

AC Servo Drives Engineering Tool SigmaWin+ ONLINE MANUAL Σ -V Component



MANUAL NO. SIEP S800000 73F

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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 $\underline{\land CAUTION}$ may have important consequences depending on the situation.

Warning-related symbols differ between ISO and JIS standards.

ISO Standards	JIS Standards
	\diamondsuit

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+ Σ -V Component users.

- Outline of SigmaWin+ Σ-V Component Functions and Operation
- SigmaWin+ Σ-V Component Installation/Removal
- Outline of SigmaWin+ Σ -V component functions and operation when connecting through a Machine Controller MP2000 Series (hereinafter referred to as Controller).
- How a SigmaWin+ Σ-V component connected through a Controller differs from a conventionally connected SigmaWin+ Σ-V component.

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
KAEP S800000 42	Σ-V Series Product Catalog
SIEP S800000 43	Σ-V Series User's Manual Setup Rotational Motor
SIEP S800000 44	Σ-V Series User's Manual Setup Linear Motor
SIEP S800000 45	Σ-V Series User's Manual Design and Maintenance Rotational Motor/Analog Voltage and Pulse Train Reference
SIEP S800000 46	Σ-V Series User's Manual Design and Maintenance Rotational Motor/MECHATROLINK-II Communications Reference
SIEP S800000 47	Σ-V Series User's Manual Design and Maintenance Linear Motor/Analog Voltage and Pulse Train Reference
SIEP S800000 48	Σ-V Series User's Manual Design and Maintenance Linear Motor/MECHATROLINK-II Communications Reference
SIEP S800000 60	Σ-V Series User's Manual Design and Maintenance Rotational Motor/Command Option Attachable Type
SIEP S800000 66	Σ-V Series User's Manual Design and Maintenance Linear Motor/Command Option Attachable Type
SIEP S800000 64	Σ-V Series User's Manual Design and Maintenance Rotational Motor/MECHATROLINK-III Communications Reference
SIEP S800000 65	Σ-V Series User's Manual Design and Maintenance Linear Motor/MECHATROLINK-III Communications Reference
SIEP C720829 02	Σ-V Series User's Manual INDEXER Module
SIEP C720829 06	Σ-V Series User's Manual Safety Module
SIEP C720829 07	Σ-V Series User's Manual DeviceNet Module

(cont'd)

Document Number	Document Name
SIEP S800000 80	DC Power Input Σ-V Series User's Manual Setup Rotational Motor
SIEP S800000 81	DC Power Input Σ-V Series User's Manual Design and Maintenance Rotational Motor/Analog Voltage Reference and Pulse Train Reference
SIEP S800000 82	DC Power Input Σ-V Series User's Manual Design and Maintenance Rotational Motor/MECHATROLINK-II Communications Reference
SIEP S800000 83	DC Power Input Σ-V Series User's Manual Design and Maintenance Rotational Motor/MECHATROLINK-III Communications Reference
SIEP S800000 89	Σ-V Series User's Manual For Use with Large-Capacity Models Setup Rotational Motor
SIEP S800000 88	Σ -V Series User's Manual For Use with Large-Capacity Models Design and Maintenance Rotational Motor Analog Voltage and Pulse Train Reference
SIEP S800000 90	Σ-V Series User's Manual For Use with Large-Capacity Models Design and Maintenance Rotational Motor MECHATROLINK-II Communications Reference
SIEP S800000 93	Σ-V Series User's Manual For Use with Large-Capacity Models Design and Maintenance Rotational Motor MECHATROLINK-III Communications Reference

How to Use this Manual

Meaning of Basic Terms

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

Servomotor: Σ-V servomotors including Σ-V servomotors with DC power input and Σ-V large-capacity servomotors
 SERVOPACK: Σ-V SERVOPACKs including Σ-V SERVOPACKs with DC power input and Σ-V large-capacity SERVOPACKs
 Servo Drive: A servomotor integrated with a SERVOPACK
 Servo System: A complete servo control system in which a servo drive is integrated with an upper level controller and peripheral devices.

Notes on the PC Communication Function

MECHATROLINK-II/III-compatible SERVOPACK

The SERVOPACK for MECHATROLINK-II/III can carry out communications with SigmaWin+ (USB/RS232C/RS422) and the host controller (MECHA-TROLINK-II/III).

If the SERVOPACK is used to communicate with two or three of these devices at the same time, note the following precautions.

- When parameters are written in from two or three devices, the latest parameter settings that was written is valid.
- When an operation is conducted in utility function mode (Fn $\square \square \square$) from SigmaWin+ or the host controller, the operation with other communications cannot be carried out.

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.
- Copyright and all other rights for this software are reserved by Yaskawa Electric Corporation.

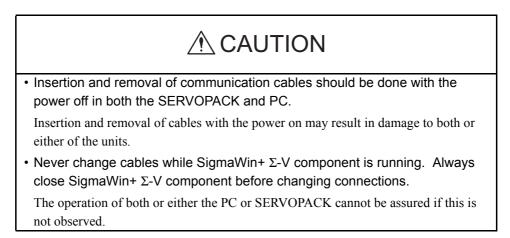
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- Windows XP, Windows Vista, and Windows 7 are trademarks or registered trademarks of Microsoft Corporation in the USA and other countries.
- MECHATROLINK is a trademark of the MECHATROLINK Members Association.
- Adobe Reader is a trademark or a registered trademark of Adobe Systems Incorporated.
- Pentium is a trademark or a registered trademark of Intel Corporation.
- Ethernet is a trademark of Xerox Corporation.
- InstallShield is a registered trademark of InstallShield Software Corporation.
- Other product and company names used in this manual are the trademarks or registered trademarks of their respective company. "TM" and the ® mark do not appear with product or company names in this manual.

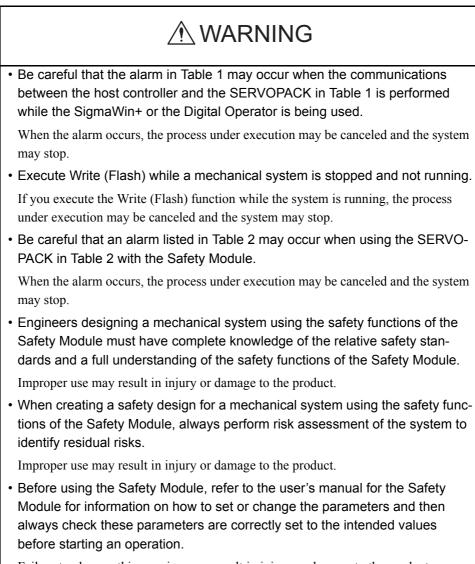
Safety Notes

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

Notes on Wiring



Usage Notes



Failure to observe this warning may result in injury or damage to the product.

SERVOPACK	Tool	Digital	SigmaWin+:
Model		Operator	USB or Serial Connection
SGDV-DDD1 (For MECHATRO Communications	OLINK	 A.95A The SERVOPACK can be used with no problem when the following functions are being executed. Monitor Alarm Display (except for alarm reset and alarm history clear) If an alarm occurs, the operation of the Safety Module will not proceed or cannot be accurately monitored. Clear the alarms to resume the operation. For details on how to clear the alarms, refer to the user's manual for the SERVO-PACK being used. 	 A.95A The SERVOPACK can be used with no problem when the following functions are being executed. Editing Parameters (except for parameter initialization) Monitor Alarm Display (except for alarm reset and alarm history clear) Tracing If an alarm occurs, the operation of the Safety Module will not pro- ceed or cannot be accurately mon- itored. Clear the alarms to resume the operation. For details on how to clear the alarms, refer to the user's manual for the SERVO- PACK being used.

Table 1 Possible Alarms with SGDV SERVOPACKs & MECHATROLINK-III Communications Reference

Note: When a MECHATROLINK command is sent from the host controller, an alarm may occur during execution of the following command:

PRM_RD/PRM_WR/PPRM_WR/CONFIG/SENS_ON/ALM_RD/ALM_CLR (history)/ADJ/SENS_ON of SVCTRL/ID_RD

SERVOPACK	Tool	Digital	SigmaWin+:
Model		Operator	USB or Serial Connection
SGDV*+SGDV- (Safety Module)		A.C90/C91/C92/EB0 If an alarm occurs, the operation of th cannot be accurately monitored. Clea For details on how to clear the alarms SERVOPACK being used.	r the alarms to resume the operation.

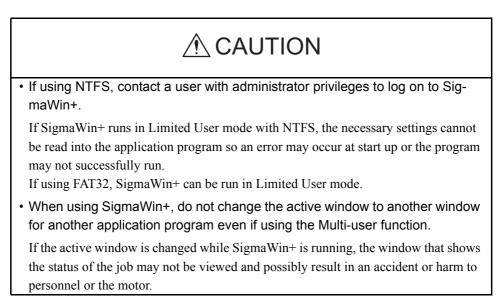
Table 2 Precautions When Using a Safety Module

* Analog / pulse model, M-II model, and Command option attachable type only. Software version: 001F or later

• Always be sure to close SigmaWin+ Σ -V component before turning the SER-VOPACK 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



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Revision History

1 System Outline

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

1.1 Outline and Advantages of SigmaWin+Σ-V Component

SigmaWin+ Σ -V component is a software tool for setup and optimum SERVOPACK tuning of Yaskawa Σ -V SERVOPACKs.

This product provides uniform features and functions enabling everyone from beginners to persons experienced in servo tuning to easily perform connections, test runs, and tuning that are matched to the customer's machine right out of the box.

Main Functions

- Parameter editing and converting
- Display and release of generated alarms (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
- Analysis of the customer's machine such as mechanical analysis (FFT analysis), and inertia identification

1.2 Configurations

SigmaWin+ Σ -V components can be connected to SERVOPACKs in either of the following two ways.

<When using USB/RC-232C/RS-422>

One SigmaWin+ Σ -V component is connected to one SERVOPACK at a time. The communication cable has to be changed to connect the SigmaWin+ Σ -V component to another SERVOPACK.

<When using a Controller>

One SigmaWin+ Σ -V component can tune the connected SERVOPACKs through a Controller equipped with a MECHATROLINK communication cable.

When running a SigmaWin+ Σ -V component through a Controller that is connected to multiple SERVOPACKs, there is no need to change the connection of the communication cable when switching SERVOPACK connections.

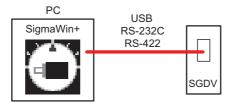
Two connection methods are possible when using a Controller.

- Ethernet
 - Connects a PC to a Controller through an Ethernet network.
- PCI bus

Connects a PC in which a Controller board is installed.

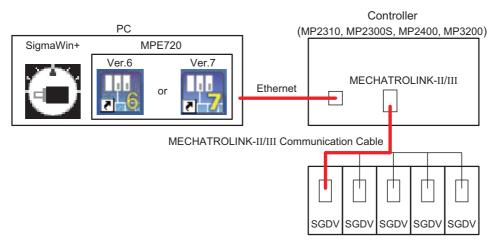
Note: Among SigmaWin+ components, only the SigmaWin+ Σ -V component is compatible with connection of SigmaWin+ through a Controller.

■ When using USB/RC-232C/RS-422



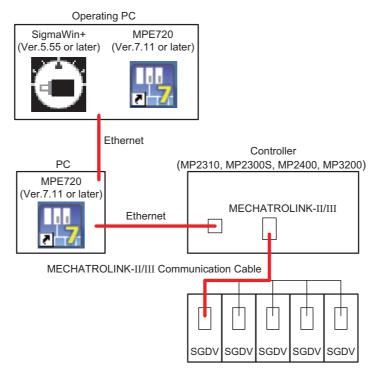
When using a Controller

Using Ethernet

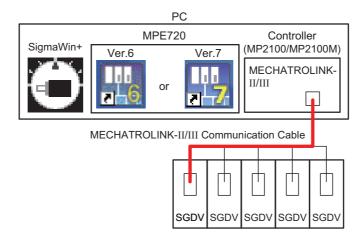


<Remote operation>

For a remote operation, the following configuration is required.

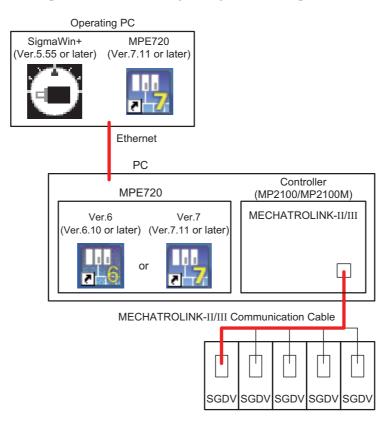


Using PCI



<Remote operation>

For a remote operation, the following configuration is required.



1.3 Compatible Devices

SigmaWin+ Σ -V is compatible with the following Σ -V SERVOPACKs, including Σ -V SERVOPACKs with DC power input and Σ -V large-capacity SERVOPACKs.

- SGDV-000010
- SGDV-000050
- SGDV-000110
- SGDV-000150
- SGDV-000E10
- SGDV-DDDDE5D
- SGDV-000210
- SGDV-000250
- SGDV-000510
- SGDV-0000P10



Some SigmaWin+ Σ -V functions may be unusable depending on the SERVOPACK type. Unusable functions will appear dimmed on the selection menu.

1.4 System Requirements

■ When using USB/RS-232C/RS-422

SigmaWin+ Σ -V 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 • 350MB (400MB recommended at installation) At Custom Setup • Σ component: 40MB • Σ-II component: 90MB • SGDS component: 70MB • SGDX component: 70MB • Σ-V component: 70MB • INDEXER component: 70MB • MECHATROLINK-II component: 70MB (100MB recommended at each installation)
Monitor	XVGA (1024×768 or greater using a small font)
Number of Colors	256 colors (65536 colors recommended)
Operating System (OS)	 Windows XP * Windows Vista Windows 7 (32 bit/64 bit)
Communication Cables for SERVOPACK to PC Connection	 For USB connection The following cable is available from Yaskawa. Contact Yaskawa if necessary. JZSP-CVS06-02-E For RS-232C connection The following cables are available from Yaskawa. Contact Yaskawa if necessary. For cable wiring, see Appendix A. Digital operator conversion cable: Model JZSP-CXI00-03 PC connection cable: Model JZSP-CMS02 (D-SUB 9-pin connector compatible)
Others	One node or more USB I/F or RS-232C CD-ROM drive (for installation only)

* If using HotfixQ328310, SigmaWin+ may or may not be installed. If it cannot be installed, use HotfixQ329623 instead.

When using a Controller

SigmaWin+ Σ -V component connected through a Controller requires the following minimum system configuration.

When Using MPE720 Ver.6 and MECHATROLINK-II Communications

SigmaWin+ Σ -V Component	Ethernet, PCI BU	JS	
Communication Interface	Version 5.11 or la	ater	
Engineering Tool MPE720	MPE720 Ver.6 Li * For details of ins	Machine Controller MPE72) s, refer to Engineering Tool for 20 Version 6 User's Manual
Controller	Machine Control	ler MP2000 Series	
	Controller	MECHATROLINK module	Version
	MP2100	SVB (built-in CPU)	Version 2.66 or later
	MP2100M	SVB (built-in CPU)	Version 2.66 or later
		SVB 01	Version 1.25 or later
	MP2310	SVB (built-in CPU)	Version 2.66 or later
	MP2300S	SVB-01	Version 1.25 or later
	MP2400	SVB (built-in CPU)	Version 2.66 or later
	MECHATROLIN component throu Other required se • Set the number	of retry to slaves must be of retry to slaves to one of retry to slaves must b	SigmaWin+Σ-V
	(number of retry	y to slaves) - (number of	retry processing times) > 1
SERVOPACK	Σ -V series SGDV	/ SERVOPACK version	0011 or later

When Using MPE720 Ver.6 and MECHATROLINK-III Communications

SigmaWin+∑-V Component	Ethernet, PCI BU	JS	
Communication Interface	Version 5.30 or la	ater	
Engineering Tool MPE720	MPE720 Ver.6 L * For details of ins	Machine Controller MPE72) s, refer to Engineering Tool for 20 Version 6 User 's Manual
Controller	Machine Control	ler MP2000 Series	
	Controller	MECHATROLINK module	Version
	MP2100M	SVC-01	Version 1.03 or later
	MP2101M	SVC-01	Version 1.03 or later
	MP2101T	SVC (built-in CPU)	Version 2.74 or later
	MP2101TM	SVC (built-in CPU)	Version 2.74 or later
		SVC-01	Version 1.03 or later
	MP2200 CPU-03	SVC-01	Version 1.03 or later
	MP2200 CPU-04	SVC-01	Version 1.03 or later
	MP2310	SVC-01	Version 1.03 or later
	MP2300S	SVC-01	Version 1.03 or later
	MECHATROLIN component throu Other required se • Set the number • The set number of retry process	ettings are as follows. of retry to slaves to one of retry to slaves must b sing times.	SigmaWin+ Σ-V
SERVOPACK	Σ-V series SGDV	/ SERVOPACK version	0015 or later

When Using MPE720 Ver.7 and MECHATROLINK-II Communications

SigmaWin+ Σ -V Component	Ethernet, PCI BU	JS	
Communication Interface	Version 5.55 or la	ater	
Engineering Tool MPE720	MPE720 Ver.7 (V	Version 7.11 or later)	
Controller	Machine Control	ler MP2000/3000 Series	1
	Controller	MECHATROLINK module	Version
	MP2100	SVB (built-in CPU)	Version 2.66 or later
	MP2100M	SVB (built-in CPU)	Version 2.66 or later
		SVB 01	Version 1.25 or later
	MP2310	SVB (built-in CPU)	Version 2.66 or later
	MP2300S	SVB-01	Version 1.25 or later
	MP2400	SVB (built-in CPU)	Version 2.66 or later
	MP3200	SVB-01	Version 1.25 or later
	MECHATROLIN component throu Other required se • Set the number • The set number of retry process	ettings are as follows. of retry to slaves to one r of retry to slaves must sing times.	e SigmaWin+Σ-V
SERVOPACK		, , , , , , , , , , , , , , , , , , ,	
SERVOPACK	Σ -V series SGDV	SERVOPACK version	0011 or later

When Using MPE720 Ver.7 and MECHATROLINK-III Communications

SigmaWin+ Σ -V Component	Ethernet, PCI BU	IS	
Communication Interface	Version 5.55 or la	ater	
Engineering Tool MPE720	MPE720 Ver.7 (V	Version 7.11 or later)	
Controller	Machine Control	ler MP2000/3000 Series	
	Controller	MECHATROLINK module	Version
	MP2100M	SVC-01	Version 1.03 or later
	MP2101M	SVC-01	Version 1.03 or later
	MP2101T	SVC (built-in CPU)	Version 2.74 or later
	MP2101TM	SVC (built-in CPU)	Version 2.74 or later
		SVC-01	Version 1.03 or later
	MP2200 CPU-03	SVC-01	Version 1.03 or later
	MP2200 CPU-04	SVC-01	Version 1.03 or later
	MP2310	SVC-01	Version 1.03 or later
	MP2300S	SVC-01	Version 1.03 or later
	MP3200	SVC-01	Version 1.03 or later
	MECHATROLIN component throu Other required se • Set the number • The set number of retry process	ttings are as follows. of retry to slaves to one of retry to slaves must b ing times.	SigmaWin+ Σ-V
SERVOPACK		SERVOPACK version	,

1.5 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".

YASKAWA SigmaWin+Engli	sh Edition Ver.5.11 - InstallShield Wizard	×
	Wetcome to the InstatiShield Wizard for YASEAWA SignaWin+ English Edition Wet.5.11 The InstatEnatid Wizard will instatil YASEAWA SignaWin+ English Edition Vet.5.11 on your computer. To continue click Next.	

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

3. Click Next to continue. The License Agreement window will appear.



4. Read the agreement and select "I accept the terms of the license agreement" to agree. Then click **Next** to continue. The Choose Destination Location window will appear.

YASKAWA SigmaWin+ English Ed Choose Destination Location Select folder where setup will inst	tion Ver.5.11 – InstallShield Wizard	×	
	Hudd YASKAWA Sgonol/im Engleh Editon Vin 511 to H UPogaan Film/SgondDE	Durge	
InstallSided	<berry 2]<="" [heat="" th=""><th>Cancel</th><th></th></berry>	Cancel	

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

YASKAWA SigmaWin + English Edition Setup Type Select the setup type to install.	er.S. 11 - InstallShield Wizard	×
_	ane served a serve type. Complete Al program features will be installed. (Requires the most Conten Safeet which program features you ward installed. Reco	
InstallStidd	< Back Ment >	Cancel

6. Select the setup type.

<To install all components of SigmaWin+>

Choose "Complete" and click **Next**. The Select Program Folder window will appear.

	Fdition Ver.5.11 - InstallShield Wizard
Select Program Folder Please select a program folde	
	Shiqa will add program somit to the Program Folder lated below. You new hore a new hider nome, or select one from the exerting folders lat. Click New Ib continue. The program Folder: The program Folder: Accessions Accessions Schap. The program folder:
InstallSidd	< Back Next> Cancel

<To install selected components of SigmaWin+>

(1) Choose "Custom" and click Next. The Select Features window will appear.

Select the features solup will inst	ittion Yer.S. I I – InstallShield Woard	×
	Select the features pour work to install, and develoce Status Component Status Component Status Component Status Component Status Component Status Component	the features you do not want to install —Onscripton Please select this component sympo select.
festall Cristia	232.13 MB of space required on the M drive 407.75 MB of space available on the M drive < Back Next >	Cancel

(2) Select the components to be installed, and click **Next**. The Select Program Folder window will appear.

Select Program Folder	
Please select a program folde	M. ²
	Setup will add program icoms to the Program Folder lated below. You may type a new tolder name, or select one from the existing folders lat. Click New to continue.
	Progam Földer
	TE Apple store
	Exiding Folder: Accessories
	Administrative Tools Stahup Vie Applications
	18
InstallSide	<back next=""> Cancel</back>

7. 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. The Ready to Install Program window will appear.

YASKAWA SigmaWin+ English Ready to Install the Program The wizard is ready to begin in:	least the second		×
	Click Install to bogin the it If you want to review or c recard	ntalation. hange any of your installation se	
Installigited	4	Back Instal	 Cancel

8. Click Install.

The PC files will be copied to PC from the CD-ROM. The percentage of the copying that has been completed will be shown.

YASKAWA SigmaWin+En Setup Statur	Jich Edition Ver.5.11 - InstallSheld Wuard 🗙
	The InstallSheld Wilsed II installing VASVOVIA SignaloVine English Editori Ver.511 Installing
Testal 1924	Carol

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, the InstallShield Wizard Complete window will appear.

9. Click **Finish** to complete the setup.

1.6 Removing SigmaWin+ Program

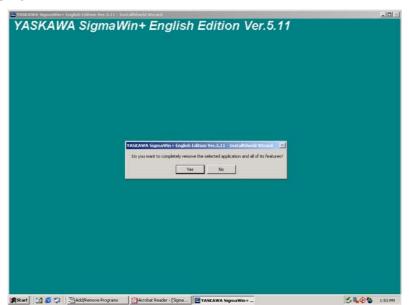
Remove the SigmaWin+ program using the following procedure.

- 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.

🚡 Add/Remov	e Programs		
1	Currently installed programs:	Sort by: Name	•
Change or Remove	(# CPSON Pointer Software		A
Programs	💏 Mindere 2000 Der Hos Park 4		
-	YASKAWA SigmaWin+ English Edition Ver.5.11	Size	<u>310MB</u>
Add New	Click here for <u>support information</u> .	Used Last Used On	frequently 6/12/2008
Programs	To change this program or remove it from your computer, click Change or Remove.	Change	Remove
्			
Add/Remove Windows			
Components			
i			
Set Program Access and Defaults			
Deradics			
			7

3. Click **YASKAWA SigmaWin+ English Edition** as the program to be removed, and then click **Change/Remove**.

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



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

YASEAWA SigmaWin+En	Jish Edition Ver.5.11 - InstallShield Wizard	
	Uninital Conside	
Install [®] 755	citat Print, Court	

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

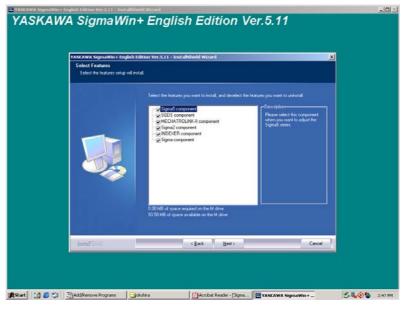
1.7 Installing and Removing Other SigmaWin+ Programs

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.

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

		fdition Ver.5.11 – Insta				
		Maintenance Con Install5hield Wizard English Edition Ver.!	has finished performing maintenanc	e operations on YASKAWA	SignaWin+	
lasta	Nanda		cgeok Frindt		Cancel	

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

2.2.1 When using USB/RS-232C/RS-422

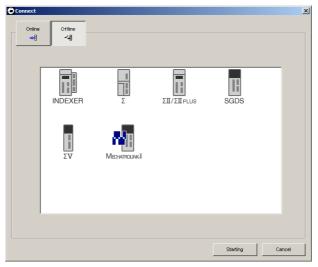
When SigmaWin+ is initially started, the Connect dialog box appears. Enter the settings for communications between SigmaWin+ and the SERVOPACK by means of a communication port.

		🞯 Search	
JUSB	COM4:RS-232C	Axix name	

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
- Offline: 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**. The SigmaWin+ main window will appear.

<When Online is selected>

*			
및 USB 및 COM4:RS-232C			🛈 Search
Axis No. Servopack	Servomotor	Application module	Axix name

Enter the necessary settings for communication setup.

- 1. Click Search.
 - <For RS-232C or RS-422 connection>

Search Condition S	etting			×
Check off the target	that is not needed to a	search		
Target Servopack	Series Setting			
🔽 👖 ΣV	🔽 🛅 Σ	Ш	🔽 🖥 ΣΠ/ΣΙ	IPLUS
Σ 🖥 💟	M 📑 되	IDEXER		
	M1:RS-232C 🛛 🐺 M			
	1 .	Lon Hirto Linto Linto I		1
Search				
C. mat	6.5		ss 0	
Single	C Range	Axis Addre:	(0-7F)	
			Search	Cancel
			Search	Cancel

Single Axis Connection (Single)

V 🖥 ΣV	ע 📑 א ע 🗐 א		ΣΙΙ/ΣΙΙΡLUS
Search	11.113-422 🎬 ME		
C Single	Range	Start Address	0 • H
		End Address	0 + H (0-7F)

Multi-axes Connection (Range)

Note: SigmaWin+ is compatible with the following SERVOPACKs.

- Σ Series
- SGDA- $\Box\Box\Box$ S
- SGDA- $\Box\Box\Box$ P
- SGDB-DDDD
- DR2-DDD for speed
- DR2-DDD for position
- SGDE-DDDS
- SGDE-DDDP
- SGDF-DDDS
- SGDF-DDDP
- SGDL-DDDS
- SGDL-DDDP
- Σ -II and Σ -II Plus Series
- SGDM-DDD
- SGDM-DDDA
- SGDH- $\Box\Box\Box$ E
- SGDP-**DDP**
- SGDP-DDDPA
- SGDJ-DDDS
- SGDJ-DDDP
- SGDH-DDE + NS600 or NS601 (INDEXER application module for SGDH SERVOPACK)

• SGDS-□□01A • SGDS-□□02A

 Σ -III Series

- SGDS-005A
- SGDS-DDD12A
- SGDS-0015A
- Σ -III Plus Series
- SGDX-**DD0**1A
- SGDX- $\Box\Box\Box$ 02A
- SGDX-**DD**12A

 Σ -V Series

- SGDV-000010
- SGDV-000050
- SGDV-DDDD11D
- SGDV-000150
- SGDV-DDDDE1D
- SGDV-DDDDE5D
- SGDV-000210
- SGDV-000250
- SGDV-□□□□□E + SGDV-OCA03□ (INDEXER option module for SGDV SERVOPACK)
- SGDV-**DDD**S1**D**
- SGDV-DDDDP1D

<For USB connection >

×
- 1
ted
ncel

Note: SigmaWin+ is compatible with the following SERVOPACKs.

- Σ-III Plus Series
 - SGDX-DDD01A
 - SGDX-□□□02A
 - SGDX-DDD12A

 Σ -V Series

- SGDV-000010
- SGDV-**DDD**05**D**
- SGDV-000110
- SGDV-000150
- SGDV-DDDDE1D
- SGDV-**DDDE**5**D**
- SGDV-000210
- SGDV-000250
- SGDV-DDDDS1D
- SGDV- $\Box\Box\Box\BoxP1\Box$
- 2. Select SERVOPACK series and make the settings required. Click **Search**. After the SERVOPACKs have been successfully connected to SigmaWin+, a list of the connected SERVOPACKs will appear on the screen.

nnect				
Online ~에	Offline ~-{]			C Search
Axis No.	COM1:RS-422	MECHATROLINK-II	Application module	Axix name
1	SGDV-1R6A01A	SGMAS-01ACA21		
			0	connect Cancel
				Cancer

SERVOPACK Selection Box

Note: 1. When RS-232C is used, only one SERVOPACK will be displayed.

- 2. If the SERVOPACK is not displayed though a SERVOPACK is connected, refer to <If the SERVOPACK is not Displayed>.
- Select the SERVOPACK to be connected and then click Connect, or just double-click the SERVOPACK to be connected. The SigmaWin+ main window will appear. 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 Item	Measure
Is the power on?	
Are the connections loose?	Fasten all communication cable connectors securely.
Was the correct communications interface (port) selected?	Make sure that the communications interface (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-232c:> <rs-422a:multi-axis connection=""> Make sure that the axis address of the connected NS600 or NS601:</rs-422a:multi-axis> Is not 0 (zero). Is not duplicated. <servopack connection="" later="" or="" plus="" series="" σ-iii=""> Make sure that the axis address of the connected SERVOPACK is not 0 (zero).</servopack>
Is the RS-232C port enabled? <rs-232c connection=""></rs-232c>	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 Chapter 3 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 2 m RS-422A: Maximum 30 m (total) USB: Maximum 5 m (30 m in total by connecting five hubs.)

Check the following items if the SERVOPACK is not displayed.



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

Communications may be impossible due to external environmental influences such as noise. The SERVOPACK uses RS-422A specifications for serial communications. Sometimes the RS-232C cannot be used, depending on the type of PC.

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.

2.2.2 When using a Controller

Ethernet

Three connection methods are possible when using Ethernet.

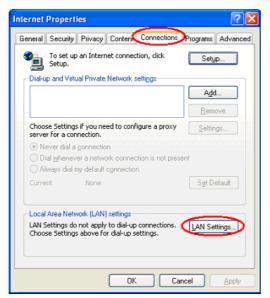
- When using SigmaWin+ Version 5.55 or later with MPE720 Version 7.11 or later
- When using other versions of SigmaWin+ or MPE720
- Remote operation

When using SigmaWin+ Version 5.55 or later with MPE720 Version 7.11 or later

The IP address of the PC must be set before SigmaWin+ and the Controller are connected with Ethernet.

1. Click the **Start** button, and then select *Settings - Control Panel* from the **Start** menu. Click the **Internet Options** icon in Control Panel.

The following dialog box will appear.



2. Select the **Connections** tab, and then click the **LAN Settings.** The following dialog box will appear.

	Area Network (LAN) Settings	<u>?</u> ×
Au	tomatic configuration may override manual settings. To ensu e of manual settings, disable automatic configuration.	ire the
C	Automatically detect settings	
	Use automatic configuration <u>script</u> Address	
	xy server Use a proxy server for your LAN (These settings will not app dial-up or VPN connections).	ly to
	Address: Ports: Advang	ed
	Bypass proxy server for local addresses	incel

- 3. Confirm that the **Automatically detect settings** check box is not selected, and then click **OK** to close the dialog box.
- Click the Start button, and then select Settings Control Panel from the Start menu. Click the Network Connections icon in the Control Panel.

The following window will appear.

Network and Dial-up Connection	s			
File Edit View Favorites Too	ols Advanced Help			
🖛 Back 👻 🄿 👻 🖹 🔞 Search	🔁 Folders 🛛 🎯 History	R R X 0 E	<u>.</u> .	
Address 違 Network and Dial-up Conn	ections			• @G
	Name 🛆	Туре	Status	Device
	📴 Make New Connection			
Real Provide Line of the line	Local Area Connection	LAN	Network cable unplugged	Intel(F
Network and Dial-up Connections				
	•			
This folder contains network connections for this computer, and a				
wizard to help you create a new				
connection.				
To create a new connection, click Make New Connection.				
To open a connection, click its icon.				
To access settings and components of				
a connection, right-click its icon and then click Properties.				
To identify your computer on the				
network, click Network Identification				
To add additional networking				
components, click <u>Add Network</u> Components.				
Select an item to view its description.				
	•			

5. Select *Local Area Connection*, and then click *Change settings of this connection* in the **Network Tasks** field.

The following dialog box will appear.

🕂 Local Area Connection Properties 🛛 🛛 🛛
General Authentication Advanced
Connect using:
Broadcom 440x 10/100 Integrated C
This connection uses the following items:
Elient for Microsoft Networks Elie and Printer Sharing for Microsoft Networks Bos Packet Scheduler Thtemet Protocol (TCP/IP)
Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.
Show icon in notification area when connected ✓ Notify me when this connection has limited or no connectivity
OK Cancel

6. Select the *Internet Protocol (TCP/IP)* check box in the **General** tab page, and then click the **Properties.**

The following dialog box will appear.

Internet Protocol (TCP/IP) Proj	perties 🛛 🛛 🛛 🛛
General	
You can get IP settings assigned au this capability. Otherwise, you need t the appropriate IP settings.	
O Dbtain an IP address automatic	saly
OUse the following IP address: -	
JP address:	192.168.1.2
Sybnet mask:	255 . 255 . 255 . 0
Default gateway:	
Obtain DNS server address au	tomatically
Use the following DNS server a	addresses:
Preferred DNS server:	
Alternate DNS server:	
	Ad <u>v</u> anced
	OK Cancel

 Select Use the following IP address, and then enter the IP address you wish to enter and "255 255 255 0" as the *Subnet mask*. Click OK to close the dialog box. 8. When SigmaWin+ is initially started, the **Connect** dialog box will appear. Enter the settings for communications between SigmaWin+ and the SERVOPACK by means of a communication port.

~4	·			C Search
Axis No.	Servopack	Servomotor	Axis name	Comments for axis

9. Confirm that the **Controller** tab is displayed and click **Search**. The following window will appear.

ommunication po	rt	ETHERN	ET[1] (I		ith the 2.168.						
					IP	Setti	ng				
rget IP address		192	. 168		1		1	-			
otion CPU		0 : Mair	n CPU (Ba	asic	CPU Mo	odule))	•			
arch Controller					\$	5eard	h				
Controller	Con	nmunicat	ion Info.		Modu	le nai	ne				
	otion CPU arch Controller	arch Controller	arch Controller	arch Controller	otion CPU 0 : Main CPU (Basic	rget IP address 192 , 168 , 1 otion CPU 0 : Main CPU (Basic CPU Ma arch Controller	rget IP address 192 . 168 . 1 . otion CPU 0 : Main CPU (Basic CPU Module) arch Controller Search	arch Controller 0 : Main CPU (Basic CPU Module) Search	rget IP address 192 . 168 . 1 . 1 otion CPU 0 : Main CPU (Basic CPU Module) arch Controller Search	rget IP address 192 . 168 . 1 . 1 otion CPU 0 : Main CPU (Basic CPU Module) arch Controller Search	rget IP address 192 . 168 . 1 . 1 otion CPU 0 : Main CPU (Basic CPU Module) 💌 arch Controller Search

10. Select the IP address of Ethernet as the **Communication Port** for the Controller connection.

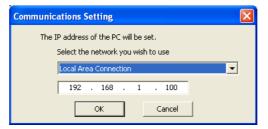
Search Condition Setting	ę		X
Check off the target that is no	ot needed to search		
Target Servopack Series S	etting		
🔽 👖 ΣV	🔲 🔟 ΣШ	🗖 🖬 ΣΙΙ/ΣΙ PLUS	
Γ 🖶 Σ	🗖 📊 INDEXER		
₿ USB ♀ COM1:RS-2	32C . Controller		
Configure the settin Communication port	[=	92.168.1.200) L 💌	
Target IP address	-:ETHERNET (IP:Au -:PCI	68.1.200) Local Area Conne	
Option CPU	0 : Main CPU (Basic	CPU Module) 📃	
Search Controller		Search	
Controller	Communication Info.	Module name	
		Search	ancel

<How to customize port settings>

Use the following procedure.

(1) Click IP Setting.

The following dialog box will appear.



- (2) Select a network and enter the IP address.
- (3) Click **OK** to close the dialog box.

The communication port is now available for selection.

The IP address of the connectable controller can be confirmed as follo
BUSB COM1:RS-232C
₩ Search
Configure the settings for communications with the controller. Communication port ETHERNET[1] (IP:192.168.1.200) L
IP Setting
Target IP address 192 . 168 . 1 . 1
Option CPU 0 : Main CPU (Basic CPU Module)
Search Controller Search
Controller Communication Info. Module name
Search Cancel

1. Click **Search** of **Controller** tab.

The controller name, IP address/port, and module name will be displayed in the **Search Controller** list.

2. Confirm that the IP address selected as the **Communication port** is the same IP address shown in the **Search Controller** list.

11. Click Search.

Connectable SERVOPACKs will be found through the MECHATROLINK communication cable and the result will be displayed in the **Connect** window.

Online -କୃତ୍ତି	offir ~4				
Control		,			Q Search
Line nu	Axis No.	Servopack	Servomator	Axis name	Comments for axis
1	4 (44)	SGDV-R70F11A	SGMAV-A5A3AS1		SGDV-R70F11A

- Note: Only controller modules that can be connected using MECHATROLINK communication cables are supported. "MP connection cannot be used for xxx." will be displayed when connected to an unsupported module (SVA module, PO module, and SVR module). The "xxx" represents a module name.
- 12. Select the SERVOPACK to be connected and then click **Connect**, or just double-click the SERVOPACK to be connected.

When using other versions of SigmaWin+ or MPE720

The IP address of the PC must be set before SigmaWin+ and the Controller are connected with Ethernet.

1. Perform steps 1 to 9 outlined in the section titled *When using SigmaWin+ Version* 5.55 or later with MPE720 Version 7.11 or later.

The following window will appear.

Configure th Communicat	-	 	 	oller.	
IP address		 . 168		1	

2. Select the communication port for the Controller connection, and click Search.



When *Ethernet (LP)* is selected as the Communication Port, the IP address of the connectable controller can be confirmed as follows.

Z Search Configure the	settings for communication	ns with the controller.	
Communication	port 2 : Ethernet(LP)	(JP:192.168.1.2)	-
IP address	192 . 168	. 1 . 1	
Search Contro	ler	Search]
Controller	IP address/port	Module name	
MP23005	192.168.1.1 / 9999	CONTROLLER	
,			

- 1. Click Search of Controller tab.
 - The controller name, IP address/port, and module name will be displayed in the **Search Controller** list.
- 2. First confirm that the IP address selected as the **Communication port** is the same IP address shown in the **Search Controller** list, and then click **Search**.
- Note: The **Search Controller** list will be displayed only when Ethernet (LP) is selected as the **Communication Port**.

	omi -4				
[]] Contro	ller				C Search
Line nu	Axis No.	Servopack	Servomotor	Axis name	Comments for axis
1	4 (44)	SGDV-R70F11A	SGMAV-A5A3AS1		SGDV-R70F11A

Connectable SERVOPACKs will be found through the MECHATROLINK communication cable and the result will be displayed in the **Connect** window.

- Note: Only controller modules that can be connected using MECHATROLINK communication cables are supported. "MP connection cannot be used for xxx." will be displayed when connected to an unsupported module (SVA module, PO module, and SVR module). The "xxx" represents a module name.
- 3. Select the SERVOPACK to be connected and then click **Connect**, or just double-click the SERVOPACK to be connected.

Remote Operation

For remote operation, the following versions of the engineering tools are required.

- SigmaWin+: Version 5.55 or later
- MPE720: Version 7.11 or later
- 1. Perform steps 1 to 9 outlined in the section titled *When using SigmaWin+ Version* 5.55 or later with MPE720 Version 7.11 or later.
- 2. Select the communication port for the Controller connection.

Search Condition Setting			
Check off the target that is not r	needed to search		
Target Servopack Series Sett	ng		
🔽 🖥 ΣV	🔽 🛅 ΣШ	🔽 🖥 ΣΙΙ/ΣΙΙ PLUS	
Σ 🗄 🗵	💌 💼 INDEXER		
🛱 USB 🛛 🌄 COM1:RS-232			1
🔽 Search			
Configure the settings	for communications v	vith the controller.	
Communication port	-:Remote (IP:192.	168.1.200) Loca 💌	
		IP Setting	
Remote Kind	Gateway(Ver7)	•	
Server Settings			
IP address	192 . 168	. 1 . 200	
Port No.	15000		
Password			
Controller Settings			
Communication port	ETHERNET[1]	-	
Target IP address	192 . 168	. 1 . 1	
Option CPU	0 : Main CPU (Basic	CPU Module) 💌	
		Search Cano	;el

<How to customize port settings>

Use the following procedure.

(1) Click IP Setting.

The following dialog box will appear.

Communications Setting	×
The IP address of the PC will be set. Select the network you wish to use	
Local Area Connection	
192 . 168 . 1 . 100	
OK Cancel	

- (2) Select a network and enter the IP address.
- (3) Click **OK** to close the dialog box.

The communication port is now available for selection.

3. Select *Gateway (Ver7)* as the Communication port.

- 4. Set the IP address, port number, and other required items for the server and the Controller.
- 5. Click Search.

Connectable SERVOPACKs will be found through the MECHATROLINK communication cable and the result will be displayed in the **Connect** window.

-~6	~4				🞯 Search
Contro	, '	Servopack	Servomotor	Axis name	Comments for axis
	4 (44)	SGDV-R70F11A	SGMAV-A5A3AS1		SGDV-R70F11A

- Note: Only controller modules that can be connected using MECHATROLINK communication cables are supported. "MP connection cannot be used for xxx." will be displayed when connected to an unsupported module (SVA module, PO module, and SVR module). The "xxx" represents a module name.
- 6. Select the SERVOPACK to be connected and then click **Connect**, or just double-click the SERVOPACK to be connected.

PCI Bus

Three connection methods are possible when using PCI bus.

- When using SigmaWin+ Version 5.55 or later with MPE720 Version 7.11 or later
- When using other versions of SigmaWin+ or MPE720
- Remote operation

When using SigmaWin+ Version 5.55 or later with MPE720 Version 7.11 or later

1. When SigmaWin+ is initially started, the Connect dialog box will appear.

onnect					
Online -~尙	offlir ~4				Ct Search
Line nu	Axis No.	Servopack	Servomotor	Axis name	Comments for axis
		ļ	!	!	
				C	Cancel

2. Confirm that the **Controller** tab is displayed and click **Search**. The following window will appear.

Configure the settings Communication port	for communications with the control	ler.
CPU No.	1	•
Option CPU	0 : Main CPU (Basic CPU Module)	•

3. Select the communication port for the Controller connection, and click Search.

Connectable SERVOPACKs will be found through the MECHATROLINK communication cable and the result will be displayed in the **Connect** window.

	~-0				
]] Control	ker				Q Search
Line nu	Axis No.	Servopack	Servomotor	Axis name	Comments for axis
1	4 (44)	SGDV-R70F11A	SGMAV-A5A3AS1		SGDV-R70F11A

Note: Only controller modules that can be connected using MECHATROLINK communication cables are supported. "MP connection cannot be used for xxx." will be displayed when connected to an unsupported module (SVA module, PO module, and SVR module). The "xxx" represents a module name.

4. Select the SERVOPACK to be connected and then click **Connect**, or just double-click the SERVOPACK to be connected.

When using Other Versions of SigmaWin+ or MPE720

1. When SigmaWin+ is initially started, the **Connect** dialog box will appear.

-•0	~6	1			
Contro	ler				Ct Search
Line nu	Axis No.	Servopack	Servomotor	Axis name	Comments for axis

2. Confirm that the **Controller** tab is displayed and click **Search**. The following window will appear.

	COM1:RS-232C Controller							
V Search								
Configure the settings for communications with the controller. Communication port 3: MP2100/2500								
CPU No.	1							
	Search Cancel							

3. Select the communication port for the Controller connection, and click **Search**. Connectable SERVOPACKs will be found through the MECHATROLINK communication cable and the result will be displayed in the **Connect** window.

	~4	1			
]] Contro	ller				Q Search
Line nu	Axis No.	Servopack	Servomotor	Axis name	Comments for axis
1	4 (44)	SGDV-R70F11A	SGMAV-A5A3AS1		SGDV-R70F11A

- Note: Only controller modules that can be connected using MECHATROLINK communication cables are supported. "MP connection cannot be used for xxx." will be displayed when connected to an unsupported module (SVA module, PO module, and SVR module). The "xxx" represents a module name.
- 4. Select the SERVOPACK to be connected and then click **Connect**, or just double-click the SERVOPACK to be connected.

Remote Operation

For remote operation, the following versions of the engineering tools are required.

- For a operating PC
 - SigmaWin+: Version 5.55 or later
 - MPE720: Version 7.11 or later
- For a PC in which a Controller is installed
 - MPE720: Version 6.10 or 7.11 or later
- 1. Perform steps 1 to 9 outlined in the section titled When using *SigmaWin+ Version 5.55* or later with MPE720 Version 7.11 or later.
- 2. Select the communication port for the Controller connection.

Search Condition Setting			X
Check off the target that is not r	needed to search		
Target Servopack Series Setti	ng		
🔽 🖥 ΣV	🔽 🛄 ΣΠΙ	🔽 🗍 ΣΙΙ/ΣΙΙ PLUS	
- ΠΣ	✓ ■ INDEXER	_	
USB COM1:RS-232	C []] Controller		
🔽 Search			
Configure the settings	for communications with	the controller.	
Communication port	-:Remote (IP:192.168		
	,	IP Setting	
Remote Kind	Gateway(Ver7)		
Server Settings			
IP address	192 . 168 .	1 . 200	
Port No.	15000		
Password			
Controller Settings			
Communication port	ETHERNET[1]	•	
Target IP address	192 . 168 .	1 . 1	
Option CPU	0 : Main CPU (Basic CP	'U Module) 💌	
		Search Cancel	

 Select the type of communications for remote operations. The available type differs with the version of MPE720 being used. MPE720 Version 6.10 or later: Gateway (Ver.6) MPE720 Version 7.11 or later: Gateway (Ver.7)

<Gateway (Ver.6)>

The following dialog box will appear.

Search Condition Setting		×
Check off the target that is not n	eeded to search	
Target Servopack Series Setti	ng	
ΣΛ 🛯 ΣΛ	। स्टब्स्ट्रा	ΣΙΙ/ΣΙΙ PLUS
ΓΠΣ	INDEXER	- -
🔒 USB 🛛 🖓 COM1:RS-232	C Controller	
🔽 Search		
Coefficient the coefficient	6	
Configure the settings	for communications with the contro	
Communication porc	,	
	IP Settin	1g
Remote Kind	Gateway(Ver6)	-
Server Settings		
IP address	1	100
Port No.	12000	
Controller Settings		
CPU No.	1	<u> </u>
Option CPU	0 : Main CPU (Basic CPU Module)	-
	Sea	rch Cancel

<Gateway (Ver.7)>

The following dialog box will appear.

Search Condition Setting		
Check off the target that is not r	needed to search	
Target Servopack Series Setti	ng	
🔽 👖 ΣV	🔽 👖 ΣΠΙ	🔽 🗟 ΣΙΙ/ΣΙΙ PLUS
Σ 🖥 Σ	🔽 📊 INDEXER	
☐ USB	C Controller	1
🔽 Search		
Configure the settings	for communications w	ith the controller.
Communication port	-:Remote (IP:192.1	168.1.200) Loca 💌
		IP Setting
Remote Kind	Gateway(Ver7)	•
Server Settings		
IP address	192 . 168 .	. 1 . 200
Port No.	15000	
Password		
Controller Settings		
Communication port	ETHERNET[1]	•
Target IP address	192 . 168 .	1 . 1
Option CPU	0 : Main CPU (Basic	CPU Module) 💌
		Search Cancel

4. Set the IP address, port number, and other required items for the server and the Controller.

5. Click Search.

Connectable SERVOPACKs will be found through the MECHATROLINK communication cable and the result will be displayed in the **Connect** window.

	1000 				
🔲 Control	ler				C Search
Line nu	Axis No.	Servopack	Servomotor	Axis name	Comments for axis
1	4 (44)	SGDV-R70F11A	SGMAV-A5A3AS1		SGDV-R70F11A

- Note: Only controller modules that can be connected using MECHATROLINK communication cables are supported. "MP connection cannot be used for xxx." will be displayed when connected to an unsupported module (SVA module, PO module, and SVR module). The "xxx" represents a module name.
- 6. Select the SERVOPACK to be connected and then click **Connect**, or just double-click the SERVOPACK to be connected.

If the SERVOPACK is not Displayed

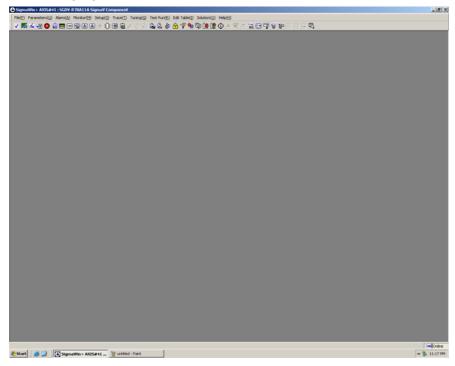
If the SERVOPACK is not displayed through a SERVOPACK is connected, problems may occur in communications.

Check the following items if the SERVOPACK is not displayed.

Check Item	Measure
The number of retry to slaves is set to 0.	Set the number of retry to slaves to one or more.
Is there no SERVOPACK although SERVOPACK is allocated to the axis?	 Increase the number of stations. When the number of stations cannot be increased, do the followings measures. Delete axis allocation. But, the parameter that has already been allocated will be deleted. Install SERVOPACK.
Is the MECHATROLINK-II/III wiring correct?	Check the MECHATROLINK-II/III wiring. • Correct the MECHATROLINK-II/III wiring. • Connect the terminator correctly.
Did MECHATROLINK-II/III data reception error occur due to noise interference?	Take measures against noise. (Check the MECHATROLINK-II/III communication cable and FG wiring, and take measures such as attaching a ferrite core to the MECHATROLINK-II/III communication cable.)

3 SigmaWin+ Σ-V Component Main Window

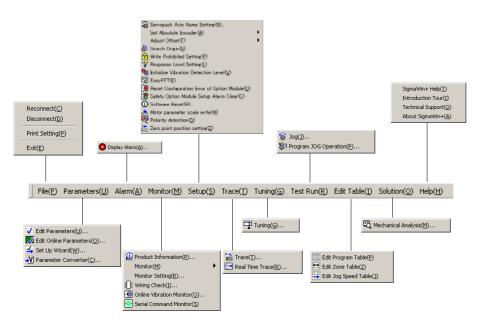
The SigmaWin+ Σ -V component main window has a menu bar and a toolbar as shown in the following figure.



SigmaWin+ Σ -V Component Main Window

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

Menu Bar and Menus



SigmaWin+ Σ-V 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 + Σ -V component.
Introduction Tour:	Introduces main functions of SigmaWin+ Σ -V component.
Technical Support:	Lists local contacts.
About SigmaWin+:	Displays version information of SigmaWin+ Σ -V component.

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

Print Setting

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

Printing Item Setting
Cover
Attaching the Cover Editing
Where to Submit
Where to Submit (No.1) O Submit (No.2) O Submit (No.3)
Item Name Setting Value
Title
Company Name Department Name
Name
Data for each function
Parameters
Header & Footer Printing Items
Header Info
Title Parameters
Models Info
V Printing Date
🔽 File Name
Footer Info
✓ Pages
Color Selection
Black and White C Color
OK Cancel

Cover

Select Attaching the Cover, and then click Cover Editing.

CUYEI						
Submitter Where	to Submit (No.1)	Where to Submi	t (No.2) V	Where to Submit	(No.3)	Greeting Sentences
Company Name:						
Department Name:						
					_	
Name:						
Address:						
TEL:					-	
FAX:					-	
e-mail:						
Place to store for th	e logo files + File i	name:			_	
					Re	eference
		ок		Cancel		

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**.

Printing Item Setting					
Cover					
Attaching the Cover Cover Editing					
Where to Submit Where to Submit (No.1)	Where to Where to Where to				
Item Name			Setting Valu	ie	
Title	SigmaWin	200			
Company Name	Yaskawa				
Department Name					
Name	Tarou Yas	kwa			
Data for each functio	n				
Parameters				-	
	Printing Items				
Constant Number Relation of Users- Vame V Switches Info. Vunit Vonit					
Others-					
Color Selection C Black and White C Color					
ОК			Cancel		

Data for each function

Depending on which functions you select, the items that you can print will differ. Select the functions from the list.

