

CNC

MELDAS AC SERVO WITH INDEXING FUNCTION

MR-J2-CT Series

SETUP SOFTWARE

FWS-B05B013 (RS-232-C CONNECTION)

FWS-B05B015 (BUS CONNECTION)

INSTRUCTION MANUAL

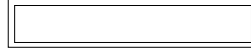


Notice

Please keep the following items in mind when reading this instruction manual.

1. The buttons in the window and the keyboard keys are indicated as follows.

Buttons in window





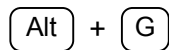
Keys on keyboard







2. The  and  keys are indicated as .

3. The + symbol is used to indicate two keys pressed simultaneously when using the keyboard.

Example To press the  and  keys simultaneously:



4. The keyboard is operated with the DOS/V personal computer method.
The following key operation differs when using an NEC PC-98 Series personal computer.

DOS/V	PC-98 Series
	
	

5. Always read the Precautions for Test Operations in section 2-4 before starting test operation.

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Contents

Chapter 1 Introduction.....	1-1
1-1 Specifications	1-2
1-2 Purchasing inspection	1-3
1-3 System configuration.....	1-3
1-3-1 Configuration parts.....	1-3
1-3-2 Communication cable	1-4
1-3-3 Configuration drawing	1-6
1-4 Basic terminology.....	1-7
1-5 Basic operations.....	1-8
1-6 Screen explanation	1-11
1-7 Installation	1-12
Chapter 2 Usage Methods	2-1
2-1 Operation.....	2-2
2-2-1 Starting	2-2
2-1-2 Selecting commands.....	2-2
2-1-3 Operating in the window	2-3
2-2 Commands and display windows	2-6
2-3 Detailed explanation on each window	2-9
2-3-1 File menu.....	2-9
2-3-2 Setup menu.....	2-11
2-3-3 Monitor menu	2-11
2-3-4 Alarm menu.....	2-20
2-3-5 Diagnosis menu	2-22
2-3-6 Parameter menu	2-26
2-3-7 Test operation menu	2-30
2-3-8 Setup-Axis menu.....	2-33
2-3-9 Absolute position repair operations using FWS-B05B015	2-35
2-4 Precautions for test operation	2-37
Chapter 3 Troubleshooting	3-1
3-1 If communication error occurs:.....	3-2
3-2 The screen cannot be printed:	3-2

Chapter 1 Introduction

The basic matters required for using this setup software are described in this chapter.

- 1-1 Specifications
- 1-2 Purchasing inspection
- 1-3 System configuration
- 1-4 Basic terminology
- 1-5 Basic operations
- 1-6 Screen explanation
- 1-7 Installation

1-1 Specifications

The setup software allows the parameters to be changed, graphs to be displayed, various monitors to be displayed, and test operation to be carried out with a personal computer using the MR-J2-CT communication function.

The standard setup software FWS-B05B013 connects the personal computer and MR-J2-CT with RS-232-C communication.

The M6 Series NC compatible setup software FWS-B05B015, carries out communication via the bus connection that connects the M6 Series and MR-J2-CT. In this case, the axis designation can be changed when setting up multiple MR-J2-CT units that are connected.

Specification item		FWS-B05B013 specifications	FWS-B05B015 specifications	
Function	Communication signal	RS-232-C compliant	Bus connection	
	Baud rate	9600bps	5.6Mbps	
	Monitor	Batch display, high-speed display	○	○
		Graph display	○	○
	Alarm	Alarm display	○	○
		Alarm history display	○	○
		Alarm reset	○	○
	Monitor	I/F display	○	○
		Power ON cumulative time display	○	○
		Software No. display	○	○
		Tuning data display	○	○
		ABS data display	○	○
	Parameter	Data setting	○	○
		List display	○	○
		Changed list display	○	○
		Detailed information display	○	○
		Absolute position data repair	○	○
	Test operation	JOG operation, incremental feed operation	○	○
		Origin return	○	○
		Manual operation, automatic operation	○	○
		Absolute position origin initialization	○	○
		Random point command, stopper positioning command	○	○
	File operation	Data read, save, print	○	○
Setup axis selection	Selection of axis to be set up	×	○	
	Designation of No. of bus-connected axes, axis name	×	○	

1-2 Purchasing inspection

Confirm that the package contains the following items.

Enclosed items	Quantity
Floppy disk	1 disk
Instruction manual	1 copy

1-3 System configuration

1-3-1 Configuration parts

In addition to the MR-J2-CT and servomotor, the following items are required to use the setup software. Configure the system referring to the instruction manual for each device.

Note that when using the M6 Series compatible setup software FWS-B05B015, the M6 Series NC configuration parts are used. Thus, no extra parts need to be prepared.

Model	Details
Personal computer (Note)	Personal computer with 80386 or more CPU, running Windows 3.1 or Windows 95 (80486 or more is recommended) Memory : 8MB or more Hard disk: 1MB or more The serial port is used.
OS	Windows 3.1 or Windows 95
Display	Windows 3.1/Windows 95 compatible 640 x 400 or more colors, or 16 shade monochrome display
Keyboard	Keyboard compatible with personal computer
Mouse	Windows 3.1/Windows 95 compatible mouse. Note that a serial mouse is incompatible.
Printer	Windows 3.1/Windows 95 compatible printer.
Communication cable	MR-CPC98CBL3M • MR-CPCATCBL3M If these cables cannot be used, refer to section 1-3-2, and manufacture the cable.

Note : With some modes, the operations described in this manual may not be possible.

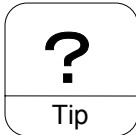
1-3-2 Communication cable

(1) Selection

Use a communication cable to connect the personal computer and MR-J2-CT.

Select a communication cable that matches the shape of the RS-232-C connector on the personal computer.

When using the M6 Series compatible setup software FWS-B05B015, the communication cable is unnecessary.



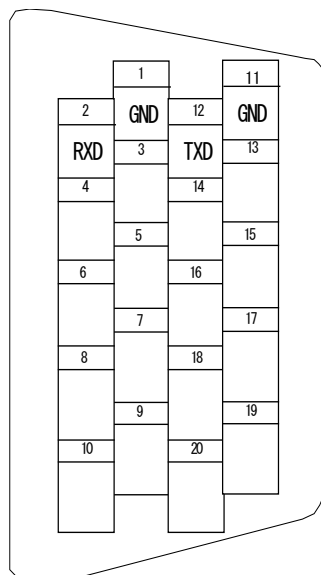
Depending on the personal computer, this cable may not be usable. Confirm the RS-232-C connector signal, and manufacture a cable referring to this section.

Type	Length (m)	Application	Details	
MR-CPC98CBL3M	3	PC-98 Series (D-SUB 25-pin)	Personal computer side (D-SUB25P) Connector: DB-25PF-N Case : DB-C2-J9 (Japan Aviation Electronics)	Servo amplifier side (half-pitch 20P) Connector: 10120-6000EL Case : 10320-3210-000 (Sumitomo 3M)
MR-CPCATCBL3M	3	IBM Series (D-SUB 9-pin)	Personal computer side (D-SUB9S) Connector: DE-9SF-N Case : DE-C1-J6-S6 (Japan Aviation Electronics)	Servo amplifier side (half-pitch 20P) Connector: 10120-6000EL Case : 10320-3210-000 (Sumitomo 3M)

Refer to the connection diagrams in this section and observe the following when manufacturing the cable.

- 1) Always use a multi-core cable with shield, and accurately ground the shield with the frame.
- 2) The wiring distance will differ according to the working environment, and is a maximum of 15m when used in an office not affected by noise. Keep the wire as short as possible.

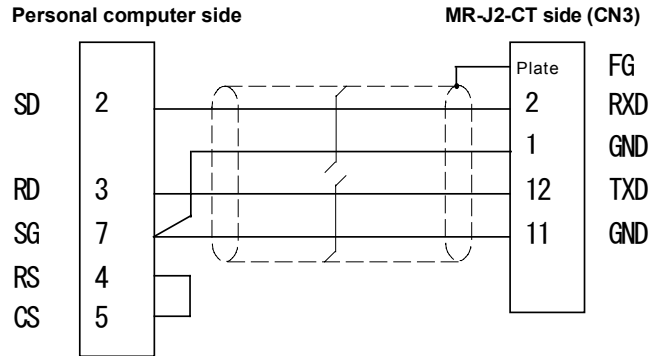
(2) Communication connector signal layout



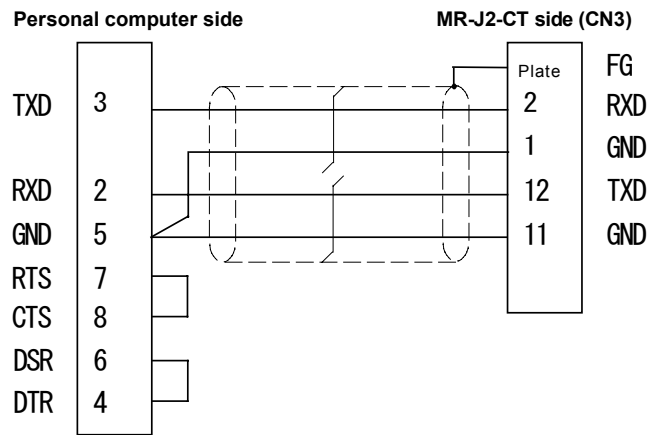
MR-J2-CT side connector (CN3)

(3) Cable connection diagram

• MR-CPC98CBL3M

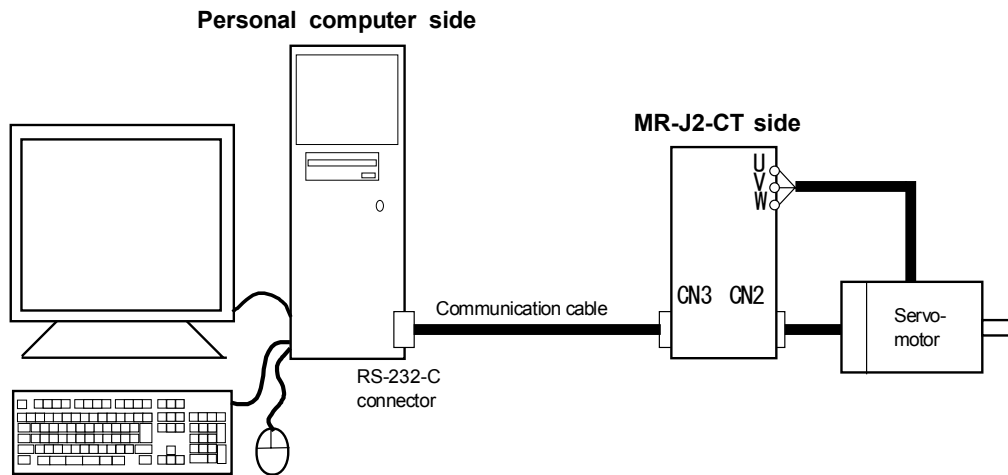


• MR-CPCATCBL3M



1-3-3 Configuration drawing

When using the standard setup software FWS-B05B013



1-4 Basic terminology

(1) Mouse cursor

Arrow that moves on the screen in sequence with the mouse.

(2) Point

To move the mouse cursor to the item to be operated.

(3) Click

To quickly press and release the left mouse button.

(4) Double-click

To click twice in succession.

(5) Drag

To move the mouse while holding down the left mouse button.

(6) Focus

To highlight the character or button, etc., when the menu is in the state to receive inputs from the mouse or keyboard.

(7) Control menu box

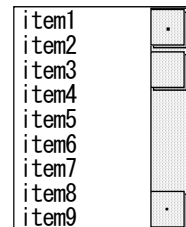
A box at the upper left of the window, and used to operate the window.
Refer to the Windows Manual for details.

(8) Text box

A box for entering characters.

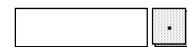
(9) List box

A box used to select an item from multiple items.



(10) Combo box

A box used to select an item from multiple items.

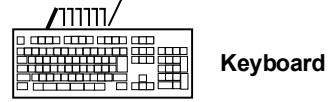


(11) Option box

A box used to select one or more items from multiple items. ☒ or ● displays when the selection target changes.

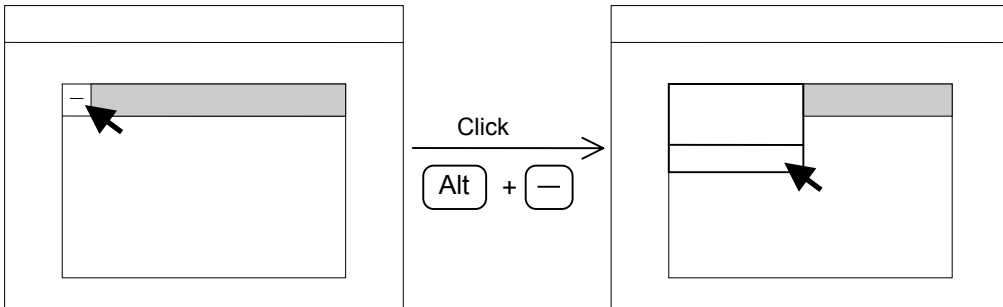
1-5 Basic operations

(1) Opening the control menu



Click on the control menu box.

Press the **Alt** + **—** key.

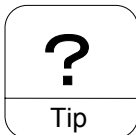
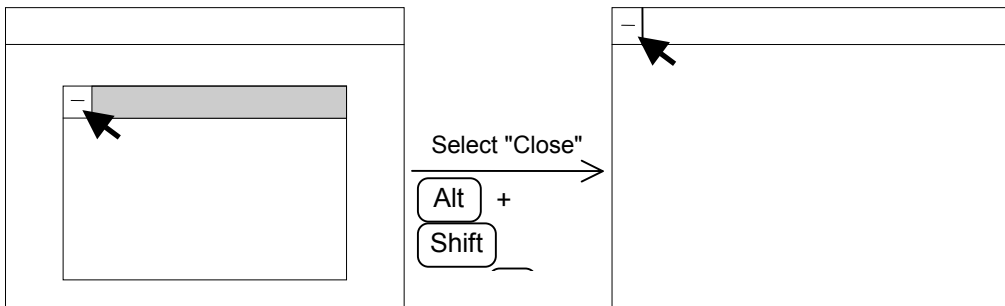


(2) Closing the window



Open the control menu box, and click on "Close".

Press the **Alt** + **Shift** + **F4** keys.



With Windows 3.1, if there is no display other than the Program Manger window, the software will quit.

(3) Moving the focus between multiple windows.



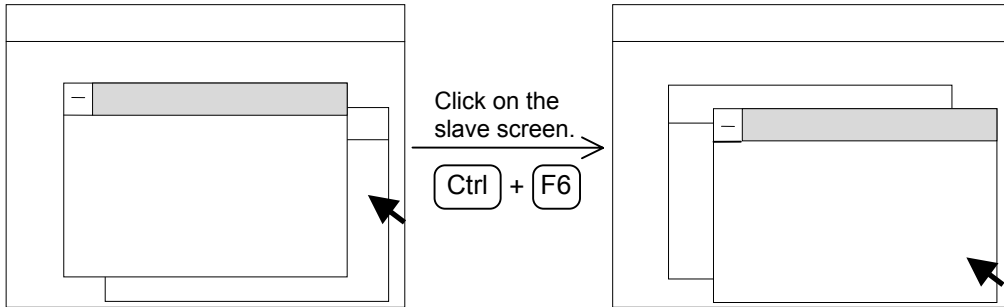
Mouse



Keyboard

Click on part of the window to be used.

Press the **Ctrl** + **F6** keys.



