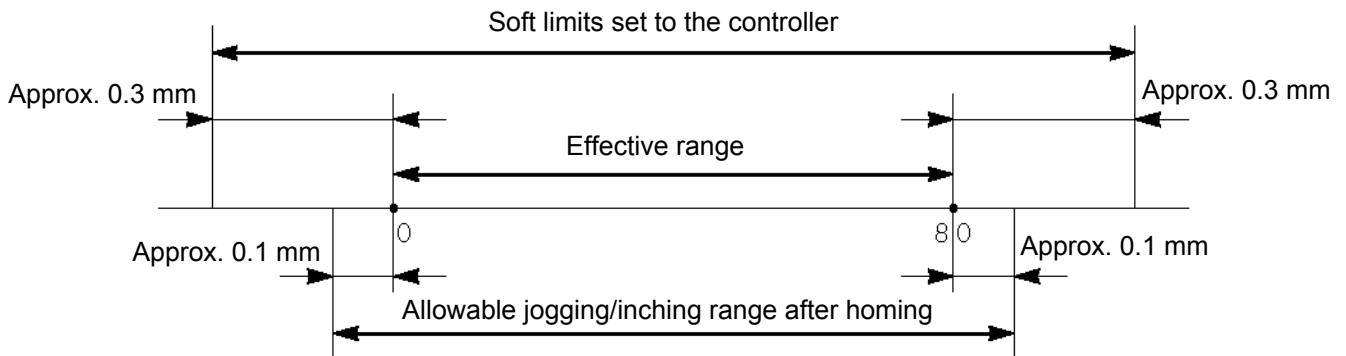
Depending on the controller model, a confirmation window (Fig. 6.2) may be displayed after parameters have been sent to the controller, asking if you want to restart the controller (reset the software).
 (This window appears only when the controller to which data has been written supports the software reset function. Refer to “Supported Models.”)



Fig. 6.2 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




- 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 RPA rod-type actuators 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.

7. Monitoring

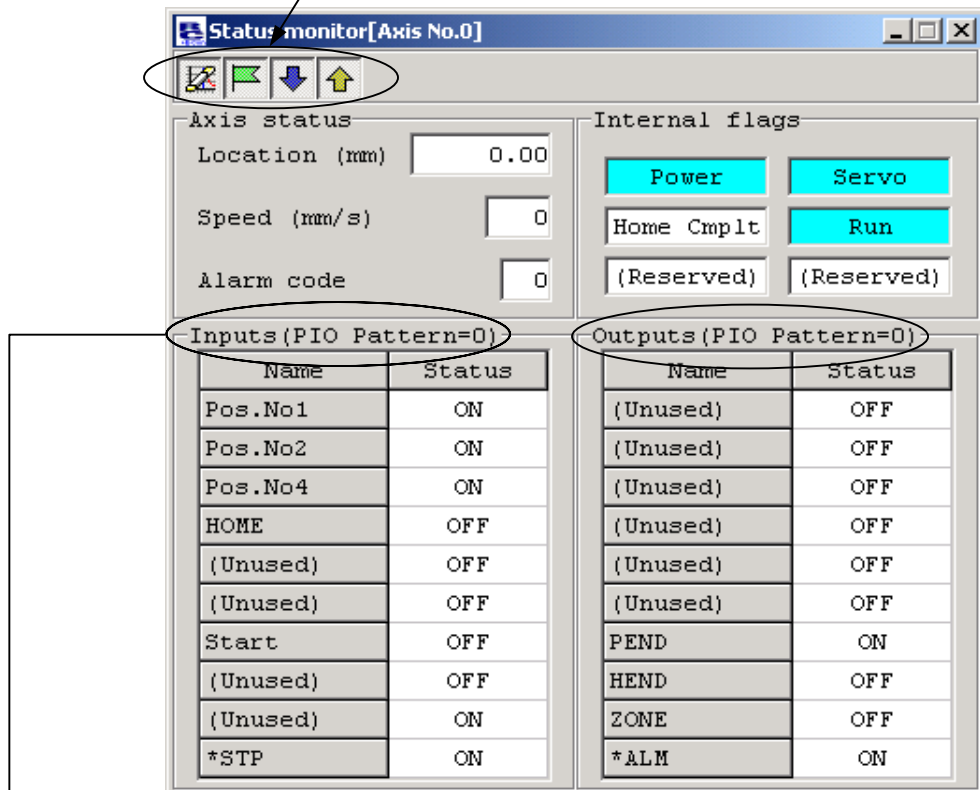
You can monitor various statuses, controller error list, and velocity/current waveforms (only if the controller supports the function).