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

Printing Item Setting					
Cover					
Attaching the Cover Cover Editing					
Where to Submit Where to Vhere to Submit (No.1) Submit (No.2) Submit (No.3)					
Item Name Setting Value					
Title Oha-					
Company Name Yaskawa					
Department Name MCKJ					
Name Tatsuvnakasaiams					
Data for each function					
Parameters					
Header Footer Printing Items					
Header Info-					
Title Parameters					
Models Info.					
Printing Date					
File Name					
Footer Info					
I Pages					
Color Selection					
C Black and White C Color					
OK Cancel					

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.

| ✓ 豚 ☆ √ 🧶 🖻 🗉 ରେ 🗉 🖸 🕕 🖽 岩 🕊 🖉 ಮ 🏖 😩 🎳 😚 🧐 🕼 🛯 🕐 🗮 🗮 🖽 🗮

Toolbar Button	Function Name
✓	Parameter Editing
20	Parameter Online Editing
*	Setup Wizard
→V	Parameter Converter
0	Alarm Display
.0	Product Information
	System Monitor
	Status Monitor
6	Motion Monitor
2	Input Signal Monitor
	Output Signal Monitor
	Wiring Check
	Online Vibration Monitor
•	Serial Command Monitor
Ē	SERVOPACK Axis Name Setting
1×	Absolute Encoder Reset
3	Multi-Turn Limit Setting

Toolbar Button	Function Name
80	Speed/Torque Reference Offset Adjustment
2	Analog Monitor Output Adjustment
<u>_</u> .	Motor Current Detection Offset Adjustment
ර්	Origin Search
=	Write Prohibited Setting
1	Response Level Setting
9 1	Initialize Vibration Detection Level
8	Easy FFT
9	Reset Configuration Error of Option Module
12	Safety Option Module Setup Alarm Clear
0	Software Reset
<u></u>	Motor Parameter Scale Write
R	Polarity Detection
	Zero Point Position Setting
	Trace
	Real Time Trace
Ŧ	Tuning
6	JOG Operation
5 ¤	Program JOG Operation

Toolbar Button	Function Name
	Program Table Editing
	Zone Table Editing
× •	Jog Speed Table Editing
ß	Mechanical Analysis

4 Operation

Editing Parameters 4.1

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+ Σ -V component main window, click **Parameters** and then click **Edit** Parameters. The Parameter Editing window for the online mode appears.

			Level 2 (To th		t.)		Display Settin	<u> </u>	
All	7	Function Selection(Pn0xx-) Gain(Pn1	xx-) Position	(Pn2xx-)	Speed(Pn3xx-) Tor		Sequence(P	n5xx-) I/O Sigr	•
	No.	Name	Input value	Unit	Set value	Min	Max	Default	_^
	Pn000	Basic Function Select Switch 0	0000H	-	-	-	-	0000H	_
	Odigit	Direction Selection	0 : Sets		-	-	-	-	
	1 digit	Reserved (Do not change.)	0:Reser		-	-	-	-	
	2digit	Reserved (Do not change.)	0:Reser		-	-	-	-	
	3digit	Reserved (Do not change.)	0:Reser	-	-	-	-	-	
	Pn001	Application Function Select Switch 1	0000H	-	-	-	-	0000H	
	Odigit	Servo OFF or Alarm G1 Stop Mode	0 : Stops		-	-	-	-	
	1 digit	Overtravel (OT) Stop Mode	0:Same		-	-	-	-	
	2digit	AC/DC Power Input Selection	0 : Not a		-	-	-	-	
	3digit	Reserved (Do not change.)	0:Reser	-	-	-	-	-	
	Pn002	Application Function Select Switch 2	0000H	-	-	-	-	0000H	
	Odigit	MECHATROLINK Command Position	0 : Does	-	-	-	-	-	
	Select All(All	constant number:include not displayed)					Safety Edit	🗸 Edit	

Selects all parameters on the displayed tab.

Parameter Editing Window (Online Mode)

- Note: 1. Safety Edit and Safety Initialize buttons are displayed only when the SERVOPACK and Safety Module are connected.
 - 2. Write (Flash) button is displayed only when the SERVOPACK and DeviceNet Module are connected.

Display Mode

—Display Mode — User Level	2 : Level 2 (To the adjustment.)	•
Control Mode	13 : All types of controls	-

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

User Level:	1: Level 1 (To the setup/test run.)
	2: Level 2 (To the adjustment.)

Control Mode: 13 modes

Display Setting

Click **Display Setting**, and the Display setting box appears. Select the information to be displayed and the size of the Parameter Editing window.

Display Setting		×
Select items to be displayed.		
Display Items		
✓ Name	🔽 Unit	
🔽 Min, Max	✓ Default	
Dialog size		
800 × 600		
	OK Cancel	

Display Setting Box

Display Items

Select the information to be displayed.

Dialog Size

Select the size of the Parameter Editing window.

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.

Comment

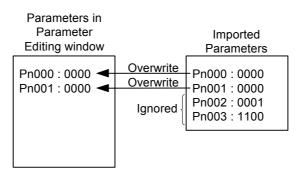
Comments can be typed or edited in the Comment box. Click **Comment**, and the Comment box appears.

Comment		×
		<u> </u>
		7
		Correct 1
	OK	Cancel

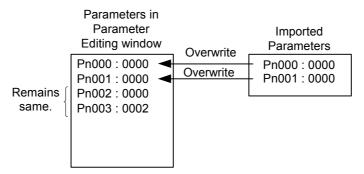
Import

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.

Open		? ×
Look in: 🔂	YE_Applications 💽 🖛 🛍 📸 🖽]-
🗋 Manual	170.107	
20070423	153437.usr	
File name:	20070423153437.usr 0	pen
Files of type:	Parameter file(*.usr)	ancel
Product Info:	SECOLA MEAIN A.	
	Customization information is used.	
Comment:		

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

When the **Customization information is used**. check box is selected, the parameters set on the **Customize** tab in the Parameter Editing window are also imported. (See Customize for details.) The check box cannot be selected when the file has no parameter on the **Customize** tab.

Customize

Only the selected parameters can be displayed on the Customize tab.

1. Click **Customize**, and the Customize setting box appears. All the parameters are displayed in the Parameter candidate list.

Customize setting	×
Please select the parameter which wants to be customized.	
Parameter candidate C	ustomaize parameter
Pn000: Function Selection Application SV Pn001: Function Selection Application SV Pn002: Function Selection Application SV Pn006: Function Selection Application SV Pn000: Function Selection SV Pn000: Function Select	
Ph106:2nd Position Loop Gain Ph107:Bias Ph108:Bias Addition Width Ph108:Feed Forward Ph108:Feed Forward Filter Time Consts Ph10B:Gain Related Application Switch	1 Up
Customaize name Customize	OK Cancel

2. Select parameters to be displayed on the **Customize** tab from the Parameter candidate list.

istomize setting	2
Please select the parameter which wants to be customized	
Parameter candidate	Customaize parameter
Pn000: Function Selection Basic Switch ▲ Pn001: Function Selection Application S Pn002: Function Selection Application S Pn006: Function Selection Application S Pn006: Function Selection Application S Pn007: Function Selection Application S Pn008: Function Selection Application S Pn009: Function Selection Application S Pn100: Speed Loop Oran Pn101: Speed Loop Cain Pn102: Postion Loop Gain Pn107: Bias Addition Width Pn109: Feed Forward Filter Time Conster Pn109: Gain Related Application Switch ▼	
Customaize name Customize	OK Cancel

3. Click **Add**, and the selected parameters will move from the Parameter candidate list to the Customize parameter list as follows.

Opens a customized file. Saves customize data to a file.	Information to be displayed on the Customize tab
Customize setting Image: Setting Image: Setting Please select the parameter which wants to be customized.	×
	Customaize parameter
Pn000:Function Selection Application S Pn000:Function Selection Application S Pn002:Function Selection Application S Pn006:Function Selection Application S Pn007:Function Selection Application S Pn007:Function Selection Application S	Pn100:Speed Loop Gain Pn103:Moment of Inertia Ratio Pn101:Speed Loop Integral Time Constant Pn102:Position Loop Gain Pn104:2nd Speed Loop Gain Pn105:2nd Speed Loop Integral Time Const
Pn106:2nd Position Loop Gain Pn107:Bias Pn108:Bias Addition Width Pn108:Feed Forward Pn108:Ceain Related Application Switch Pn106:Ceain Related Application Switch Pn100:Mode Switch (torque reference) Pn100:Mode Switch (acceleration) Delete	
Pn10F:Mode Switch (error pulse) Pn110:Autotuning Related Application S Pn111:Speed Feedback Compensation	
Customaize name Customize	OK Cancel
Sets a tab name for the Customize tab.	the selected item down one level.
Mov	ves the selected item up one level.

Information not displayed in the Parameter candidate list

Select parameters in the Customize parameter list and click **Delete**. The selected parameters will move back from the Customize parameter list to the Parameter candidate list.

(Open) Button

In the Customize setting box, click the B button, and the Open dialog box appears with the customized files displayed.

Open					<u>? ×</u>
Look in: 🔁	New Folder	•	÷ 🗈	r 📰 🕈	
200407281					
File name:	20040728102501			Oper	
Files of type:				Canc	_
riles of type:	customize file (*.ucs)		-	Lanc	

Open Dialog Box

Click **Open** to read the designated customized file. Click **Cancel** to return to the Customize setting box.

(Save) Button

In the Customize setting box, click the \square button, and then select the storage location for the parameters displayed in the Customize parameter list of the Customize setting box.

Save As	<u>?</u> ×
Save in: 🔁 New Folder 💽 🔶 📸 🏢 -	
■ 20040728102501.ucs	
File name: 20040728102518 Save	
Save as type: customize file (*.ucs)	

Save As Dialog Box

Click **Save** to store the file name designating the parameters displayed in the Customize parameter list as the customized file name. Click **Cancel** to return to the Customize 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 ask if you want to replace the existing file.

Save As	×
⚠	A:\20040603235653.ucs already exists. Do you want to replace it?
	Yes No

Click **Yes** to overwrite the already existing file. Click **No** to return to the Customize setting box.

4. When the selection of parameters to be displayed on the **Customize** tab is completed, click **OK**. Then the Parameter Editing window appears and the selected parameters will be displayed on the **Customize** tab.

	Control Mode	2 : Level 2 (To the second sec	controls			Comn	
No.	sition(Pn2xx-) Speed(Pn3xx-) Torqu	Input value	Unit	Set value	Min	Max	Default
Pn100	Speed Loop Gain	400	0.1Hz	40.0 Hz	10	20000	400
Pn103	Moment of Inertia Ratio	100	%	100 %	0	20000	100
Pn101	Speed Loop Integral Time Constant	2000	0.01ms	20.00 ms	15	51200	2000
Pn102	Position Loop Gain	400	0.1/s	40.0 /s	10	20000	400
Pn104	2nd Speed Loop Gain	400	0.1Hz	40.0 Hz	10	20000	400
•							•
🔲 Select Alli	Customize:include not displayed)						🗸 Edit
							1

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.

Edit
Pn001 Basic Function Select Switch 1
digit 0 Servo OFF or Alarm G1 Stop Mode
0 : Stops the motor by applying DB (dynamic brake).
digit 1 Overtravel (OT) Stop Mode 0 : Same setting as Pn001.0 (Stops the motor by applying DB or by coasting).
digit 2 AC/DC Power Input Selection
0 : Not applicable to DC power input: Input AC power supply through L1, L2 (, : 💌
digit 3 Warning Code Output Selection
0 : ALO1, ALO2, and ALO3 output only alarm codes.
0000 H OK Cancel

Safety Edit

The Safety Module parameters can be changed or initialized with the safety edit function.

1. Click the **Option (Pcxx)** tab to display a list of Safety Module parameters.

Note: Safety Module parameters (Pcxx) can also be displayed by clicking the All constant number tab.

	Control Mode	13 : All Control Mode	•		Comm	ent	Custor
(Pn1xx-) Po	sition(Pn2xx-) Speed(Pn3xx-) Torqu	ie(Pn4xx-) Sequence(Pn5xx	-) I/O Sign Mecha	atrolink(Pn	Bxx-) Option(Pcxx-) d	iffer frc
No.	Name		Input value	Unit	Set value	Min	Ma
Pc00	Basic Safety function selection Swi	tch	0002H	-	-	-	-
Odigit	Safety Function A Selection		2: SBB-D	-	-	-	-
1 digit	Safety Function B Selection	0 : No fu	-	-	-	-	
2digit	Reserved (Do not use.)	0: Reser	-	-	-	-	
3digit	Reserved (Do not use.)	0: Reser	-	-	-	-	
Pc01	EDM Signal Output Select Switch	0011H	-	-	-	-	
Odigit	EDM Signal A Output Setting	1 : Durin	-	-	-	-	
1 digit	EDM Signal B Output Setting	1 : Durin	-	-	-	-	
2digit	Reserved (Do not use.)		0: Reser	-	-	-	-
3digit	Reserved (Do not use.)		0: Reser	-	-	-	-
Pc10	Wait time to decelerate A		0	10ms	0 ms	0	100
Pc11	Deceleration monitoring time A		500	10ms	5000 ms	0	100
Select All(Option(Pcxx-):include not displayed)				Safety Edit		🗸 Edit

The Safety Module Parameter list is displayed with a gray background, and **Safety Initialize** is unavailable. Safety Module parameters cannot be edited or initialized at this stage.

2. Click Safety Edit, and the Code box appears.

	×
Cancel	
	Cancel

3. Enter "0000" and click OK. The following window appears.

		User Level	2 : Level 2 (To the adju	stment.)	•				
	C	Control Mode	13 : All Control Mode		•		Comm	nent	Custon
(Pn1xx-) Pos	sition(Pn2xx-) Speed	d(Pn3xx-) To	rque(Pn4xx-) Sequence	(Pn5xx-) I/O	Sign Mecha	trolink(Pn	Bxx-) Option	(Poxx-)	liffer frc
No.	Name				Input value	Unit	Set value	Min	Ma
Pc00	Basic Safety funct	tion selection S	witch		0002H	-	-	-	-
Odigit	Safety Function	A Selection			2:SBB-D	-	-	-	-
1 digit	Safety Function	B Selection			0 : No fu	-	-	-	-
2digit	Reserved (Do not use.)				0:Reser	-	-	-	-
3digit	Reserved (Do not use.)				0:Reser	-	-	-	-
Pc01	EDM Signal Output Select Switch				0011H	-	-	-	-
Odigit	EDM Signal A Output Setting				1 : Durin	-	-	-	-
1 digit	EDM Signal B Ou	tput Setting			1 : Durin	-	-	-	-
2digit	Reserved (Do no	otuse.)			0 : Reser	-	-	-	-
3digit	Reserved (Do no	otuse.)			0 : Reser	-	-	-	-
Pc10	Wait time to decele	erate A			0	10ms	0 ms	0	100
Pc11	Deceleration monit	oring time A			500	10ms	5000 ms	0	100
4									Þ
Select All(Option(Pcxx-):include	not displayed)					Safety Edit		🖌 Edit
Initialize	Safety Initialize		ompare				Read		Write

The background of the Safety Module parameters list will change from gray to white. Safety Module parameters can now be edited. Also, **Safety Initialize** is now available.

Note: Some Safety Module parameters are still displayed with a gray background. These parameters cannot be edited.

4. Select a Safety Module parameter to be edited, and then click **Edit**. The attributes of the selected parameters can be edited in the **Edit** box.

Initialize

The SERVOPACK parameters (Pnxxx) can be returned to the factory settings with the Initialize function. Return to the initial settings using the following procedure. Note: The Safety Module parameters (Pcxx) will not be returned to their factory settings by clicking **Initialize**.

1. Click Initialize, and the Verification box appears.

Verification 🔀
Use caution when initializing parameters as some parameters may not match the target machine.
Clicking the OK button to initialize the Servopack settings.
OK Cancel

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

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

nitial	ize the Servopack	settings	Х
Click setti	-	n will initialize the Servopack	
	Initialize	Cancel	

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

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

Initialize				\times
	le itielizie e			
	Initializing			
_				
		<mark>4</mark> 9%	 	

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.

Safety Initialize

The Safety Module parameters (Pcxx) can be returned to the factory settings with the safety initialize function.

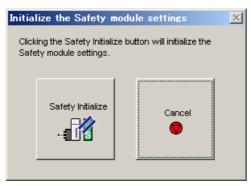
- 1. If **Safety Initialize** is unavailable, click **Safety Edit** and enter the code and change the settings so **Safety Initialize** can be used. For details, refer to *Safety Edit*.
- 2. Click Safety Initialize, and the Verification box appears.



Click **Cancel** to return to the Parameter Editing window without changing the Safety Module settings.

Note: SERVOPACK parameters (Pnxxx) will not be returned to their factory settings by clicking **Safety** Initialize.

3. Click **OK**, and the dialog box for initializing the Safety Module parameters appears.



Click **Cancel** to return to the Parameter Editing window without changing the Safety Module settings.

4. Click **Safety Initialize** to start initialization, and the percentage of the progress completed is shown.

Initialize		\times
l	nitializing	
	<mark>4</mark> 9%	

After the parameters are successfully initialized, the following box appears.

Paramet	er Editing
i)	Software reset function or the power supply re-turning on because the safety parameter was changed.
	ОК

5. 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, confirming if you want to compare all parameter settings.

Compare X
Clicking the OK button will start the comparison of all the currently edited parameters(including those not displayed) with those in the Servopack.
OK

Click **Cancel** to return to the Parameter Editing window without comparing the settings.

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

Comparing		X
0		
Comparing	: Pn121	(40/91)
	42	2%

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

1000 Speed Loop Gain 41 40 Hz 1106 2nd Position Loop Gain 41 40 1/s	Speed Loop Gain 41 40 2nd Position Loop Gain 41 40	lo.	Name	Value	Servop	Unit
106 2nd Position Loop Gain 41 40 1/s	2nd Position Loop Gain 41 40	1002	Function Selection Application Switc	0001H	0000H	-
· · · · · · · · · · · · · · · · · · ·		n100	Speed Loop Gain	41	40	Hz
1107 Bias 1 0 r/min	Bias 1 0 Image: Image of the state of the	n106	2nd Position Loop Gain	41	40	1/s
		n107	Bias	1	0	r/min
Image: state						
	1					

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 **All constant number** tab and select the **Select All (All constant number: include not displayed)** check box 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.

Reading from Servopack	×
Reading parameters from Servopack. Clicking the OK button will overwrite the current setting	IS.
OK	

Click Cancel to return to the Parameter Editing 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.

Note: Click the **All constant number** tab and select the **Select All (All constant number: include not displayed)** check box to select all the parameters to be saved, including those not currently displayed.

The procedures to use the Write function differ depending on whether or not you are using a Safety Module or a Devicenet Module.

When Not Using a Safety Module or a DeviceNet Module

1. Click **Write**. A Verification box listing the saved parameters will be displayed after they have been successfully saved.

Pn000	Function Selection Base Switch	
Pn001	Function Selection Application Switch 1	
Pn002	Function Selection Application Switch 2	
Pn004	Reserved Parameter	
Pn005	Reserved Parameter	
Pn10B	Gain-Related Application Switches	
Pn110	Online Autotuning-Related Switches	
Pn200	Position Control Reference Type Selection Swit	
Pn201	PG Divider Ratio	
Pn202	Electronic Gearing Ratio (numerator)	
Pn203	Electronic Gearing Ratio (denominator)	
Pn205	Multi-Turn Limit Setting	
Pn206	Reserved Parameter	

i	The following parameters are hidden para setting.	meters which	n do not match the Serv	ropack
No.	Name	Value	Servopack	
Pn202	Electronic Gearing Ratio (numerator)	5	4	
Pn203 Pn204	Electronic Gearing Ratio (denominator) Position Reference Accel/Decel Time	2	0	
Clicking the	OK button will overwrite the parameters.			

Note: Click **OK** to continue and overwrite the previous settings. Click **Cancel** to return to the Parameter Editing window without overwriting the parameters.

- 2. Click OK.
- 3. Restart the SERVOPACK to validate the new settings.

All steps are completed.

When Using a Safety Module

1. Click **Write**. A Verification box listing the saved parameters will be displayed after they have been successfully saved.

No.	Name	^
Pn000	Function Selection Base Switch	
Pn001	Function Selection Application Switch 1	
Pn002	Function Selection Application Switch 2	
Pn004	Reserved Parameter	
Pn005	Reserved Parameter	
Pn10B	Gain-Related Application Switches	
Pn110	Online Autotuning-Related Switches	
Pn200	Position Control Reference Type Selection Swit	
Pn201	PG Divider Ratio	
Pn202	Electronic Gearing Ratio (numerator)	
Pn203	Electronic Gearing Ratio (denominator)	
Pn205	Multi-Turn Limit Setting	
Pn206	Reserved Parameter	
		ОК



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.

0.	Name	Value	Servopack	
1202	Electronic Gearing Ratio (numerator)	5	4	
1203	Electronic Gearing Ratio (denominator)	2	1	
1204	Position Reference Accel/Decel Time	1	0	

Note: Click **OK** to continue and overwrite the previous settings. Click **Cancel** to return to the Parameter Editing window without overwriting the parameters.

2. Verify the values shown in the **Input** column, and select the check boxes of the parameters whose settings are confirmed to be correct.

No.	Name	Servo	Input	Unit	Check
PcO1	EDM Signal Output Select Switch	0011H	0010H	-	
Pc10	Wait time to decelerate A	0	5	10ms	
Pc11	Deceleration monitoring time A	500	505	10ms	
Pc12	The monitoring speed during deceleration waiting A	0	5	min-1	
Pc13	Monitoring position A	10	15	edge	
Pc14	Monitoring speed A during constant speed	0	5	min-1	
Pc20	Wait time to decelerate B	0	5	10ms	
Pc21	Deceleration monitoring time B	500	505	10ms	
Pc22	The monitoring speed during deceleration waiting B	0	5	min-1	
Pc23	Monitoring position B	10	15	edge	
Pc24	Monitoring speed B during constant speed	0	5	min-1	

When all the check boxes of the displayed parameters are selected, the **OK** button becomes available.

3. Click OK.



Click **Cancel** to return to the Safety Module Parameter Editing window without overwriting the parameters.

4. Verify the values in the **Servo** column and select the check boxes of the parameters whose settings are correct.

No.	Name	Servo	Input	Unit	Check
Pc01	EDM Signal Output Select Switch	0010H	0010H	-	
Pc10	Wait time to decelerate A	5	5	10ms	
Pc11	Deceleration monitoring time A	505	505	10ms	
Pc12	The monitoring speed during deceleration waiting A	5	5	min-1	
Pc13	Monitoring position A	15	15	edge	
Pc14	Monitoring speed A during constant speed	5	5	min-1	
Pc20	Vait time to decelerate B	5	5	10ms	
Pc21	Deceleration monitoring time B	505	505	10ms	
Pc22	The monitoring speed during deceleration waiting B	5	5	min-1	
Pc23	Monitoring position B	15	15	edge	
Pc24	Monitoring speed B during constant speed	5	5	min-1	



When all the check boxes are selected, the **OK** button becomes available.

 ${\bf Servo}:$ Shows the current settings for Safety Module parameters

Input: Shows the values set in the Parameter Editing window for the Safety Module.

5. Click OK.

INFO

If the power needs to be restarted to enable parameter settings, a Verification box listing the saved parameters will be displayed after they have been successfully saved.

No.	Name	
Pn000	Function Selection Base Switch	
Pn001	Function Selection Application Switch 1	
n002	Function Selection Application Switch 2	
2n004	Reserved Parameter	
n005	Reserved Parameter	
n108	Gain-Related Application Switches	
n110	Online Autotuning-Related Switches	
Pn200	Position Control Reference Type Selection Swit	
Pn201	PG Divider Ratio	
Pn202	Electronic Gearing Ratio (numerator)	
Pn203	Electronic Gearing Ratio (denominator)	
Pn205	Multi-Turn Limit Setting	
Pn206	Reserved Parameter	
		C CK

Click OK.

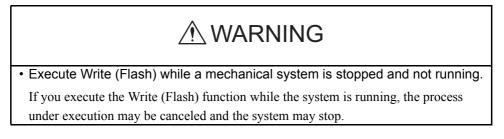
When the Safety Module parameters (Pcxx) are displayed, proceed to step 6. When only the SERVOPACK parameters (Pnxxx) are displayed, proceed to step 7.

6. Click OK.

Paramet	er Editing
(į)	Software reset function or the power supply re-turning on because the safety parameter was changed.
	ОК

7. Restart the SERVOPACK to validate the new settings. All steps are completed.

When Using a DeviceNet Module



1. Click **Write**. A caution message will be displayed reminding you of the order of operations and asking if you want to continue.

Set Parameters
To save the DeviceNet Module parameters, execute Write, and then execute Write (Flash). If Write (Flash) is not used, the setting will be cleared when the power is turned off.
ОК

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

Inction Selection Base Switch Inction Selection Application Switch 1 Inction Selection Application Switch 2 Served Parameter	
nction Selection Application Switch 2	
served Parameter	
eserved Parameter	
ain-Related Application Switches	
nline Autotuning-Related Switches	
sition Control Reference Type Selection Swit	
∋ Divider Ratio	
ectronic Gearing Ratio (numerator)	
ectronic Gearing Ratio (denominator)	
ulti-Turn Limit Setting	
eserved Parameter	
	an-Related Application Switches nline Autotuning-Related Switches sition Control Reference Type Selection Swit 3 Divider Ratio ectronic Gearing Ratio (numerator) ectronic Gearing Ratio (denominator) ulti-Turn Limit Setting sserved Parameter

of

٩	The following parameters are hidden para setting.	meters whic	h do not match the
No.	Name	Value	Servopack
Pn202	Electronic Gearing Ratio (numerator)	5	4
Pn203 Pn204	Electronic Gearing Ratio (denominator) Position Reference Accel/Decel Time	2	1
	OK button will overwrite the parameters.		

Note: Click **OK** to continue and overwrite the previous settings. Click **Cancel** to return to the Parameter Editing window without overwriting the parameters.

3. Click OK.



5.

When the DeviceNet Module parameters are displayed, proceed to step 4. When only the SERVOPACK parameters are displayed, proceed to step 6.

4. Click **Write (Flash)** in the Parameter Editing window. A caution message asking if you want to continue will be displayed.

	UTION	
DeviceNet	: Module parameters will be	e saved.
SERVOPA executed,	CK if they are changed to	with the servomotor and the servo off status. When Write (Flash) e servomotor and the SERVOPACK ar tatus.
Do you w	ant to continue?	
	ОК	Cancel

- [INFO] Click Cancel to return to the previous window without using the Write (Flash) function.
- 6. Restart the SERVOPACK to validate the new settings. All steps are completed.

(Save) Button

Click the 🔲 button, and then select the storage location for the parameter file displayed in the Parameter Editing window.

Save As			? ×
Save in: 🔂	YE_Applications	- 🗧 🗧	• 🎟 •
🗋 Manual			
200704231	153437.usr		
I			
File name:	20070423154230		Save
Save as type:	Parameter file(*.usr)	•	Cancel
Product Info:	SORV-IRSAELA		
Comment:			

Save As Dialog Box

Up to 255 characters can be typed as a comment.

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

Save

Click **Save** to store the file name designating the current parameter settings. When parameters are set in the **Customize** tab, they are also saved. Click **Cancel** to return to the Parameter Editing window 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 ask if you want to replace the existing file.

Save As		×
⚠	A:\200406032 Do you want t	235748.usr already exists. to replace it?
	Yes	No

Click **Yes** to overwrite the already existing file. Click **No** to return to the Parameter Editing window.

(Print) Button

The data on the Parameter Editing window can be printed.

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

Printing Item Setting	Printing Item Setting
Cover	Cover
Attaching the Cover Editing	Attaching the Cover Cover Editing
Where to Submit Where to Submit (No.1) Submit (No.2) Submit (No.3)	Where to Submit Where to Submit (No.1) C Where to Submit (No.2) C Submit (No.3)
tem Name Settinα Value	Item Name Setting Value
Title SigmaWin 200	Title SigmaWin 200
Company Name Yaskawa	Company Name Yaskawa
Department Name MCKJ	Department Name MCKJ
Name Tarou Yaskawa	Name Tarou Yaskawa
Data for each function Parameters Header & Footer Printing items Header Info Image: Title Parameters Image: Title Paramet	Data for each function Parameters Parameters Header & Footer Printing Items Constant Number Relation of Users Image: Switches Info Image: Switches Info Others Image: Comments Color Selection Image: Black and White
OK Cancel	OK Cancel



Printing Items Tab

Printing Item Setting Box

Cover

Select Attaching the Cover, and the click Cover Editing. For details, see Chapter 3 SigmaWin+ Σ -V Component Main Window.

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						
🖬 🖨 <u>P</u> rint Q. Q. 🎫 💌	🛛 🕼 🕼 1/12 🔰 🔶 Ber	k. ➡ Forward Editing of the	Printing Items			
ontents Parameters List Comments	Parameters 1800-1904 Automatical Automatical	KII		Printing Date File Name : 2007	: April 23, 2007 04231 53437.usr	
	No.	Name	Setting Value	Unit	Default Setting	
	P n000 Basic Function Selec		0000H -		0000H	
	digit 0 Direction	Folgation				
	-	/ as forward direction.				
	digit 1 Control M					
	-	ntrol (analog reference)				
	digit 2 Reserved	(Do not change.)				
	0 Reserved	(Do not change.)				
	-	(Do not change.)				
	0 Reserved	(Do not change.)				
	P n001 Basic Function Selec	t Switch 1	0000H -		0000H	
	digit 0 Servo OF	For Alarm G1 Stop Mode				
	0 Stops the	motor by applying DB (dynam	ic brake).			
		I (OT) Stop Mode				
		ting as Pn001.0 (Stops the mot	or by applying DB o	r by coasting).		
		wer Input Selection able to DC power input: Input A	C notenn at make the	ough 11 13 Cond	1.2) terminala	
		Code Output Selection	Re power suppry thi	ouginer, ez (, anu	C J) terminais.	
		.02, and ALO3 output only alar	rm codes.			
	P n002 Basic Function Selec	- C	0000H -		0000H	
	Phuu2 Basic Function Selec	t Switch 2	0000H -		0000H	
		ntrol Option (T-REF Terminal	Allocation)			
	0 None					
		ntrol Option (V-REF Terminal	Allocation)			
	0 None digit 2 Absolute					

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+ Σ -V component main window, click **Parameters** and then click **Edit Parameters**.



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>

The operation is the same as when the 🗾 button is clicked. See 🗾 (Open)	
Button.	

<When Select New SERVOPACK is Selected>

The operation is the same as when the 🔲 button is clicked. See 🔲 (New) Button.

eck boxes		Saves parameter data		g winde	OW.				
	🚾 Farameter Editi	ng : Kaany-ne maak							
		Display Mode User Level 2:	Level 2 (To th	e adjustme	ent.)	•	Display Se	etting) Import
		Control Mode 13	: All types of a	ontrols		-	🚺 Com	ment Cu:	stomize
	All constant numbe	Function Selection(Pn0xx-) Gain(Pn1 Name	· ·	(Pn2xx-) Unit	Speed(Pn3xx-)	Torque(Pn4×	x-) Sequence	e(Pn5xx-) I/O :	Sigr 🔸
	Pn000	Basic Function Select Switch 0	0000H	-	Set Value	19111	max	0000H	
	Odigit	Direction Selection	0 : Sets	-	-		-	-	1-1
	1 digit	Control Method Selection	0 : Spee			-	-	-	-
	2digit	Reserved (Do not change.)	0 : Reser		-	_	_	-	
	3diqit	Reserved (Do not change.)	0:Reser		-	-	-	-	
	Pn001	Basic Function Select Switch 1	0000H	-	-	-	-	0000H	
	Odigit	Servo OFF or Alarm G1 Stop Mode	0 : Stops	-	-	-	-	-	
	1 digit	Overtravel (OT) Stop Mode	0 : Same		-	-	-	-	
	2digit	AC/DC Power Input Selection	0 : Not a	-	-	-	-	-	<u> </u>
	3digit	Warning Code Output Selection	0: ALO1	-	-	-	-	-	
	Pn002	Basic Function Select Switch 2	0000H	-	-	-	-	0000H	
	Odigit	Speed Control Option (T-REF Termin	0 : None	-	-	-	-	-	
	1 digit	Torque Control Option (V-REF Termi	0 : None	-	-	-	-	-	
	2digit	Absolute Encoder Usage	0 : Uses	-	-	-	-	-	
	3digit	External Encoder Usage	0 : Do no	-	-	-	-	-	
	Pn006	Application Function Select Switch 6	0002H	-	-	-	-	0002H	•
	Select All(A	All constant number:include not displayed)						Z	Edit

Selects all parameters on the displayed tab.

Parameter Editing Window (Offline Mode)

(New) Button

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

1. Click the 🔲 button, and the Editing Parameters - Model Selection box appears.

Motor type	ameters - Model Sele]	
Servoj	pack: **** -	*** * ****	
		T	
Servopack m	iodel	Current	[Max. applicable motor capacity]
	1A(Analog/pulse-train inp 1A(MECHATROLINK type		
	ecial Spec.		
(Use the dig number.)	ervopack version number jital operator to find out th Special Spec. number.	e version	known check box to set the version to the latest.
		Safety card	Feedback card
	Reference card		
Model:	Interence card	wn Lakn	
Option Card Model: Ver: Special Spec.:		vn Luknc	

2. Select the motor type, SERVOPACK model, current [max. applicable motor capacity], and special specification numbers from the lists, and enter the version number of the SERVOPACK.

The option modules that can be mounted on the selected SERVOPACK are displayed in the **Option Card Model** field.

Select the model, version number, and special specification number of each option module.

Editing Par	ameters - Model Selection			
Motor type	Rotary 💌			
Servo	oack: <u>SGDV</u> - R90) * 01A		
			٦	
Servopack m	odel		Current (Max. ap	plicable motor capacity]
	IA(Analog/pulse-train input type			AC200V) [50W]
SGDV-***1	I A(MECHATROLINK type rotary	motor)		AC200V) [100W]
			2R8 (2.8Arms, /	AC200V) [400VV]
				AC200V) [500W]
-Version/Sp	ecial Spec.			
	rvopack version number. ital operator to find out the vers	0000 ion	-	Note: Select the Unknown check box to set the version to the latest.
Select the S	pecial Spec. number.	Standard	•	
	Reference card	Safety card		Feedback card
Option Card		Unmounted (I	No match)	Unmounted (No match)
Vlodel:				SGDV-OFA01A(Fully-closed in
		_		
/er:	Unknown	Г	Unknown	0000 🔲 Unknown
Special Spec.:]]	~	Standard
		ок	Cancel	

3. Click **OK**. The set data will be imported, and the Parameter Editing window will appear.

Option modules
The following three option modules are available.
Reference option module
Safety option module
Feedback option module

(Open) Button

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

1. Click the 🖻 button, and the Open box will appear.

Open		? ×
Look in: 🔁	YE_Applications 💽 🗲 🔁	-11 🎦
🗋 Manual		
200704231	53437.usr	
File name:	20070423153437.usr	Open
Files of type:	Parameter file(*.usr)	Cancel
Product Info:	300%-9/8A21A	
	Customization information is used.	
Comment:		

- 2. Select the parameter file to be imported, and click **Open**.
- 3. When **Customization information is used.** check box is selected, the parameters set on the **Customize** tab in the Parameter Editing window are also imported. (See "Customize" for details.) The check box cannot be selected when the file has no parameter on the **Customize** tab.

The other operations are the same as those for parameter editing when online. See "Parameter Editing when Online."

4.1.2 Editing Parameters Online

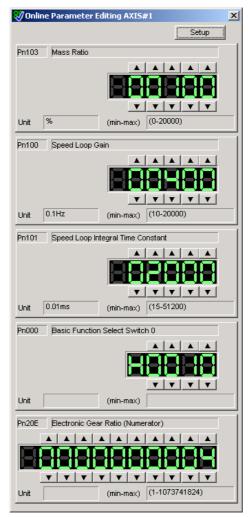
Parameters can be viewed or edited in the Online Parameter Editing window.



- Values edited in the Online Parameter Editing box are also immediately changed in the SERVOPACK.
- If the power to the SERVOPACK is turned off or the communication between the SERVOPACK and the SigmaWin+ is interrupted while editing parameters online, the edited values will not be saved in the SERVOPACK.
- Safety Module parameters (Pcxx) cannot be set or edited in the Online Parameter Editing box.

Edit parameters online using the following procedure.

 In the SigmaWin+ Σ-V 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

 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.

Parameter Select pa Dialog.	r s arameters to be displayed in the Online P	arameter Editor	
No.	Name	Unit	[
Pn103	Mass Ratio	%	SetDel_
Pn100	Speed Loop Gain	0.1Hz	SetDel_
Pn101	Speed Loop Integral Time Constant	0.01ms	_SetDel_
Pn000	Basic Function Select Switch 0	-	SetDel
Pn20E	Electronic Gear Ratio (Numerator)	-	SetDel_
1		•	
		ок	Cancel
			Ganoor

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

aran	neters list				×
	Select a p (Select the	arameter. e currently highlighted parameter)			
	No.	Name	Unit		
	Pn408	Force-Related Function Switches	-		
	Pn409	1st Notch Filter Frequency	Hz		
	Pn40A	1st Notch Filter Q Value	0.01		
	Pn40B	1st Notch Filter Depth	0.001		
	Pn40C	2nd Notch Filter Frequency	Hz		
	Pn40D	2nd Notch Filter Q Value	0.01		
	Pn40E	2nd Notch Filter Depth	0.001		
	Pn40F	2nd Step 2nd Force Reference Filter	Hz		
	Pn410	2nd Step 2nd Force Reference Filter	0.01		
	Pņ412	1st Step 2nd Force Reference Filter	0.01ms	<u> </u>	
	•		•		
		ок	Cancel		

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

Ρ

No.	Name	Unit	_
		_	CSetCil D
Pn409	1st Notch Filter Frequency	Hz	Set D
Pn100	Speed Loop Gain	0.1Hz	
Pn101	Speed Loop Integral Time Constant	0.01ms	SetD
Pn000	Basic Function Select Switch 0	-	SetD
Pn20E	Electronic Gear Ratio (Numerator)	-	SetD
			111

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

et Paramete Select pa Dialog.	r s arameters to be displayed in the Online Pe	arameter Editor	X	
No.	Name	Unit	1	
Pn409	1st Notch Filter Frequency	Hz	_SetDel	
Pn40B	1st Notch Filter Depth	0.001	Del	
Pn101	Speed Loop Integral Time Constant	0.01ms	SetDel	
Pn000	Basic Function Select Switch 0	-	_Set_Del_	
Pn20E	Electronic Gear Ratio (Numerator)	-	_Set_Del_	
•		•		Deletes the parameter
		ок	Cancel	displayed at left.

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

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

😻 Online Param	neter Editing AXIS#1	×
	Se	tup
Pn409 1st Not	ch Filter Frequency	
Unit Hz	(min-max) (50-5000)	
Pn40B 1st Not	ch Filter Depth	
Linit 0.001		
Unit 0.001	(min-max) (0-1000)	
Pn101 Speed	Loop Integral Time Constant	
Unit 0.01ms	▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲	
Pn000 Basic F	Function Select Switch 0	
	(niin-max)	
Pn20E Electro	nic Gear Ratio (Numerator)	
Unit	(min-max) (1-1073741824	

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.

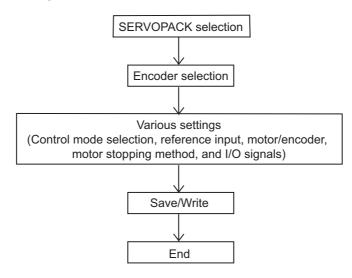
4.1.3 Setup Wizard

Setup Wizard is a function which carries out the setting of parameters using a dialog method. By following instructions on the screen to select the control mode and the I/O settings, those settings which are necessary for an operation are automatically completed.

Setup Wizard has the following features.

- Parameters can be set easily and quickly, even if you are using the SERVOPACK for the first time.
- It is possible to calculate the electronic gears automatically using the mechanical characteristics and the desired reference units (for position control).
- It is possible to select the I/O assignments while visually confirming them.

The following flowchart shows how Setup Wizard guides you through each step of parameter setting.



While Setup Wizard is open, the current settings and recommended procedures are displayed in the flowchart on the left side of the window.

Example

Servopack Selection Soft-****01A (200//) Image: Selection Encoder Selection Encoder Selection Fully-closed encoder : Do not use Speed control (analog reference) Image: Selection Time : 0 [ms] Speed Reference Input Setting Speed Reference Input Setting Speed Reference Input Setting Soft Start Acceleration Time : 0 [ms] Soft Start Deceleration Time : 0 [ms] Soft Start Deceleration Time : 0 [ms] Soft Start Deceleration Time : 0 [ms] Servo OFF, 61 atam: : Stops the motor by setting Servo OFF, 61 atam: : Stops the motor by setting Servo Setting : Use the standard atlocat Output spinal setting : Use Standard atlocat Output spinal setting : Use Standard atlocat Output s	SGDV-***01A (200/v)	(?
Image: Selection Encoder Selection: C 17-bit incremental Fully-closed encoder: Do not use Control Mode Selection Speed control (analog reference) Image: Speed control (analog reference) Image: Speed control (analog reference) Image: Speed Reference Input Setting Speed Reference Input Coin: S00 (D 10/Watt); ' Soft Start Acceleration Time: 0 (ms) Soft Start Acceleration Time: 0 (ms) Output putses: 2048 (P/Rev) Absolute Encoder Usage: Uses absolute enrol (analog reference) Image: Stops the motor by agring as Pholo 10 (Stops Governave): Song setting as Pholo 10 (Stops		
Encoder Selection : C 17-bit incremental Fully-closed encoder : D ond use		
Control Mode Selection Speed control (analog reference) Reference Input Setting Speed Reference Input Gain: 600 [0.01 V/rat Speed Coincidence Signal Detecting Width :: Soft Start Acceleration Time : 0 [ms] Soft Start Deceleration Time : 0 [ms] Mode which controls speed by input of reference analog voltage. Mode which controls speed by input of reference analog voltage. Mode which controls speed by input of reference analog voltage. Mode which controls speed by input of reference analog voltage. Mode which controls speed by input of reference analog voltage. Mode which controls speed by input of reference analog voltage. Mode which controls speed by input of reference analog voltage. Mode which controls speed by input of reference analog voltage. Mode which controls speed by input of reference analog voltage. Mode which controls speed by input of reference analog voltage. Mode which controls speed by input of reference analog voltage. Mode which controls speed by input of reference analog voltage. Mode which controls speed by input of reference analog voltage. Mode which controls speed by input of reference analog voltage. Mode which controls speed by input of reference analog voltage. Mode which controls speed by input of reference analog voltage. Mode which controls speed by input of reference analog voltage. Mode which controls speed by input of reference analog voltage. Mode which controls speed by input of reference analog voltage. Mode which controls speed by input of reference analog voltage. Mode which controls speed by input of reference input speed by input of reference analog voltage. Mode which controls speed by input of reference analog voltage. Mode which controls speed by input of reference analog voltage. Mode which controls speed by input of reference analog voltage. Mode which controls speed by input of reference analog voltage. Mode which controls speed by input of reference analog voltage. Mode which context speed by input of reference analog voltage. Mode which		
Speed control (analog reference) Implementation of the setting Speed Reference Input Setting Speed Reference Input Setting Speed Concidence Signal Detecting Width :: Soft Start Acceleration Time : 0 [ms] Servo OFF, Of 1 alarm : Stops the motor by actions Soft Start Acceleration Time : 0 [ms] But Signal Setting Input signal setting : Use the standard allocat Output signal setting : Use the standard allocat Output signal setting : Use the standard allocat	Speed control (analog reference)	
Speed control (analog reference)		
Speed Reference Input Gain : 600 [0.01 V/ret Speed Coincidence Signal Detecting Width : Soft Start Acceleration Time : 0 [ms] Motor Encoder Setting Output pulses : 2048 [P/Rev] Absolute Encoder Usage : Uses absolute en Rotation (movement) direction setting : Stand Motor Stop Method Selection Servo OFF, G1 alarn : Stops the motor by ar Overtravel : Same setting as PNO01.0 (Stops G2 alarn : Stops the motor by setting the spe UpU Signal Setting Input signal setting : Use the standard allocat Output signal setting : Use the standard allocat	Speed control (analog reference)	
Speed Coincidence Signal Detecting Width : Soft Start Acceleration Time : 0 [ms] Soft Start Deceleration Time : 0 [ms] Culput pulses : 2048 [P.Rev] Absolute Encoder Usage : Uses absolute en Rotation (movement) direction setting : Stand Motor Stop Method Selection Servo OFF, 61 alam : Stops the motor by ag Overtravel : Stops the motor by setting the spe Servo OFF, 61 alam : Stops the motor by setting the spe Servo OFF, 61 alam : Stops the motor by ag Doubrit signal setting : Use the standard allocat output signal setting : Use the standard	Reference Input Setting	
Soft Start Deceleration Time : 0 (ms) Cuput pulses : 2048 (PRev) Absolute Encoder Usage : Uses absolute en Rotation (movement) direction setting : Stand Cuput signal Setting : Use the standard allocat	Speed Coincidence Signal Detecting Width : 1	
Output puises : 2048 [P/Rev] Absolute Encoder Usage : Uses absolute en Rotation (movement) direction setting : Stand Image: Motor Stop Method Selection Servo OFF, [c1 alarm : Stops the motor by ar Overtravel : Same setting as Pn001.0 (Stops G2 alarm : Stops the motor by setting the spe Image: Uo Signal Setting Input signal setting : Use the standard allocat Output signal setting : Use the standard allocat		
Absolute Encoder Usage : Uses absolute en Rotation (movement) direction setting : Stand Motor Stop Method Selection Servo OFF, G1 alarm : Stops the motor by ac Overtravel : Same setting as Pn001 0 (Stops G2 alarm : Stops the motor by setting the spe MUO Signal Setting I/O Signal Setting I/O Signal setting : Use the standard allocat Output signal setting : Use the standard allocat	an Motor Encoder Setting	
Servo OFF, G1 alarm : Stops the motor by ar Overtravel : Same setting as Pn001.0 (Stops G2 alarm : Stops the motor by setting the spe	Absolute Encoder Usage : Uses absolute en	
Overtravel : Same setting as Pn001.0 (Stops G2 alarm : Stops the motor by setting the spe Imput Signal Setting Input signal setting : Use the standard allocat Output signal setting : Use the standard allocat	And the selection And the sele	
G2 alarm : Stops the motor by setting the spe		
Input signal setting : Use the standard allocat Output signal setting : Use the standard allocat	G2 alarm : Stops the motor by setting the spe	
Output signal setting : Use the standard alloc	🖓 I/O Signal Setting	
Apply Cancel		
	Apply Apply	Cancel
		Close

The above display shows that the control mode is being selected.

Start Setup Wizard with the following procedure.



The wizard pages displayed on screen will vary in accordance with the selected SERVOPACK specifications. The wizard pages shown here are only one example.

In the SigmaWin+ Σ -V component main window, click **Parameters** and then click **Set Up Wizard**. The Setup Wizard window will appear.

Servopack Selection	Setting Items
C Encoder Selection	Servopack Selection / C Encoder Selection Servopack and motor selection: Continn your motor model and Servopack model. In Online mode (when the Servopack is connected), the models are automatically displayed. In Offline mode (when the Servopack is disconnected), the model numbers must be set manually.
Control Mode Selection	Control Mode Selection Control Mode Selection: Select a control mode such as Speed Control that uses analog voltage reference and Position Control that uses pulse-train reference.
Reference Input Setting	Reference Input Setting Set the reference input specifications and other items in accordance with the connected machine and host controller.
Motor Encoder Setting	The Motor Encoder Setting Configure the settings for the motor and encoder you use, such as encoder type, encoder output from the Servopack (encoder dividing pulse).
Motor Stop Method Selection	Motor Stop Method Selection Set the motor stop method and whether or not to use brake at occurrence of alarm when the servo is off (motor power is off) or the when the overtravel limit is used (movable machine parts exceed the allowable range of motion and turn ON a limit switch).
🖏 I/O Signal Setting	I/O Signal Setting The I/O signal allocations for specified terminal numbers of the CN-1 connector can be changed from the standard allocation. I/O signal forced input and output are provided to check the wiring.
T Save/White	di Gheck the allocated signals, and save the parameters in a file.

Setup Wizard Window - First Wizard Page

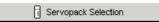
SERVOPACK selection/Encoder selection (servomotor selection):

Select these items first. When offline, first select the SERVOPACK, and then select the encoder. (When online, information on the connected SERVOPACK and encoder will be automatically set.)

Setting items other than the above:

There is no required setting order. If not set, the set value (default value when offline) of the SERVOPACK will be automatically set.

SERVOPACK Selection (only when offline)



1. Click **Servopack Selection** in the flowchart. The Servopack Selection wizard page will appear on the right.

00170	back: **** - ***	* ****		
		-	_	
Servopack m	odel		Current [Max. appli	cable motor capacity]
	1 A(Analog/pulse-train input type i 1 A(MECHATROLINK interface roti			
_ _ Version/Sp	ecial Spec.			
Entoy the Cr				
	ervopack version number. jital operator to find out the versio	n	ch	te: Select the Unknown eck box to set the version t latest.
(Use the dig number.)			ch	eck box to set the version t
(Use the dig number.) Select the S	ital operator to find out the version	Safety card	ch the	eck box to set the version t
(Use the dig number.) Select the S	ital operator to find out the versio		ch the	eck box to set the version t ⊧latest.
(Use the dig number.)	ital operator to find out the versio	Safety card	ch the	eck box to set the version t ⊧latest.

2. Select the motor type, SERVOPACK model, current [max. applicable motor capacity], and special specification numbers from the lists, and enter the version number of SERVOPACK.

The option modules that can be mounted on the selected SERVOPACK are displayed in the **Option Card Model** field.

- 3. Select the model, version number, and special specification number of each option module.
- 4. Click **Apply**. The display will return to the first wizard page and the set data will be written in the flowchart.



Option modules

The following three option modules are available.

- · Reference option module
- Safety option module
- · Feedback option module

Encoder Selection (When a rotary motor is selected)

Click **Encoder Selection** in the flowchart. The Encoder Selection wizard page will appear on the right.

Serial Encoder Specifications 1 3-bit incremental 1 6-bit incremental 17-bit incremental 17-bit incremental 16-bit absolute 17-bit absolute 17-bit absolute I17-bit absolute I17-bit absolute Inknown/No match IIIy-closed encoder Use	Serial Encoder Settin Resolution Encoder Type	ng bit	3
Serial converter unit	Resolution Encoder Type	bit	Y

Serial Encoder Specifications/Serial Encoder Setting

When online: Displayed only when no motor is connected. Not displayed when a motor is connected.

When offline: Always displayed.

Fully-closed encoder

When online: Displayed only when no fully-closed encoder is connected. Only the "Use" check box is displayed when a fully-closed encoder is connected.

- When offline: Displayed only when the SERVOPACK selected on the SERVOPACK selection wizard page supports fully-closed control.
- 1. Select the serial encoder specifications from the list. When using a special or new serial encoder that is not included in the list, select **Unknown/No match** and then enter the resolution and select the encoder type in the **Serial Encoder Setting** field.
- When using fully-closed control, set the fully-closed encoder to be used. This setting is valid only when the Use check box is selected. Select the serial converter unit from the list. When using a special or new serial converter unit that is not included in the list, select Unknown/No match and then enter the resolution and select the encoder type in the boxes on the right.

Encoder Selection (When a linear motor is selected)

e Encoder Selection

Click **Encoder Selection** in the flowchart. The Encoder Selection wizard page will appear on the right.

8-bit multiplier incremental Unknown/No match	Scale pitch divisions Encoder Type	bit	_1
		,	
Enter Linear Scale Pitch.			
Linear Scale Pitch	2000 [0.01 um]		
Pn	282 : Linear Scale Pitch	pitch	
	(1-6553600)		

Serial converter unit

When online: Not displayed when a linear motor is connected. Displayed only when no linear motor is connected.

When offline: Always displayed.

- 1. Select the serial converter unit from the list. When using a special or new serial converter unit that is not included in the list, select **Unknown/No match**, enter the number of scale pitch divisions, and select the encoder type in the boxes on the right.
- 2. Enter the linear scale pitch.
- 3. Click **Apply.** The display will return to the first wizard page and the set data will be written in the flowchart.

Control Mode Selection

🔼 Control Mode Selection

Click **Control Mode Selection** in the flowchart. The Control Mode Selection wizard page will appear on the right.

Control Mode Selection		
Select the control mode you wish to use.		
Speed control (analog reference)	•	
Mode which controls speed by input of reference and	alog voltage.	
	Apply	Cancel

Select the control mode from the list, and then click **Apply**. The display will return to the first wizard page and the set data will be written in the flowchart.

Reference Input Setting

吸 Reference Input Setting

Click Reference Input Setting in the flowchart.

The wizard page for reference input setting will vary according to the selected control mode:

- For speed control
- · For position control
- For torque (force) control
- For internal set speed control
- · For zero clamp



When a control mode that includes more than one control is selected, a reference input setting for each control is required.

Control mode: Speed control

The Reference Input Setting - Speed Control wizard page appears.

	ence Input Setting Speed Control	3 -			0
Set the speed to by reference inp Calculate ▼ 600 Pn300: Speed R (150 - 3	3000 [0.01V/rated species of the s	nd 600 has been se	Motor Selection Rated speed Referenc Speed	SOMAS 3000 [mi slope Reference Votage(V)	is
Speed Coincide	Pn503 : Spee	etecting Width. 10 [min- ed Coincidence Sign ectina Width 0 - 100)		ed to the second	nce speed
		<	Back Nex	d >	Cancel

Motor Selection Rated Speed

When online: The rated speed of the connected motor is automatically set.