(4) Moving the window



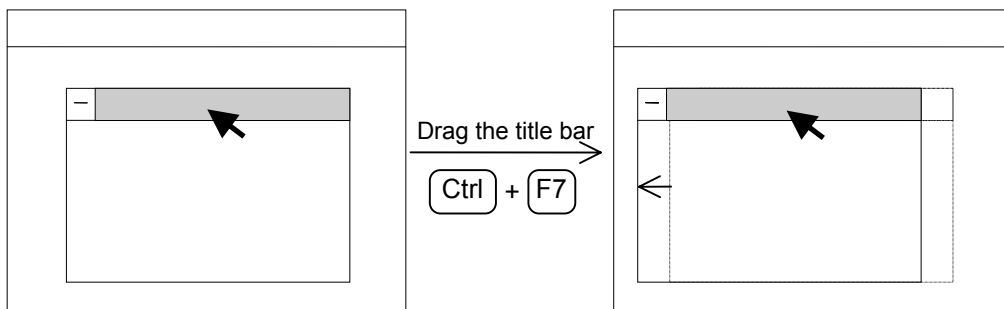
Mouse



Keyboard

Move the mouse cursor to the title bar, and drag the window to the new position. Then, release the button.

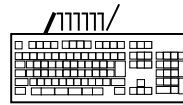
- 1) Press the **Ctrl** + **F7** keys.
- 2) Move the windows with the **←**, **↑**, **→** and **↓** keys. Press the **↵** key to complete the movement.



(5) Moving the focus to the menu bar.



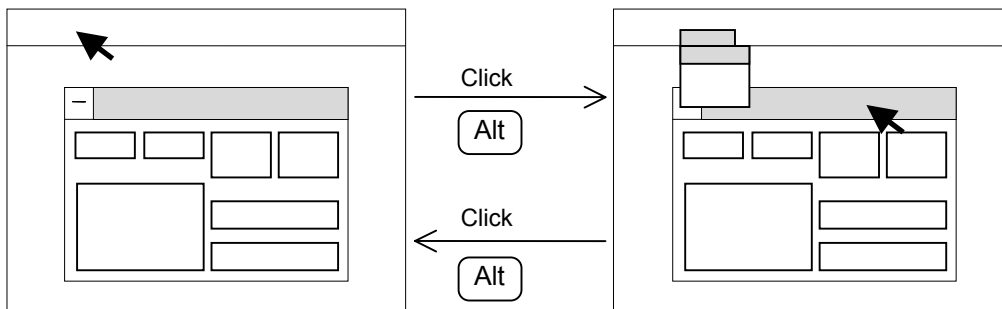
Mouse



Keyboard

Click on the menu bar. To move the focus to the window, click on the window.

Press the **Alt** key. To move the focus to the window, use the same operation.



(6) Moving the focus in the window



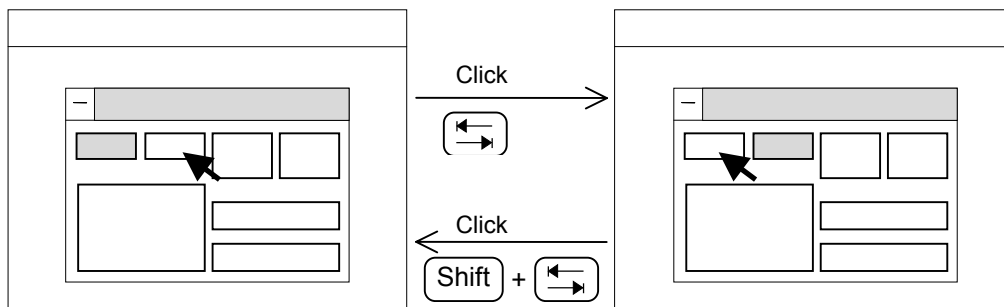
Mouse



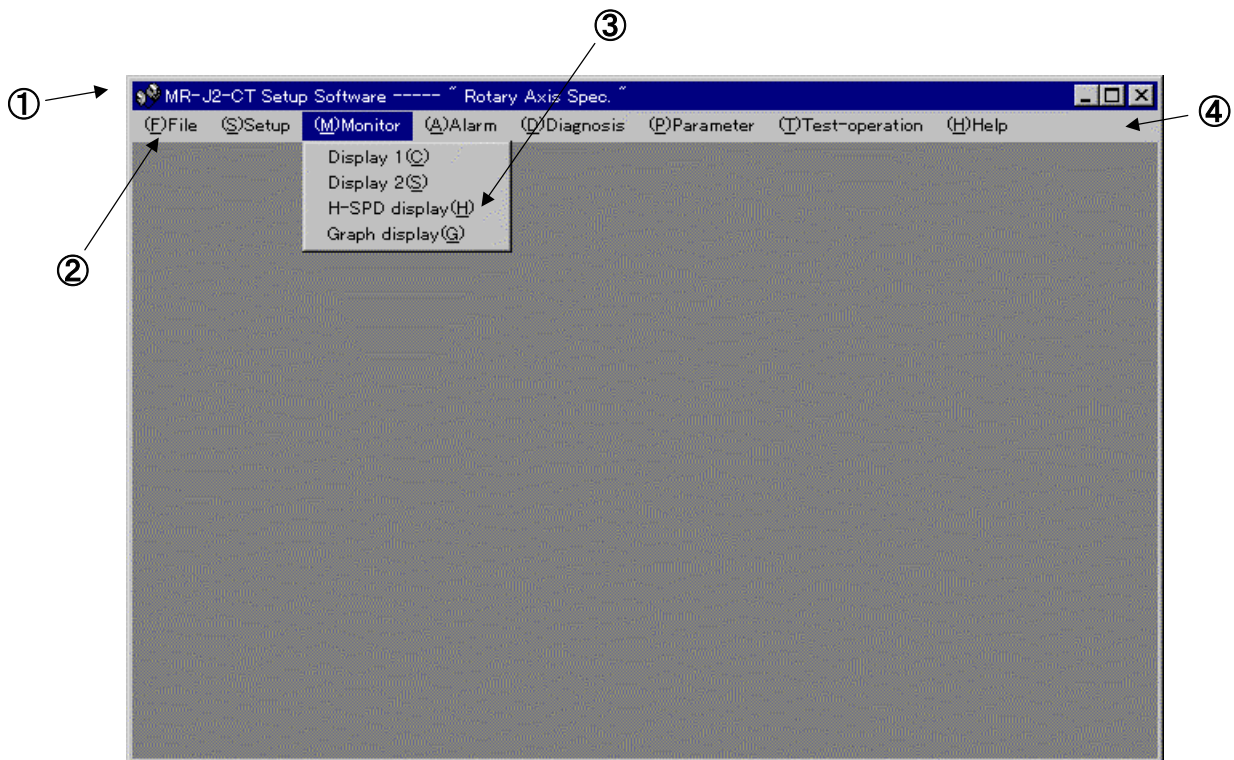
Keyboard

Click on the object (text box, etc.) to be operated. If the operation target is a button, the process will be executed when the button is clicked on.

Press the **Alt** key to move the focus to the object to be selected. Then, execute by pressing the **Alt** key.



1-6 Screen explanation



(1) Title bar (software title and axis specifications display area)

The title of the setup of software and the axis specifications (linear axis/rotation axis) of the MR-J2-CT to be setup are displayed.

When using the M6 Series NC compatible setup software FWS-B05B015, the name of the axis to be setup will display.

(2) Menu title

The main menu title is displayed. The alphabetic character shown in parentheses before the title indicates the access key to this menu. The menu can be selected by pressing the Alt key and the alphabetic character shown in the parentheses.

(3) Sub-menu

The command menu for the first layer will display. The alphabetic character shown in parentheses after the command menu indicates the access key to this menu. The submenu can be selected by pressing the alphabetic character shown in the parentheses.

(4) Menu bar

1-7 Installation

The method for installing the setup software onto the personal computer hard disk is described in this section. Here, the personal computer hard disk drive is C, and the floppy disk drive is A. When carrying out the actual installation, change the drive name according to the configuration of the personal computer into which the software is to be installed. This explanation assumes that Windows is already running.

(1) Running the installation program

- 1) Place the setup software in drive A (floppy disk drive).
- 2) Start up "setup.exe" on the floppy disk with one of the following methods.

a. Using the Program Manager

Click on the Program Manager icon to open the menu. Then, click on the "Run" menu. When the following type of window appears, input "a:\setup.exe", and click on the **OK** button or press the **↵** key.

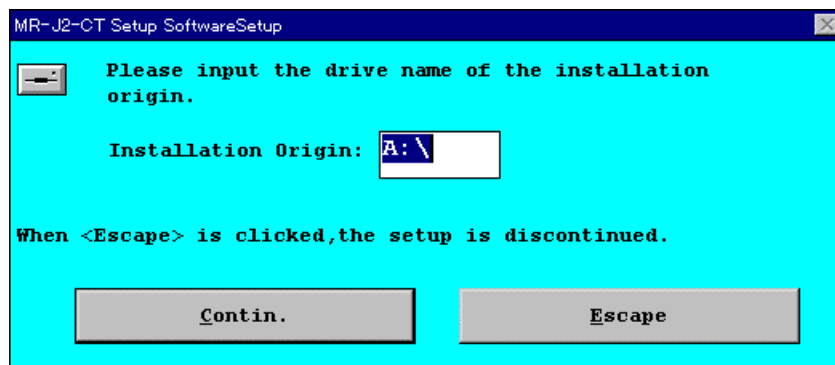
b. Using the Explorer or File Manager

Select the floppy disk drive using the Explorer or File Manager. When the floppy disk contents appear, select the "setup.exe" file. Then, press the **↵** key or double-click on the "setup.exe" file.

(2) Designating the installation origin drive

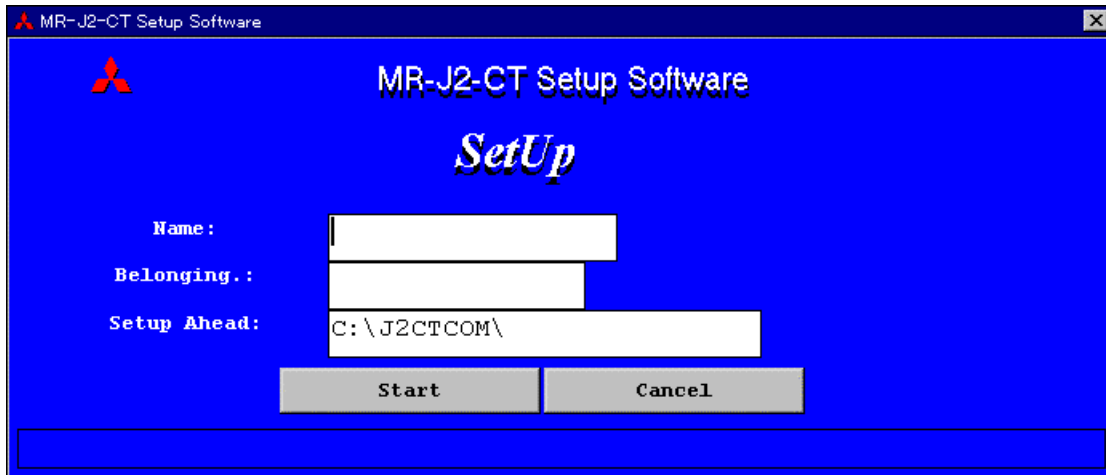
After the message "Preparing for setup..." appears, the following window will appear. Normally, the floppy disk drive is automatically set as the installation origin, and is displayed in the Installation Origin setting line. Check the floppy disk drive, and then click on the **Contin.** button or press the **↵** key.

If the displayed installation origin differs, set the installation origin drive in the Installation Origin setting line. Then, click on the **Contin.** button or press the **↵** key.



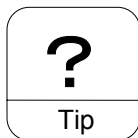
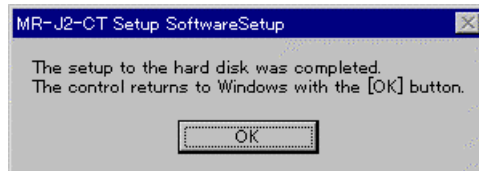
(3) Registering the user, company name, and designating the installation destination drive and director

- 1) Set the user's name in the Name setting line, and the company name in the Belonging setting line.
- 2) Set the installation destination drive and directory (folder) in the Setup Ahead setting line. (The default is "C:\J2CTCOM".)
- 3) When completed, click on the button or press the key to run the software.



(4) Completing the installation

When the installation is completed, the following type of window will appear. Click on the button or press the key to return to Windows.



To cancel the initialization, press or on any window.

Chapter 2 Usage Methods

Each of the window usage methods are described in the respective help windows. Refer to this chapter and the help windows for details on using this system.

2-1 Operation

2-2 Commands and display windows

2-3 Detailed explanation on each window

2-4 Precautions for test operation

2-1 Operation

The operation methods using the mouse and keyboard are explained for the command selection methods. The commands that cannot be selected are displayed with light characters.

2-2-1 Starting

Double-click on the Setup Software icon.



2-1-2 Selecting commands



Mouse



Keyboard

1. Clicking

1. Click on the menu bar's menu title to open the menu.
2. Point at the command to be selected, and click.

2. Dragging

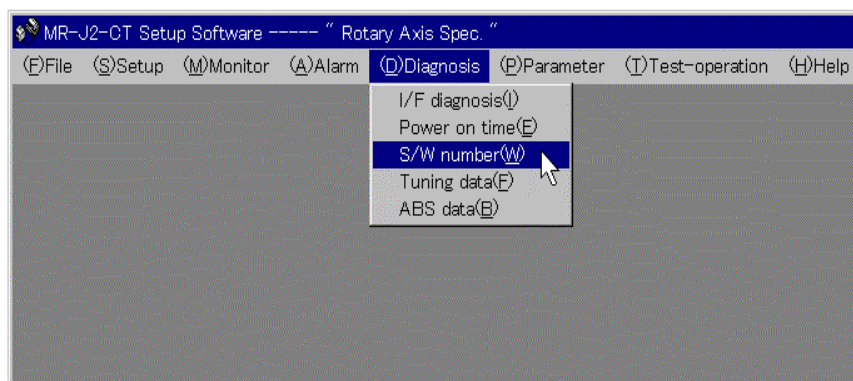
Point at the menu bar's menu title, and while holding down the left mouse button, drag to the command to be selected. Then, release the button.

1. Using the command symbols

1. Press the **Alt** key, and then press the key for the underlined character shown in the menu title.
2. Press the key for the underlined character shown for the command to be selected.

2. Using the arrow keys

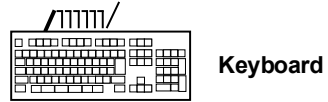
1. Press the **Alt** key. The focus will change to the menu title.
2. Using the **←** and **→** keys, move the focus to the menu title to be selected. Press the **↵** key to open the menu.
3. Using the **↑** and **↓** keys, move the focus to the command to be selected. Press the **↵** key to select the command.



2-1-3 Operating in the window


Data is set and buttons are pressed in the operation window.

(1) Pressing the button









Click on a button shown in the window.

1. Press a button with symbol

Press the  key, and then press the character key enclosed in parentheses behind the button title.

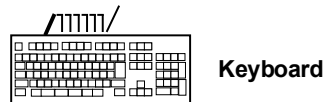
2. Pressing a button without symbol

Using the , , ,  and  keys, move the focus to the button to be selected.


Press the  key to enter the selection.



(2) Inputting data



Click on the setting area to move the focus, and then input the data from the keyboard.

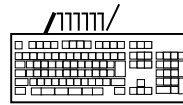
Press the  key to move the focus to the setting area, and then input the data from the keyboard.



(3) Selecting data









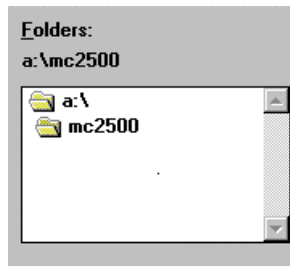
Mouse



Keyboard

Click on the data to be selected.

1. Press the **Alt** key, and then press the character key enclosed in parentheses behind the group title of the data to be selected.
2. Using the , , ,  and  keys, move the focus to the data to be selected.
Press the  key to enter the selection.



(4) Selecting data from a combo box, etc.








