

AC Servo Drives Engineering Tool SigmaWin+ ONLINE MANUAL INDEXER Component



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Safety-Related Symbols

The following symbols are used in this manual according to the safety-related content. Be sure to observe text annotated with these safety symbols as their content is important.



Indicates precautions that, if not heeded, could possibly result in loss of life or serious injury.



Indicates precautions that, if not heeded, could result in relatively serious or minor injury, damage to the product, or faulty operation.

Furthermore, items marked with ACAUTION may have important consequences depending on the situation.

Warning-related symbols differ between ISO and JIS standards.

ISO Standards	JIS Standards
\triangle	

This manual uses ISO standard symbols.

Product warning labels may use either the ISO or JIS standards. Treat either in the same manner.

Manual Outline

This manual explains the following areas for SigmaWin+ INDEXER component users.

- Outline of SigmaWin+ INDEXER component Functions and Operation
- SigmaWin+ INDEXER component Installation/Removal

Related Manuals

Be sure to refer to the corresponding technical materials regarding related devices, modules, and other equipment.

Use this product only with a full understanding of its specifications, service life, and other important information.

Document Number	Document Name
SIEPS80000005	Σ-II Series SGM□□/SGDH User's Manual Rotational Motor/Analog Voltage and Pulse Train Reference
SIE-C718-9	Σ-II Series SGDH Indexer Application Module User's Manual

How to Use this Manual

Meaning of Basic Terms

This manual applies the following meanings to the terms below unless otherwise specified.

- Servomotor : Σ-II Series Servomotor
- SERVOPACK : Σ-II Series SERVOPACK
- Servodrive: A servomotor integrated with a SERVOPACK
- Servo System: A complete servo control system in which a servodrive is integrated with an upper level controller and peripheral devices.
- NS600 : Application module JUSP-NS600
- NS601 : Application module JUSP-NS601

Notes on the PC Communication Function

Σ-II Series Series SERVOPACK Operator Panel and SigmaWin+ INDEXER component

- The operator panel of the SERVOPACK SGDH-□□□E in the Σ-II series with the NS600 or NS601 will be disabled in the following situations. (The LEDs on the panel display will all be out, and input by the panel switches is not accepted.)
 - SigmaWin+ INDEXER component is connected to the NS600 or NS601.
 - Serial commands are sent to the NS600 or NS601.

The operator panel reactivates in the following situations.

- SigmaWin+ INDEXER component is closed correctly.
- More than three minutes have elapsed since SigmaWin+ INDEXER component was closed incorrectly.

However, when the controller or the personal computer sends a serial command via the NS600's or NS601's connector CN6, the operator panel may remain disabled.

Regarding Software

Usage Notes

- Use this software on one specified PC. Request a separate license to use this software on another computer.
- Copying of this software for purposes other than use as backup copies is strictly prohibited
- Carefully store the CD-ROM (original medium) upon which this software is written.
- Reverse compiling or assembly of this software is strictly prohibited.
- Use of this software in whole or in part by a third party through transfer, exchange, resale, and so forth, is strictly prohibited without the prior agreement of Yaskawa Electric Corporation.
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Operating Systems and Registered Trademarks

Windows 95, Windows 98, Windows NT, Windows 2000 and Windows Me are registered trademarks of Microsoft Corporation in the United States.

Safety Notes

The following are important cautionary items that must be observed in the wiring and use of this product.

Notes on Wiring

ACAUTION

- Insertion and removal of communication cables should be done with the power off in both the SERVOPACK and PC.
 - Insertion and removal of cables with the power on may result in damage to both or either of the units.
- Never change cables while SigmaWin+ INDEXER component is running. Always close SigmaWin+ INDEXER component before changing connections.

The operation of both or either the PC or SERVOPACK cannot be assured if this is not observed.

Usage Notes

A CAUTION

 Always be sure to close SigmaWin+ INDEXER component before turning the SERVO-PACK power off or on.

The operation of both or either the PC or SERVOPACK cannot be assured if this is not observed.

Notes on Using WindowsXP

A CAUTION

- If using NTFS, contact a user with administrator privileges to log on to SigmaWin+. If SigmaWin+ runs in Limited User mode with NTFS, the necessary settings cannot be read into the application program so an error may occur at start up or the program may not successfully run. If using FAT32, SigmaWin+ can be run in Limited User mode.
- When using SigmaWin+, do not change the active window to another window for another application program even if using the Multi-user function.

If the active window is changed while SigmaWin+ is running, the window that shows the status of the job may not be viewed and possibly result in an accident or harm to personnel or the motor.

Notes on Using NP115

! CAUTION

• Do not remove or insert NP115 unit, connectors and cables while power is on.

This may cause system shutdown due to communication error.

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Revision History

1 System Outline

This section includes an outline of the SigmaWin+ INDEXER component system, and explains its advantages and preparation prior to use.

1.1 Outline and Advantages of SigmaWin+ INDEXER Component

SigmaWin+ INDEXER component is a software tool for the setup and optimum tuning of Yaskawa Σ -II SERVOPACKs.

This product provides uniform features and functions enabling even beginners to easily perform connections, test runs, and simple tuning.

Main Functions

- Editing of tables, such as program tables
- Parameter editing and help displays appropriate for each parameter
- Display and release of generated alarms (help displays appropriate to the cause and resolution method)
- Display of SERVOPACK data, such as I/O signals and the internal status, and product data
- Various setup functions such as those for the absolute encoder, and offset adjustment
- · Graph displays for torque reference, speed feedback, and so on

1.2 Compatible Devices

SigmaWin+ INDEXER component is compatible with the following SERVOPACK in the Σ -II series.

• SGDH-□□□E + NS600 or NS601

Note: Some SigmaWin+ INDEXER component functions may be unusable depending on the SERVOPACK type. Unusable functions will appear dimmed on the selection menu.

1.3 System Requirements

SigmaWin+ INDEXER component requires the following minimum system configuration.

Personal Computer (PC)	PC/AT DOS/V-compatible device
	Note: Operation cannot be assured on the NEC PC9821 series.
Processor	Pentium 200MHz
Main Memory	64MB (96MB recommended)
Free Hard Disk Space	At Normal Setup
	• 250MB (300MB recommended at installation)
	At Custom Setup
	• Σ component: 40MB
	• Σ-II component: 90MB
	• SGDS component: 70MB
	• INDEXER component: 70MB
	(100MB recommended at each installation)
Monitor	Super VGA (800×600 or greater using a small font)
Number of Colors	256 colors (65536 colors recommended)
Operating System (OS)	• Windows 98
	• Windows NT4.0 Service Pack 3 or later (IE4.01 Service Pack 2 or later)
	• Windows 2000
	WindowsMe
	• WindowsXP*
Communication Cables for SERVOPACK to PC Connection	The JZSP-CMS02 (D-SUB 9-pin connector-compatible) cable is available from Yaskawa. Contact Yaskawa if necessary. For cable wiring, see <u>Appendix A</u> .
Other	One node or more RS-232C or RS-422A I/F CD-ROM drive (for installation only)

^{*} If using HotfixQ328310, SigmaWin+ may or may not be installed. If it cannot be installed, use Hotfix329623 instead.

1.4 Installing SigmaWin+ Program

To install SigmaWin+, run the setup file for SigmaWin+. And the installation process will begin. In this process, SigmaWin+ and the related files will be installed, or stored on the hard disk.

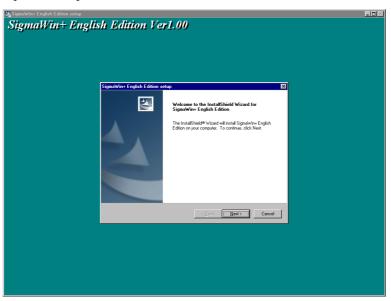
Operating conflicts may arise with the other programs during installation. Be sure to close all other programs before installing SigmaWin+.

Install the program using the following procedure.

- 1. Insert the CD-ROM into the CD-ROM drive (the D-drive for example).
- 2. If "Autoplay" is enabled, the installation program will automatically start when the CD-ROM is inserted.

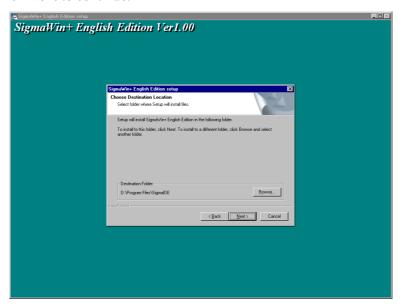
If "Autoplay" is not enabled, either of the following methods may be used.

- On the Start menu, select Run. Type "D:\SETUP", and then click OK.
- Open the Explorer, load the CD-ROM contents, and double click "D:\SETUP.EXE".

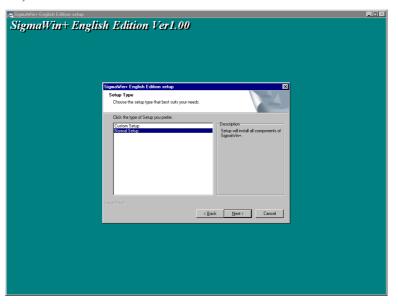


A message will appear, welcoming you to the SigmaWin+ program.

3. Click **Next** to continue.

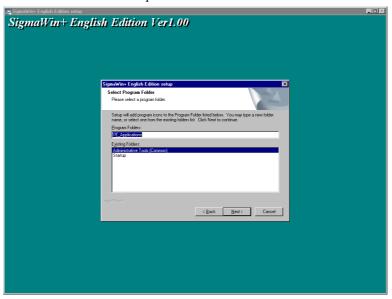


4. Follow the onscreen instructions to choose a destination folder to copy the SigmaWin+ file to, and click **Next** to continue.



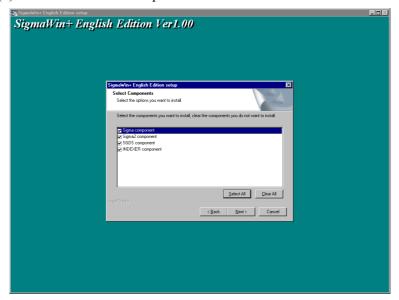
5. Select the setup type.

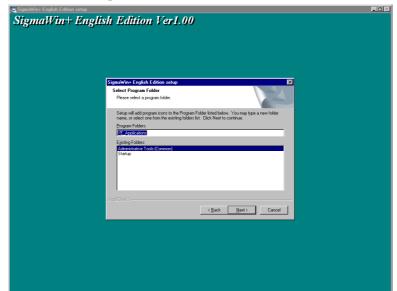
<To install all components of SigmaWin+> Choose "Normal Setup" and click Next.



<To install selected components of SigmaWin+>

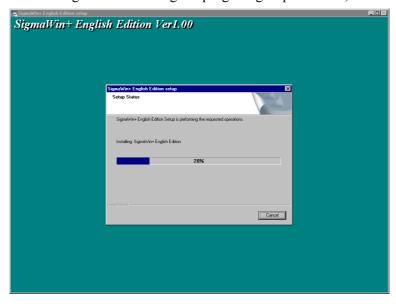
(1) Choose "Custom Setup" and click Next.





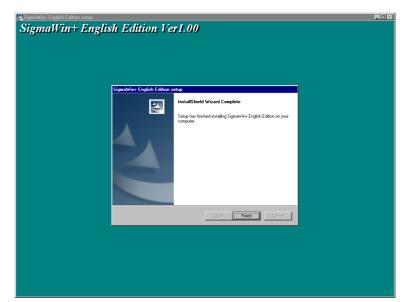
(2) Select the components to be installed, and click Next.

6. Select the program group to create the SigmaWin+ icon. "YE_Applications" is the default setting. After selecting the program group or folder, click **Next** to continue.



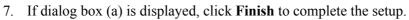
Then the PC files are copied from the CD-ROM. The percentage of the copying that has been completed is shown.

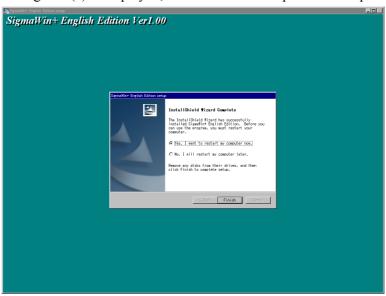
Note: If new versions of the PC support files are needed to install SigmaWin+, a window will appear asking whether to overwrite the current version or to cancel the installation. SigmaWin+ may not run correctly if the new versions of the support files are not installed.



If SigmaWin+ has been successfully installed, one of two dialog boxes is displayed.

(a)





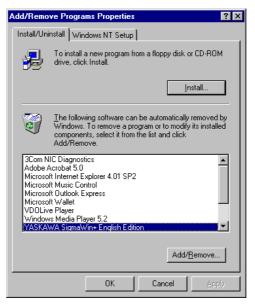
(b)

8. If dialog box (b) is displayed, select **Yes** when asked if you want to restart the computer and then click **Finish** to complete the setup.

1.5 Removing SigmaWin+ Program

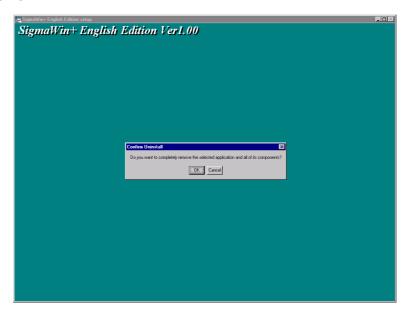
Remove the SigmaWin+ program using the following procedure.

- 1. Click the **Start** button, point to **Settings** and click **Control Panel**.
- 2. Click the **Add/Remove Programs** icon. The Add/Remove Programs Properties box appears.

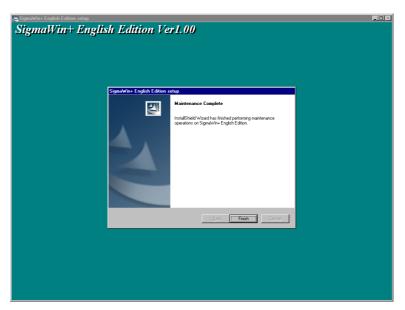


Click the Install/Uninstall tab if it is not already selected. Click YASKAWA
 SigmaWin+ English Edition as the program to be removed, and then click Add/
 Remove.

A confirmation message will appear asking if you are sure you want to remove the program.



4. Click **OK** to start removing the program. When the program has been successfully removed, the following window will appear telling you that maintenance is complete.



5. Click **Finish** to complete the removal process.

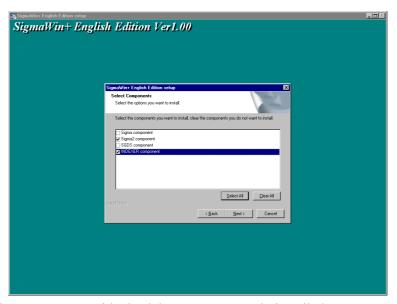
1.6 Installing and Removing Other SigmaWin+ Programs

To change the SigmaWin+ program which is now installed, use the following procedure.

1. Insert the CD-ROM into the CD-ROM drive (the D-drive for example). The setup maintenance program will automatically start.

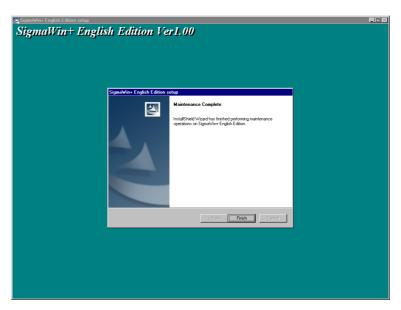


2. Choose "Modify" and click Next.



The components with check boxes are currently installed.

3. To remove a component, clear the check box. Select the components to be installed and click **Next**.



4. Click **Finish** to complete the changing process.

2 Starting SigmaWin+

Start SigmaWin+ using the following method.

2.1 Starting SigmaWin+

Start SigmaWin+:

- · from the Start menu
- from a shortcut

2.1.1 From the Start Menu

To start SigmaWin+ from the **Start** menu:

- 1. Click the **Start** button, and point to **Programs**.
- 2. Open the YE_Applications folder.
- 3. Click SigmaWin+.

2.1.2 From a Shortcut

To start SigmaWin+ from a shortcut on the desktop:

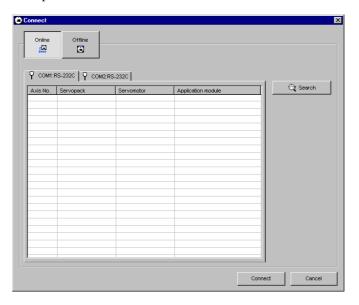
- 1. Open the YE_Applications folder on the desktop.
- 2. Click SigmaWin+.



SigmaWin+ Startup Screen

2.2 Selecting a SERVOPACK

When SigmaWin+ is in initially started, the Connect dialog box appears. Enter the settings for communications between SigmaWin+ and the SERVOPACK by means of a communication port.

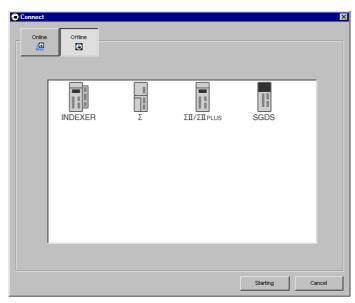


Select the method to set up the SERVOPACK: online or offline. Online is the default setting.

Online: Select when setting up or tuning the servo drive with the SERVOPACK connected

Off-line: Select when editing parameters or checking screens for tracing or mechanical analysis without the SERVOPACK connected

<When Offline is selected>

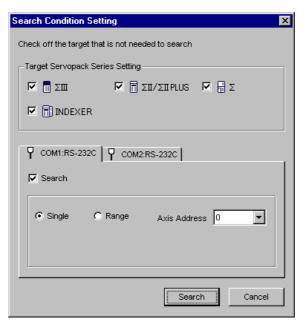


Select the SERVOPACK series and click Starting.

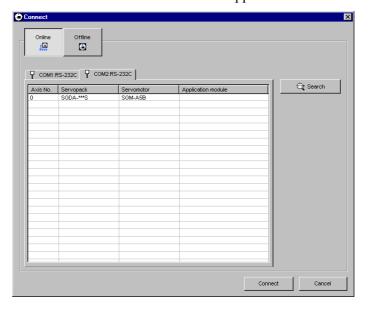
<When Online is selected>

Enter the necessary settings for communication setup.

(1) Click Search.



(2) Select SERVOPACK series and axis address. Click **Search**. After the SERVOPACKs have been successfully connnected to SigmaWin+, a list of the connected SEROVPACKs will appear on the screen.



SERVOPACK Selection Box

Note: When RS-232C is used, only one SERVOPACK will be displayed.

(3) Select the SERVOPACK to be connected and then click \mathbf{OK} , or just double-click the SERVOPACK to be connected.

Click **Cancel** to close the dialog box.

< If the SERVOPACK is not Displayed >

If the SERVOPACK is not displayed though a SERVOPACK is connected, problems may occur in communications.

Check the following items if the SERVOPACK is not displayed:

Check Item	Note
Is the power on?	
Are the connections loose?	Fasten all communication cable connectors securely.
Was the correct port selected?	Make sure that the port connected to the communication cable is the same as the port selected during connection.
Is the axis address correct?	<rs-232c: axis="" connection="" single=""> Make sure the setting for the axis address in the NS600 or NS601 (set by rotary switches) is the same as the axis address selected during connection. <rs-422a:multi-axis connection=""> Make sure that the axis address of the connected NS600 or NS601: • Is not duplicated.</rs-422a:multi-axis></rs-232c:>
Is the RS-232C port enabled?	To save energy, it is possible to select the option of not feeding power to the RS-232C port in the PC. Check this setting. See the manual for the PC for details on how to select this function.
Is a battery being used to power the PC?	Problems in communications may occur if the PC is running on batteries. Use AC power.
Is the wiring correct?	Check the communication cable wiring. See <u>Appendix A</u> or the SERVOPACK user's manual for more information on the wiring.
Is the communication cable the recommended length?	Shorten the cable length as much as possible. Recommended Lengths of Communication Cables RS-232C: Maximum 2m RS-422A: Maximum 30m (total)

If the SERVOPACK selection box still does not appear even after checking the above items:

The SERVOPACK uses RS-422A specifications for standard communications. Sometimes the RS-232C cannot be used, depending on the type of PC.

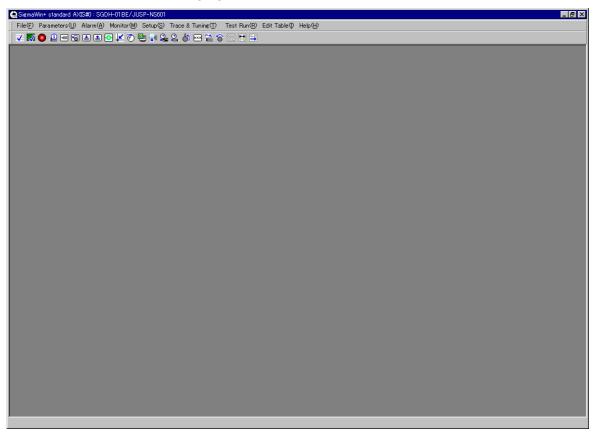
Moreover, communication may be impossible due to external environmental influences such as noise.

Execute the following if communications cannot be performed even after verifying the aforementioned items:

- Use a different PC.
- If using RS-232C, change to an RS-422A connection.

3 SigmaWin+ INDEXER Component Main Window

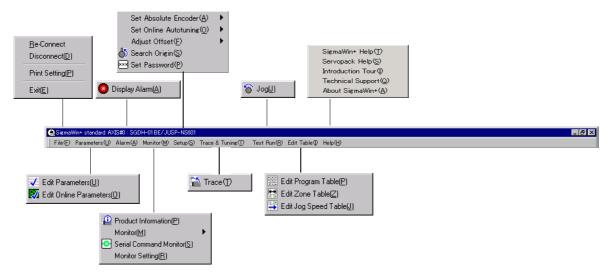
The SigmaWin+ INDEXER component main window has a menu bar and a toolbar as shown in the following figure.



SigmaWin+ INDEXER Component Main Window

All application functions can be accessed from the menu bar or the toolbar.

Menu Bar and Menus



SigmaWin+ INDEXER Component Menu Bar

File menu

Connect: Switches between Online and Offline modes or between the connected

SERVOPACKs.

Disconnect: Switches to Offline mode.

Print Setting: Select your preferences for printing the information seen on the screen.

See "Print Setting" for details on the setting method.

Exit: Quits SigmaWin+.

Help menu

SigmaWin+ Help: Displays a help window for SigmaWin+ INDEXER

component

SERVOPACK Help: Displays a help window for the SERVOPACK.

Introduction Tour: Introduces main functions of SigmaWin+ INDEXER

component.

Technical Support: Lists local contacts.

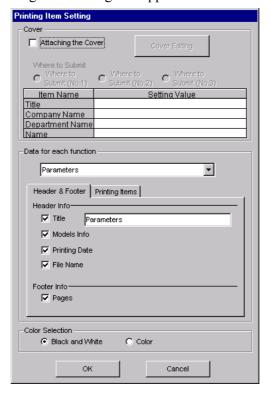
About SigmaWin+: Displays version information of SigmaWin+ INDEXER

component.

There are also function menus. For details, see Chapter 4.

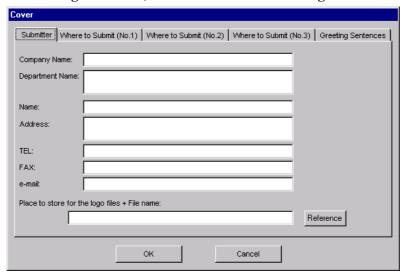
Print Setting

In the SigmaWin+ INDEXER component main window, click **File**, and then click **Print Setting**. The Printing Item Setting box appears.

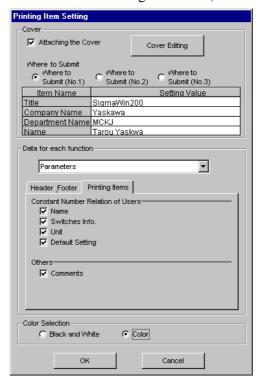


Cover

Select Attaching the Cover, and then click Cover Editing.

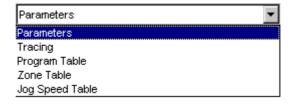


The Cover box appears, displaying the Submitter tab in front. Use the formatting options on the tabs to control the content of the cover, such as the greeting sentences and where to submit the information. After the setting is finished, click **OK**.