When offline: Select the motor model to be used from the **Motor Selection** list.

When **Unknown/No match** is selected from the list, enter the motor rated speed in the **Rated speed** box.

- 1. Set the ratio between the reference voltage and the speed reference by entering the values. When offline, select the motor model from the **Motor Selection** list. Enter the rated speed if **Unknown/No match** is selected from the list.
- 2. Click **Calculate**. The speed reference input gain will be automatically calculated and set according to the set ratio between the reference voltage [V] and the speed reference [min⁻¹].
- 3. Enter the speed coincidence signal detecting width and then click **Next** to continue setting.

	ence Input Setting - Speed Control	
Enter Soft start ti	ûne.	
Soft Start Acce	eleration Time [ms]	
Soft Start Dece	eleration Time 0 [ms]	
	Pn305 : Soft Start Acceleration Time Pn306 : Soft Start Deceleration Time	
	(0-10000) (0-10000)	
	Maximum speed of Servomotor	_
Before soft start ——	After soft start	

4. Enter the soft start acceleration time and soft start deceleration time and then click **Apply**. The display will return to the first wizard page and the set data will be written in the flowchart.



If Control mode settings for all the selected controls are not completed Next will be displayed instead of Apply. Click Next to display the wizard page for the unset control. Make the required setting on the displayed wizard page.

Control mode: Position control

The Reference Input Setting - Position Control wizard page will appear.

Pulse train having a containation of both forward rotation and reverse rotation: hputs a pulse train info SIGN. C OV + COW C OV + COW Forward rotation: hputs a pulse train info SIGN. Reverse rotation: hputs a pulse train info SIGN. Reverse rotation: hputs a pulse train info SIGN. C OV + COW Forward rotation: hputs a pulse train info SIGN. Pulse	G Sign + Pulse	Forward Reference	Reverse Reference
Forward rotation: Inputs a pulse train ins SIGN. SIGN SIGN SIGN COV)	Pulse train having a combination of both forward rotation and reverse rotation references.		
Forward rotation: Inputs a pulse train ins SIGN. SIGN SIGN SIGN COV)	C CW+CCW		
Into PULS. C phase A + phase B PuLs frain having a 90 degree phase difference.	Forward rotation: Inputs a pulse train into SIGN. Reverse rotation: Inputs a pulse train		SIGN -L"
(Press 6 + press 9 (1) (2	into PULS.		
	Pulse train having a 90 degree phase		
	Pn200: Position Control Reference For	n Selection Switch	

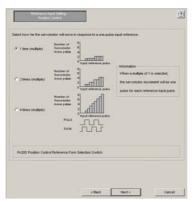
Select the pulse form of the SERVOPACK, and then click Next.
 One of the following three windows will appear, depending on the selected pulse form.

	on logic type Forward rotation Reverse rotation
F Postve logic	
Magetive logic	
h200 Pusition Control Re	eterence Form Selection Switch

	正転征方向P目中	进程使活用印刷电	
IF EINT			
C RAIE			
Ph200 (0 2 1	国指令影響選択スイッチ		

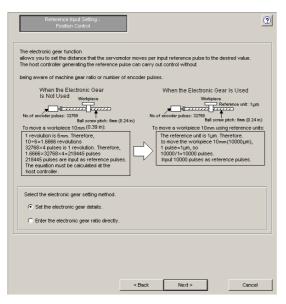
When Sign + Pulse is selected

When CW+CCW is selected

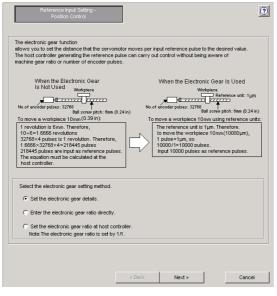


When phase A + phase B is selected

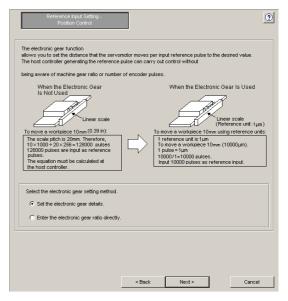
2. Select the logic type or the motor movement amount per pulse input reference, and then click **Next**.



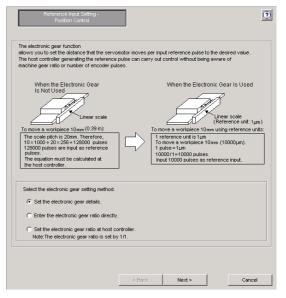
Rotary Motor/Analog Voltage and Pulse Train Reference Type SERVOPACK



Rotary Motor/MECHATROLINK-II Reference Type SERVOPACK



Linear Motor/Analog Voltage and Pulse Train Reference Type SERVOPACK



Linear Motor/MECHATROLINK-II Reference Type SERVOPACK

3. Select the electronic gear function setting method, and then click Next.

<When the Enter the electronic gear ratio directly. option is selected>

The following wizard page will appear.

Enter Electronic gea Electronic Gear Rati Pn20E : Electronic (Numerate (1 - 1073741 Enter Positioning Complete	o = 4 Gear Ratio Pn210 : Elect r) (Denc 824) (1 - 10: ompleted Width.	Pn20E Pn210 ronic Gear Ratio minator) 73741824)	Information Electronic gear ratio setting range: 0.001 <= Electronic gear ratio <= 1000 If the setting is out of the above range parameter setting error (A.040) will be output, and the Servopack will not ope correctly.
Pn20E : Electronic (Numerato (1 - 1073741 Enter Positioning Co	Gear Ratio Pn210 : Elect r) (Denn 824) (1 - 10) ompleted Width.	ronic Gear Ratio ominator) 73741824)	If the setting is out of the above range parameter setting error (A.040) will be output, and the Servopack will not ope correctly.
(Numerato (1 - 1073741 Enter Positioning Co	vr) (Deno 824) (1 - 10) ompleted Width.	ominator) 73741824)	parameter setting error (A.040) will be output, and the Servopack will not ope correctly.
Enter Positioning Co	ompleted Width.		Reference Motor s
	Pn522 : Positioning Com		Error pulse
		< Back	Apply Car

Enter the electronic gear ratio and positioning completed width, and then click **Apply**. The display will return to the first wizard page and the set data will be written in the flowchart.

• When using a fully-closed encoder

Reference Input Setting - Position Control			2	
Enter Electronic gear ratio. Electronic Gear Ratio = 4 Pn 1 Pn Pn20E : Electronic Gear Ratio Pn210 : Electronic (Numerator) (Denomina (1 - 1073741824) (1 - 1073741	- 1210 : Gear Ratio ator)	Information — Electronic gear ratio sett 0.001 <= Electronic gear If the setting is out of the parameter setting error (output, and the Servopa correctly.	ratio <= 1000 e above range, the (A.040) will be	
Enter Number of sine wave pitches (cycles) per motor rotation. Number of sine wave pitches (cycles) 32768 [Pitch/Rev] per motor rotation Pn20A : Number of External Encoder Pitch (4 - 1048576) pitch				
Enter Positioning Completed Width. Positioning Completed Width Positioning Completed Width Pn522 : Positioning Completed Width (0 - 1073741824)				
	< Back	Apply	Cancel	

Enter the electronic gear ratio, number of sine wave pitches per motor rotation, and positioning completed width, and then click **Apply**. The display will return to the first wizard page and the set data will be written in the flowchart.



If Control mode settings for all the selected controls are not completed
 Next will be displayed instead of Apply. Click Next to display the wizard page for the unset control. Make the required setting on the displayed wizard page.

<When the Set the electronic gear details. option is selected>

One of the following wizard pages will appear.

Reference Input Setting - Position Control		0	Reference input Setting - Position Control	?
Select the mechanical structure of the electroni Ball screw	e gear. FEE En E		Select ether of the following display units. Click the Change button to chanae the value.	
Calculates the electronic gear ratio from the ball screw pich, gear ratio, reference unit and resolution.	Bett and Pulley Rack and Philon Rol feed Other		Electronic Gear Ratio = 256 pn20E Linear scale pitch P 200 pn210 200 um Pn20E Electronic Gear Ratio (Numerator) Pn210: Electronic Gear Ratio (Denominator)	
			Positioning Completed Width 7 [reference units] Pn522 : Positioning Completed Width (0 - 1073741824) // CON	d
	< Back Next > Cancel		< Back Apply Cancel	

When Motor type is Rotary

When Motor type is Linear

 For rotary motors, select the electronic gear mechanical structure, and then click Next. The setting procedure when the ball screw is selected is explained here. For other mechanical structures, see "■ Supplemental Information."



Difference in settings for rotary motor and linear motor

For a linear motor, the electronic gear mechanical structure selection is not required. Proceed to step 6.

Reference Input Setting - Position Control		?
Set the ball screw pitch. P = 1 mm Information One pitch is the moving distance per ball screw. Set the gear ratio. n 1 m 1 Information When the servomotor rotates m for a load axis rotation of n, the gear ratio is represented by the		
	< Back Cancel	

• When using a fully-closed encoder

Reference Input Setting - Position Control	0
Set the ball screw pitch. P = 1 mm Information One pitch is the moving distance per ball screw. Set the gear ratio. n 1 -= 1 Information When the servomotor rotates m for a load axis rotation of n, the gear ratio is represented by n/m.	Ball screw pitch P
Enter Linear Scale Pitch. Linear Scale Pitch 2000 (0.01µm) (1 - 6553600)	pitch
< Back	Next > Cancel

puttorn to change t	e following display units. Click ne value.	the Change		Ball screw pite	ch P
reference unit	0.01 [u	m]	Modify		
C Per one rotatio	n of load axis 100000 [R	eference unit]	Modify		2
-Information					<u>f</u>
	it equals one reference pulse t of the reference sent from th				>
			<u> </u>		ratio In
The electronic get	r ratio becomes the value sho		Jenneo	Ball screw pitch P	
Electronic Gear R				1 mm	I
	100000 Pn210		1	Gear ratio 1 : 1	
Pn20E:Electroni	: Gear Ratio (Numerator)	Pn210: Electron	ic Gear Ratio (D	enominator)	
Enter Positioning	Completed Width.		_		
Positioning Comple	ted Width	[reference		eference Mot	or speed
		units]	Speed		_
	Pn522 : Positioning Comple	ted Width		Pn522	
			Error pulse	(
	(0-1073741824)		/COIN		

5. Enter the ball screw pitch and gear ratio, and then click Next.

· When using a fully-closed encoder

Enter the ball screw pitch, gear ratio, and linear scale pitch, and then click Next.

putton to change	the value.	ts. Click the Change		Ball screw	/ pitch P
reference uni	í 🗌	0.1 [um]	Modify		
🖱 Per one rotati	on of load axis 10	0000 [Reference unit]	Modify		-5-
Information					
		ce pulse from the host c it from the host controlle			Gear ratio
The electronic ge	ar ratio becomes the va	alue shown below.			m:n
	12800	4		Ball screw pite	ch P
Electronic Gear		1		1 Gear ratio 1 : 1	mm
	1 10000				
	10000	Pn210		Gearrau0 1. 1	
Pn20E:Electror	ic Gear Ratio (Numerati	111210			
	,	or) Pn210: Electroni		enominator)	
	, nic Gear Ratio (Numerati	or) Pn210: Electroni	c Gear Ratio (D	enominator)	
Pn20A :	nic Gear Ratio (Numeration) Number of External Enc	or) Pn210: Electroni	c Gear Ratio (D	enominator)	
Pn20A :	, nic Gear Ratio (Numerati	or) Pn210: Electroni	c Gear Ratio (D 50 [Pitch/Re	enominator) v]	
Pn20A :	, nic Gear Ratio (Numeratu Number of External Enc g Completed Width.	or) Pn210:Electroni	c Gear Ratio (D 50 [Pitch/Re	enominator)	Motor speed
Pn20A : Enter Positioning	, nic Gear Ratio (Numeratu Number of External Enc g Completed Width.	or) Pn210: Electroni	c Gear Ratio (D 50 [Pitch/Re	enominator) v] leference	X
Pn20A : Enter Positioning	, nic Gear Ratio (Numeratu Number of External Enc g Completed Width.	or) Pn210: Electroni	c Gear Ratio (D 50 [Pitch/Re	enominator) v] leference	X

- 6. Set the reference unit or number of reference units per load axis rotation. Check the displayed electronic gear ratio to see if it is correct, enter the positioning completed width, and then click **Apply**. The display will return to the first wizard page and the set data will be written in the flowchart.
- · When using a fully-closed encoder

Set the reference unit or number of reference units per load axis rotation. Check the displayed electronic gear ratio and number of external encoder pitches to see if they are correct, and then enter the positioning completed width. Click **Apply**.

The display will return to the first wizard page and the set data will be written in the flowchart.



■ If Control mode settings for all the selected controls are not completed

Next will be displayed instead of **Apply**. Click **Next** to display the wizard page for the unset control. Make the required setting on the displayed wizard page.

<When the Set the electronic gear ratio at host controller. option is selected>

The following wizard page will appear.

The electronic gear ratio becomes the value shown below. Electronic Gear Ratio = 1 Pn20E 1 Pn210 Pn20E : Electronic Gear Ratio Pn210 : Electronic Gear Ratio (Numerator) Pn210: Electronic Gear Ratio Controller atter writing in controller a	<u> </u>			ence Input Setting - Position Control	
Positioning Completed Width	ratio makes the setting onic gear ratio from host	The electronic gea from host controlle Please set the elect	1 Pn20E 1 Pn210	atio =	Electronic Gear Ra Pn20E : Electronic
	20 Motor speed	Speed	g Completed Width	eted Width	
< Back Apply	Cancel				

Enter the electronic gear ratio and positioning completed width, and then click **Apply**. The display will return to the first wizard page and the set data will be written in the flowchart.

• When using a fully-closed encoder

Reference Input Setting - Position Control	0
The electronic gear ratio becomes the value shown below. Electronic Gear Ratio = 1 Pn20E 1 Pn210	The electronic gear ratio makes the setting from host controller.
Pn20E : Electronic Gear Ratio Pn210 : Electronic Gear Ra (Numerator) (Denominator)	tio controller after writing in the servopack.
Enter Number of sine wave pitches (cycles) per motor rotati Number of sine wave pitches (cycles) 50 per motor rotation 900 Pn20A : Number of External Encoder (4 - 1048576)	[Pitch/Rev]
Enter Positioning Completed Width. Positioning Completed Width [reference units]	Reference Motor speed
Pn522 : Positioning Completed Width (0 - 1073741824)	Error pulse
< Back	Apply Cancel

Enter the electronic gear ratio, number of sine wave pitches per motor rotation, and positioning completed width, and then click **Apply**. The display will return to the first wizard page and the set data will be written in the flowchart.



If Control mode settings for all the selected controls are not completed
 Next will be displayed instead of Apply. Click Next to display the wizard page for the unset control. Make the required setting on the displayed wizard page.

Control mode: Torque (Force) control

The Reference Input Setting - Torque (Force) Control wizard page will appear.

Reference Input Setting - Torque (Force) control			<u></u>
Enter the ratio between the reference voltage Set the torque (force) to 100 [%] by reference input of 3 [V] Calculate ▼ 30 [0.1V/rated torque] Pn400: Torque Reference Input (10 - 100) Information When the unt coefficient is 0.1 and 30 has to rated torque is 3V. 30 × 0.1 = 3 [V/rated torque]	Ref	erence torque (thrust) R ated torque (thrust)	Reference voltage(V) This reference voltage s set.
	< <u>B</u> ack	Apply	Cancel

- 1. Set the ratio between the reference voltage [V] and the torque (force) reference [%] by entering the values.
- 2. Click **Calculate**. The torque reference input gain will automatically be calculated and set according to the set ratio between the reference voltage and the torque (force) reference.
- 3. Click **Apply**. The display will return to the first wizard page and the set data will be written in the flowchart.



If Control mode settings for all the selected controls are not completed Next will be displayed instead of Apply. Click Next to display the wizard page for the unset control. Make the required setting on the displayed wizard page.

Control mode: Internal set speed control

The Reference Input Setting - Internal Set Speed Control wizard page will appear.

Reference Input Setting - Internal Set Speed Control			0
·			
Enter the operation speed for when eac	h contact has been input.		
Internal Set Speed 1 100 [min-1]	Motor Speed +SPEED3	Speed3	Set acceleration and
Internal Set Speed 2 200 [min-1]	+SPEED2F		deceleration "Soft start time."
Internal Set Speed 3 300 [min-1]	+SPEED1 Speed 0 Stop		top Stop
	-SPEED1 -		Speed1
Pn301:Internal Set Speed 1	-SPEED2		Speed2
(0-10000)	-SPEED3 -		Speed3
Pn302: Internal Set Speed 2	/P-CL(/SPD-A) OFF. OFF	ON ON OFF	OFF ON ON OFF
(0-10000)	/N+CL(/SPD-B) OFF ON	ON OFF OFF	ON ON OFF OFF
Pn303: Internal Set Speed 3			
(0-10000)	/P-CON(/SPD-D) <u>ON</u>	<u>! ON OFF</u>	OFF! OFF OFF OFF
Enter Speed Coincidence Signal Deter	cting Width.		
Speed Coincidence Signal Detecting Width	10 [min-1]	Motor speed	
Detecti	coincidence Signal nα Width 100)	/V-C this	Reference speed MP is output in range.
	< Back	Apply	Cancel

Enter the internal set speeds 1 to 3 and the speed coincidence signal detecting width, and then click **Apply**. The display will return to the first wizard page and the set data will be written in the flowchart.



■ If Control mode settings for all the selected controls are not completed

Next will be displayed instead of **Apply**. Click **Next** to display the wizard page for the unset control. Make the required setting on the displayed wizard page.

Control mode: Zero clamp control

The Reference Input Setting - Zero Clamp wizard page will appear.

Pn501: Zero Clamp Level (0 - 10000) -Information — If a value larger than the maximum motor speed is entered, the maximum speed will be set.	Speed Preset value for zero clamping	VREF spe	ed reference

Enter the zero clamp level, and then click **Apply**. The display will return to the first wizard page and the set data will be written in the flowchart.



If Control mode settings for all the selected controls are not completed

Next will be displayed instead of **Apply**. Click **Next** to display the wizard page for the unset control. Make the required setting on the displayed wizard page.

Motor Encoder Setting

🌆 Motor Encoder Setting

Motor type: Rotary

1. Click **Motor Encoder Setting** in the flowchart. The Motor Encoder Setting - Dividing output setting wizard page will appear.

Motor Encoc Dividing ou			2	
Dividing output setting				
Use the dividing output	.t.			
Set the number of output		ation		
	· · ·			
2048 - (16 - 32768)		Set the dividing output ad acear ratio. 8192 [P/F	cording to the electronic	
		Example) Preset valu	e : 16	
			www.www	
Pn212: Encoder Output Pulses				
Information				
Set the number of out; Set value (pulses/rev.)	out pulses in the follow	ving setting unit. Motor speed upper limit (min-1)		
16 - 16384	1	6000		
16386 - 32768	2	3000		
32772 - 65536	4	1500		
65544 - 131072	8	750		
131088 - 262144	16	375		
Absolute Encoder Setting Select the method of usay Uses absolute encoder a Pn002: Basic Function	ge for the absolute en as an absolute encode			

<when a<="" th="" using=""><th>fully-closed</th><th>encoder></th></when>	fully-closed	encoder>
---	--------------	----------

Motor Encoder Setting - Dividing output setting	0
Dividing output setting ✓ Use the dividing output. Set the number of output edges per fully-closed encoder pitch. ✓ Use the reference. Set the dividing output according to the electronic or use the dividing output according to the electronic or ear ratio. Fn281: Encoder Output pulse Example) Preset value : 20 PAO JULLIU PBO JULLIU pitch Note: Linear scale pitch 20.00 [µm]	
Absolute Encoder Setting Select the method of usage for the absolute encoder. Uses absolute encoder as an absolute encoder. Pn002: Basic Function Select Switch 2	
< <u>B</u> ack: <u>N</u> ext > Cancel	

Dividing output setting

Settings in this wizard page are enabled when the **Use the dividing output.** check box is selected (the check box is selected at the initial startup). Set the number of output pulses per motor rotation from the spin box. When using a fully-closed encoder, set the number of output edges per fully-closed encoder pitch from the spin box.

Alternatively, use the following automatic settings.

- For position control: Dividing output according to the reference units calculated using the electronic gear ratio
- When using a fully-closed encoder: Dividing output according to the movement amount per edge

Click Apply and the calculated dividing output will be set.

2. Set the dividing output from the spin box, and select the absolute encoder usage from the list when using an absolute encoder. Then, click **Next**. The Motor Encoder Setting - Rotation (movement) direction setting wizard page will appear.

Motor Encoder Se Rotation (movement) dire		<u> </u>
Set the motor rotation (moveme	nt) direction.	
	Forward Reference	Reverse Reference
Standard setting	Encoder output from Servopack TUTUT PAO(phase A)	Encoder output from Servopack
C Reverse Rotation (Move	Encoder output from Servopack 	Encoder output from Servopack J.J.J.R PAO(phase A) J.J.J.R PAO(phase B)
Pn000: Basic Function Selec	t Switch 0 ward rotation" is counterclockwise as vi	ewed from the load and
Only the motor rotation direc	tion is reversed in reverse rotation mode. Ich as analog monitor signal) from Servop	. The encoder pulse output and the
	< Back	Apply Cancel

<When using a fully-closed encoder>

The Motor Encoder Setting - Fully-closed encoder usage wizard page will appear.

Motor Encoder Setting - Fully-closed encoder usage
Select the relationship between the motor rotation direction and the fully-closed pulse direction.
Use the standard direction (CCW = Count up)
C Use the reverse direction (CCW = Count down)
Pn002: Basic Function Select Switch 2
<back next=""> Cancel</back>

Select the relationship between the motor rotation direction and the fully-closed pulse direction, and then click **Next**. The display will return to the previous wizard page (Motor Encoder Setting - Rotation (movement) direction setting).

3. Select the motor rotation (movement) direction, and then click **Apply**. The display will return to the first wizard page and the set data will be written in the flowchart.

Motor type: Linear

1. Click **Motor encoder setting** in the flowchart. The Motor Encoder Setting - Linear motor basic settings wizard page will appear.

Motor Encoder Setting - Linear motor basic settings		2
Hall sensor selection(Pn080.0)		
Select "No hall sensor" if your linear motor h	has no hall sensor.	
0: Yes	_	
Scale direction(Pn080.1)		
Select the relationship between the linear so forward direction (direction to the cable out		
A phase progress is the order of UVW	/phase.	
—		
C B phase progress is the order of UVW	phase	
	< Back Next > Can	cel

2. Select whether or not the linear motor has a hall sensor from the list, and select the relationship between the linear scale count up direction and the motor forward direction. Click **Next**, and the Motor Encoder Setting - Dividing output setting wizard page will appear.

Uses absolute encoder as an absolute encoder. Pn002: Basic Function Select Switch 2	Set the number of output edges per linear scale p	Use the reference. Set the dividing output according to the electronic cear ratio. [Edge/pitch Specify the moving amount per edge. (When using a linear scale) Set the dividing output so that one 0.1 [µm] edge equals Note: Linear scale pitch 20.00 [µm]
	Uses absolute encoder as an absolute encoder.	

Dividing output setting

Settings in this wizard page are enabled when the **Use the dividing output.** check box is selected (the check box is selected at the initial startup). Set the number of output edges per linear scale pitch from the spin box.

Alternatively, use the following automatic settings.

- For position control: Dividing output according to the reference units calculated using the electronic gear ratio
- Dividing output according to the movement amount per edge

Click Apply and the calculated dividing output will be set.

Adjust Upper Limit

Click this button to adjust the upper limit for the dividing output setting.

 Set the dividing output from the spin box, and select the absolute encoder usage from the list when using an absolute encoder. Then, click Next. The Motor Encoder Setting -Rotation (movement) direction setting wizard page will appear.

Rotation (movement) dire	ction setting	
Set the motor rotation (movemer	nt) direction.	
	Forward Reference	Reverse Reference
	Encoder output	Encoder output from Servopack
Standard setting		
	JIN PAO(phase B)	JULIN PAO(phase B)
	Encoder output	Encoder output
C Reverse Rotation (Move	from Servopack	from Servopack
 Neverse Notation (inove 	JIII B B I AC(phase A)	00000
Only the motor movement dir	ward direction" is the direction to the mo ection is reversed in reverse direction m ch as analog monitor signal) from Servo	ode. The encoder output and the

4. Select the motor movement direction, and then click **Apply**. The display will return to the first wizard page and the set data will be written in the flowchart.

Motor Stop Method Selection

占 Motor Stop Method Selection

1. Click **Motor Stop Method Selection** in the flowchart. The Motor Stop Method Selection wizard page will appear.

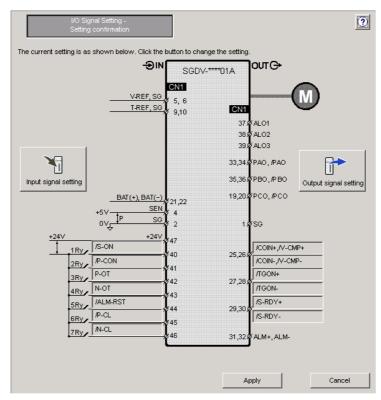
Motor Stop Method Selection	0
Motor Stop Method Selection	
Select a motor stop method.	
Servo OFF, G1 alarm(Pn001.0)	
0 : Stops the motor by applying DB (dynamic brake).	
Overtravel(Pn001.1)	
0 : Same setting as Pn001.0 (Stops the motor by applying DB or by coasting).	
G2 alarm(Pn00B.1)	
0: Stops the motor by setting the speed reference to "0".	
Information 1. Stop by dynamic brake: Stops the motor by using the dynamic brake (with short-circuiting by a circuit of Servopack). 2. Coast to a stop: Stops the motor naturally, with no brake, by using the friction resistance of the motor in operation. 3. Decelerate to stop: Stops the motor by using deceleration (braking) torque. 4. Zero Clamp Mode: Stops the motor by making the position reference zero.	
Brake setting ☐ Use the holding brake (servomotor with the holding brake).	
Apply Cancel	

2. Select the motor stop method for each of the three conditions indicated, and select or clear the check box to set whether or not to use a holding brake. Then, click **Apply**. The display will return to the first wizard page and the set data will be written in the flowchart.

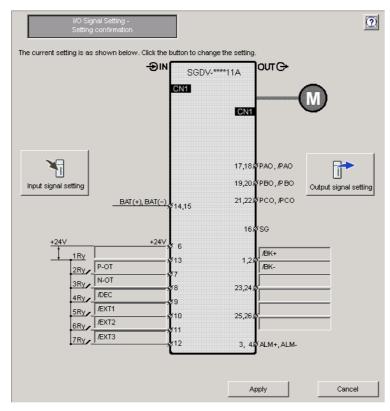
■ I/O Signal Setting

🖓 I/O Signal Setting

1. Click **I/O Signal Setting** in the flowchart. The I/O Signal Setting - Setting confirmation wizard page will appear.



Analog Voltage and Pulse Train Reference Type SERVOPACK



MECHATROLINK-II Reference Type SERVOPACK

2. Click **Input signal setting** to set input signals or **Output signal setting** to set output signals. The following wizard pages will appear for each case.

<Input Signal Setting Wizard Page>

					Select the	input signa	al allocation	n mode.		
Click an	y cell to alloc	ate an inp:	ut signal.		Stand	dard allocat	ion	Customi	ze alloca	tion
	Allocation	SID (CN1-40)	SI1 (CN1-41)	SI2 (CN1-42)	SI3 (CN1-43)	SI4 (CN1-44)	SI5 (CN1-45)	SI6 (CN1-46)	Always ON	Always OFF
/S-ON	Required	/S-0N(L)								
/P-CON	Possible		/P-CON(L)							
P-OT	Possible			P-OT(L)						
N-OT	Possible				N-0T(L)					
/ALM+RST	Possible					/ALM-RST(L				
/P-CL	Possible						/P-CL(L)			
/N-CL	Possible							/N-CL(L)		
/SPD-D	Not required									/SPD-D
/SPD-A	Not required									/SPD-A
/SPD-B	Not required									/SPD-B
/C-SEL	Not required									/C-SEL
/ZCLAMP	Not required									/ZCLAM
/INHIBIT	Not required									/INHIBIT
/G-SEL	Possible									/G-SEL
/P-DET	Possible									/P-DET
/G-SEL /P-DET	Not required Possible Possible ne (L) Nor	mal alloca				Selection 1		: Input Sigi		/IN /G- /P-

Analog Voltage and Pulse Train Reference Type SERVOPACK

					Select the	input signa	al allocation	n mode.		
Click an	lick any cell to allocate an input signal.			Standard allocation Customize allocation				tion		
	Allocation	SID (CN1-13)	SI1 (CN1-7)	SI2 (CN1-8)	SI3 (CN1-9)	SI4 (CN1-10)	SI5 (CN1-11)	SI6 (CN1-12)	Always ON	Alway
P-OT	Possible		P-0T(L)							
N-OT	Possible			N-0T(L)						
/P-CL	Possible									/P-CL
/N-CL	Possible									/N-CL
/DEC	Possible				/DEC(L)					
/ECT1	Possible					/B(T1(L)				
/ECT2	Possible						/B(T2(L)			
/B(T3	Possible							/B(T3(L)		
/EXT3 I/O nar I/O nar	ne (L) Nor	mal allocat versed allo			· -	Selection 1 Selection 2		/B(T3(L) : Input Sig	nal Selec	tion 5

MECHATROLINK-II Reference Type SERVOPACK

Standard allocation

Input signals will be allocated by default.

The allocation is fixed to the default setting and cannot be changed.

Customize allocation

Input signals can be allocated as desired.

Click a cell and the name of the signal to be allocated will be displayed in the cell. To switch between normal allocation and reverse allocation, click the cell again. When the required input signals are allocated, click **OK**.

If all required input signals are not allocated, a confirmation message will appear. (The message shown below is an example.)



Caution

There are some duplications in input
signal allocation.

Do you want to change allocations?

Yes No

If some input signal allocations are duplicated, the following confirmation message will appear.

<Output Signal Setting Wizard Page>

	Allocation	\$01 (CN1-25,26)	\$02 (CN1-27,28)	SO3 (CN1-29,30)	Disable (Do not use)	
/COIN	Not require	/COIN(L)				
AV-CMP	Possible	AV-CMP(L)				
/TGON	Possible		/TGON(L)			
/S-RDY	Possible			/S-RDY(L)		
/CLT	Possible				/CLT	
MLT	Not require				MLT	
/BK	Possible				/ВК	
AWARN	Possible				AWARN	
/NEAR	Not require				/NEAR	
I/O name (L)	Normal a	allocation	Pn50E: Output	t Signal Selectio	on 1 Pn510: Out	put Signal Selectio
I/O name (H)	Reversed	allocation	Pn50F: Output	t Signal Selectio	on 2 Pn512: Out	put Signal Inverse

Analog Voltage and Pulse Train Reference Type SERVOPACK

/COIN	Possible	(CN1-1,2)	(CN1-23,24)	(CN1-25,26)	(Do not use) /COIN	-
AV-CMP	Not require				A4CMP	_
/TGON	Possible				/TGON	-
/S-RDY	Possible				/S-RDY	
/CLT	Possible				/CLT	_
MLT	Not require				MIT	-
/ВК	Possible	/BK(L)				
AWARN	Possible				AWARN	
/NEAR	Possible				/NEAR	
	_					
I/O name (L)	Normal a					put Signal Selection
I/O name (H)	Reversed	allocation	Pn50F: Output	Signal Selectio	n 2 Pn512: Out	put Signal Inverse

MECHATROLINK-II Reference Type SERVOPACK

Click a cell to allocate an output signal.

- 3. When all required signals are allocated, click **OK**. The display will return to the wizard page shown in step 1.
- 4. Click **Apply**. The display will return to the first wizard page and the set data will be written in the flowchart.

■ Save/Write

🚮 Save/Write

Save the settings using the following procedure.

The wizard page for saving/writing parameters into the SERVOPACK when online is different from the wizard page when offline.

<When online>

1. Click **Save/Write** in the flowchart. The Saving/Writing Parameters wizard page will appear.

SavingAVriting Parameters
Writes the set parameter into the Servopack.
Select the writing method, and then click the Write button.
Write with a backup file
Saves the current Servopack settings in a backup file, and then writes the set parameters into the Servopack.
O Write without backup file
Writes the set parameters into the Servopack without saving the current settings in a backup file.
Write
Depress the Save Button to save the setting values. (The saved parameters can be used by using the parameter edit
· · · · · · · · · · · · · · · · · · ·
Finish > Cancel

2. Select the method of writing parameters into the SERVOPACK.

Write with a backup file

After saving the current settings of the connected SERVOPACK in a backup file, writes the parameters that have been set using the Setup Wizard in the SERVOPACK.

Write without backup file

Without saving the current settings of the connected SERVOPACK, writes the parameters that have been set using the Setup Wizard in the SERVOPACK.

Select either the **Write with a backup file** or the **Write without backup file** option, and then click **Write**. When the **Write with a backup file** option is selected, the following windows will appear.

		T. materia	
			•
Transferring	: Pn498	(112/154)	

Save As			<u>?</u> ×
Savejn: 🔂	YE_Applications	E 🗈 (* 🎟 *
Manual	153437.usr		
File <u>n</u> ame:	20070423181516bak		<u>S</u> ave
Save as type:	Parameter file(*.usr)	•	Cancel
Product Info	SIGN'S MARIA		
<u>C</u> omment			

When the **Write without backup file** option is selected, the message shown in step 3 appears.

3. Select the file name and the storage location, and then click **Save**. The following message appears asking for confirmation.

Confirmation			×
	Writes into the	e Servopack.	
	Is this Ac	ceptable?	
[Yes	No	

4. Click Yes.

Writing parameters to Servopack	×
6,1	
Transferring : Pn300 (6 / 17)	
35%	
Caution	
The parameters will be enabled after cycling the main and control power.	
ОК	

- 5. Click **OK**. The display will return to the wizard page shown in step 1.
- 6. Click the \Box button to save the setting data.
- 7. Click **Finish** to quit the Setup Wizard. The following message appears asking for confirmation.

Setup Wizard	ſ	×
Completes the S	etup Wizard. OK	?
Yes	No	

8. Click Yes.

<When offline>

1. Click **Save/Write** in the flowchart. The Saving/Writing Parameters wizard page will appear.

Saving/Writing Parameters	0
Depress the Save Button to save the setting values. (The saved parameters can be used by using the parameter edit	
<u> </u>	Cancel

- 2. Click the **b**utton to save the setting data.
- 3. Click **Finish** to quit the Setup Wizard. The following message appears asking for confirmation.

Se	tup Wizard	×
	Completes the S	5etup Wizard. OK?
	Yes	No

4. Click Yes.

Supplemental Information

The Reference Input Setting - Position Control wizard page will vary depending on the electronic gear mechanical structure.

Electronic Gear Mechanical Structure

<When Round table is selected>

Reference Input Setting - Position Control	?
Set the gear ratio. n 1	
< Back Next >	Cancel
	-1
Reference Input Setting - Position Control	0
Position Control Select either of the following display units. Click the Change button to change the value. Modify Image: The following display units with the change button to change the value. Modify	
Position Control Select either of the following display units. Click the Change button to change the value.	
Position Control Select either of the following display units. Click the Change button to chance the value. Image: The reference unit Image: The reference unit equals one reference pulse from the host controller. (The minimum unit of the reference sent from the host controller. (The minimum unit of the reference she value shown below. Image: The electronic gear ratio becomes the value shown below. Electronic Gear Ratio =	
Position Control Select either of the following display units. Click the Change button to chance the value. Image: Control of load axis Per one rotation of load axis 36000 Reference unit Information The reference unit equals one reference pulse from the host controller. The reference unit equals one reference sent from the host controller. The electronic gear ratio becomes the value shown below. Electronic Gear Ratio = 131072 Pn20E 36000 Pn210	
Position Control Select either of the following display units. Click the Change button to chance the value. Image: The reference unit Image: The reference unit equals one reference pulse from the host controller. (The minimum unit of the reference sent from the host controller. (The minimum unit of the reference she value shown below. Image: The electronic gear ratio becomes the value shown below. Electronic Gear Ratio =	
Position Control Select either of the following display units. Click the Change button to channe the value. • reference unit • reference unit • Old [deg] • Information • The reference unit equals one reference pulse from the host controller. • The reference unit equals one reference pulse from the host controller. • The electronic gear ratio becomes the value shown below. • Electronic Gear Ratio = • 131072 • Pn20E • Bectronic Gear Ratio = • 36000 • Pn210 • Cear ratio (Numerator) • Pn20EElectronic Gear Ratio (Numerator) • Pn20EElectronic Gear Ratio (Numerator) • Enter Positioning Completed Width.	Motor speed
Position Control Select either of the following display units. Click the Change button to chance the value. Image: Control of load axis Per one rotation of load axis 38000 Reference unit Information The reference unit equals one reference pulse from the host controller. The reference unit of the reference sent from the host controller. The electronic gear ratio becomes the value shown below. Electronic Gear Ratio = 131072 Pn20E Electronic Gear Ratio 36000 Pn20E:Electronic Gear Ratio (Numerator) Pn210:Electronic Gear Ratio (Denominator)	Reference of the second
Position Control Select either of the following display units. Click the Change button to channee the value. • reference unit • reference unit • Per one rotation of load axis • Per one rotation of load axis • Information • The reference unit equals one reference pulse from the host controller. (The minimum unit of the reference sent from the host controller. (The minimum unit of the reference sent from the host controller. (The minimum unit of the reference sent from the host controller. (The discussed of the reference sent from the host controller. (The minimum unit of the reference sent from the host controller. (The discussed of the reference sent from the host controller. (The minimum unit of the reference sent from the host controller. (The discussed of the reference sent from the host controller. (The minimum unit of the reference sent from the host controller. (The discussed of the reference sent from the host controller. (The minimum unit of the reference sent from the host controller. (The minimum unit of the reference sent from the host controller. (The minimum unit of the reference sent from the host controller. (The minimum unit of the reference sent from the host controller. (The minimum unit of the reference sent from the host controller. (The minimum unit of the reference sent from the host controller. (The minimum unit of the reference sent from the host controller. (The minimum unit of the reference sent from the host controller. (The minim the reference sent from the host controler. (T	Reference of the second
Position Control Select either of the following display units. Click the Change button to chance the value. Image: Control of load axis Per one rotation of load axis 38000 Reference unit Information The reference unit equals one reference pulse from the host controller. (The minimum unit of the reference sent from the host controller. (The minimum unit of the reference sent from the host controller. The electronic Gear Ratio = 131072 Pn20E Electronic Gear Ratio 36000 Pn210 Gear ratio Pn20E:Electronic Gear Ratio (Numerator) Pn210:Electronic Gear Ratio (Denominator) Erter Positioning Completed Width. [reference units] Pn522: Positioning Completed Width [reference units]	Motor speed

<When Belt and Pulley is selected>

Reference Input S Position Contr		?
Select the setting method. © Enter the pitch. © Enter the pully dia. Set the pitch. P = 1 mm v Information One pitch is the moving distance per pully Set the gear ratio. n 1 m 1	rotation.	
	< Back Next > Can	cel

Position	nput Setting - n Control	<u>(</u>
Select either of the follow button to change the val	wing display units. Click the Change ue.	
reference unit	0.00001 [mm]	odify
C Per one rotation of lo	ad axis 100000 [Reference unit]	odify Pulley
	als one reference pulse from the host contro e reference sent from the host controller)	diaméter D
The electronic gear ratio	becomes the value shown below.	
	131072 Pn20E	Pitch P
Electronic Gear Ratio =	100000 Pn210	1 mm Gearratio1:1
 Enter Positioning Compl 		
Enter Positioning Compl		Reference Motor speed
Enter Positioning Compl		Speed Motor speed
Positioning Completed V	idth	Motor speed
Positioning Completed V	i/dth [[reference units]	Speed
Positioning Completed V	Adth [] [reference units]	Speed Pn522 Error pulse

Select the setting method.			
Enter the pitch.			
C Enter the pinion dia.			
Set the pitch.			Pinion diameter D
P = 1 mm 💌			
Information			Gear ratio
One pitch is			
the moving distance per pinio	n rotation.		
Set the gear ratio.	Information		
n 1	When the servomotor rotates	m for a load axis	
- =1	rotation of n, the gear ratio is	represented by n/m.	
	< Back	Next >	Cancel
	- Buok	HUALE	Curicor
Reference Input S	etting -		

<When Rack and Pinion is selected>

(The minimum unit of the reference sent from the host controller) Gear ratio The electronic gear ratio becomes the value shown below. Pitch P Electronic Gear Ratio 131072 Pn20E Pitch P 1 mm Gear ratio 1 : 1	
Electronic Gear Ratio = 131072 Pn20E Pitch P	
Electronic Gear Ratio = 1 mm	entra
100000 Pn210 Gear ratio 1 : 1	
Pn20E:Electronic Gear Ratio (Numerator) Pn210: Electronic Gear Ratio (Denominator)	
Enter Positioning Completed Width.	
Positioning Completed Width [[reference units] Speed [Speed]	peed
Pn522 : Positioning Completed Width Error pulse	
	1

<When Roll feed is selected>

Reference input Setting - Position Control	0
	vonotor rotates m for a load axis the gear ratio is represented by n/m.
	< Back Next > Cancel

Reference Input Setting - Position Control	?
Select either of the following display units. Click the Change button to chance the value. reference unit 0.00001 [mm] Modify Per one rotation of load axis 100000 [Reference unit] Modify Information The reference unit equals one reference pulse from the host controller. (The minimum unit of the reference sent from the host controller) The electronic gear ratio becomes the value shown below. Ptch P	
Electronic Gear Ratio = 131072 Pn20E Pttch P 1 1 mm 9 1 00000 9 Pn210 Gear ratio 1 : 1 Pn20E:Electronic Gear Ratio (Numerator) Pn210:Electronic Gear Ratio (Denominator)	
Enter Positioning Completed Width. Positioning Completed Width Ireference units Speed	d
Pn522 : Positioning Completed Width (0 - 1073741824)	
< Back Apply Cancel	

<When Other is selected>

Reference Input Setting - Position Control	?
Select either of the following display units. Click the Change button to change the value.	
reference unit 0 [pulse]	
Information The reference unit equals one reference pulse from the host controller. (The minimum unit of the reference sent from the host controller)	
The electronic gear ratio becomes the value shown below.	
Electronic Gear Ratio = 1 Pn20E 1 rotation 131072 pulse	
Pn20E:Electronic Gear Ratio (Numerator) Pn210:Electronic Gear Ratio (Denominator)	
Enter Positioning Completed Width.	
Positioning Completed Width	4
Pn522 : Positioning Completed Width Error pulse	
(0-1073741824) /COIN	
< Back Apply Cancel	

4.1.4 Parameter Converter

The parameter converter function converts the parameter data of a Σ , Σ -II, or Σ -III series SERVOPACK (hereinafter referred to as the previous series SERVOPACK) to Σ -V series SERVOPACK compatible parameter data. The previous series SERVOPACK parameters of the specified file will be automatically converted to Σ -V series SERVOPACK compatible parameters and saved in a file.

Convert parameters using the following procedure.

1. In the SigmaWin+ Σ -V component main window, click **Parameters** and then click **Parameter Converter**.

📲 Parameter Converter	×
The previous series parameter file will be conver Select the conversion source file and the destina	
Conversion source	Conversion destination S-V series
File name Browse	File name Save
, Servopack model	Save the log file (csv) at the same time.
Comments	Comments
	Convert Cancel

Parameter Converter Window

2. Click Browse. The Open box will appear.

Open		? ×
Look in: 🔂	YE_Applications 💽 🔶 📸 📰 🗸	
Manual 200704231	153437.usr	
200704231		
	-	
, File name:	Sigma2.usr Open	
Files of type:	Parameter file(*.usr) Cancel	
Product Info:	SGDH-***E	
	Customization information is used.	
Comment:	Data of Axis X	

3. Select the conversion source, a parameter file of the previous series SERVOPACK, and then click **Open**.

The selected file is imported and the imported file name, SERVOPACK model, and comments are displayed under **Conversion source**. Also, the SERVOPACK model under **Conversion destination** is automatically set.

he previous series parameter file will be convert elect the conversion source file and the destinat	
Conversion source	Conversion destination
File name Browse Sigma2.usr	File name Save
Servopack model	Save the log file (csv) at the same time Servopack model
Comments Data of Axis X	Comments Data of Axis X
	Convert Cancel

A window with the file name, SERVOPACK model, and comments on imported data displayed

If a file that	t cannot be converted is selected	
A message	will appear telling you that the selected	I file cannot be converted.
SigmaWi	n+	×
Ţ	The selected parameter file cannot be converted. The parameter conversion is applicable only for the following mo SGDM-***DA SGDH-***E SGDH-***E(linear) SGDS-***101 SGDS-***12 SGDS-***15 SGDS-***15 SGDS-***15 SGDS-****D SGDB-****D SGDB-****D	ıdels.

4. Click **Save**. The Save As box will appear.

Save As		<u>?×</u>
Save in: 🔁	YE_Applications 💌 🖛 🗈 📸 🖽	
🗋 Manual		
200704231	53437.usr	
200704231		
Sigma2.usr		
, File name:	Sigma 5 Save	
nie name:	Sigma5 Save	•
Save as type:	Parameter file(*.usr)	el

 Select the storage location for the converted parameter file, and then click Save. The file name, the SERVOPACK model of the conversion destination, and the comments on the conversion source file will be displayed under Conversion destination in the Parameter Converter window.

VParameter Converter	×
The previous series parameter file will be conver Select the conversion source file and the destina	
Conversion source	Conversion destination
File name Browse Sigma2.usr	File name Save
Servopack model	✓ Save the log file (csv) at the same time. Servopack model SGDV-****01A
Comments	Comments
Data of Axis X	Data of Axis X
	Convert Cancel

Reselect the SERVOPACK model from the **Servopack Model** list as required. (A SERVOPACK model whose capacity is equal or closest to the SERVOPACK model of conversion source will be automatically set under **Conversion destination**.)

6. Click Convert.

The selected parameter file data of the previous series SERVOPACK will be converted to Σ -V series SERVOPACK compatible parameter data and saved in a newly created parameter file.

When conversion is complete, the conversion results will be displayed in the Parameter Converter window.

Adjust the settings as required.

onversi	imeter file ha on results b care must be Conversion source Previous se	efore writin taken with	ng therr	n into the S arameters o	ervopack. In the right. Parameter value in red : Out - auto ersion Parameter value : Perf value : Perf shaded in yellow Adju	rent from the default setting of the S-V series Servo of range in S-V series Servopack (The value will be matically set to the default of the S-V series Servop ormance depends on the series for this parameter. st the settings as required before ng the conversion result into the Servopack.	
No.	Digit/bit	Value		No.	Name	Value	Unit 🔺
				Pn000	Basic Function Select Switch 0	0000H	
Pn000	ODiait	0	==>	ODiait	Direction Selection	0:Sets CCW as forward direction.	-
Pn000	1Digit	0	==>	1Digit	Control Method Selection	0:Speed control (analog reference)	-
				2Diait	Reserved (Do not change.)	0:Reserved (Do not change.)	
				3Diait	Reserved (Do not change.)	0:Reserved (Do not change.)	-
				Pn001	Basic Function Select Switch 1	0000H	-
Pn001	ODiait	0	==>	ODiait	Servo OFF or Alarm G1 Stop Mode	0:Stops the motor by applying DB (dynamic brake).	-
Pn001	1Digit	0	==>	1Digit	Overtravel (OT) Stop Mode	0:Same setting as Pn001.0 (Stops the motor by a	
Pn001	2Digit	0	==>		t AC/DC Power Input Selection 0:Not applicable to DC power input: Input AC po		
Pn001	3Digit	0	==>		Warning Code Output Selection	0:ALO1, ALO2, and ALO3 output only alarm cod	
				Pn002	Basic Function Select Switch 2	0000H	-
Pn002	ODiait	0	==>	ODiait	Speed Control Option (T-REF Terminal Allocation)	0:None	-
Pn002	1Digit	0	==>	1Digit	Torque Control Option (V-REF Terminal Allocation)	0:None	-
Pn002	2Digit	0	==>		Absolute Encoder Usage	0:Lises absolute encoder as an absolute encoder.	-
Pn002	3Diait	0	==>	3Digit	External Encoder Usage	0:Do not use fully-closed encoder.	-
				Pn006	Application Function Select Switch 6	0002H	-
Pn003	ODiait	2	==>	0.1Digit	Analog Monitor 1 Signal Selection	02:Torque reference (1 V/100%)	-
	g				Reserved (Do not change.)	0:Reserved (Do not change.)	-
					Reserved (Do not change.)	0:Reserved (Do not change.)	-
				Pn007	Application Function Select Switch 7	0000H	-
Pn003	1Digit	0	==>		Analog Monitor 2 Signal Selection	00:Motor speed (1 V/1000 min-1)	-
	. e .g.t				Reserved (Do not change.)	0:Reserved (Do not change.)	
					Reserved (Do not change.)	0:Reserved (Do not change.)	
Pn000	2Digit	0	==>	Pn010	Axis Address Selection (for UART/USB communi	0001H	-
Pn100		40	==>	Pn100	Speed Loop Gain	400	0.1Hz
Pn101		2000	==>	Pn101	Speed Loop Integral Time Constant	2000	0.01n
Pn102		40	==>	Pn102	Position Loop Gain	400	0.1/s
Pn103		0	==>	Pn103	Moment of Inertia Ratio	400 0	%
Pn104		40	==>		2nd Sneed Loon Gain	400	0.1Hz
4							



When the **Save the log file (csv) at the same time.** check box is selected in the Parameter Converter window, a CSV formatted log file with the same name as the converted parameter file will be separately created in the same location as the converted parameter file.

Always check the conversion results before writing them into the SERVOPACK.

Some parameter data is displayed in blue, red, or shaded in yellow to distinguish it:

- Blue: Different from the default setting of the Σ -V series SERVOPACK
- Red: Out of range in the Σ -V series SERVOPACK (The value will automatically be set to the default value of the Σ -V series SERVOPACK.)
- Shaded in yellow: Performance depends on the series.



Adjust the settings of the parameters displayed in red and shaded in yellow in the conversion results as required.

7. Click **Finish** to quit the parameter converter function.



- See "4.1 Editing Parameters" for information on how to adjust the conversion results.
- After checking and adjusting the conversion results, import the parameter settings using the parameter online editing function. See "Parameter Editing when Online" of "4.1.1 Editing Parameters" for details.



How to Read the Log File

When the **Save the log file (csv) at the same time.** check box is selected, the following CSV formatted log file will be created after conversion.

Conversion	source	data
------------	--------	------

Conversion destination data

1				1					I
No.	Digit/bit	Value		No.	Name		Value	Unit	To be checked
Pn□□□	□digit		\Rightarrow	PnOOC	0000000	00	000	00	*0
•	•	•	•	•	•		•	•	
Previous Previous se series SERVOPA SERVOPACK parameter value		PACK er set		Σ-V series SERVOPA parameter		r F	C-V serie SERVOI paramet init		
SER	ious ser VOPAC meter di	K		Σ-V serie SERVOF paramete	-	SEI	' series RVOPA(ameter s I meanir	set value	9

"*O" in the "To be checked" column indicates one of the following parameters.

- *1. Parameter value different from the Σ -V series SERVOPACK default setting
- *2. Parameter value out of the Σ -V series SERVOPACK setting range (The value will automatically be set to the default value of the Σ -V series SERVOPACK.)
- *3. Parameter whose performance depends on the series of SERVOPACK.

4.2 Alarm Display

Alarms can be viewed in the Alarm Display. The alarm diagnostic function is also provided to suggest possible causes of the alarm according to diagnostic alarm latch data saved just before the alarm occurrence. It will also display suggested corrective actions.

In the SigmaWin+ Σ -V component main window, click **Alarm** and then click **Display Alarm**.

Alarm			
A.C90 : Encoder Communications Err	or		🥢 Reset
Alarm diagnosis Alarm traceback			
ause			Cause 1/5 🔳
Contact fault of encoder connector or i	incorrect encode	er wiring.	-
	status.		
Check the encoder connector contact :	status.		L
Check the encoder connector contact orrective actions Re-insert the encoder connector and c lonitor at occurrence of alarm	confirm that the e		tty wired.
Check the encoder connector contact : iorrective actions Re-insert the encoder connector and c fonitor at occurrence of alarm Name	confirm that the e	Unit	tty wired.
Check the encoder connector contact : orrective actions Re-insert the encoder connector and c ionitor at occurrence of alarm Name Motor Speed	confirm that the e		tty wired.
westigated actions Check the encoder connector contact : corrective actions Re-insert the encoder connector and c fonitor at occurrence of alarm Name Motor Speed Speed Reference Internal Torque Reference	confirm that the e	Unit min-1	tty wired.

Alarm Display

Alarm

— Ab	arm	
	A.C90 : Encoder Communications Error	🥢 Reset
	M.CBO . Encoder Communications Error	

The current alarm will be displayed.

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.