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 RCP2 controller is connected. The displayed information will vary depending on the controller type.)

Axis status Location Speed (moving speed) Alarm code	Internal flags Power: Main controller power ON/OFF status Servo: Servo command status Home Cmpl: 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.

Display ON/OFF button (corresponding to the **Axis status**, **Internal flags**, **Inputs** and **Outputs** groups, respectively)



Note) While an emergency stop is actuated, the following outputs are not shown even when the controller supports these functions:


- 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.

7-2 Controller Error List

To monitor the controller error list, click **Monitor** and then select **CTR Error List** from the main menu, or click  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.”)

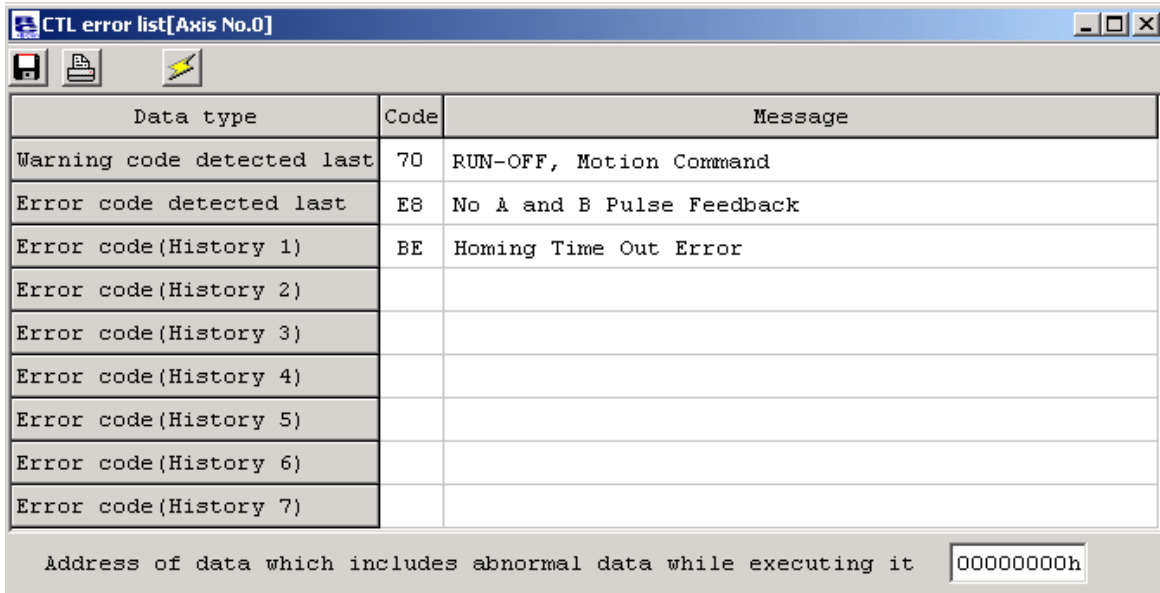


Fig. 7.2 Controller Error List Window

- (1) Error list
The last detected warning code, last eight error codes and address of data in which runtime error was detected (provided as reference data for manufacturer) are shown.

- (2) Toolbar



Fig. 7.3 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.

7-3 Velocity/Current Monitor Window



To monitor velocity/current, click **Monitor** and then select **CTR Error List** from the main menu, or click  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 clicked.



Fig. 7.4 Velocity/Current Monitor Window

* The RCP, RCS and E-Con series do not support this function.
It is supported by the RCP2 and ERC 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) [in mA], while the horizontal axis represents elapsed time after the start of monitoring [in 100's of msec].
 - [2] Rated current ratio display (When the **Rated current ratio** checkbox is selected)
The vertical axis represents rated current ratio [in %], while the horizontal axis represents elapsed time after the start of monitoring [in 100's of msec].
- (2) Velocity data display
The vertical axis represents velocity [in mm/s], while the horizontal axis represents elapsed time after the start of monitoring [in 100's of msec].

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

(3) Toolbar

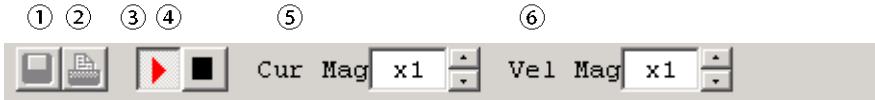


Fig. 7.5 Toolbar

- [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.