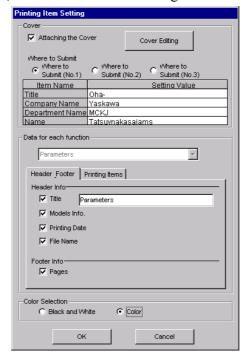


Data for each function

Depending on which one of the five functions you select, the items that you can print will differ.



To enter your printing preferences or specifications, click the tab whose options you want to enter or change, and enter the desired settings.



Color Selection

Documents can be printed in color or black and white. Select your preference.

Click OK.

■ Toolbar

Click an icon on the toolbar to directly select its corresponding function.



SigmaWin+ INDEXER Component Toolbar

Toolbar Button	Function Name
₹	Parameter Editing
.	Parameter Online Editing
0	Alarm Display
.0	Product Information
	Status Monitor
6	Motion Monitor
*	Input Signal Monitor
	Output Signal Monitor
0	Serial Command Monitor
<u> </u>	Absolute Encoder Reset
©	Multi-Turn Limit Setting
 	Absolute Encoder Zero Setting
	Rigidity Setting
· E d	Save Moment of Inertia Setting
<u></u>	Analog Monitor Output Adjustment
2	Motor Current Detection Offset Adjustment
5	Origin Search

Toolbar Button	Function Name
100 E	Password Setting
~	Trace
8	JOG Operation
	Program Table Editing
	Zone Table Editing
#	Jog Speed Table Editing

4 Operation

Editing Parameters

The following two methods exist for editing parameters.

- Using the Parameter Editing window
- Using the Online Parameter Editing window

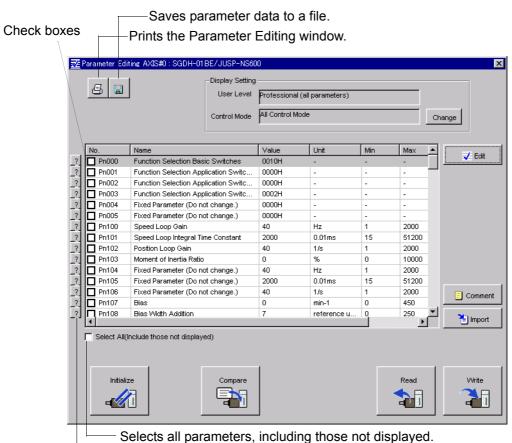
4.1.1 **Editing Parameters**

Parameters can be displayed or edited in the Parameter Editing window.

The windows differ in the Online and Offline modes.

Parameter Editing when Online

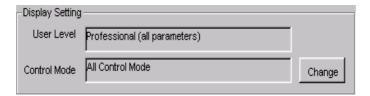
In the SigmaWin+ INDEXER component main window, click Parameters and then click **Edit Parameters**. The Parameter Editing window for the online mode appears.



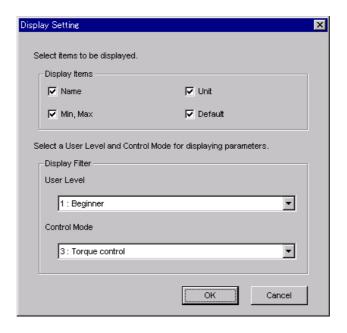
Displays the related help window.

Parameter Editing Window (Online Mode)

Display Setting



Click **Change** to view the Display setting box. Select the information to be displayed, the user level, and the control mode.



Display Setting Box

Display Items

Select the information to be displayed.

Display Filter

The number of parameters displayed is determined by the user level and the control mode.

User Level: Beginner

Expert

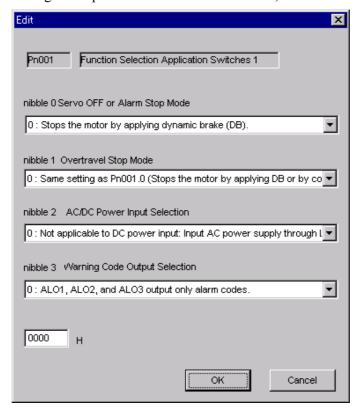
Professional (all parameters)

Control Mode: 13 modes

Click **OK** to save the changes in the display settings and to return to the Parameter Editing window. Click **Cancel** to return to the Parameter Editing window without changing the display settings.

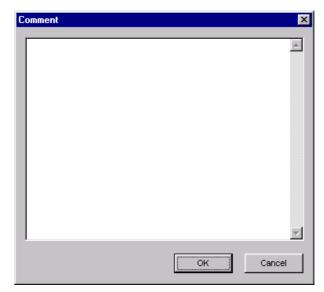
Edit

The selected parameter can be viewed and then changed in the Edit box. The Edit box differs according to the parameter selected. Click **Edit**, and the Edit box appears.



Comment

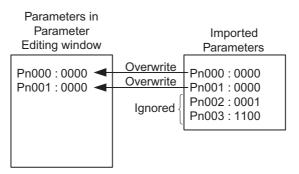
Comments can be typed or edited in the Comment box. Click **Comment**, and the Comment box appears.



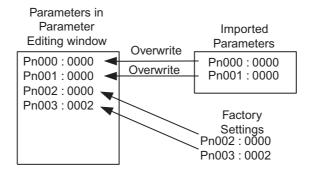
Import

Parameter settings can be transferred or imported from a stored file with the Import function. If the imported parameters differ in number from the on-screen parameters (including parameters not currently displayed), the following processing takes place.

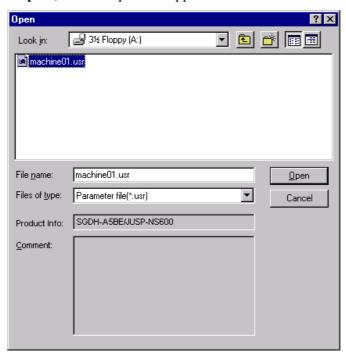
• If the number of imported parameters is greater



• If the number of imported parameters is fewer



1. Click **Import**, and the Open box appears.



2. Select the file to be transferred, and click **Open**.

Initialize

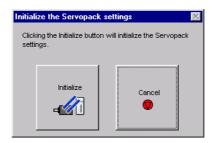
The settings of the SERVOPACK can be returned to the factory settings with the Initialize function. Return to the initial settings using the following procedure.

1. Click **Initialize**, and the Verification box appears.



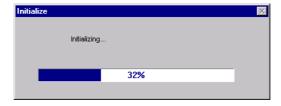
Click **Cancel** to return to the main window without changing the SERVOPACK settings.

2. Click **OK**, and the dialog box to initialize the SERVOPACK settings appears.

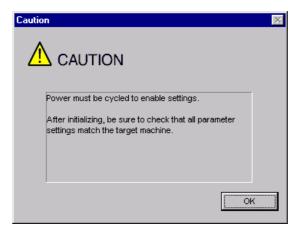


Click **Cancel** to return to the main window without changing the SERVOPACK settings.

3. Click **OK** to start initialization, and the percentage of the progress completed is shown.



When the settings are successfully initialized, you will be prompted to verify that all parameter settings are correct for the target machine.

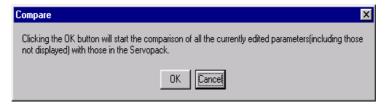


4. Click OK.

Compare

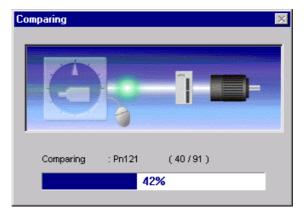
The edited parameter settings can be compared with the values in the SERVOPACK for all parameters, including those not displayed, with the Compare function. Check the settings using the following procedure.

1. Click **Compare** and a message appears, comfirming if you want to compare all parameter settings.

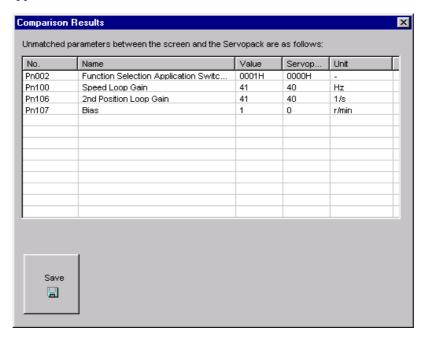


Click Cancel to return to the main window without comparing the settings.

2. Click **OK** to start the comparison, and the percentage of the progress completed is shown.



When the comparison has been successfully completed, the Comparison Results box appears.



3. Click **Save** to save the results of the comparison.

Read

Selected parameter settings from the SERVOPACK can be read and then changed by overwriting them with the Read function. Select the check boxes of the parameters to be read. Click the **Select All (including those not-displayed)** button to select all the parameters to be read, including those not currently displayed.

Read the parameters using the following procedure.

1. Click **Read** and a message appears, confirming if you want to read the parameter settings.



Click **Cancel** to return to the main window without reading the settings.

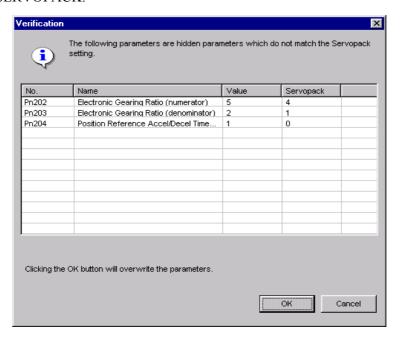
2. Click **OK** to start reading and overwriting the settings.

Write

Selected parameter settings can be saved with the Write function. Select the check boxes of the parameters to be saved. Click the **Select All (including those not-displayed)** button to select all the parameters to be saved, including those not currently displayed. Save the settings if the parameters using the following procedure.

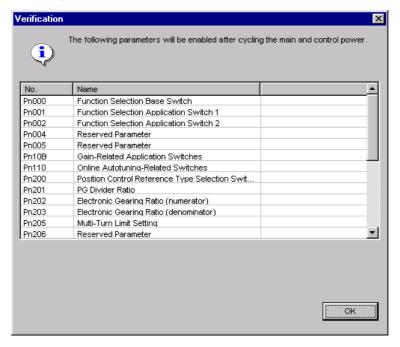
1. Click **Write** to save the parameter settings.

A Verification box asking you to confirm overwriting will be displayed when the settings of the non-displayed parameters differ from the settings of the current SERVOPACK.



Click **OK** to continue and overwrite the previous settings. Click **Cancel** to return to the main window without overwriting the parameters.

2. A Verification box listing the saved parameters will be displayed after they have been successfully saved.

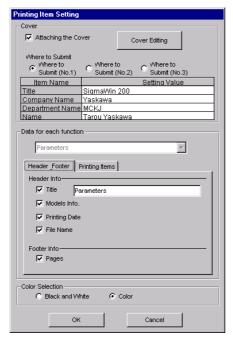


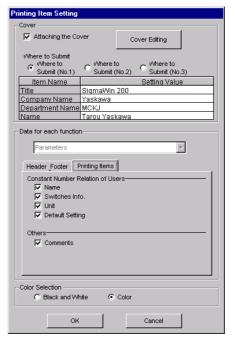
3. Click **OK**, and restart the SERVOPACK. The new settings will now be valid.

(Print) Button

The data on the Parameter Editing window can be printed.

Click the button, and the Printing Item Setting box appears.





Header Footer Tab

Printing Items Tab

Printing Item Setting Box

Cover

Select **Attaching the Cover**, and the click **Cover Editing**. For details, see <u>Chapter 3</u>.

Data for each function

To enter your printing preferences or specifications, click the tab whose options you want to enter or change, and enter the desired settings.

Color Selection

Documents can be printed in color or black and white. Select your preference.

Parameters
SGDH-01BEJJUSP-NS601/SGMPH-01B1*** Printing Date : September 09, 2002 File Name : ------Parameters List 0000H - 0000H - 40 Hz 2000 0.01ms 40 1/s 40 Hz 2000 0.01ms 40 Hz 2000 0.01ms 40 1/s 0 min-1 0000H 40 2000 40 0010H

After setting is finished, click **OK**. The document appears on the screen the way it will appear in print.

To print the document as is without any changes, click **Print**.

To return to the Printing Item Setting box and change some settings, click Editing of the **Printing Items.**

Parameter Editing when Offline

In the SigmaWin+ INDEXER component main window, click **Parameters** and then click **Edit Parameters**. The Edit Parameters box appears.



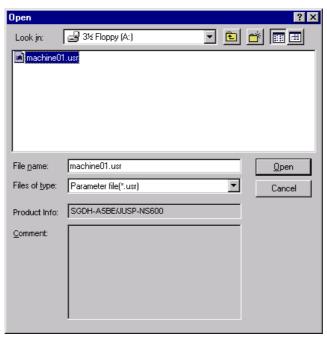
Load From File: Reads in existing parameters.

Select New SERVOPACK: Creates new settings for parameters.

Select the desired command and click **OK**.

< When "Load from File" is Selected >

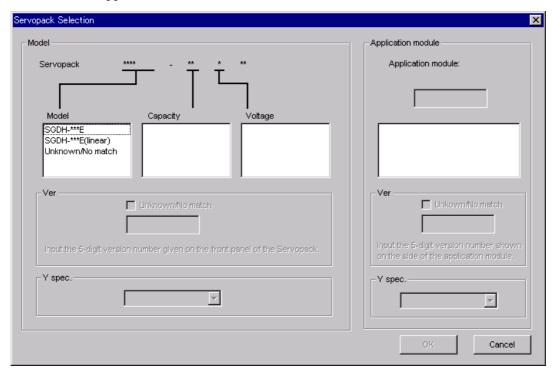
When "Load from File" is selected, the Open box appears.



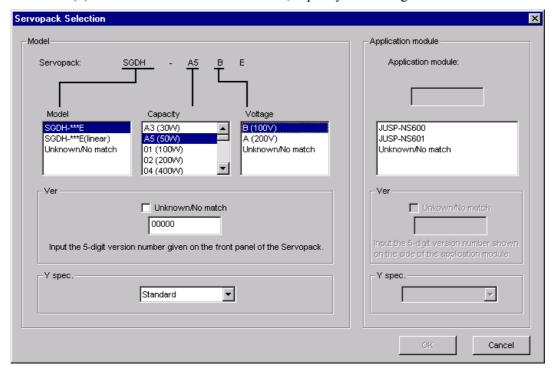
Select the file to be imported, and click **Open**.

< When "Select New SERVOPACK" is Selected >

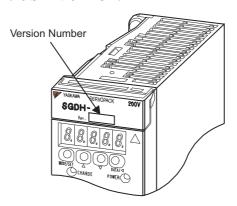
(1) When "Select New SERVOPACK" is selected, the SEROPACK Selection box appears.



(2) Select the SERVOPACK model, capacity and voltage.



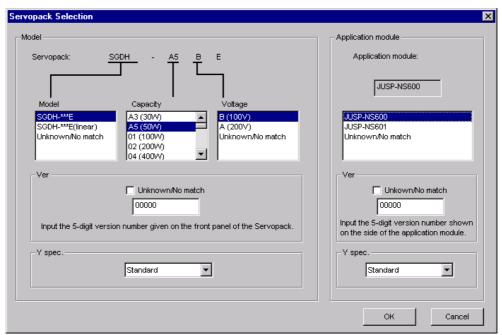
(3) Type the version number of the SERVOPACK. The version number is shown on the front of the SERVOPACK.



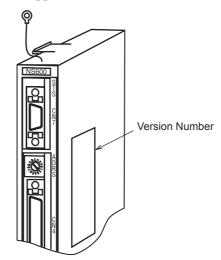
Version Number on SGDH

If the version number is unknown, select **Unknown/No match**.

- (4) Select the specifications of the SERVOPACK.
- (5) Select the application module. Select JUSP-NS600 or JUSP-NS601.



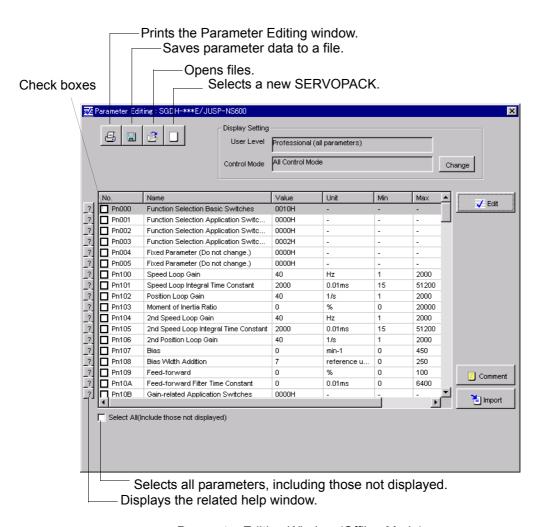
(6) Type the version number of the application module. The version number is shown on the side of the application module.



Version Number on NS600 or NS601

If the version number is unknown, select **Unknown/No match**.

(7) Select the specifications of the application module, and then click **OK**. The data will be imported, and the Parameter Editing window will appear.

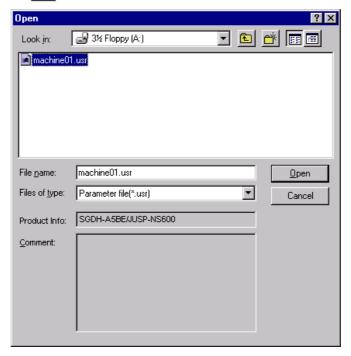


Parameter Editing Window (Offline Mode)

(Open) Button

The parameters file can be loaded in the Open box. To load the file, use the following procedure.

1. Click the 🔁 button, and the Open box appears.

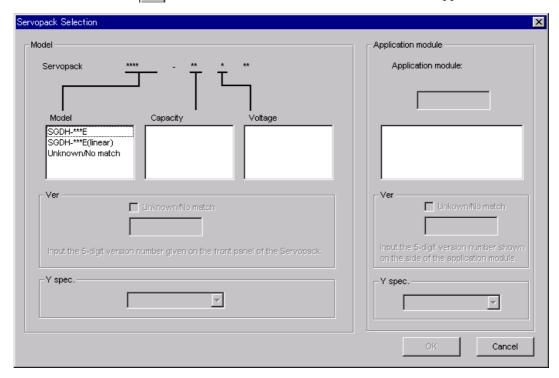


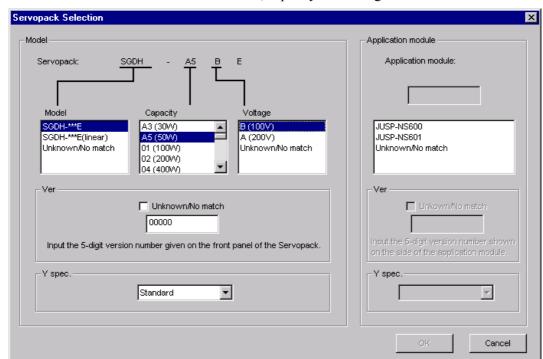
2. Select the name of the parameter file to be imported, and click **Open**.

☐ (New) Button

A new SERVOPACK can be selected in the SERVOPACK Selection box using the New command. To change to a different SERVOPACK, use the following procedure.

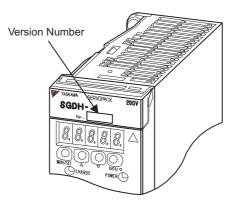
1. Click the button, and the SERVOPACK Selection box appears.





2. Select the SERVOPACK model, capacity and voltage.

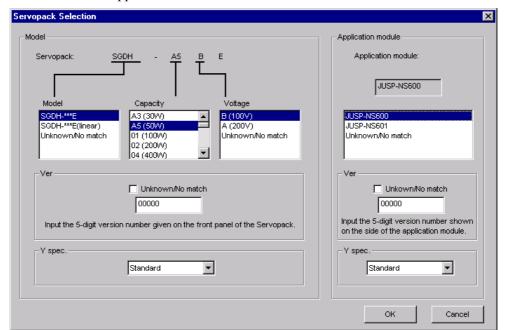
3. Type the version number of the SERVOPACK. The version number is shown on the front of the SERVOPACK.



Version Number on SGDH

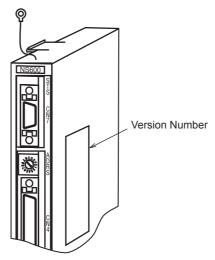
If the version number is unknown, select Unknown/No match.

4. Select the specifications of the SERVOPACK.



5. Select the application module. Select JUSP-NS600 or JUSP-NS601.

6. Type the version number of the application module. The version number is shown on the side of the application module.



Version Number on NS600 or NS601

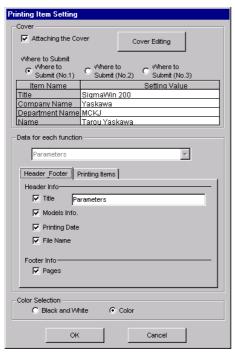
If the version number is unknown, select Unknown/No match.

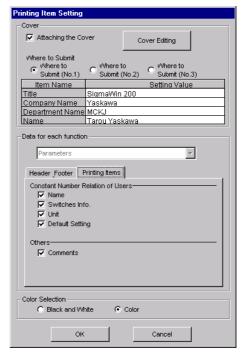
7. Select the specifications of the application module, and then click **OK**. The data will be imported, and the Parameter Editing window will appear.

(Print) Button

The data on the Parameter Editing window can be printed.

Click the button, and the Printing Item Setting box appears





Header Footer Tab

Printing Items Tab

Printing Item Setting Box

Cover

Select **Attaching the Cover**, and the click **Cover Editing**. For details, see <u>Chapter 3</u>.

Data for each function

To enter your printing preferences or specifications, click the tab whose options you want to enter or change, and enter the desired settings.

Color Selection

Documents can be printed in color or black and white. Select your preference.

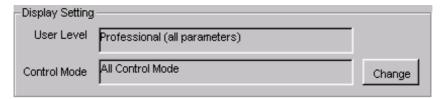
Parameters
SGDH-01BEJJUSP-NS601/SGMPH-01B1*** Printing Date : September 09, 2002 File Name : ------Parameters List 0000H - 0000H - 40 Hz 2000 0.01ms 40 1/s 40 Hz 2000 0.01ms 40 Hz 2000 0.01ms 40 1/s 0 min-1 0000H 40 2000 40 0010H

After setting is finished, click **OK**. The document appears on the screen the way it will appear in print.

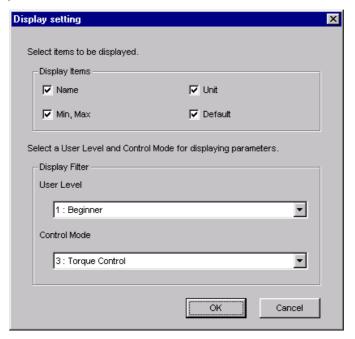
To print the document as is without any changes, click **Print**.

To return to the Printing Item Setting box and change some settings, click Editing of the **Printing Items.**

Display Setting



Click **Change** to view the Display setting box. Select the information to be displayed, the user level, and the control mode.



Display Setting Screen

Display Items

Select the information to be displayed.

Display Filter

The number of parameters displayed is determined by the user level and the control mode.

User Level: Beginner Expert

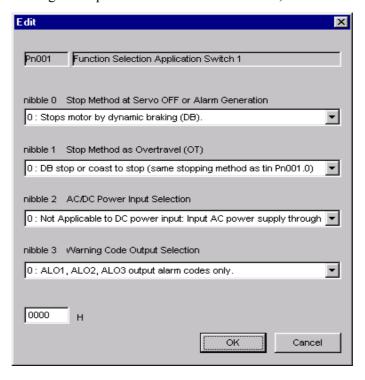
Professional (all parameters)

Control Mode: 13 modes

Click **OK** to save the changes in the display settings and to return to the Parameter Editing window. Click **Cancel** to return to the Parameter Editing window without changing the display settings.

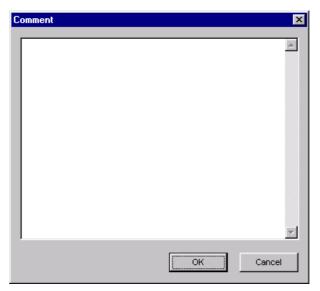
Edit

The selected parameter can be viewed and then changed in the Edit box. The Edit box differs according to the parameter selected. Click **Edit**, and the Edit box appears.



Comment

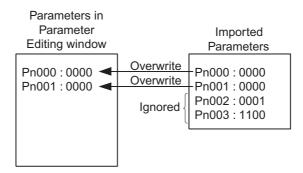
Comments can be typed or edited in the Comment box. Click **Comment**, and the Comment box appears.