Alarm Diagnosis Tab

	Alarm traceback			
				Cause 1/5 🔳
Cause				
Contact fault of e	encoder connector or incor	rect encode	er wiring.	
Investigated action	IS			
Check the encod	er connector contact statu:	s.		4
				×
Corrective actions				
l Monitor at occurre	nce of alarm			<u>-</u>
Monitor at occurre Name	nce of alarm	Value	Unit	
	nce of alarm	Value 0	Unit	
Name				
Name Motor Speed	9	0	min-1	
Motor Speed Speed Reference	e eference	0	min-1 min-1	

Cause (Currently displayed page)/ (Total pages = Total of causes)

Displays the total number of possible causes of the alarm. Click the setting arrows to change the page.

Cause

Displays a possible cause of the current alarm.

Investigated actions

Displays the investigated actions of the current alarm.

Corrective actions

Displays suggested corrective actions for the current alarm.

Monitor at occurrence of alarm

Displays the data monitored just before the alarm occurrence.

Alarm Traceback Tab

02 A.510 03 Norma 04 Norma	: Encoder Communications Error : Overspeed I	49:01:06.4 49:00:36.7 0:00:00.0
03 Norma 04 Norma		
04 Norma	1	0.00.00.0
		0.00.00.0
	1	0:00:00.0
05 Norma	1	0:00:00.0
06 Norma	1	0:00:00.0
07 Norma	1	0:00:00.0
08 Norma	1	0:00:00.0
09 Norma	1	0:00:00.0
10 Norma	1	0:00:00.0

The SERVOPACK stores a history of the 10 most recent alarms. These are displayed in the Alarm Traceback tab page, and are shown in order of occurrence with their alarm codes 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+ Σ -V component when an alarm occurs.

Click Clear to delete or clear the alarm history.

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+ Σ -V component main window, click **Monitor** and then click **Product Information**. Information about the SERVOPACK, the motor, and the option modules will be displayed.

SERVOPACK/Motor Tab

Option Card Tab

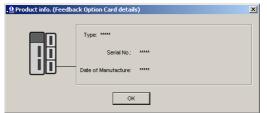
(Displayed only when option modules are mounted) Production Information Window

Serial No.

Displays the details of the respective product information.

. ⁰ Product Information	(Detail of the Servopack)	×
	Type: SGDV-1R6A01A Serial No.: Date of Manufacture:	
	ОК	

. Product Information	(Detail of the Servomotor)	×
	Motor type: SGMAS-01ACA21	
	Serial No.: R10601-242-DK500	
	Date of Manufacture: 2004.03	
	Encoder type: UTTIH-B17EC	
	Serial No.: K247-4805D8	
	Date of Manufacture: 2004.03	
	ОК	



Product Information (Detail) Window (Displayed only when option modules are mounted)

Connection (Active only when a Feedback option module is mounted)

Displays information on the connected motor and encoder.

👲 Product info. (Feedb	duct info. (Feedback Option Card - Connection info.)					
	Servomotor					
	Туре:	*****				
	Serial No.:	****				
	Date of Manufacture:	*****				
	Encoder					
	Туре:	JZDP-M002-001				
	Serial No.:	****				
	Resolution:	16777216 [Pulse/rev]				
	Туре:	absolute				
	Soft version:	****				
	Date of Manufacture:	1995.95				
	Parameter file					
	Created from:					
	File version:					
	[ОК				

Click **OK** to return to the SigmaWin+ Σ -V component main window.

4.3.2 Monitor

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

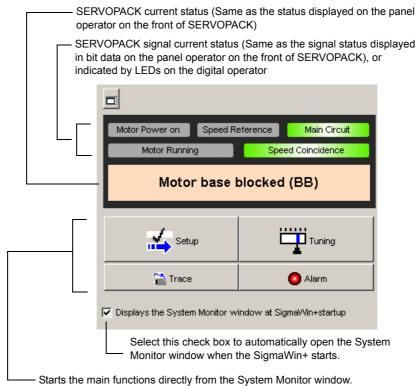
There are five types of monitor windows: System Monitor, Status Monitor, Motion Monitor, Input Signal Monitor, and the Output Signal Monitor.

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

Select the items to be monitored in the Monitor Item Setting Window (For System Monitor, the items to be monitored are fixed and cannot be selected.)

System Monitor

The System Monitor window will automatically open when the SigmaWin+ starts. Or, in the SigmaWin+ Σ -Vcomponent window, click **Monitor**, point to **Monitor**, and then click **System Monitor**.



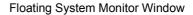


The System Monitor window is a dockable window. By clicking the button, the System Monitor window can be docked in the top frame of the application's window, or can be viewed as a floating window.

<u>.</u>	otor Power on Speed Reference	Main Circuit		2. ቆ 🔂 🐨 🗣 🛱 🔯 🖗 ① ≟ 쫷 Motor base blocked (BB)	229961	puq		
ation M	ontor		x Status	Monitor	×	Output S	ignal Monitor	
Axis	None	Value	Axis	None	Value 🔺	Axis	Output Terminal N	Signal Name
1	Current Alarm State	-		Main Circuit			ALM	
1	Motor Speed		101	Encoder (PGRDY)	•	101	SO1 (CN1-25, 26)	/COIN,/V-CN
1	Speed Reference		101	Motor Power (Request)	•		SO2 (CN1-27, 28)	/TGON
1	Internal Torque Reference		101	Motor Power ON	•	101	S03 (CN1-29, 30)	/S-RDY
1	Rotation angle 1 (number of pulses fr		101	Motor	•	101	ALO1	
1	Rotation angle 2 (angle from the origin)		101	Dynamic Brake (DB)	•	101	ALO2	
1	Input Reference Pulse Speed			Rotation Direction	•		AL03	
1	Deviation Counter (Position Deviations)			Mode Switch		4		
1	Cumulative Load			Speed Reference (V-Ref)				<u>,</u>
1	Regenerative Load			Torque Reference (T-Ref)				
1	DB Resistor Consumption Power			Position Reference (PULS)	•			
1	Reference Pulse Counter			Clear Signal	•	Input Sig	nal Monitor	
1	Feedback Pulse Counter			Position Reference Direction	•	Axis	Input Terminal Name	Signal Name
1	Fully Closed Feedback Pulse Counter	-		Surge Current Limit Register Short R		01	SID (CN1-40)	/S-ON
1	Total Operation Time			Regenerative Transistor			SII (CN1-41)	/P-CON
1	Alarm traceback time stamp No.1			Regenerative Error Detection	•		SI2 (CN1-42)	P-OT
1	Alarm traceback time stamp No.2			AC Power ON	•		SI3 (CN1-43)	N-OT
1	Alarm traceback time stamp No.3			Overcurrent	A		SH (CN1-44)	/ALM-RST
1	Alarm traceback time stamp No.4		D 1	Origin not Passed			SI5 (CN1-45)	/P-CL
1	Alarm traceback time stamp No.5		1	Ripple being corrected			SI6 (CN1-46)	AN-CL
1	Alarm traceback time stamp No.6		1	/S-0N			SEN	
1	Alarm traceback time stamp No.7			/P-CON	•			
1	Alarm traceback time stamp No.8			P-OT	•			
1	Alarm traceback time stamp No.9			N-OT				
1	Alarm traceback time stamp No.10			P-CL	· .			
				ALCI.				

Docked System Monitor Window

totion M	Ionitor	×	Status M	lonitor		×	Output S	gnal Monitor	
Axis	Name	Value	Axis	Name	Value	-	Axis	Output Terminal N	Signal Nam
1	Current Alarm State			Main Circuit		-7		ALM	
11	Motor Speed			Encoder (PGRDY)		_		SO1 (CN1-25, 26)	/CON.V-C
11	Speed Reference			Motor Power (Request)				SO2 (CN1-27, 28)	/TGON
1	Internal Torque Reference			Motor Power ON		_		SO3 (CN1-29, 30)	/S-RDY
1	Rotation angle 1 (number of pulses fr			m Monitor		×		AL.01	
1	Rotation angle 2 (angle from the origin)					_		ALO2	
1	Input Reference Pulse Speed							AL03	
1	Deviation Counter (Position Deviations)					_			
1	Cumulative Load		M	otor Power on Speed Refer	rence Main Circuit				
1	Regenerative Load			Motor Running	Speed Coincidence				
1	DB Resistor Consumption Power			www.evening	speeu concidence				
1	Reference Pulse Counter						1		•
1	Feedback Pulse Counter			Motor base blo	cked (BB)				
1	Fully Closed Feedback Pulse Counter					_			
1	Total Operation Time					_	Input Sign	tal Monitor	
1	Alarm traceback time stamp No.1							-	
1	Alarm traceback time stamp No.2			Setup	Tuning		Axis	Input Terminal Name	Signal Nam
1	Alarm traceback time stamp No.3		II —		-			SI0 (CN1-40)	/S-ON
1	Alarm traceback time stamp No.4			Trace	Alorm			SII (CN1-41)	/P-CON
1	Alarm traceback time stamp No.5		II	Inace	V Alerm			SI2 (CN1-42)	P-OT
1	Alarm traceback time stamp No.6							SI3 (CN1-43)	N-OT
1	Alarm traceback time stamp No.7		Di 🔽 Di	splays the System Monitor windo	w at Sigmai/Vin+startup			SI4 (CN1-44)	/ALM-RST
1	Alarm traceback time stamp No.8							SI5 (CN1-45)	/P-CL
1	Alarm traceback time stamp No.9			N-OT	•	_		SI6 (CN1-46)	/N-CL
1	Alarm traceback time stamp No.10		101	JP-CL				SEN	
			101	AV-CL					
			1101	/ALM-RST					
			101	SEN					
			101	/SPD-D					
			101	/SPD-A					
				/SPD-B					
				IC-SEL		-			
<[117			ъĒ	1		



Status Monitor

The status monitor function monitors the SERVOPACK status.

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

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

Status Monitor

Axis	Name	Value	•
	Main Circuit	-	
	Encoder (PGRDY)	-	
	Motor	-	
	Dynamic Brake (DB)	-	
	Rotation Direction	-	
	Mode Switch	-	
	Speed Reference (V-Ref)	-	
	Torque Reference (T-Ref)	-	
	Position Reference (PULS)	-	
	Command Pulse Sign (SIGN)	-	
	Clear (CLR)	-	•

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 "Value" column.

Status Monitor						
Axis	Name	Value	▲			
1 0	Main Circuit	Main Circuit ON				
0	Encoder (PGRDY)	Encoder Prepar				
1 0	Motor	No Motor Power				
0	Dynamic Brake (DB)	-				
0	Rotation Direction	-				
0	Mode Switch	-				
0	Speed Reference (V-Ref)	-				
0	Torque Reference (T-Ref)	-				
0	Position Reference (PULS)	-				
0	Command Pulse Sign (SIGN)	-				
	Clear (CLR)	-	¥			

Motion Monitor

The motion monitor function monitors the SERVOPACK motion.

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

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

Axis	Name	Value	Unit	<u> </u>
D٥	Alarm	-		
0	Speed Feedback	-	min-1	
	Torque Reference	-	%	
0	Speed Reference	-	min-1	
0	Command Pulse Speed	-	min-1	
0	Deviation Counter	-	reference units	
0	Angle of Rotation 1 (number of pulse	-	pulse	
0	Angle of Rotation 2 (number of degre	-	deg	
	Cumulative Load	-	%	

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 Mor	nitor			
Axis	Name	Value	Unit	
	Alarm	-		
⊡ 0	Speed Feedback	0	min-1	
	Torque Reference	-	%	
⊡ 0	Speed Reference	0	min-1	
	Command Pulse Speed	-	min-1	
	Deviation Counter	-	reference units	
⊡ 0	Angle of Rotation 1 (number of pulse	371	pulse	
⊡ 0	Angle of Rotation 2 (number of degre	0	deg	
	Cumulative Load	-	%	•

Input Signal Monitor

The input signal monitor function monitors the SERVOPACK input signals.

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

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

Axis	Input Terminal Name	Signal Name	Value	
0	SI0 (CN1-40)	/S-ON	-	
0	SI1 (CN1-41)	/P-CON	-	
0	SI2 (CN1-42)	P-OT	-	
0	SI3 (CN1-43)	N-OT	-	
0	SI4 (CN1-44)	/ALM-RST	-	
0	SI5 (CN1-45)	/P-CL	-	
0	SI6 (CN1-46)	/N-CL	-	
0	SEN		-	

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.

put Sigr	nal Monitor			
Axis	Input Terminal Name	Signal Name	Value	
v 0	SI0 (CN1-40)	/S-ON	Hi	
v 0	SI1 (CN1-41)	/P-CON	Hi	
v 0	SI2 (CN1-42)	P-OT	Hi	
0	SI3 (CN1-43)	N-OT	-	
0	SI4 (CN1-44)	/ALM-RST	-	
0	SI5 (CN1-45)	/P-CL	-	
0	SI6 (CN1-46)	/N-CL	-	
0	SEN		-	

Output Signal Monitor

The output signal monitor function monitors the SERVOPACK output signals.

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

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

Axis	Output Terminal N	Signal Name	Value	
0	ALM		-	
0	SO1 (CN1-25, 26)	AVARN	-	
	SO2 (CN1-27, 28)	/BK	-	
	SO3 (CN1-29, 30)	/S-RDY	-	
0	ALO1		-	
	ALO2		-	
0	ALO3		-	

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.

Axis	Output Terminal N	Signal Name	Value	
v 0	ALM		Hi	
v 0	SO1 (CN1-25, 26)	AVARN	Hi	
v 0	SO2 (CN1-27, 28)	/BK	Hi	
0	SO3 (CN1-29, 30)	/S-RDY	-	
0	ALO1		-	
0	ALO2		-	
0	ALO3		-	

Monitor Item Setting

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

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

Monitor Item Settin	g			×
🔳 Status	Motion	📔 🚵 Input Signal	🛃 Output Signal	
Monitor select:			Monitor selection:	
		Add all >> Add > < Delete	Main Circuit Encoder (PGRDY) Motor Power (Request) Motor Power ON Motor Rotating (Moving) Direction Rotation Direction Mode Switch Torque (Force) Reference (T-R Position Reference (T-Ref) Position Reference Direction Surge Current Limit Register Sh Regenerative Error Detection AC Power ON Overcurrent Origin not Passed Ripple being corrected <i>IS</i> -ON P-CON	
			OK Cancel	

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 selection** list and then click **Add**.

	Monitor Item Setting	×	
Information not —— displayed in the Monitor window.	Monitor Item Setting Image: Status Motion Image: Status Motion Monitor select: Monitor selection: Deviation Counter (Position Deviatic Regenerative Load Add all >> DB Resistor Consumption Power Add all >> Reference Pulse Counter Feedback Pulse Counter Feuß Ocsd Feedback Pulse Count Add > Total Operation Time Setting maximum value of Motor me Setting maximum value of Encoder Alarm traceback time stamp No.1 Alarm traceback time stamp No.5 Alarm traceback time stamp No.5 Alarm traceback time stamp No.6 Alarm traceback time stamp No.7 Alarm traceback time stamp No.8 Alarm traceback time stamp No.9 Alarm traceback time stamp No.9 Alarm traceback time stamp No.9 Alarm traceback time stamp No.10 Alarm traceback time stamp No.9 Alarm traceback time stamp No.10 Alarm traceback time stamp No.10 <td< td=""><td></td><td> Information to be displayed in the Monitor window Moves the selected item up one level. Moves the selected item down one </td></td<>		 Information to be displayed in the Monitor window Moves the selected item up one level. Moves the selected item down one
	OK Cancel		level.

tion M	nitor		× Status	Monitor	×	Output S	ignal Monitor	
Axis	Name	Value	Axis	Name	Value 🔺	Axis	Output Terminal N	Signal Name
21	Current Alarm State	Normal		Main Circuit			ALM	1
1	Motor Speed	0		Encoder (PGRDY)	•		SO1 (CN1-25, 26)	/COIN,/V-CMP
1	Speed Reference	-2		Motor Power (Request)	-		SO2 (CN1-27, 28)	/TGON
1	Internal Torque Reference	0		Motor Power ON	•		SO3 (CN1-29, 30)	/S-RDY
1	Rotation angle 1 (number of pulses fr	0		Motor	-		ALO1	
1	Rotation angle 2 (angle from the origin)	150		Dynamic Brake (DB)	•		ALO2	
1	Input Reference Pulse Speed	0		Rotation Direction	-		ALO3	
				Mode Switch	•			
				Speed Reference (V-Ref)	•			
				Torque Reference (T-Ref)	•			
				Position Reference (PULS)	•			
				Clear Signal	•			
				Position Reference Direction	•			
				Surge Current Limit Register Short R				1
				Regenerative Transistor				
				Regenerative Error Detection	-			
				AC Power ON	•			
				Overcurrent	•	Input Sig	nal Monitor	
				Origin not Passed	-	Axis	Input Terminal Name	Signal Name
				Ripple being corrected	-		SI0 (CN1-40)	/S-ON
				/S-ON	-		SI1 (CN1-41)	/P-CON
				/P-CON	-		SI2 (CN1-42)	P-OT
			1	P-OT	-		SI3 (CN1-43)	N-OT
				N-OT	-		SI4 (CN1-44)	/ALM-RST
				/P-CL	-		SI5 (CN1-45)	/P-CL
			1	/N-CL	-		SI6 (CN1-46)	/N-CL
			1	/ALM-RST	-		SEN	
				SEN	-			
				/SPD-D	-			
				/SPD-A	-			
				/SPD-B	-			
				/C-SEL				

3. Click **OK**. Monitoring of the selected items starts.

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

Name Value Status Montor Axis Name Value Axis Output Signal Montor 1 Motor Speed 0 <th></th> <th></th> <th>×</th> <th>1</th> <th></th> <th> ×</th> <th></th> <th></th> <th></th>			×	1		×			
1 Current Alarm State Normal 1 Motor Speed 0 1 Speed Reference - 1 Motor Motor Temes Speed 0 1 Rotation angle 1 (number of pulses fr) 0 1 Indoor Power ON - 1 Motor Speed - 1 Input Reference Pulse Speed - 1 Rotation Direction - 1 Torque Reference (V-Ref) - 1 Clear Signal - 1 Regenerative Transistor - 1 Regenerative Transistor - 1 Speed Reference - 1 Speed Reference - 1 Speed Reference CV-Ref) - 1 Re	tion Moni	itor	^ ^	Status M	lonitor	^	Output S	ignal Monitor	
1 Motor Speed 0 1 Speed Reference -1 1 Internal Torque Reference 0 1 Motor Speed (number of pulses Str	xis	Name	Value	Axis	Name	Value 🔺	Axis	Output Terminal N	Signal Name
11 Speed Reference -	1	Current Alarm State	Normal		Main Circuit	-		ALM	
Internal Torque Reference 0 Rotation angle 1 (number of pulses fr 0 Input Reference Pulse Speed 0 Down 1 Mode Switch - Imput Reference Pulse Speed 0 Montor Item Setting 1 Montor Item Setting 1 Montor Item Setting 1 Montor Item Setting 1 Restorm And Part Item Setting 1 Restorm Reference (F-Ref) - Restorm Re	1	Motor Speed	0	1	Encoder (PGRDY)	•	1	SO1 (CN1-25, 26)	/COIN,/V-C
Rotation angle 1 (number of pulses from Up or Input Reference Pulse Speed Up Down Input Reference (DB) - I ALO1 I ALO2 I I ALO3 I I I I ALO3 I <td< td=""><td></td><td>Speed Reference</td><td>-1</td><td>□1</td><td>Motor Power (Request)</td><td>-</td><td>1</td><td>SO2 (CN1-27, 28)</td><td>/TGON</td></td<>		Speed Reference	-1	□ 1	Motor Power (Request)	-	1	SO2 (CN1-27, 28)	/TGON
Rotation angle 2 (angle from the original Reference Pulse Speed up input Reference Pulse Speed up Help 1 Montor Item Setting Speed Reference (V-Ref) Montor Item Setting 1 Montor Item Setting 1 Montor Item Setting 1 Common Setting 1 Montor Item Setting 1 Common Setting 1 Montor Item Setting 1 Common Setting 1 Regenerative Error Detection - 1 Ac Power ON 1 Ac Power ON 1 Ac Power ON 1 Rependentive Error Detection 1 Rependentive Error Detection 1 Representive Error Detection 1 Representive Error Detection 1 Representive Error Detection 1 Representive Error Detection 1 Rocon 1 Rocon		Internal Torque Reference	0	1	Motor Power ON	•	1	SO3 (CN1-29, 30)	/S-RDY
Input Reference Puise Speed Up Down I Rotation Direction - Help Help 1 Mode Switch - - Montor Item Setting Postion Reference (V-Ref) - - - Montor Item Setting Postion Reference (V-Ref) - - - Imut Reference (PULS) - - - - - Imut Reference (PULS) - - - - - - Imut Reference Proce Pulse - <td></td> <td>Rotation angle 1 (number of pulses fr</td> <td> 0</td> <td></td> <td>Motor</td> <td>-</td> <td>1</td> <td>ALO1</td> <td></td>		Rotation angle 1 (number of pulses fr	0		Motor	-	1	ALO1	
Input Reference Pulse Speed Down I Rotation Direction - Imput Reference Pulse Speed Imput Reference (V-Ref) -		Rotation angle 2 (angle from the original	Up		Dynamic Brake (DB)	•	1	ALO2	
Help Mode Switch - Monkor Item Setting 1 Torque Reference (V-Ref) - Monkor Item Setting 1 Torque Reference (V-Ref) - 1 Torque Reference (V-Ref) - - 1 Torque Reference (V-Ref) - - 1 Clear Signal - - 1 Postion Reference Direction - - 1 Regenerative Error Detection - - 1 Regenerative Error Detection - - 1 Overcurrent - - - 1 Overcurrent - - - 1 Overcurrent - - - 1 Orgin not Passed - - - 1 Sc ON - - - 1 PoT - - - 1 PoT - - - 1 NoT - - - 1		Input Reference Pulse Speed			Rotation Direction	-	1	ALO3	
Monitor Item Setting I Torque Reference (T-RE) - I Postion Reference Direction - I Regenerative Error Direction - I Ac Power ON - I Origin not Passed - I Pool			Down		Mode Switch	-			
Monitor item setting 1 Postion Reference (PULS) - 1 Clear Signal - - 1 Clear Signal - - 1 Surge Current Limit Register Short R - - 1 Surge Current Limit Register Short R - - 1 Regenerative Transistor - - 1 A CP ower ON - - 1 Overcurent - - 1 Nortic Terminal Name Signal Monitor - 1 A CP ower ON - - 1 Nortic Terminal Name Signal Monitor - 1 Nortic Terminal Name Signal Monitor - 1 ScoN - - 1 Nortic Terminal Name Signal Monitor - - 1 Nortic Terminal Name Signal Monitor - - 1 ScoN - - - 1 Nort - - - 1 PocON -			Help		Speed Reference (V-Ref)	-			
Image: Construction Postion Reference (PCLS) - Image: Construction - - Image: Constres			Monitor Itom Sotting		Torque Reference (T-Ref)	-			
Image: style			Monitor Item Setting		Position Reference (PULS)	-			
Image: Surge Current Limit Register Short R - Image: Regenerative Transistor - Image: Regenerative Transistor<					Clear Signal	-			
Image: Constraint of the second sec					Position Reference Direction	·			
Image: Second					Surge Current Limit Register Short R	-	1		
Image: Constraint of the constr					Regenerative Transistor	·			_
Imput Signal Montor Imput S					Regenerative Error Detection	-			
I Overcurrent - I Overcurrent - I Origin not Passed - I Ripple being corrected - I P-CON - I P-CON - I P-CON - I N-OT - I SIG (NI-43) N-OT I SIG (NI-45) N-OL I SIG (NI-45) N-OL I SIG (NI-45) N-OL I SIG (NI-46) N-OL I SIG (NI-46) N-OL I SIG (NI					AC Power ON	-	Input Sig	al Monitor	
Image: Constraint of the second se					Overcurrent	·	input oigi		
I N-ON - I N-ON - I P-ON - I P-ON - I P-ON - I P-OT - I N-OT - I N-OT - I N-OL - I N-CL - I N-CL - I SS (ON-43) N-OL I SS (ON-46) N-UL I SPO-D - I SPD-A - I SPD-A -					Origin not Passed	-	Axis	Input Terminal Name	Signal Nam
I P-CON - I P-OT - I P-OT - I P-OT - I P-OT - I N-OT - I P-CL - I N-CL - I N-CL - I N-CL - I SE - I SE - I SE - I SE - I SEN - I SPD-D - I SPD-A - I SPD-B -					Ripple being corrected	-	D 1	SI0 (CN1-40)	/S-ON
Image: Constraint of the second se						-		SI1 (CN1-41)	/P-CON
Image: Constraint of the second se						-	1	SI2 (CN1-42)	P-OT
Image: space of the space o						-	1	SI3 (CN1-43)	N-OT
I M-CL - I Second - I I I Second I I I Second I I I I I I Second I I I I I I I I I I I I I I I I I I <td></td> <td></td> <td></td> <td></td> <td></td> <td>-</td> <td>01</td> <td>SI4 (CN1-44)</td> <td>/ALM-RST</td>						-	01	SI4 (CN1-44)	/ALM-RST
Image: Constraint of the constr						-	1	SI5 (CN1-45)	/P-CL
1 SEN - 1 SPD-D - 1 SPD-A - 1 SPD-B -						-	1	SI6 (CN1-46)	/N-CL
						-	1	SEN	
□ 1 ISPD-A						-			
1 ISPD-B -						-			
						-			
						-			
				1		-			

4.3.3 Wiring Check

The wiring check function is used to check the status of I/O signals between the SERVOPACK and the host controller or peripheral devices. Changing an output signal status in Forced Output mode allows you to check the operation of the host controller and peripheral devices.

To check wiring, use the following procedure.

In the SigmaWin+ Σ -V component main window, click **Monitor** and then **Wiring Check**.

Wiring check AXIS#1							×
	Model	SGDV-1R6A01A				Hi	
CN1-7,8 PULS	Reference	0 [refer	rence units]		¢	Lo	
CN1-11,12 SIGN	•	[pps] 0			Θ	Forced Hi	
		0 (min-1	1]		٢	Forced Lo	
CN1-5,6 V-REF	Speed	-12 [min-1	1]				
		-0.02 [V]					
CN1-9,10 T-REF	Torque	0 [%]					
		[V] 0.00	Monitor Mode				
CN1-15,14 CLR	CLEAR Sign	al Not Input	Forced Output Mode				
CN1-4,2 SEN	Sensor OFF						
(SI0)CN1-40 /S-ON	Hi) Servo OFF		AL01 Output OFF	•	ALO1	CN1-37	
	I		AL02 Output OFF	•	ALO2	CN1-38	
(SI1)CN1-41 P-CON	Proportiona	Operation C	AL03 Output OFF	•	AL03	CN1-39	
(SI2)CN1-42 P-OT	Hi Allow Forw	ard Rup	PAO Output ON	÷	PAO	CN1-33,34	
(02)00002 11:00	T		PBO Output OFF	•	PBO	CN1-35,36	
(SI3)CN1-43 N-OT	Hi) 🛛 Allow Reve	rse Run	PCO Output OFF	•	PCO	CN1-37,38	
(SI4)CN1-44 /ALM-RST	Hi Alarm Not R	aaat	Positioning Incomplete Speed Coincidence		/COIN	(SO1)CN1-25,26	2
(314)UNT-44 J /ALM-N31		0001	L Sheen compinence	ľ	J 74-CIMP	(301)041-25,26	
(SI5)CN1-45 P-CL	🕫 🛛 No Forward	External Toi	Motor Stopped	•	/TGON	(SO2)CN1-27,28	
(SI6)CN1-46 N-CL	Hi No Forward	Pauaras Ta	Motor Preparation Compl		/S-RDY	(SO3)CN1-29,30	
	I		Normal	Ĭ	ALM		<
	I		j normai	ľ	J ALIW	CN1-31,32	
CN8-5,6 HVVBB2		cicaseu					

Wiring Check in Monitor Mode

Wiring check AXIS#1					×
	Model SGDV-11	R6A01A		•	Hi
CN1-7,8 PULS	Reference	0 [reference units]			Lo
CN1-11,12 SIGN		0 [pps]			Forced Hi
		0 [min-1]		۲	Forced Lo
CN1-5,6 V-REF	Speed	-12 [min-1]			
		-0.02 [V]			
CN1-9,10 T-REF	Torque	0 [%]			
		0.00 [V] Monitor Mode			
CN1-15,14 CLR	CLEAR Signal Not Input	Forced Output Mode			
CN1-4,2 SEN	Sensor OFF				
(SI0)CN1-40 /S-ON	Servo OFF		H	ALO1	CN1-37
	alive on		H	ALO2	CN1-38
(SI1)CN1-41 P-CON	Proportional Operation C		H	ALO3	CN1-39
				PAO	CN1-33,34
(SI2)CN1-42 P-OT	Allow Forward Run		6	PBO	CN1-35,36
(SI3)CN1-43 N-OT	Allow Reverse Run	H	٢	PCO	CN1-37,38
				/COIN	
(SI4)CN1-44 /ALM-RST	Alarm Not Reset			IV-CMP	(SO1)CN1-25,26
(SI5)CN1-45 / /P-CL	No Forward External To	HI 🔟		/TGON	(SO2)CN1-27,28
(SI6)CN1-46 N-CL	No Forward Reverse To		•	/S-RDY	(SO3)CN1-29,30
CN8-3,4 HVVBB1	Baseblock released		۵	ALM	CN1-31,32
CN8-5,6 HVVBB2	Baseblock released				
			Contraction of the		

Wiring Check in Forced Output Mode

Depending on each I/O signal status, the corresponding signal status on the screen will vary.

Monitor Mode

I/O signal status can be monitored in Monitor mode.

Input signal: Change the signal status on the host controller and check the input signal status and wiring to the SERVOPACK.

Output signal: Check the output signal status and wiring to the SERVOPACK.

Forced Output Mode

Output signal status can be forcibly set in Forced Output mode. I/O signal status is continuously monitored also in Forced Output mode. Click **Hi** or **Lo** to set the signal status. Forced Output mode is disabled while the servo is on.

4.3.4 Online Vibration Monitor

If vibration occurs while the power is supplied to the servomotor, the online vibration monitor can be used to detect the vibration elements and analyze the frequency by setting the parameters to select a notch filter.

To monitor the vibrations online, use the following procedure.

1. In the SigmaWin+ Σ -V component main window, click **Monitor**, and then click **Online Vibration Monitor**. A warning message appears, telling you that the motor may move unpredictably if the parameters are changed.

Online Vibration Monitor	×
Change User Parameter by this function, the action of a motor may change a lot.	
OK?	
OK Cancel	

2. Click **OK**, and the Online Vibration Monitor box appears.

Petection execute / Stopping operation Detection situation	_ &	Execute
Detection result It displays sequentially from what ha frequency. Name		of vibration
It displays sequentially from what ha frequency.	is the large peak value Frequency	Unit
It displays sequentially from what ha frequency. Name The 1st peak frequency	Frequency	
It displays sequentially from what ha frequency.	Frequency -	Unit Hz

3. Click **Execute** to activate the vibration sensor. The peak frequencies of the vibrations are displayed.

Online Vibration Monitor AXIS#0 Detection execute / Stopping operation			
Detection situation Vibration detection completed.	□ Q	Execute	
Detection result It displays sequentially from what ha frequency.			
It displays sequentially from what ha frequency. Name	Frequency	Unit	
It displays sequentially from what ha frequency. Name The 1st peak frequency	Frequency 1350	Unit Hz	
It displays sequentially from what ha frequency. Name	Frequency	Unit	

4. Click Auto Setting. In the "Previous" column, the current settings are displayed.

💭 Online Vibration Monitor AXIS#0			X
Detection execute / Stopping operation			
Detection situation		E>	ecute
Vibration detection completed.	٩	=	Q
Detection result			
It displays sequentially from what has the frequency.	arge peak valu	ue of vibra	ation
Name	Frequency	Unit	
The 1st peak frequency	1820	Hz	
The 2nd peak frequency	100	Hz	
The 3rd peak frequency	310	Hz	
		Auto	Setting 🕿
No. Name	Previ	Current	Unit
Pn401 1st Step 1st Order Torque Referen	250		0.01ms
Pn408 Torque Related Function Switch	0101		-
Pn409 1st Step Notch Filter Frequency	713		Hz
Write result	Reset		

5. Click **Write result**. The adjusted values for detected frequencies are displayed in the "Current" column, and the values are stored in the SERVOPACK.

Detectiv	on situation		[
	Situation	~	E	xecute
\	/ibration detection completed.	\sim		Q
	lays sequentially from what has the la	irge peak va	lue of vibr	ation
freque		Frequency	Unit	
The	1st peak frequency	1820	Hz	
	2nd peak frequency	100	Hz	
		310		
1			Auto	Setting ;
			Auto	Setting ;
		Previ	Auto	Setting ;
vrite res	sult			Unit
Write res	sultName		Current	Unit
Vrite res	sult Name 1 st Step 1 st Order Torque Referen	. 250	Current 250	

To clear the table without saving the values, click **Reset**.

4.3.5 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+ Σ -V component main window, click **Monitor** and then click **Serial Command Monitor**. The Serial Command Monitor window appears.

• Serial command monitor AXIS#1	×
Binary Command	start the monitor monitoring time p0:00:00 stop the monitor
Command receive character number Command receive error character number Servopack Send command	display clear communication setting Serial Communication Protocol RS422 with Echo Back Baud rate 9600 Answer
Command send character number	Answer (OK)

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 AXIS#1	X	
	Binary ECommand		
		he monitor	
		monitoring time 00:00:14	
	Command receive Command receive error D		
Γ	Servopack Send command	save display clear	
	00000 31 53 56 4F 4E 0D 0A 31 4F 4B 1 S V 0 N . 1 0 K	nication setting	1
Displays the sent —		ommunication Protocol	 Determined by
or received number of		with Echo Back	the parameter
characters after	Beud rat		settings. See Section <u>4.1</u> for
turning on the power.	Answer	r	details on setting
ponon	Command send character 21 Answer	r (OK)	parameters.
F			

Serial Command Monitor Window: Binary Display

Serial command monitor AXIS#1	<u>×</u>
Binary Command	start the monitor monitoring time 00:00:50
Command receive Command receive error Character number 16 Character numbers 0	display clear
	communication setting Serial Communication Protocol RS422 with Echo Back
	Baud rate 9600 Answer Answer (OK)

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.

Serial c	command monitor AXIS#1			×	
Binar	Y Command		,		
🐴 Ser	vopack Receive command				
00000	31 53 56 4F 4E 0D 0A 31 53 56	1 S V O N 1 S V 🔺	start the monitor		
00010	4F 46 46 0D 0A 31 73 76 6F 6E	0 F F 1 s v o n			
00020	0D 0A 31 73 76 6F 66 66 0D 0A	1 s v o f f	I		
			monitoring time	00:01:52	
			stop the monitor		
		id receive error 0			 Saves the information about the
- 🚰 Ser	vopack Send command		🔚 save di	splay clear	commands in a file.
00000	31 53 56 4F 4E 0D 0A 31 4F 4B	1 S V O N 1 O K 🔺			
00010	20 20 20 20 20 20 20 20 20 0D		communication setting		
00020	0A 31 53 56 4F 46 46 0D 0A 31	. 1 S V O F F 1	Serial Communication Protocol		
00030	4F 48 20 20 20 20 20 20 20 20 20	ок			
00040	20 0D 0A 31 53 56 4F 4E 0D 0A	1SVON	RS422 with Echo Back		
00050	31 4F 4B 20 20 20 20 20 20 20 20	1 ОК			
00060	20 20 0D 0A 31 53 56 4F 46 46	1 S V O F F	Baud rate		
00070	0D 0A 31 4F 4B 20 20 20 20 20	10К	9600		
00080	20 20 20 20 0D 0A	• • • • • • •	Answer		
Comman number	d send character 86		Answer (OK)		
			1		

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 SERVOPACK Axis Name

The SERVOPACK axis name setting function can be used to set a SERVOPACK axis name for each SERVOPACK. The set axis name will be displayed in the search results of Connect box. (See Connect box of "2.2 Selecting a SERVOPACK.") It is easier to identify each SERVOPACK by using its axis name rather than by using its model or axis address.

In the SigmaWin+ Σ -V component main menu, click Setup and then click Servopack Axis Name Setting.



Enter the axis name in the **Servopack axis name** input field and then click **Set**. The display in the **Current name** box will change to the set axis name.

4.4.2 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.

1. In the SigmaWin+ Σ -V 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 Absolute encoder Setup box appears.

Absolute encoder - Setup AXIS#41	×
Perform absolute encoder setup under the following circumstances: 1. At first start-up of the machine 2. When an "encoder backup alarm" has been generated 3. After the Servopack power has been turned OFF and the encoder cable removed	
Absolute encoder setup can only be performed with the Restart power after setup processing is complete.	
Alarm name Normal	
Execute setting	

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

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

Setup Verification	×
Upon execution of processing, the multi-turn data within th absolute encoder is reset to "0" and the mechanical syste go to a position data system different from that used until	m will
Continue processing?	
Continue	cel

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

f 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.

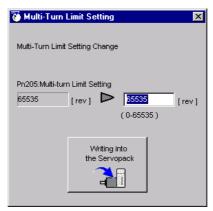
Set the multi-turn limit to the SERVOPACK and the servomotor using the following procedure.

 In the SigmaWin+ Σ-V 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.

Multi-Turn Limit Setting	×
The position data is cleared when this function is used. Since the multi-turn (multiple rotations) limit is changed, the position data of the machine system is changed and it is very dangerous. Do you want to continue the process?	
Continue	1

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.

🐻 Multi-Turn Limit Setting	×
Multi-Turn Limit Setting Change	
Pn205:Multi-turn Limit Setting	
65535 [rev] 🕨 1555	[rev]
(0-65535)	
Writing into	
the Servopack	
-	

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

Multi-turn Limit Setting
Multi-turn limit value was changed. The following procedure is needed to operate with changing the Multi-turn limit.
1. Close this function program.
2. "A.CC0.Multi-turn Limit Disagreement" is occurred when the power of the Servopack (control) is cycled.
3. Select "Multi-turn Limit Setting function" again.
 Set the Multi-turn limit setting value to the servomotor according to the instruction of the screen.
5. Cycle power again Multi-turn limit change is completed, through these procedures.
ОК

- 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 incomplete and the alarm A.CC0 Multi-turn Value Unmatched occurs.

 Return to the SigmaWin+ Σ-V 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.

۲	Multi-Turn Limit Setting 🛛 🛛 🔀
	The position data is cleared when this function is used. Since the multi-turn (multiple rotations) limit is changed, the position data of the machine system is changed and it is very dangerous.
	Do you want to continue the process?
	Continue

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

🐻 Multi-Turn	Limit Setting	×
Set the multi-t	urn limit value to the	servo motor.
Pn205:Multi-tu	rn Limit Setting	
1555	[rev]	Re-Change
	Writing into	
	the Motor	
	-201	

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

Th	itti-turn limit setting has been completed. Cycle (control) power. e operation can be done with the set multi-turn limit from the next e when the power is turned on.
pe	s very dangerous to operate the machine in this state. Be sure to rform the original point re-setup of a machine system after wer is turned on again.

10. Click OK.

4.4.3 Offset Adjustment

There are three types of offset adjustments.

- Speed/Torque reference offset adjustment
- Analog monitor output adjustment
- Motor current detection offset adjustment

Adjusting Speed and Torque Reference Offset

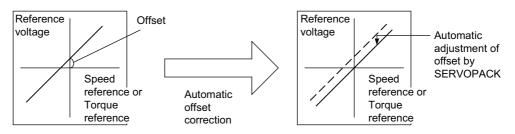
There are two types of speed/torque reference offset adjustment: Automatic and Manual.

Automatic Adjustment

When using the speed/torque control mode, the motor may turn slightly even if the analog reference voltage is set to 0V. This occurs when there is a slight (in units of mV) offset in the reference voltage of the upper-level controller or external circuit.

With this function, you can measure the offset and automatically adjust the reference voltage. Both the speed and torque references can be adjusted.

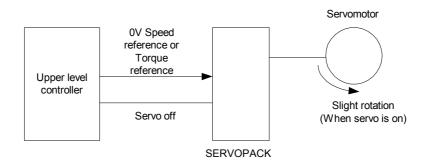
Automatically adjust the offset as follows when a voltage reference (offset) exists in either the upper-level controller or external circuit.



Once the offset has been automatically adjusted, the offset is recorded within the SERVOPACK.

Automatically adjust the offset using the following procedure.

- 1. Check that the power of the SERVOPACK is turned off.
- 2. Set the reference voltage so that it will be regarded as 0V by the upper-level controller or external circuit.



- 3. In the SigmaWin+ Σ -V component main window, click Setup, point to Adjust Offset and click Adjust the Speed and Torque Reference Offset, and the Adjust the Speed and Torque Reference Offset box appears.
- 4. Click the Automatic Adjustment tab.

Adjust the Speed and Torque Reference Offset	×
Automatic Adjustment Speed Reference Torque Re	

5. Click Adjust.

Adjust the Speed and Torque Reference Of	
Automatic Adjustment Speed Reference Torque Ne Speed Reference Offset -111 -51 Torque Reference Offset -1 Adjust	

The automatically adjusted values are displayed in the New box.

Manual Adjustment

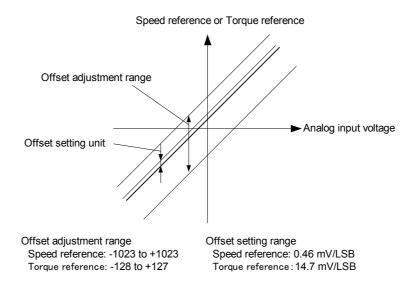
Manual adjustment of the speed/torque reference offset is a function that can be used in the speed and torque control modes. Use under the following conditions.

- When the position loop is closed in the upper-level controller and the error pulse is zero at servo lock stop
- When an offset has been purposefully set

This function may also be used when checking the offset data that had been automatically adjusted.

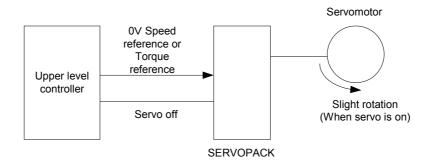
Although the basic functions are the same as those for the reference offset automatic adjustment mode, the adjustment must be done while directly inputting the offsets. Offsets can be set in both the speed reference and the torque reference.

The following diagram shows the range and setting units of the offset adjustment.



Manually adjust the offset using the following procedure.

1. Set the reference voltage so that it will be regarded as 0V by the upper-level controller or external circuit.



2. In the SigmaWin+ Σ -V component main window, click Setup, point to Adjust Offset and click Adjust the Speed and Torque Reference Offset, and the Adjust the Speed and Torque Reference Offset box appears. Click the Speed Reference tab to adjust the speed reference; click the Torque Reference tab to adjust the torque reference. The Speed Reference tab is clicked, the following box appears.

🎧 Adjust the Speed and Torque Reference Offset AXIS#0 🛛 🛛 🔀
Automatic Adjustment Speed Reference Torque Reference
Speed Reference -8 [min-1]
Speed Reference Offset
-423 -1 Q+

3. Use the +1 and -1 buttons to adjust the settings so that the value in the "Speed Reference" box becomes zero.

🏫 Adjust the Speed and Torque Reference Offset AXIS#0	X
Automatic Adjustment Speed Reference Torque Reference	
Speed Reference 0 [min-1]	
Speed Reference Offset	

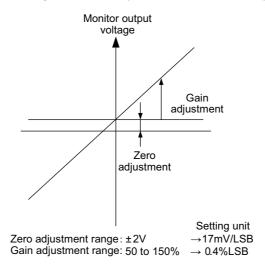
The settings for the torque reference can also be adjusted using the same procedure after clicking the **Torque Reference** tab.

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

Adjust the zero position using the following procedure.

 In the SigmaWin+ Σ-V 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.

Section 2018 Adjust the Analog Monitor Output AXIS#0	×
Zero Adjustment Gain Adjustment	
Analog Monitor Output Offset]
Channel CH1	
Offset +1 ⓓ↑	
Monitor Signal Torque reference : 1V/100%	

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.

 In the SigmaWin+ Σ-V 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.

Se Adjust the Analog Monitor Output AXIS#0	x
Zero Adjustment Gain Adjustment	
Analog Monitor Output Gain	
Channel CH1 💌	
Gain -2 -1 Q↓	
Monitor Signal Torque reference : 1V/100%	

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

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.

1. In the SigmaWin+ Σ -V 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 carelessly or incorrectly.

Adjust the Montor Current Detection Offset
Normally, it is not necessary to adjust the motor current detection offset as the Servopack has already been adjusted by our company. Careless use of this function may degrade Servopack performance.
Clicking the Continue button will start this operation.
Continue

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

Adjust the Motor Current Detection Offset AXIS#	0 ×
Automatic Adjustment Manual Adjustment	
V-phase Offset 12 V-phase Offset 12 Adjust	

3. Click Adjust.

Adjust the Motor Cur		₽
U-phase Offset V-phase Offset	12	New 16 12
	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+ Σ -V 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 carelessly or incorrectly.

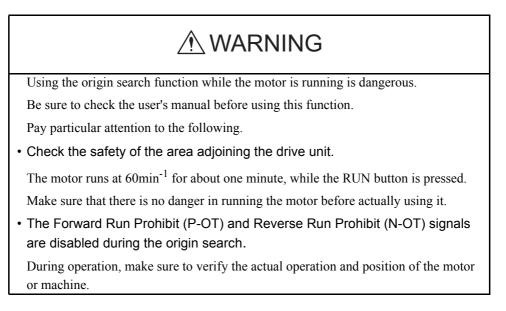
A	djust the Montor Current Detection Offset
	Normally, it is not necessary to adjust the motor current detection offset as the Servopack has already been adjusted by our company. Careless use of this function may degrade Servopack performance.
	Clicking the Continue button will start this operation.
	Continue

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

Adjust the Motor Current Detection Offset AXIS#0
Automatic Adjustment Manual Adjustment
Motor Current Detection Offset
Channel U-phase 💌
Offset 16 -1 €

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



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.

Perform an origin search using the following procedure.

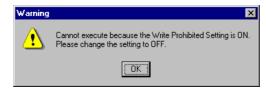
1. In the SigmaWin+ Σ -V component main window, click **Setup**, and then click **Search Origin**. A warning message appears reminding you of the dangers that are possible when using this function.



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

<When the Write Prohibited setting is ON>

If the write prohibited setting is on, the following message will appear.



Click **OK**, and set the write prohibited setting to off. See "4.4.5 Write Prohibited Setting" for setting method.

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

🎒 Origin Search Axis #0	X
Status	
Origin Search Not Executed	
_ Operation	
Servo ON	
Forward Reverse	
₼ + -	

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.

👌 Origin Search Axis #0	<
Status	
Operation Servo OFF	
Forward	

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 Write Prohibited Setting

The write-prohibited setting function is used to prevent the inadvertent rewriting of parameters from the digital operator. Rewriting parameters from the SigmaWin+ is allowed even if the write prohibited setting is on.

Set to ON or OFF the write prohibited setting using the following procedure.

1. In the SigmaWin+ Σ -V component main window, click **Setup**, and then click **Write Prohibited Setting**. One of the following boxes will appear.

<If the Write Prohibited Setting is ON>

🔒 Write F	Prohibited Setting AXIS#0		X
	Write Prohibited Setting is ON.		
		Setting	

Click the **v** button to change the value to "0000" and click **Setting**. The write prohibited setting is off.

<If the Write Prohibited Setting is OFF>



Click the **L** button to change the value to "0001" and click **Setting**. The write prohibited setting is on.

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



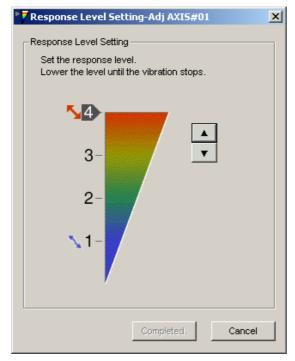
Click **OK** and restart the SERVOPACK.

4.4.6 Setting the Response Level

The response level setting function is used to adjust the responsiveness when using tuning-less function, which is a tuning function that requires no parameter settings.

Set the response level using the following procedure.

1. In the SigmaWin+ Σ -V component main window, click Setup and then Response Level Setting.



2. Click the setting arrows to adjust the response level so that the machine does not vibrate.

The factory setting is 4, the maximum level.

3. Click **Completed** to save the setting in the SERVOPACK.

4.4.7 Initializing Vibration Detection Level

This function detects vibration when a servomotor is connected to a machine and automatically adjusts the level at which vibrations are detected to output more exactly the vibration alarm (A.520) and warning (A.911).

To initialize the vibration detection level, use the following procedure.

1. In the SigmaWin+ Σ -V component main window, click **Setup**, and then click **Initialize Vibration Detection Level**. The Initialize Vibration Detection Level box appears.

📲 Initialize Vibration Detection Level AXIS#0	×
Setting Condition	1
Pn311 : Vibration Detection Sensibility (50 - 500)	
100 . [%]	
Pn310 : Vibration Detection Switch nibble 0 Vibration Detection Selection	
0 : No detection.	
Detection Start	
Setting Result	1
Pn312 : Vibration Detection Level	
50 [min-1]	

2. Select a percentage as the degree of vibration detection sensitivity and the vibration detection switch, and then click **Detection Start**.

Tnitialize Vibration Detection Level AXIS#0	×
Setting Condition	
Pn311 : Vibration Detection Sensibility (50 - 500)	
100 (%)	
Pn310 : Vibration Detection Switch nibble 0 Vibration Detection Selection	
2: Outputs alarm (A.520) when vibration is detected.	
Execute	
Setting Result	
Pn312 : Vibration Detection Level	
50 (min-1) (min-1)	

3. Click **Execute**. The level at which the vibrations are detected is automatically adjusted, and the setting is displayed in the box on the right and saved in the SERVOPACK.

Initialize Vibration Detection Level AXIS#0	x
Setting Condition	
Pn311 : Vibration Detection Sensibility (50 - 500)	
Pn310 : Vibration Detection Switch nibble 0 Vibration Detection Selection	
2 : Outputs alarm (A.520) when vibration is detected.	
Detection Start	
Setting Result	_
Pn312 : Vibration Detection Level	
50 [min-1] 🕨 24 [min-1]	
When vibration exceeds a detection level 24 [min-1], Alarm(A.520) is detected.	

4.4.8 EasyFFT

WARNING Using the EasyFFT 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 items. Check the safety of the area adjoining the drive unit. The motor turns less than a quarter of a turn several times in the specified direction while using the EasyFFT function. Make sure that there is no danger in running the motor before actually using it. External instructions Do not enter instructions from an external source, because this function creates instructions in the SERVOPACK and sends them to the motor.

The EasyFFT function can be used for fine frequency tuning by assigning a frequency, which is based upon the machine's characteristics, to the notch filter and setting the corresponding parameter to this frequency.

To perform an EasyFFT operation, use the following procedure.

1. In the SigmaWin+ Σ -V component main window, click **Setup** and then click **EasyFFT**. A warning message appears, reminding you of the possible dangers.

<u>/!</u> /	/ARNIN	IG			
Be sure to	confirm an	erous functio operation mar of the followin	nual before e	ed by operatio xecution.	on of a motor.
1.Please d	heck the sa	fety near an c	peration part	t.	
	ium two or r			n are less thar eration during	
	xecute this n of a motor		fully checkin	g that there is	no danger by
2. About a	in external ir	nstruction inpu	ıt 🛛		
	•			ause this func and outputs t	-
EasuEET i	s started.Ok	?			

Click **Cancel** to return to the main window without performing an EasyFFT operation.

2. Click **OK**, and the EasyFFT box appears.

EasyFFT AXIS#0	×
Servo ON/OFF operation	
Servo OFF	Servo ON
Measurement start / Stopping operation	
Measurement condition	
Stimulus signal Frequency	Start
Instruction amplitude	
(1 - 300) Rotation direction	
	Analyzing frequency
Measurement result	
Detected resonance frequency	[Hz]
Optimal notch filter frequency	[Hz]
Notch filter selection	
	Measurement complete

3. Click Servo ON.

EasyFFT AXIS#0				<u>></u>
-Servo ON/OFF operati	on			
Serv	o ON			Servo OFF
-Measurement start / S	topping opera	ation —		
_Measurement condit	ion			
Stimulus signal	Frequency			Start
Instruction amplitude	50	•	[%]	
	(1 - 300)			\sim
Rotation direction	Forward	•		
				Analyzing frequency
-Measurement result				
Detected resonance	e frequency			[Hz]
Optimal notch filter 1	requency			[Hz]
Notch filter selection				
				Measurement complete

4. Select the instruction amplitude and the rotation direction, and click **Start**. The motor begins to rotate, and the measurement of the frequency starts. After the measurements have been taken, the results are displayed in the lower section of the box.

EasyFFT AXIS#0	
Servo ON/OFF operation	
Servo ON	Servo OFF
Measurement start / Stopping operation	
Measurement condition	
Stimulus signal Frequency	Start
Instruction amplitude 50 🔭 [%]	
(1 - 300) Rotation direction Forward 💌	
Measurement result	
Detected resonance frequency 504	[Hz]
Optimal notch filter frequency 554	[Hz]
Notch filter selection The 1st step	

5. Click Measurement complete.

EasyFFT AXIS#0	×
Notch filter selection	-
Pn408:Torque Related Function Switch nibble 0 Notch Filter Selection 1	
0:Disabled	r
•	
1:Uses 1st step notch filter for torque reference.	r
,	
Notch filter frequency	
Pn409:1st Step Notch Filter Frequency	
2000 [Hz] 🕨 554 [Hz]	
Please click a button, when you reflect a measurement result in User Paramete	r.
Result Writing	
-	
<u>i</u>	

6. Click **Result Writing** to assign the results as parameter settings.

4.4.9 Resetting the Configuration Error of Option Module

When the SERVOPACK detects an option module configuration error, this function is used to reset the error.