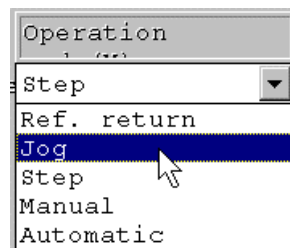
Mouse



Keyboard

1. Click on the arrow at the right of the setting area to open the combo box.
2. Click on the data to select it.

1. Using the  key, move the focus to the setting area. Press the **Alt** +  keys to open the combo box.
2. Using the  and  keys, move the focus to the data to be selected.
Press the  key to enter the selection.

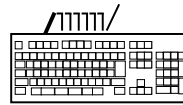


(5) Pressing the option button











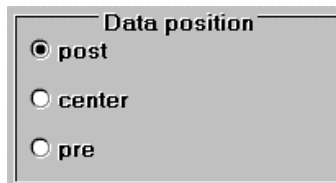
Mouse

Click on the item or button.



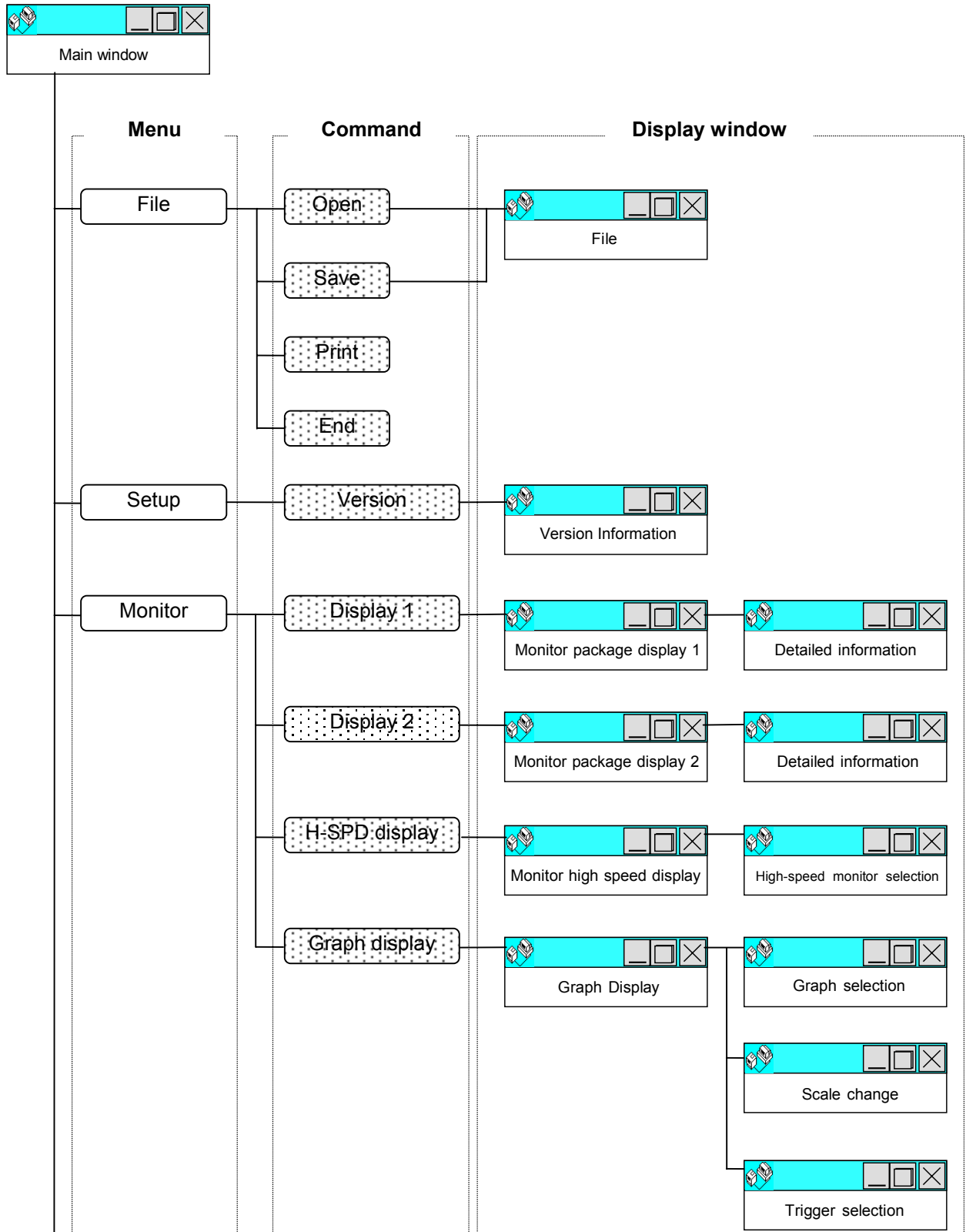
Keyboard

1. Using the  key, select the item, and then press the  key.
2. If the buttons are grouped, select the group with the  key. Select the item using the , ,  and  keys, and then press the  key.



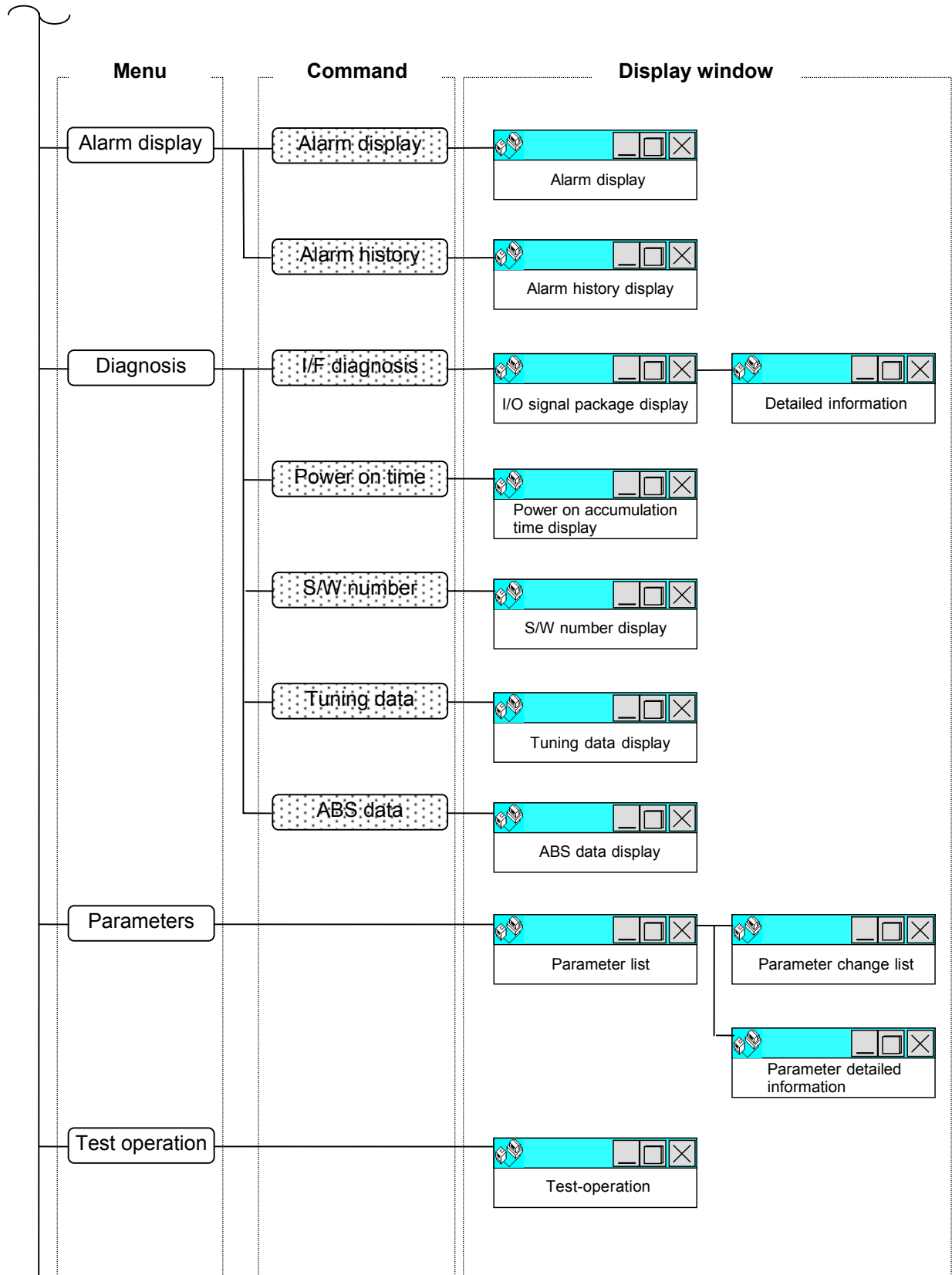
2-2 Commands and display windows

The flow of the commands and windows are shown below.



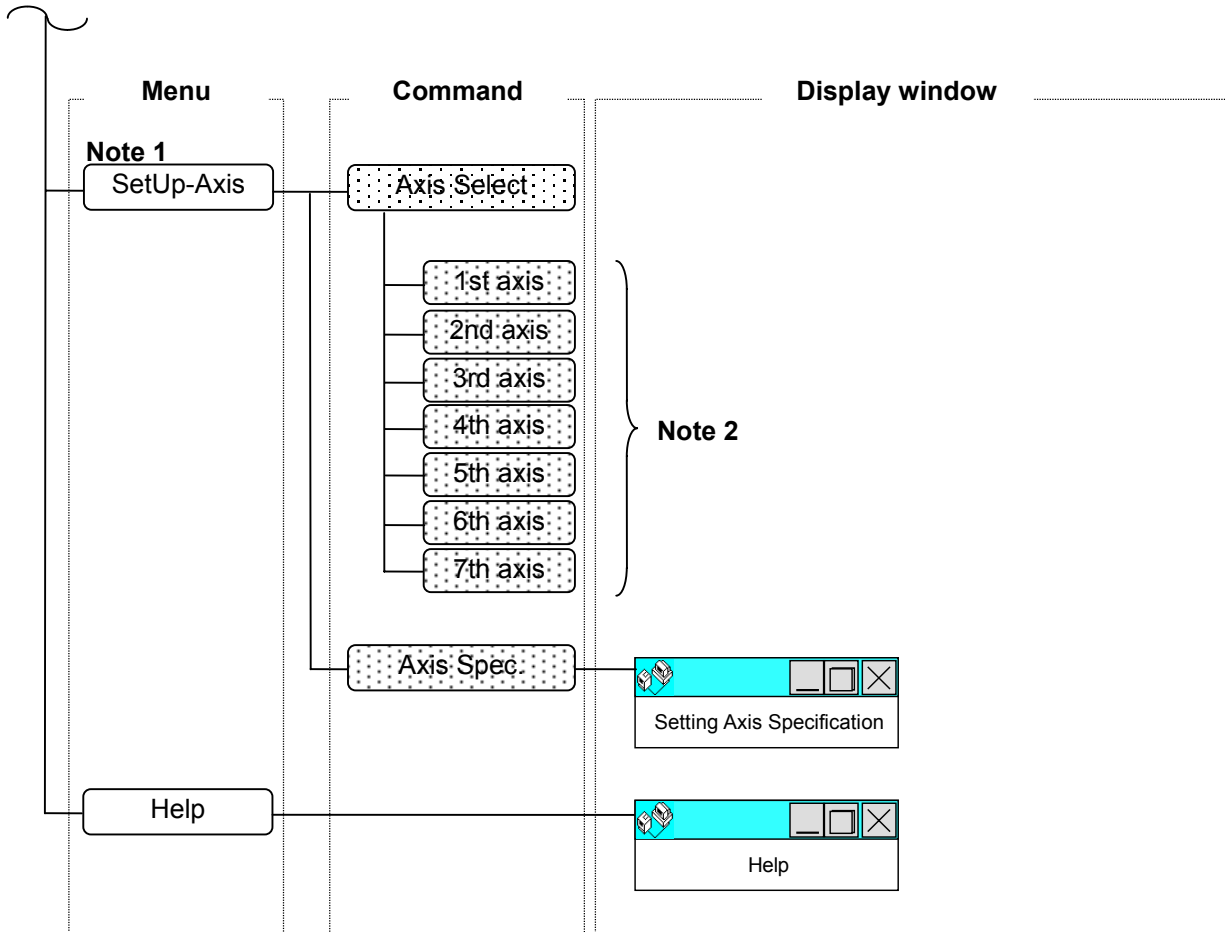
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Note 1 : The "Setup Axis" menu will appear only with the M6 Series NC compatible setup software FWS-B05B015.

Note 2 : The "Axis Select" sub-command menu will appear for the No. of connected axis set in the "Setting Axis Specification" window.
The displayed character is the axis name set in the "Setting Axis Specification" window.

2-3 Detailed explanation on each window

2-3-1 File menu


The (F) file menu corresponds to the currently active window. Only the valid menus can be selected. The Open (O), Save (S) and Print (P) menus are valid only when the following windows are valid.

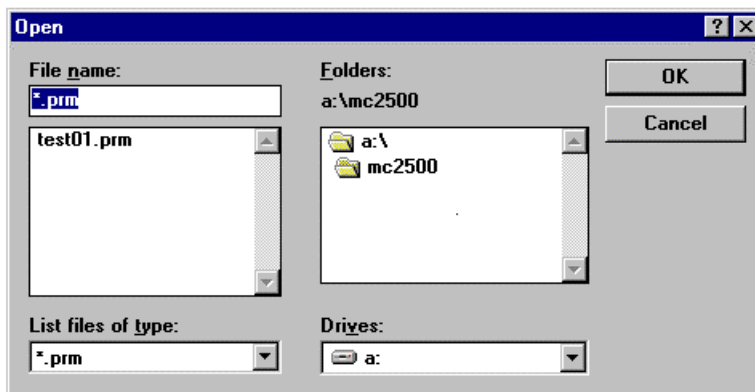
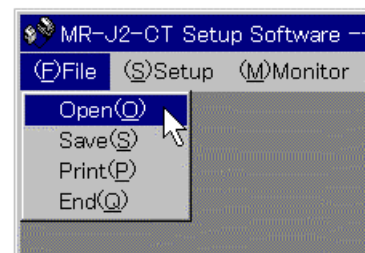
Active window	File extension	File contents
(M) Monitor or Graph (G)	.grf	Each setting condition for graph, and graph data
(P) Parameter	.prm	Parameters

2-3-1-1

When (F) File - Open (O) are selected, the window for opening a file into the currently active window will appear.

The file name extension is automatically assigned according to the currently active window.


If the drive name, folder name and file name are input and  is pressed, the designated file will be read out, and the data will be updated.

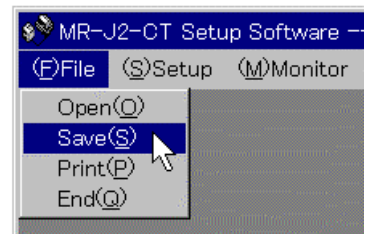


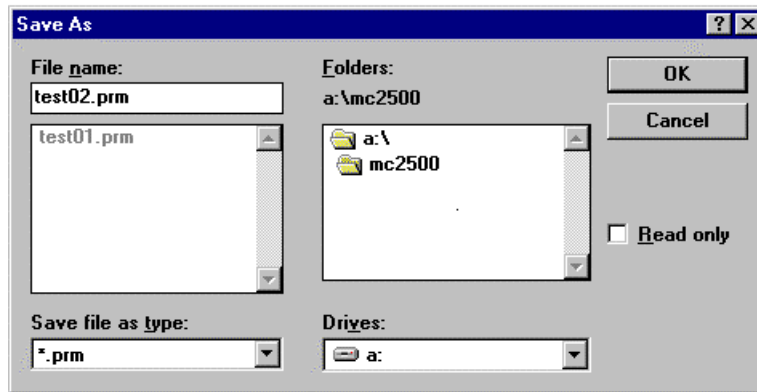
2-3-1-2

When (F) File - Save (S) are selected, the window for saving the data in the currently active window will appear.