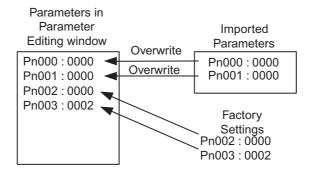
Import

Parameter settings can be transferred or imported from a stored file with the Import function. If the imported parameters differ in number from the on-screen parameters (including parameters not currently displayed), the following processing takes place.

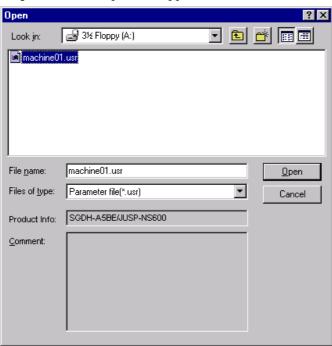
• If the number of imported parameters is greater



• If the imported parameters is fewer



1. Click **Import**, and the Open box appears



2. Select the file to be transferred, and click **Open**.

4.1.2 Editing Parameters Online

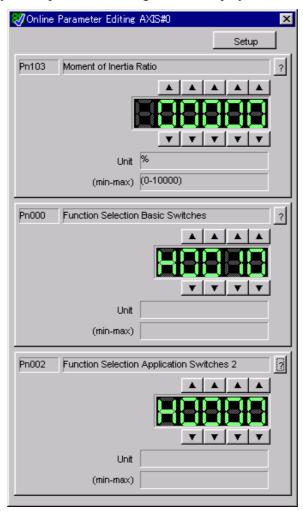
Parameters can be viewed or edited in the Online Parameter Editing window.



Values edited in the Online Parameter Editing box are also immediately changed in the SERVOPACK.

Edit parameters online using the following procedure.

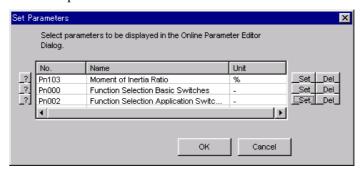
1. In the SigmaWin+ INDEXER component main window, click **Parameters** and then click **Edit Online Parameters**. The Online Parameter Editing box appears. The previously saved parameter settings will be displayed.



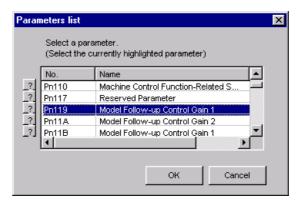
Online Parameter Editing Box

2. To change the values of the settings, click the setting arrows to raise or lower the value. If an upper or lower limit is displayed, make sure that the setting is within the limit.

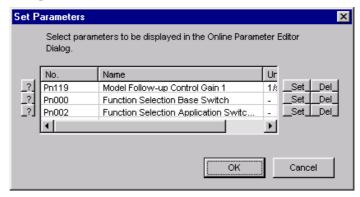
Modified values are also immediately changed in the SERVOPACK. Click **Setup** to view different parameters.



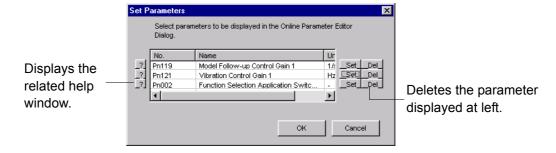
3. Click **Set** to view a parameter other than the "Moment of Inertia Ratio".



4. Select the parameter to be edited, and click **OK**.

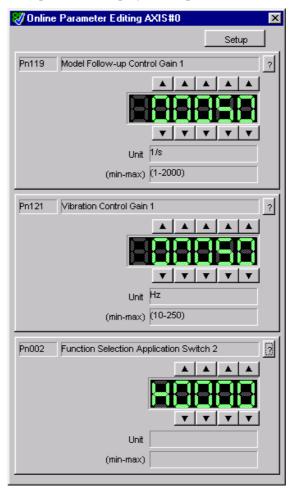


5. If there are still parameters to be edited, click **Set** for a second or third time and set these in the same manner as the first parameter.



To view other parameters, click **Del** to delete the currently displayed parameter and then click **Set**.

6. Click **OK** when parameter display is complete.

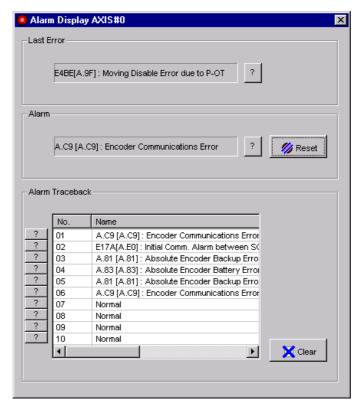


7. To change the values of the settings, click the setting arrows to raise or lower the value. If an upper or lower limit is displayed, make sure that the setting is within the limit. Modified values are also immediately changed in the SERVOPACK.

4.2 Alarm Display

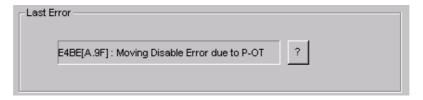
Alarms can be viewed in the Alarm Display.

In the SigmaWin+ INDEXER component main window, click **Alarm** and then click **Display Alarm**.



Alarm Display

Last Error



The last error is displayed.

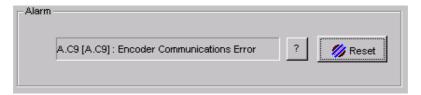
Error for the NS600 or NS601 and the SGDH are indicated in the following style.

NS600 or NS601 error [SGDH error]: Error name

The error which is displayed here may not be the current error.

Click the | button to display details concerning a specific error.

Alarm



The current alarm is displayed.

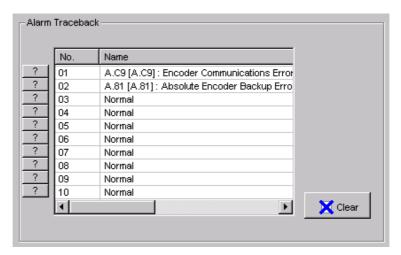
Alarms for the NS600 or NS601 and the SGDH are indicated in the following style.

NS600 or NS601 alarm [SGDH alarm]: Alarm name

To clear an alarm, click **Reset** after removing the cause of the alarm. The alarm will continue until the cause is removed, and then the information on the screen will be subsequently updated.

Click the button to display details concerning a specific alarm and its corrective measures.

Alarm Traceback



The SERVOPACK stores a history of the 10 most recent alarms. These are displayed in the Alarm Traceback window, and are shown in order of occurrence with their alarm displays and details about the type of alarm, such as name.

When a new alarm occurs, it is stored as number 1, and the numbers of the other alarms are raised starting from the top of the list. For example, what was alarm number 1 now becomes number 2. The last alarm is eliminated. These numbers are changed immediately by SigmaWin+ INDEXER component when an alarm occurs. However, alarm traceback data is not updated when alarms with the same alarm number occur consecutively.

Click **Clear** to delete or clear the alarm history.

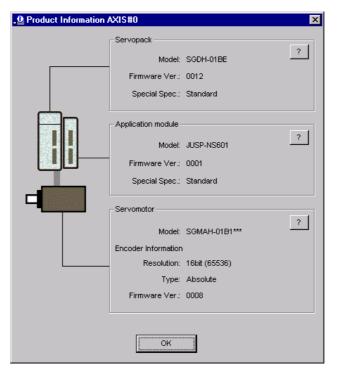
Click the button to display details concerning a specific alarm and its corrective measures.

4.3 Monitor

4.3.1 Product Information

Information about the SERVOPACK and the motor can be viewed in the Product Information window.

In the SigmaWin+ INDEXER component main window, click **Monitor** and then click **Product Information**. Information about the SERVOPACK and the motor will be displayed.



Product Information Window

Click the button to display the specifications for the respective product models. Click **OK** to return to the SigmaWin+ INDEXER component main window.

4.3.2 Monitor

The SERVOPACK's status, movement, and I/O signal status, can be monitored on the computer screen.

There are four types of monitor windows: Status Monitor, Motion Monitor, Input Signal Monitor, and the Output Signal Monitor.

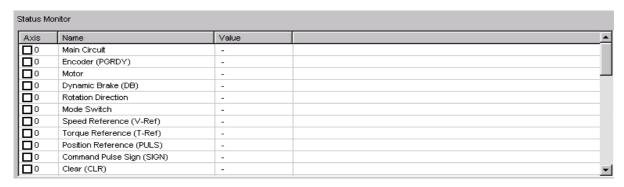
The monitor windows are independent of each other, but several windows can be displayed at the same time.

Select the information to be monitored in the Monitor Item Setting window.

Status Monitor

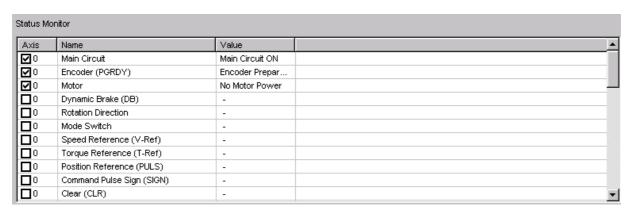
To monitor the status of the SERVOPACK, use the following procedure.

1. In the SigmaWin+ INDEXER component main window, click **Monitor**, point to **Monitor** and click **Status Monitor**.



The items which can be monitored are listed.

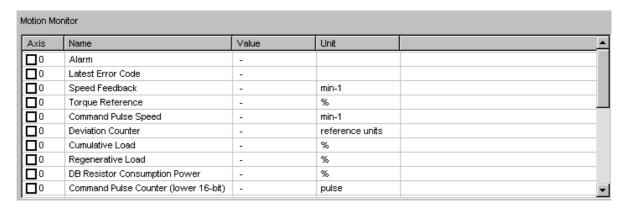
2. Select the items to be monitored. The current status of a selected item is displayed in the "Value" column.



Motion Monitor

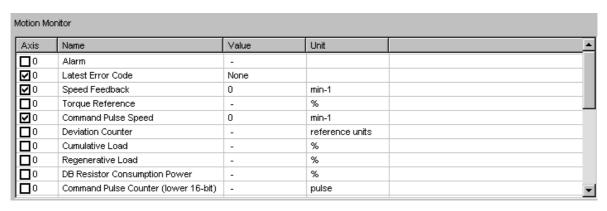
To monitor the motions of the SERVOPACK, use the following procedure.

1. In the SigmaWin+ INDEXER component main window, click **Monitor**, point to **Monitor** and click **Motion Monitor**.



The items which can be monitored are listed.

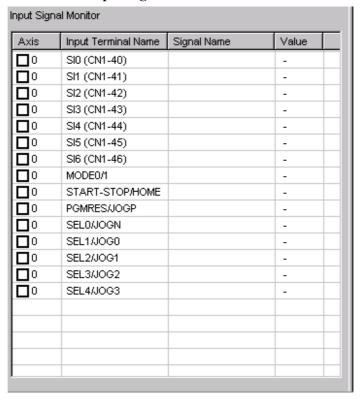
2. Select the items to be monitored. The current status of a selected item is displayed in the "Value" column.



Input Signal Monitor

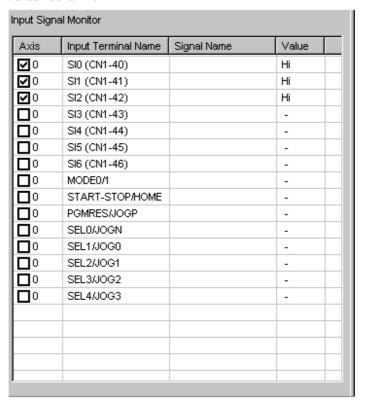
To monitor the input signal of the SERVOPACK, use the following procedure.

1. In the SigmaWin+ INDEXER component main window, click **Monitor**, point to **Monitor** and click **Input Signal Monitor**.



The items which can be monitored are listed.

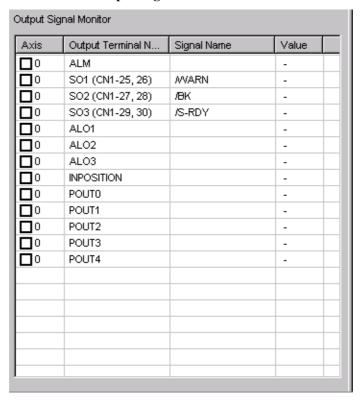
2. Select the items to be monitored. The current status of a selected item is displayed in the "Value" column.



Output Signal Monitor

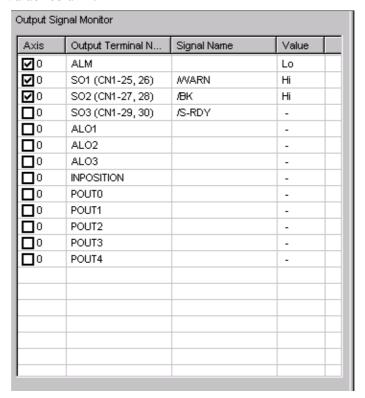
To monitor the output signal of the SERVOPACK, use the following procedure.

1. In the SigmaWin+ INDEXER component main window, click **Monitor**, point to **Monitor** and click **Output Signal Monitor**.



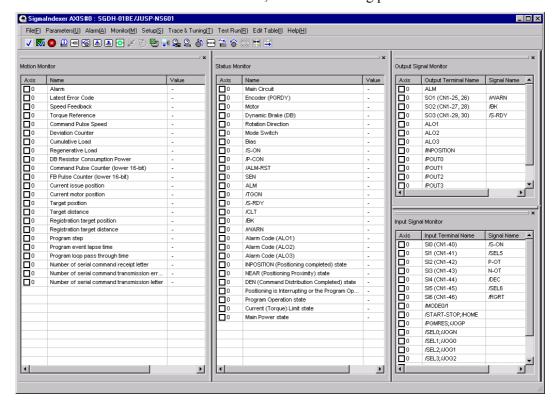
The items which can be monitored are listed.

2. Select the items to be monitored. The current status of a selected item is displayed in the "Value" column.

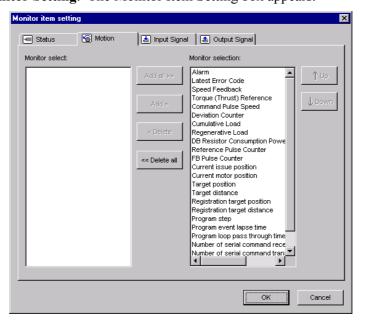


Monitor Item Setting

To select the information to be monitored, use the following procedure.

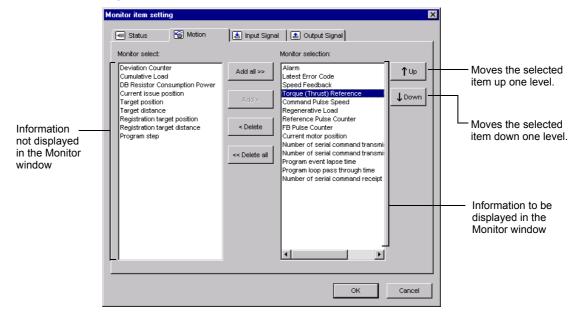


1. In the SigmaWin+ INDEXER component main window, click **Monitor**, and then click **Monitor Setting**. The Monitor Item Setting box appears.

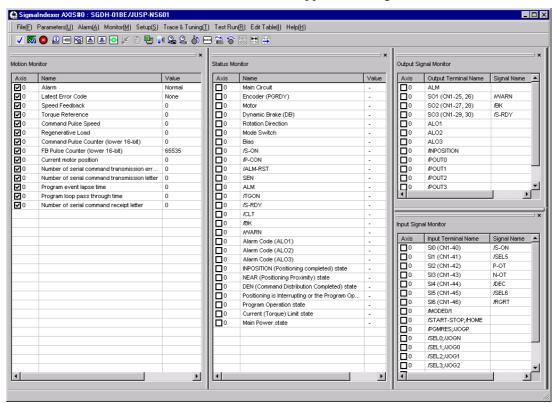


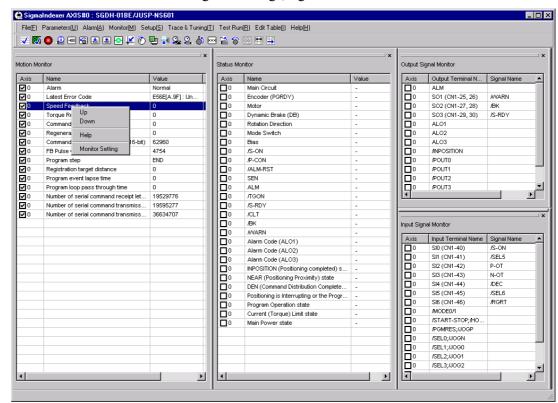
The Monitor Selection list displays items being monitored.

2. To hide an item, select it in the Monitor Selection list and then click **Delete**. To display an item, select it in the Monitor Select list and then click **Add**.



3. Click **OK**, and the four monitor windows appear showing the selected information.





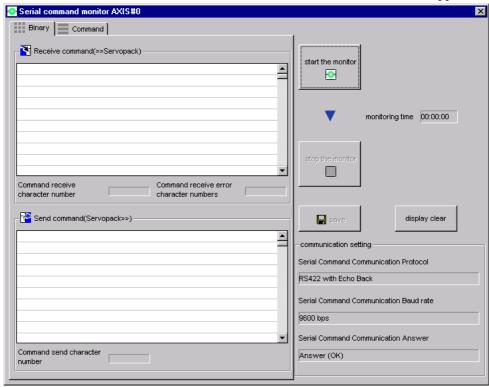
To move an item or change its settings, right-click an item and select a command.

4.3.3 Serial Command Monitor

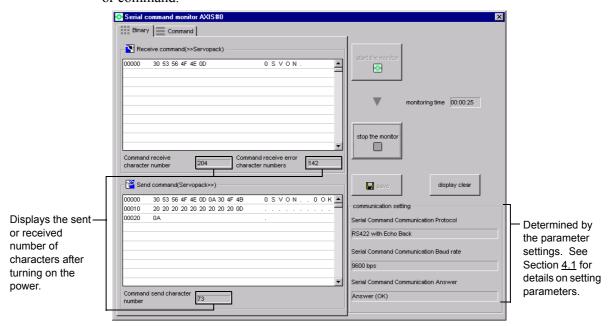
The status of a command that is transmitted between the SERVOPACK and the host computer can be monitored on the screen.

To monitor the status of a command, use the following procedure.

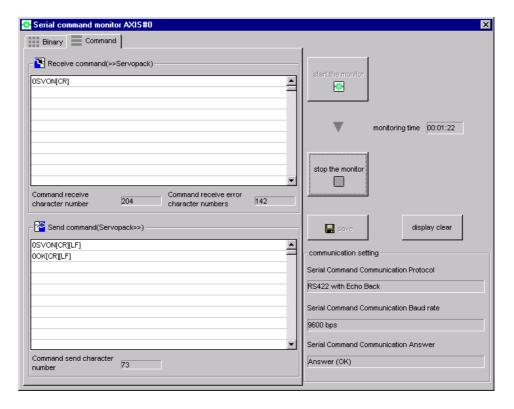
1. In the SigmaWin+ INDEXER component main window, click **Monitor** and then click **Serial Command Monitor**. The Serial Command Monitor window appears.



2. Click **Start the monitor**. The commands received from the host computer and those sent from the SERVOPACK are displayed. Two kinds of displays are available, binary or command.



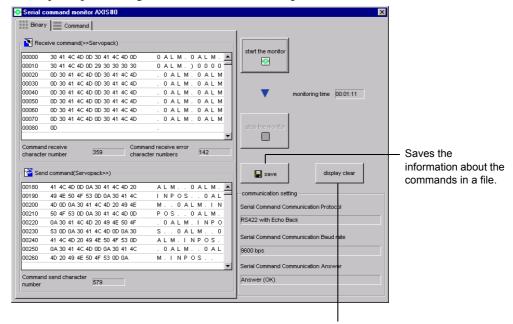
Serial Command Monitor Window: Binary Display



Serial Command Monitor Window: Command Display

When a large quantity of commands are sent in a short time, the monitor might not be able to process all the information. If so, a star, "*" is shown in the binary display or "LOST" is shown in the command display for information that was unable to be processed.

3. To stop the processing of the monitor, click **Stop the monitor**.



Clears the lists of commands.

4.4 Setup

4.4.1 Setting the Absolute Encoder

Initializing the Absolute Encoder

⚠ WARNING

The absolute encoder setup function resets the multi-turn counter and the encoder alarms for a connected serial absolute encoder.

If the absolute encoder's multi-turn counter is reset to zero, the previously defined mechanical system will change to a different coordinate system.

Operating the machine in this state is extremely dangerous. Failure to observe this warning may result in personal injury and/or damage to the machine. Be sure to reset the zero point for the mechanical system after the encoder has been successfully set up.

Set up the absolute encoder in the following cases:

- At initial machine startup
- When an "Encoder Backup Alarm" has occurred
- When the SERVOPACK power has been turned off, and the encoder cable removed.

The absolute encoder can only be set up while the servo is off. Turn the power back on after the encoder has been successfully set up.

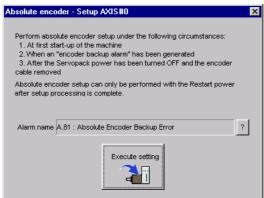
Set up the absolute encoder using the following procedure.

In the SigmaWin+ INDEXER component main window, click Setup, point to Set
 Absolute Encoder and click Reset Absolute Encoder. A warning message appears
 confirming if you want to continue the processing.



Click Cancel to return to the main window without resetting the absolute encoder.

2. Click **Continue**, and the Abolute encoder Setup box appears.



The Alarm Name box displays the code and name of the alarm that is occurring now.

Click the button to display details concerning a specific alarm and its corrective measures.

Click **x** button to return to the main window without resetting the absolute encoder.

3. Click **Execute setting**, and a verification message appears confirming if you want to continue although the coordinate system will change.



Click **Cancel** to return to the previous window without resetting the absolute encoder.

- 4. Click **Continue** to set up the encoder.
 - < If Setup is Unsuccessful >

If setting up is attempted with the servo ON, a reset conditions error occurs, and the processing is aborted.



Click **OK** to return to the main window.

< If Setup Completes Normally >



If the encoder is set up successfully, a warning message will appear reminding you that the coordinate system has changed and must also be reset.

5. Click **OK** to return to the main window. Restart the servo, and perform an origin search for the upper-level controller.

■ Setting the Multi-Turn Limit

If using an absolute detection system for machines, such as round tables, that turn in response to the number of times that the load shaft turns, reset the multi-turn data from the encoder to zero after a set number of rotations (referred to as "m"). The load shaft of the machine turns "n" times, and the motor turns "m" times.

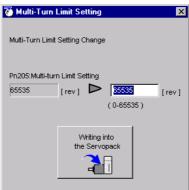
Set the multi-turn limit to the SERVOPACK and the servomotor using the following procedure.

 In the SigmaWin+ INDEXER component main window, click Setup, print to Set Absolute Encoder and click Multi-Turn Limit Setting. A verification message appears confirming if you want to continue although the position data will change.

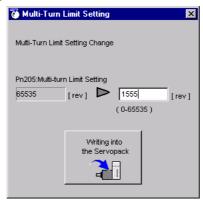


Click Cancel to return to the main window without setting the multi-turn limit.

2. Click **Continue**, and the Multi-Turn Limit Setting box appears.



3. Change the setting to the desired number of revolutions.



4. To save the settings, click **Writing into the Servopack**, and a warning message appears.

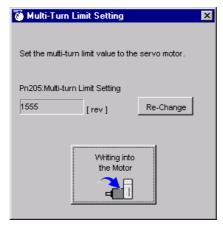


- 5. Click **OK** and the settings are changed to the new ones.
- 6. After turning off the power, restart the SERVOPACK. Because only the settings for the SERVOPACK were made, the settings for the motor are still imcomplete and an alarm occurs.

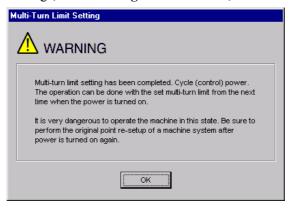
7. Return to the SigmaWin+ INDEXER component main window. To make the settings for the motor, click **Setup** and then click **Multi-Turn Limit Setting** again. A verification message appears confirming if you want to continue although the position data will change.



8. Click **Continue**, and the Multi-Turn Limit Setting box appears. To change the settings, click **Re-Change**.



9. To save the settings, click **Writing into the Motor**, and a warning message appears.



10. Click OK.

■ Absolute Encoder Zero Setting

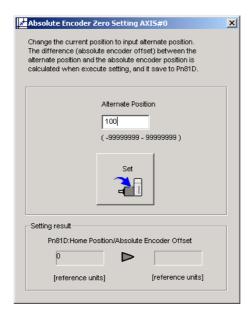
If using an absolute encoder, the current position can be changed to a specified position. Make the zero setting for the absolute encoder using the following procedure.