There are three types of option modules:

- Reference module
- Safety option module
- Feedback option module

The SERVOPACK detects five kinds of option module configuration statuses: Two kinds of normal statuses as and three kinds of error statuses.

<Normal>

- Normally detected: The option module is correctly connected to the SERVOPACK.
- Not mounted: No option module is connected.

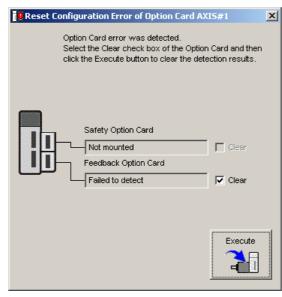
<Error>

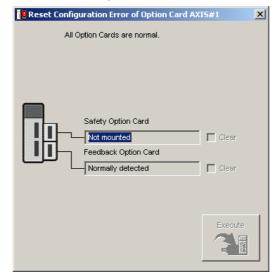
- Failed to detect: Cannot detect the previously connected option module.
- **Detection unmatched**: The detected option module is different from the previously connected option module.
- **Error detected**: An unsupported option module is connected. Or, an error occurred in communications with the option module.

To reset the configuration error of the option module, use the following procedure.

1. In the SigmaWin+ Σ -V component main window, click **Setup** and then **Reset Configuration Error of Option Card**.

If an option module error occurs when SigmaWin+ is started, the following box will appear.





If no error occurs when SigmaWin+ is started, the following box will appear.

2. Check to see if the **Clear** check box of the option module whose detection result to be cleared is selected, and then click **Execute**. A message will appear inform you that clearing the results will change the system configuration and overwrite some parameter settings, asking for your confirmation to clear the results.





The detection result **Error detected** cannot be cleared. Remove the option module, or check to see if the option module is correctly mounted.

3. Click **OK**. A message will inform you that the detection results were cleared, and prompt you to turn the power off and then on again to validate the settings.

Reset Configuration Error of Option Card
The detection results of the selected Option Cards were cleared. The setting will be validated by turning the power off and then on again.
Reconnect, the SigmaWin+ to the Servopack after turning on the power.
ОК

4. Click OK.

4.4.10 Safety Option Module Setup Alarm Clear

The Safety Option Module Setup Alarm Clear function can be used to clear an alarm A.EC0 or A.EC1 when using a Safety Module.

Alarm A.EC0 or A.EC1 may occur:

- At the initial startup after mounting a Safety Module
- During initialization of Safety Module parameters (Pcxx)
- After changing any of Safety Module parameter (Pcxx) settings
- After changing the Safety-related servo parameters (Pnxxx)

<How to Clear Alarm A.EC0>

Use the following procedure to clear an alarm A.EC0.

1. Select Safety Option Module Setup Alarm Clear from Setup menu in the SigmaWin+ Σ -V component main window.

The Safety Option Module Setup Alarm Clear box will appear.

Safety Option Module Setup Alarm Clear	×
The following Safety module alarm have been detected now. Click Execute to clear the alarm. Other Servo alarms might have been generated though it is 'Normal'. Confirm it by the Alarm Display.	
A.EC0 : Safety Module: Confirmation Alarm	
Execute	

2. Click **Execute**, and the alarm clearing process starts.

When the alarm is successfully cleared, the following message appears.

Safety Option Module Setup Alarm Clear		×
The following Safety module alarm have been detected now. Click Execute to clear the alarm. Other Servo alarms might have been generated though it is 'N Confirm it by the Alarm Display.		
Normal		
	Execute	

<How to Clear Alarm A.EC1>

Use the following procedure to clear an alarm A.EC1.

1. Select Safety Option Module Setup Alarm Clear from Setup menu in the SigmaWin+ Σ -V Component main window.

The Safety Option Module Setup Alarm Clear box will appear.

Safety Option Module Setup Alarm Clear	×
The following Safety module alarm have been detected now. Click Execute to clear the alarm. Other Servo alarms might have been generated though it is 'Nor Confirm it by the Alarm Display.	mal'.
A.EC1 : Safety-related Servo Parameter Unmatch Alarm	
	Execute

2. Click Execute. The Parameter Confirmation box will appear.

No.	Name	Servo	Input	Unit	Check
Pc01	EDM Signal Output Select Switch	0011H	0010H	-	
Pc10	Wait time to decelerate A	0	5	10ms	
Pc11	Deceleration monitoring time A	500	505	10ms	
Pc12	The monitoring speed during deceleration waiting A	0	5	min-1	
Pc13	Monitoring position A	10	15	edge	
Pc14	Monitoring speed A during constant speed	0	5	min-1	
Pc20	Wait time to decelerate B	0	5	10ms	
Pc21	Deceleration monitoring time B	500	505	10ms	
Pc22	The monitoring speed during deceleration waiting B	0	5	min-1	
Pc23	Monitoring position B	10	15	edge	
Pc24	Monitoring speed B during constant speed	0	5	min-1	
					_

Servo: Shows the current settings for Safety Module parameters

Input: Shows the values set in the parameter editing window for the Safety Module.

3. Verify the values shown in **the Input** column, and select the check boxes of the parameters whose settings are confirmed to be correct.

When all the check boxes of the displayed parameters are selected, the **OK** button becomes available.

No.	Name	Servo	Input	Unit	Check
Pc01	EDM Signal Output Select Switch	0010H	0010H	-	
Pc10	Wait time to decelerate A	5	5	10ms	
Pc11	Deceleration monitoring time A	505	505	10ms	
Pc12	The monitoring speed during deceleration waiting A	5	5	min-1	
Pc13	Monitoring position A	15	15	edge	
Pc14	Monitoring speed A during constant speed	5	5	min-1	
Pc20	Wait time to decelerate B	5	5	10ms	
Pc21	Deceleration monitoring time B	505	505	10ms	
Pc22	The monitoring speed during deceleration waiting B	5	5	min-1	
Pc23	Monitoring position B	15	15	edge	
Pc24	Monitoring speed B during constant speed	5	5	min-1	

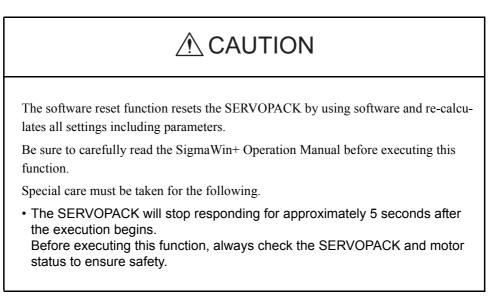
Click OK.

4. The following message appears.

Paramete	er Editing
į	Software reset function or the power supply re-turning on because the safety parameter was changed.
	OK

Click **OK**, and restart the SERVOPACK to validate the new settings.

4.4.11 Resetting the SERVOPACK by Software



The software reset function turns on or off the power supply to the SERVOPACK by using software.

To execute the software reset function, use the following procedure.

When using USB/RS-232C/RS-422

1. In the SigmaWin+ Σ -V component main window, click **Setup** and then click **Software Reset**.

A warning message will appear, confirming if you want to continue.

After calculating the moment of inertia as described in "4.6 Tuning," the window shown in step 2 will appear.

Software Reset		x
The software reset function resets and re-calculates all settings includi Be sure to carefully read the Sigma executing this function. Special care	ng parameters. Ain+ Operation Manual before	9
The Servopack will stop responding after the execution begins. Before executing this function, alwa motor status to ensure safety.		
Execute	Cancel	

Click **Cancel** to return to the main window without executing the software reset function.

2. Click Execute. The Software Reset window will appear.



3. Click **Execute**. When execution of the software reset function is complete, a warning message will appear, asking you to reconnect the SigmaWin+ to the SERVOPACK.

Software Reset	×
The software reset function has been completed. All settings including parameters were re-calculated. Always reconnect the SigmaWin+ to the Servopack after execution of this function.	
ОК	

4. Click **OK** to close the Software Reset window. All settings including parameters have been re-calculated. Disconnect the SigmaWin+ from the SERVOPACK, and then reconnect.

■ When using a Controller

1. In the SigmaWin+ Σ -V component main window, click **Setup** and then click **Software Reset**.

A warning message will appear, confirming if you want to continue. After calculating the moment of inertia as described in "4.6 Tuning," the **Software Reset** window shown in step 2 will appear.

Software	Reset	
Δ.	CAUTION	
and re-c Be sure	alculates all settings including to carefully read the SigmaW	
after the Before e	vopack will stop responding f e execution begins. executing this function, alway atus to ensure safety.	
	Execute	Cancel

Note: Click Cancel to return to the main window without executing the software reset function.

2. Click Execute. The following message will appear.

Software Reset AXIS#44 The software reset function will be executed. The Servopack will stop responding for approximately 5 seconds after the fuction begins.
Execute
0%
Reset MECHATROLINK communication



When software reset is executed, communication between the Controller and the SERVOPACK is disabled, and an error is issued. MECHATROLINK communication must be reset to clear the communication error. Check *Reset MECHATROLINK communication* to reset the MECHATROLINK communication

3. When execution of the software reset function is complete, the following message will appear.



4. Click **OK** to close the **Software Reset** message. All settings including parameters have been re-calculated. Disconnect SigmaWin+ from the SERVOPACK, and then reconnect.

<MECHATROLINK Communication Reset>

MECHATROLINK Communication Reset function resets the communication with MECHATROLINK.

Only the communication of MECHATROLINK can be reset.

Communication between the Controller and the SERVOPACK can be restored by clearing the communication error that occurred between them.

 In the SigmaWin+Σ-V component main window, click Setup and then click MECHATROLINK Communication Reset.

The following message will appear.

MECHATROLINK Communications Reset AXIS#44
MECHATROLINK communications will be reset. After confirming that the host controller is not sending a command to the axis#44, execute this function. Communications with the axis will be also reset.
The parameter reflected automatically are reflected in the controller. The parameter reflected automatically are reflected in controller's setting
parameter before communications reset.
Reset

2. Click Reset.

The following message will appear.

меснат	ROLINK Communications Reset
(į)	The parameter reflected automatically are reflected in controller's setting parameter. The reflected setting parameter will be cleared when controller's power supply is restarted. Please save the setting parameter in the controller with MPE720 to it is not cleared. It can be saved by Axis Setup Wizard "Axis Reflect SERVOPACK Parameter in Setting Parameter" from Axis Setup Wizard.
	The reflected parameter is as follows.
	$\begin{array}{l} \mbox{Pn.102} => \mbox{No.46} \mbox{Position loop gain} \\ \mbox{Pn.100} => \mbox{No.47} \mbox{Speed loop gain} \\ \mbox{Pn.109} => \mbox{No.48} \mbox{Speed feedforward amends} \\ \mbox{Pn.11F} => \mbox{No.50} \mbox{Position integration time constant} \\ \mbox{Pn.101} => \mbox{No.52} \mbox{Speed integration time constant} \\ \mbox{Pn.812} => \mbox{No.58} \mbox{Filter time constant} \end{array}$
	Do you want to continue?
	<u>Y</u> es <u>N</u> o

3. Click Yes.

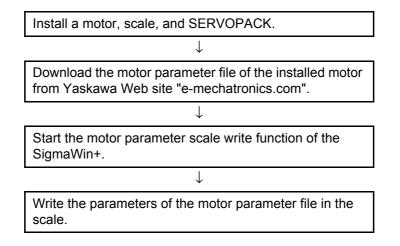
The parameters that are automatically reflected will be reflected in Controller's setting parameters (register: OWxxxx).

At the same time, the MECHATROLINK communication reset will be executed and the **MECHATROLINK Communication Reset** message will close.

4.4.12 Writing the Motor Parameters in the Scale

The Motor Parameter Scale Write function rewrites data in the scale. If the data which does not suit the connected motor is rewritten, the motor may not run normally, resulting in motor overrun, etc. Be sure that the data written in the scale suits the connected motor.	WARNING
	If the data which does not suit the connected motor is rewritten, the motor may not run normally, resulting in motor overrun, etc.

Write the parameters of the motor parameter file in the scale:



Write the motor parameters in the scale using the following procedure. Download the motor parameter file of the installed motor from Yaskawa Web site "e-mechatronics.com" in advance.

1. In the SigmaWin+ Σ -V component main window, click **Setup**, and then click **Motor**

Parameter Scale Write. A warning message appears, reminding you of the possible danger.



Click **Cancel** to return to the main window without writing motor parameters in the scale.

2. Click **OK**. The following box appears, and the SERVOPACK starts reading the parameter information from the scale.

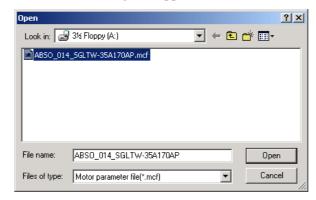
-

When the reading was completed successfully, the following box appears.

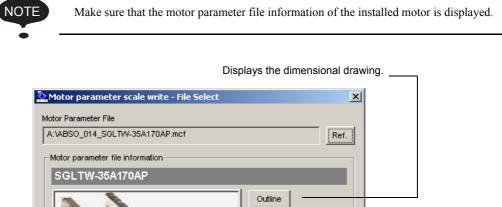
Motor parameter scale write	e - File Select
	Ref.
Motor parameter file information	

	Outline
	- 0
	- O
	- O
	- 0
Туре:	Ă
Aspect:	×
Remarks:	A Y
	Next > Cancel

3. Click Ref., and the following box appears.



4. Select the motor parameter file downloaded from Yaskawa Web site "emechatronics.com", and then click **Open**. The motor parameter file information is displayed in the Motor parameter scale write - File select box.



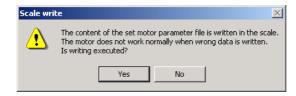
	meter file information	
	Outline -	
3	ContForce 220	[N]
	ContCurrent 3.3 PeakForce	[Arms]
L	660 PeakCurrent	[N]
<u> </u>	11.3	[Arms]
Туре:	Iron-core TW The Iron-core TW linear motors are composed of	•
Aspect:	*Yaskawa's unique construction principles of the TW linear motors negate the effects of	•
Remarks:		<u> </u>

5. Click Next. The following box appears.

The motor par	ameter scale write - Scale write rameter is written in the scale. In the motor which connects is correspond information.	ding to	Vvrite			
Motor parameter file information						
SGLTV	SGLTW-35A170AP					
and the second s		Outline ContForce 220 ContCurrent 3.3 PeakForce 860 PeakCurrent 11.3	[N] [Arms] [N] [Arms]			
Туре:	Iron-core TW The Iron-core TW linear motors are com	posed of				
Aspect: *Yaskawa's unique construction principles of the TVV linear motors negate the effects of						
Remarks:			× V			
	< Back	Complete	Cancel			

Click **Cancel** to return to the main window without writing motor parameters in the scale. Click **Back** to return to the Motor parameter scale write - File select box.

6. Click Write. The following message appears.



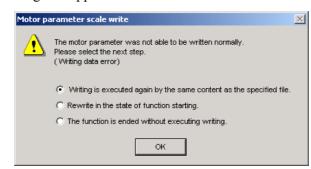
Click No to cancel writing.

Click Yes. The following box appears, and the motor parameter scale writing starts.

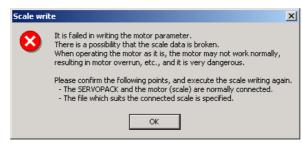


<If the Motor Parameters Were Not Written Normally>

The following box appears.



Select the next step to be executed, and then click **OK**. If "The function is ended without executing writing" is selected, the following box appears.



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

< If the Motor Parameters Were Written Normally>

The following box appears.

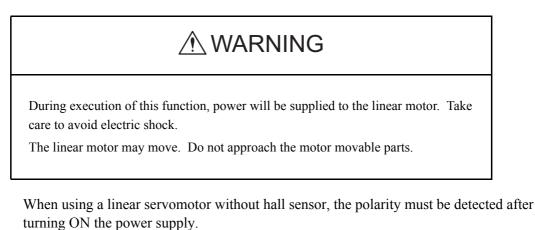
🌺 Motor para	ameter scale write - 9	5cale write		×
	ameter is written in the s n the motor which conne nformation.		ling to	Write
-Motor paran	neter file information —			
SGLTW	/-35A170AP			
Concert.	A COLOR		Outline ContForce 220 ContCurrent 3.3 PeakForce 660 PeakCurrent 11.3	[N] [Arms] [N] [Arms]
Type:	Iron-core TW The Iron-core TW linea	r motors are comp	oosed of	▲ ▼
Aspect:	*Yaskawa's unique co the TW linear motors n			▲ ▼
Remarks:				 ▼
		< Back	Complete	Cancel

8. Click **Complete**, and the following box appears.

Motor parameter scale write	×
The scale writing of the motor parameter was completed. Please execute the power supply re-turning ON. The setting value will be enabled the next power ON.	
*After the next power ON, when "A.CA0:Encoder parameter error" occur, the writing of data is required separately. Please ask for the data file to our company.	
ОК	

9. Click OK. Turn OFF the power and then ON again to validate the written data.

4.4.13 Detecting the Polarity



The polarity detection function is used to detect the polarity and store the phase data in the SERVOPACK and the linear scale.

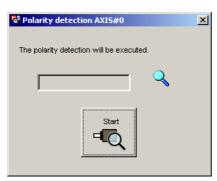
Detect the polarity using the following procedure.

1. In the SigmaWin+ Σ -V component main window, click **Setup** and then **Polarity Detection**. A warning message appears, reminding you of the possible dangers.

Polarity detection	×
During execution of this function, power will be su Take care to avoid electric shock. The linear motor may move widely. Do not approach the motor movable parts.	plied to the linear motor.
Do you want to continue the polarity detection?	
Con	ue Cancel

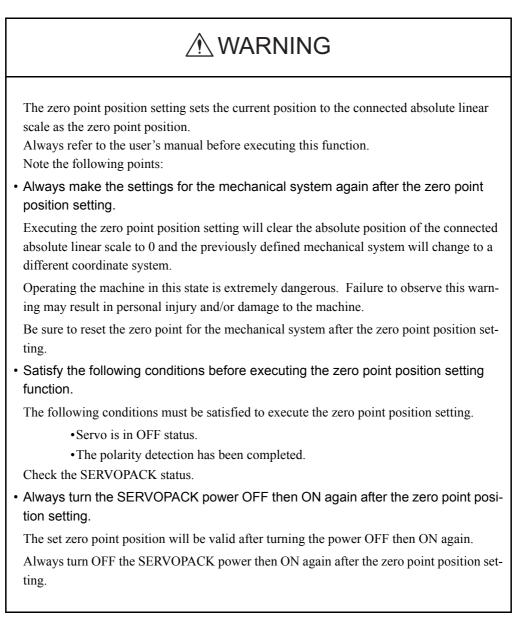
Click **Cancel** to return to the main window without executing the polarity detection function.

2. Click Continue, and the Polarity Detection box appears.



3. Click Start, and the polarity detection will be executed.

4.4.14 Setting the Zero Point Position



The zero point position of the absolute scale can be set when using an absolute scale and the absolute scale supported SERVOPACK.

Before executing the zero point position setting, move the motor to the position to be set as the zero point.

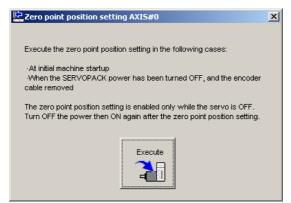
Set the zero point position using the following procedure.

1. In the SigmaWin+ Σ -V component main window, click **Setup** and then **Zero Point Position Setting**. A warning message appears, reminding you of the possible dangers.



Click **Cancel** to return to the main window without carrying out zero point position setting.

2. Click Continue, and the Zero Point Position Setting box appears.



3. Click Execute.

Zero point position setting	×
Executing the zero point position setting will clear the absolute position of the connected absolute linear scale to 0 and the previously defined mechanical system will change to a different coordinate system.	
Do you want to continue the zero point position setting?	
Continue	

Click **Cancel** to return to the previous window without carrying out the zero point position setting.

4. Click **Continue** to execute the zero point position setting. A message appears, reminding you to turn OFF the SERVOPACK power and then ON again to validate the setting.



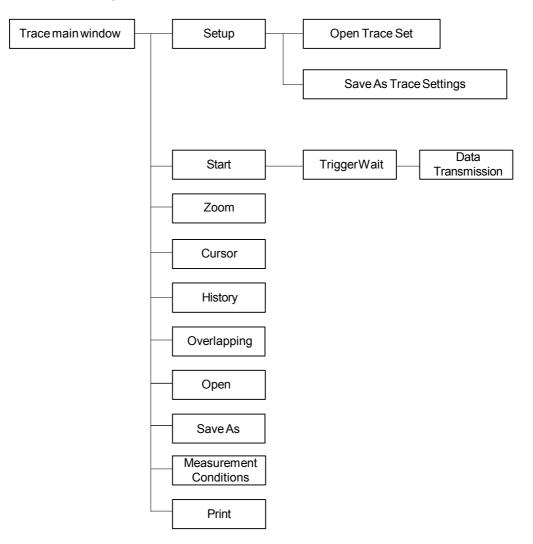
5. Click OK.

4.5 Tracing

4.5.1 Trace Function

■ Structure

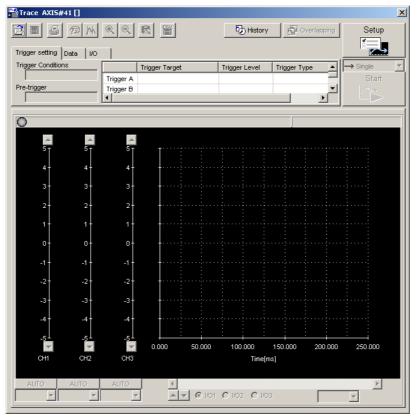
The following flowchart shows how the trace function works.



Data Trace

Trace Main Window

In the SigmaWin+ Σ -V component main window, click **Trace** and then click **Trace**. The Trace main window appears.



Trace Main Window

Trace Setting

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.

are	e objects to be traced and trigger automatically set according to item selected here.	
	Trace Setting	1
	Auto Setting Monitors positioning completion () Set Sampling Setting Sampling Time 125 : [us] × 1000 = 125.000 [ms]	
	Trace Object Setting	
	Image: Produced to a half.) Image: Produced to a half.) <td></td>	
	Trigger Conditions Trigger A Trigger Conditions Trigger A Trigger A Trigger Target No Trigger Trigger Target No Trigger Target Trigger Target Trigger Target Trigger Target T	
-	Trigger Level 0	
The item selected here is displayedas an option.	Display options Settling time OK Cancel	

Trace Setting Box

<Sampling Setting>

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

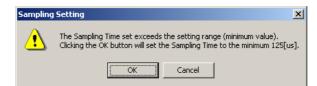
If directly typing a value and the value is outside the acceptable range, a warning message will appear telling you that the sampling time is incorrect. The warning will vary according to the error.

1. If the typed value is larger than the maximum setting time:

Trigger Condition Setting		
	The Sampling Time set exceeds the setting range (maximum value). Clicking the OK button will set the Sampling Time to the maximum 8191875[us].	
	Cancel	

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 typed value is smaller than the minimum setting 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.

3. If the typed value cannot be allocated in the time interval:

Trigger (Condition Setting
⚠	Set Sampling Time using multiples of 125[us], Clicking the OK button will set Sampling Time to 1000[us],
	Cancel

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

<Trace Object Setting>

Data 1/Data 2/Data3

Select content such as "Torque Reference," "Feedback Speed," etc., identical to the analog monitor as trace objects from the data boxes. The line color for Data1/Data2/Data3 can be set here. The settings are as follows.

Name	Unit
Not set	-
Torque reference	%
Feedback speed	min ⁻¹
Reference speed	min ⁻¹
Position reference speed	min ⁻¹
Position error	Reference unit
Position amplifier error	pulse
Position error between motor and load	Reference unit
Speed feed forward	min ⁻¹
Torque feed forward	%
Effective gain	
External encoder speed	min ⁻¹

Name	Unit
Not set	-
Force reference	%
Feedback speed	mm/s
Reference speed	mm/s
Position reference speed	mm/s
Position error	Reference unit
Position amplifier error	pulse
Position error between motor and load	Reference unit
Speed feed forward	mm/s
Force feed forward	%
Effective gain	

Rotary Motor

Linear Motor

I/O 1 / I/O 2 / I/O 3

Select output signals such as "/COIN" or "ALM" and input signals such as "/C-SEL", "P-OT", or "N-OT" as trace objects. The line color for I/O 1 / I/O 2 / I/O 3 can be set here.

<Trigger 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 (Trigger Conditions)

Set two trigger conditions: Trigger A and Trigger B.

By combining Trigger A and Trigger B, a total of three conditions can be set as follows.

Trigger Condition	Description
Trigger A	Trigger A is satisfied
Trigger A AND Trigger B	Both Trigger A and Trigger B are satisfied
Trigger A OR Trigger B	Either Trigger A or Trigger B is satisfied

Pre-trigger (0% to 99%)

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

A trigger condition is designated by the following three items.

Trigger Target

Designate the object to which the trigger is applied. The selected objects can either be from the designated in Data 1, 2, and 3, and I/O 1, 2, and 3, or "No Trigger".

If "No Trigger" is selected, the trigger will be applied at the time the **START** button is clicked. Also the settings for "Trigger Level", "Trigger" (trigger type), and "Pre-Trigger" will be unavailable.

Torque Reference	•
No Trigger	
Feedback Speed	
Torque Reference	
/S-ON	
/P-CON	

Trigger Target 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 / I/O 3" or "No Trigger."

Trigger (Trigger Type)

Designate the trigger judgement method when the trigger is applied. Select **Rising Edge**, **Falling Edge**, **Change Edge**, **Above the Trigger** (above the trigger level) or **Below the Trigger** (below the trigger level).

	🛧 Rising Edge
	Rising Edge Falling Edge Change Edge Above the Trigger Below the Trigger
	Trigger 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
Above the Trigger:	The trigger is detected when the trigger object data is above the trigger level. Cannot be selected for I/O.
Below the Trigger:	The trigger is detected when the trigger object data is below the trigger level. Cannot be selected for I/O.

Rising Edge	Falling Edge	Change Edge	Above the Trigger Level	Below the Trigger Level
ţ	r>	쑤	*	→

(Open) Button

In the Trace Setting box, click the 🗾 button, and the trace setting files appear.

Open	? >
Look jn:	🥪 3½ Floppy (A:) 💽 🖻 🛗 🧱
20031125 20031125	
File <u>n</u> ame:	20031125150437 <u>O</u> pen
Files of <u>type</u> :	Trace Settings File (*.stc)

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) Button

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

Save As				? ×
Savejn:	🛃 3½ Floppy (А:)	_	d	9-9- 5-5- 8-6-
File <u>n</u> ame:	20031125151357			<u>S</u> ave
Save as <u>t</u> ype:	Trace Settings File (*.stc)	•]	Cancel

Save As 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.

ΟΚ

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

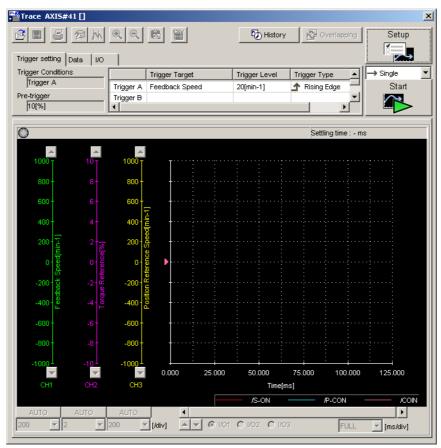
Cancel

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



If the saved file is opened using a SigmaWin+ version number that does not support Data 3 and I/O 3 for trace, the contents of only Data 1, Data 2, I/O 1 and I/O 2 are read-in.

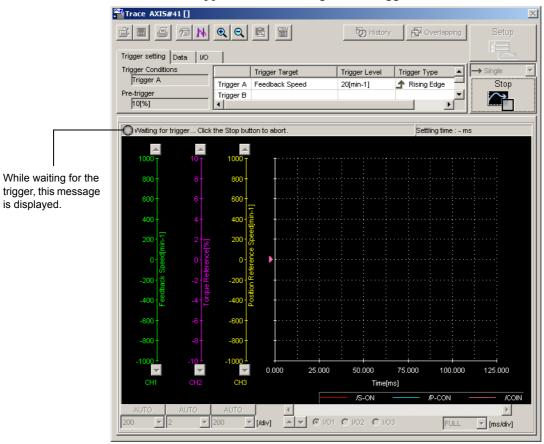
Starting the Trace



Trace Mode

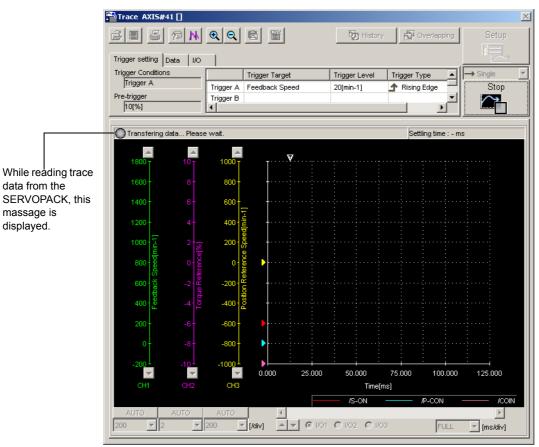
Select whether to executing tracing only one time or repeatedly from the Trace mode box.

- Single: Executes the trace process once. Waiting for the trigger -Trigger conditions are met - Graphic display, and then ends the trace.
- Continuous: Repeats the trace process until Stop is clicked.



Click **Start** in the Trace main window, and the SigmaWin+ will wait for the trigger. The window below appears while waiting for the trigger.

Window Displayed While Waiting for the Trigger



The message remains until the set trigger conditions are met. Click **Stop** to stop waiting for the trigger.

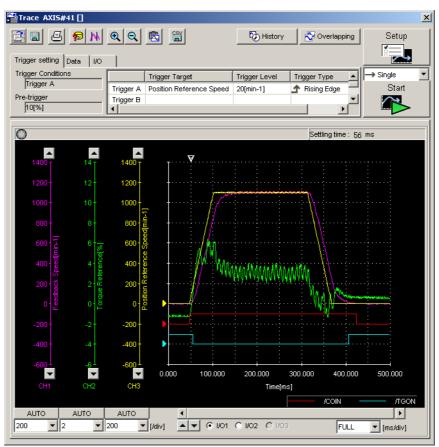
Window Displayed While Reading Trace Data from the SERVOPACK

Once the trigger condition is satisfied, the SERVOPACK starts transferring data to the SigmaWin+. When the data transfer is completed, the Trace main window appears.

- Notes 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 may continue to wait for the trigger even after the trigger has been applied. SigmaWin waits because data for the sampling time is saved in the SERVOPACK after the trigger has been applied.

■ Trace Main Window

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



Trace Main Window

Toolbar



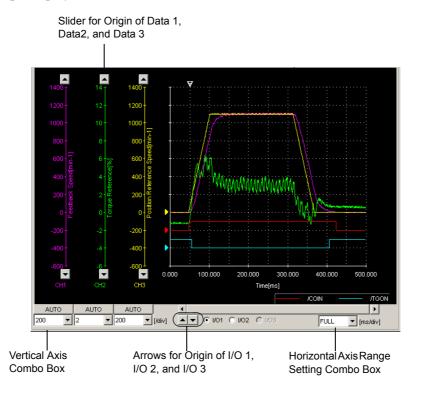
Trace Main Window Toolbar

Toolbar Button	Click this button to:
D pen	Load the trace data file.
Save As	Save a copy of the on-screen trace graph to a specified file.
<u>e</u> Print	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.
Q Zoom In	Enlarge the view of a selected area. Can trace with the enlarged view.
Return	Restore the area shown in the window to its usual size.
Clipboard Copy	Copy the displayed screen to the clipboard.
Save As CSV	Save on-screen trace graph in CSV format.

See "
Toolbar Details" for details on the toolbar buttons.

Trace Graph Display Field

Buttons, arrows, boxes, and sliders to control the graph display are provided on the trace graph display field.

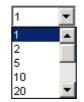


Trace Graph Display Field

Vertical Axis Scale

Select a vertical axis scale for Data 1, Data 2, and Data 3 from the vertical axis combo box. It is not possible to input a scale by typing the value.

If the **AUTO** button is clicked, a scale will be automatically selected so that all of the data can be shown in the graph.

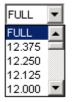


Vertical Axis Combo Box

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

INFO I I/O Trace Graph	
Grid Line	
	The center of the grid becomes the HI position.
Origin Mark →Grid Line	

History

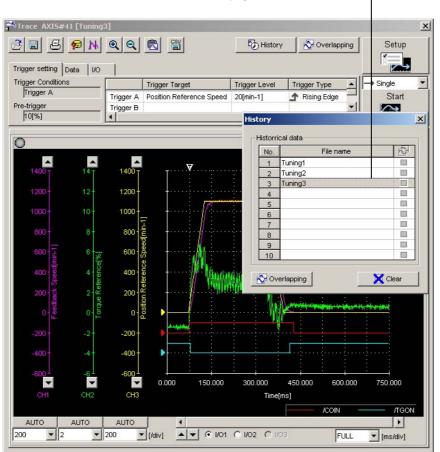
The data that had been traced and the trace data that had been called from the files are listed in order from the oldest in the History box. "Unsaved" is displayed for the trace data that have not been saved. Up to 10 data can be saved and displayed. When more than 10 data have been traced or called, the older data are cleared. The history save and display function is enabled only when the trace function is being executed. Therefore, the historical data is cleared when exiting the trace function.

Click **History** to display the History box.

If you click **History** while the overlapping function is effective, the overlapping function is cancelled and the "Overlapping data" in the Overlapping box disappears.

See "Overlapping" for details on overlapping function.

The information of the file selected and highlighted here are displayed in the Trace main window.



Historical Data

The information of the file selected and highlighted here are displayed in the Trace main window.

Overlapping

Click **Overlapping** so that the overlapping function is effective, and the Overlapping box appears. See "Overlapping" for details.

Clear

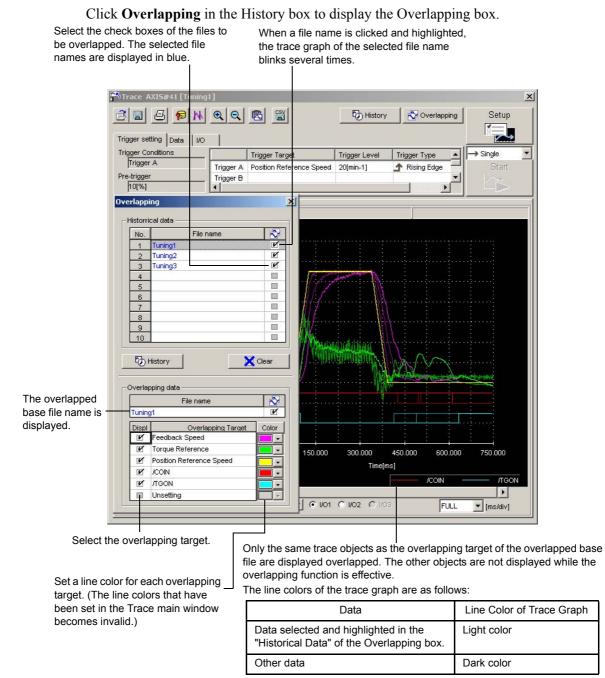
Clears all the historical data displayed in the History box and the data displayed in the Trace main window.

"Unsaved" is displayed in the "Historical data" of the History box for the trace data that have not been saved. When trying to select other data without saving, a message appears confirming if you want to save the trace data.



Overlapping

The graph of the trace data that have been called from the file and the data that have been traced are displayed overlapped. The trace objects of each file can be compared on the graphic display.



Historical Data

Select a check box of the file to overlap the graph. More than one data can be selected.

History

Click **History** to cancel the overlapping function. The Overlapping box disappears, and the History box appears.

Clear

Click **Clear** to clear all the historical data displayed in the "Historical Data" and the data displayed in the Trace main window.

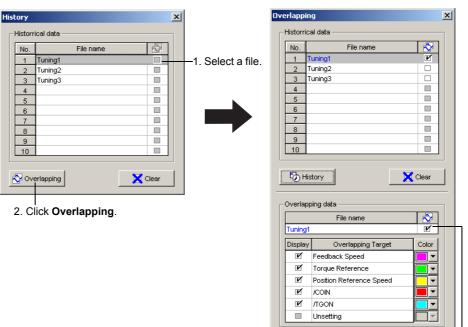
Overlapping Data

The overlapped base file in the "File name" of the "Historical data" is displayed in the "File name" of the "Overlapping data." The trace objects of the overlapped base file are displayed in the "Overlapping Target" and the relevant "Display" check boxes are selected. Select or clear the check boxes to select the objects to be displayed overlapped on the graph.

If the trace is executed by clicking **SETUP** in the Trace main window, the same objects as those of the base file are set automatically and cannot be changed.

<Basic File Setting Procedure>

- When opening the Overlapping box from the History box
- 1. Select a file from the "Historical data" in the History box.
- 2. Click **Overlapping**, and the selected file name is displayed in "File name" of the "Overlapping data" of the Overlapping box as the base file. A check mark is displayed for the base file name both in the "Historical data" and the "Overlapping data."



The selected file is displayed as the base file.

• When opening the Overlapping box by clicking **Overlapping** in the Trace main window

The file displayed in the Trace main window is set as the base file automatically.

Operation Example of Overlapping Function

An operation example of overlapping function is given below.

1. Select a file to be the base file from the "Historical data" in the History box, and then click **Overlapping**.

The Overlapping box appears and the selected base file name is displayed in the "File name" of the "Overlapping data." The information of the base file are displayed in the Trace main window. The trace objects of the base file are displayed in the "Overlapping Target" of the "Overlapping data."

ager Conditio Trigger A -trigger 10[%] erlapping Historrical da No. 1 Tuni 2 Tuni 3 Tuni	ata File name		rence Speed	Trigger Level 20[min-1]	Trigger Type	Start
-trigger 10[%] Historrical da No. 1 Tuni 2 Tuni	sta File name	> ×	-1	20[min-1]	Rising Edge	Start
10[%] Friapping Historrical da No. 1 Tuni 2 Tuni	ata File name ng1	×				
rlapping listorrical da No. 1 Tuni 2 Tuni	ata File name ng1	2	۲I			
Historrical da	File name	2				
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Histor	y .	X Clear			NY Y	
				8	la word	~
Overlapping	data					
	File name	2				
Tuning1	The Hume	I IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	1			
runingr						Letion of
L		et Color				
Displ	Overlapping Targ			· · ·		
🗹 Feed	dback Speed					
Feed Feed Torc	dback Speed jue Reference		150.000		450.000 600.00	0 750.000
Feed Feed Torc	dback Speed jue Reference tion Reference Speed		150.000	300.000 Time(m:		0 750.000

When online, if the overlapping targets different from the trace objects set in the Trace Setting box are selected, the following message appears.

Overlapp	ing X
⚠	A trace target different from the trace setting present was specified for the overlapping target. Executing overlaps, the trace execution is an enable only in the same data as the overlapping target. Please confirm the trace setting at trace execution time.
	ОК

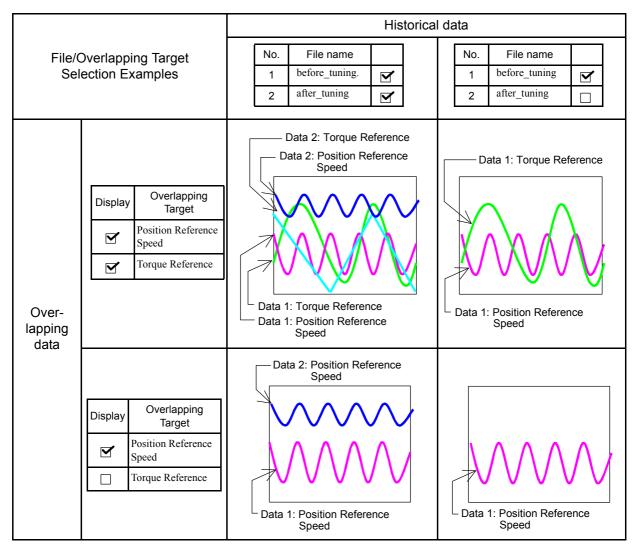
Select the check boxes of the files to overlap over the base file from the "Historical data." More than one check box can be selected. A check box for a file without the same overlapping targets as those of the base file cannot be selected. The overlapped trace graphs are displayed in the Trace main window.

jer sett			,	·	
ger Cor rigger	0	gger Target	Trigger Level	Trigger Type	→ Single
	Ingger A Po	sition Reference Spee	d 20[min-1]	🛧 Rising Edge 🚽	Start
trigger 0[%]	Trigger B				
		1			
lappir	ng	×		1	
istorric	al data				
No.	File name				
_	Tuning1	Ľ			
2	Tuning2	I			
3	Tuning3		Alexandra and a second		
4		🔲 🔲 🔤 🔤 🖓 Sapha	A CONTRACTOR OF THE OWNER		
5			18 E M.		
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<u>ю</u> н	istory 🛛 🔀 🤇	Clear	Contraction (NAM)	They are I	
- 405-774	istory	Clear		Martin Martin Caleman	
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Бн	ping data				wether wether
юverlap	ping data				********
Бн	ping data		\		
юн verlap Tuning	ping data File name 1				
Verlap Tuning Displ	ping data				
Verlap Tuning Displ	ping data File name 1 Overlapping Target Feedback Speed			450.000 600.000	750.000
Verlap Tuning Displ	ping data File name 1 Overlapping Target Feedback Speed Torgue Reference		300.000	450.000 600.000	
Verlap Displ	ping data File name 1 Overlapping Target Feedback Speed			450.000 600.000	

The objects to be displayed overlapped on the graph can be selected by selecting or clearing the "Display" check boxes for the "Overlapping Target" of the "Overlapping data."

When having newly loaded a file to overlap by clicking the D (Open) button, the file name is automatically displayed with the check box selected in the "File name" of the "Historical data" and the trace graph is overlapped over the graph of the base file. If a file without the same overlapping targets as those of the base file tries to be loaded, the following message appears.





The following table shows four display examples of overlapped graphs.

Optional Display

When the Display options check box is selected in the Trace Setting box, an optional data is displace. When not selected, no optional data is displayed.

The following data can be optionally displayed.

Settling Time

The settling time calculated from waveform is displayed. If the settling time could not be calculated, "–" is displayed.

Data Tab

The trace objects and line colors of Data 1, Data 2, and Data 3 designated in the Trace Setting box are displayed. The line color can be changed in this tab page.

Select whether the trace graph of Data 1, Data 2, or Data 3 is to be displayed or not.





I/O Tab

The trace objects and line colors of I/O 1, I/O 2, and I/O 3 designated in the Trace Setting box are displayed. The line color can be changed in this tab page.

Select whether the trace graph of I/O 1, I/O 2, or I/O 3 is to be displayed or not.

Trigger setting Data	1/0				
<mark>//O1</mark> /S-ON ⓒ Display	n a	I/O2 I∕P-CON ⓒ Display	🕞 Hidden	I/O3 Unsetting Display	Hidden



Trigger Setting

This displays the trigger settings in the Trace Setting box.

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

Trigger setting Data	1/0				
Trigger Conditions		Trigger Target	Trigger Level	Trigger Type	
Trigger A	Trigger A	Position Reference Speed	20[min-1]	🛧 Rising Edge	
Pre-trigger	Trigger B				-
h0[%]	•			<u> </u>	

Toolbar Details

蔖 (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.

Open					? ×
Look jn:	🔁 TraceData	•	£	d *	
20010514					
20010514	102121.std				
L					
File <u>n</u> ame:					<u>O</u> pen
Files of <u>type</u> :	Trace Data File (*.std)	_	-		Cancel
					Cancer
Comment:					

When the 🗾 Button is Clicked in the Trace Main Window

Open

Click **Open** to load the selected trace file.

Cancel

Click Cancel to return to the Trace 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.

Save As			? ×
Savejn:	🔁 TraceData	- 🗈 💣 🖪	
200105140 200105141			
File <u>n</u> ame:	20010514102121.std	<u><u>S</u></u>	ave
Save as <u>t</u> ype:	Trace Data File (*.std)	▼ Ca	ncel
<u>C</u> omment:			

When the 📕 Button is Clicked in the Trace Main Window

Up to 255 characters can be typed as a comment.

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

Save

Click Save to save the data to the selected trace file. Automatically returns to the Trace main window when no file is selected.

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 **Cancel** to return to the Trace main window.



If the saved file is opened using a SigmaWin+ version number that does not support Data 3 and I/O 3 for trace, the contents of only Data 1, Data 2, I/O 1 and I/O 2 are read-in.

(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.

Printing Item Setting		
- Cover		
Attaching the Co	ver Cover Editing	
Where to Submit Where to Submit (No.1)	C Where to Submit (No.3)	
Item Name	Settina Value	
Title	Servo Tuning	
Company Name	Yaskawa	
Department Name	MCKJ	
Name	Taro Yaskawa	
Data for each function Tracing Header & Footer Printing items Header Info ✓ Title Tracing ✓ Models Info ✓ Printing Date ✓ File Name Footer Info		
Pages		
Color Selection		
C Black and White Color		
ок	Cancel	

Header & Footer Tab

rinting Item Setting	inting Item Setting		
Cover			
Attaching the Cover Cover Editing			
Where to Submit Where to Where to Submit (No.2) Submit (No.3)			
Item Name	Setting Value		
Title	Servo Tuning		
Company Name	Yaskawa		
Department Name	MCKJ		
Name	Taro Yaskawa		
Header & Footer Printing items Overlapping ✓ ✓ overlapping ✓ overlapping ✓ ringer Setting ✓ Acquisition Date of the Data Constant Number Relation of Users ✓ ✓ Parameters ✓ Name			
Switches Info			
Others			
Color Selection			
OK			

Printing Items Tab When the Overlapping Function Is Not Effective

inting Item Setting		
Cover		
Attaching the Co	Cover Editing	
Where to Submit Where to Submit (No.1)	C Where to Submit (No.2) C Where to Submit (No.3)	
Item Name	Setting Value	
Title	Servo Tuning	
Company Name	Yaskawa	
Department Name	MCKJ	
Name	Taro Yaskawa	
Tracing		
Overlapping ✓ overlapping Graph Relations ✓ Trigger Setting ✓ Acquisition Date of the Data Constant Number Relation of Users		
✓ Parameters		
🔽 Name 🔽 Unit		
Switches Info 🔽 Default Setting		
Others-		
Color Selection	hite 💿 Color	
ок	Cancel	

Printing Items Tab When the Overlapping Function Is Effective

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.

Overlapping

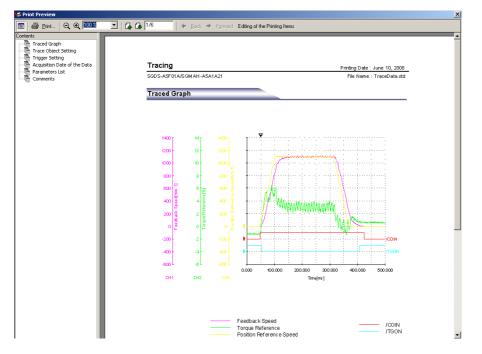
Selecting the **overlapping** check box prints not only the overlapped trace graph but also each trace graph before overlapping. Click to clear the check box and only the overlapped trace graph is printed.

Color Selection

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

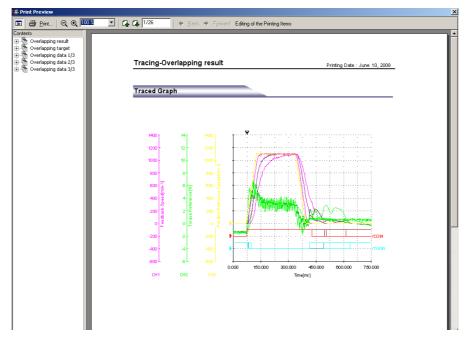
After setting is finished, click **OK**. The document appears on the screen the way it will appear in print.

<When the Overlapping Function Is Not Effective>



<When the Overlapping Function Is Effective>

The following overlapped trace graph is displayed first, and then each trace graph before overlapping is displayed.



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**.

(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.

Measure	asurement Conditions			×		
Measur	Measurement Conditions Comment Parameters					
	b 1	uning1.std				
Date	&Time:		2004/06/02 11:5	3:00		
Serv	opack:		SGDS-A5F01A			
Serv	•		SGMAH-A5A1A21			
Trac	e Settir	ng:				_
	1	Name	Target		Color	
	Data 1		Feedback Speed			
	Data 2		Torque Reference			
	Data 3		Position Reference Speed			
	I/O 1		/COIN			
	I/O 2		ЛGON			
	I/O 3 Unsetting					
Trigg	jer sett Trig <u>c</u>	er Condition				
		Trigger Target		Trigger Level	Trigger D	etec
	lger A			20[min-1]	🛧 Rising	g Edg
Tric	Trigger B					⊾
Pre-trigger: 10[%]						
	Sam	pling Time:	750[us]x1000=7	50.000[ms]		
			[ок	Cance	el

Measurement Conditions Tab

No.	Name	Value	Unit 4
Pn000	Function Selection Basic Sv	0010H	-
Pn001	Function Selection Application	0000H	-
Pn002	Function Selection Application	0000H	-
Pn003	Function Selection Application	0002H	-
Pn004	Function Selection Application	0000H	-
Pn005	Fixed Parameter (Do not cha	0000H	-
Pn100	Speed Loop Gain	40	Hz
Pn101	Speed Loop Integral Time Co	2000	0.01ms
Pn102	Position Loop Gain	40	1 <i>i</i> s
Pn103	Moment of Inertia Ratio	0	%
Pn104	2nd Speed Loop Gain	40	Hz
Pn105	2nd Speed Loop Integral Tirr	2000	0.01ms
Pn106	2nd Position Loop Gain	40	1 <i>i</i> s
Pn107	Bias	0	min-1
Pn108	Bias Width Addition	7	reference un
Pn109	Feed-forward	0	%
Pn10A	Feed-forward Filter Time Co	0	0.01ms
Pn10B	Gain-related Application Sw	0000H	-
Pn10C	Mode Switch Torque Refere	200	%
Pn10D	Mode Switch Speed Referen	0	min-1
Pn10E	Mode Switch Acceleration	0	10(min-1)/s
Pn10F	Mode Switch Error Pulse	0	reference un
Pn110	Online Autotuning Switches	0010H	-
Pn111	Speed Feedback Compensa	100	%
Po112	Fixed Peremeter (Do not che	100	96

Parameter Tab

Measurement Conditions	×
Measurement Conditions	Comment Parameters
	OK Cancel

Comment Tab

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

ΟΚ

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.

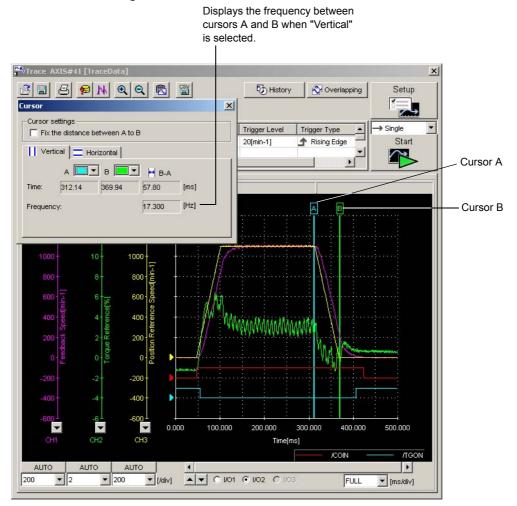
\rm (Cursor) Button

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.

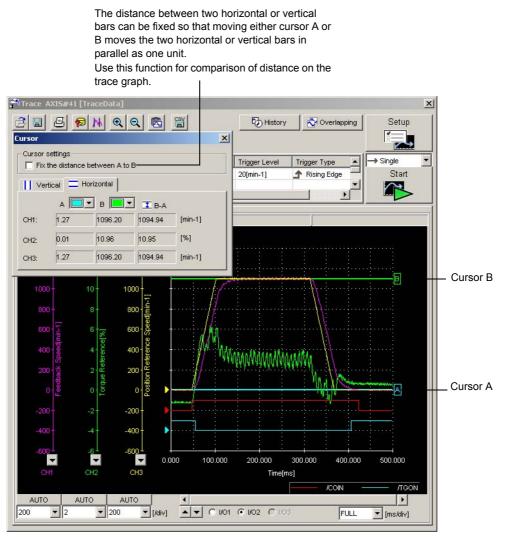
Display the data using the following procedure.

- 1. Click the button. The Cursor setting box appears and two vertical bars will be displayed on the trace graph.
- 2. Move each cursor. As you move each cursor, the data changes in the "Cursor" of the Cursor setting box.



3. To view the trace target, select **Horizontal** in the Cursor setting box. Two horizontal bars (A and B) will be displayed.