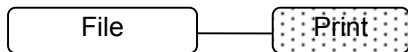
The file name extension is automatically assigned according to the currently active window.

If the drive name, folder name and file name are input and  is pressed, the data will be written into the designated file.

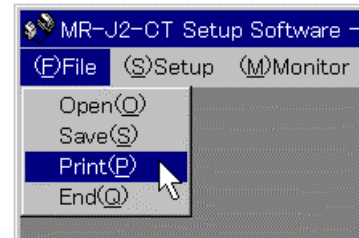




2-3-1-3



When (F) File - Print (P) are selected, the data on the currently active window will be printed.



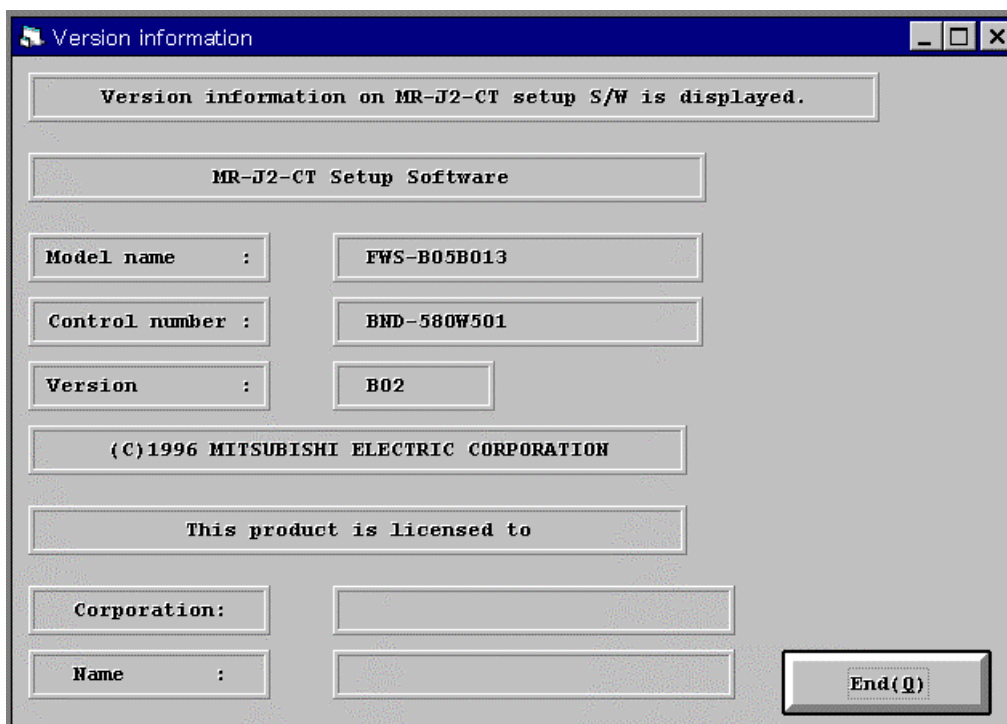
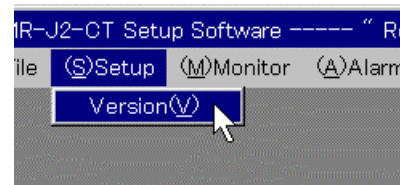
2-3-1-4



When (F) File - End (Q) are selected, the setup software will quit.

2-3-2 Setup menu

The (S) Setup menu displays information on the setup software.



Display	Details
Model name	The product model name is displayed.
Control number	The software number is displayed.
Version	The version is displayed.
Corporation	The corporation name input during installation is displayed.
Name	The user name input during installation is displayed.

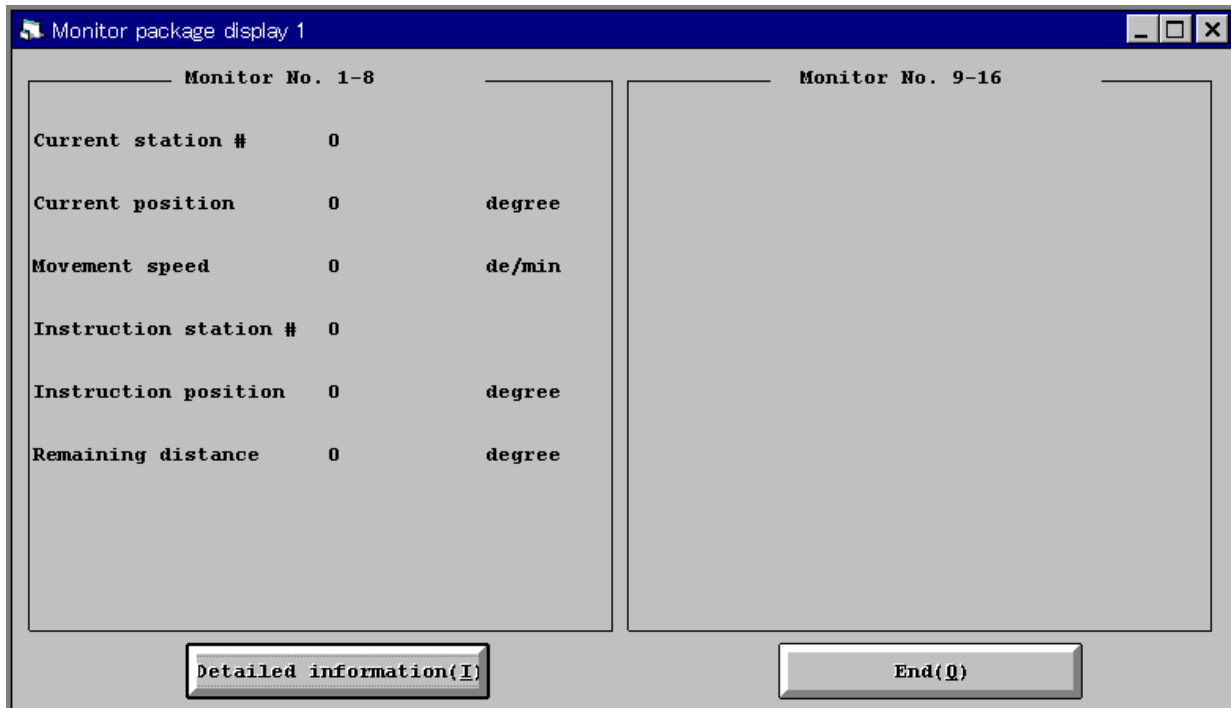
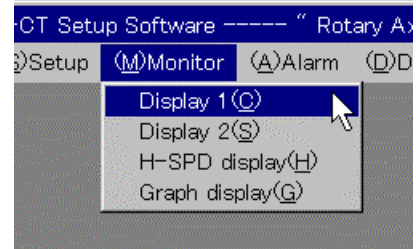
2-3-3 Monitor menu

Various data can be monitored with the (M) monitor menu.
The following menus are available.

Menu	Display details
Display 1 (C)	Information related to indexing control (coordinate value, station number, etc.) is displayed.
Display 2 (S)	Information related to servo control (droop, load rate, etc.) is displayed.
H-SPD display (H)	Up to four data items out of the Monitor package display 1 and 2 are displayed at a high speed.
Graph display (G)	The analog 2ch and digital 4ch graphs are displayed.

2-3-3-1 Monitor — Display 1

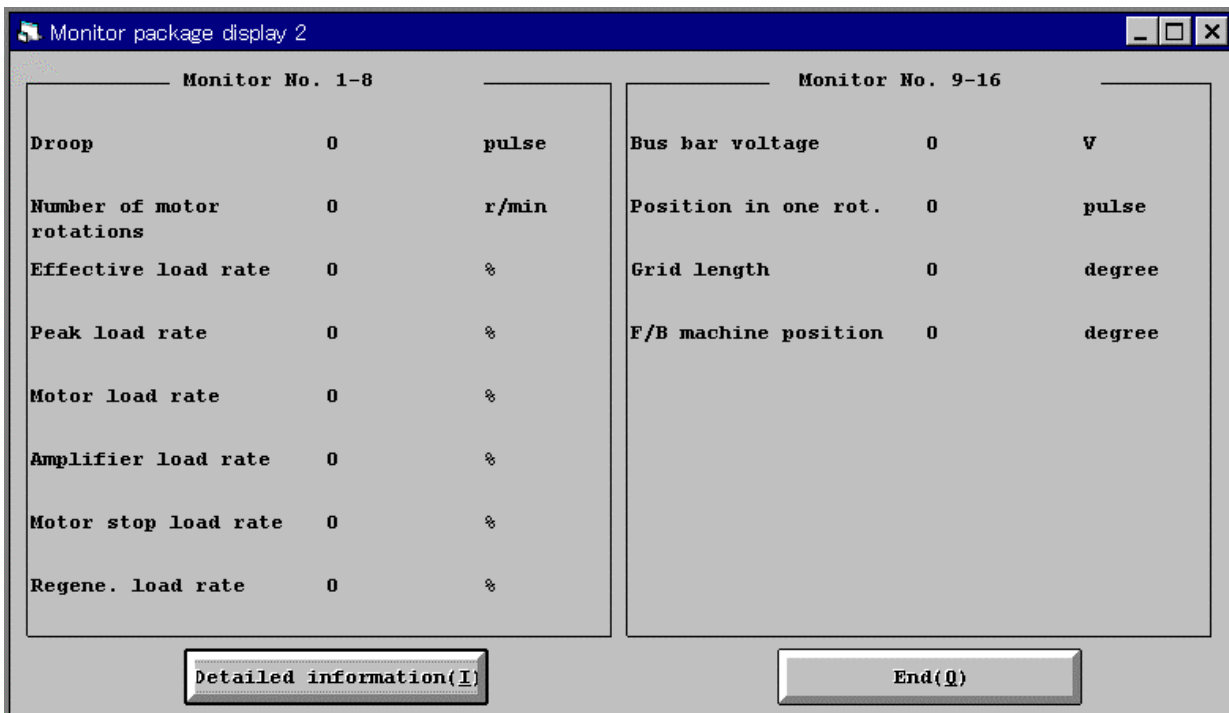
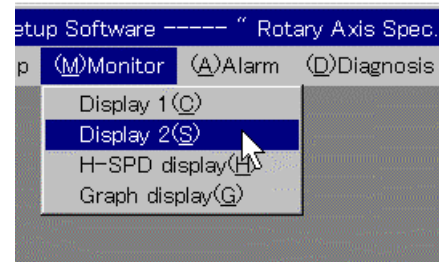
When (M) Monitor - Display 1 (C) are selected, the window displaying information related to the indexing function will appear.



Item	Details	Unit
Current station #	This is the number of the station currently stopped at. If the set position signal is not output, this value will be 0.	Number
Current position	This is the current coordinate value.	1 deg. or 1mm
Movement speed	This is the commanded speed.	1 deg/min. or 1mm/min.
Instruction station #	This is the automatic operation command (instruction) station No. or the nearest station No. to be stopped at with manual operation, etc.	Number
Instruction position	This is the coordinate position in respect to the commanded station No.	1 deg. or 1mm
Remaining distance	This is the remaining distance to the commanded position.	1 deg. or 1mm

2-3-3-2 Monitor — Display 2

When (M) Monitor - Display 2 (S) are selected, the window displaying information related to the servo control will appear.

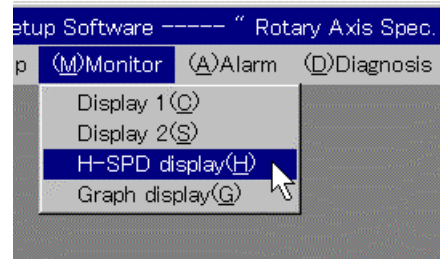


Chapter 2 Usage Methods

Item	Details	Unit
Droop	The difference of the actual machine position in respect to the command position is called the droop. This amount is displayed.	Pulse (detector unit)
Number of motor rotations	The actual motor speed is displayed.	rpm
Effective load rate	The continuous effective load torque is displayed. This is 100% at the rated torque. The effective value for the past 15 seconds is displayed.	Rating %
Peak load rate	The max. torque generated during acceleration/deceleration, etc., is displayed. This is 100% at the rated torque. The peak value for the past 15 seconds is displayed.	Rating %
Motor load rate	The rate of the load torque in respect to the tolerable load torque is displayed as a %.	%
Amplifier load rate	The rate of the load torque in respect to the tolerable load torque is displayed as a %.	%
Motor stop load rate	The rate of the load torque in respect to the tolerable load torque when the motor is stopped is displayed as a %.	%
Regene. load rate	The rate of the regenerative power in respect to the tolerable regenerative power is displayed as a %. The tolerable regenerative power will differ depending on whether the regenerative option is provided. Thus, correctly set the regenerative option type parameter.	%
Bus bar voltage	The voltage (across P-N) of the main circuit converter is displayed.	V
Position in one rot.	The position within one detector rotation is displayed as a pulse unit.	Pulse (detector unit)
Grid length	The length from the dog off (including grid mask amount) to the grid point when dog-type reference point return is carried out is displayed. (When the grid mask is set, the length from mask off to the grid point is displayed.)	1 deg. or 1mm
F/B machine position	The real position of the machine is displayed.	1 deg. or 1mm

2-3-3-3 Monitor — H-SPD display

When (M) Monitor - H-SPD display (H) are selected, up to four data items can be selected from the Monitor package display 1 and 2, and displayed at a high speed.

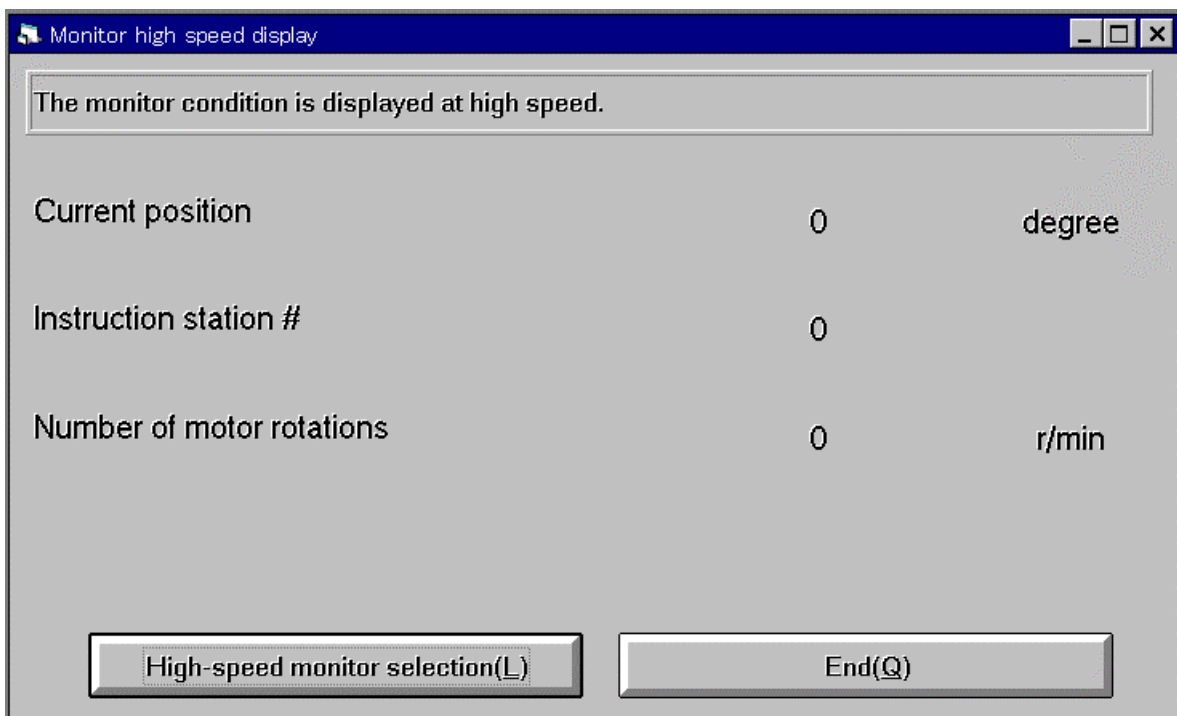
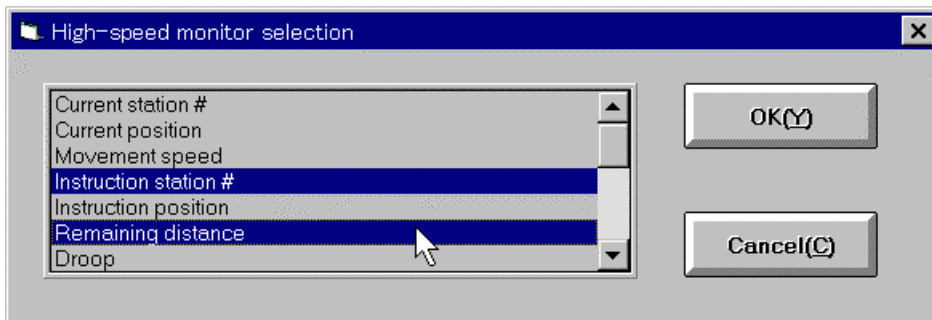


To select the item to display, press **High-speed monitor selection(L)**.