1. In the SigmaWin+ INDEXER component main window, click **Setup**, point to **Set Absolute Encoder**, and click **Absolute Encoder Zero Setting**. A verification message appears confirming if you want to continue although the position data will change.



Click **Cancel** to return to the main window without making the zero setting for the absolute encoder.

- 2. Click Continue.
- 3. The Absolute Encoder Zero Setting box appears. Type the desired value for the position.

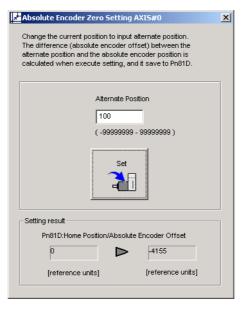


4. Click Set.



Click **Cancel** to return to the main window without making zero setting for the absolute encoder.

5. Click Continue and the zero point for the absolute encoder is set.



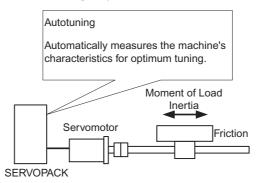
6. To finish the setting, click the **X** button of upper-right of the box. A warning message appears.



7. Click **OK**.

4.4.2 Online Autotuning

Incorrect settings for the speed loop gain, position loop gain, in the servo system are often the causes of slow performance when positioning. Set these servo gains to match the machine's configuration and rigidity.



The SERVOPACK has an autotuning function which automatically measures the mechanical characteristics of the system and sets the necessary servo gains. Using this function makes it easy, even for beginners, to tune servo gains. The servo gains are set in the parameters.

Setting Machine Rigidity in Online Autotuning

Select the target values for the speed loop gain and position loop gain for the servo system in the Machine Rigidity Setting box during online autotuning.

In the SigmaWin+ INDEXER component main window, click **Setup**, point to **Set Online Autotuning** and click **Set Rigidity**, and the Machine Rigidity Setting box appears.



Rigidity Setting box during Online Autotuning

Machine Rigidity

Select the machine's rigidity from the data boxes. Increasing the machine rigidity setting will increase the loop gains and shorten the positioning time of the servo system. If the setting is too high, however, machine excitation may result. If excitations occur, lower the setting.

Select the machine's rigidity according to the recommendations in the following table. However, these settings may not be appropriate for all machines.

Drive Type	Machine Rigidity
Direct connection to ball screw	4 to 10
Ball screw with gearbox	3 to 4
Timing belt	1 to 4
Chain	1 to 3
Harmonic gears	1 to 3

Click **Guideline** to view details on the rigidity setting guidelines.

Execute

When **Execute** is clicked, the tuning-related parameters will automatically change according to the rigidity setting. The changed settings are displayed in the "Current" column.

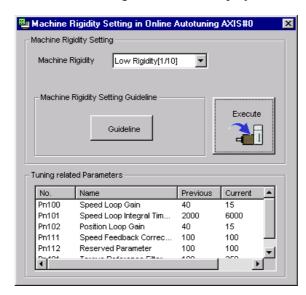
Tuning related Parameters

Lists the parameters needed for autotuning.

Previous: Lists the settings that were used before the rigidity was changed.

Current: Lists the settings that are changed based on the rigidity setting.

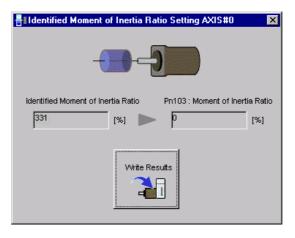
Click **Execute**, and the new changed values are displayed in the "Current" column.



Saving Autotuning Results

Online autotuning constantly calculates the latest moment of inertia and updates the data so that the speed loop gain meets the target value. The autotuning results must be saved in the Identified Moment of Inertia Ratio Setting box so that the settings can be used the next time that the servo is turned on.

In the SigmaWin+ INDEXER component main window, click **Setup**, point to **Set Online Autotuning** and click **Set Identified Moment of Inertia Ratio** and the Identified Moment of Inertia Ratio Setting box appears.



Identified Moment of Inertia Ratio

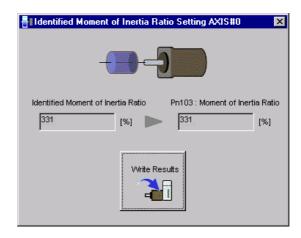
Shows the latest load moment of inertia ratio. This value constantly changes as the servomotor accelerates or decelerates.

Write Results

Assign the currently displayed load moment of inertia to the SERVOPACK parameter Pn103.

Pn103: Moment of Inertia Ratio

Shows the load moment of inertia ratio that was just assigned to parameter Pn103 when the **Write Results** was clicked.



4.4.3 Offset Adjustment

There are two types of offset adjustments.

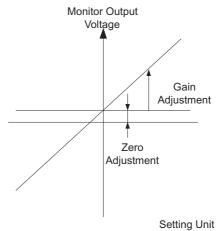
- Analog monitor output adjustment
- Motor current detection offset adjustment

Adjusting Analog Monitor Output

With this function, you can monitor the motor speed, torque reference, position error, and so on by the analog monitor output.

There are two types of analog monitor output adjustment: Zero Adjustment and Gain Adjustment.

Perform zero adjustment when correcting a error in output voltage caused by drift, or a error from the zero point caused by noise on the monitoring system. Also, perform adjust the gains when matching the sensitivity to the measurement system.

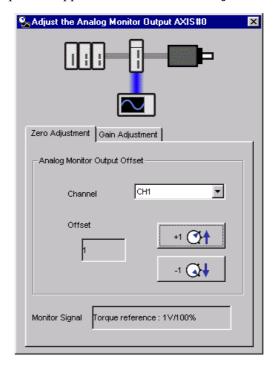


Zero Adjustment Range: $\pm\,2V$ $\rightarrow\,17mV/LSB$ Gain Adjustment Range: 50% to 150% $\rightarrow\,0.4\%$ LSB

Zero Adjustment

Adjust the zero position using the following procedure.

1. In the SigmaWin+ INDEXER component main window, click **Setup**, point to **Adjust Offset** and click **Adjust the Analog Monitor Output**, and the Adjust the Analog Monitor Output box appears. Click the **Zero Adjustment** tab.



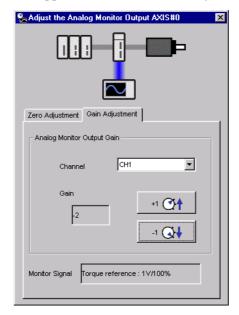
There are two channels: CH1 and CH2.

2. While watching the analog monitor, use the +1 and -1 buttons to adjust the offset.

Gain Adjustment

Adjust the gain using the following procedure.

1. In the SigmaWin+ INDEXER component main window, click **Setup**, point to **Adjust Offset** and click **Adjust the Analog Monitor Output**, and the Adjust the Analog Monitor Output box appears. Click the **Gain Adjustment** tab.



There are two channels: CH1 and CH2.

2. While watching the analog monitor, use the +1 and -1 buttons to adjust the gain.

Adjusting Motor Current Detection Offset

∴ CAUTION

The offset of the motor current detection need not usually be adjusted because it is adjusted at delivery by Yaskawa. If the offset of the detection is carelessly or incorrectly set, the performance will be degraded. Use this function only when the torque ripple is obviously much larger than that of other SERVOPACKs.

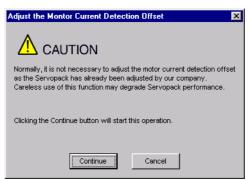
Usually, the offset of the motor current detection does not have to be adjusted because it is adjusted at delivery by Yaskawa. Adjust the offset only when higher precision is needed, such as if the torque ripple error is thought to be excessive based on the current offset or if there is a need for further reduction in torque ripple.

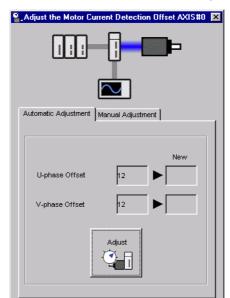
There are two types of motor current detection offset adjustment: Automatic and Manual.

Automatic Adjustment

Automatically adjust the offset using the following procedure.

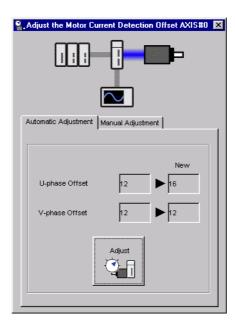
In the SigmaWin+ INDEXER component main window, click Setup, point to Adjust
 Offset and click Adjust the Motor Current Detection Offset. A warning message
 appears confirming if you want to continue although the SERVOPACK's performance
 will be affected if the function is used carefully or incorrectly.





2. Click Continue, and then click the Automatic Adjustment tab.

3. Click Adjust.



The automatically adjusted values are displayed in the "New" box.

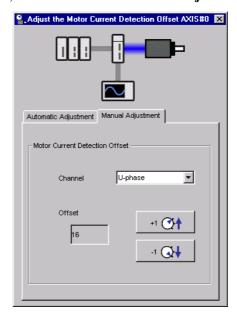
Manual Adjustment

Manually adjust the offset using the following procedure.

- 1. Turn the motor at 100 min⁻¹.
- 2. In the SigmaWin+ INDEXER component main window, click **Setup**, point to **Adjust Offset** and click **Adjust the Motor Current Detection Offset**. A warning message appears confirming if you want to continue although the SERVOPACK's performance will be affected if the function is used carefully or incorrectly.



3. Click Continue, and then click the Manual Adjustment tab.



4. While watching the analog monitor, use the +1 and -1 buttons to adjust the offset to minimize the ripple on the torque reference monitor. The U-phase and V-phase currents must be adjusted so that they balance. Repeat the adjustment alternately between them several times.

4.4.4 Origin Search

WARNING

Using the origin search function while the motor is running is dangerous.

Be sure to check the user's manual before using this function.

Pay particular attention to the following.

· Check the safety of the area adjoining the drive unit.

The motor runs at 60 min⁻¹ for about one minute, while the RUN button is pressed.

Make sure that there is no danger in running the motor before actually using it.

• The Forward Run Prohibit (P-OT) and Reverse Run Prohibit (N-OT) signals are disabled during the origin search.

During operation, make sure to verify the actual operation and position of the motor or machine.

This function moves the motor to the origin and clamps at the position. Use this function when the motor shaft needs to be aligned with the machine.

The following conditions must be satisfied to carry out an origin search.

- 1. The servo ON (/S-ON) input signal is OFF.
- 2. Parameter Pn50A.1 is set to any number other than "7", and the servo ON mask is released.
- 3. The password (parameter overwrite prohibition) is set to "0000" allowing overwrite (release of overwrite prohibitions).*
- * The SERVOPACK must be restarted after this change to enable the settings.

Perform an origin search using the following procedure.

1. In the SigmaWin+ INDEXER component main window, click **Setup**, and then click **Search Origin**. A warning message appears reminding you of the dangers that are possible when using this function.



Click **Cancel** to return to the main window without performing origin search.

<When the Password Has Been Set>

If the password has been set, the following message will appear.

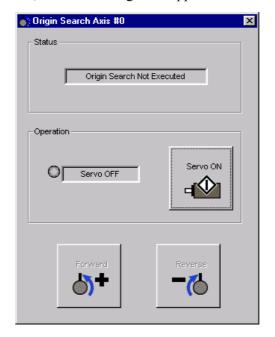


Click **OK**, and cancel the password.

See "4.4.5 Setting the Password" for cancelling method.

2. Click **OK**, and the Origin Search box appears.

If the servo is on, an error message will appear. Make sure that the servo is off.



Origin Search Box

Status

This displays the run status.

Origin Search not Executed: The motor has not turned.

Origin Search Executing: Searching for the origin by turning forward or

in reverse.

Origin Search Stopped: The Forward or Reverse button has been

released during the origin search, so the motor

stopped.

Origin Search Completed: Origin found, and the motor stopped (clamped)

at the point.

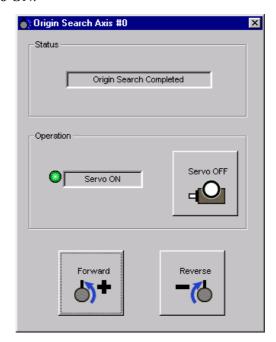
Close the Origin Search box to re-execute another origin search after a one search has been completed.

Operation

On the left, shows if the servo is on or off and the corresponding LED display.

On the right, the button changes according to the servo's status. When the servo is off, the **Servo ON** button appears; when the servo is on, the **Servo OFF** button appears.

3. Click Servo ON.



4. Press **Forward** or **Reverse**. The search is performed while one of these buttons is pressed. The axis stops when the search is complete.

4.4.5 Setting the Password

The password setting function is used to prevent the inadvertent rewriting of the parameters.

Set or cancel the password using the following procedure.

1. In the SigmaWin+ INDEXER component main window, click **Setup**, and then click **Password**. One of the following boxes will appear.

<If the Password Has Been Set>



Click **Permit** to cancel the password.

<If the Password Has Been Cancelled>



Click **Prohibit** to set the password.

2. A message appears, telling you that the password has been changed and will be effective the next time the SERVOPACK is restarted.

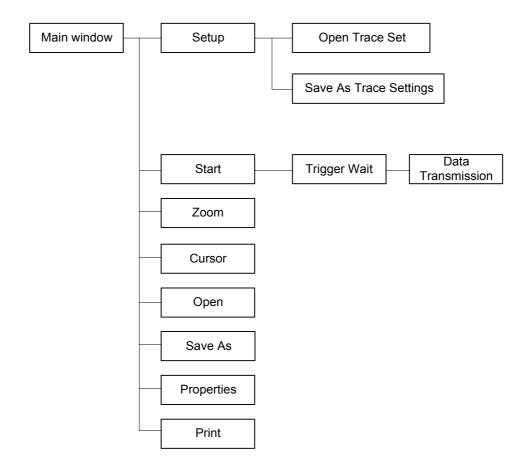


Click **OK** and restart the SERVOPACK.

4.5 Tracing and Tuning

■ Structure

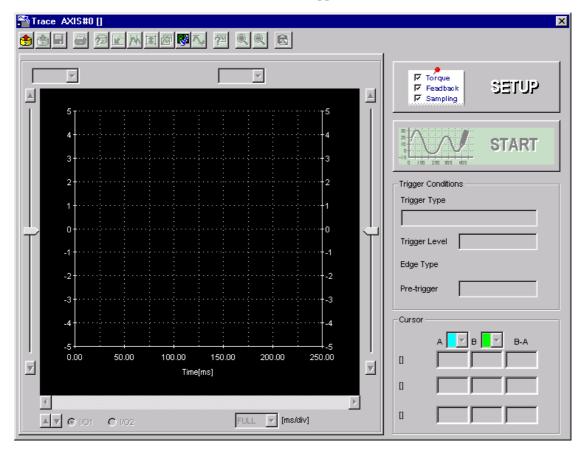
The following flowchart shows how the trace function works.



■ Data Trace

Main Window

In the SigmaWin+ INDEXER component main window, click **Trace** & **Tuning**, and then click **Trace**, and the Trace main window appears.

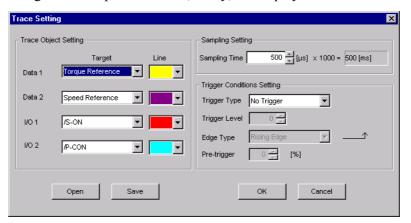


Trace Main Window

Trace Settings

In the Trace main window, click **SETUP**, and the Trace Setting box appears. Select the objects and conditions for the trace.

The settings from the previous trace, if any, are displayed.



Trace Setting Box

< Trace Object Settings >

The settings for the trace objects, or targets can be made here.

Data 1/Data 2

Select content such as "Torque Reference", "Speed Feedback", etc., identical to the analog monitor as trace objects from the data boxes.

1/0 1 / 1/0 2

Select output signals such as "/COIN" or "ALM" and input signals such as "/C-SEL", "P-OT", or "N-OT" as trace objects.

Line

Select a line color for data 1 and 2 and I/O 1 and 2.

< Sampling Setting >

The setting for the allowable interval time for getting trace data can be made here. Data will be obtained every 250 μ s if the sampling time is set to 250 μ s. The total trace time is the sampling time multiplied by the number of data items. Use the spin button to set the time.

If direct input is attempted, and the value is outside the acceptable range, a warning message will appear telling you that the sampling time is incorrect. The warning will vary according to the error.

1. If the input data setting is larger than the maximum time:



Click **OK** to automatically adjust the sampling time to the maximum setting. Click **Cancel** to return to the Trace Setting box without setting the sampling time.

2. If the input data is smaller than the minimum setting time:



Click **OK** to automatically adjust the sampling time to the minimum setting. Click **Cancel** to return to the Trace Setting box without setting the sampling time.

3. If the input data cannot be allocated in the time interval:



Click **OK** to automatically adjust the sampling time. Click **Cancel** to return to the Trace Setting box without setting the sampling time.

< Trigger Condition Setting >

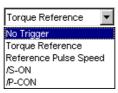
A trigger is a device for designating the timing of data access. For example, it is possible to set conditions such as "After /COIN signal goes ON" or "After the speed feedback exceeds 100 min⁻¹", and thereby make detailed reference of the servo operation at the time these conditions occur.

Trigger conditions are designated as any one of the following four items.

Trigger Type

Designate the object to which the trigger is applied. The selected objects can either be from the designated in Data 1 and 2, and I/O 1 and 2, or "No Trigger".

If "No Trigger" is selected, the trigger will be applied at the same time as the START button is pressed. Also the settings for "Trigger Level", "Edge Type" and "Pre-Trigger" will be unavailable.



Trigger Type box

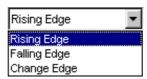
Trigger Level

Designate the standard for determining when the trigger starts. The units for the setting are the same as those of the trigger object selected.

The trigger level cannot be set if the trigger object is "I/O 1 / I/O 2" or "No Trigger".

Edge Type

Designate the direction of change when a trigger is applied. Select "Rising Edge", "Falling Edge", or "Change Edge" as the type of edge.



Edge Type Box

Rising Edge: The trigger is detected when the trigger object data rises from below the

trigger level to above the trigger level. When the change is from LO to HI in I/O

Falling Edge: The trigger is detected when the trigger object data falls from above the

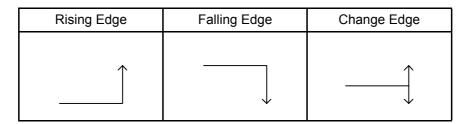
trigger level to below the trigger level. When the change is from HI to LO in I/O

Change Edge: The trigger is detected if the trigger object crosses the "Trigger Level" in any

way.

When the signal level changes in I/O

The miniature graph beside the Edge Type box shows how the selected edge will look.

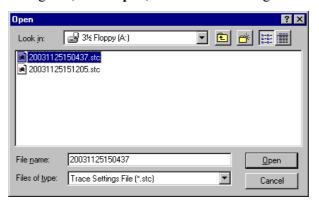


Pre-Trigger (0% to 99%)

Designate to what degree data is displayed in the graph before a trigger is applied.

Open

In the Trace Setting box, click **Open**, and the trace setting files.

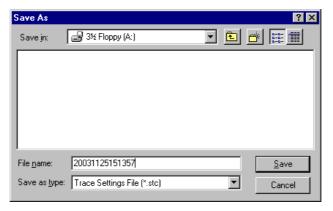


Open Dialog Box

Click **Open** to read the designated trace setting file. Click **Cancel** to return to the Trace Setting box without reading the file.

Save

In the Trace Setting box, click **Save**, and then select the storage location for the setting file shown in the Trace Setting box.



Save Dialog Box

Click **Save** to store the file name designating the current trace settings. Click **Cancel** to return to the Trace Setting box without saving the file.

If the file name already exists or if an already existing file is loaded and then re-saved, a warning message appears, telling you that the file name already exists, and asks if you want to replace the existing file.



Click **Yes** to overwrite the already existing file. Click **No** to return to the Save dialog box without saving the file.

OK

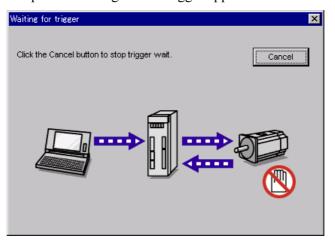
In the Trace Setting box, click \mathbf{OK} to return to the Trace main window. The trace object and trigger are updated according to the settings.

Cancel

In the Trace Setting box, click **Cancel** to return to the Trace main window without changing the settings.

Starting the Trace

In the Trace main window, click **START**, and an illustration showing SigmaWin+INDEXER component waiting for the trigger appears on the screen.



Waiting for the Trigger

The illustration is displayed until the set trigger conditions are met. Click **Cancel** to stop waiting for the trigger and to return to the Trace main window.



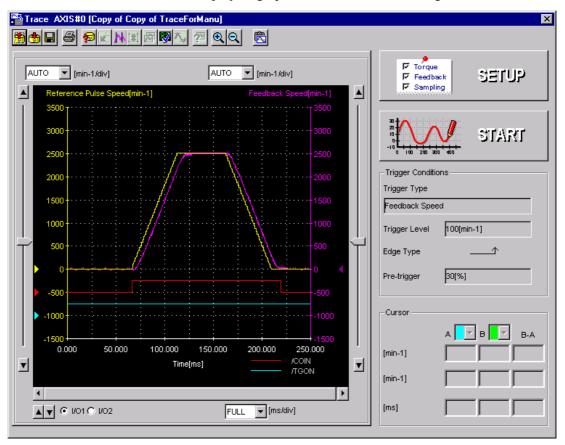
Reading Trace Data from the SERVOPACK

When the conditions are met and the trigger is applied, an illustration showing the progress of the data transmission appears on the screen. The Trace main window is displayed when the data transmission is complete.

- Note: 1. The trigger sometimes cannot be detected in less than 2ms due to the relationship of the detection period.
 - 2. If the sampling time is lengthened, SigmaWin+ INDEXER component may continue to wait for the trigger even after the trigger has been applied. SigmaWin+ INDEXER component waits because data for the sampling time is saved in the SERVOPACK after the trigger has been applied.

■ Main Window

This Trace main window displays a graph based on the trace settings.



Trace Main Window

Toolbar

The position of the toolbar can be adjusted, and the on-screen display type selected.



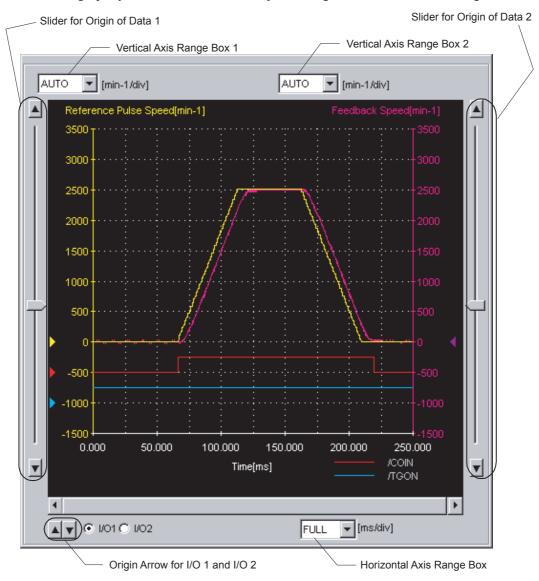
Trace Main Window Toolbar

Toolbar Button	Click this button to:
Open	Load the trace data file.
Save As	Save a copy of the on-screen trace graph to a specified file.
Save	Save the data.
₽rint	Print the Trace main window.
Measurement Conditions	View the conditions to measure the trace.
Cursor	View the information for the location where a cursor is shown.
Parameter Online Editing	View the Parameter Online Editing box. For details, see Section 4.1.2.
Zoom In	Enlarge the view of a selected area.
Q Return	Restore the area shown in the window to its usual size.
Clipboard Copy	Copy the displayed screen to the clipboard.

See "■ <u>Toolbar Details</u>" for details on the toolbar buttons.

Trace Object Graph

In the graph, you can view the trace objects designated in the Trace Setting box.



Trace Object Graph

Vertical Axis Range

Select a vertical axis range for both Data 1 and Data 2 from the corresponding box.

If AUTO is selected, the range widths will be automatically adjusted so that all of the data can be shown in the graph.

The range must be selected from the list.



Vertical Axis Range Box

Horizontal Axis Range

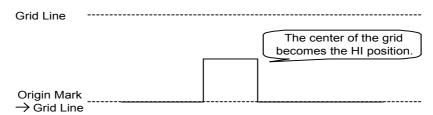
Select a horizontal axis range for the time axis from the box. The time is measured in "ms". The range must be selected from the list.