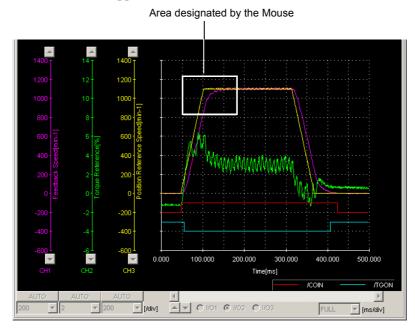
4. Move each cursor. As you move each cursor, the data changes on the Cursor setting box.



🔍 (Zoom) Button

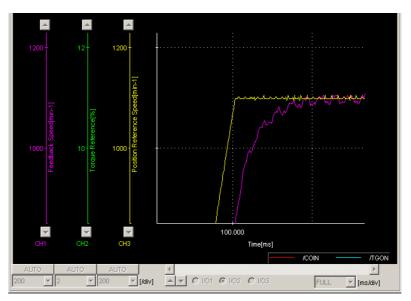
A view of an area selected by the mouse can be magnified. Zoom in on an area using the following procedure.

- 1. Click the 🔍 button.
- 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 \bigcirc button to view the original graph.



If you use the Zoom button before clicking **Start** on the Trace main window, the trace graph will be displayed while the designated area is still enlarged. This is effective when doing a serial trace.

🖄 (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 the button, and the Clipboard Copy dialog box appears.

The selected area and stored in the (
Area to be copied		
Copy only the graph.		
C Copy whole dialog box.		
Color	C Black and white	
White background		

Area to be copied

Select the area to be copied to the clipboard.

Graph display color selection

Select the graph and background color. The graph can be clearly printed when the **Black** and white option or the White background check box is selected.

ΟΚ

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

Cancel

Click Cancel to return to the Trace main window.



The on-screen trace graph can be saved in CSV format. The trace data can be edited by

Excel. Click the 🔛 button. The Save As dialog box appears.

Save As				<u>? ×</u>
Save in: 🔂	TraceData	•	(= 🖻 (* 💷 -
File name:	Tune1			Save
Save as type:	CSV file (*.csv)		•	Cancel
Comment:				
				//.

When the 📓 Button is Clicked in the Trace Main Window

Up to 255 characters can be typed as a comment.

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

Save

Click Save to save the data to the selected CSV 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.

Save As		×
	A:\200406012 Do you want (232051.csv already exists. to replace it?
	Yes	No

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

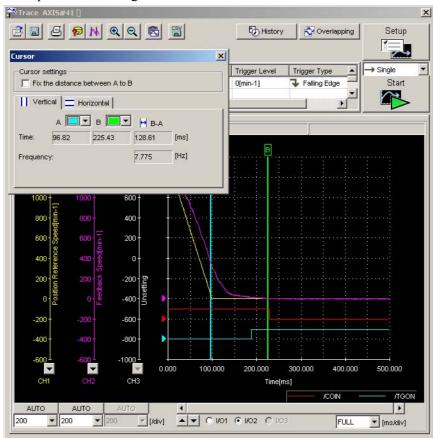
Cancel

Click **Cancel** to return to the Trace 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 **b** (Cursor) button in 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 = 400 [0.1 Hz]; Pn101: speed loop integral time constant = 2000 [0.01 ms]; Pn102: positioning loop gain = 400 [0.1/s].

Trace object: Data 1 = Position Reference Speed

Data 2 = Speed feedback

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

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

Trigger conditions: Falling edge of reference pulse speed 0 min⁻¹ Pre-trigger: 20%

(We are using this setting to trigger the completion of the command.)

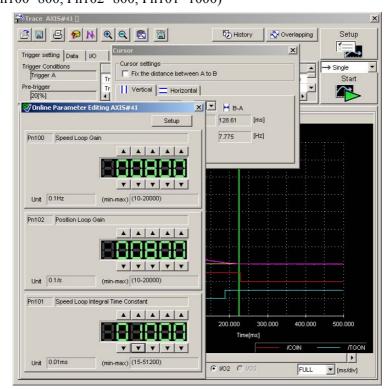
When in this condition, the positioning completed time is 128 ms

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

Trace AXIS#41 [× 2 8 5 9 N Q Q 🖻 🖀 History 🛛 🔊 Overlapping Setup 1 × ~ Curso Trigger setting Data 1/0 Cursor settings Trigger Conditions 1 → Single -Start J. dae Pre-trigger 20[%] Vertical Thorizontal H B-A × 💹 Online Parameter Editi a AXIS#41 128.61 [ms] Setup 7.775 [Hz] Pn100 Speed Loop Gain 88488 **T T T T** Unit 0.1Hz (min-max) (10-20000) Pn102 Position Loop Gain 88488 **T T T T** (min-max) (10-20000) Linit 0.1/s Pn101 Speed Loop Integral Time Constant 200.000 300.000 400.000 500.000 Tirr /TGON **T T T T** /COIN Þ (min-max) (15-51200) Unit 0.01ms @ 1/02 C 1/ FULL ▼ [ms/div]

Click the 🔯 button to view Online Parameter Editing box.

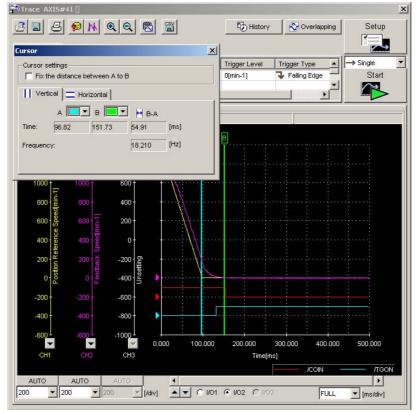
 Click the ▲ or ▼ button to raise or lower the gain. (Pn100=800, Pn102=800, Pn101=1000)



4. Check the positioning completed time on the Trace main window.

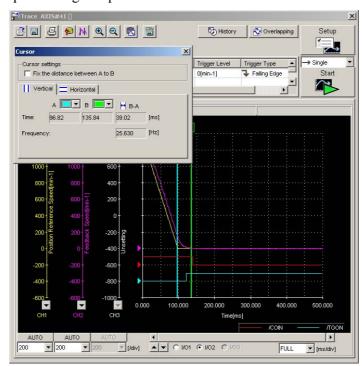
The positioning completed time has been reduced to 55 ms.

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.*
 - Trace AXIS#41 <u>2 || 2 || N Q Q || ||</u> History 🛛 🔂 Overlapping Setup × ~ Trigger setting Data 1/0 sor settings Single Trigger A Fix the dista Start Vertical _____ Horizontal Tri ∢ e-trigger 20[%] 💽 🛏 в-а × 54.91 [ms] Setup 18.210 [Hz] Pn100 Speed Loop Gair A | A | A | A | A T T T T Unit 0.1Hz 1 (10-20000) Pn102 Position Loop G **StStStS T T T T** Unit 0.1/s max) (10-20000) Pn101 Speed Loop Integral Time Constant 300 88888 **T T T T** F Unit 0.01ms ax) (15-51200) @ 1/02 C FULL ▼ [ms/div]
 - (Pn100=1000, Pn102=1000, Pn101=800)

6. Check the positioning completed time on the Trace main window. The positioning completed time has been reduced to 39 ms.



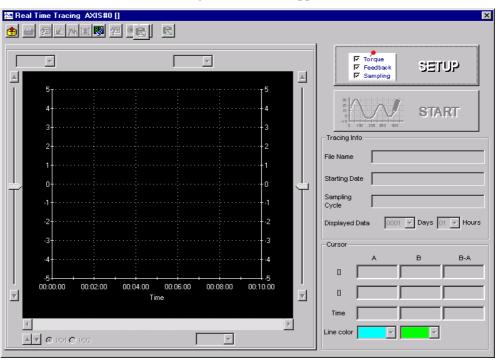
7. Repeat steps 2 to 4 until you get the target positioning completed time.

4.5.2 Real Time Trace Function

Data Trace

Main Window

In the SigmaWin+ Σ -V component main window, click **Trace**, and then click **Real Time Trace**, and the Real Time Tracing main window appears.



Real Time Tracing Main Window

Real Time Trace Settings

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

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

Trace Setting	×
Trace Object Setting Object Line Data trace 1 Torque Reference	Sampling cycle
Data trace 2 Feedback Speed I/O 1 //TGON	Vot Saved
	Updating Cycle
	OK

Real Time 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.

I/O 1 / I/O 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

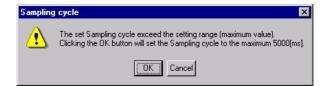
Select a line color for data 1 and 2 and I/O 1 and 2.

<Sampling Cycle>

The setting for the allowable interval time for getting trace data can be made here. Data will be obtained every 20 ms if the sampling cycle is set to 20 ms. Use the spin button to set the time.

If directly typing a value, 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 typed value is larger than the setting range:



Click **OK** to automatically adjust the sampling cycle within the setting range. Click **Cancel** to return to the Real Time Trace Setting box without setting the sampling cycle.

2. If the typed value is smaller than the setting range:

Sampli	ng cycle 🛛 🗙
	The set Sampling cycle exceed the setting range (minimum value). Clicking the OK button will set the Sampling cycle to the minimum 20[ms].
	Cancel

Click **OK** to automatically adjust the sampling cycle within the setting range. Click **Cancel** to return to the Real Time Trace Setting box without setting the sampling cycle.

3. If the typed value cannot be allocated in the time interval:

Sampling	j cycle 🔀
⚠	Set Sampling cycle in multiple of 2[ms]. Clicking the OK button will set Sampling cycle to 20[ms].
Cancel	

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

<Saves File>

Select whether or not saves the trace data.

Not to save the data, select the Not Saved check box.

To save the data, clear the **Not Saved** check box, and click **Setting**. The Setting the File Name dialog box appears.

Setting the I	File Name		? ×
Save jn:	TE_Applications	- 🗈 🖸	*
20011119	9131442.rtd		
20011119	9131458.rtd		
File <u>n</u> ame:	20011119131518		OK
Save as <u>t</u> ype	Real-Time Tracing File (*.rtd)	•	Cancel
Comments In	fo.		

Setting the File Name Dialog Box

Click **OK** to store the file name designating the current trace settings. Click **Cancel** to return to the Real Time 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 Setting the File Name dialog box without saving the file.

ΟΚ

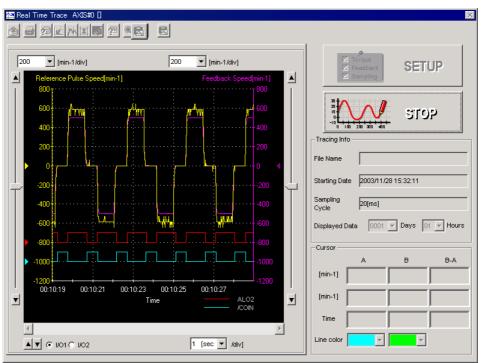
In the Real Time Trace Setting box, click **OK** to return to the Real Time Tracing main window. The trace object and trigger are updated according to the settings.

Cancel

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

■ Starting the Trace

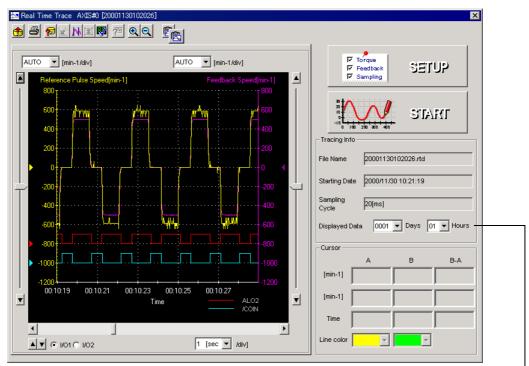
In the Real Time Tracing main window, click START to start trace.



To stop a trace, click STOP.

Main Window

This Real Time Tracing main window displays a graph based on the trace settings.



Displays information about when the trace started. In this example for the displayed data, "0001" means that it is the first day of the trace and "01" means that the trace has been running for its first hour.

Real Time Tracing Main Window

Toolbar

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



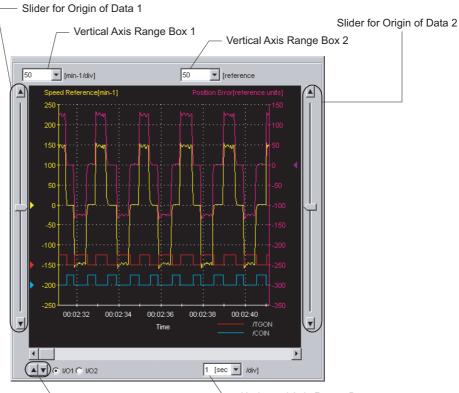
Real Time Tracing Main Window Toolbar

Toolbar Button	Click this button to:
٢	Load the trace data file.
Open	
8	Print the Real Time Tracing main window.
Print	
P	View the conditions to measure the trace.
Measurement Conditions	
th	View the information for the location where a cursor is shown.
Cursor	
1	View the Parameter Online Editing box. For details, see 4.1.2 Editing Parameters Online.
Parameter Online Editing	
Q	Enlarge the view of a selected area.
Zoom In	
Q	Restore the area shown in the window to its usual size.
Return	
R	Copy the displayed screen to the clipboard.
Clipboard Copy	

See "
Toolbar Details" for details on the toolbar buttons.

Trace Object Graph

In the graph, you can view the trace objects designated in the Real Time 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.

200	•
AUTO	
1	
2	
5 10	-

Vertical Axis Range Box

Horizontal Axis Range

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



Horizontal Axis Range Box

INFO INFO INFO INFO INFO INFO INFO INFO	
Grid Line	
Origin Mark →Grid Line	The center of the grid becomes the HI position.

Toolbar Details

🁲 (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.

Open		? ×
Look jn:	🚽 3½ Floppy (A:)	*
RTTraceD	ata.rtd	
File <u>n</u> ame:		<u>O</u> pen
Files of <u>type</u> :	Real-Time Tracing File (*.rtd)	Cancel
Comments Info	p.	_

When the 🕚 Button is Clicked in the Main Window

Open

Click **Open** to load the selected trace file. Returns to the main window if nothing is selected.

Cancel

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

(Print) Button

The graph and data on the Real Time Tracing main window can be printed. To print the graph and data, click the 🕑 button. The Printing Item Setting dialog box appears.

Printing Item Setting	Printing Item Setting
Cover	Cover
Attaching the Cover Cover Editing	Attaching the Cover Cover Editing
Where to Submit Where to Submit (No.1) Where to Submit (No.2) Where to Submit (No.3)	Where to Submit Vhere to Submit (No.1) Vhere to Submit (No.2) Vhere to Submit (No.3)
Item Name Setting Value Title SigmaWin 200	Item Name Setting Value Title SigmaWin 200
Company Name Yaskawa	Company Name Yaskawa
Department Name MCKJ	Department Name MCKJ
Name Tarou Yaskawa	Name Tarou Yaskawa
Data for each function	Data for each function
Real-Time Tracing	Real-Time Tracing
Header Footer Printing Items	Header Footer Printing Items
Header Info	Graph Relations
V Models Info.	Constant Number Relation of Users
Printing Date	🔽 Parameters 🔽 Name
I File Name	Switches Info.
1 THE NUME	🔽 Unit
	✓ Default Setting
Footer Info	Others
i i ugos	Comments
- Color Selection	
C Black and White C Color	Color Selection C Black and White C Color
OK Cancel	OK Cancel

Header & Footer Tab

Printing Item Tab

Printing Item Setting Box

Cover

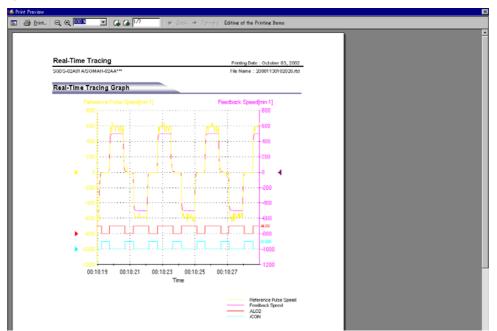
Select Attaching the Cover, and the click Cover Editing. For details, see Chapter 3 SigmaWin+ Σ -V Component Main Window.

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 reference.



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

To print the document as it 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**.

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

Measurement Data		
Management		
Measurement Data	Comments Parameters	
M .		
Servopack:	SGDS-A5A01A	
Servomotor:	SGMAH-A5A1A21	
Servomotor.	30MATEAJATA21	
Trace Setting:		
Name	Target Lin	e
Data 1	Torque Reference	
Data 2	Feedback Speed	
I/O 1	/V-CMP	
I/O 2	ЛGON	
Tracing Info:		
File Name	:	
Starting Date	: 2002/10/03 14:34:18	
Sampling Cycl	e : 10[ms]	
Displayed Dat	a : 0001 Days 01 Hours	
	ОК	Cancel

Measurement Condition Tab

asureme	nt Conditions Comment Pa	rameters	
No.	Name	Value	Unit 🔺
Pn000	Function Selection Basic Sw	0010H	-
Pn001	Function Selection Application	0000H	-
Pn002	Function Selection Application	0000H	-
Pn003	Function Selection Application	0002H	-
Pn004	Function Selection Application	0000H	-
Pn005	Fixed Parameter (Do not cha	0000H	-
Pn100	Speed Loop Gain	40	Hz
Pn101	Speed Loop Integral Time Co	2000	0.01ms
Pn102	Position Loop Gain	40	1/s
Pn103	Moment of Inertia Ratio	0	%
Pn104	2nd Speed Loop Gain	40	Hz
Pn105	2nd Speed Loop Integral Tim	2000	0.01ms
Pn106	2nd Position Loop Gain	40	1/s
Pn107	Bias	0	min-1
Pn108	Bias Width Addition	7	reference un
Pn109	Feed-forward	0	%
Pn10A	Feed-forward Filter Time Co	0	0.01ms
Pn10B	Gain-related Application Sw	0000H	-
Pn10C	Mode Switch Torque Refere	200	%
Pn10D	Mode Switch Speed Refere	0	min-1
Pn10E	Mode Switch Acceleration	0	10(min-1)/s
Pn10F	Mode Switch Error Pulse	0	reference un
Pn110	Online Autotuning Switches	0010H	-
Pn111	Speed Feedback Compensa	100	%
Po112	Fixed Peremeter (Do not cha	100	<u>« </u>

Parameter Tab

Measurement Data			×
	Quining and a	1	
Measurement Data	Comments	Parameters	1
Π			

Comments Tab

Click the Comments tab and type any comments

ΟΚ

Click **OK** to save comments and return to the Real Time Tracing main window.

Cancel

Click **Cancel** to return to the Real Time Tracing main window without saving the comments.

🔣 (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.

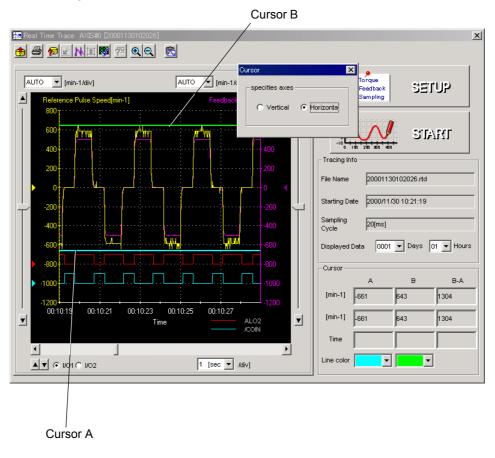
Display the data using the following procedure.

- 1. Click the **b** 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.

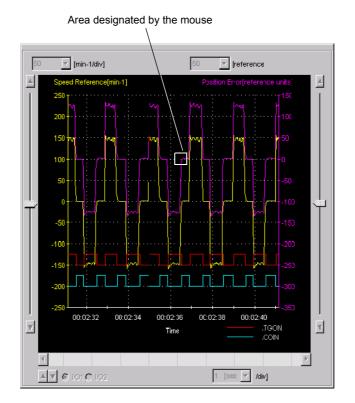
4. Move each cursor. As you move each cursor, the data changes in the cursor box in the lower right of the window.



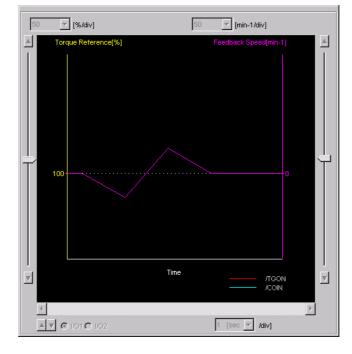
🔍 (Zoom In) Button

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

- 1. Click the 🔍 button.
- 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 \bigcirc button to view the original graph.

🖄 (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 the 🖾 button, and the Clipboard Copy dialog box appears.



Select the area to be copied to the clipboard.

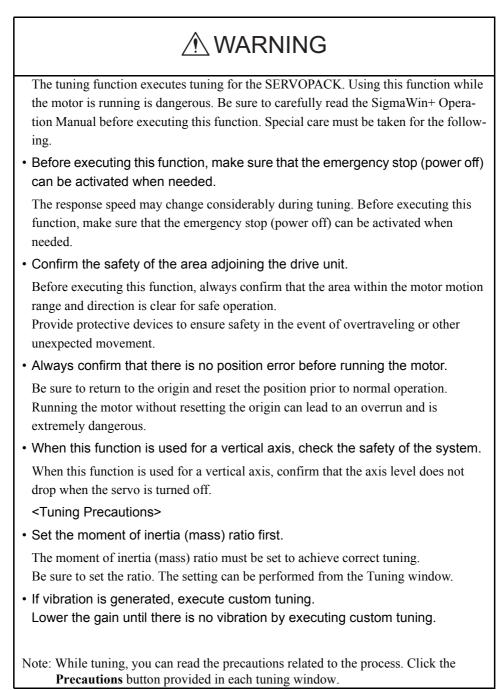
ΟΚ

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

Cancel

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

4.6 Tuning

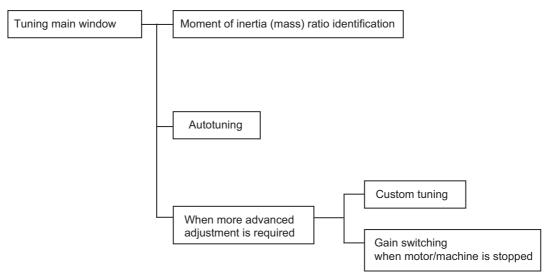


The tuning function allows you to smoothly carry out tuning of your servo system.

The tuning function calculates the moment of inertia ratio and sets a servo gain suitable for the machine characteristics. The optimal gain is set to avoid vibrations.

Structure

The following flowchart shows how the tuning function works.



Set the moment of inertia ratio first, and select autotuning to execute.

If more advanced adjustment is required after autotuning, execute custom tuning.

To reduce vibrations when the motor or machine is stopped, execute Gain switching while the motor/machine is stopped.

Tuning Main Window

Open the Tuning main window using the following procedure.

1. In the SigmaWin+ Σ -V component main window, click **Tuning** and then click **Tuning**.

Tuning	×
This function executes tuning for the Servopack. Using this function while the motor is running is dangerous. Be sure to carefully read the SigmaWin+ Operation Manual before executing this function. Special care must be taken for the following.	
<safety precautions=""></safety>	_
Before executing this function, make sure that the emergency stop (power off) can be activated when needed. The response speed may change considerably during tuning.	
Before executing this function, make sure that the emergency stop (power off) can be activated when needed.	
2. Confirm the safety of the area adjoining the drive unit.	
Before executing this function, always confirm that the area within the motor motion range	
and direction is clear for safe operation. Provide protective devices to ensure safety in	
the event of overtraveling or other unexpected movement.	
3. Always confirm that there is no position error before running the motor.	
Be sure to return to the origin and reset the position prior to normal operation.	
Running the motor without resetting the origin can lead to an overrun and is extremely dangerous.	
4. When the moment of inertia (mass) identification function is used for a vertical axis,	
check the safety of the system.	
When the moment of inertia (mass) identification function is used for a vertical axis,	
confirm that the axis level does not drop when the servo is turned off.	
<tuning precautions=""></tuning>	
5. Set the moment of inertia (mass) ratio first.	
The moment of intertia (mass) ratio must be set to achieve correct tuning. Be sure to set the ratio. The setting can be performed from the Tuning window.	
De sure to set the ratio. The setting can be performed from the running window.	
6. If vibration is generated, execute custom tuning.	
Lower the gain until there is no vibration by executing custom tuning.	
Note: While tuning, you can read the precautions related to the process. Click the Precautions button provided in each tuning window.	
Execute Cancel	

Click **Cancel** to return to the SigmaWin+ Σ -V component main window without executing tuning.

2. Click **Execute**. The Tuning main window appears.

Tuning	×
Set the moment of inertia (mass) ratio before executing autotuning.	Precautions
Moment of inertia (mass) ratio identification Pn103 : Moment of Inertia Ratio	
Autotuning Reference input from host controller Position reference input No reference input	
Advanced adjustment	Finish

Tuning Main Window

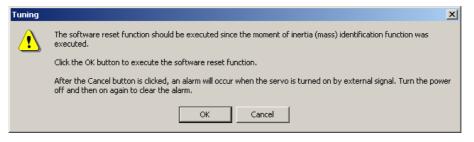
Moment of Inertia Identification

When automatically setting the moment of inertia ratio:

Click **Execute** in the main window, and the moment of inertia identification process will start.

See "4.6.1 Moment of Inertia (Mass) Identification" for details on moment of inertia identification.

When the moment of inertia is identified, a message will ask you to execute software reset.



Click **OK** to execute software reset. See "4.4.11 Resetting the SERVOPACK by Software" for the software reset function.

When manually setting the moment of inertia ratio:

Click Edit and enter a value in the input field. Click OK.

Autotuning

Select the **Position reference input** or **No reference input** option under **Reference input from host controller**, and then click **Autotuning**.

Autotuning with reference input (when the **Position reference input** option is selected):

The servo gain is automatically adjusted while running the motor by the reference from the host controller. If vibration is generated during adjustment, the vibration suppression function can be used. See "4.6.2 Autotuning with Reference Input" for details.

Autotuning without reference input (When the **No reference input** option is selected):

The servo gain is automatically adjusted while running the motor by the SERVOPACK internal reference (auto-run). See "4.6.3 Autotuning without Reference Input" for details.

When More Advanced Adjustment is Required after Autotuning

Click **Advanced adjustment** when more advanced adjustment is required after autotuning. The Tuning box will appear.

Tuning			×
Click the button of the function to be executed.			
Manually adjust gain and vibration.	$\blacksquare\!$	Custom tuning	I
Suppress vibration by decreasing gain		Gain switching	

Custom tuning

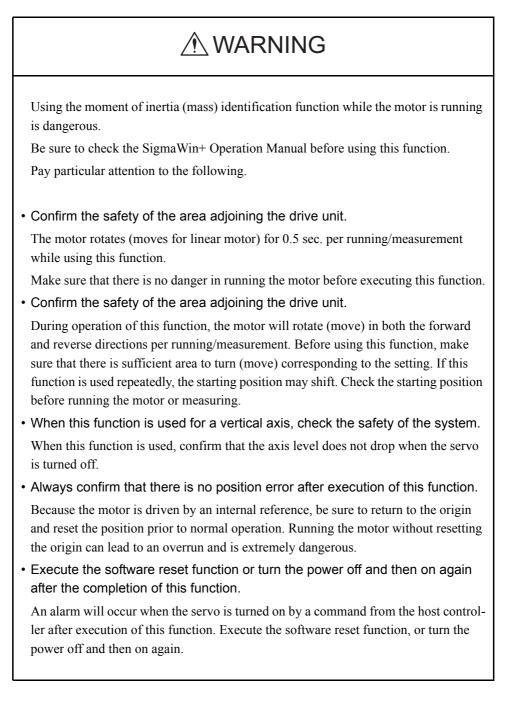
The gain can be manually adjusted. If vibration is generated during adjustment, the antiresonance control adjustment function and vibration suppression function can be used. See "4.6.4 Custom Tuning" for details.

Gain switching

The settings to suppress vibration while the motor and machine are stopped can be made. See "4.6.5 Gain Switching When Motor/Machine Is Stopped" for details.

When tuning is completed, click Finish to quit the tuning function.

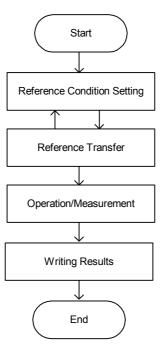
4.6.1 Moment of Inertia (Mass) Identification



Load moment of inertia (mass) can be regarded as a standard parameter when adjusting control parameters. Although the load moment of inertia (mass) ratio can be derived by calculation based on the mass and structure of the machine components, this is a very cumbersome operation in which deriving correct values for the complex structures of today's machines is very difficult.

The moment of inertia (mass) identification method of SigmaWin+ Σ -V component can obtain accurate and high-quality moment of inertia (mass) values simply by running the motor several times forward and backward.

The following flowchart shows how the moment of inertia (mass) is identified.



Moment of Inertia (Mass) Identification Boxes

Open the moment of inertia (mass) identification boxes using the following procedure. Click **Execute** in the Tuning main window. The Condition Setting box will appear. The boxes displayed here are those displayed when using a rotary motor.

Setting the Conditions

Set the conditions for identifying moment of inertia (mass) in the Condition Setting box.

Condition Setting AXIS#1	X
Condition Reference Deration / Setting Transmission Measurement	nt 🖙 Write Results
Please set the following conditions for Moment of Inertia Ider	ntification.
Speed Loop Setting Pn100:Speed Loop Gain 400 [0.1Hz] Edit Pn101:Speed Loop Integral Time Constant	Reference Selection ±1000min-1(2.50 turns MAX) ✓ Confirm Detailed Setting(limitation in operation)
2000 [0.01ms] Identification start level	Acceleration ± (5000.00 - 45836.62) [min-1/s]
The Moment of Inertia Ratio can not be identified correctly under the following cases: 1. When the torque limit is active	Speed (9.16 · 1100.00) [min-1] Moving distance
Please see the Setting Help in detail. Execute the software reset function, or turn the power off and then on after completion of execution.	(0.01 · 2.75) [rotation]
	< Back. Next > Cancel

Condition Setting Box

Speed Loop Setting

Set the speed loop gain and integral time constant.

Edit

Click Edit to view the Speed Loop-Related Setting Change box.

Identification Start Level

Set the moment of inertia (mass) identification start level.

Help

Click **Help** to open the window for guidelines on the reference condition settings. See <Guidelines for Reference Condition Settings> for details.

Reference Selection

Select the reference pattern for identifying the moment of inertia (mass). (Recommended method.)

Detailed Setting

Create the reference pattern for setting the moment of inertia (mass) by changing the values with the slider or by directly entering the values.

Next>

Click Next to view the Reference Transmission box.

Cancel

Click Cancel to return to the main window without changing the conditions.

Confirm

Click **Confirm** to view the reference wave.

Reference confirmation			×
Moving distance 2.50	[rota]		
Driving pattern			
	\		
V:Speed	1000.00	[min-1]	
T1:Acceleration Time	50	[ms]	
T2:Constant-speed time	100	[ms]	
Total moving time	400	[ms]	
	ок		

<Guidelines for Reference Condition Settings>

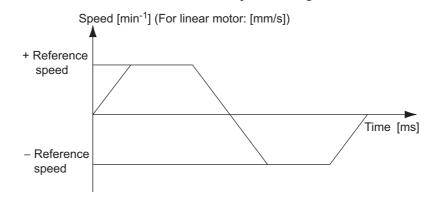
- Run the motor to measure the load's inertial moment (mass) of the mechanism to compare it with the rotor's inertial moment (coil assembly mass for linear motor) of the motor in the moment of inertia (mass) ratio.
- Set the driving mode, reference pattern (maximum acceleration, maximum speed, and maximum moving distance), and parameters related to the speed loop.
- Accurate measurement of the moment of inertia (mass) ratio depends on the settings. See the measurement results to determine the proper settings. See the following guidelines for each setting.

Reference Selection

The motor turns (moves) with the references as shown in the following graph for a forward run and a reverse run. The following references are for a rotation (movement) in a forward run. Select a reference pattern from the Reference Selection box (recommended method) or create the reference pattern by directly entering the values.

As the setting for maximum acceleration increases, the accuracy of the inertia identification tends to improve.

Consider the pulley diameter or the speed reduction ratio such as the ball screw pitches, and set the maximum acceleration within the operable range.





- The amount of movement is the value for each operation (a forward run or a reverse run). After several operations, the operation starting position may have moved in either direction. Confirm the operable range before each measurement and operation.
- Certain settings for the parameters or inertia size of the mechanism may result in overshooting or undershooting, and cause the speed to temporarily exceed the maximum speed. Allow a margin when making the settings.

Speed Loop Setting

If the response of the speed loop is poor, the moment of inertia (mass) ratio cannot be measured accurately.

The speed loop setting to get the required response for the moment of inertia (mass) setting is already set to the default setting. Normally, this setting does not have to be changed.

If this speed loop gain is too high, and is causing excitation in the mechanism, lower the setting. However, do not set it to a value that is higher than the default setting.

Identification Start Level

With a heavy load or low-rigidity machine, torque limit may be applied and the moment of inertia identification may fail.

In this case, double the identification start level and execute identification again.



If the moment of inertia (mass) ratio cannot be measured accurately

If the torque (force) is limited, the moment of inertia (mass) ratio identification cannot be made correctly. Adjust the setting of the limit or decrease the acceleration in Reference Selection so that the torque (force) will not be limited.

See "Torque (Force) Limit" in the SERVOPACK user's manual for details of the torque (force) limiting function.

Reference Transmission

Transfer the reference conditions to the SERVOPACK. Click **Start** in the Reference Transmission box to begin the transfer.

Reference Transmis	sion AXIS#0		
Condition III Setting	Reference Transmission	Operation / Measurement	Write Results
Transferrir	ng Reference Conditions	to the Servopack.	Start Cancel
		¢	
		0%	
			Cancel

Reference Transmission Box

Start

Click to **Start** to transfer the reference conditions to the SERVOPACK. A progress bar displays the progress status of the transfer.

Cancel

The **Cancel** button is available only during the transfer to the SERVOPACK. After the transmission is finished, it is unavailable and cannot be selected.

Next>

The **Next** button is available if the data is transferred successfully. If an error occurs or if the transmission is interrupted, it is unavailable and cannot be selected.

Click Next to view the Operation/Measurement box.

<Back

Click **Back** to return to the Condition Setting box. The **Back** button is unavailable during a data transfer.

Cancel

Click Cancel to stop processing and return to the main window.

After the data has been successfully transferred, click **Next**, and the Operation/ Measurement box appears.

Operation/Measurement

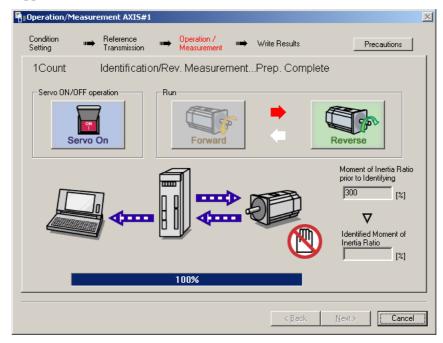
In the Operation/Measurement box, run and measure the actual motor. Measurements are taken two to seven times and then verified.

Run the motor and take measurements using the following procedure.

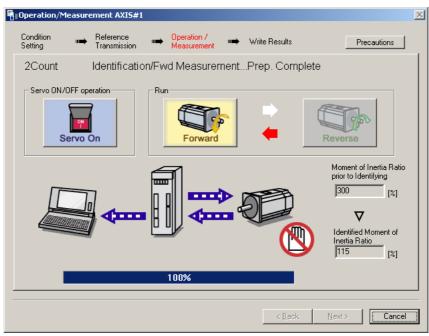
1. Click Servo ON to turn on the servo power.

📲 Operation/Measur	ement AXIS#1			×
Condition 🔫	Reference Transmission	u Operation / Measurement ■ Writ	te Results Precaution	s
1Count	Identificatio	on/Fwd MeasurementPre	əp. Complete	
Servo ON/OFF op		Run Forward	Reverse	
			▼ Identified Moment Inertia Ratio	8]
		0%		
			< Back Next > Ca	ancel

2. Click **Forward** to take measurements by turning (moving) the motor forward. After the measurements and the data transmission are finished, the following window appears.



3. Click **Reverse** to take measurements by turning (moving) the motor in reverse. After the measurements and the data transmission are finished, the following window appears.



4. Repeat steps 2 through 3 until all the measurements have been taken.

The actual number of times the measurements have been taken is displayed in the upper left part on the screen.

The progress bar displays the percentage of data that has been transferred.1

- 5. After the measurement has been successfully completed, click **Servo ON** to turn to the servo OFF status.
- 6. Click Next, and the Write Results box appears.

When **Next** is clicked without turning to the servo OFF status, the following message appears.

Moment o	of Inertia I	dentification	X
⚠	It turns th	e Servo OFF.	
	ОК	Cancel	

Click **OK** to turn to the servo OFF status.

Writing Results

In the Write Results box, set the moment of inertia (mass) ratio calculated in the operation/ measurement to the parameters.

w	rite Results AX	15#0					
	Condition Setting	•	Reference Transmission	••	Operation / Measurement	•	Write Results
	Writ	es th	ne Identified	d Mo	ment of In	ertia I	Ratio.
					- 	5	
			Identified Mome	ut of l			Pn103 : Moment of Inertia Ratio
			426	nt or ir	[%] ►		0 [%]
						1	
-							< Back. Einish Cancel

Write Results Box

Identified Moment of Inertia (Mass) Ratio

Displays the moment of inertia (mass) ratio calculated in the operation/measurement.

Writing Results

Click **Writing Results** to assign the value displayed in the identified moment of inertia (mass) ratio to SERVOPACK parameter Pn103.

Pn103: Moment of Inertia (Mass) Ratio

Displays the value assigned to the parameter.

Click **Write Results**, and the new ratio calculated from the operation/measurement will be displayed.

<Back

The **Back** button is unavailable.

Cancel

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

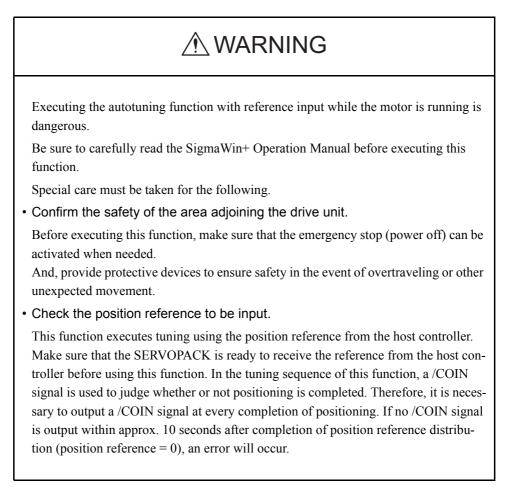
Finish

Click **Finish**, and a warning message appears reminding you to reset the origin position. (No warning message appears when the Write Results box has been opened from the Tuning main window.)

Moment of Inertia Identification	×
Be sure to reset the position before normal operation. Because the motor is driven by an internal reference, be sure to perform home return and reset the position prior to normal operation. Performing servomotor operation without reset is extremely dangerous as it may lead to runaway, etc.	
ок	

Click **OK** to return to the SigmaWin+ Σ -V component Main window. If Pn103 (Moment of Inertia (Mass) Ratio) has been changed, that new value will remain.

4.6.2 Autotuning with Reference Input



This autotuning uses reference inputs from the host controller, and sets a servo gain suitable for the machine characteristics. The gain is set as high as possible to avoid vibrations.

To execute autotuning using reference inputs from the host controller, use the following procedure.

1. Select the **Position reference input** option under **Reference input from host controller** in the Tuning main window, and then click **Autotuning**. The Autotuning-Setting Conditions box will appear.

Autotuning - Setting Conditions AXIS#1	×
Set conditions.	
Mode selection	
2:For positioning	
A gain adjustment specialized for positioning will be executed. In addition, the following automatic adjustments can be executed: Model following control, notch filter, anti-resonance control, and vibration suppression.	
Mechanism selection	
2:Ball screw mechanism or linear motor	
Executes adjustment suitable for relatively high-rigidity mechanism, such as a ball screw or linear motor. Select this type if there is no applicable mechanism.	
Tuning parameters	
Next > Cancel	

 Select the mode from the Mode selection combo box and the mechanism from Mechanism selection combo box, and then click Next. The Autotuning-Moment of Inertia Ratio Setting box will appear. When the Start tuning using the default settings. check box is selected in the Autotuning-Setting Conditions box, tuning will be executed using tuning parameters set to the default value.

🎬 Autotuning - Moment of Inertia RatioSet	×
If Moment of Inertia Ratio is not correctly set, vibration may be generated.	
Is Moment of Inertia Ratio correctly set?	
Pn103 : Moment of Inertia Ratio (0 - 20000)	
100 [%]	
< Back Next > Cancel	

3. Enter the correct moment of inertia ratio and then click **Next**. The following window will appear.

Autotuning - Automatic se	tting AXIS#1	X
Waiting for execution	Tuning Turn the servo on, input the reference from the host controller, and then click the Start button.	
Oscillation level measurement	Start tuning	
Gain search behaviour evaluation		
Tuning completed		
	Mode selection	
	2:For positioning	
Notch filter	Mechanism selection	
OAnti-res Adj OVib Suppress	2:Ball screw mechanism or linear motor	
Precautions	< Back Finish Cancel	

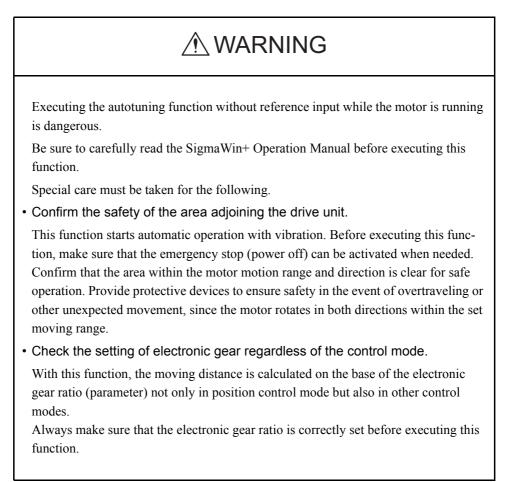
4. Turn the servo on and then input the reference from the host controller. Click **Start tuning** to start tuning.

Autotuning - Automatic se	tting AXIS#1	×
Waiting for execution	Tuning Executing tuning (Input the reference.)]
Oscillation level measurement Gain search behaviour evaluation	Cancel	
Tuning completed	Mode selection 2:For positioning	
Notch filter Anti-res Adj Vib Suppress	Mechanism selection 2:Ball screw mechanism or linear motor	
Precautions	< Back Finish Cancel	

Vibration generated during tuning is automatically detected and the optimum setting for the detected vibration will be made. When setting is completed, the LED indicator lamps (bottom left of the box) of the functions used for the setting will light up.

5. When tuning is complete, click **Finish**. The results of tuning will be written in the parameters.

4.6.3 Autotuning without Reference Input



This autotuning sets a servo gain suitable for the machine characteristics. The gain is set as high as possible for auto run within the set range to avoid vibration.

Two methods are available to stop autotuning without reference input while the motor is running, and the motor will stop according to the method selected. Make sure to select the best method for the situation.

- If the SERVO OFF button is used, the motor will stop according to the stopping method after servo off specified by the parameters.
- If the CANCEL button is used, the motor will decelerate to a stop and then enter a zero clamp state.

Note: The CANCEL button may not be used with some SERVOPACKs.

To execute autotuning without using a reference input, use the following procedure.

1. Select the **No reference input** option under **Reference input from host controller** in the Tuning main window, and then click **Autotuning**. The Autotuning-Setting Conditions box will appear.

Autotuning - Settii	ng Conditions A	XIS#1		×
Set conditions.				
Switching the load mo	oment of intertia (I	oad mass) identificatior	ı	
1:A moment of iner	tia is not presume	ed.	•	
Mode selection				
2:For positioning			•	
following automatic	adjustments can	sitioning will be execute be executed: Model foll ind vibration suppressio	owing control,	
-Mechanism selection				
2:Ball screw mech	anism or linear mo	otor	•	
		tively high-rigidity mech s type if there is no appl		
-Distance				_
The moving range fi	rom the current v	alue is specified.		
98	X 1000 =	98000	[reference units]	
(-99990 - 99990) (Setting invalid rang	je:-31-31)	2.9	[Rotation]	
Tuning parameters —				_
Start tuning using	g the default setti	ngs.		
		Next >	Cancel	

2. Select whether or not to use the load moment of inertia (load mass) identification from the **Switching the load moment of inertia (load mass) identification** box, the mode from the **Mode selection** box, the mechanism from the **Mechanism selection** box, and enter the moving distance. Then, click **Next**.

When the **Start tuning using the default settings.** check box is selected in the Autotuning-Setting Conditions box, tuning will be executed using the tuning parameters set to the default values.

Autotuning - Automatic se	tting AXIS#1	×
Waiting for execution	Servo ON/OFF operation Servo OFF Servo ON	
Oscillation level measurement		
Gain search behaviour evaluation		
Tuning completed	Mode selection 2:For positioning	
	Mechanism selection 2:Ball screw mechanism or linear motor	
ONotch filter OAnti-res Adj	Distance 98000 [reference units]	
Vib Suppress	2.9 [Rotation]	
Precautions	< Back Finish Cancel	

1-12/44		11	
🚰 Autotuning - Automatic setting AXIS#1			
Waiting for execution	- Servo ON/OFF operatio	Servo OFF	
Oscillation level measurement	Tuning		
Gain search behaviour evaluation		Start tuning	
Tuning completed	Mode selection 2:For positioning		
	Mechanism selectio	n	
	2:Ball screw mecha	anism or linear motor	
	Distance		
Notch filter	98000	[reference units]	
OAnti-res Adj Vib Suppress	2.9	[Rotation]	
Precautions	< Back	Finish Cancel	

3. Click Servo ON. The following box will appear.

4. Click **Start tuning**. The motor will start rotating and tuning will commence.

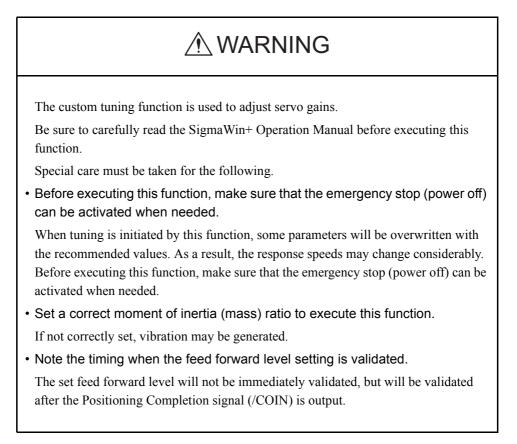
Autotuning - Automatic setting AXIS#1

Waiting for execution	Servo ON/OFF operation Servo OFF Servo OFF
Oscillation level measurement	
	Tuning
Gain search behaviour evaluation	
Tuning completed	Mode selection
Tuning completed	Mode selection 2:For positioning
Tuning completed	
Tuning completed	2:For positioning
	2:For positioning Mechanism selection 2:Ball screw mechanism or linear motor Distance
Notch filter	2:For positioning Mechanism selection 2:Ball screw mechanism or linear motor
	2:For positioning Mechanism selection 2:Ball screw mechanism or linear motor Distance

Vibration generated during tuning is automatically detected, and the optimum setting for the detected vibration will be made. When the setting is complete, the LED indicator lamps (bottom left of the box) of the functions used for the setting will light up.

5. When tuning is completed, click **Finish**. The results of tuning will be written in the parameters.

4.6.4 Custom Tuning



This custom tuning adjusts servo gains by manually adjusting the feed forward level and feedback level. If vibration is detected during tuning, the anti-resonance control adjustment function and the vibration suppression function can be used. Use custom tuning for fine adjustment of gains as well as for autotuning.

Either one of the following two methods of custom tunings can be executed by selecting the tuning mode.

When the **tuning mode** is set to **0 (servo gains with priority given to stability)** or **1 (servo gains with priority given to response)**

This custom tuning enables multiple servo gains to be set to stable conditions merely by manipulating one tuning level. If vibration is detected during tuning, the notch filter/anti-resonance control auto setting function is provided to suppress it. The anti-resonance control adjustment function can also be manually set during tuning.

When the **turning mode** is set to 2 (servo gains with priority given to positioning application) or 3 (servo gains with priority given to prevention of overshooting in positioning applications)

This custom tuning enables not only multiple servo gains to be set to stable conditions but also realizes reduction of positioning time by manipulating two tuning levels. This tuning uses the following-model control to reduce positioning time. In addition to the notch filter/ anti-resonance control auto setting function in case of vibration occurrence during tuning, a function to automatically set friction compensation is provided. The anti-resonance control adjustment function and the vibration suppression function can also be manually set during tuning.



Autotuning can be executed as the final step to keep balance among servo gains.

Custom Tuning - Adus	AXIS#1
Tuning mode Mechanism selection Friction compensation Gain status	0 : Set servo gains with priority given to stability. 2 : Ball screw mechanism or linear motor Enable 1 gain
Tuning level adjustment Setting the tuning level too high can cause vibration or abnormal noise. Finish	Tuning level. Tuning level Tuning level Tuni
	Auto-setting Notch filter Vibration not detected 1 step inactive 2 step inactive Anti-res Ctrl Adj Vibration not detected Anti-res Adj inactive Cancel Anti-res Ctrl Adj
Precautions	Anti-res Adi Anti-res Ctrl Adj Back: To Autotuing Completed. Cancel

Custom Tuning - Adjust Box when Tuning Mode is Set to 0 or 1

Custom Tuning - Adust	AXIS#1
Tuning mode	2 : Set servo gains for positioning application.
Mechanism selection	2 : Ball screw mechanism or linear motor
Friction compensation	Disable
Gain status	1 gain
	Tuning level
· · · · · · · · · · · · · · · · · · ·	Set the tuning level.
FF level adjustment	Feed forward level (FF)
Increase until	
overshooting occurs.	
	(1 - 2000)
↓ ↓	Feedback level (FB)
FB level adjustment	
Increase until	(1 - 2000)
overshooting disappears.	Auto-setting
	Notch filter Vibration not detected
	Vib Detect
Response level OK?	1 step inactive Cancel
No Lui	
Yes	Anti-res Ctrl Adj Vibration not detected
	Anti-res Adj inactive Cancel Anti-res Ctrl Adj
Finish	
	Vib Suppression
	Frequency 1 inactive Cancel Vib Suppress
Precautions	Back To Autotuing Completed. Cancel
	Control Control Control Control

Custom Tuning - Adjust Box When Tuning Mode is Set to 2 or 3

Execute custom tuning using the following procedure.

The procedure described here is for when the tuning mode is set to 2 (servo gains with priority given to positioning application).

1. Click Advanced adjustment in the Tuning main window, and then click Custom tuning in the Tuning box that will appear. The Custom Tuning - Mode selection box will appear.

¹ Custom Tuning - Mode	e selection AX	15#1		I
-Tuning mode				
2:Set servo gains for p	oositioning applic	ation.		
0:Set servo gains with Overshoot will rarely of to gain adjustments, th for torque (force) cont 1:Set servo gains with Overshoot may occur addition to gain adjustr (except for torque (for	occur since prio le notch filter an trol) can be adju n priority given to since priority is nents, the notch	rity is given to stability. d anti-resonance cont sted. o response. given to responsivene filter and anti-resonar	rol (except	
Mechanism selection	m or linear moto	P		
Executes adjustment s	uitable for relati	vely high-rigidity mech		
Outine				
-Option Friction compensation	Enable	C Disable		

The tuning modes that can be selected will vary according to the SERVOPACK setting.

 Select the tuning mode from the **Tuning mode** box and the mechanism from the Mechanism selection box, and then click Next. The Friction compensation option is available only when the tuning mode is set to 0 or 1.

The Custom Tuning - Moment of Inertia Ratio Set box will appear.

Custom Tuning - Moment of Inertia RatioSet		
When Moment of Inertia Ratio is not correctly set, vibration may be generated.		
Is Moment of Inertia Ratio correctly set?		
Pn103 : Moment of Inertia Ratio (0 - 20000)		
Back Next Cancel		

Enter the correct moment of inertia ratio.

3. Click Next. The Custom Tuning - Adjust box will appear.

Custom Tuning - Adust	AXIS#1
Tuning mode	2 : Set servo gains for positioning application.
Mechanism selection	2 : Ball screw mechanism or linear motor
Friction compensation	Enable
Gain status	1 gain
FF level adjustment Increase until overshooting occurs.	Tuning level Set the tuning level and start the tuning. Feed forward level (FF)
FB level adjustment	Feedback level (FB)
1	Auto-setting
Response level OK?	Notch filter 1 step inactive 2 step inactive Cancel
Finish	Anti-res Ctrl Adj Anti-res Adj Anti-res Ctrl Adj Anti-res Ctrl Adj
	Vib Suppression Frequency 1 inactive Cancel Vib Suppress
Precautions	Back To Autotuing Completed. Cancel

4. Turn the servo on and input the reference from the host controller. Then, click **Start tuning** to begin tuning.

Custom Tuning - Adust	AXIS#1	BX
Tuning mode	2 : Set servo gains for positioning application.	
Mechanism selection	2 : Ball screw mechanism or linear motor	
Friction compensation	Enable	
Gain status	1 gain	
+	Tuning level	
	Set the tuning level.	
FF level adjustment	Feed forward level (FF)	
Increase until		
overshooting occurs.		
	(1 - 2000)	
↓	Feedback level (FB)	
FB level adjustment		
Increase until	(1 - 2000)	
overshooting disappears.		
1	Auto-setting	
*	Notch filter Vibration not detected Vib Detect	
Response level OK?>	1 step inactive	
	2 step inactive	
Yes		
	Anti-res Ctrl Adj Vibration not detected	
	Anti-res Adj inactive Cancel Anti-res Ctrl A	Adj
Finish		='
	Vib Suppression	
	Frequency 1 inactive Cancel Vib Suppres	s
Precautions	Back To Autotuing Completed. Cancel	
Frecautions	To Autotuing Completed Cancel	

5. Change the feed forward level by clicking the setting arrows. Continue to raise the level until an overshoot occurs.



The set feed forward level will not be applied until the Positioning Completion signal /COIN is output.