Select the items to be displayed from the High monitor selection window, and then press

OK(Y). Only up to four items can be selected.

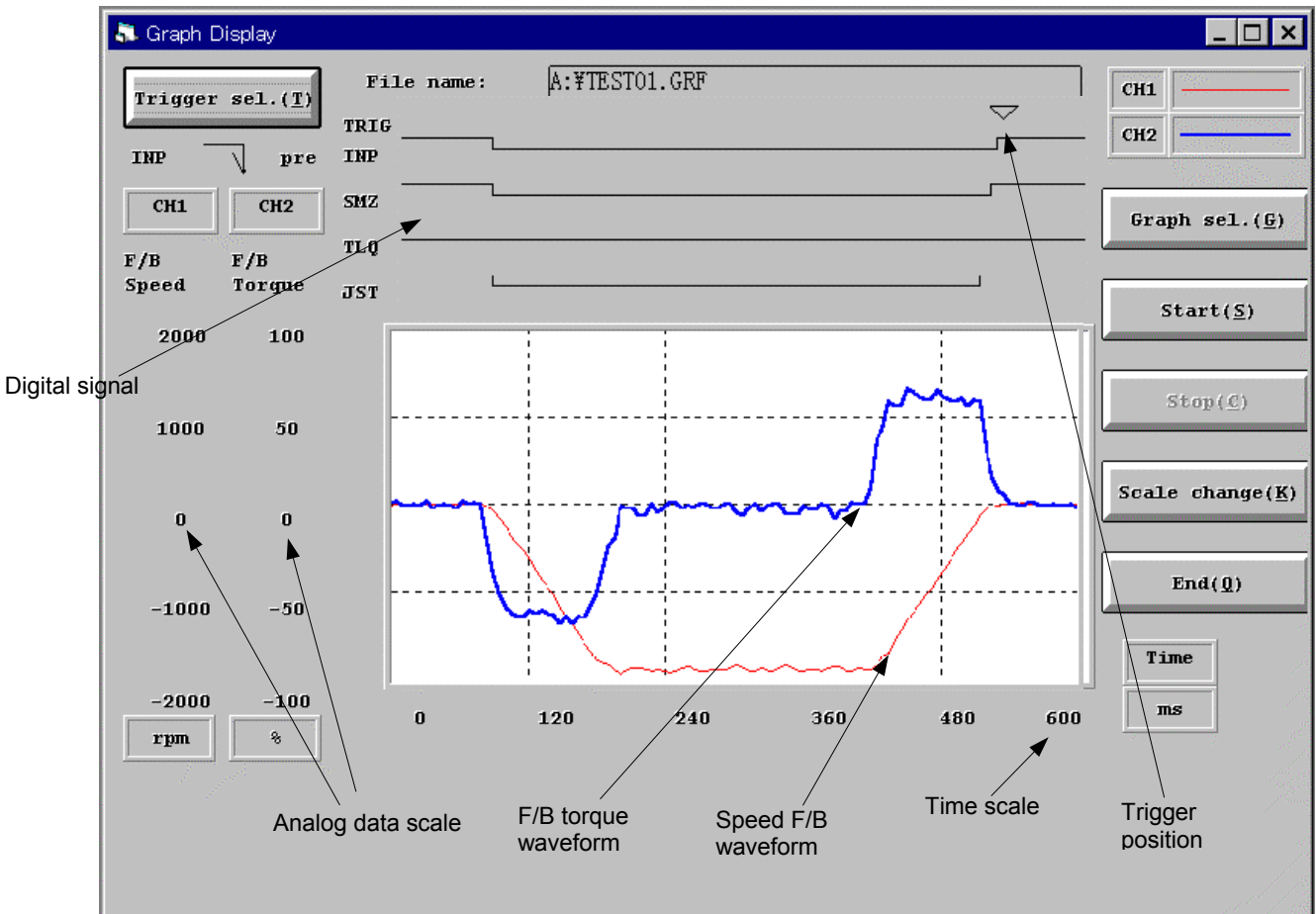
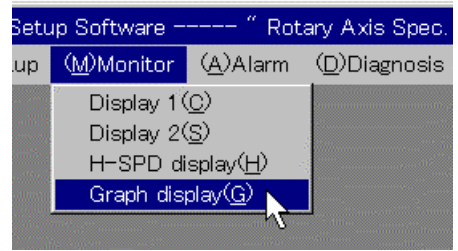
When fewer items are selected, the display will be refreshed more quickly.



2-3-3-4 Monitor — Graph



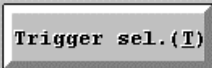

When (M) Monitor - Graph (G) are selected, the graph display window will appear.

The graph display can simultaneously retrieve two analog data channels and four digital signal channels, and display the data.

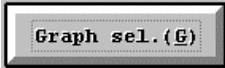



When the window is displayed, the graph and trigger have not been selected, so the graph cannot be displayed. Set the graph and trigger with the following procedure, and then retrieve and display the data.

Graph data retrieval procedure

- | | |
|---|--|
|  | (1) Select the analog and digital data to be retrieved. |
|  | (2) If necessary, change the analog data scale. |
|  | (3) Select the digital signal to be used as the trigger, and designate the trigger conditions. |
|  | (4) Prepare the operation conditions, and then press this button. The system will wait for the trigger conditions to be established. When the trigger conditions are established, the graph will appear automatically. |

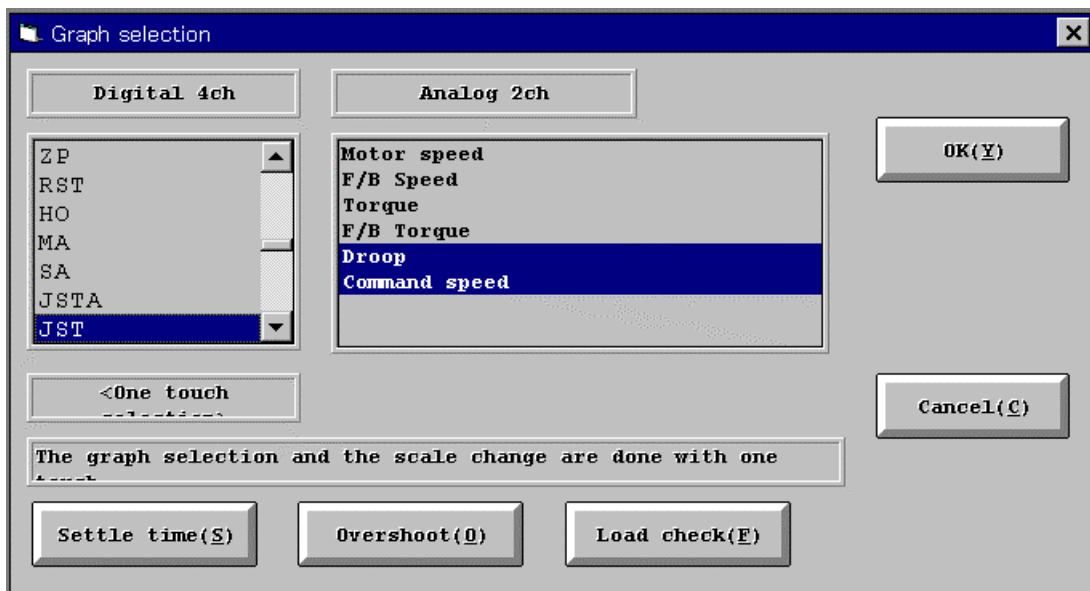
(1) Selecting the graph

When  is displayed, the Graph selection window will appear.

Select up to four digital signals and up to two analog data items. When  is pressed, the graph selection will be completed.

The analog data scale is set to the default value immediately after the graph is selected. If necessary, the scale can be changed with the following procedure.

When one of the one-touch selection buttons are pressed, the preset graph selection conditions can be set with a single touch. The conditions corresponding to each button are shown on the next page.

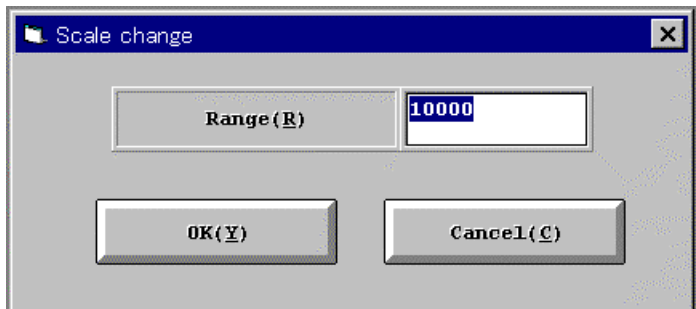
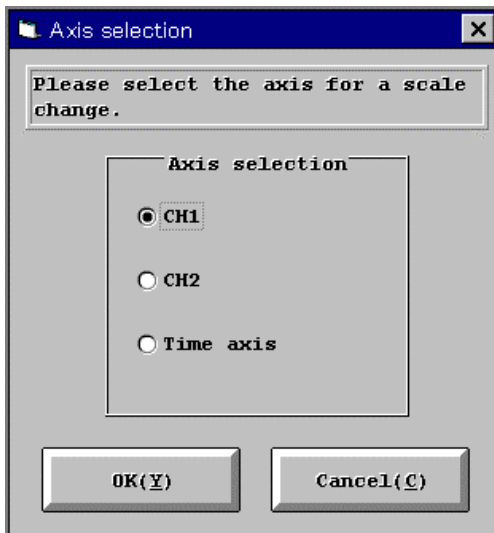


One touch selection button	Analog signal		Digital signal				Trigger selection		
	Signal 1	Signal 2	Signal 1	Signal 2	Signal 3	Signal 4	Signal	Condition	Position
Settle time	Droop	Command speed	INP	SMZ	TLQ	JST	INP	Rising edge	post
Overshoot	Motor speed	F/B torque	INP	SMZ	TLQ	JST	INP	Falling edge	post
Load check	Speed F/B	F/B torque	INP	SMZ	TLQ	JST	INP	Falling edge	center

(2) Selecting the scale

When **Scale change(K)** is pressed, the scale selection window will appear.

When the axis for which the scale is to be changed is selected and **OK(Y)** is pressed, the Scale change window will appear. Input the new scale value.
If graph data is displayed, it will be redisplayed following the new scale.



The scale can also be changed by double-clicking the **CH1**, **CH2** or **Time** buttons on the screen. The Scale change window will appear, and the scale value can be changed without selecting the scale change axis.

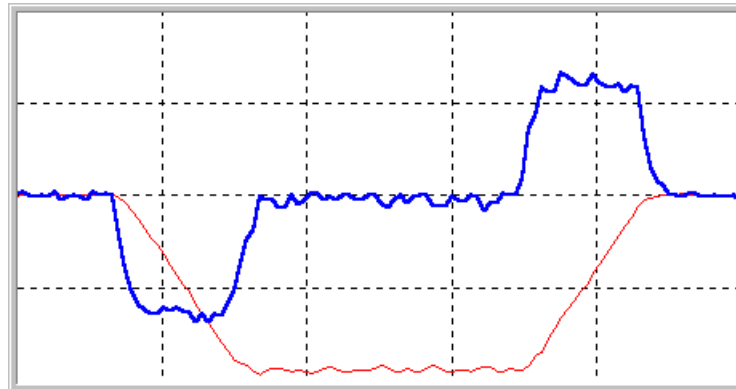
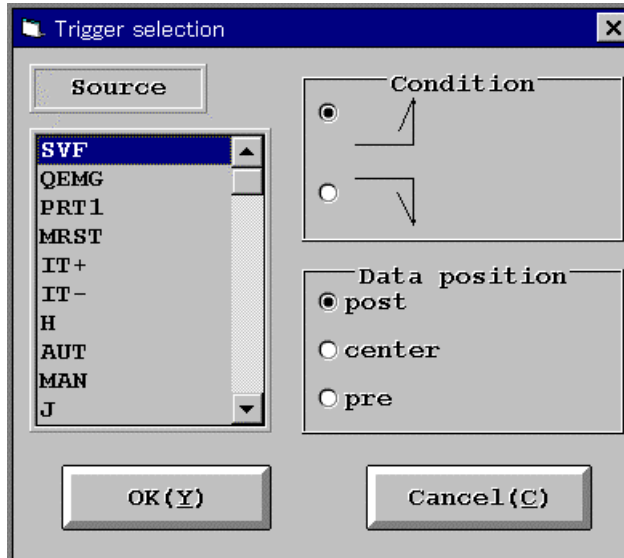
(3) Selecting the trigger

When **Trigger sel.(T)** is pressed, the Trigger selection window will appear.

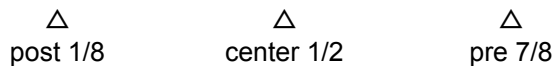
The trigger conditions are required to display the data before and after the timing of the one-point digital signal changes (either rising edge or falling edge).

Conditions that exceeds the limit value of the analog data level cannot be set.

The data position selection is used to select the time axis to place the trigger position. It is approximately as shown below.



Trigger data position selection



(4) Starting

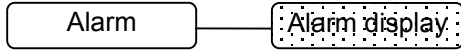
When **start(S)** is pressed, the monitor will enter the trigger wait state. When the trigger conditions are established, the graph will be displayed automatically. Thus, press this button after preparing for operation with the conditions to be retrieved. Depending on the trigger conditions, the trigger will not be applied, and the monitor will stay in the trigger wait state. In this case, press

stop(C) to forcibly quit the monitor. The graph will not be drawn.

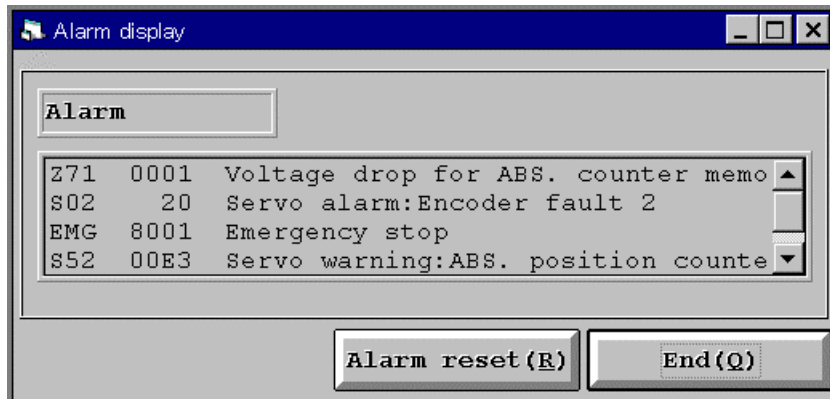
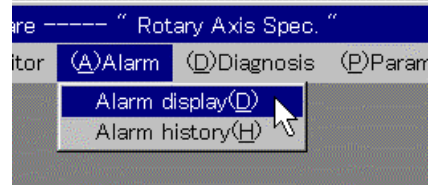
2-3-4 Alarm menu

The (A) Alarm menu can be used to confirm the currently occurring alarms, and to confirm and erase the alarm history.