If FULL is selected, all of the data will be automatically adjusted so that the entire horizontal axis can be displayed. When the window is too small to show all of the horizontal axis, a horizontal scroll bar is displayed to allow you to view all of the axis.



Horizontal Axis Range Box

Supplement: Regarding I/O Trace Graph



Trigger Conditions

This displays the trigger conditions in the Trace Setting box.

The trigger level is blank if an I/O trace is the trigger condition.

■ Toolbar Details

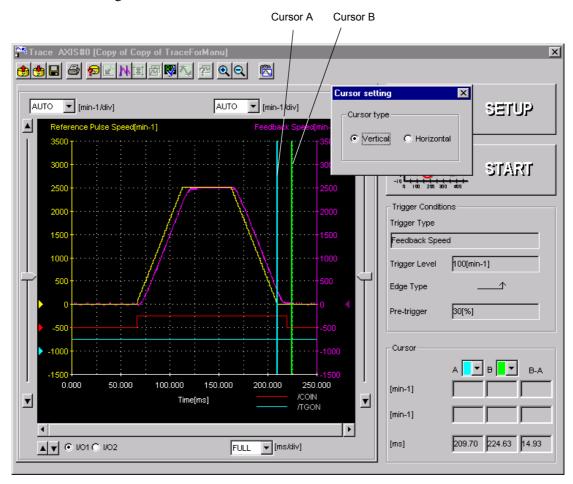
(Cursor) Button

The information for the location where a cursor is shown can be viewed. Information for the cursor locations A and B can be viewed.

The color of cursor locations A and B can be changed.

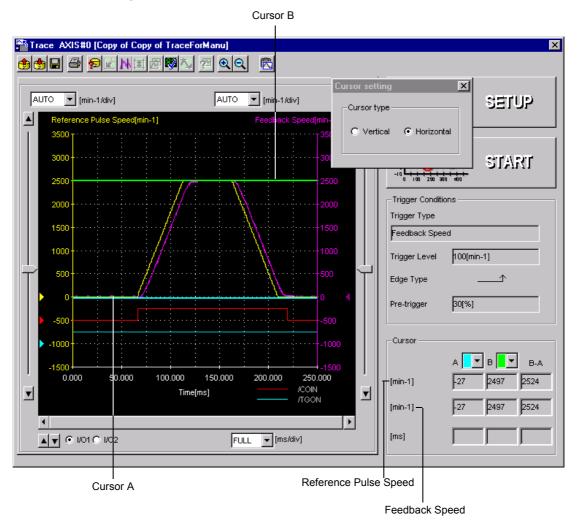
Display the data using the following procedure.

- 1. Click the button. Two vertical bars will be displayed.
- 2. Move each cursor. As you move each cursor, the data changes in the cursor box in the lower right of the window.



3. To view the speed data, select **Horizontal** in the Cursor Setting box. Two horizontal bars will be displayed.

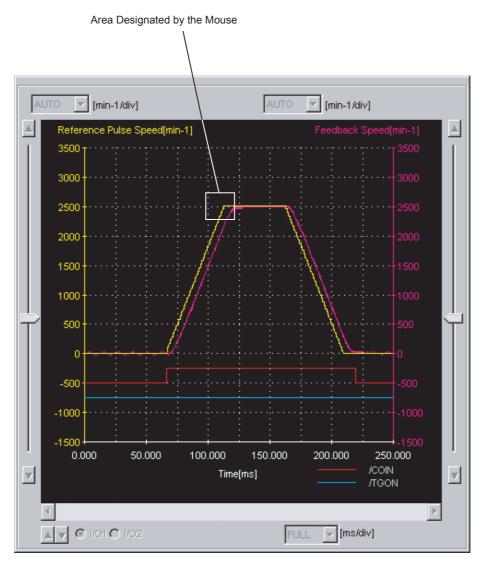
4. Move each cursor. As you move each cursor, the data changes in the cursor box in the lower right of the window.



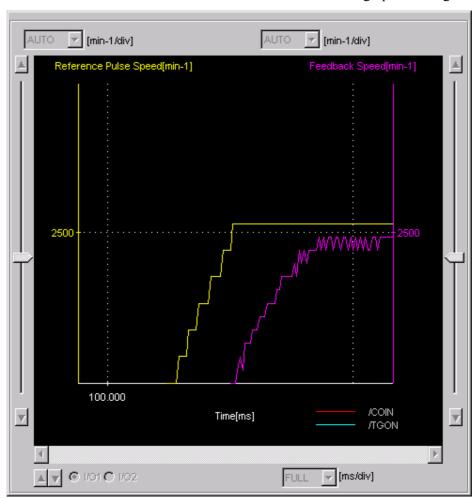
(Zoom) Button

A view of an area selected by the mouse can be magnified. Zoom in on an area using the following procedure.

- 1. Click the utton.
- 2. Position the mouse at one corner of the area you want to select, and drag to the opposite corner. A line will appear around the selected area.



Area to be Magnified



3. Release the left mouse button. The selected area of the graph is enlarged.

Magnified Area

4. Click the button to view the original graph.

(Open) Button

The trace data file can be loaded in the Open dialog box. To load the file, click the button. The Open dialog box appears.



When the Button is Clicked in the Main Window

Open

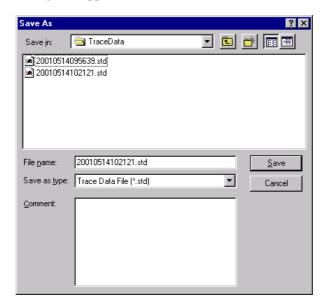
Click Open to load the selected trace file.

Cancel

Click **Cancel** to return to the main window without loading the file.

(Save As) Button

The on-screen trace graph can be saved to a file. To save the graph, click the button. The Save As dialog box appears.



When the Button is Clicked in the Main Window

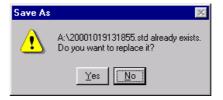
Up to 256 characters can be typed as a comment.

The default file name is the current time (yyyymmddhhmmss).

Save

Click **Save** to save the data to a designated trace file.

If the file name already exists or if an already existing file is loaded and then re-saved, a warning message appears, telling you that the file name already exists, and asks if you want to replace the existing file.



Click **Yes** to overwrite the already existing file. Click **No** to return to the Save As dialog box without saving the file.

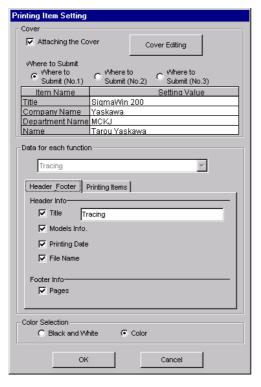
Cancel

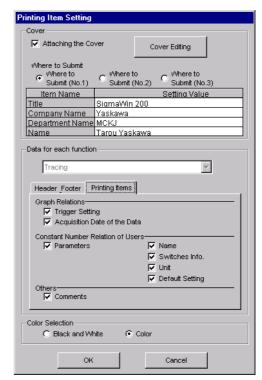
Click to Cancel to return to the main window.

(Print) Button

The graph and data on the Trace main window can be printed. To print the graph and data,

click the button. The Printing Item Setting dialog box appears.





Header Footer Tab

Printing Items Tab

Printing Item Setting Box

Cover

Select Attaching the Cover, and the click Cover Editing. For details, see Chapter 3.

Data for each function

To enter your printing preferences or specifications, click the tab whose options you want to enter or change, and enter the desired settings.

Color Selection

Documents can be printed in color or black and white. Select your preference.

After setting is finished, click **OK**. The document appears on the screen the way it will appear in print.

To print the document as is without any changes, click **Print**.

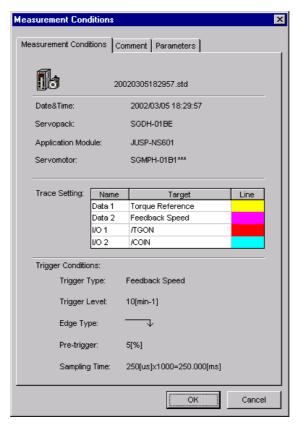
To return to the Printing Item Setting dialog box and change some settings, click **Editing of the Printing Items**.



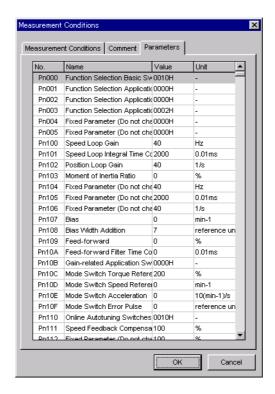
[60] (Measurement Conditions) Button

The conditions for measuring the trace can be viewed. To view the conditions, click the

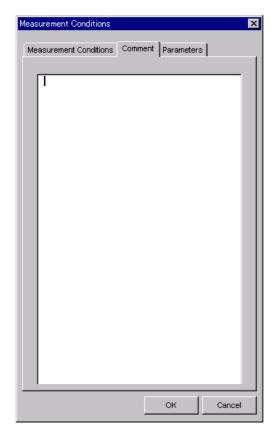
button. The Measurement Condition dialog box appears. If not already selected, click the Measurement Conditions tab to view the conditions for measuring the trace.



Measurement Conditions Tab



Parameters Tab



Comment Tab

Click the **Comment** tab and type any comments.

OK

Click **OK** to save comments and return to the Trace main window.

Cancel

Click **Cancel** to return to the Trace main window without saving the comments.

(Clipboard Copy) Button

The displayed screen can be copied to the clipboard. It can be exported to Word or Excel by using this button.

Click button, and the Clipboard Copy dialog box appears.



Clipboard Copy Dialog Box

Select the area to be copied to the clipboard.

OK

Click **OK** to copy the selected area to the clipboard.

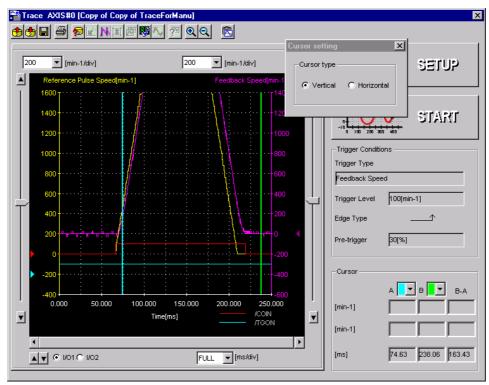
Cancel

Click Cancel to return to the main window.

■ An Example of Using the Trace Function

In this example of how to adjust the servo using the trace function, the positioning completed time is being reduced. The positioning completed time is the time from the completion of the command until the /COIN signal is formed.

1. Click the button on the trace main window. Check the positioning completed time using the cursor.



This graph shows the results of a trace carried out using the factory settings. (Pn100: speed loop gain = 40 Hz; Pn101: speed loop integral time constant = 2000 [0.01 ms]; Pn102: positioning loop gain = 40 l/s)

Trace object: Trace 1 = Reference pulse speed

Trace 2 =Speed feedback

I/O Trace 1 = /COIN signal (positioning completed)

I/O Trace 2 = /TGON signal (motor running)

Trigger conditions: Falling edge of reference pulse speed 0 min⁻¹

Pre-trigger: 30 %

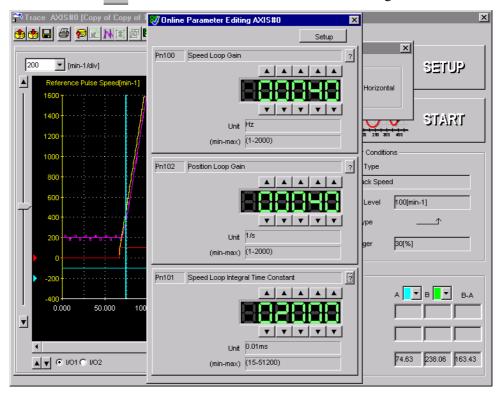
(We are using this setting to trigger the completion of the

command.)

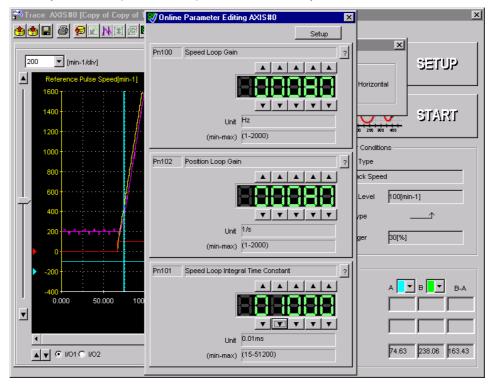
When in this condition, the positioning completed time is 163 ms.

2. To adjust the positioning completed time, modify the values of the parameters.

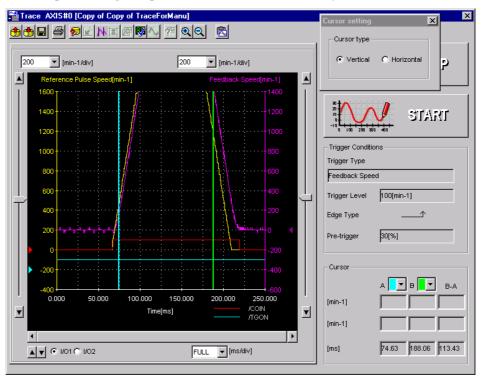
Click the button to view the Online Parameter Editing box.



3. To increase the gain, click the setting arrows to raise or lower the values. (Pn100 = 80, Pn102 = 80, and Pn101 = 1000)



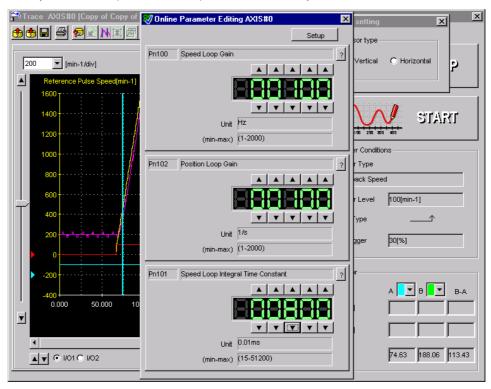
4. Confirm the positioning completed time on the trace main window. The positioning completed time has been reduced by 113 ms.



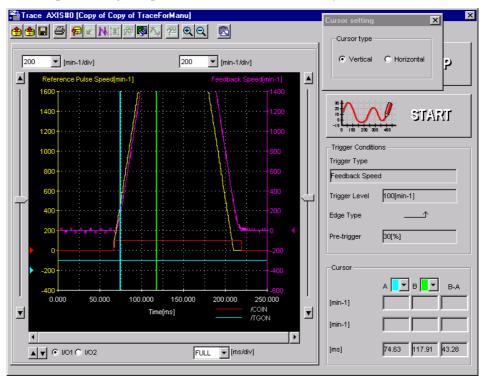
Because the machine is still not vibrating, increase the gain some more.

5. Click the button to view the Online Parameter Editing box again and then change the values.

(Pn100 = 100, Pn102 = 100, and Pn101 = 800)



6. Confirm the positioning completed time on the trace main window. The positioning completed time has been reduced by 43 ms.



7. Repeat steps 2 to 4 until you get the target positioning completed time.

4.6 JOG Operation

WARNING

Performing JOG operation while the motor is running is dangerous.

Be sure to check the user's manual before executing.

Pay particular attention to the following.

· Check the safety of the area adjoining the drive unit.

The motor runs at the JOG speed, while the RUN button is pressed.

Make sure that there is no danger in running the motor before execution.

 The Forward Run Prohibit (P-OT) and Reverse Run Prohibit (N-OT) signals are disabled during JOG operation.

During operation, make sure to verify the actual operation and position of the motor or machine.

This function turns the motor at the set JOG speed. The rotational direction and the speed setting can be verified without connecting an upper-level controller.

The following conditions must be satisfied to carry out a JOG operation.

- 1. The servo ON (/S-ON) input signal is OFF.
- 2. Parameter Pn50A.1 is set to any number other than "7", and the servo ON mask is released.
- 3. The password (parameter overwrite prohibition) is set to "0000" allowing overwrite (release of overwrite prohibitions).*
- * The SERVOPACK power must be restarted after this change to enable the settings.

Perform a JOG operation using the following procedure.

In the SigmaWin+ INDEXER component main window, click **Test Run**, and then click **Jog**. A warning message appears reminding you of the dangers that are possible when using this operation.



Click Cancel to return to the main window without performing JOG operation.

<When the Password Has Been Set>

If the password has been set, the following message will appear.

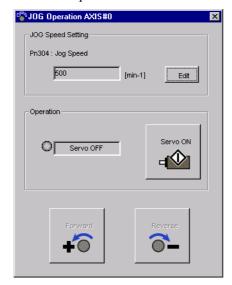


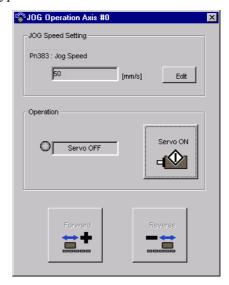
Click **OK**, and cancel the password.

See "4.4.5 Setting the Password" for cancelling method.

2. Click **OK**, and the JOG Operation box appears.

If the servo is on, an error message will appear. Make sure that the servo is off. The Operation box differs on motor types.





For rotating motor

For linear motor

Pn304: JOG Speed (Pn383 for linear motor)

Parameter Pn304 (Pn383 for linear motor) displays the JOG speed. Click **Edit** to change the JOG speed.

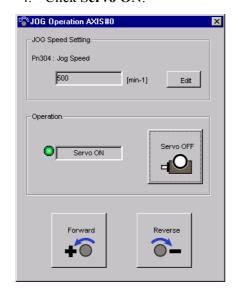
Operation

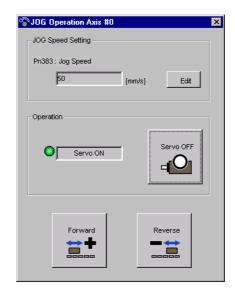
On the left, shows if the servo is on or off and the corresponding LED display.

On the right, the button changes according to the servo's status. When the servo is off, the **Servo ON** button appears; when the servo is on, **Servo OFF** button appears.

3. Check the JOG speed. To change the JOG speed, click **Edit**.

4. Click Servo ON.





For rotating motor

For linear motor

5. Press **Forward** or **Reverse**. A JOG operation is performed only while one of these buttons is pressed.

4.7 Table Editing

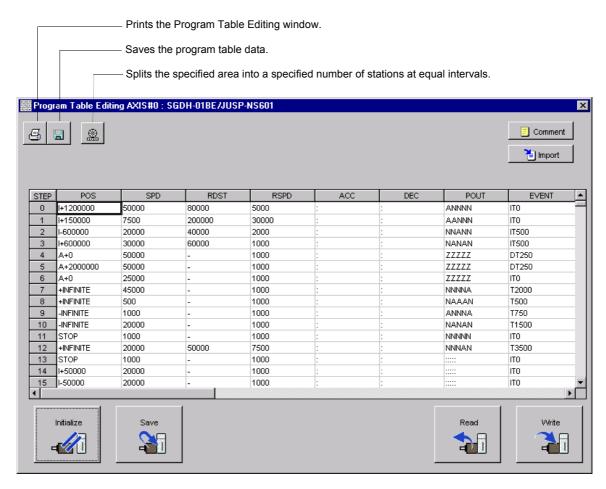
4.7.1 Program Table Editing

Programs can be viewed and edited in the Program Table Editing window. Create programs by setting the individual program steps (one row in the table is a program step). The NS600 or NS601 runs the program (steps) that is in the program table in accordance with a reference from the upper-level controller.

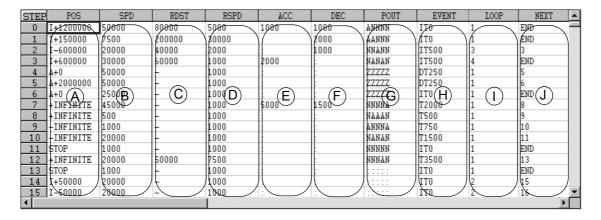
The windows differ in the Online and Offline modes.

■ When Online

In the SigmaWin+ INDEXER component main window, click **Table** and then click **Edit Program Table**. The Program Table Editing window appears.

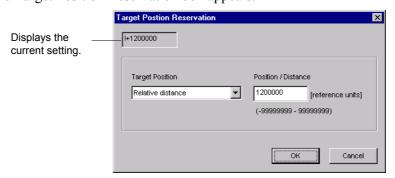


Program Table Editing Window (Online Mode)



Box A: POS

The positioning target position can be changed in this box. Double click any cell in the box, and the Target Position Reservation box appears.



Select the target position. The following table shows the six items that can be selected.

Selection Items	Display	
Absolute Position	A ±Position	
Relative Distance	I ±Distance	
Infinity (Positive direction)	+INFINITE	
Infinity (Negative direction)	-INFINITE	
Stop	STOP	
Without reference	-	

If "Absolute Position" or "Relative Distance" is selected, type a number in the Position/ Distance column.

Click **OK** to save the changes and return to the Program Table Editing window.

Box B: SPD

The speed can be typed directly in this box.

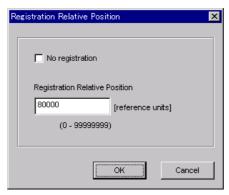
Box C: RDST

The registration relative distance can be set in this box. Double click any cell in the box, and the Registration Relative Position box appears.



Click **OK** to return to the Program Table Editing window without registration.

Do not select "No Registration" to register a relative position. Type the registration relative position.



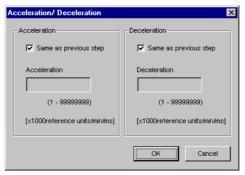
Click **OK**.

Box D: RSPD

The registration speed can be typed directly in this box.

Box E: ACC (NS600 Ver. 0004 or later, NS601 only)
Box F: DEC (NS600 Ver. 0004 or later, NS601 only)

The acceleration and deceleration speeds can be set in this box. Double click any cell in one of these boxes, and the Acceleration and Deceleration box appears.

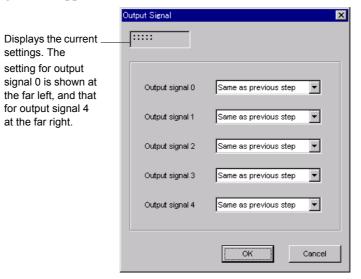


To set the same acceleration or deceleration speed as in the previous step, select "Same as previous step" and click **OK**.

To set a new speed, clear the previous setting by clicking "Same as previous step" to remove the checkmark. Then, type the new setting in the Acceleration or Deceleration box and click \mathbf{OK} .

Box G: POUT

The output signals 0 to 4 can be set in this box. Double click any cell in the box, and the Output Signal box appears.



Select the output timing for the output signals. The following table shows the four items that can be selected.

Selection Items	Description	Display
Active	Always Active.	A
Not Active	Always Inactive.	N
Same as previous step	Continues previous state.	:
Zone	Sets a zone signal (Z0 to Z4) corresponding to the column.	Z

Ex.: The "ANNZ" display shows the following settings.

Output Signal 0: Active

Output Signal 1: Not Active

Output Signal 2: Not Active

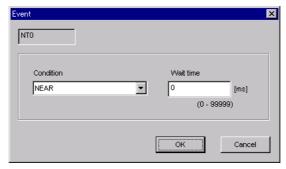
Output Signal 3: Zone Signal Z3

Output Signal 4: Same as previous step

Click **OK** to save the settings and return to the Program Table Editing window.

Box H: EVENT

The conditions can be set in this box. Double click any cell in the box, and the Event box appears.



Select the conditions. The following table shows the items that can be selected.

Selection Items	Description	Display
Positioning Comple-	Establish conditions for INPOSITION	I
tion	band	
NEAR	Establish conditions for NEAR band	N
Command Issuance	Establish conditions for command issu-	D
Completion	ance completion	
SEL0, SEL1,	Establish conditions at signal (SEL0,	SEL0, SEL1,
	SEL1,) ON	
Wait Time	Establish conditions after a designated	T Wait Time
	wait time	
Same as previous	Use the same conditions as the previous	:
step	step	

If a item other than "same as previous step" is selected, type a wait time.

Click **OK** to save the settings and return to the Program Table Editing window.

Box I: LOOP

The number of times a step that is to be carried out can be typed directly in this box.

Box J: NEXT

The next step can be designated in this box. Double click any cell in the box, and the Next Step box appears.



If the program ends in this step, select "Complete," and then click **OK**.