When the tuning mode is set to 0 or 1, change the tuning level by clicking the setting arrows.

Custom Tuning - Adust	AXIS#1	
Tuning mode Mechanism selection Friction compensation	0 : Set servo gains with priority given to stab 2 : Ball screw mechanism or linear motor Enable	ility.
Gain status	1 gain	
Tuning level adjustment Setting the tuning level too high can cause vibration or abnormal noise. Finish	Tuning level Set the tuning level. Tuning level	Back
	Auto-setting Notch filter Vibration not detected 1 step inactive Cencel 2 step inactive Cencel Anti-res Ctrl Adj Vibration not detected	
	Anti-res Adj inactive Cancel	Anti-res Ctrl Adj

6. Change the feedback level by clicking the setting arrows. Continue to raise the level until no overshoot occurs.

Custom Tuning - Adust	AXIS#1	×
Tuning mode	2 : Set servo gains for positioning application.	-
Mechanism selection	2 : Ball screw mechanism or linear motor	-
Friction compensation	Enable	1
Gain status	1 gain] .
	Tuning level	_
	Set the tuning level.	
FF level adjustment	Feed forward level (FF)	
Increase until		
overshooting occurs.		
	(1 - 2000)	
↓	Feedback level (FB)	
FB level adjustment		
Increase until	(1 - 2000)	
overshooting disappears.	Auto-setting	
↓	Notch filter Vibration not detected	1
	Vib Detect	
Response level OK?	1 step inactive Cancel	
No		
Yes	Anti-res Ctrl Adj Vibration not detected	
	Anti-res Adj inactive Cancel Anti-res Ctrl Adj	1
Finish		-
	Vib Suppression Evenuence 1 Vib Suppress Vib Suppress	
	Frequency 1 inactive Cancel Vib Suppress	
Precautions	Back To Autotuing Completed. Cancel	1
		1

Repeat steps 5 and 6 to continue tuning.

The notch filter/anti-resonance control auto setting function, the anti-resonance control adjustment function, the vibration suppression function, or autotuning with reference input can be used as required.

See "Functions To Suppress Vibration" for details.

To reset to the original settings and status, click **Back**.

7. When tuning is complete, click **Completed**. The settings will be written in the SERVOPACK.

Functions To Suppress Vibration

<Notch Filter/Anti-resonance Control Adjustment Auto Setting Function>

For vibration frequencies above 1,000 Hz when servo gains are increased, the notch filter auto setting function provides effective suppression. For vibration frequencies between 100 and 1,000 Hz, the anti-resonance control adjustment auto setting function is effective.

Auto Setting

To use auto setting, enable the notch filter/anti-resonance control adjustment auto setting function by using parameters.

During tuning, the notch filter frequency (anti-resonance control frequency for the antiresonance control adjustment auto setting function) effective for the detected vibration is automatically set and displayed in **1 step** or **2 step** (in **Anti-res Adj** when using the antiresonance control adjustment auto setting function).

Custom Tuning - Adust	XXI5#1	_ 8 ×
Tuning mode	2 : Set servo gains for positioning applicati	on.
Mechanism selection	2 : Ball screw mechanism or linear motor	
Friction compensation	Enable	
Gain status	1 gain	
	Tuning level	
	Set the tuning level.	
FF level adjustment	Feed forward level (FF)	Back
Increase until		
overshooting occurs.		
	(1 - 2000)	
↓	Feedback level (FB)	
FB level adjustment		
Increase until	(1 - 2000)	
overshooting disappears. -	Auto-setting	
↓ ↓	Notch filter 2 step setting completed	
\sim	1 step inactive	Vib Detect
Response level OK?	2 step 1260Hz active Cancel	
No Ly		
Yes	Anti-res Ctrl Adj Vibration not detected	
	Anti-res Adj inactive Cancel	Anti-res Ctrl Adj
Finish		
	Vib Suppression	
	Frequency 1 inactive Cancel	Vib Suppress
Precautions	Back To Autotuing	Completed. Cancel
Frecautoris	- Date: To Activiting	Cancer

Window with Notch Filter Automatically Set

Cancel

If the automatically set notch filter frequency (or anti-resonance control frequency) does not effectively suppress vibration, click **Cancel** to reset to the preceding frequency. When the frequency is reset, wibration detection will restart

When the frequency is reset, vibration detection will restart.

Vib Detect (vibration detection)

While the notch filter/anti-resonance control adjustment auto setting function is enabled, click **Vib Detect** (vibration detection) to manually detect vibration. The SERVOPACK detects vibration at the moment **Vib Detect** (vibration detection) is clicked, and the notch filter frequency (or anti-resonance control frequency) effective for the detected vibration is set and displayed in **1 step** or **2 step** (or in **Anti-res Adj**). Manual vibration detection can also be executed when the SERVOPACK does not detect vibration.

Anti-res Ctrl Adj (anti-resonance control)

Click **Anti-res Ctrl Adj** (anti-resonance control) to execute the anti-resonance control function if further adjustment is required. See "4.6.6 Anti-resonance Control Adjustment Function" for details.

<Vibration Suppression Function>

This function is used to suppress low-frequency (1 to 100 Hz) vibrations for which neither the notch filter nor anti-resonance control adjustment functions are effective. When a vibration for which the vibration suppression function can be used is detected, the **Vib Suppress** (vibration suppression) button will blink.

Vib suppress (vibration suppression)

Click **Vib suppress** (vibration suppression) to execute the vibration suppression function. See "4.6.7 Vibration Suppression Function" for details.

<Autotuning with Reference Input>

To Autotuning

Click **To Autotuning** to execute autotuning using reference inputs from the host controller. See "4.6.2 Autotuning with Reference Input" for details.

4.6.5 Gain Switching When Motor/Machine Is Stopped

After servo gains have been increased by tuning, vibration will not be generated while the motor/machine is running. However, vibration may be generated when the motor/machine is stopped. This function suppresses vibrations generated when the motor/machine is stopped by automatically reducing internal servo gains. The reduced servo gains will automatically be reset to the original set values when the motor/machine starts running again.

To perform gain switching, use the following procedure.

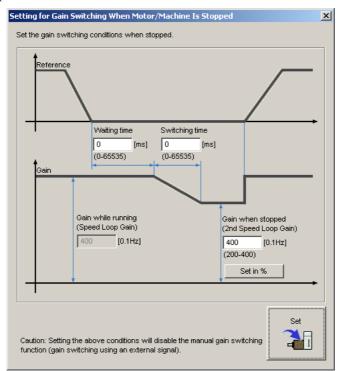
1. In the Tuning main window, click **Advanced adjustment** and then click **Gain switching**. A message will appear, asking for confirmation to execute the function.

Setting for Gain Switching When Motor/Machine Is Stopped 🛛 🗙				
Executing this function will d Do you want to execute this	isable manual gain switching. function?			
Execute	Cancel			

When the gain switching function is already effective, a message will inform you that the function is already effective, and ask for confirmation to execute.

Setting for Gain Switching When Motor/Machine Is Stopped 🔀				
The automatic gain switching function is already effective. Executing this function here will overwrite the gain setting. Do you want to execute this function?				
Execute	Cancel			

2. Click **Execute**. The Setting for Gain Switching When Motor/Machine Is Stopped box will appear.



Waiting time

Enter the period of time from the moment the position reference becomes zero until the gain switching starts.

Switching time

Enter the period of time required to switch the gain from the value when the motor/machine is running to the value when the motor/machine is stopped.

Gain when stopped (2nd Speed Loop Gain)

Enter a value from 50% to 100% of the gain when the motor/machine is running (speed loop gain).

Set in %

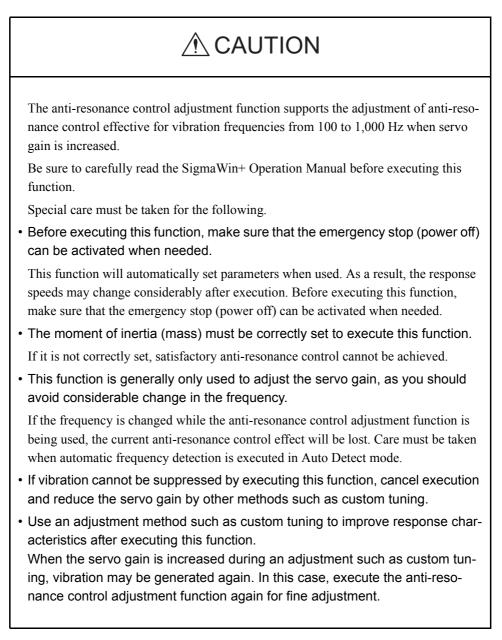
If you want to set the gain when the motor/machine is stopped (2nd speed loop gain) as a percentage of the gain when the motor/machine is running (speed loop gain), click **Set in** %. The box for setting the gain as a percentage will appear.

Setting for Gain Switching When Motor/Machine Is Stopped	×
Set the gain when the motor/machine is stopped to	
80 [%] of the gain when the motor/machine is running.	
(50 - 100)	
OK Cancel	

Enter a percentage, and then click **OK**. The gain when the motor/machine is stopped (2nd speed loop gain) will be automatically calculated according to the set percentage and displayed in the previous box.

3. When the setting is complete, click **Set**. The set values will be written in the SERVOPACK.

4.6.6 Anti-resonance Control Adjustment Function

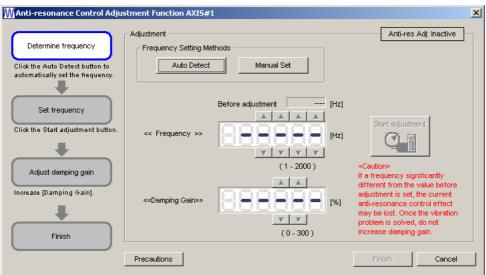


The anti-resonance control adjustment function supports the adjustment of anti-resonance control effective for vibration frequencies from 100 to 1,000 Hz when servo gain is increased. Vibration can be suppressed by setting vibration frequency by auto detection or by manual setting to adjust damping gain. Input a reference and execute this function when there is vibration.

×

To execute the anti-resonance control adjustment function, use the following procedure.

1. In the Tuning main window, click **Advanced adjustment**, **Custom tuning**, and then **Anti-resonance control**. The Anti-resonance Control Adjustment Function box will appear.



2. Click Auto Detect or Manual Set to set the frequency.

MAnti-resonance Control Adjustment Function AXIS#1

Determine frequency Click the Auto Detect button to automatically set the frequency.	Adjustment	Manual Set	Anti-res Adj: Inactive
Set frequency Click the Start adjustment button.	<< Frequency >>	Before adjustment 580 [Hz]	Start adjustment
Adjust damping gain Increase (Damping Gain).	< <damping gain="">></damping>	(1 - 2000)	<caution> If a frequency significantly different from the value before adjustment is set, the current anti-resonance control effect may be lost. Once the vibration problem is solved, do not increase damping gain.</caution>
	Precautions		Finish Cancel

Auto Detect

Click **Auto Detect**. The SERVOPACK will automatically analyze the frequency and set the optimum frequency.

Manual Set

Click **Manual Set** to view the currently set frequency. When the anti-resonance control adjustment function is not effective, the displayed frequency can be manually adjusted by clicking the setting arrows.

Use this setting method if the frequency is already known.

3. Click Start adjustment.

MAnti-resonance Control Adju:	stment Function AXIS#	1				×
Determine frequency Click the Auto Detect button to automatically set the frequency.	Adjustment Frequency Setting Me Auto Detect	thods Manual Set		Anti-res A	Adj: Active	
Set frequency Click the Start adjustment button.	<< Frequency >>	Before adjustment 580	[Hz] [Hz]	Reset		
Adjust damping gain Increase (Damping Gain).	< <damping gain="">></damping>			<caution> If a frequency signidifferent from the values adjustment is set, the set of th</caution>	alue before le current	
Finish	Precautions	(0-300)	[%]	anti-resonance com may be lost. Once ti problem is solved, c increase damping g	he vibration lo not	
	Precautions				Cancel	

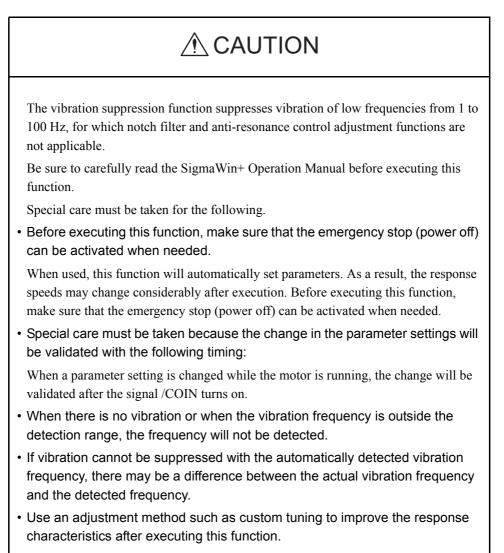
4. Adjust the damping gain by clicking the setting arrows.

MAnti-resonance Control Adju	stment Function AXIS#		×
Determine frequency Click the Auto Detect button to automatically set the frequency.	Adjustment	thods Manual Set	Anti-res Adj: Active
Set frequency Click the Start adjustment button.	<< Frequency >>	Before adjustment 580 [Hz]	Reset
Adjust damping gain Increase [Damping Gain].	< <damping gain="">></damping>		<caution> If a frequency significantly different from the value before adjustment is set, the current</caution>
Finish		(0 - 300)	anti-resonance control effect may be lost. Once the vibration problem is solved, do not increase damping gain.
	Precautions		Finish Cancel

Click Reset to reset the settings to their original values during adjustment.

5. When the adjustment is complete, click **Finish**. The set values will be written in the SERVOPACK.

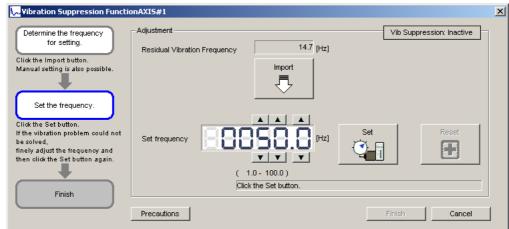
4.6.7 Vibration Suppression Function



The vibration suppression function is a support function mainly used to suppress transitory vibration of low frequencies from 1 to 100 Hz generated by impact when the motor/ machine is stopped. This function is effective for vibration frequencies for which notch filter and anti-resonance control adjustment functions are not applicable. Input a reference and execute this function when there is vibration.

To execute the vibration suppression function, use the following procedure.

1. In the Tuning main window, click **Custom tuning**, and then **Vibration suppression**. The Vibration Suppression Function box will appear.



2. Click Import, or set the frequency by clicking the setting arrows.

Import

Click **Import** to set the monitored residual vibration frequency as the set frequency. (This function is valid only when the residual vibration frequency is between 1.0 and 100.0.)

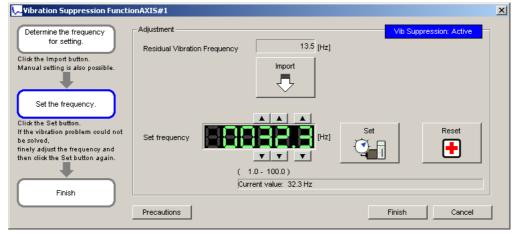
The set frequency can be manually adjusted by clicking the setting arrows.

😾 Vibration Suppression Functio	nAXIS#1			×
Determine the frequency for setting. Click the Import button. Manual setting is also possible. Set the frequency. Click the Set button. If the vibration problem could not be solved, finely adjust the frequency and then click the Set button again.	Adjustment Residual Vibration Frequency		Vib Suppression: Inactive	
Finish	Click the Se	. Bulton.		
	Precautions		Finish Cancel	

3. Click Set.

Vibration Suppression Functi	onAXIS#1					×
Determine the frequency for setting. Click the Import button. Manual setting is also possible. Set the frequency. Click the Set button. If the vibration problem could not be solved. Tinely adjust the frequency and then click the Set button again.	Adjustment Residual Vibration I	13.5 Import	[Hz]	Vib Sup	Reset	
	Precautions			Finish	Cancel	

If there is still vibration, fine-adjust the set frequency by clicking the setting arrows, and then click **Set** again.



Click Reset to reset the frequency to the original value during adjustment.

4. When vibration is suppressed, click **Finish**. The set frequency will be written in the SERVOPACK.

4.7 Test Run

4.7.1 JOG Operation

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 Forward or Reverse 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.

Perform a JOG operation using the following procedure.

1. In the SigmaWin+ Σ -V 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.

	is to operate this function, because the servomotor will rotate. ure to check the user's manual before operating.
Pay particula	r attention to the following points:
1. Perform se	afety checks around moving parts.
the JOG sp	operation button is being depressed, the servomotor will run at eed set. Execute after having confirmed that servomotor vill present no danger.
2. [Forward	Run Prohibit (P-OT)]/[Reverse Run Prohibit (N-OT)] is disabled.
disabled du P-OT/N-OT	rd Run Prohibit (P-OT)/Reverse Run Prohibit (N-OT) signals are uring JOG operation (the servomotor will not stop even if the signals are passed). When operating, carefully verify the action n of the servomotor/machine.

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

<When the Write Prohibited Setting is ON>

If the write prohibited setting is ON, the following message will appear.

Warning	×
⚠	Cannot execute because the Write Prohibited Setting is ON. Please change the setting to OFF.

Click **OK**, and set the write prohibited setting to OFF.

See "4.4.5 Write Prohibited Setting" for setting 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.

🍄 JOG Operation AXIS#0	×
JOG Speed Setting	
Pn304 : JOG Speed	
500	[min-1] Edit
Operation	
O Servo OFF	Servo ON
Forward	Reverse

Pn304: JOG Speed

Parameter Pn304 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.

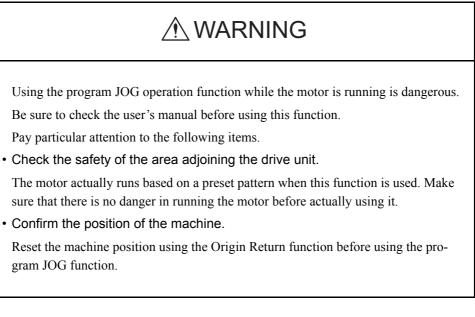
3. Check the JOG speed. To change the JOG speed, click Edit.

4. Click Servo ON.

Ľ	JOG Operation AXIS#0	×
	JOG Speed Setting	
	Pn304 : JOG Speed	
	500 [min-1] Edit	
	Operation	
	Servo OFF	
	Forward Reverse	

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

4.7.2 Program JOG Operation



This function allows automatic operation determined by the preset pattern of operation.



Two methods are available to stop program JOG operation while the motor is running, and the motor will stop according to the method selected. Make sure to select the best method for the situation.

- If the Servo OFF button is used, the motor stops according to the stopping method after servo off specified by the parameters.
- If the Cancel button is used, the motor coasts to a stop and then enters a zero clamp state.

Note: The Cancel button may not be used with some SERVOPACKs.

To perform the JOG operation for a particular pattern, use the following procedure.

 In the SigmaWin+ Σ-V component main window, click Test Run and then click Program JOG Operation. A warning message appears, reminding you of the possible dangers.

	unction is a dangerous function accompanied by operation of a motor.
	re to confirm an operation manual before execution. reful especially of the following points.
1. P	ease check the safety near an operation part.
J	whether motion is a set of the operation program set up when Program OG Operation was executed.Please execute this function after fully hecking that there is no danger by operation of a motor.
2. P	lease check the position of a machine.
	lease carry out a starting position return etc. and be sure to re-set up a osition, before executing Program JOG Operation.
The	cautions on use
Abc	ut an instruction waveform display
C	he displayed instruction waveform is calculated from the Program JOG operation parameter set up and presume.lt may not be in agreement with n actual instruction waveform.
Abc	ut the current position display under execution
e s	he cursor showing the current position displayed during execution may xpress the progress time from an execution start, and may not be in greement with operation of a Servodrive Please refer to this information is a standard of a position during execution.

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

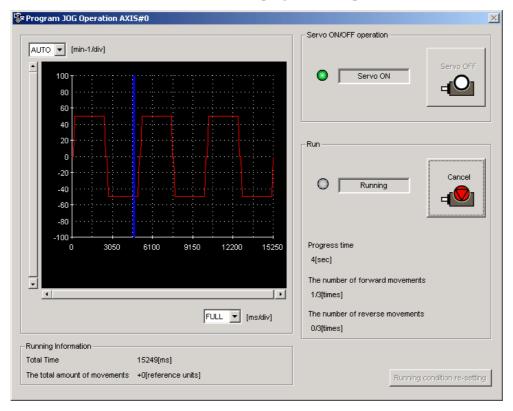
ogram JOG Operation AXIS#1	
	Running Condition
UTO 🔽 [min-1/div]	Pn531:Program JOG Movement Distance
	32768 [reference units] (1-1073741824)
¹⁰⁰⁰ T	Pn533:Program JOG Movement Speed
800	500 [min-1] (1-10000)
600	[min-1](1-10000)
	Pn534:Program JOG Acceleration/Deceleration Time
400	100 [ms] (2-10000)
200	
o	Pn535:Program JOG Waiting Time
-200	100 [ms] (0-10000)
	Pn536:Number of Times of Program JOG Movement
	3 [times] (0-1000) (0: Infinite)
-600	
-800 ······	Pn530.0:Program JOG Operasion Related Switch
	4 : (Waiting:Pn535 -> Forward:Pn531 -> Waiting: 💌
0 2554 5108 7662 10216 12770	
FULL (ms/div)	Apply
[OCC] [III3/GIV]	
nning Information	
al Time 12771[ms]	
total amount of movements +0[reference units]	Run

2. Click OK, and the Running Condition Setting box appears.

3. Set the running conditions and click **Apply**. The graph for the operation pattern is displayed.

AUTO 🔽 [min-1/div]	Servo ON/OFF operation
100 80 60	Servo OFF
40 20 -20 -40 -60	Run Execute
-80 -100 0 3050 6100 9150 12200 15250	Progress time 0[sec] The number of forward movements
FULL (ms/div)	0/3[times] The number of reverse movements 0/3[times]
unning Information	
he total amount of movements +0[reference units]	Running condition re-setting

4. Click **Run** and the Program JOG Operation box appears.



5. Click Servo ON and Execute. The program JOG operation starts.

4.8 Table Editing

4.8.1 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 INDEXER option module 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+ Σ -V component main window, click **Table** and then click **Edit Program Table**. The Program Table Editing window appears.

	Saves the program table data.										
	Prints the Program Table Editing window.										
	Splits the specified area into a specified number of stations at equal intervals.										
#Prog	ram Table	Editing AX	IS#1 : SGDV-1R	6AE1A/Opt	ion Board						×
	i	8	🚆 Station s	plit						Commen	
STEP	POS	SPD	RDST	RSPD	ACC	DEC	POUT	EVENT	LOOP	NEXT	
0	+INFIN	1000	25000	3000	:	:	: : NAZ : NA	ITO	1	END	
1	-INFIN:		-	1000	5000	5000	:::::::	ITO	1	END	
2	A+1200	1000	60000	1000	:	:		ITO	1	END	
3	-	1000	-	4000	:	:	:::::::	ITO	1	END	
4	S+1200		-	1000	:	:	NA:AA::Z	ITO	1	END	
5	A+1200		-	1000	5000	78000	:::::::	ITO	1	END	
6	+INFIN:		-	5000	:	:	:::::::	ITO	1	END	
7	-INFIN:		-	1000	:	:	Z:NAZ:NA	ITO	1	END	
8	STOP	1000	-	1000	1	:		ITO	1	END	
9	S+5000		-	1000	:	:		ITO	1	END	
10	-	1000	-	1000	100000	70000	:::::::	ITO	1	END	
11		100000	-	1000	:	:		ITO	1	END	
12	-INFIN:		-	1000	:	:		ITO	1	END	
13	A+5500		-	1000	:	:	:::::::	ITO	1	END	
14	STOP	1000	-	1000	1.1	1		ITO	1	END	-
	Initia d	lize	Save	ī				Read		Write	

Program Table Editing Window (Online Mode)

STEP	POS	SPD	RDST	RSPD	ACC	DEC	POUT	EVENT	LOOP	NEXT 🔺
0	I+1200008	5,0000	80800	5080	1080	1000	ANNNN	ITO	1	EMB
1	1+150000	// 500	200000	\$0000	$\left(\right)$	2000	AANNN	(TO)	(1)	END
2	I-600000	20000	40000	2000	:	1000	NNANN	IT500	3	3
3	‡+600000	30000	60000	1000	2000	:	NANAN	IT500	4	END
4	≜ +0	50000	-	1000	:	:	ZZZZZ	DT250	1	5
5	A+2000000	50000	$\vdash \frown$	1000		:	ZZZZZ	DT250	1	6
6	4+0 (A)	250(0 B)	+ (C)	1000(D)	(F)	F)	ZZZ ZG	ITO(H)	1 ()	END(J)
- 7	+INFINITE	45009	\downarrow	1000	\$000	1500	NNNN	T2008	$1 \bigcirc$	8
8	+INFINITE	500	-	1000	:	-	NAAAN	T500	1	9
9	-INFINITE	1000	-	1000	:	-	ANNNA	T750	1	10
10	-INFINITE	20000	-	1000	:	-	NANAN	T1500	1	11
11	\$TOP	1000	-	1000		-	NNNNN	ITO	1	END
12	+INFINITE	20000	50000	7500		-	NNNAN	T3500	1	13
13	\$TOP	1000	-	1000		:	:::::	ITO	1	END
14	t+50000 /	£0000 \	f)	<i>t</i> 000	1	1	\::::)	ито /	2	15
15	I-\$0000	28000	-	1000	:			TTO	2	18.
4										•

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.

	Target Postion Reservation	×
Displays the current setting.	+1200000	
	Target Position	Position / Distance 1200000 [reference units] (-99999999 - 99999999)
		OK Cancel

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	
Serial stop	S + Position	
Without reference	-	

If "Absolute position," "Relative distance," or "Serial stop" 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.

Registration Relative Position	×
✓ No registration	
Registration Relative Position	
(0 - 99999999)	
OK Can	cel

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.

Registration Relative Position	×
No registration	
Registration Relative Position	
80000 [reference units]	
(0 - 9999999)	
Canc	el

Click OK.

Box D: RSPD

The registration speed can be typed directly in this box.

Box E: ACC Box F: DEC

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.

Acceleration/Deceleration	×
Acceleration	Deceleration
Acceleration	Deceleration
(1 - 99999999) [1000reference units/min/ms]	(1 - 99999999) [1000reference units/min/ms]
	OK Cancel

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 **OK**.

Box G: POUT

The output signals 0 to 7 can be set in this box. Double click any cell in the box, and the Output Signal box appears.

	Output Signal		×
Displays the current settings. The	_ : : : : : : : : :		
setting for output signal 0 is shown at	Output signal 0	Same as previous step 💌	
the far right, and	Output signal 1	Same as previous step 💌	
that for output	Output signal 2	Same as previous step 💌	
signal 7 at the far	Output signal 3	Same as previous step 💌	
left.	Output signal 4	Same as previous step 💌	
	Output signal 5	Same as previous step 💌	
	Output signal 6	Same as previous step 💌	
	Output signal 7	Same as previous step 💌	
		OK Cancel	

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.	А
Not Active	Always Inactive.	Ν
Same as previous step	Continues previous state.	:
Zone	Sets a zone signal (Z0 to Z4) corre- sponding to the column.	Z

Ex.: The "ANN : ZZ : N" display shows the following settings.

Output Signal 0: Not Active

Output Signal 1: Same as previous step

Output Signal 2: Zone Signal Z2

Output Signal 3: Zone Signal Z3

Output Signal 4: Same as previous step

Output Signal 5: Not Active

Output Signal 6: Not Active

Output Signal 7: Active

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.

Event				х
NTO				
Condition		Wait time		
NEAR	•	0	[ms]	
		(0 - 9	99999)	
		OK	Cancel	

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

Selection Items	Description	Display
Positioning Comple-	Establish conditions for INPOSITION	Ι
tion	band	
NEAR	Establish conditions for NEAR band	Ν
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.

Next Step	×
Complete	
Next step number	
(0 - 255)	
(OK) Cancel	

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

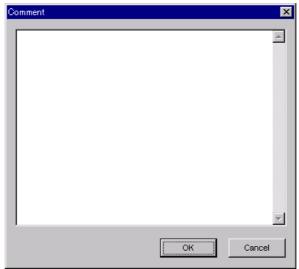
If the program continues, do not select "Complete," and type the number of the next step.

Next Step	×
Next step number	
(0 - 255) OK Cancel	

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

Comment

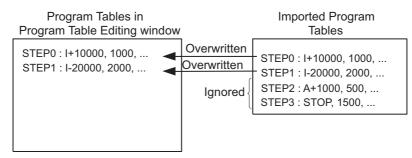
Comments can be typed or edited in the Comment box. Click **Comment**, and the Comment box appears.



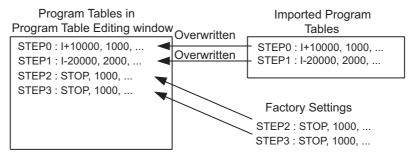
Import

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.

Open				? ×
Look jn:	YE_Applications	• E		
20010313	102203.pgt			
File <u>n</u> ame:				<u>O</u> pen
Files of <u>type</u> :	Program table file(*.pgt)	•]	Cancel
Product info	SGDH-A3BE/JUSP-NS600]	
<u>C</u> omment:				

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.

Save Table	х
Saves table data into flash memory. Continue this process?	
OK Cancel	

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.

Initialize		\times
Returns to factory settings. When this function is impleme which has been saved is era Is this acceptable?	•	ı
Initialize	Cancel	

Click Initialize to initialize the program tables.

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

Station Split 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, station split , and the Station Split Selection box appears.

< Linear Movement of Loads >

Station split selection	×
Because the method of moving the load is set to the Linear type division becomes a Linear station split.	
Please set up a change of rotation/linear type by "Pn81A:Moving mode".	
C	ancel

1. Click Next.

Linear station split	×
Start position End position Station2 Station1 Station0	Range setting Condition setting Select the starting and ending point. Select the starting point and interval. Start position [-99999999] [reference units] (-99999999 - 9999999)
It creates a number of stations specified between the starting position and the end position at equal intervals, and allot the station number to the program step. In position at the specified position by specify the program step.	End position 99999999 [reference units] (-99999999 - 99999999) Station number 256 (2 - 256) Positioning speed 1000 [1000reference units/min]
	<back cancel<="" ok="" td=""></back>

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

Prog	Program Table Editing AXIS#1 : SGDY-1R6AE1A/Option Board									
	6 8 6	🚊 Station s	olit						Commen	t
									👌 Import	
STEP	POS SPD	RDST	RSPD	ACC	DEC	POUT	EVENT	LOOP	NEXT	
0	A-9999 1000	-	1000	:	:	111111111	ITO	1	END	
1	A-9921 1000	-	1000	:	:	111111111	ITO	1	END	
2	A-9843.1000	-	1000	1	1	111111111	ITO	1	END	
3	A-9764'1000	-	1000	1	1	111111111	ITO	1	END	
4	A-9686:1000	-	1000	1		111111111	ITO	1	END	
5	A-9607 1000	-	1000	1	:		ITO	1	END	
6	A-9529 1000	-	1000	:	1	111111111	ITO	1	END	
7	A-9450 1000	-	1000	1		111111111	ITO	1	END	
8	A-9372 1000	-	1000	:		111111111	ITO	1	END	
9	A-9294:1000	-	1000	:	:	111111111	ITO	1	END	
10	A-9215 1000	-	1000	:	:	1111111111	ITO	1	END	
11	A-9137:1000	-	1000	:	:	111111111	ITO	1	END	
12	A-9058 1000	-	1000	:	:	111111111	ITO	1	END	
13	A-8980:1000	-	1000	:	:	111111111	ITO	1	END	
14	A-8901 1000	-	1000	1	1	111111111	ITO	1	END	•
	Initialize	Save]				Read		Write	

< Rotational Movement of Loads >



1. Click Next.

Rotary station split	×
Starting position Station0 Station1 Station2	Range setting Condition setting Image: Select one load axis rotation from the starting point. Image: Select the starting and ending point. Image: Select the starting point and interval. Start position -99999999 [reference units] (-999999999)
It creates a number of the stations specified on the load axis at equal intervals, and allot the station number to the program step. In position at the specified position by specify the program step.	Station number
Beginning 99999999 [reference units] End 99999999 [reference units]	(2 - 256) Positioning speed 1000 [1000reference (1 - 99999999) units/min]
I	<back cancel<="" ok="" td=""></back>

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

n Prog	ogram Table Editing AXIS#1 : SGDY-1R6AE1A/Option Board										
	ê	8	🚆 Station s	plit						Comment	
STER	POS	SPD	RDST	RSPD	ACC	DEC	POUT	EVENT	LOOP	NEXT	
0	A-9999	1000	-	1000	1	1		ITO	1	END	
1	A-9921	1000	-	1000	1	:	111111111	ITO	1	END	
2	A-9843		-	1000	:	:	1111111111	ITO	1	END	
3	A-9765	1000	-	1000	:	1	111111111	ITO	1	END	
4	A-9687		-	1000	:	:	1111111111	ITO	1	END	
5	A-9609:		-	1000	:	:	1111111111	ITO	1	END	
6	A-9531:		-	1000	:	:	1111111111	ITO	1	END	
7	A-9453:		-	1000	:	:	111111111	ITO	1	END	
8	A-9374		-	1000	:	:	1111111111	ITO	1	END	
9	A-9296		-	1000	:	:	1111111111	ITO	1	END	
10	A-9218		-	1000	:	:	111111111	ITO	1	END	
11	A-9140		-	1000	:	1	111111111	ITO	1	END	
12	A-9062-		-	1000	:	:	111111111	ITO	1	END	
13	A-8984:		-	1000	:	:	111111111	ITO	1	END	
14	A-8906:	1000	-	1000	1.00		111111111	ITO	1	END	•
	Initia	lize	Save					Read		Write	

/ (Print) Button

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

Printing Item Setting	Printing Item Setting
Cover	Cover
Cover Editing	Attaching the Cover Cover Editing
Where to Submit Where to Submit (No.1) Where to Submit (No.2) Where to Submit (No.3) Item Name Settino Value Title Company Name Department Name Department Name	Where to Submit (No.2) Where to Submit (No.2) Where to Submit (No.2) Submit (No.3) Item Name Setting Value Title Setting Value Department Name Department Name Name Name
Data for each function	Data for each function
Program Table	Program Table
Header & Footer Printing Items	Header & Footer Printing Items
Header Info-	Program Table Print Range
Models Info	O Print only STEP which defined program.
Printing Date	C Select the Print STEP. Start End
🔽 File Name	Others-
Footer Info	Commonio
Pages	
Color Selection	Color Selection © Black and White © Color
OK Cancel	OK

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.

nt Preview													
🖨 Print	Q (€ 100 %	-	. 🕼 1/3	+	<u>B</u> ack ⇒	Forward E	diting of	the Printing It	ems			
	Proc	gram Tab	le					Durin	ntin q Date : M	(augla 05	2002		
		-A5BE/JUSP-						Phi		Name :			
	00011		110001						1.00	rivello .			
	Proc	gram Tabl	e										
			-										
						[Unut] P	08 :	(referer	ice units]				
						SI	PD :	(x1000r	eference un	its/min]			
						R	DST :	referer	ce units]				
						R	SPD :	(x1000r	eference un	its/min]			
						A	CODEC :	(x1000r	eference un	its/min/r	ms]		
	STEP	POS	SPD	RDST	RSPD	ACC	DEC	POUT	EVENT	LOOP	NEXT		
	0	STOP	1000	-	1000	:	:		ITO	1	END		
	1	STOP	1000	-	1000	:	:		IT0	1	END		
	2	STOP	1000	-	1000	:	:		ITO	1	END		
	3	STOP	1000	-	1000	1	1		ITO	1	END		
	4	STOP	1000	-	1000	1	:		ITO	1	END		
	5	STOP	1000	-	1000	:	:		ITO	1	END		
	6	STOP	1000	-	1000	:	:		ITO	1	END		
	7	STOP	1000	-	1000	:	:		ITO	1	END		
											CAUD.		
		STOP	1000	-	1000	:	: 		ITO	1	END		
	8	STOP STOP	1000	-	1000	1	:		ПО		END		

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+ Σ -V 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.

Open			? ×
Look jn:	YE_Applications	- 🗈	
20010313	102203.pgt		
File <u>n</u> ame:			<u>O</u> pen
Files of <u>type</u> :	Program table file(*.pgt)	•	Cancel
Product info			
<u>C</u> omment:			

Select the data to be imported, and click Open.

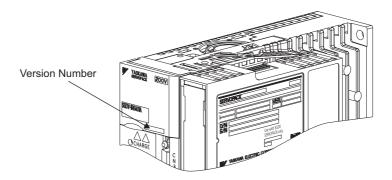
- < When "Select New SERVOPACK" is Selected >
- 1. When "Select New SERVOPACK" is selected, the SERVOPACK Selection box appears.

Servopack Sele	ection		X					
Servop Servopack mo	odel		[Max. applicable motor capacity]					
SGDV-***E1	SGDV-****E1A(Command-Option module type rotary motor)							
Enter the Ser (Use the digit number.)	Version/Special Spec. Enter the Servopack version number. (Use the digital operator to find out the version Cuse the digital operator to find out the version to							
	Reference option	Safety option	Feedback option					
Option Module Model:								
Ver.:	Unknown	Unknov	wn 🔲 🗖 Unknown					
Special Spec.:		<u> </u>	V					
		OK						

2. Select the SERVOPACK model, current [max. applicable motor capacity].

Servopack Sele	ection			X		
Motor type	Rotary					
Servopa	ack: <u>SGDV-</u> R	70 * E1A				
Servopack mo				plicable motor capacity]		
SGDV-***ET	A(Command-Option module typ	pe rotary motor)	R90 (0.91 Arms	AC100V) [50W] AC100V) [100W] AC100V) [200W]		
•		I	R70 (0.66Arms,	AC100V) [400W] AC200V) [50W]		
Version/Spe	cial Spec.					
	vopack version number. al operator to find out the vers	sion	-	Note: Select the Unknown check box to set the version to the latest.		
Select the Sp	ecial Spec. number.	Standard	•			
	Reference option	Safety option		Feedback option		
Option Module Model:	SGDV-OCA03A(INDEXER)	Unmounted (1	No match)	Unmounted (No match) SGDV-OFA01A(Fully-closed)		
Ver.:	0000 🗖 Unknown	Г	Unknown	🔲 🗖 Unknown		
Special Spec.:	Standard		V	Ţ		
	OK Cancel					

3. Type the version number of the SERVOPACK. When there is a version number, the version number is shown on the front of the SERVOPACK.



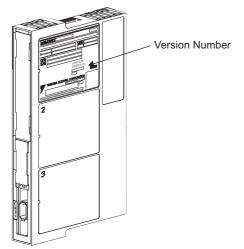
Version Number on SGDV

If the version number is unknown, select Unknown.

- 4. Select the specifications of the SERVOPACK.
- 5. Select the reference option module. Select SGDV-OCA03A (INDEXER).

Servopack Sel	ection		X
Motor type	🔳 Rotary 💌		
Servop Servopack mc SCDV-************************************	ack: SGDV- odel A(Command-Option module cial Spec,	type rotary motor) R70 (0) R90 (0) 2R1 (2: 2R6 (2: 2R6 (2: 2R70 (0) Pon (0) Pon (0) Pon (0) Pon (0)	[Max. applicable motor capacity] 66Arms, AC100V) [50W] 91 Arms, AC100V) [100W] 1 Arms, AC100V) [200W] 86Arms, AC200V) [50W] 66Arms, AC200V) [50W] known Note: Select the Unknown check box to set the version to the latest.
Select the Sp	becial Spec. number.	Standard	
	Reference option	Safety option	Feedback option
Option Module Model:	SGDV-OCA03A(INDEXER	Unmounted (No match) Unmounted (No match) SGDV-OFA01A(Fully-closed)
Ver.:	0000 🗌 Unknown	Unknov	wn 🔲 🗖 Unknown
Special Spec.:	Standard	•	× ×
		OK Cancel	

6. Type the version number of the reference option module. When there is a version number, the version number is shown on the side of the reference option module.



Version Number on INDEXER option module

If the version number is unknown, select Unknown.

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

			Ũ	n Table Edit d area into a	0	mber of station	ns at equal	intervals	S.	
igram Tabl		GDV-*****E1A/	1	A					🔄 Comme	_
P POS	SPD	RDST	RSPD	ACC	DEC	POUT	EVENT	LOOP	NEXT	Т
STOP	1000	_	1000	:	:		ITO	1	END	T
				1						- 12
STOP	1000	—	1000	1.1			ITO	1	END	
STOP STOP	1000		1000				IT0 IT0	1	END	-
								1 1 1		
STOP	1000		1000				ITO	1 1 1 1	END	
STOP STOP	1000 1000		1000 1000	: : : : :			ITO ITO	1 1 1 1 1 1	END END	
STOP STOP STOP	1000 1000 1000		1000 1000 1000	: : : : : :	1 1 1 1 1 1 1 1 1 1 1		ITO ITO ITO	1 1 1 1 1 1 1 1	END END END	
STOP STOP STOP STOP STOP STOP	1000 1000 1000 1000 1000 1000	-	1000 1000 1000 1000 1000 1000		: : : : : : : :		ITO ITO ITO ITO ITO ITO ITO	1 1 1 1 1 1 1 1 1 1	END END END END END END	
STOP STOP STOP STOP STOP	1000 1000 1000 1000 1000 1000 1000	-	1000 1000 1000 1000 1000 1000 1000		: : : : : : : : : : : : : :		ITO ITO ITO ITO ITO ITO ITO ITO	1 1 1 1 1 1 1 1 1 1 1 1 1	END END END END END END END END	
STOP STOP STOP STOP STOP STOP	1000 1000 1000 1000 1000 1000	-	1000 1000 1000 1000 1000 1000		Image: Constraint of the sector of		ITO ITO ITO ITO ITO ITO ITO	1 1 1 1 1 1 1 1 1 1 1 1	END END END END END END	
STOP STOP STOP STOP STOP STOP STOP	1000 1000 1000 1000 1000 1000 1000		1000 1000 1000 1000 1000 1000 1000		I I		ITO ITO ITO ITO ITO ITO ITO ITO	1 1 1 1 1 1 1 1 1 1 1 1 1	END END END END END END END END	
STOP STOP	1000 1000 1000 1000 1000 1000 1000 100		1000 1000 1000 1000 1000 1000 1000 100		I I		IT0 IT0 IT0 IT0 IT0 IT0 IT0 IT0 IT0	1 1	END END END END END END END END END	
STOP STOP STOP STOP STOP STOP STOP STOP	1000 1000 1000 1000 1000 1000 1000 100		1000 1000 1000 1000 1000 1000 1000 100		Image: Constraint of the sector of		IT0 IT0 IT0 IT0 IT0 IT0 IT0 IT0 IT0 IT0	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	END END END END END END END END END	
STOP STOP	1000 1000 1000 1000 1000 1000 1000 100		1000 1000 1000 1000 1000 1000 1000 100	· · · · · · · · · · · · · · · · · · ·	Image: Section 1 Image: Section 2 Image: Se		IT0 IT0 IT0 IT0 IT0 IT0 IT0 IT0 IT0 IT0	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	END END END END END END END END END END	

Program Table Editing Window (Offline Mode)

STEP	POS	SPD	RDST	RSPD	ACC	DEC	POUT	EVENT	LOOP	NEXT 🔺
0	STOP	1/00		1/10					1	EYD
1	STOP	1000	(-1)	1000	(*)	(*)	(:::::	ITO	(1)	ÉND .
2	STOP	1000	-	1000	:	1		ITO	1	END
3	STOP	1000	-	1000	:	1		ITO	1	END
4	STOP	1000	-	1000	:	1		ITO	1	END
5	STOP	1000	-	1000	:	-		ITO	1	END
6	STOP	1000	-	1000	:	-	:::::	ITO	1	END
7	STOP(A)	100(B)	(C)	(D)	(E)	F	G	IT (H)		
8	STOP	1000					U			END
9	STOP	1000	-	1000	:	2		ITO	1	END
10	STOP	1000	-	1000	:	-		ITO	1	END
11	STOP	1000	-	1000	-	-	:::::	ITO	1	END
12	STOP	1000	-	1000	-	1		ITO	1	END
13	STOP	1000	-	1000	:	1	:::::	ITO	1	END
14	STOP	1000	۲/	1000	<u>\</u>			TTO /	K /	IND /
15	SNR	100		100					1	EN
•										Þ

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.

	Target Postion Reservation	×
Displays the current setting.	[+1200000	
	Target Position Relative distance	Position / Distance 1200000 [reference units] (-999999999 - 99999999)
		OK Cancel

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
Serial Stop	S + Position
Without reference	-

If "Absolute Position," "Relative Distance," or "Serial Stop" 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.

Registration Relative Position	×
Vo registration	
Registration Relative Position	
(0 - 99999999)	
OK Cancel	

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.

Ree	sistration Relative Position	х
	No registration	
	Registration Relative Position 80000 [reference units]	
	(0 - 99999999)	
	Cancel	

Click OK.

Box D: RSPD

The registration speed can be typed directly in this box.

Box E: ACC Box F: DEC

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.

Acceleration/ Deceleration	×
Acceleration	Deceleration
Acceleration	Deceleration
[x1000reference units/min/ms]	[x1000reference units/min/ms]
	OK Cancel

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 **OK**.

Box G: POUT

The output signals 0 to 7 can be set in this box. Double click any cell in the box, and the Output Signal box appears.

	Output Signal	×
Displays the current settings. The		
setting for output signal 0 is shown at the far left, and that	Output signal 0 Same as previous step	
for output signal 7 at the far right.	Output signal 1 Same as previous step	
	Output signal 2 Same as previous step	
	Output signal 3 Same as previous step	
	Output signal 4 Same as previous step	
	OK Cancel	

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.	А
Not Active	Always Inactive.	Ν
Same as previous step	Continues previous state.	:
Zone	Sets a zone signal (Z0 to Z4) corre- sponding to the column.	Z

Ex.: The "ANN : ZZ : N" display shows the following settings.

Output Signal 0: Not Active

Output Signal 1: Same as previous step

Output Signal 2: Zone Signal Z2

Output Signal 3: Zone Signal Z3

Output Signal 4: Same as previous step

Output Signal 5: Not Active

Output Signal 6: Not Active

Output Signal 7: Active

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.

Event NTO			X
Condition NEAR	•	VVait time 0 (0 - 9	[ms] 19999)
	[OK	Cancel

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

Selection Items	Description	Display
Positioning Comple-	Establish conditions for INPOSITION	Ι
tion	band	
NEAR	Establish conditions for NEAR band	Ν
Command Issuance	Establish conditions for command issu-	D
Completion	ance completion	
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	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.

Next Step	×
Complete	
END (0 - 255)	
ОК	Cancel

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.

Next	Step	×
	Complete Next step number (0 - 255)	
	OK Cancel	

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.

Open					?	х
Look jn:	YE_Applications	-	£	d		
20010313	102203.pgt					
File <u>n</u> ame:	[<u>O</u> pen]
Files of <u>type</u> :	Program table file(*.pgt)		•		Cancel	
Product info	SGDH-A3BE/JUSP-NS600					
<u>C</u> omment:						

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

(New) Button

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

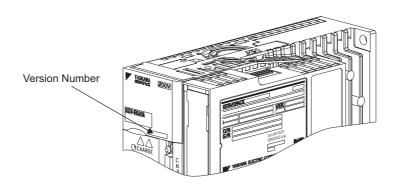
1. Click the D button, and the SERVOPACK Selection box appears.

Servopack: ************************************	ervopack Sel Motor type	ection Rotary		<u>(</u>	
Version/Special Spec. Enter the Servopack version number. (Use the digital operator to find out the version number.) Select the Special Spec. number. Select the Special Spec. number. Option Module Model: Ver.: Unknown Unknown Unknown Unknown Unknown Unknown	Servopack mo	odel		(Max. applicable motor capacity)	
Option Module Model:	Version/Special Spec. Enter the Servopack version number. (Use the digital operator to find out the version number.) Note: Select the Unknown check box to set the version to the latest.				
		Reference option	Safety option	Feedback option	
Special Spec.:	Ver.:	Unknown	Unknov	Wn	
OK	Special Spec.:				

2. Select the SERVOPACK model, current [max. applicable motor capacity].

Servopack Sele	ection		×
Motor type	🗨 Rotary 💽		
Servopa	ack: <u>SGDV-</u> R	70 * E1A	
Servopack mo	del A(Command-Option module typ		rent [Max. applicable motor capacity] 0 (0.66Arms, AC100V) [50W]
SGOVE	Arconiniand-Option module typ		0 (0.91 Arms, AC100V) [50W]
			1 (2.1Arms, AC100V) [200VV]
			3 (2.8Arms, AC100V) [400W] 0 (0.66Arms, AC200V) [50W]
Version/Spe			
	vopack version number. al operator to find out the vers	0000	Unknown Note: Select the Unknown check box to set the version to
(Use the digit number.)	al operator to find out the vers	ion	the latest.
Select the Sr	ecial Spec. number.	Standard	
Select the Sp	colar opec, namber.	JStandard	<u> </u>
	Reference option	Safety option	Feedback option
Option Module	SGDV-OCA03A(INDEXER)	Unmounted (No ma	
Model:			SGDV-OFA01A(Fully-closed)
			known
Ver.:	0000 🗖 Unknown		
Special Spec.:	Standard]	Y
		OK Canc	cel

3. Type the version number of the SERVOPACK. When there is a version number, the version number is shown on the front of the SERVOPACK.



Version Number on SGDV

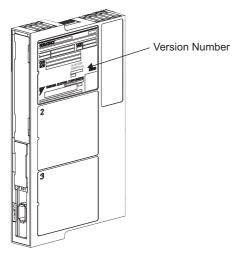
If the version number is unknown, select Unknown.

4. Select the specifications of the SERVOPACK.

5. Select the reference option module. Select SGDV-OCA03A (INDEXER).

Servopack Sel	ection			j
Motor type	🔳 Rotary 💌			
Servopack mc ScDV-****E1	ack: SGDV- odel A(Command-Option module t ecial Spec.	vpe rotary motor)	R70 (0.66Arms, R90 (0.91Arms, 2R1 (2.1Arms, 2R8 (2.8Arms, R70 (0.66Arms, 500 (0.01Arms)	plicable motor capacity] AC100V) [50W] AC100V) [200W] AC100V) [200W] AC100V) [200W] AC100V) [200W] AC100V] [200W] AC100V [200W] AC10V [200W] AC1
(Use the digit number.)	tal operator to find out the ve	rsion '		check box to set the version to the latest.
Select the Sp	ecial Spec. number.	Standard	•	
	Reference option	Safety option		Feedback option
Option Module Model:	SGDV-OCA03A(INDEXER)	Unmounted (N	lo match)	Unnounted (No match) SGDV-OFA01A(Fully-closed)
Ver.:	0000 🗖 Unknown		Unknown	Unknown
Special Spec.:	Standard	•	7	
		ок	Cancel	

6. Type the version number of the reference option module. When there is a version number, the version number is shown on the side of the reference option module.



Version Number on INDEXER option module

If the version number is unknown, select Unknown.

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

/ (Print) Button

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

Printing Item Setting	Printing Item Setting
Cover	-Cover
Cover Editing	Attaching the Cover Cover Editing
Where to Submit VWhere to Submit (No.1) VWhere to Submit (No.2) VWhere to Submit (No.3) Item Name Setting Value Setting Value Title Department Name Department Name Name Name Name	Where to Submit Where to Submit (No.2) Vhere to Submit (No.2) Submit (No.3) Item Name Company Name Department Name Name
Data for each function	Data for each function
Program Table	Program Table
Header & Footer Printing Items	Header & Footer Printing items
Header Info	Program Table Print Range
Title Program Table	Print all STEP.
Models Info	O Print only STEP which defined program.
✓ Printing Date	O Select the Print STEP. Start End
🔽 File Name	Others
Footer Info-	Comments
I Pages	
Color Selection	- Color Selection
Black and White C Color	Black and White C Color
OK Cancel	OK Cancel

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.