2-3-4-1



When (A) Alarm - Alarm display (D) are selected, the window displaying the currently occurring alarm message will appear.

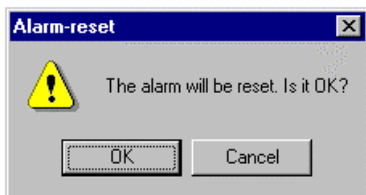


Up to five sets of alarms can be displayed. Note that if the same type of alarm occurs, the alarm with the highest priority will display.

(Example: Even if servo alarms S02 and S03 occur simultaneously, only S02 will display.)

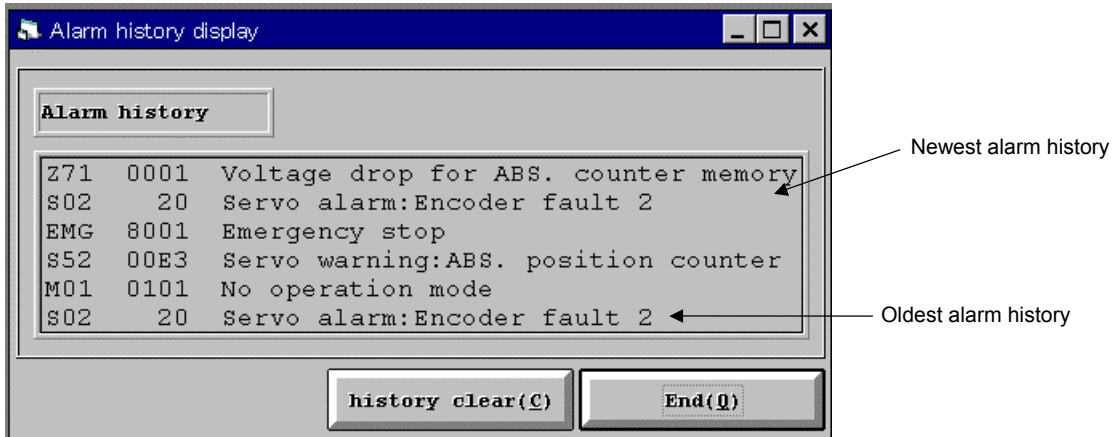
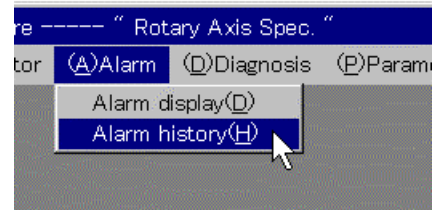
If there are no alarms, the message "No Alarm" will appear.

When **Alarm reset (R)** is pressed, the alarm reset can be executed from a remote state. The following type of window will appear, so press **OK**. The alarms will be reset.



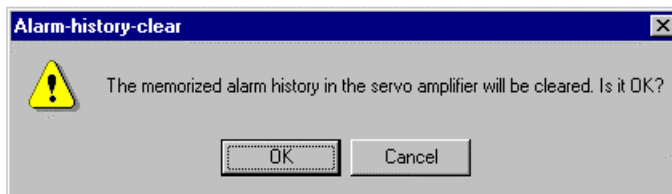
2-3-4-2 Alarm Alarm history

When (A) Alarm - Alarm history (H) are displayed, the window displaying the alarm history will appear.



Up to six sets of alarm history can be displayed. If a new alarm occurs, the oldest alarm will be erased. The newly occurring alarm will appear as the newest alarm.

When **history clear(C)** is pressed, the entire alarm history can be erased. The following type of window will appear, so press **OK**. The entire alarm history will be erased.

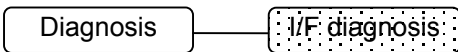


2-3-5 Diagnosis menu

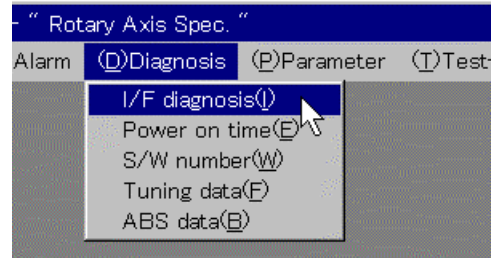
The (D) Diagnosis menu displays various statuses. The following menus are available.

Menu	Display details
I/F diagnosis (I)	The input/output state of the control signals with the NC unit are displayed.
Power on time (E)	The cumulative time that the power was ON and the contactor ON frequency are displayed.
S/W number (W)	The software number of the MR-J2-CT unit is displayed.
Tuning data (F)	The automatic tuning status (position, speed gain, etc.) is displayed.
ABS data (B)	The absolute position detection information is displayed.

2-3-5-1



When (D) Diagnosis - I/F diagnosis (I) are selected, the window displaying the status of the control signals exchanged with the NC unit will appear.



Input signal								
7	6	5	4	3	2	1	0	
H		*IT-	*IT+	MRST	*PRT1	QEMG	*SVF	X00
S	ZST	AZS		ZRN	J	MAN	AUT	X08
PR2	PR1	MP2	MP1	PUS	STS	DIR	ST	X10
								X18
ST128	ST64	ST32	ST16	ST8	ST4	ST2	ST1	X20
							ST256	X28
								X30
								X38

Output signal								
7	6	5	4	3	2	1	0	
ADJ	TLQ	MVM	MVP	AX1	SMZ	INP	RDY	Y00
NEAR	JST	JSTA	SA	MA	HO	RST	ZP	Y08
S0	AZS0		ZRN0	ARNN	J0	MAN0	AUTO	Y10
ZSE	ZSF	ZSN	ABS	BAL	AL4	AL2	AL1	Y18
ST0128	ST064	ST032	ST016	ST08	ST04	ST02	ST01	Y20
							ST0256	Y28
PSW8	PSW7	PSW6	PSW5	PSW4	PSW3	PSW2	PSW1	Y30
				PSI	PFN	PMV		Y38

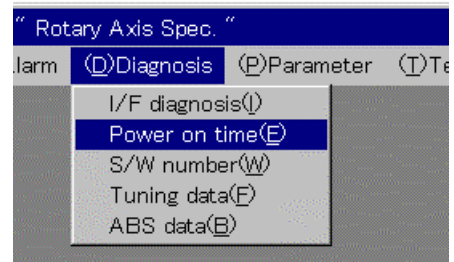
The control command signals from the NC unit to the MR-J2-CT are displayed in the Input signal section.

The status output signals from the MR-J2-CT to the NC unit are displayed in the Output signal section. In both the Input signal section and Output signal section, if the signal is ON, the background of the signal will change to yellow. If the signal is OFF, the background will be white.

When **Detailed information(I)** is pressed, an explanation of each signal will appear.

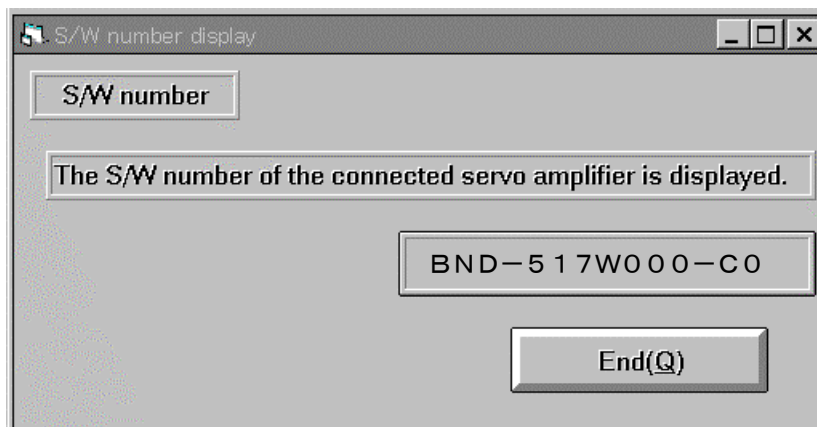
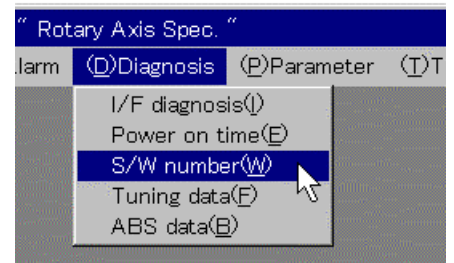
2-3-5-2 Diagnosis Power on time

When (D) Diagnosis - Power on time (E) are selected, the cumulative time that the power was ON and the contactor ON frequency turned ON will display.



2-3-5-3 Diagnosis S/W number

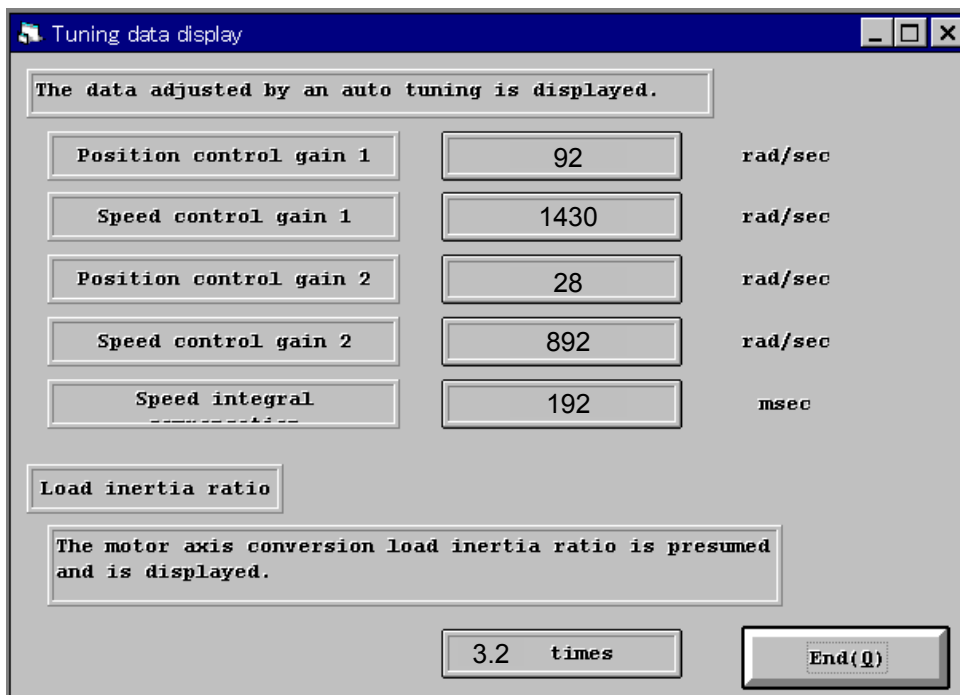
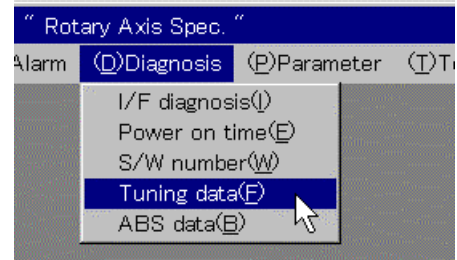
When (D) Diagnosis - S/W number (W) are selected, the software number of the servo amplifier will display.



2-3-5-4 Diagnosis — Tuning data

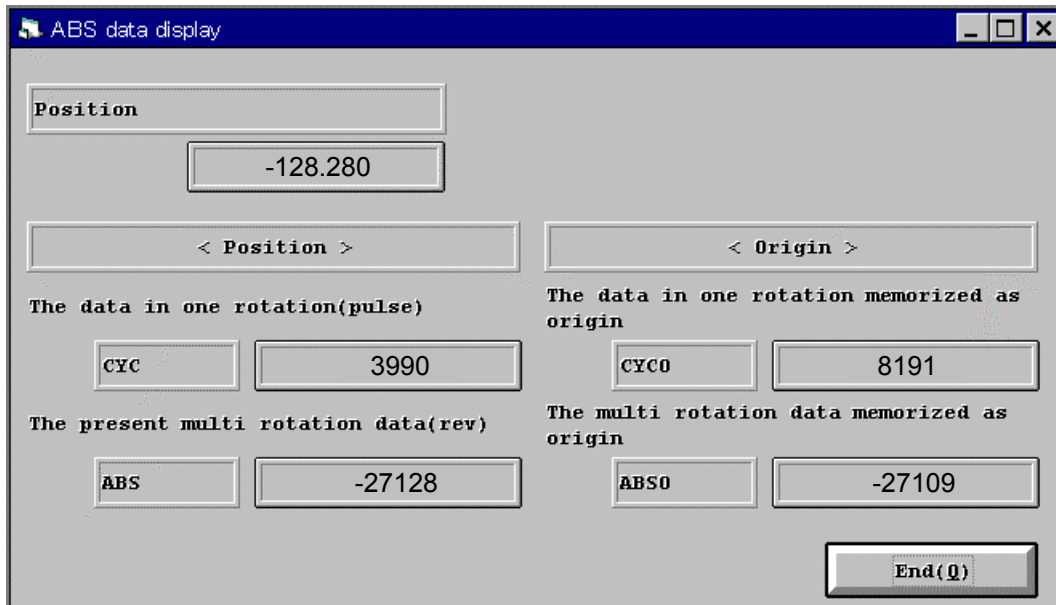
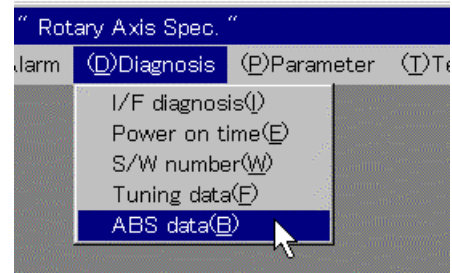
When (D) Diagnosis - Tuning data (F) are selected, the position automatically tuned to with the automatic tuning function, and the value such as the speed control gain and estimated load inertia ratio will be displayed in real-time.

The automatic tuning function is executed in real time, so it responds quickly to fluctuating load statuses to tune the servo constants. The constantly changing values are displayed in real-time.



2-3-5-5 Diagnosis ABS data

When (D) Diagnosis - ABS data (B) are selected, the status of the absolute position detection system will display.