7-4 Setting of Application Window

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

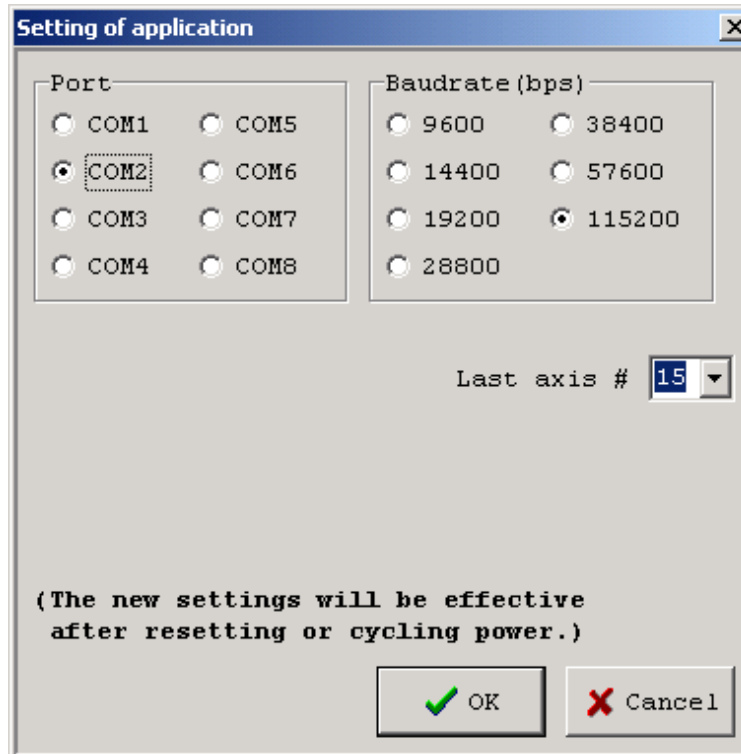


Fig. 7.6 Setting of Application Window

- [1] Port
From the list, select the serial port to be used to communicate with the controller.
- [2] Baudrate (bps)
From the list, select the baudrate the software will use when communicating with the controller.
* 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 #
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.

Changing any of the items in [1] to [3] and then clicking **OK** will display the re-connection confirmation window shown in Fig. 7.7. 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.

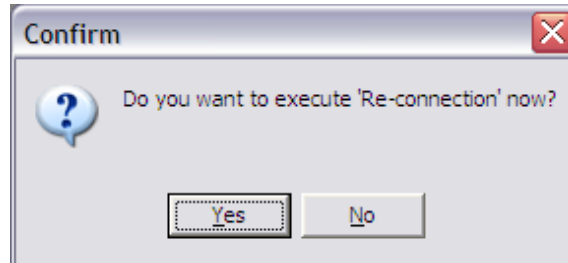


Fig. 7.7 Re-connection Confirmation Window

8. Version Information

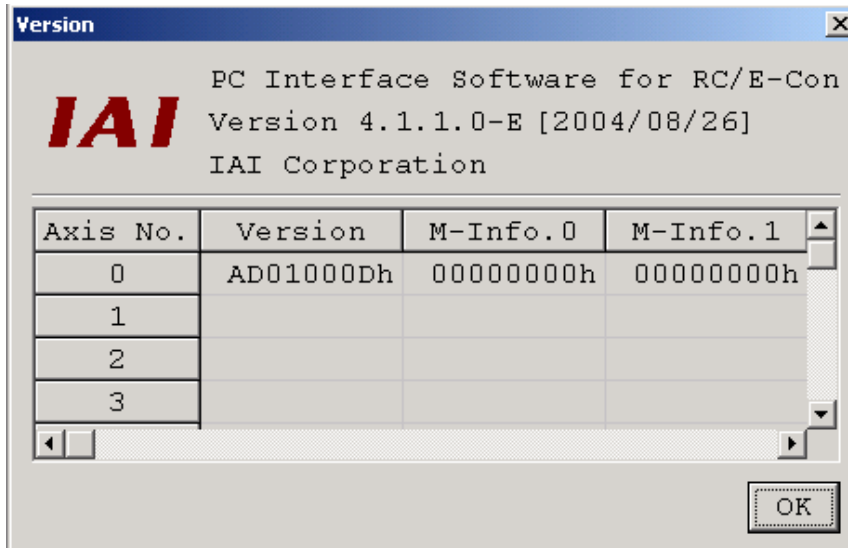


Fig. 8.1 Version Information

- [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	*.prp	*.bur
E-Con	*.pte	*.pre	*.bue
RCP2	*.ptr2	*.pmr2	*.bkr2
ERC	*.ptre	*.pmre	*.bkre



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