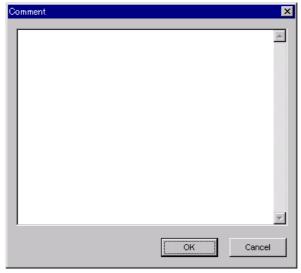
If the program continues, do not select "Complete," and type the number of the next step.



Click **OK** to save the settings and return to the Program Table Editing window.

Comment

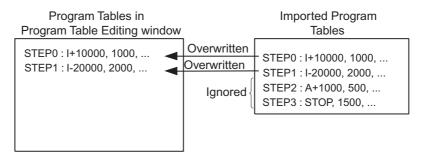
Comments can be typed or edited in the Comment box. Click **Comment**, and the Comment box appears.



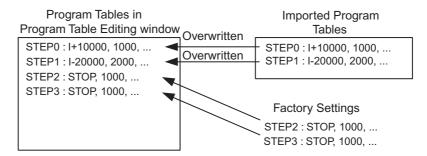
Import

Program table settings can be transferred or imported from a stored file with the Import function. If the imported program tables differ in number from the on-screen program tables, the following processing takes place.

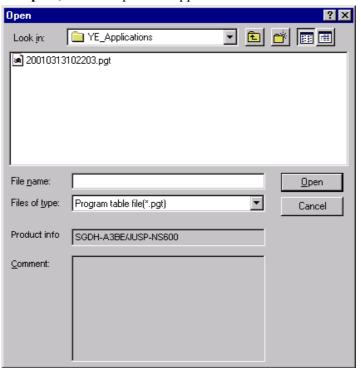
• If the number of imported program tables is greater



• If the number of imported program tables is fewer



1. Click **Import**, and the Open box appears.



2. Select the file to be transferred, and click **Open**.

Write

The program tables can be written to the SERVOPACK with the Write function. Click **Write**, and a warning message will appear reminding you that the data erased if the power is turned off.



Click **OK** to write in the data.

Click Cancel to return to the Program Table Editing window without writing in the data.

<Differences Between Write and Save>

Write: Saves table data to the SERVOPACK in temporary storage. The data in the table is deleted when the power is turned OFF.

Save: Saves the data in the table that is stored in the SERVOPACK memory to the flash memory. The data for the tables remains unchanged if power is turned off.

Read

The program tables can be read within the connected SERVOPACK with the Read function. Click **Read**, and a message will appear, confirming if you want to read the table data.



Click **OK** to start reading and overwriting the table data.

Click Cancel to return to the Program Table Editing window without reading the table data.

Save

The data in the table can be saved to the flash memory with the Save function. Click **Save**, and a warning message will appear reminding you that the data may different than that of the SERVOPACK.



Click **Cancel** to return to the Program Table Editing window. Then by clicking **Write**, write program table that is currently displayed but has not been stored into the SERVOPACK.

If already saved in temporary storage, click **OK**. A conformation message appears.

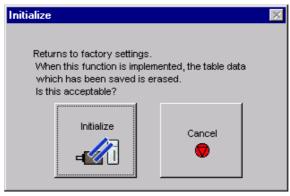


Click **OK** to save the data.

Click Cancel to return to the Program Table Editing window without saving the data.

Initialize

The settings of the SERVOPACK can be returned to the factory settings with the Initialize function. Click **Initialize**, and a verification message appears.



Click **Initialize** to initialize the program tables.

Click Cancel to return to the Program Table Editing window without changing the settings.

Station Split Button

A specified number of stations at equal intervals can be created between specified positions. And each station position can be allocated to the program table.

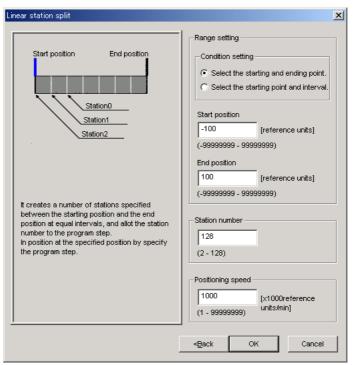
Two types of station splits are available: linear and rotation. The window differs in accordance with the method of moving the load.

Click the Station Split button, , and the Station Split Selection box appears.

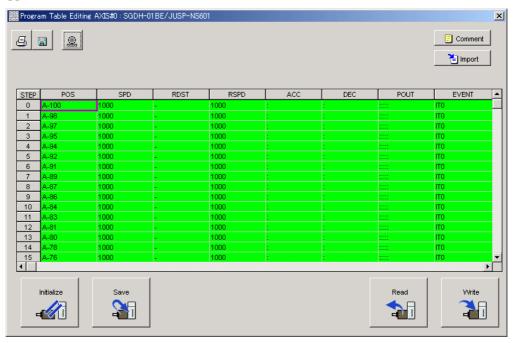
< Linear Movement of Loads >



1. Click Next.



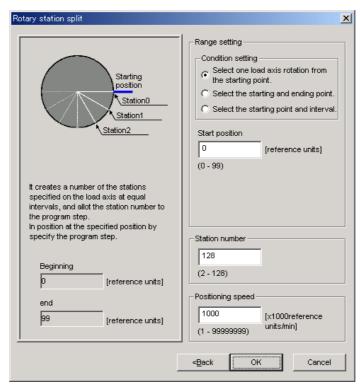
2. Type the values for the settings and click **OK**. The Program Table Editing window will appear.



< Rotational Movement of Loads >

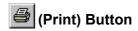


1. Click Next.



2. Type the values for the settings and click **OK**. The Program Table Editing window will appear.

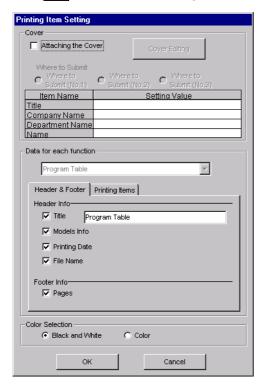


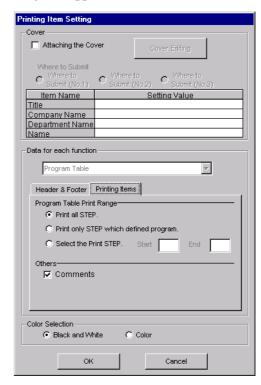


The data on the Program Table Editing window can be printed. To print the data, click the

*\(\begin{aligned}
\)*

button. The Printing Item Setting dialog box appears.





Header & Footer Tab

Printing Items Tab

Printing Item Setting Box

Cover

Select **Attaching the Cover**, and the click **Cover Editing**. For details, see <u>Chapter 3</u>.

Data for each function

To enter your printing preferences or specifications, click the tab whose options you want to enter or change, and enter the desired settings.

Color Selection

Documents can be printed in color or black and white. Select your preference.

Print Preview · | 👍 👍 1/3 Q Q 100% Program Table Program Table POS SPD RDST [reference units] [x1 000reference units/min] [reference units] 1000 1000 1000 1000 1000 1000 END END 5 STOP 6 STOP 7 STOP 1000 1000 1000 1000 END END 1000 8 STOP 9 STOP 10 STOP 1000 1000 1000 END END

After setting is finished, click **OK**. The document appears on the screen the way it will appear in print.

To print the document as is without any changes, click **Print**.

1000 1000

To return to the Printing Item Setting dialog box and change some settings, click Editing of the **Printing Items.**

■ When Offline

In the SigmaWin+ INDEXER component main window, click **Table** and then click **Edit Program Table**. The Program Table Editing box appears.



Load From File: Reads existing data.

Select New SERVOPACK: Creates new data.

Select the desired command and click **OK**.

<When "Load from File" is Selected>

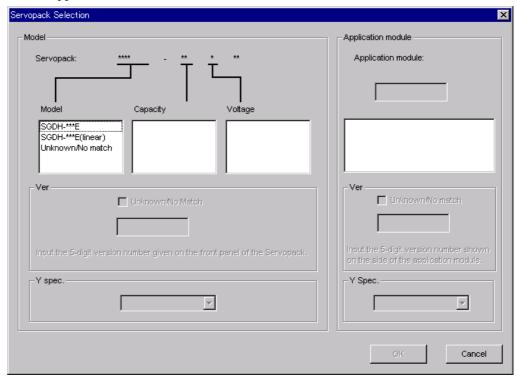
When "Load from File" is selected, the Open box appears.



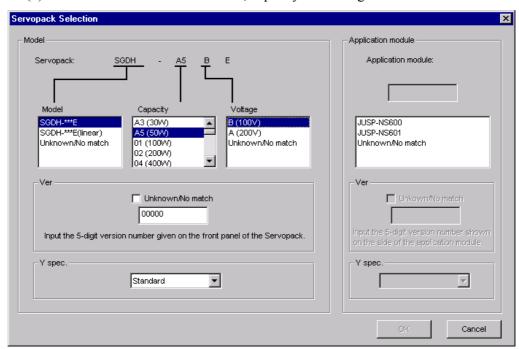
Select the data to be imported, and click **Open**.

< When "Select New SERVOPACK" is Selected >

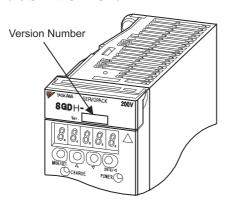
(1) When "Select New SERVOPACK" is selected, the SEROPACK Selection box appears.



(2) Select the SERVOPACK model, capacity and voltage.



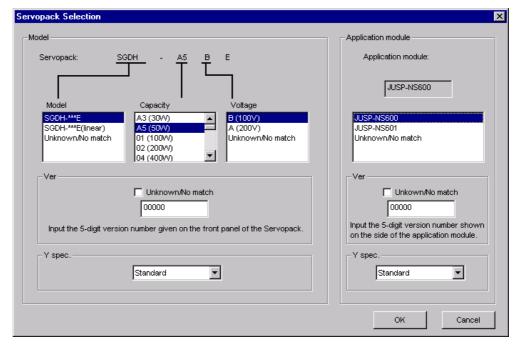
(3) Type the version number of the SERVOPACK. The version number is shown on the front of the SERVOPACK.



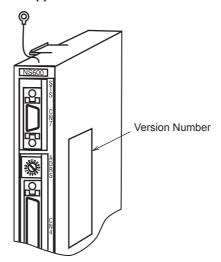
Version Number on SGDH

If the version number is unknown, select **Unknown/No match**.

- (4) Select the specifications of the SERVOPACK.
- (5) Select the application module. Select JUSP-NS600 or JUSP-NS601.



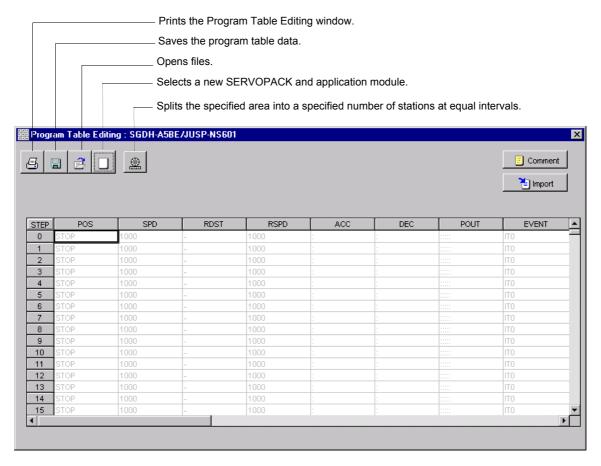
(6) Type the version number of the application module. The version number is shown on the side of the application module.



Version Number on NS600 or NS601

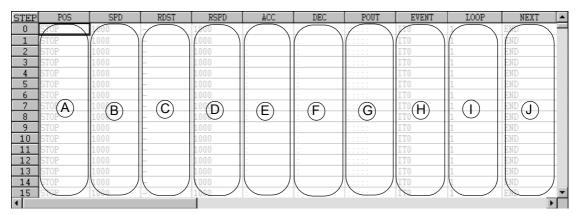
If the version number is unknown, select **Unknown/No match**.

(7) Select the specifications of the application module, and then click **OK**. The data will be imported, and the Program Table Editing window will appear.



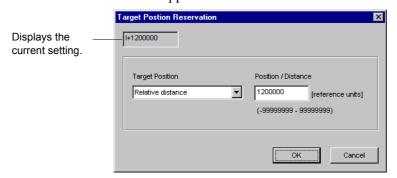
Program Table Editing Window (Offline Mode)

Default values are displayed in gray. The settings in this window are all gray as they are default settings.



Box A: POS

The positioning target position can be changed in this box. Double click any cell, and the Target Position Reservation box appears.



Select the target position. The following table shows the six items that can be selected.

Selection Items	Display
Absolute Position	A ±Position
Relative Distance	I ±Distance
Infinity (Positive direction)	+INFINITE
Infinity (Negative direction)	-INFINITE
Stop	STOP
Without reference	-

If "Absolute Position" or "Relative Distance" is selected, type a number in the Position/ Distance column.

Click **OK** to save the changes and return to the Program Table Editing window.

Box B: SPD

The speed can be typed directly in this box.

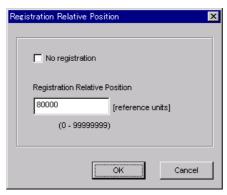
Box C: RDST

The registration relative distance can be set in this box. Double click any cell, and the Registration Relative Position box appears.



Click **OK** to return to the Program Table Editing window without registration.

Do not select "No Registration" to register a relative position. Type the registration relative position.



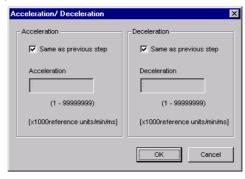
Click **OK**.

Box D: RSPD

The registration speed can be typed directly in this box.

Box E: ACC (NS600 Ver. 0004 or later, NS601 only) Box F: DEC (NS600 Ver. 0004 or later, NS601 only)

The acceleration and deceleration speeds can be set in this box. Double click any cell in one of these boxes, and the Acceleration and Deceleration box appears.

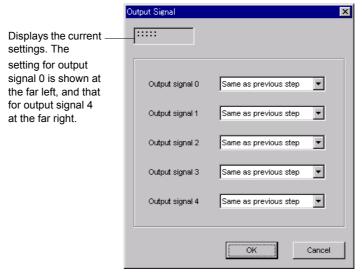


To set the same acceleration or deceleration speed as in the previous step, select "Same as previous step" and click \mathbf{OK} .

To set a new speed, clear the previous setting by clicking "Same as previous step" to remove the checkmark. Then, type the new setting in the Acceleration or Deceleration box and click \mathbf{OK} .

Box G: POUT

The output signals 0 to 4 can be set in this box. Double click any cell in the box, and the Output Signal box appears.



Select the output timing for the output signals. The following table shows the four items that can be selected.

Selection Items	Description	Display
Active	Always Active.	A
Not Active	Always Inactive.	N
Same as previous step	Continues previous state.	:
Zone	Sets a zone signal (Z0 to Z4) corresponding to the column.	Z

Ex.: The "ANNZ" display shows the following settings.

Output Signal 0: Active

Output Signal 1: Not Active

Output Signal 2: Not Active

Output Signal 3: Zone Signal Z3

Output Signal 4: Same as previous step

Click **OK** to save the settings and return to the Program Table Editing window.

Box H: EVENT

The conditions can be set in this box. Double click any cell in the box, and the Event box appears.



Select the conditions. The following table shows the ten items that can be selected.

Selection Items	Description	Display
Positioning Comple-	Establish conditions for INPOSITION	I
tion	band	
NEAR	Establish conditions for NEAR band	N
Command Issuance Completion	Establish conditions for command issuance completion	D
SEL0, SEL1,	Establish conditions at signal (SEL0, SEL1,) ON	SEL0, SEL1,
Wait Time	Establish conditions after a designated wait time	T Wait Time
Same as previous step	Use the same conditions as the previous step	:

If a item other than "same as previous step" is selected, type a wait time.

Click **OK** to save the settings and return to the Program Table Editing window.

Box I: LOOP

The number of times a step that is to be carried out can be typed directly in this box.

Box J: NEXT

The next step can be designated in this box. Double click any cell in the box, and the Next Step box appears.



If the program ends in this step, select "Complete," and then click **OK**.

If the program continues, do not select "Complete," and type the number of the next step.



Click **OK** to save the settings and return to the Program Table Editing window.

(Open) Button

The parameters file can be loaded in the Open box. To load the file, use the following procedure.

1. Click the 🔁 button, and the Open box appears.

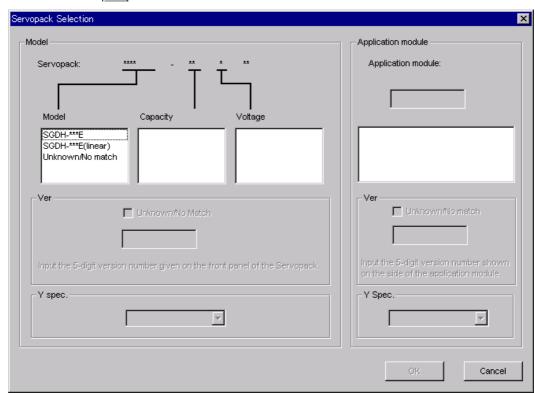


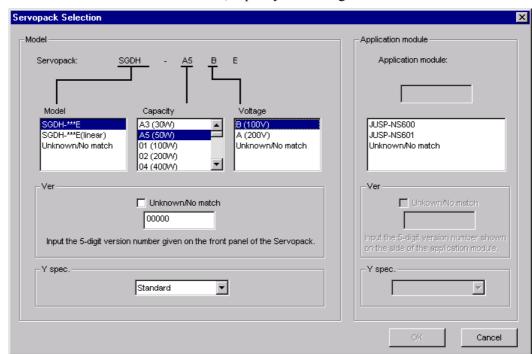
2. Select the name of the file to be imported, and click **Open**.

(New) Button

A new SERVOPACK can be selected in the SERVOPACK Selection box using the New command. To change to a different SERVOPACK, use the following procedure.

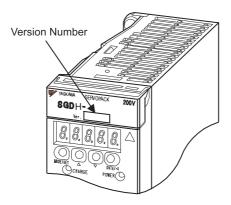
1. Click the button, and the SERVOPACK Selection box appears.





2. Select the SERVOPACK model, capacity and voltage.

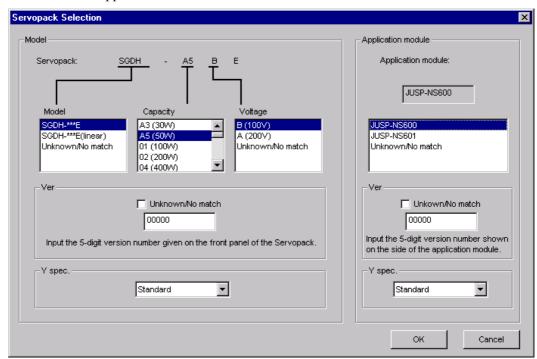
3. Type the version number of the SERVOPACK. The version number is shown on the front of the SERVOPACK.



Version Number on SGDH

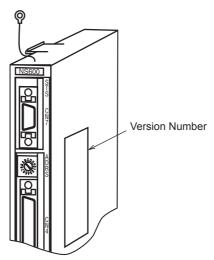
If the version number is unknown, select Unknown/No match.

4. Select the specifications of the SERVOPACK.



5. Select the application module. Select JUSP-NS600 or JUSP-NS601.

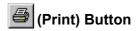
6. Type the version number of the application module. The version number is shown on the side of the application module.



Version Number on NS600 or NS601

If the version number is unknown, select **Unknown/No match**.

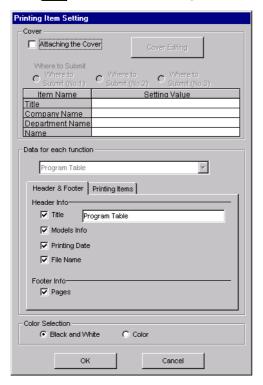
7. Select the specifications of the application module, and then click **OK**. The data will be imported, and the Program Table Editing window will appear.

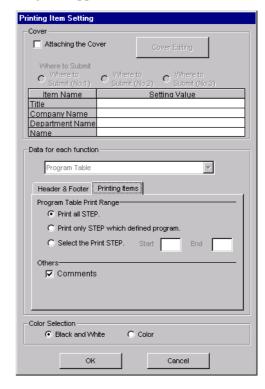


The data on the Program Table Editing window can be printed. To print the data, click the

a

button. The Printing Item Setting dialog box appears.





Header & Footer Tab

Printing Items Tab

Printing Item Setting Box

Cover

Select **Attaching the Cover**, and the click **Cover Editing**. For details, see <u>Chapter 3</u>.

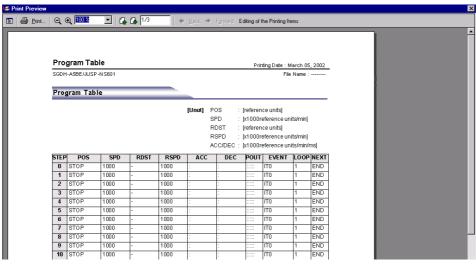
Data for each function

To enter your printing preferences or specifications, click the tab whose options you want to enter or change, and enter the desired settings.

Color Selection

Documents can be printed in color or black and white. Select your preference.

After setting is finished, click **OK**. The document appears on the screen the way it will appear in print.



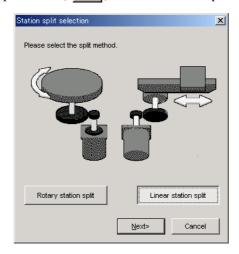
To print the document as is without any changes, click **Print**.

To return to the Printing Item Setting dialog box and change some settings, click **Editing of the Printing Items**.

Station Split Button

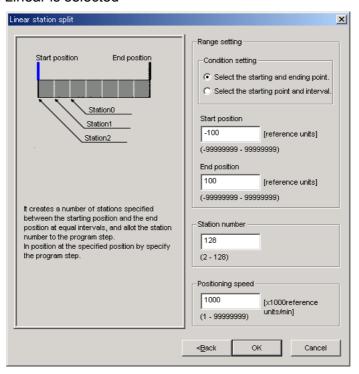
A specified number of stations at equal intervals can be created between specified positions. And each station position can be allocated to the program table.

Click the Station Split button, and the Station Split Selection box appears.

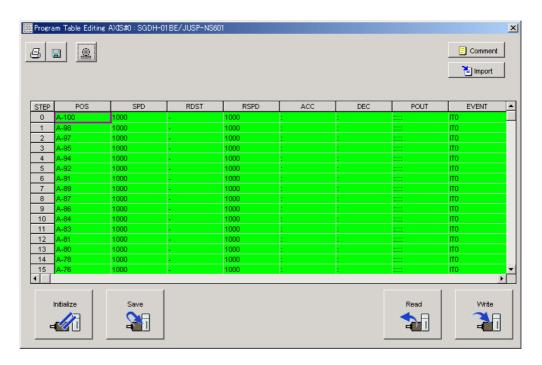


Select the split method, and click **OK**.

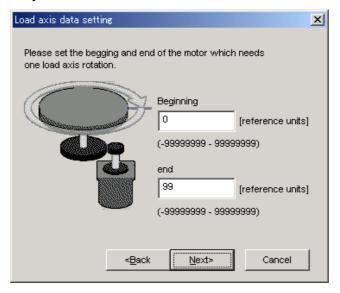
< When Linear is selected >



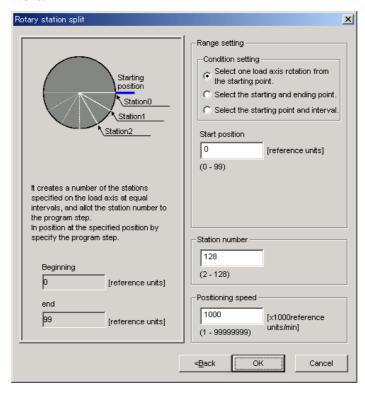
Type the values for the settings and click **OK**. The Program Table Editing window will appear.



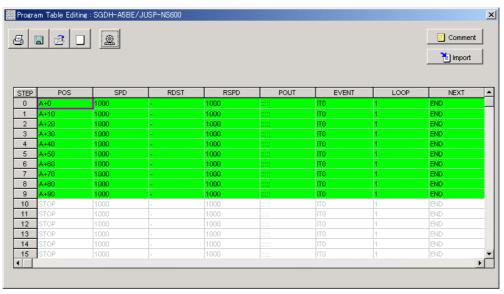
< When Rotary is selected >



1. Type the beginning and end of the motor which needs one rotation of load axis, and click **Next**.

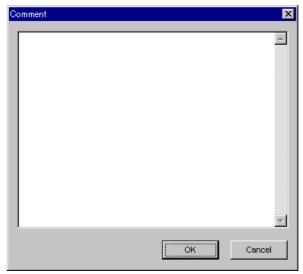


2. Type the values for the settings and click **OK**. The Program Table Editing window will appear.



Comment

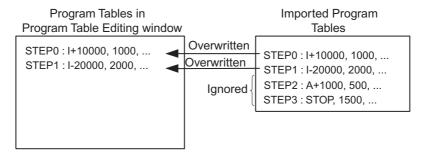
Comments can be typed or edited in the Comment box. Click **Comment**, and the Comment box appears.