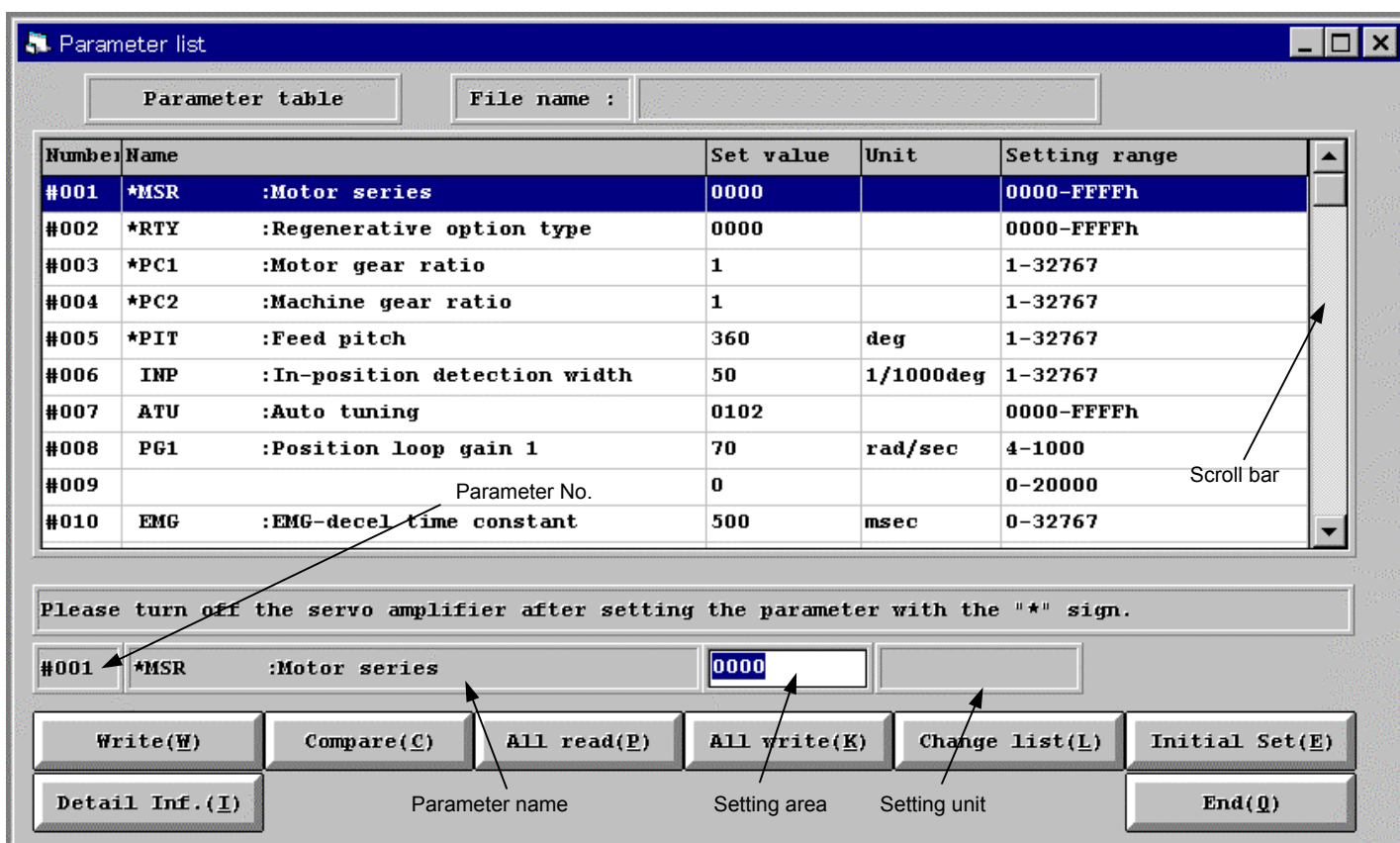


Item	Display details	Unit
Position	The current position coordinates are displayed.	deg/mm
<Position>/The data in one rotation	The current detector and the position within one rotation are displayed.	Pulse
<Position>/The present multi rotation data	The current detector and the multi-rotation counter value are displayed.	rev.
<Origin>/The data in one rotation memorized as origin	The position within one rotation of the detector memorized as the origin reference is displayed.	Pulse
<Origin>/The multi rotation data memorized as origin	The value of the detector's multi-rotation counter memorized as the origin is displayed.	rev.

2-3-6 Parameter menu

The (P) Parameter menu is used to set and display the parameters.
The following functions can be used.

Function	Details
Write (W)	Only the currently selected parameter is written to the servo amplifier.
Compare (C)	All of the details set with the setup software and the parameters in the servo amplifier are compared. The numbers of the parameters that do not match are listed.
All read (P)	All of the parameters in the servo amplifier are read out as a package, and the display is updated.
All write (K)	All of the parameters set with the setup software are written as a package to the servo amplifier.
Change list (L)	The parameters in the servo amplifier are compared with the default values. The parameters that do not match are listed.
Initial Set (E)	All parameters are initialized to the default values.
Detail Inf. (I)	An explanation on the currently selected parameter is displayed.

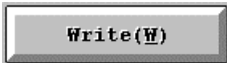


The display is scrolled by using the scroll bar at the right side of the window or by using the UP and DOWN cursor keys.

The value for the currently selected number is displayed in the setting area. This value is the setting target.

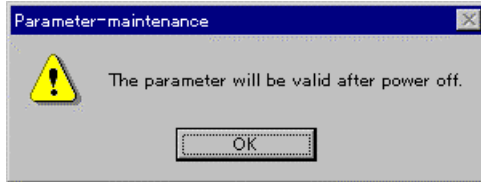
If all write or initialization has not been carried out even once after the setup software was started, nothing will appear in the data display area even if the Parameter window is opened. Each item will display after all write or initialization has been carried out.

2-3-6-1



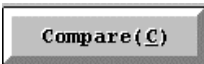
When writing is carried out, only the currently selected parameters will be written to the servo amplifier side.

One of the following windows will appear when the parameters have been written correctly.

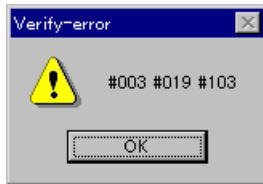


Note that if the "The parameter will be valid after power off" message appears, the written parameter will be validated after the power has been turned ON again.

2-3-6-2



When comparison is carried out, the details set with the setup software and all of the parameters in the servo amplifier will be compared. If any parameters do not match, the mismatch number will be listed as shown below.




In this case, parameters #003, #019 and #103 did not match.

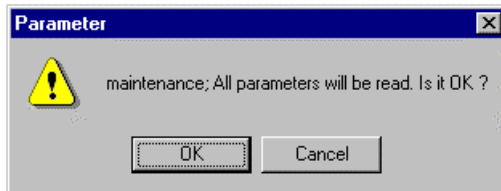
2-3-6-3



When all read is carried out, all of the parameters in the servo amplifier will be read out as a package, and the display will be updated.

The following message will appear before reading is executed.

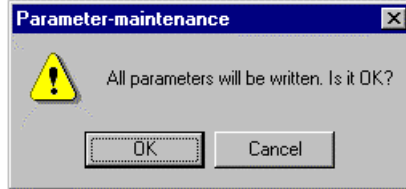
When  is pressed, the reading will start.



2-3-6-4

When all write is called out, all of the parameters set with the setup software will be written as a package to the servo amplifier. The following message will appear before writing is executed.

When is pressed, the writing will start.



2-3-6-5

The parameters in the servo amplifier will be compared with the default values. The parameters that do not match will be displayed as shown below.

A dialog box titled "Parameter change list" containing a table with the following data:

Pr	Name	Initial value	Present value
#001	*MSR :Motor series	0000	1000
#003	*PC1 :Motor gear ratio	1	10
#004	*PC2 :Machine gear ratio	1	20
#006	INP :In-position detection width	50	100
#010	EMG :EMG-decel time constant	500	1000
#100	*station :calculation station numbers	2	10
#104	*Tleng :liner axis stroke	100.000	500.000
#110	ZRNspeed :Ref. point return speed	1000	3000
#111	ZRNcreep :Ref. point return creep speed	200	300

At the bottom of the dialog box is an "End (Q)" button.

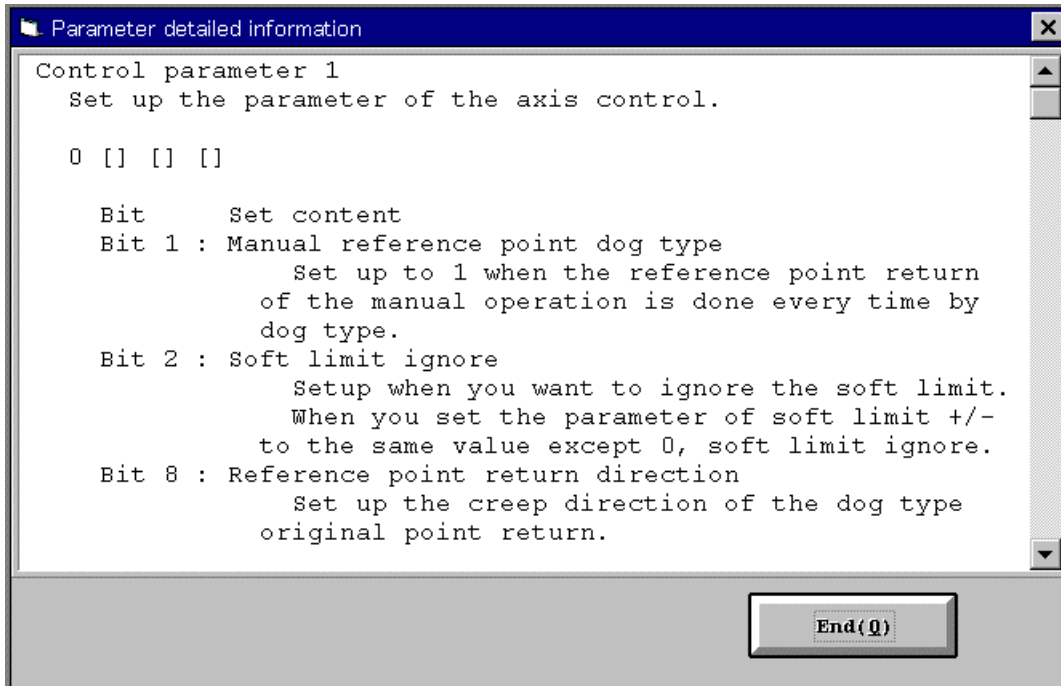
2-3-6-6

All of the parameter will be initialized to the default values, and the display will be updated. The default values are values preset with the setup software. These are the same as the values set when the servo amplifier is shipped from the factory.

2-3-6-7

Detail Inf.(I)

A detailed explanation is displayed for the currently selected parameters.
If the explanation does not fit on the screen, the remaining explanation can be viewed by pressing the scroll bar on the right side.



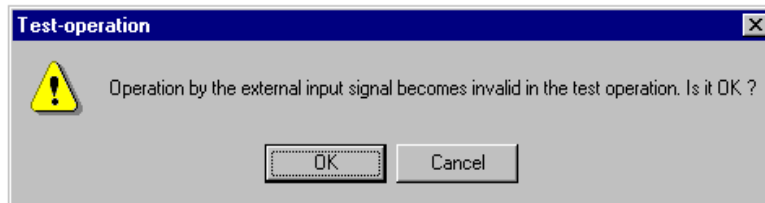
2-3-7 Test operation menu

The (T) Test operation menu is used to test operate the servo amplifier as a single unit. The following functions can be used.

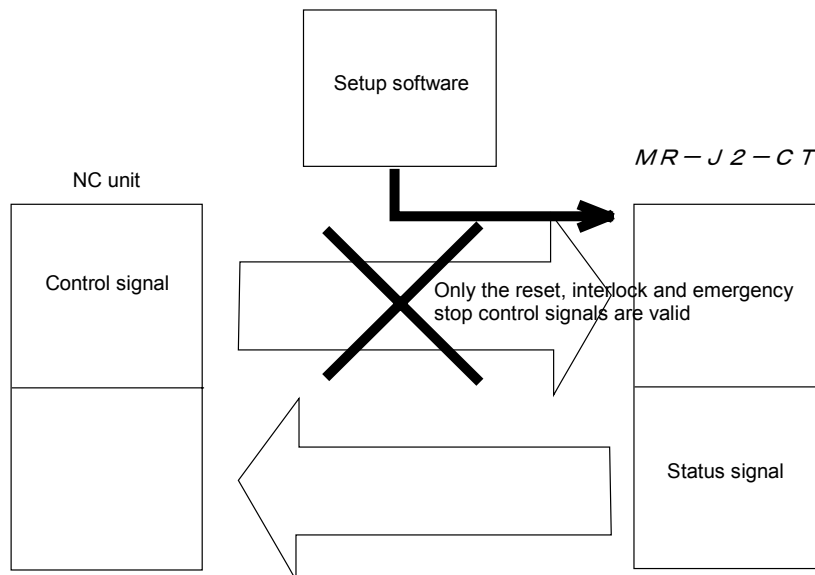
Function	Details
Operation mode (M)	Automatic operation, manual operation, JOG, step or origin return can be selected.
Parameter group Sel. (P)	Up to four operation parameter sets can be selected in each operation mode.
Absolute position initial set	The origin can be initialized at the dog-less absolute position.

When the Test operation menu is selected, the following message will appear.

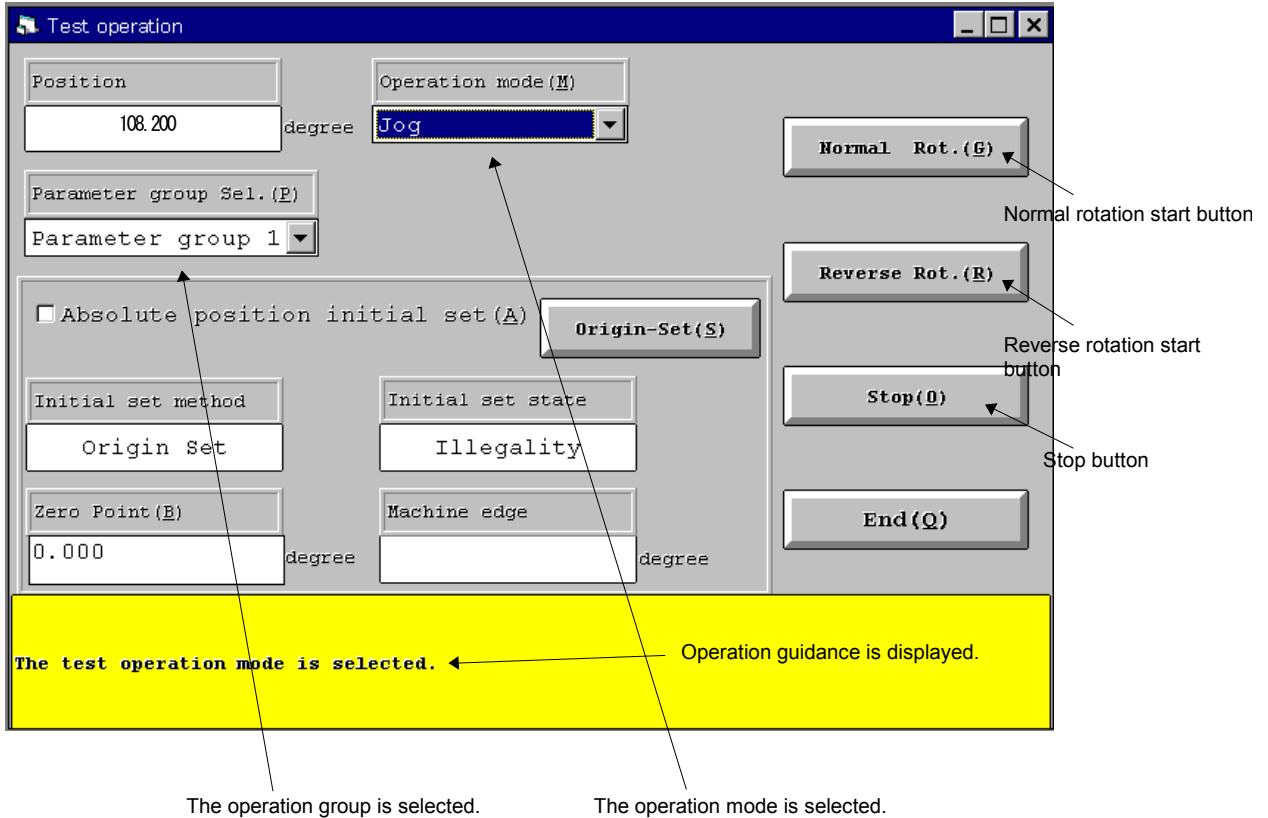
When is pressed, the test operation mode will be entered.



What is the test operation mode?
 When the test operation mode is validated, the adjusting machine signal (ADJ) will be output to the NC side. In this state, most of the control signals sent from the NC side will be invalidated, and instead the signals from the test operation window will be validated. Note that the servo OFF signal will be forcibly canceled, and the servo will turn ON.



Flow of control signals during test operation mode



Test operation screen

2-3-7-1 Preparation for test operation

Before carrying out the test operation, the operation mode and operation parameter group must be selected. If the servo amplifier is to be used in the normal mode (axis selection rotary switch set between 0 and 6), confirm that the interlock signal input from the NC side is canceled.

2-3-7-2 Operation

After preparations have been completed, press the **Normal Rot. (G)** button or **Reverse Rot. (R)** button. The rotation direction signal and start signal will be input to the servo amplifier, and operation will start.