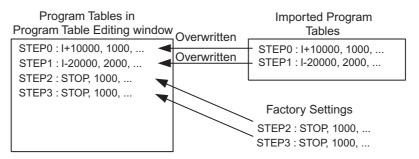
Import

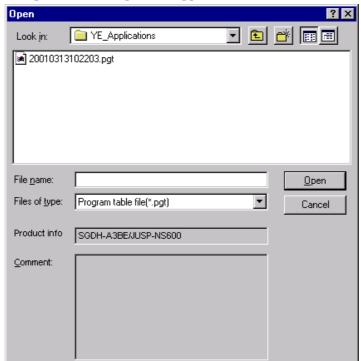
Program table settings can be transferred or imported from a stored file with the Import function. If the imported program tables differ in number from the on-screen program tables, the following processing takes place.

• If the number of imported program tables is greater



• If the number of imported program tables is fewer





1. Click **Import**, and the Open box appears.

2. Select the file to be transferred, and click **Open**.

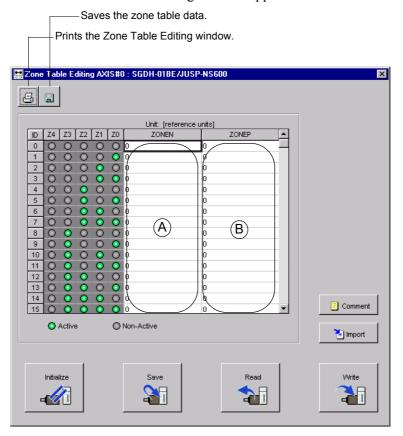
4.7.2 Zone Table Editing

Zones can be viewed and edited in the Zone Table Editing window. Designate a zone by setting the starting and ending positions of the zone. The NS600 or NS601 will send five output signals (/POUT0 to /POUT4) corresponding to the zone of the current position according to the zone table.

The windows differ in the Online and Offline modes.

■ When Online

In the SigmaWin+ INDEXER component main window, click **Table** and then click **Edit Zone Table**. The Zone Table Editing window appears.



Zone Table Editing Window (Online Mode)

Thirty-two types of zones can be set. The five signals (Z0 to Z4) correspond to the following: Z0 = /POUT0, Z1 = /POUT1, Z2 = /POUT2, Z3 = /POUT3, Z4 = /POUT4.

Box A: ZONEN

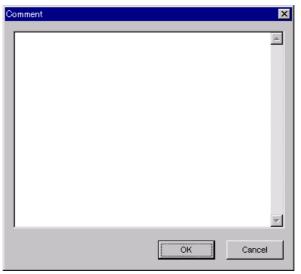
The zone starting position (ZONEN) can be designated directly in this box.

Box B: ZONEP

The zone ending position (ZONEP) can be designated directly in this box.

Comment

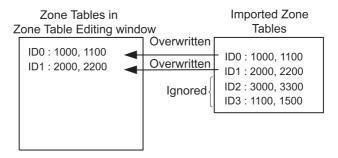
Comments can be typed or edited in the Comment box. Click **Comment**, and the Comment box appears.



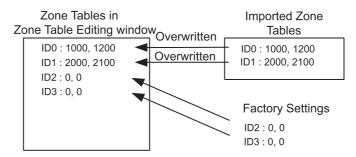
Import

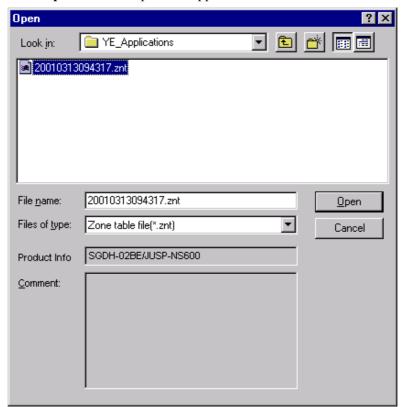
Zone table settings can be transferred or imported from a stored file with the Import function. If the imported zone tables differ in number from the on-screen zone tables, the following processing takes place.

• If the number of imported zone tables is greater



• If the number of imported zone tables is fewer





1. Click **Import** and the Open box appears.

2. Select the file to be transferred, and click **Open**.

Write

The program tables can be written to the SERVOPACK with the Write function. Click **Write**, and a warning message will appear reminding you that the data erased if the power is turned off.



Click **OK** to write in the data.

Click Cancel to return to the Zone Table Editing window without writing in the data.

<Differences Between Write and Save>

Write: Saves table data to the SERVOPACK in temporary storage. The data in the table is deleted when the power is turned OFF.

Save: Saves the data in the table that is stored in the SERVOPACK memory to the flash memory. The data for the tables remains unchanged if power is turned off.

Read

The zone tables can be read within the connected SERVOPACK with the Read function. Click **Read**, and a message will appear, confirming if you want to read the table data.

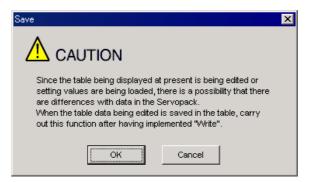


Click **OK** to start reading and overwriting the table data.

Click Cancel to return to the Zone Table Editing window without reading the table data.

Save

The data in the table can be saved to the flash memory with the Save function. Click **Save**, and a warning message will appear reminding you that the data may different than that of the SERVOPACK.



Click **Cancel** to return to the Zone Table Editing window. Then by clicking **Write**, write zone table that is currently displayed but has not been stored into the SERVOPACK.

If already saved in temporary storage, click **OK**. A conformation message appears.

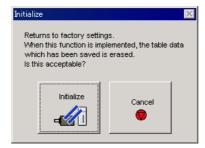


Click **OK** to save the data.

Click Cancel to return to the Zone Table Editing window without saving the data.

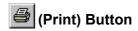
Initialize

The settings of the SERVOPACK can be returned to the factory settings with the Initialize function. Click **Initialize**, and a verification message appears.



Click **Initialize** to initialize the zone tables.

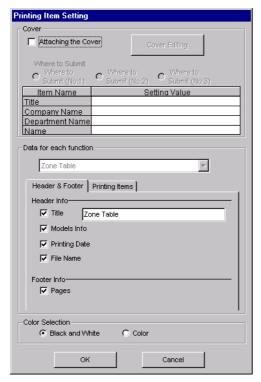
Click **Cancel** to return to the Zone Table Editing window without changing the settings.

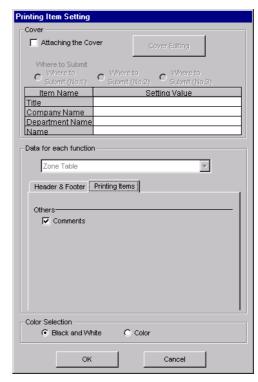


The data on the Zone Table Editing window can be printed. To print the data, click the

*\(\begin{aligned}
\)*

button. The Printing Item Setting dialog box appears.





Header & Footer Tab

Printing Items Tab

Printing Item Setting Box

Cover

Select **Attaching the Cover**, and the click **Cover Editing**. For details, see <u>Chapter 3</u>.

Data for each function

To enter your printing preferences or specifications, click the tab whose options you want to enter or change, and enter the desired settings.

Color Selection

Documents can be printed in color or black and white. Select your preference.

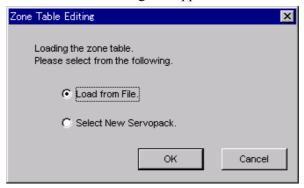
After setting is finished, click **OK**. The document appears on the screen the way it will appear in print.

To print the document as is without any changes, click **Print**.

To return to the Printing Item Setting dialog box and change some settings, click **Editing of the Printing Items**.

■ When Offline

In the SigmaWin+ INDEXER component main window, click **Table** and then click **Edit Zone Table**. The Zone Table Editing box appears.



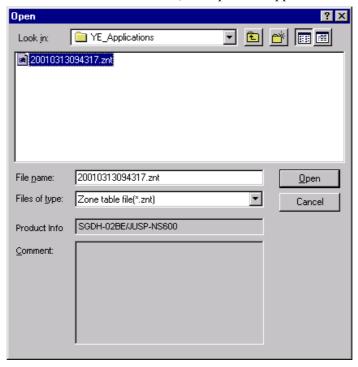
Load From File: Reads existing data.

Select New SERVOPACK: Creates new data.

Select the desired command and click **OK**.

< When "Load from File" is Selected>

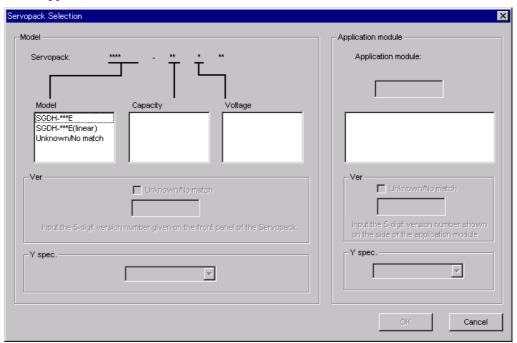
When "Load from File" is selected, the Open box appears.



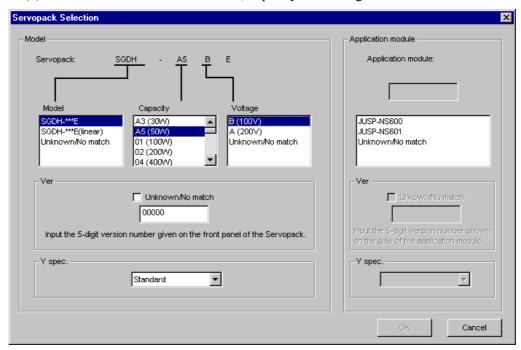
Select the data to be imported, and click **Open**.

< When "Select New SERVOPACK" is Selected >

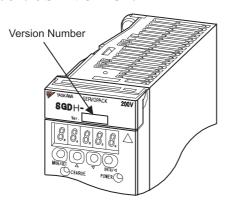
(1) When "Select New SERVOPACK" is selected, the SEROPACK Selection box appears.



(2) Select the SERVOPACK model, capacity and voltage.



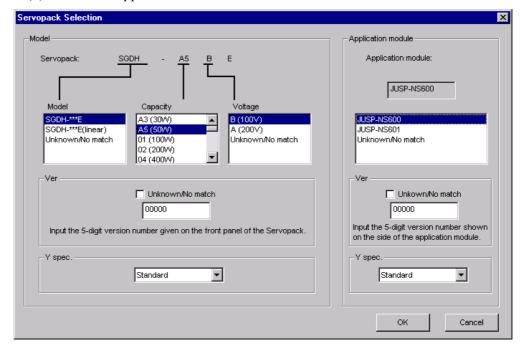
(3) Type the version number of the SERVOPACK. The version number is shown on the front of the SERVOPACK.



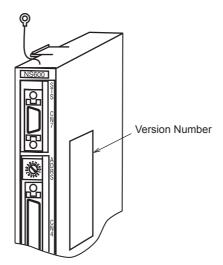
Version Number on SGDH

If the version number is unknown, select Unknown/No match.

- (4) Select the specifications of the SERVOPACK.
- (5) Select the application module. Select JUSP-NS600 or JUSP-NS601.



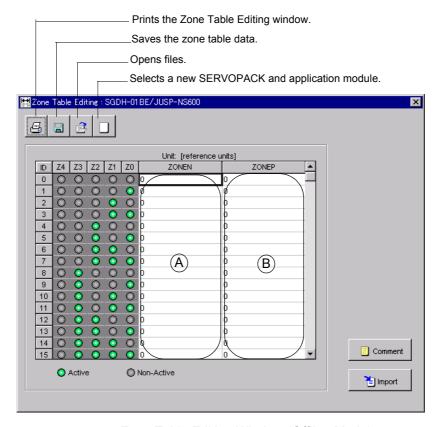
(6) Type the version number of the application module. The version number is shown on the side of the application module.



Version Number on NS600 or NS601

If the version number is unknown, select Unknown/No match.

(7) Select the specifications of the application module, and then click **OK**. The data will be imported, and the Zone Table Editing window will appear.



Zone Table Editing Window (Offline Mode)

Box A: ZONEN

The zone starting position (ZONEN) can be designated directly in this box.

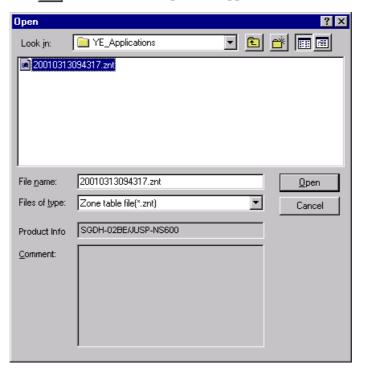
Box B: ZONEP

The zone ending position (ZONEP) can be designated directly in this box.



The parameter file can be loaded in the Open box. To load the file, use the following procedure.

1. Click the | button, and the Open box appears.

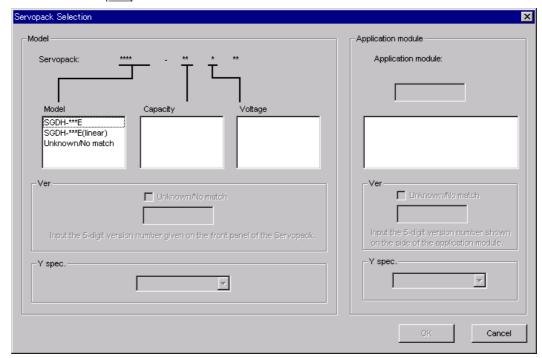


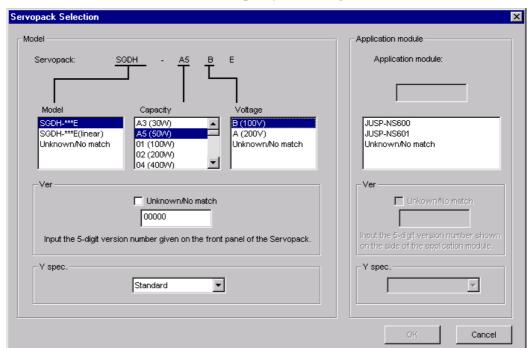
2. Select the name of the file to be imported, and click **Open**.

(New) Button

A new SERVOPACK can be selected in the SERVOPACK Selection box using the New command. To change to a different SERVOPACK, use the following procedure.

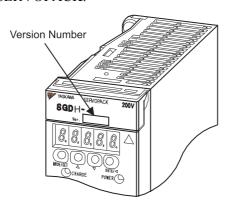
1. Click the button, and the SERVOPACK Selection box appears.





2. Select the SERVOPACK model, capacity and voltage.

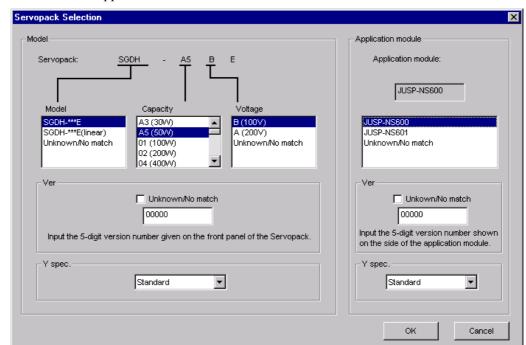
3. Type the version number of the SERVOPACK. The version number is shown on the front of the SERVOPACK.



Version Number on SGDH

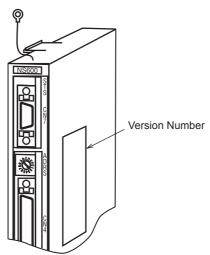
If the version number is unknown, select Unknown/No match.

4. Select the specifications of the SERVOPACK.



5. Select the application module. Select JUSP-NS600 or JUSP-NS601.

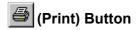
6. Type the version number of the application module. The version number is shown on the side of the application module.



Version Number on NS600 or NS601

If the version number is unknown, select **Unknown/No match**.

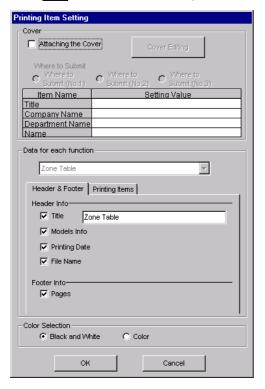
7. Select the specifications of the application module, and then click **OK**. The data will be imported, and the Zone Table Editing window will appear.

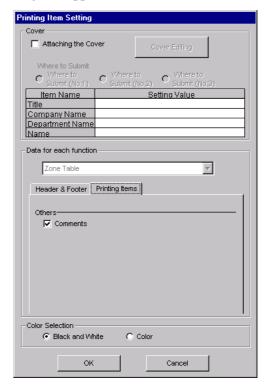


The data on the Zone Table Editing window can be printed. To print the data, click the

a

button. The Printing Item Setting dialog box appears.





Header & Footer Tab

Printing Items Tab

Printing Item Setting Box

Cover

Select **Attaching the Cover**, and the click **Cover Editing**. For details, see <u>Chapter 3</u>.

Data for each function

To enter your printing preferences or specifications, click the tab whose options you want to enter or change, and enter the desired settings.

Color Selection

Documents can be printed in color or black and white. Select your preference.

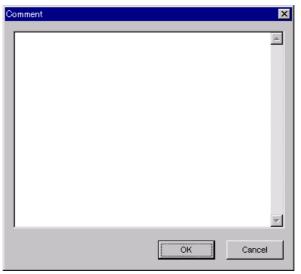
After setting is finished, click **OK**. The document appears on the screen the way it will appear in print.

To print the document as is without any changes, click **Print**.

To return to the Printing Item Setting dialog box and change some settings, click **Editing of the Printing Items**.

Comment

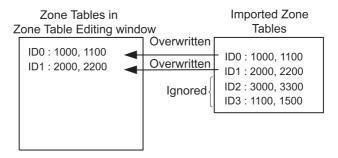
Comments can be typed or edited in the Comment box. Click **Comment**, and the Comment box appears.



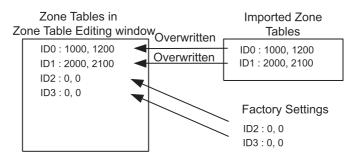
Import

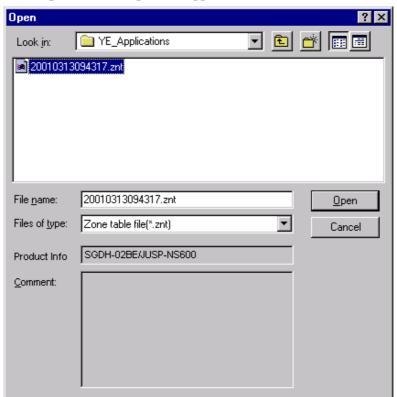
Zone table settings can be transferred or imported from a stored file with the Import function. If the imported zone tables differ in number from the on-screen zone tables, the following processing takes place.

• If the number of imported zone tables is greater



• If the number of imported zone tables is fewer





1. Click **Import** and the Open box appears.

2. Select the file to be transferred, and click **Open**.

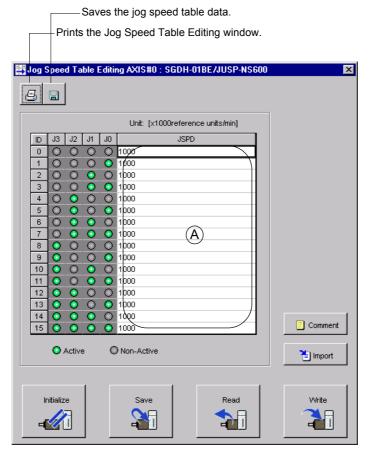
4.7.3 Jog Speed Table Editing

The jog speeds can be viewed and edited in the Jog Speed Table Editing window. The NS600 or NS601 changes the speed to the corresponding jog speed in the jog speed table in accordance with the combination of input signals, /JOG0 to /JOG3.

The windows differ in the Online and Offline modes.

When Online

In the SigmaWin+ INDEXER component main window, click **Table** and then click **Edit Jog Speed Table**. The Jog Speed Table Editing window appears.



Jog Speed Table Editing Window (Online Mode)

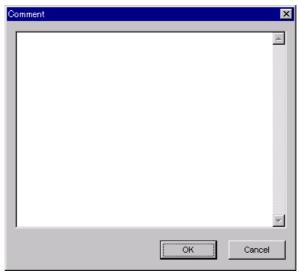
Sixteen types of jog speed can be set. The four signals (J0 to J3) correspond to the following: J0 = /JOG0, J1 = /JOG1, J2 = /JOG2, J3 = /JOG3.

Box A: JSPD

The jog speed can be typed directly in this box.

Comment

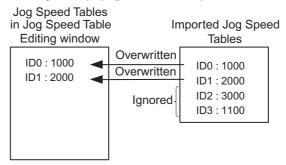
Comments can be typed or edited in the Comment box. Click **Comment**, and the Comment box appears.



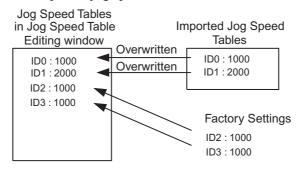
Import

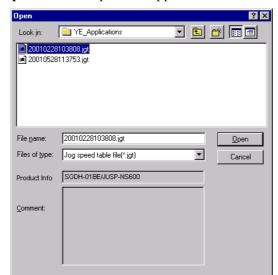
Jog speed table settings can be transferred or imported from a stored file with the Import function. If the imported jog speed tables differ in number from the on-screen jog speed tables, the following processing takes place.

• If the number of imported jog speed tables is greater



• If the number of imported jog speed tables is fewer



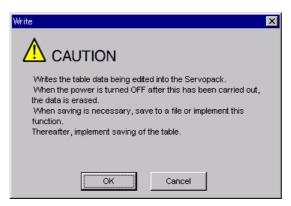


1. Clicking **Import** and the Open box appears.

2. Select the file to be transferred, and click **Open**.

Write

The program tables can be written to the SERVOPACK with the Write function. Click **Write**, and a warning message will appear reminding you that the data erased if the power is turned off.



Click **OK** to write in the data.

Click Cancel to return to the Jog Speed Table Editing window without writing in the data.

<Differences Between Write and Save>

Write: Saves table data to the SERVOPACK in temporary storage. The data in the table is deleted when the power is turned OFF.

Save: Saves the data in the table that is stored in the SERVOPACK memory to the flash memory. The data for the tables remains unchanged if power is turned off.

Read

The jog speed tables can be read within the connected SERVOPACK with the Read function. Click **Read**, and a message will appear, confirming if you want to read the table data.



Click **OK** to start reading and overwriting the table data.

Click **Cancel** to return to the Jog Speed Table Editing window without reading the table data.

Save

The data in the table can be saved to the flash memory with the Save function. Click **Save**, and a warning message will appear reminding you that the data may different than that of the SERVOPACK.



Click **Cancel** to return to the Jog Speed Table Editing window. Then by clicking **Write**, write jog speed table that is currently displayed but has not been stored into the SERVOPACK.

If already saved in temporary storage, click **OK**. A conformation message appears.

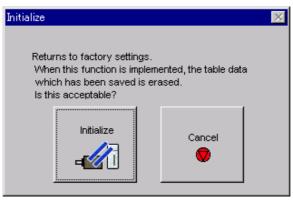


Click **OK** to save the data.

Click Cancel to return to the Jog Speed Table Editing window without saving the data.

Initialize

The settings of the SERVOPACK can be returned to the factory settings with the Initialize function. Click **Initialize**, and a verification message appears.



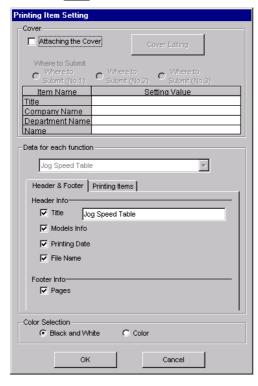
Click **Initialize** to initialize the jog speed tables.

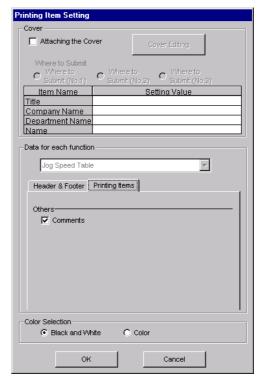
Click **Cancel** to return to the Jog Speed Table Editing window without changing the settings.

(Print) Button

The data on the Jog Speed Table Editing window can be printed. To print the data, click

the 🗐 button. The Printing Item Setting dialog box appears.





Header & Footer Tab

Printing Items Tab

Printing Item Setting Box

Cover

Select Attaching the Cover, and the click Cover Editing. For details, see Chapter 3.

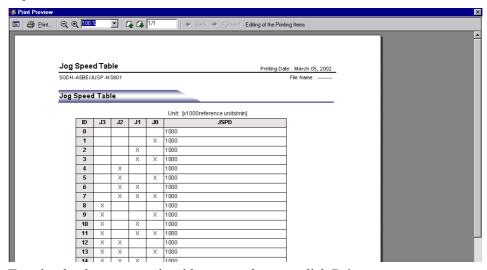
Data for each function

To enter your printing preferences or specifications, click the tab whose options you want to enter or change, and enter the desired settings.

Color Selection

Documents can be printed in color or black and white. Select your preference.

After setting is finished, click \mathbf{OK} . The document appears on the screen the way it will appear in print.



To print the document as is without any changes, click **Print**.

To return to the Printing Item Setting dialog box and change some settings, click **Editing of the Printing Items**.

■ When Offline

In the SigmaWin+ INDEXER component main window, click **Table** and then click **Edit Jog Speed Table**. The Jog Speed Table Editing box appears.



Load From File: Reads existing data.

Select New SERVOPACK: Creates new data.

Select the desired command and click **OK**.

< When "Load from File" is Selected>

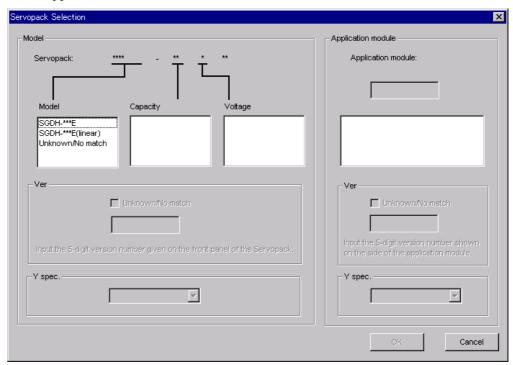
When "Load from File" is selected, the Open box appears.



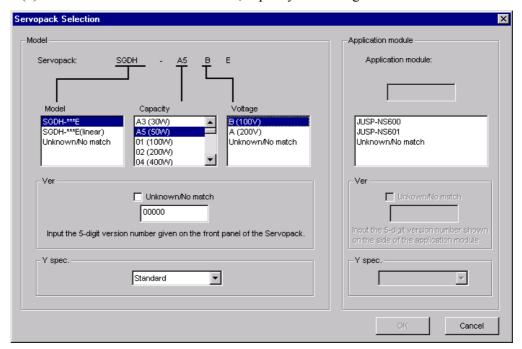
Select the data to be imported, and click **Open**.

< When "Select New SERVOPACK" is Selected >

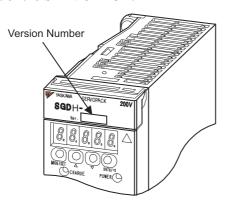
(1) When "Select New SERVOPACK" is selected, the SEROPACK Selection box appears.



(2) Select the SERVOPACK model, capacity and voltage.



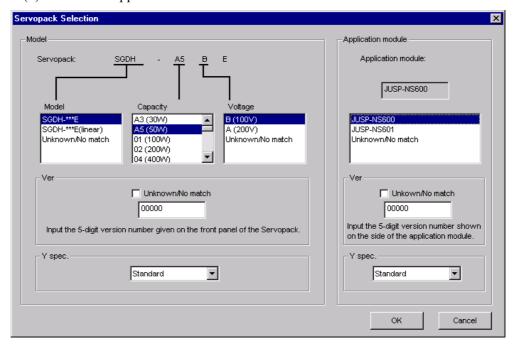
(3) Type the version number of the SERVOPACK. The version number is shown on the front of the SERVOPACK.



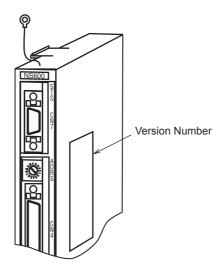
Version Number on SGDH

If the version number is unknown, select Unknown/No match.

- (4) Select the specifications of the SERVOPACK.
- (5) Select the application module. Select JUSP-NS600 or JUSP-NS601.



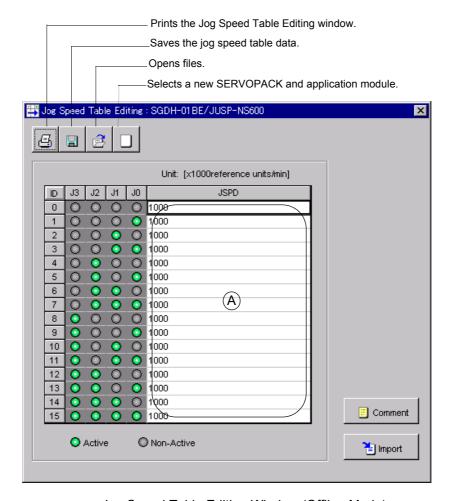
(6) Type the version number of the application module. The version number is shown on the side of the application module.



Version Number on NS600 or NS601

If the version number is unknown, select Unknown/No match.

(7) Select the specifications of the application module, and then click **OK**. The data will be imported, and the Jog Speed Table Editing window will appear.



Jog Speed Table Editing Window (Offline Mode)

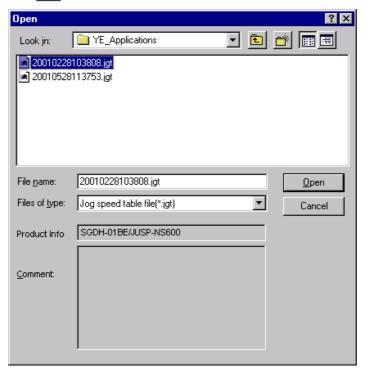
Box A: JSPD

The jog speed can be typed directly in this box.

(Open) Button

The parameter file can be loaded in the Open box. To load the file, use the following procedure.

1. Click the 🔁 button, and the Open box appears.

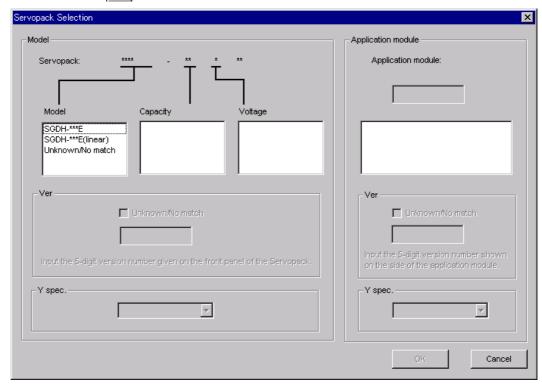


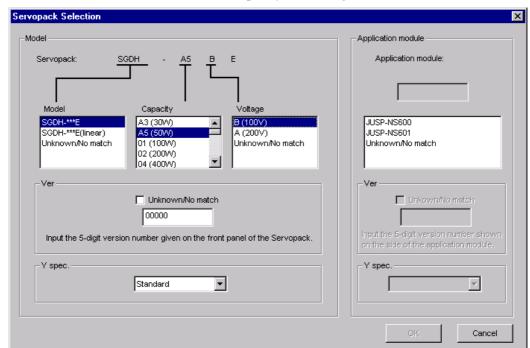
2. Select the name of the file to be imported, and click **Open**.

(New) Button

A new SERVOPACK can be selected in the SERVOPACK Selection box using the New command. To change to a different SERVOPACK, use the following procedure.

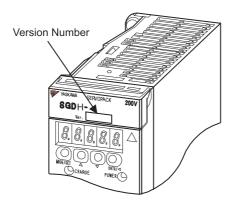
1. Click the button, and the SERVOPACK Selection box appears.





2. Select the SERVOPACK model, capacity and voltage.

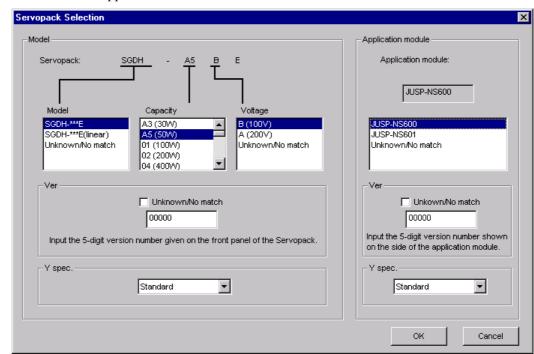
3. Type the version number of the SERVOPACK. The version number is shown on the front of the SERVOPACK.



Version Number on SGDH

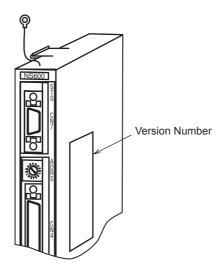
If the version number is unknown, select **Unknown/No match**.

4. Select the specifications of the SERVOPACK.



5. Select the application module. Select JUSP-NS600 or JUSP-NS601.

6. Type the version number of the application module. The version number is shown on the side of the application module.



Version Number on NS600 or NS601

If the version number is unknown, select Unknown/No match.

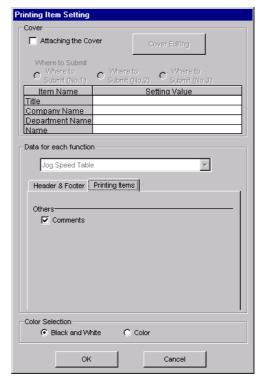
7. Select the specifications of the application module, and then click **OK**. The data will be imported, and the Jog Speed Editing window will appear.

(Print) Button

The data on the Jog Speed Table Editing window can be printed. To print the data, click

the button. The Printing Item Setting dialog box appears.





Header & Footer Tab

Printing Items Tab

Printing Item Setting Box

Cover

Select **Attaching the Cover**, and the click **Cover Editing**. For details, see <u>Chapter 3</u>.

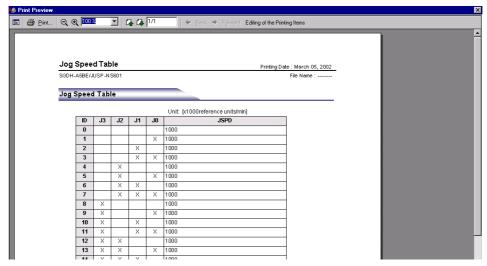
Data for each function

To enter your printing preferences or specifications, click the tab whose options you want to enter or change, and enter the desired settings.

Color Selection

Documents can be printed in color or black and white. Select your preference.

After setting is finished, click **OK**. The document appears on the screen the way it will appear in print.

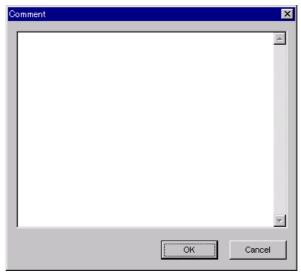


To print the document as is without any changes, click **Print**.

To return to the Printing Item Setting dialog box and change some settings, click **Editing of the Printing Items**.

Comment

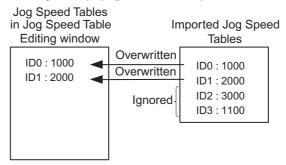
Comments can be typed or edited in the Comment box. Click **Comment**, and the Comment box appears.



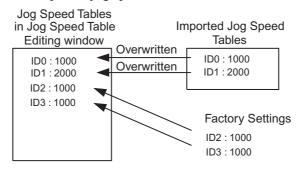
Import

Jog speed table settings can be transferred or imported from a stored file with the Import function. If the imported jog speed tables differ in number from the on-screen jog speed tables, the following processing takes place.

• If the number of imported jog speed tables is greater



• If the number of imported jog speed tables is fewer



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1. Click **Import** and the Open box appears.

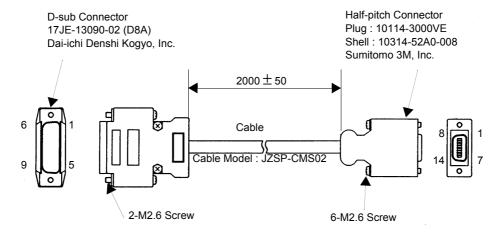
2. Select the file to be transferred, and click **Open**.

Appendix A: Cable Between the PC and SERVOPACK

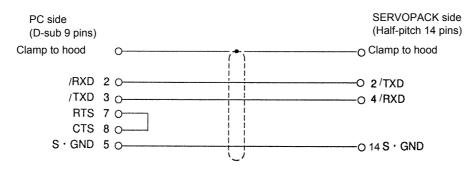
Prepare a dedicated cable for connecting the PC to the SERVOPACK. Contact Yaskawa for the dedicated cable.

Model: JZSP-CMS02 (D-sub 9 pins)

Cable Specifications



Connection Circuit



Communication Specifications

The communication specifications are:

• Baud Rate 9600 bps Start: 1 bit Data: 7 bits • Bit Structure

Stop: 1 bit Odd Number Parity: 1 bit • Synchronization Type Start-stop synchronization

• XON/XOFF Control None • Shift Control

• Communication Type Half-duplex communication

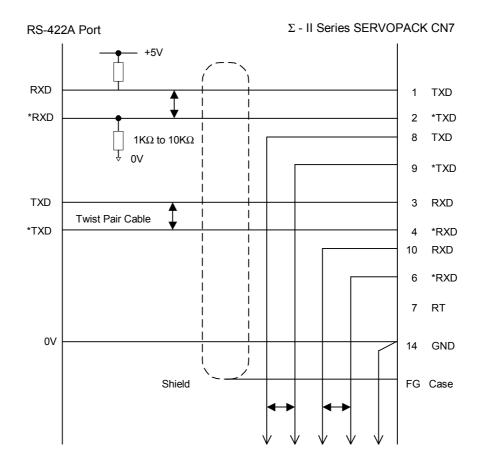
None

Connection Circuit

When Using an RS-422A port

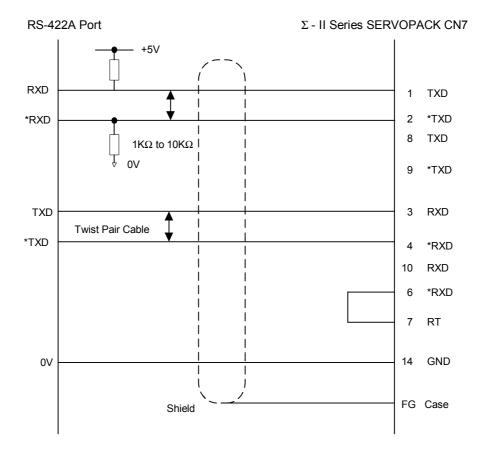
The cable can also be connected using an RS-422A port. The following diagram shows a connection circuit.

- Transmission Range: 30m maximum (the maximum cable length is 30m.)
- Transmission Type : RS422A
- < Multi-Axis Connection (for non-terminal connection) >



< Multi-Axis Connection (for terminal connections) >

A 120Ω terminal resistor is inserted due to a short between pins 6 and 7.



Connector Terminals on the SERVOPACK Side

Pin Number	Signal Name	Signal Line Name Signal Direction	
1	TXD	Transmission Data (non-inverted side)	P *1 ← S *2
2	/TXD	Transmission Data (inverted side)	P ← S
3	RXD	Reception Data (non-inverted side)	$P \rightarrow S$
4	/RXD	Reception Data (inverted side)	$P \rightarrow S$
5	ОРН	Reserved Terminal	-
6	/RXD	A 120Ω terminal resistor between RXD - *RXD is inserted if there is a short between pins 6 and 7.	
7	RT		
8	TXD	Transmission Data (non-inverted side)	P ← S
9	/TXD	Transmission Data (inverted side)	P ← S
10	RXD	Reception Data (non-inverted side)	$P \rightarrow S$
11		Reserved Terminal	# *3
12		Reserved Terminal	# *3
13	5VPP	Reserved Terminal	-
14	GND	Signal 0V	-

Connector Pin Number and Signal Name

Note: Peel back the cable shield on the end of each connector and affix it PPwith a clamp.

^{*1.} P: PC

^{*2.} S: SERVOPACK

^{*3. #:} Reserved Terminal (always leave open)

Appendix B: Install File List

SigmaWin+ INDEXER component installs the following files into two directories on the PC.

The application default installation directory is C:\PROGRAM FILES\SgmaIDE\ SigmaWinPlus\SigmaIndexer.

Main Application Files

File Name	Function	Installation Directory
SIGMAINDEXER.exe	Executable Module (EXE)	Application Directory\Bin
BASELIB.dll	Executable Module (DLL)	Application Directory\Bin
CYELIB.dll	Executable Module (DLL)	Application Directory\Bin
SVADJUST.dll	Executable Module (DLL)	Application Directory\Bin
SVBASE.dll	Executable Module (DLL)	Application Directory\Bin
SVCHART.dll	Executable Module (DLL)	Application Directory\Bin
SVCONNECT.dll	Executable Module (DLL)	Application Directory\Bin
SVGRAPH.dll	Executable Module (DLL)	Application Directory\Bin
SVINFO.dll	Executable Module (DLL)	Application Directory\Bin
SVJOG.dll	Executable Module (DLL)	Application Directory\Bin
SVLIB.dll	Executable Module (DLL)	Application Directory\Bin
SVLIBC.dll	Executable Module (DLL)	Application Directory\Bin
SVMON.dll	Executable Module (DLL)	Application Directory\Bin
SVMONSETTING.dll	Executable Module (DLL)	Application Directory\Bin
SVMULTITURN.dll	Executable Module (DLL)	Application Directory\Bin
SVPASSWORD.dll	Executable Module (DLL)	Application Directory\Bin
SVPLUSRES.dll	Executable Module (DLL)	Application Directory\Bin
SVPRN.dll	Executable Module (DLL)	Application Directory\Bin
SVTRACE.dll	Executable Module (DLL)	Application Directory\Bin
SVTUNEON.dll	Executable Module (DLL)	Application Directory\Bin
SVUSER.dll	Executable Module (DLL)	Application Directory\Bin
SVUSERDIRECT.dll	Executable Module (DLL)	Application Directory\Bin
SVZSET.dll	Executable Module (DLL)	Application Directory\Bin
IDXSERIALMON.dll	Executable Module (DLL)	Application Directory\Bin
IDXALARM.dll	Executable Module (DLL)	Application Directory\Bin
IDXENCABS.dll	Executable Module (DLL)	Application Directory\Bin
IDXIDXTBL.dll	Executable Module (DLL)	Application Directory\Bin
IDXZONETBL.dll	Executable Module (DLL)	Application Directory\Bin

Main Application Files

File Name	Function	Installation Directory
IDXJOGTBL.dll	Executable Module (DLL)	Application Directory\Bin
YEDBASE.dll	Executable Module (DLL)	Application Directory\Bin
YESIGMA.dll	Executable Module (DLL)	Application Directory\Bin
IDEINFO.mdb	Database File	Application Directory\Bin
YEPRN.exe	Executable Module (EXE)	Application Directory\Bin
SIGMAIDE.atb	SigmaWin+ INDEXER component Menu File	Application Directory\Bin\Dat\ToolBar
SIGMAFUNCINFO.swi	Component Information File	Application Directory\Bin\Dat
ORG_BLUE_LEFT.bmp	Bitmap File	Application Directory\Bin\Dat\Bmp
ORG_BLUE_RIGHT.bmp	Bitmap File	Application Directory\Bin\Dat\Bmp
ORG_DARKGREEN_LEFT.bmp	Bitmap File	Application Directory\Bin\Dat\Bmp
ORG_DARKGREEN_RIGHT.bmp	Bitmap File	Application Directory\Bin\Dat\Bmp
ORG_GREEN_LEFT.bmp	Bitmap File	Application Directory\Bin\Dat\Bmp
ORG_GREEN_RIGHT.bmp	Bitmap File	Application Directory\Bin\Dat\Bmp
ORG_PERPLE_LEFT.bmp	Bitmap File	Application Directory\Bin\Dat\Bmp
ORG_PERPLE_RIGHT.bmp	Bitmap File	Application Directory\Bin\Dat\Bmp
ORG_PINK_LEFT.bmp	Bitmap File	Application Directory\Bin\Dat\Bmp
ORG_PINK_RIGHT.bmp	Bitmap File	Application Directory\Bin\Dat\Bmp
ORG_PRINT_LEFT.bmp	Bitmap File	Application Directory\Bin\Dat\Bmp
ORG_PRINT_RIGHT.bmp	Bitmap File	Application Directory\Bin\Dat\Bmp
ORG_RED_LEFT.bmp	Bitmap File	Application Directory\Bin\Dat\Bmp
ORG_RED_RIGHT.bmp	Bitmap File	Application Directory\Bin\Dat\Bmp
ORG_SYAN_LEFT.bmp	Bitmap File	Application Directory\Bin\Dat\Bmp
ORG_SYAN_RIGHT.bmp	Bitmap File	Application Directory\Bin\Dat\Bmp
ORG_YELLOW_LEFT.bmp	Bitmap File	Application Directory\Bin\Dat\Bmp
ORG_YELLOW_RIGHT.bmp	Bitmap File	Application Directory\Bin\Dat\Bmp
SERVOPACK.chm	Help File	Application Directory\Help
SIGMAWIN+ INDEXER COMPONENT.chm	Help File	Application Directory\Help
SIGMATOUR.chm	Help File	Application Directory\Help

Microsoft Foundation Support Files

File Name	Function	Installation Directory
MFC42.dll	MFC Core Code	Application Directory\Bin
MSVCIRT.dll	C Runtime Library	Application Directory\Bin
MSVCRT.dll	C Runtime Library Application Directory\Bin	
ODBC32.dll	MFC DLL	Application Directory\Bin
MSVCRT40.dll	C Runtime Library Windows System Directory	
VBAJET32.dll	VBA Jet Expression Service Windows System Directory	
VBAR332.dll	VBA Runtime	Windows System Directory
OLEPRO32.dll	Microsoft OLE Property Support DLL	Windows System Directory
OLEAUT32.dll	Automation Support DLL Windows System Directory	

DAO and Jet Support Files

File Name Function		Installation Directory
DAO350.dll	DAO DLL	DAO Directory
DAO2535.tlb	DAO TBL File	DAO Directory
MSJET35.dll	DAO DLL	Windows System Directory
MSRD2X35.dll	DAO DLL	Windows System Directory
EXPSRV.Ddll	DAO DLL	Windows System Directory
MSJINT35.dll	DAO DLL	Windows System Directory
MSJTER35.dll	DAO DLL	Windows System Directory

Tool OCX

File Name	Function	Installation Directory
SPR32X30.ocx	Spreadsheet OCX *1	Windows System Directory
OLCH2X32.ocx	Olectrachart 2D *2	Windows System Directory
SSTBARS2.ocx	Active Bar *3	Windows System Directory
ACTRPT.dll	Active Bar Report DLL *4	Windows System Directory
FPSPR30.ocx	Spreadsheet OCX *1	Windows System Directory

*1. SPREAD

Copyright (C) 1999 FarPoint Technologies, Inc.

*2. Olectra Chart

Copyright (C) APEX Software Corporation

*3. ActiveToolBar Plus

Copyright (C) 2000 Sheridan Software Systems, Inc.

*4. ActiveReports

Copyright (C) 2000 Data Dynamics, Ltd.

User's Manual

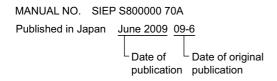
File Name	Function	Installation Directory
SIGMAINDEXER.pdf	SigmaWin+ INDEXER component User's Manual	Application Directory\Manuals

Visal Basic Runtime Library

File Name Function		Installation Directory
MSVBVM60.dll	Visual Basic Runtime Library	Windows System Directory
TABCTL32.ocx	Tab Control OCX	Windows System Directory
COMDLG32.ocx	Common Dialog OCX	Windows System Directory

Revision History

The revision dates and numbers of the revised manuals are given on the bottom of the back cover.



Date of Publication	Rev. No.	Section	Revised Content
June 2009	_	_	First edition

AC Servo Drives Engineering Tool SigmaWin+ ONLINE MANUAL **INDEXER** Component

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YASKAWA ELECTRIC CORPORATION

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