If the **Stop (O)** button is pressed during operation, the start signal will turn OFF and the operation will stop.

Operation can also be stopped by pressing the **Shift** key.

During automatic operation, the operation will automatically stop after positioning is completed. However, the start signal will remain on, so when the stop button has been pressed, the operation must be restarted. Note that this is not necessary for the step mode.

2-3-7-3 Initializing the absolute position

When using the absolute position detection system, the origin must be initialized (origin set). When using the dog-less type, initialization must be carried out with the stopper method or origin setting method.

In the test operation mode, the dog-less initialization operation can be carried out.

Follow the procedure below.

(1) Validate the initialization mode

Check the box in Absolute position initial set (A) to validate the state. At this time, confirm that the Initial set method display is either "origin set" (reference point setting) or "stopper". Any other method requires the parameters to be set.

(2) Reference point setting using the origin set method

When using the origin setting method, move the machine to the reference position. Use either the JOG or step mode to move the machine.

When the button is pressed after positioning, that position will be set as the reference position.

(3) Reference point setting using the stopper method

When using the stopper method, move the machine to the stopper mechanism, and gradually press it against the stopper. At this time, the torque limit value will automatically change to the value set in operation parameter 4. Thus, the operation parameter 4 torque limit value must be set to the pressing limit beforehand. If the torque limit is reached when pressing, the command in the pressing direction will be automatically blocked. This pressing position is set as the reference point.

(4) Positioning to grid point

After setting the reference point with method (2) or (3), the length from the reference position to the reference grid point will appear in the Machine edge display shown on the right. If the machine is moved in the direction of this machine edge code with the JOG or step mode, the machine will automatically stop at the reference grid point. The detector's absolute position information will be memorized, and the initialization will be completed. Note that the machine cannot be moved in the reverse direction.



(5) Resetting the initial setting

Once the initialization has been carried out and the machine stops at the grid point, starting will not be possible even in the JOG mode. To execute the initialization again, remove the check in the Absolute position initial set item set in step (1), and then check it again. The operations can be started again from step (2).

The operation guidance will appear during the above state. In the initialization state, the operation procedure will appear. If the initialization is completed normally, the completion message will appear.

To carry out normal operations, such as automatic operation, after initializing the system, the power must be turned OFF once.

2-3-8 Setup-Axis menu

The (U) Setup-Axis menu is used only with the FWS-B05B015 software.

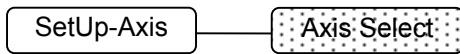
As the FWS-B05B015 carries out communication between the setup software and MR-J2-CT using the bus connection, the communication cable is not required. All MR-J2-CT units that are connected can be set up. Note that multiple axis cannot be set up simultaneously. The target axis must be selected with the setup software.

The menu used for this operation is the SetUp-Axis menu.

The following functions are provided in the SetUp-Axis menu.

Function	Details
Axis Select (C)	The axis to be set up is selected.
Axis Spec. (S)	The number of connected axis and the name of each axis is set.

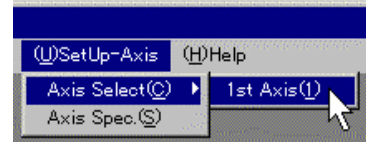
2-3-8-1



When (U) SetUp-Axis - Axis Select (C) are selected, the submenus for the currently set connected axis will appear.

Select the axis to be set up from this submenu.

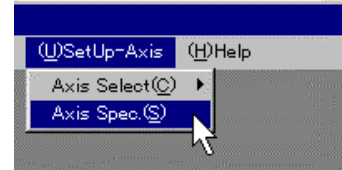
The number of submenu axes and the submenu titles can be set freely to match the actual machine configuration. (Refer to next page for explanation.)



Once the axis is selected, all windows in the setup software will carry out communication in respect to the selected axis until a new axis is selected. Note that when the setup software is quit once and restarted, the 1st axis will be selected as the default.

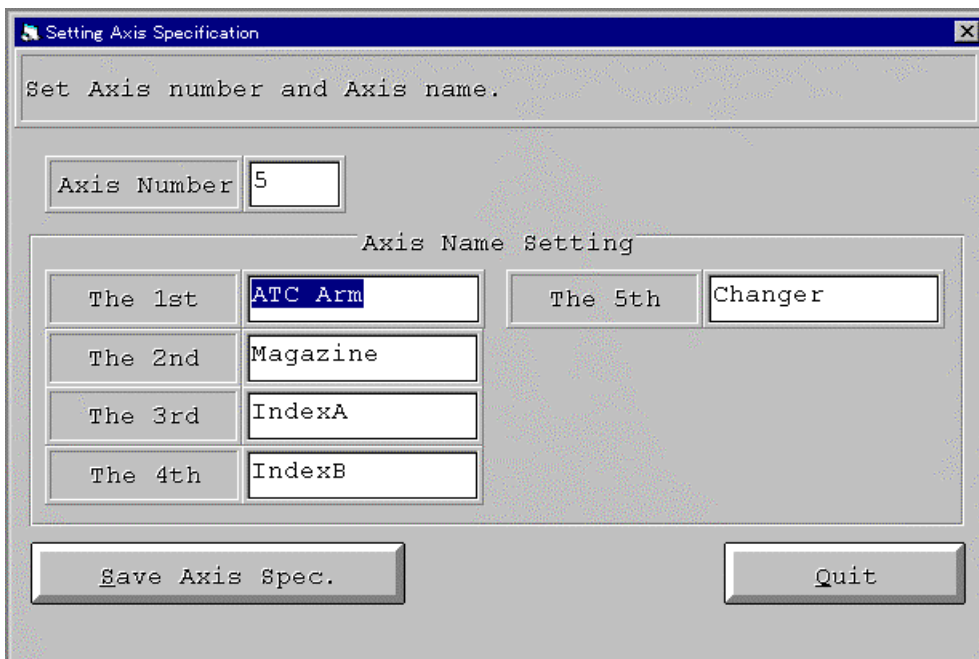
2-3-8-2 SetUp-Axis — Axis Spec.

When (U) SetUp-Axis - Axis Spec. (S) are selected, the window for setting the axis specifications will appear. The number of connected axes and the names of each axis can be set in this window. The information set here can be saved in a file, so the information does not need to be set again when the setup software is restarted. If the setup software is quit without saving the information in a file, the original values will be applied when the software is restarted.



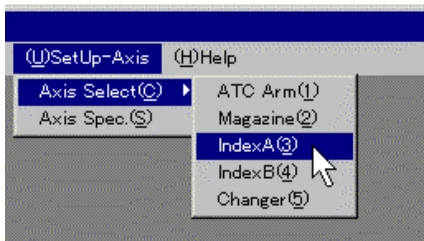
Immediately after the software is installed, the 0 is displayed for the Axis Number, and ? is displayed for the Axis Name Setting. (? is a value between 1 and 7.)

Random names can be set to match the actual machine configuration. The set axis name is displayed in the Axis Select (C) submenu, and is constantly displayed on the title bar. Thus, the setup target axis can be seen in a glance.

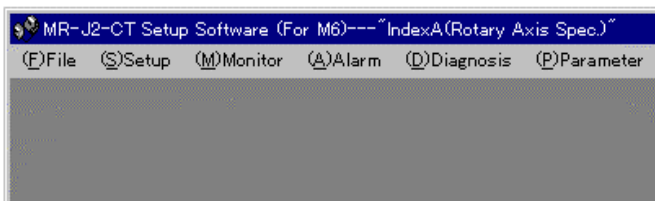


Example of axis specifications setting

If the above information is set, the submenu and title bar displays will be as follow.



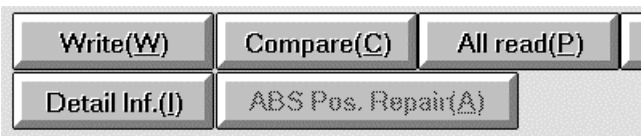
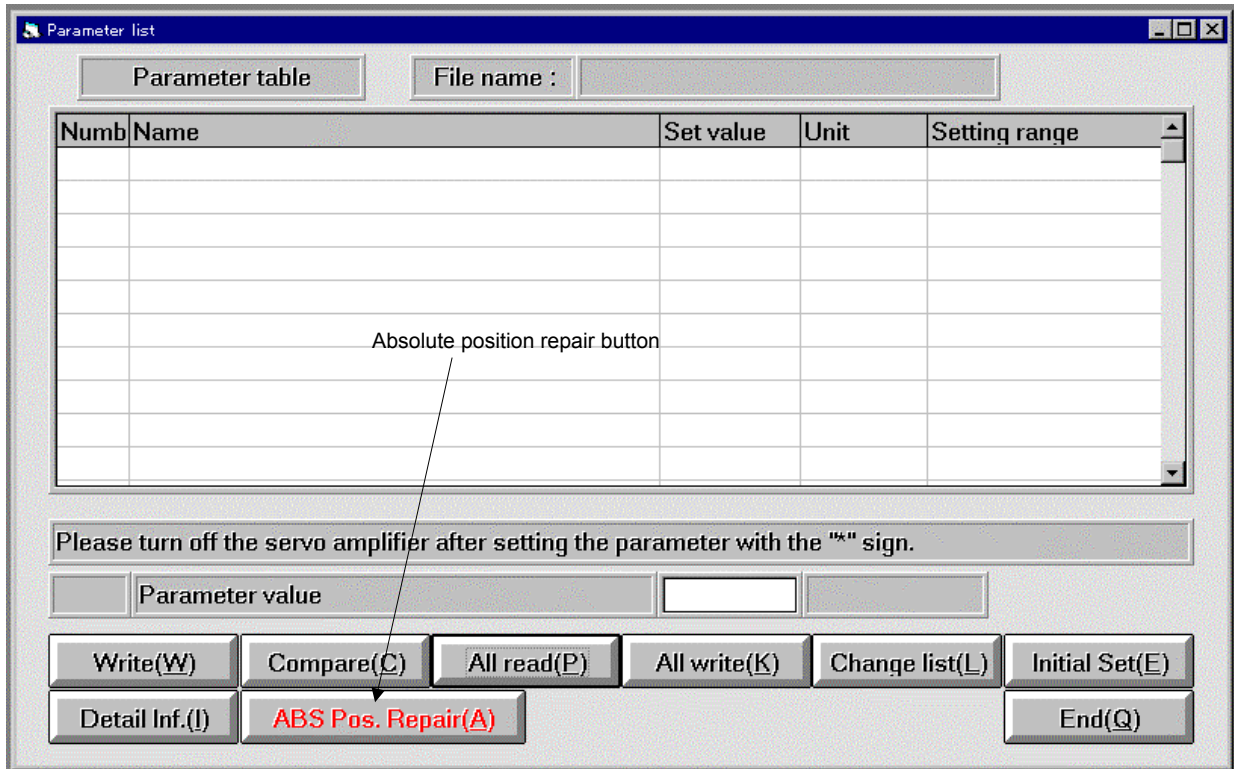
Example of submenu display




Example of title bar display

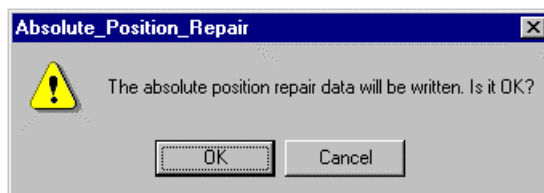
2-3-9 Absolute position repair operations using FWS-B05B015

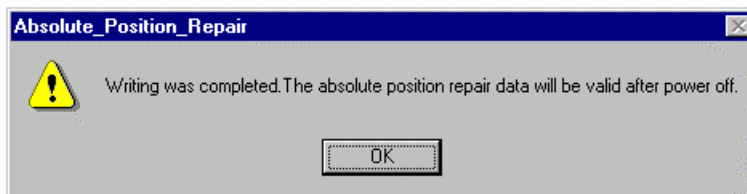
When using the FWS-B05B015, if the MR-J2-CT unit is replaced, the absolute position can be repaired with the setup software. This operation eliminates the need to initialize the absolute position. The absolute position is repaired with the parameter menu. An absolute position repair button is displayed on the FWS-B05B015 Parameter window. Note that this button is valid only when the absolute position for the target MR-J2-CT has been lost. In all other cases, the button will be displayed with a light color, indicating that it is invalid.



Display when absolute position repair button is invalid

When this button is pressed, the following message will appear. If  is pressed, the absolute position reference data will be read in, and the repair will be executed. When the writing is completed normally, a completion message will appear. The absolute position repair warning alarm (Z70-0005) will occur in the MR-J2-CT. This alarm will be reset and the absolute position repairs will be completed when the power is turned ON again.





CAUTIONS

1. **When the motor or detector has been replaced, the absolute position cannot be repaired with the absolute position repair operations. Always repair the absolute position by initializing it.**
2. **When the absolute position has been repaired with the absolute position repair operations, always confirm that the repair position is correct before starting operations.**

2-4 Precautions for test operation

DANGER

1. **Never operate the switches with wet hands.**
Failure to observe this could lead to electric shocks.
2. **Never carry out operation with the front cover removed.**
The high-voltage terminals and charged parts will be exposed.
Failure to observe this could lead to electric shocks.
3. **Never open the front cover while the power is ON or during operation.**
Failure to observe this could lead to electric shocks.

CAUTIONS

1. **Always check each parameter before starting operation.**
Depending on the machine, unforeseen movements could occur.
2. **The servo amplifier's heat radiator, regenerative resistor and servomotor will be hot while the power is ON and for some time after the power is turned OFF.**
Do not touch these parts. Failure to observe this could lead to burns.

(1) Servo ON

During the test operation, the servo will be turned ON automatically in the MR-J2-CT regardless of whether the MR-J2-CT's digital input signal SVF is ON or OFF.

The command pulses and input signals (excluding emergency stop) from an external source will not be accepted until the Test-operation window is closed and the commands are completed.

(2) Stopping test operation

1. Stop the test operation with the following method.
 - Press the **End** button.
 - Close the "Test-operation" window using the control menu box in the "Test-operation" window.
2. The servomotor will stop in the following cases during test operation.
 - If the communication cable is disconnected.
 - If the window is dragged or another menu is opened, the communication between the personal computer and MR-J2-CT will be cut off. This can cause the servomotor to stop temporarily.

Chapter 3 Troubleshooting

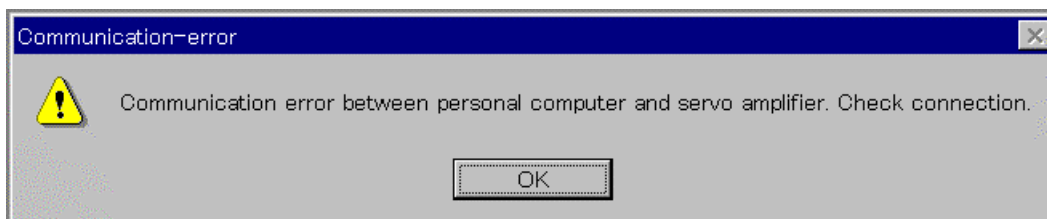
Refer to this section if trouble occurs while using the setup software.

3-1 If communication error occurs:

3-2 The screen cannot be printed:

3-1 If communication error occurs:

If the communication between the personal computer and servo amplifier is cut off causing the following type of communication error to occur, confirm the error No. following the error message, and remove the cause.



Code	Details
001	A parity error was found in the data received from the personal computer.
002	A check sum error was found in the data sent from the personal computer.
003	A character not found in the specifications was sent to MR-J2-CT.
004	A command not found in the specifications was sent to MR-J2-CT.
005	A data No. not found in the specifications was sent to MR-J2-CT. Data exceeding the tolerable value was sent to the MR-J2-CT.
None	A check sum error was found in the data received by the personal computer.

3-2 The screen cannot be printed:

If the screen cannot be printed even when the Print command is executed, open the Windows Setup window, and change the display setting to 256 colors or less.



MODEL	MR-J2-CT Series
MODEL CODE	008-148
Manual No.	BNP-B2208*(ENG)