Program Table Printing Date:::March:05, 2002 SGDH-ASBE/JUSP-NS801 File Name: Program Table	Print Preview											
Program Table Printing Date :: March 05, 2002 SODH -ASBE/AUSP-NS801 File Name : Program Table	🖨 <u>P</u> rint	Q	Q 100 %	-	1/3		<u>B</u> ack ⇒	Forward E	diting of	he Printing Ite	ems	
Image: Construction of the second s		_	-						Prir			
SPD (p1000reference units/mi) RDST : preference units/mi preference units/mi RSPD : (p1000reference units/mi) ACC/DEC : (p1000reference units/mi)/mi STEP POS SPD RSPD icC POT EVENT LOOP (EXT) 1 STOP 1000 1000 : ::::::::::::::::::::::::::::::::::::		Prog	gram Tabl	le								
0 STOP 1000 - 1000 : :::::: ITO 1 END 1 STOP 1000 - 1000 : ::::: ITO 1 END 2 STOP 1000 - 1000 : ::::: ITO 1 END 3 STOP 1000 - 1000 : ::::: ITO 1 END 4 STOP 1000 - 1000 : ::::: ITO 1 END 5 STOP 1000 - 1000 : ::::: ITO 1 END 6 STOP 1000 - 1000 : ::::: ITO 1 END 7 STOP 1000 - 1000 : :::::: ITO 1 END 8 STOP 1000 - 1000 : ::::::: ITO 1 END <t< th=""><th></th><th>ETED</th><th>DOC</th><th>600</th><th>DDCT</th><th></th><th>SI R R</th><th>PD : DST : SPD : CC/DEC : </th><th>x1000r (referen x1000r x1000r</th><th>eference un ce units] eference un eference un</th><th>its/min] its/min/i</th><th></th></t<>		ETED	DOC	600	DDCT		SI R R	PD : DST : SPD : CC/DEC :	x1000r (referen x1000r x1000r	eference un ce units] eference un eference un	its/min] its/min/i	
1 STOP 1000 - 1000 : ::::: ITO 1 END 2 STOP 1000 - 1000 : ::::: ITO 1 END 3 STOP 1000 - 1000 : :::::: ITO 1 END 4 STOP 1000 - 1000 : :::::: ITO 1 END 5 STOP 1000 - 1000 : :::::: ITO 1 END 6 STOP 1000 - 1000 : ::::::: ITO 1 END 7 STOP 1000 - 1000 ::::::::::::::::::::::::::::::::::::					RUST		ALL	DEC				
2 STOP 1000 - 1000 : :::::: ITO 1 END 3 STOP 1000 - 1000 : ::::: ITO 1 END 4 STOP 1000 - 1000 : ::::: ITO 1 END 5 STOP 1000 - 1000 : ::::: ITO 1 END 6 STOP 1000 - 1000 : ::::: ITO 1 END 7 STOP 1000 - 1000 : :::::: ITO 1 END 8 STOP 1000 - 1000 : ::::::: ITO 1 END 9 STOP 1000 - 1000 :::::::: ITO 1 END					-		1					
3 STOP 1000 - 1000 : :::::: ITO 1 END 4 STOP 1000 - 1000 : :::::: ITO 1 END 5 STOP 1000 - 1000 : ::::::: ITO 1 END 6 STOP 1000 - 1000 : :::::::::::::: ITO 1 END 7 STOP 1000 - 1000 ::::::::::::::::::::::::::::::::::::				1	- E		1					
4 STOP 1000 - 1000 : : :::: ITO 1 END 5 STOP 1000 - 1000 : :::: ITO 1 END 6 STOP 1000 - 1000 : :::: ITO 1 END 7 STOP 1000 - 1000 : :::: ITO 1 END 8 STOP 1000 - 1000 : ::::: ITO 1 END 9 STOP 1000 - 1000 : :::::: ITO 1 END					-		1. 1.				1	
5 STOP 1000 - 1000 : : ::::: IT0 1 END 6 STOP 1000 - 1000 : ::::: IT0 1 END 7 STOP 1000 - 1000 : ::::: IT0 1 END 8 STOP 1000 - 1000 : :::::: IT0 1 END 9 STOP 1000 - 1000 : ::::::::::::::::::::::::::::::::::::		_					1					
6 STOP 1000 - 1000 : : ::::: ITO 1 END 7 STOP 1000 - 1000 : : ::::: ITO 1 END 8 STOP 1000 - 1000 : :::::: ITO 1 END 9 STOP 1000 - 1000 : ::::::: ITO 1 END							1					
7 STOP 1000 - 1000 : : :: ITO 1 END 8 STOP 1000 - 1000 : : :: ITO 1 END 9 STOP 1000 - 1000 : : :: ITO 1 END							1				1	
8 STOP 1000 - 1000 : : :::: ITO 1 END 9 STOP 1000 - 1000 : : :::: ITO 1 END					-							
9 STOP 1000 - 1000 : : ::::: ITO 1 END					-							
					-							
			STOP	1000	-	1000				ITO	1	END

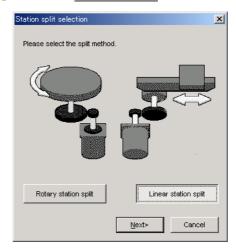
To print the document as is without any changes, click **Print**.

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

Station Split 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, station split , and the Station Split Selection box appears.



Select the split method, and click OK.

< When Linear is selected >

Linear station split	×
Start position End position Station2 Station1 Station0	Range setting Condition setting Condition setting Select the starting and ending point. Select the starting point and interval. Start position -99999999 [reference units] (-99999999 [reference units]
It creates a number of stations specified between the starting position and the end position at equal intervals, and allot the station number to the program step. In position at the specified position by specify the program step.	(-99999999 - 99999999) Station number 256 (2 - 256)
	Positioning speed 1000 [1000reference (1 - 99999999) units/min]
	<back cancel<="" ok="" td=""></back>

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

	2	8	🏨 Station s							Commer
TEP	POS	SPD	RDST	RSPD	ACC	DEC	POUT	EVENT	LOOP	NEXT
0	A-9999'	1000	—	1000	:	:		ITO	1	END
1	A-9921!	1000	-	1000	:	1		ITO	1	END
2	A-9843:	1000	-	1000	:	1	111111111	ITO	1	END
3	A-9764	1000	-	1000	1	1	111111111	ITO	1	END
4	A-9686:	1000	-	1000	:	:	1111111111	ITO	1	END
5	A-9607	1000	-	1000	:	:		ITO	1	END
6	A-9529	1000	-	1000	:	:		ITO	1	END
7	A-9450	1000	-	1000	•	1		ITO	1	END
8	A-9372		_	1000			1111111111	ITO	1	END
ğ.	A-9294:		_	1000				ITO	1	END
10	A-9215		_	1000	•			ITO	1	END
11	A-9137:		_	1000				ITO	1	END
12	A-9058		_	1000				ITO	1	END
13	A-8980:		_	1000	•			ITO	1	END
14	A-8901			1000				ITO	1	END

< When Rotary is selected >

Load axis data setting	×
Please set the begging and end one load axis rotation.	of the motor which needs
	Beginning 0 [reference units]
	(-999999999 - 99999999) end 99 [reference units]
	(-999999999 - 99999999)
< <u>B</u> ack	Next> Cancel

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

Rotary station split	×
Starting position Station0 Station1 Station2	Range setting Condition setting Select one load axis rotation from the starting point. Select the starting and ending point. Select the starting point and interval. Start position -99999999 (-99999999)
t creates a number of the stations specified on the load axis at equal intervals, and allot the station number to the program step. In position at the specified position by specify the program step. Beginning -99999999 [reference units]	Station number 256 (2 - 256) Positioning speed
End 99999999 [reference units]	(1 - 99999999)
	<back cancel<="" ok="" td=""></back>

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

R Progr	am Table	Editing : S(GDV-****E1A/S	GD¥-OCA03	A						×
	2		🔛 Station s							Comment	
STEP	POS	SPD	RDST	RSPD	ACC	DEC	POUT	EVENT	LOOP	NEXT	-
0	A-9999	1000	-	1000	:	:		ITO	1	END	
1	A-9921	1000	-	1000	:			ITO	1	END	
2	A-9843	1000	—	1000	:	:	111111111	ITO	1	END	
3	A-9765		-	1000	:	:	11111111	ITO	1	END	
4	A-9687		-	1000	:	:		ITO	1	END	
5	A-9609		-	1000	:	1		ITO	1	END	
6	A-9531		-	1000	:	:	111111111	ITO	1	END	
7	A-9453		-	1000	:	:		ITO	1	END	
8	A-9374		-	1000	:	:	111111111	ITO	1	END	
9	A-9296		-	1000	:	1		ITO	1	END	
10	A-9218		-	1000	:	1		ITO	1	END	
11	A-9140		-	1000	:	1	111111111	ITO	1	END	
12	A-9062		-	1000	:	1	111111111	ITO	1	END	
13	A-8984		-	1000	:	:		ITO	1	END	
14	A-8906	1000	-	1000	1	1.1	1111111111	ITO	1	END	I

Comment

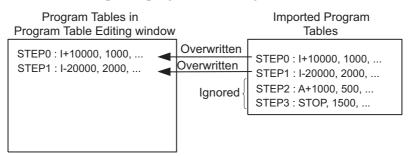
Comments can be typed or edited in the Comment box. Click **Comment**, and the Comment box appears.

	Comment		×
			<u>^</u>
v			
			7
OK Cancel		I OK I	Cancel

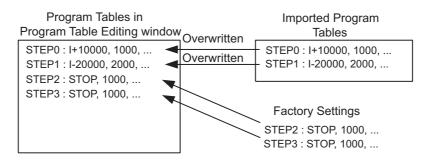
Import

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**.

4.8.2 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 INDEXER option module 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+ Σ -V component main window, click **Table** and then click **Edit Zone Table**. The Zone Table Editing window appears.

Prints the Zone Table Editing window.
Unit: [reference units]
ID Z4 Z3 Z2 Z1 Z0 ZONEN ZONEP
5 🔍 🔍 🔘 🔘 🔘 0
O Active O Non-Active
Initialize Save Read Write

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

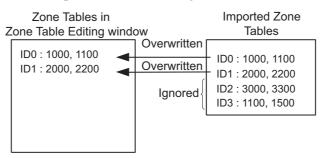
Comments can be typed or edited in the Comment box. Click **Comment**, and the Comment box appears.

Comment		×
		A
		-
,		
	ОК	Cancel

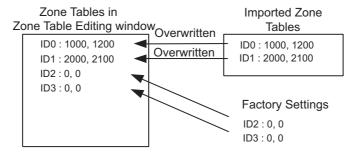
Import

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.

Open ?	Ľ
Look jn: 🗀 YE_Applications 💿 🗢 🔁 📸 🎫	
20090320074303	
File <u>n</u> ame: 20090320074303 <u>O</u> pen	
Files of type: Zone table file(*.znt) Cancel	
Product Info SGDV-1R6AE1A/Option Board	
<u>C</u> omment:	

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.

Save	×
Since the table being displayed at present is being edited or setting values are being loaded, there is a possibility that there are differences with data in the Servopack. When the table data being edited is saved in the table, carry out this function after having implemented "Write".	
OK	

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.

Save	×
	N
Saves the table data Continue this proces	· · · · ·
ОК	Cancel

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.

Initialize	×
Returns to factory setting When this function is impl which has been saved is Is this acceptable?	emented, the table data
Initialize	Cancel

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

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

🞒 (Print) Button

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

Printing Item Setting	Printing Item Setting
Cover	Cover
Attaching the Cover Editing	Cover Editing
Where to Submit Where to Submit (No.1) O Where to Submit (No.2) O Where to Submit (No.3)	Where to Submit Where to Submit (No.1) C Where to Submit (No.2) C Submit (No.3)
Item Name Setting Value Title Company Name Department Name Name	Item Name Setting Value Title Company Name Department Name Name
Data for each function	Data for each function
Header & Footer Printing Items	Header & Footer Printing Items
Color Selection © Black and White © Color	Color Selection
OK Cancel	OK Cancel

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.

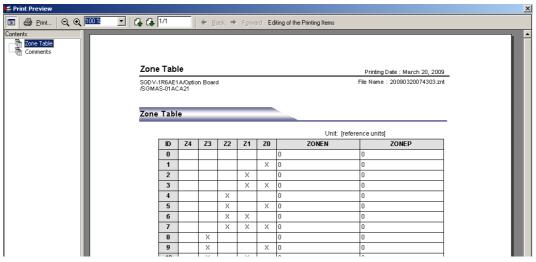
Data for each function

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**.

When Offline

In the SigmaWin+ Σ -V 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.

Open				? ×
Look jn: 🗋	YE_Applications	(È 💣 🎟 •	
200903200	074303			
File <u>n</u> ame:	20090320074303		<u>0</u> pe	n
Files of type:	Zone table file(*.znt)	-] Cano	cel
Product Info]	
<u>C</u> omment:				

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

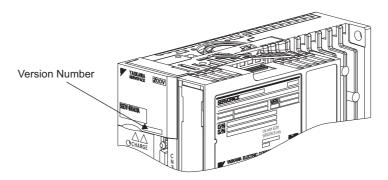
- < When "Select New SERVOPACK" is Selected >
- 1. When "Select New SERVOPACK" is selected, the SERVOPACK Selection box appears.

Servopack Sele	ection		X			
Motor type	Motor type Rotary					
Servop	Servopack: **** * ****					
		<u>т </u>				
Servopack mo	idel A(Command-Option module ty		[Max. applicable motor capacity]			
Version/Spe	cial Spec.					
Enter the Ser	vopack version number.		known Note: Select the Unknown			
(Use the digit number.)	al operator to find out the ver	sion '	check box to set the version to the latest.			
Select the Sp	ecial Spec. number.					
	Reference option	Safety option	Feedback option			
Option Module Model:						
Ver.:	Unknown	🔲 🗖 Unknov	wn 🗌 🗖 Unknown			
Special Spec.:		-	¥			
	OK					

2. Select the SERVOPACK model, current [max. applicable motor capacity].

ervopack Sele	ction		×
Motor type	Rotary		
Servopa	sk: SGDV-	R70 * E1A	
Servopack mod			Max. applicable motor capacity]
SGDV-****E1A	(Command-Option module t	R90 (0.9 2R1 (2.1 2R8 (2.8	66Arms, AC100V) [50W] 31 Arms, AC100V) [100W] Arms, AC100V) [200W] 36Arms, AC100V) [400W] 36Arms, AC200V) [50W]
Version/Spec			
(Use the digita number.)	opack version number. I operator to find out the ve cial Spec. number.		(nown Note: Select the Unknown check box to set the version to the latest.
	Reference option	Safety option	Feedback option
Option Module Model:	SGDV-OCA03A(INDEXER)	Unmounted (No match)	Unmounted (No match) SGDV-OFA01A(Fully-closed)
Ver.:	0000 🗌 Unknown	Unknov	vn 📃 🗖 Unknown
Special Spec.:	Standard	•	V V
		OK Cancel]

3. Type the version number of the SERVOPACK. When there is a version number, the version number is shown on the front of the SERVOPACK.



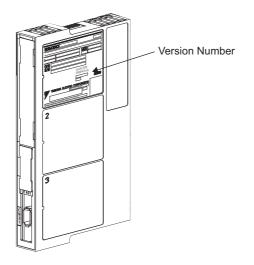
Version Number on SGDV

If the version number is unknown, select Unknown.

- 4. Select the specifications of the SERVOPACK.
- 5. Select the reference option module. Select SGDV-OCA03A (INDEXER).

Servopack Sele	ction		×
Motor type	Rotary		
Servopa	ick: SGDV-	R70 * E1A	
Servopack mo	dei A(Command-Option module t		nt [Max. applicable motor capacity] 0.66Arms, AC100V) (50W)
		R90 (0.91 Arms, AC100V) [100W]
			2.1Arms, AC100V) [200W] 2.8Arms, AC100V) [400W]
			0.66Arms, AC200V) [50W]
Version/Spe	niel Spee		
			Note: Colort the University
	vopack version number. al operator to find out the ve		Jnknown Note: Select the Unknown check box to set the version to
number.)			the latest.
Select the Sp	ecial Spec. number.	Standard	T
		,	
	Reference option	Safety option	Feedback option
Option Module	SGDV-OCA03A(INDEXER)	Unmounted (No mate	
Model:			SGDV-OFA01A(Fully-closed)
Ver.:	0000 🗖 Unknown	Unkn	own
Special Spec.:	Standard	•	× ×
		OK Cancel	

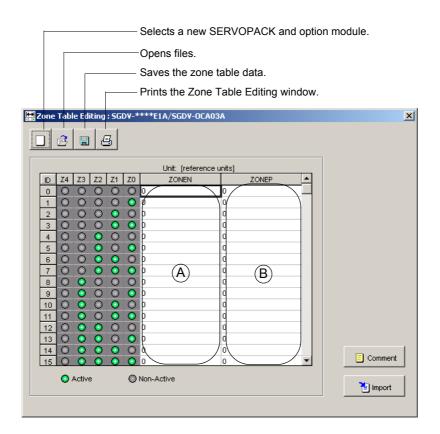
6. Type the version number of the reference option module. When there is a version number, the version number is shown on the side of the reference option module.



Version Number on INDEXER option module

If the version number is unknown, select Unknown.

7. Select the specifications of the reference option 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.

Open			? ×
Look jn: 🗋	YE_Applications	- 🗢 🔁	-111 *
200903200	074303		
, File <u>n</u> ame:	20090320074303		<u>O</u> pen
Files of type:	Zone table file(*.znt)	•	Cancel
Product Info			
<u>C</u> omment:			

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

(New) Button

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

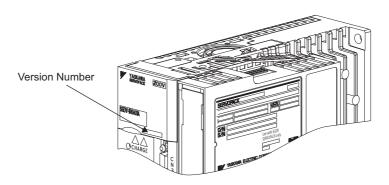
1. Click the D button, and the SERVOPACK Selection box appears.

ervopack Sel	ection		×			
Motor type	Motor type Rotary					
Servop	Servopack: **** * ****					
Serveneek me			May applicable mater conceitul			
	Servopack model Current [Max. applicable motor capacity] SGDV-****E1A(Command-Option module type rotary motor)					
•						
(Use the digit number.)	rvopack version number. tal operator to find out the ve becial Spec. number.	ersion	known Note: Select the Unknown check box to set the version to the latest.			
	Reference option	Safety option	Feedback option			
Option Module Model:						
Ver.:	Unknown		wn			
Special Spec.:			¥ ¥			
	OK Cancel					

2. Select the SERVOPACK model, current [max. applicable motor capacity].

Servopack Sel	ection		×
Motor type	Rotary		
Servop Servopack m SCDV-****E1		vpe rotary motor) R70 R90 2R1 2R8	rent [Max. applicable motor capacity] 0 (0 66Arms, AC100V) [50W] 0 (0 91 Arms, AC100V) [100W] 1 (2.1Arms, AC100V) [200M] 8 (2.8Arms, AC100V) [400W] 0 (0.68Arms, AC20V) [50M]
Version/Spa	cial Spec	ieor	ດ ບັດ ດາມ 🖛 🗠 ແລວດດານ ນີ້ ກາດແມ່ນ 🖉
(Use the digi number.)	rvopack version number. tal operator to find out the ver becial Spec. number.	sion	Unknown Note: Select the Unknown check box to set the version to the latest.
	Reference option	Safety option	Feedback option
Option Module Model:	SGDV-OCA03A(INDEXER)	Unmounted (No ma	
Ver.:	0000 🗌 Unknown	🔲 🗖 Un	nknown
Special Spec.:	Standard	-	Y
		OK Canc	cel

3. Type the version number of the SERVOPACK. When there is a version number, the version number is shown on the front of the SERVOPACK.



Version Number on SGDV

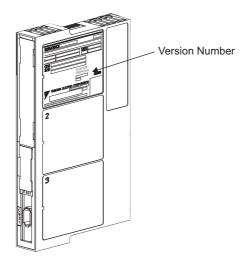
If the version number is unknown, select Unknown.

4. Select the specifications of the SERVOPACK.

5. Select the reference option module. Select *SGDV-OCA03A (INDEXER)*.

Servopack Sel	ection		×	
Motor type	Rotary			
Servop	ack: SGDV-	R70 * E1A		
Servopack mo	odel	Current	[Max. applicable motor capacity]	
SGDV-****E1	A(Command-Option module		66Arms, AC100V) [50W]	
			91 Arms, AC100V) [100VV]	
			1Arms, AC100V) [200W] BArms, AC100V) [400W]	
			66Arms, AC100V) [400VV]	
Version/Spe	cial Spec.			
	vopack version number.		known Note: Select the Unknown	
(Use the digr number.)	tal operator to find out the vi	ersion	check box to set the version to the latest.	
Select the Sp	ecial Spec. number.	Standard	▼	
	Reference option	Safety option	Feedback option	
Option Module	SGDV-OCA03A(INDEXER) Unmounted (No match)		
Model:			SGDV-OFA01A(Fully-closed)	
	1			
Ver.:	0000 🗖 Unknown	Unknov	vn 🗖 Unknown	
Special Spec.:	Standard	_	Y	
OK Cancel				

6. Type the version number of the reference option module. When there is a version number, the version number is shown on the side of the reference option module.



Version Number on INDEXER option module

If the version number is unknown, select Unknown.

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

🞒 (Print) Button

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

Printing Item Setting	Printing Item Setting
Cover	Cover
Attaching the Cover Cover Editing	Cover Editing
Where to Submit Where to Where to Submit (No:1) Submit (No.2) Submit (No.3) Item Name Setting Value Title Department Name Name Name	Where to Submit (No.2) Where to Submit (No.2) Item Name Setting Value Title Company Name Department Name Name
Data for each function	Data for each function
Zone Table	Zone Table
Header & Footer Printing Items	Header & Footer Printing Items
Header Info	
Title Zone Table	Others
Models Info	Comments
Printing Date	
🔽 File Name	
Footer Info	
Pages	
- Color Selection	- Color Selection
Black and White C Color	Black and White C Color
OK	OK Cancel

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.

Print Previ	ew									
1 🥔 Erio	nt @	ર્ 🔍 🛄	%	- (44	1/1		← Back. → Figward Edit	ing of the Printing Items	
		_				,				_
	Z	one Tab	le						Printing Date : March 05, 200	102
	S	GDH-A5BE/	JUSP -N	S601					File Name :	
	_									
	z	one Tab	e	_	_	_				
								Linik fordere		
		ID	Z4	Z3	Z2	Z1	ZO	Unit [refere ZONEN	ZONEP	
		0	24	23	22		20	0	0	
		1	-				X	0	0	-
		2				X		0	0	-
		3				X	Х	0	0	
		4			Х			0	0	
		5			X		Х	0	0	
		6			Х	X		0	0	
		7	_		X	X	X	0	0	_
		8	-	X			X	0	0	-
		10	-	×		X	^	0	0	-
		11		X		X	X	0	0	-
		12	-	Х	X			0	0	-
		13		Х	Х		Х	0	0	
		14		X	X	l x		n	In	

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

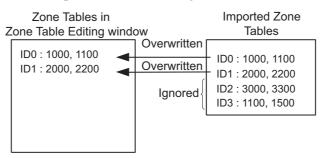
Comments can be typed or edited in the Comment box. Click **Comment**, and the Comment box appears.

	×
	
	V
ОК	Cancel
	OK

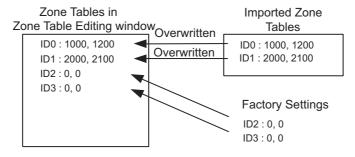
Import

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.

Open					? ×
Look jn: 🗋	YE_Applications	•	🗢 🔁	r 📅 🐨	
200903200	174303				
, File <u>n</u> ame:	20090320074303			<u>O</u> per	n
Files of <u>type</u> :	Zone table file(*.znt)		•	Cano	el
Product Info	SGDV-1R6AE1A/Option Board				
<u>C</u> omment:					

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

4.8.3 Jog Speed Table Editing

The jog speeds can be viewed and edited in the Jog Speed Table Editing window. The INDEXER option module 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+ Σ -V component main window, click **Table** and then click **Edit Jog Speed Table**. The Jog Speed Table Editing window appears.

Saves the jog speed table data.				
Prints the Jog Speed Table Editing window.				
💾 Jog Speed Table Editing AXIS#1 : SGDV-1R6AE1A/Option Board	×			
Unit: [x1000reference units/min]				
ID J3 J2 J1 J0 JSPD				
5 0 0 0 0 1000				
6 0 0 0 000				
$7 \odot \odot \odot \odot 1000$ (A)				
9 0 0 0 1000				
15 • • • • 1009	Comment			
Active Non-Active				
	🚹 Import			
David David	101.3-			
Initialize Save Read	Write			

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

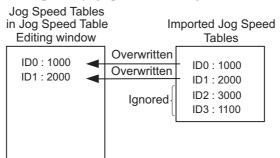
Comments can be typed or edited in the Comment box. Click **Comment**, and the Comment box appears.

Comment			×
			<u> </u>
			7
		ОК	Cancel
		<u>[]</u>	

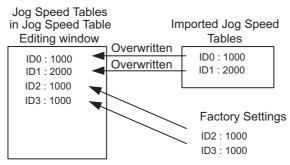
Import

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.

Open			<u>?</u> ×
Look in: 🔂	YE_Applications	• + 1) 💣 🎟 -
200903200	175628.jgt		
, File <u>n</u> ame:	20090320075628		<u>O</u> pen
Files of <u>t</u> ype:	Jog speed table file(*.jgt)	•	Cancel
Product Info	SGDV-1R6AE1A/Option Board		
<u>C</u> omment:			
Files of <u>type</u> : Product Info	Jog speed table file(*.jgt)	<u> </u>	

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.

Write	×
Writes the table data being edited into the Servopack. When the power is turned OFF after this has been carried out, the data is erased. When saving is necessary, save to a file or implement this function. Thereafter, implement saving of the table.	
OK	

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.

Read 🗙
Reads table data. The table data being edited is overwritten. Is this acceptable?
Cancel

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.

Save
Since the table being displayed at present is being edited or setting values are being loaded, there is a possibility that there are differences with data in the Servopack. When the table data being edited is saved in the table, carry out this function after having implemented "Write".
OK Cancel

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.

Save	×
Saves the table data into flash memory. Continue this process?	
OK Cancel	

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.

Initialize		×
Returns to factory settings. When this function is impleme which has been saved is era Is this acceptable?		1
Initialize	Cancel	

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

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

button. The Printing Item Setting dialog box appears.

Printing Item Setting	Printing Item Setting
Cover	Cover
Attaching the Cover Cover Editing	Cover Editing
Where to Submit Vivere to Submit (No.1) Vivere to Submit (No.2) Vivere to Submit (No.3)	Where to Submit C Where to Submit (No.1) C Where to Submit (No.2) C Submit (No.3)
Item Name Setting Value	Item Name Setting Value
Company Name	Company Name
Department Name	Department Name
LName	LName
Data for each function	Data for each function
Jog Speed Table	Jog Speed Table
Header & Footer Printing Items	Header & Footer Printing Items
Header Info	
✓ Title Jog Speed Table	Others
Models Info	Comments
✓ Printing Date	
File Name	
Footer Info-	
I Pages	
Color Selection	Color Selection
Black and White C Color	Black and White C Color
OK Cancel	OK Cancel

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.

🖨 Print Preview							<u>×</u>
🔟 🎒 Erint 🔍 🍳 🏧 🗾	G G 1/1		♠ B	ack 🟓	Forw	ard Editing of the Printing Items	
Contents Jog Speed Table Comments	Jog Spee	d Tab	le			Printing Date:	March 20, 2009_
	SGDV-1R6AE1 /SGMAS-01AC	A21			_	File Name : 200	990320075628 jgt
						Unit: [x1000reference units/min]	
	ID	J3	J2	J1	JO	JSPD	
	0					1000	
	1			Х	Х	1000	
	2			X	Х	1000	
	4		х	~	~	1000	
	5		X		х	1000	
	6		Х	Х		1000	
	7		Х	Х	Х	1000	
	8	Х				1000	
	9	Х			Х	1000	

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.

Jog Speed Table Editing	×
Loads the jog speed table. Please select from the following.	
Load from File.	
Select New Servopack.	
OK Cancel	

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.

Open					<u>?</u> ×
Look jn: 🔂	YE_Applications	•	← 🔁	📸 🎞	
200903200	175628.jgt				
File <u>n</u> ame:	20090320075628			<u>0</u> per	n
Files of type:	Jog speed table file(*.jgt)		•	Canc	el
Product Info	SGDV-1R6AE1A/Option Board				
<u>C</u> omment:					
File <u>n</u> ame: Files of <u>type</u> : Product Info	20090320075628 Jog speed table file(*.jgt)				_

Select the data to be imported, and click Open.

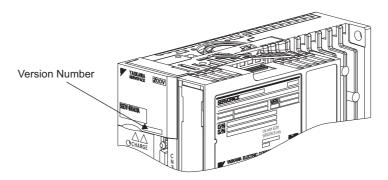
- < When "Select New SERVOPACK" is Selected >
- 1. When "Select New SERVOPACK" is selected, the SERVOPACK Selection box appears.

Servopack Sele	ection				x		
Motor type	Rotary						
Servopa	ack: **** - **	* * ****					
Servopack mo			Current Max ar	unlicable motor canacity)			
· · · · · · · · · · · · · · · · · · ·	Servopack model Current [Max. applicable motor capacity] SGDV-****E1A(Command-Option module type rotary motor)						
		>	I				
Enter the Ser	Version/Special Spec. Enter the Servopack version number. (Use the digital operator to find out the version number.) Unknown check box to set the version to the latest.						
Select the Sp	ecial Spec. number.		~				
	Reference option	Safety option		Feedback option			
Option Module Model:							
Ver.:	Unknown	Г	Unknown	Unknown			
Special Spec.:			v		-		
OK Cancel							

2. Select the SERVOPACK model, current [max. applicable motor capacity].

Servopack Selection	×
Motor type Rotary	
Servopack: SGDV- R70 * E1A	
Servopack model	Current [Max. applicable motor capacity]
SGDV-***E1A(Command-Option module type rotary motor)	R90 (0.91 Arms, AC100V) [100W] 2R1 (2.1 Arms, AC100V) [200M] 2R8 (2.8 Arms, AC100V) [400W] R70 (0.66 Arms, AC200V) [50M]
Version/Special Spec.	
Enter the Servopack version number. (Use the digital operator to find out the version number.) Select the Special Spec. number. Standard	Unknown Note: Select the Unknown check box to set the version to the latest.
Reference option Safety option	n Feedback option
Option Module SGDV-OCA03A(INDEXER) Unmounted	I (No match) Unmounted (No match) SGDV-OFA01A(Fully-closed)
Ver.: 0000 🗖 Unknown	🗖 Unknown
Special Spec.: Standard	•
ок	Cancel

3. Type the version number of the SERVOPACK. When there is a version number, the version number is shown on the front of the SERVOPACK.



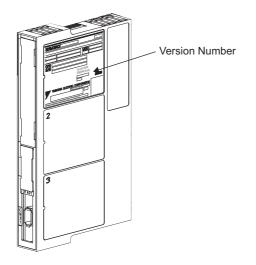
Version Number on SGDV

If the version number is unknown, select Unknown.

- 4. Select the specifications of the SERVOPACK.
- 5. Select the reference option module. Select SGDV-OCA03A (INDEXER).

Servopack Selection	×
Motor type Rotary	
Servopack: SGDV- R70 * E1A	_
Servopack model	Current [Max. applicable motor capacity]
SGDV-***E1A(Command-Option module type rotary motor)	R70 (0.66Arms, AC100V) (50W) R90 (0.91Arms, AC100V) [100W] 2R1 (2.1Arms, AC100V) [200W]
	2R8 (2.8Arms, AC100V) [400W] R70 (0.66Arms, AC200V) [50W]
	R70 (0.66Amis, AC2007) [5070]
Version/Special Spec.	
Enter the Servopack version number. (Use the digital operator to find out the version number.)	Unknown Note: Select the Unknown check box to set the version to the latest.
Select the Special Spec. number. Standard	<u>•</u>
Reference option Safety option	Feedback option
Option Module SGDV-OCA03A(INDEXER) Unmounted Model:	(No match) SGDV-OFA01A(Fully-closed)
Ver: 0000 Unknown	Unknown
Special Spec .: Standard	Y
ОК	Cancel

6. Type the version number of the reference option module. When there is a version number, the version number is shown on the side of the reference option module.



Version Number on INDEXER option module

If the version number is unknown, select Unknown.

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

	<u> </u>					-Selects a new SERVOPACK and c	ption module.				
	Opens files.										
	Saves the jog speed table data.										
	Prints the Jog Speed Table Editing window.										
د 📇 I	og S	pee	d Tal	ole E	diting]:SGDV-****E1A/SGDV-OCA03A	×				
r=	51	~			- 1						
]	Ż		16	5						
						Unit: [x1000reference units/min]					
	ID	J3	J2	J1	JO	JSPD					
	0	\odot	۲	\odot	۲	1980					
	1	\odot	\odot	\odot	\odot	1000					
	2	\odot	\odot	्	\odot	1000					
	3	\odot	\odot	\odot	\odot	1000					
	4	\odot	0	\odot	\odot	1000					
	5	\odot	0	\odot	0	1000					
	6	\odot	0	0	\odot	1000					
	7	\odot	\odot	0	\odot	1000 (A)					
	8	0	\odot	\odot	\odot	1000					
	9	0	\odot	0	0	1000					
	10	0	\odot	0	\odot	1000					
	11	0	\odot	0	0	1000					
	12	0	0	0	\odot	1000					
	13	0	0	0	0	1000					
	14	0	0	0	Ō	1000					
	15	Õ	$\overline{\circ}$	Õ	$\overline{\circ}$	1009	Comment				
		0	Activ	e	C) Non-Active	1 Import				

Jog Speed Table Editing Window (Offline Mode)

Box A: JSPD

The jog speed can be typed 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.

Open			? X
Look jn: 🔂	YE_Applications	- + 🗈	r 📰 🕈
20090320	075628.jgt		
File <u>n</u> ame:	20090320075628		<u>O</u> pen
Files of type:	Jog speed table file(*.jgt)	•	Cancel
Product Info	SGDV-1R6AE1A/Option Board		
<u>C</u> omment:			

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

(New) Button

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

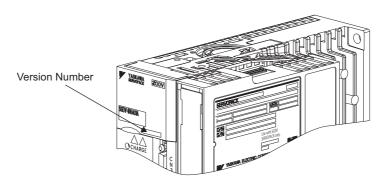
1. Click the D button, and the SERVOPACK Selection box appears.

Servopack Sel Motor type		_	2
Servop Servopack mo SGDV-****E1			[Max. applicable motor capacity]
Version/Spe Enter the Ser (Use the digit number.)	icial Spec. vopack version number. Ial operator to find out the v pecial Spec. number.		Note: Select the Unknown check box to set the version to the latest.
Option Module Model:	Reference option	Safety option	Feedback option
Ver.: Special Spec.:			
		OK	

2. Select the SERVOPACK model, current [max. applicable motor capacity].

Servopack Sele	ection		×
Motor type	Rotary		
Servop	ack: SGDV-	R70 * E1A	
			1
Servopack mo	odel A(Command-Option module		irrent [Max. applicable motor capacity] 70 (0.66Arms, AC100V) (50W]
300V- LT	A(Command-Option module		90 (0.91 Arms, AC100V) [100VV]
			R1 (2.1 Arms, AC100V) [200VV]
			R8 (2.8Arms, AC100V) [400W] 70 (0.66Arms, AC200V) [50W]
	eiel Case		
Version/Spe	•		
	vopack version number. al operator to find out the v	/ersion	Unknown Note: Select the Unknown check box to set the version to
number.)			the latest.
Select the Sp	ecial Spec. number.	Standard	T
		,	_
	Reference option	Safety option	Feedback option
Option Module	SGDV-OCA03A(INDEXEF	R) Unmounted (No r	
Model:			SGDV-OFA01A(Fully-closed)
			۲
Ver.:	0000 🗌 Unknown		Jnknown
Special Spec.:	Standard	•	Y
		OK Can	ncel
	-		

3. Type the version number of the SERVOPACK. When there is a version number, the version number is shown on the front of the SERVOPACK.



Version Number on SGDV

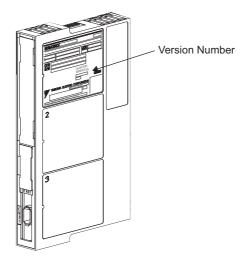
If the version number is unknown, select Unknown.

4. Select the specifications of the SERVOPACK.

5. Select the reference option module. Select *SGDV-OCA03A (INDEXER)*.

Servopack Sele	ection		×
Motor type	Rotary		
Servopa	ack: SGDV-	R70 * E1A	
Servopack mo	idel A(Command-Option module:		[Max. applicable motor capacity] 66Arms, AC100V) [50W]
SOUVE	Accommand-Option module		91 Arms, AC100V) [100V/]
			1Arms, AC100V) [200W]
			8Arms, AC100V) [400W] 66Arms, AC200V) [50W]
Version/Spe	cial Spec.		
	vopack version number. al operator to find out the ve		known Note: Select the Unknown check box to set the version to
number.)	ai operator to find out the w	ersion	the latest.
Select the Sr	ecial Spec. number.	Standard	-
Select the Sp	colar opec, namber,	Istanuaru	
	Reference option	Safety option	Feedback option
Option Module	SGDV-OCA03A(INDEXER)) Unmounted (No match)	
Model:			SGDV-OFA01A(Fully-closed)
			Ⅰ
Ver.:	0000 🗌 Unknown		wn 🗌 🗖 Unknown
Special Spec.:	Standard		
		OK Cancel]

6. Type the version number of the reference option module. When there is a version number, the version number is shown on the side of the reference option module.



Version Number on INDEXER option module

If the version number is unknown, select Unknown.

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

🕘 (Print)	Button
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The data on the Jog Speed Table Editing window can be printed. To print the data, click

the	8	button.	The Printing Item Setting dialog box appears	s.
-----	---	---------	--	----

Printing Item Setting	Printing Item Setting
Cover	Cover
Cover Editing	Cover Editing
Where to Submit Where to Where to Submit (No.1) Submit (No.2) Submit (No.3) Item Name Setting Value Title Company Name Department Name Name	Where to Submit C Where to Submit Where to Submit Sdbmit (No.1) C Submit (No.2) C Item Name Setting Value Title Company Name Department Name Name
Data for each function	Data for each function
Jog Speed Table	Jog Speed Table
Color Selection	Color Selection Color Black and White C Color
OK Cancel	OK Cancel

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.

🚔 Print Preview									
🛅 🎒 <u>P</u> rint 🔍 🍳 🏧	I 🔓 🕼 🕅		♠ B	ack 🔿	Forw	ard Editing of the Printing Items			
Contents	Jog Spee	4/SGD V	-OCA03	iA			Printing Date : March 20, 2009 File Name :		
	Jog Speed Table Unit: [x1000reference units/min]								
	ID 0	J3	J2	J1	JO	JSPD 1000			
	0	-			X	1000			
	2			Х		1000			
	3			Х	Х	1000			
	4		Х			1000			
	5		Х		Х	1000			
	6		X	X		1000			
	7	X	Х	Х	Х	1000			
	8	X			X	1000			
	10	X		x	L^	1000			
	44			v		4.000	I		

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

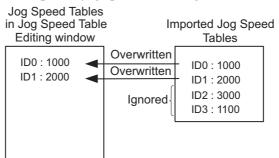
Comments can be typed or edited in the Comment box. Click **Comment**, and the Comment box appears.

Comment			×
			<u> </u>
			7
		ОК	Cancel
		<u>[]</u>	

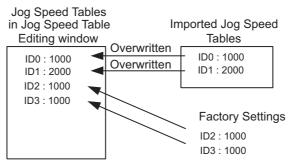
Import

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

Open	<u>? ×</u>
Look jn: 🔂	YE_Applications 🔽 🖛 🗈 📸 🎟 -
200903200	075628.jgt
	Type: JGT File Size: 824 bytes
File <u>n</u> ame:	20090320075628
Files of type:	Jog speed table file(*.igt)
Product Info	SGDV-1R6AE1A/Option Board
<u>C</u> omment:	

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

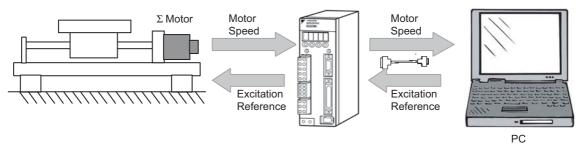
4.9 Solutions

4.9.1 Mechanical Analysis Function

Function Outline

Mechanical Analysis

This function measures the frequency characteristics of a mechanical system where a SERVOPACK is connected to a PC. It enables the measurement of mechanical frequency characteristics without the use of special equipment.



The function applies a mechanical excitation from the motor and measures the speed frequency characteristics in relation to the motor torque (force for linear motor). This allows the function to ascertain the resonance of the mechanical system from the measured frequency characteristics.

This function ascertains the mechanical resonance and uses it as a reference for servo tuning and mechanical changes. Study of mechanical changes is necessary because the servo performance cannot be fully realized according to the machine rigidity. This will become a direction (reference value) for adjustment of parameters such as those for servo rigidity, and the torque (force) filter time constant, in servo tuning. Also, it will be used for the notch filter setting and parameter inputs (Pn110 and later) used in high-speed machine positioning such as the machine control functions. See the User's Manual for more information on the operations that use the mechanical resonance as a reference value.

WARNING

Using the mechanical analysis function while the motor is running is dangerous.

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

Pay particular attention to the following.

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

The motor runs for 2 sec. maximum per excitation/measurement while using this function.

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

· Correctly set the allowable rotation (movement).

Damage to the machine due to overrun, etc., may result if this is not set properly.

Also, there is a limit to the allowable rotation (movement) per excitation/measurement. The excitation starting position may deviate if excitation is performed multiple times. Be sure to check this before excitation/measurement.

• When the mechanical analysis function is used for a vertical axis, check the safety of the system.

When the mechanical analysis function is used for a vertical axis, select **Vertical mode** from Driving Mode Selection and confirm that the axis level does not drop when the servo is turned off.

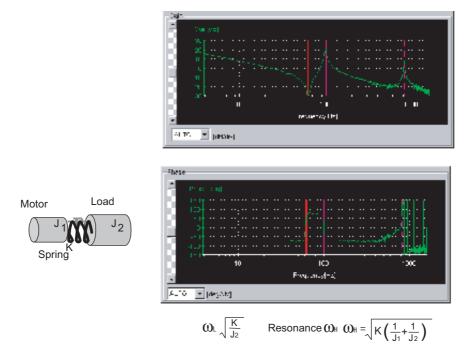
• Always reset the origin after quitting the mechanical analysis function.

The mechanical analysis function causes the position to deviate because it executes motor excitation by the torque (force) reference. After quitting this function, be sure to return to the origin and reset the position before regular operation of the motor. Running the motor without resetting the origin can lead to an overrun and is extremely dangerous.

Frequency Characteristics

The analysis function ascertains machine characteristics by applying an excitation to the machine using the motor, and measuring the frequency characteristics from the torque (force) to the motor speed. In a typical machine the resonance frequency becomes clear if the gain and phase are graphed (Bode Plot) as shown in Figure below. The Bode Plots show the size of the response of the machine to which the torque (force) is applied (gain), and the phase delay (phase) of the response for each frequency. The machine resonance frequency can be ascertained from the maximum frequency of the valleys (anti-resonance) and peaks (resonance) of the gain and the phase delay.

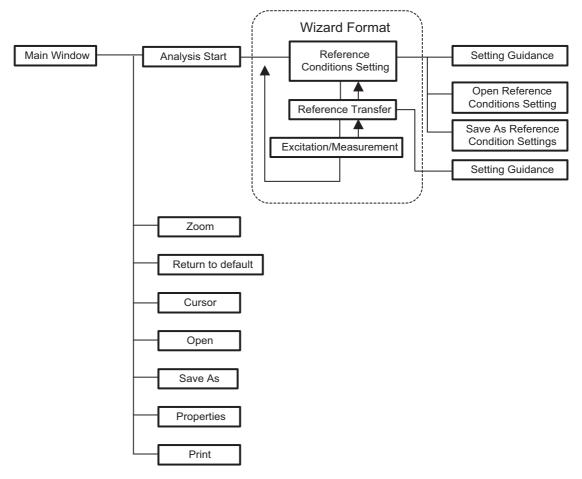
In a motor unit and rigid machine the gain and phase change gradually in the board line.



Frequency Characteristics of the Inertia Model

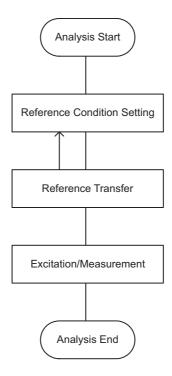
Structure

The following flowchart shows how the mechanical analysis function works.



Analysis

A mechanical analysis wizard will lead you through the steps of analyzing a connected SERVOPACK. The following flowchart shows the steps involved in analyzing the frequency characteristics.



Main Window

Open the main window of the mechanical analysis function using the following procedure.

In the SigmaWin+ Σ -V component main window, click Solution, and then click

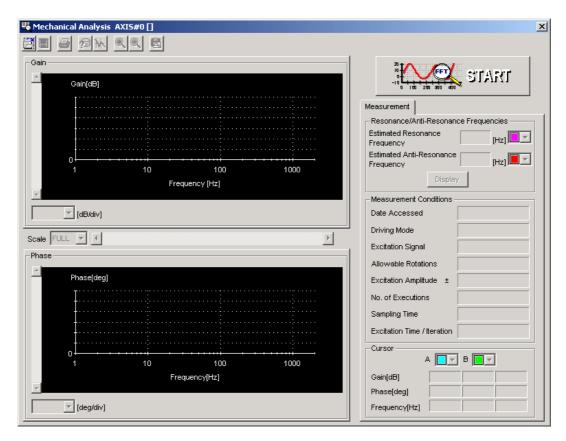
Mechanical Analysis. A warning message appears reminding you of the dangers that are possible when using this operation.

(Although the following windows describe the rotary motor, all instructions, warnings etc. apply to both rotary and linear motors.)

Always be su	s to operate this function, because the servomotor will rotate. are to check the user's manual before operating. attention to the following points:
1. Check the safe	ty around moving parts.
the execution of	will turn for up to 2 sec. for each Excitation/Measurement during this function. er adequately verifying that there is no danger from servomotor
2. Set an appropri	ate allowable rotations.
Moreover, the A	may lead to damage of the machine due to overrun, etc. llowable Rotations is the limit to each Excitation/Measurement. tarting point may shift if excited multiple times. It his before Excitation/Measurement.
3. Please confirm	the safety of the system when used in a vertical axis.
	'ertical mode" when you use this function with a vertical axis. e confirm it is a system that doesn't fall when it is servo OFF.
4. Always be sur	e to perform position reset after closing this function.
return and reset	tor is driven by an internal reference, be sure to perform home the position prior to normal operation. omotor operation without reset is extremely dangerous as it may r, etc.

Click **Cancel** to return to the SigmaWin+ Σ -V component main window without carrying out mechanical analysis.

Click OK, and the Mechanical Analysis main window appears.



Mechanical Analysis Main Window

Reference Condition Setting

In the Mechanical Analysis main window, click **START**, and the Reference Conditions Setting box appears. Select the conditions for exciting the machine with the motor and measuring the frequency characteristics.

Please set Reference Conditions for analysis. Setting Help Driving Mode Selection Help Horizontal mode Vertical mode Sampling Time Measurement Frequency Excitation Time/Iteration 250 [us] 1600.00 [Hz] 250 [ms] Excitation Signal Cycle wave 250 [ms] 1600.00 [Hz] 250 [ms] Excitation ± 50 ± [%] 1 [%] CALLENSING Allowable 1 … [%] The servomotor may turn up to the Allowable Rotations. No. of 1 … [Sets] Please confirm the allowable rotation ranges of your machine, and always set an appropriate value.	thanical Analysis (Refere Reference Conditions Setting	Pafaranaa	Exc	itation / asurement			
Measurements	Driving Mode Selection Morizontal mode Sampling Time 250 Excitation Signal Excitation Amplitude Allowable Rotations No. of Measurements	C Vertical mode	asurement Fro 1600 [%] [Rotations]	1.00 [Hz]	JTION tor may turn up i r one excitation. m the allowble m always set an	Hel Afteration 250 [ms] to the Allowva obtation range: appropriate v	ble s of your alue.

Reference Conditions Setting Box

Driving Mode Selection

Horizontal mode: Excite the motor with the torque control.

Do not use this mode for the vertical axis. The load may droop.

Vertical mode: Excite the motor with the position control.

The servo ON status is maintained during the motor run/measurement. The SERVOPACK will not turn to servo OFF status automatically.

Use this mode for the vertical axis. A control such as notch filter is applied to this mode, so the characteristics differ from those of the horizontal mode.

• Always confirm that the gain setting is stable before starting operation in vertical mode. Because position control is applied in vertical mode, the motor may vibrate if not stable.

Sampling Time/Measurement Frequency/Excitation Time

Select a sampling time. The sampling time must be selected from the list. The shorter the sampling time, the higher the measurable frequency and the shorter the excitation time will be. If the sampling time is shortened, however, the frequency resolution will be degraded and the measurement accuracy, particularly at low frequencies, will be lowered. The sampling time determines the measured frequency and excitation time. First, select a short sampling time, and then determine the best sampling time while checking the measurement results.

Excitation Signal

The type of excitation signal is assumed to be only cycle wave.

Excitation Amplitude (1 to 300%)

Select the size of the reference amplitude applying excitation to the motor as a percentage of the ratio of size to rated torque (force). A larger excitation amplitude tends to give more correct measurements, but an excessively large amplitude can cause overspeed (A.510) and overcurrent (A.100) alarms. Problems with the load inertia (mass for linear motor) and the balance would cause the alarms to occur, and accurate measurements would be impossible. Also, the excitation amplitude must be set to a value below the "Torque (Force) Limit". Remember that the accurate measurement is not possible if the torque (force) is restricted during excitation.

See the user's manual for the individual SERVOPACK for details on the Torque (Force) Limit function.

Allowable Rotations (1 to 1000) (Allowable Movements (1 to 1000 mm) for linear motor)

Select the limit of motor rotations (movements) during measurement. If the allowable number of rotations (movements) is exceeded, the motor will stop by zero clamp function and measurements will be halted. Consider the deceleration ratios for the pulley radius, ball screws, and so on, and then select a number of motor rotations (movements). When reducing the number of motor rotations (movements), also reduce the excitation amplitude and the sampling time.

- The allowable rotations (movements) is a restriction for each excitation period. In multiple excitation applications, the excitation start position might shift. Check the range of motion each time excitation is applied.
- Detection of the allowable rotation (movement) in the SERVOPACK may be delayed by a maximum of 2 ms. If so, operation may exceed the settings due to factors such as inertia (mass) size and interference from speed. Include a margin when setting the allowable number of rotations (movements).

No. of Measurements (1 to 5 sets)

Select the number of times that the measurements should be taken to get an average of the measurements. One set is a back-and-forth operation that starts excitation or measurement from the forward side and excitation/measurement from the reverse side. More measurement iterations tends to yield more accurate measurements, but the time required for measurement increases.

Line Color

Select the colors of the lines used in the graph of the measurement results.

Open

In the Reference Conditions Setting box, click **Open**, and the reference conditions files are displayed.

Open			? ×
Look jn:	🔁 YE_Applications 💽 🤦		0-0- 0-0-
L			
File <u>n</u> ame:			<u>O</u> pen
Files of type:	Reference Conditions Setting File (*.myc)	• _	Cancel

Open Dialog Box

Click **Open** to read the designated reference conditions setting file. Click **Cancel** to return to the Reference Conditions Setting box without reading the file.

Save

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

Save As			? ×
Save jn:	🔄 YE_Applications 📃 🤦		9-9- 5-5- 5-6-
I			
File <u>n</u> ame:	20001115173839		<u>S</u> ave
Save as <u>t</u> ype:	Reference Conditions Setting File (*.myc)	J _	Cancel

Save As Dialog Box

Click **Save** to store the file name designating the current reference conditions. Click **Cancel** to return to the Reference Conditions 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.

Save As	×
	C:\WINNT\Profiles\All Users\Desktop\YE_Applications\20001115173839.myc already exists. Do you want to replace it?
	Yes Mo

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

Help

Click **Help** to open the window for guidelines on the reference condition settings. See <Guidelines for Reference Condition Settings> for details.

Next>

Click Next to view the Reference Transmission box.

<Back/Cancel

Click Back or Cancel to return to the Mechanical Analysis main window.

After the setup has been successfully completed, click **Next**, and the Reference Transmission box appears.

<Guidelines for Reference Condition Settings>

- Run the motor to excite the machine and measure the frequency characteristics.
- Set Driving Mode, Sampling Time, Excitation Amplitude, and No. of Measurements.
- Accurate measurement of the frequency characteristics depends on the settings. See the measurement results to determine the proper settings. See the guidelines for each setting.
- The number of **Allowable Rotations (Movements)** must be set so that measurements can be taken safely. Set the motor revolutions (movements) so the setting is within the operable range.

Driving Mode Selection

Horizontal mode is used to run a motor with torque control, and Vertical mode is used with position control.

Use Vertical mode for a vertical axis to prevent the load from dropping (shifting).

A control such as notch filter is applied to Vertical mode, so the characteristics differ from those of Horizontal mode.

Sampling Time [µs] (Measurement Frequency [Hz], Excitation Time [ms])

As sampling time is shortened, the higher the frequencies are that can be measured and the shorter the excitation time becomes. However, frequency resolution will deteriorate. Measurement accuracy becomes especially poor at low measuring frequencies. Measuring frequency and excitation time depend on the sampling time. First, set the sampling time to a certain small value. Then see the results of the measurement and determine the proper sampling time.

Excitation Signal: Cycle Wave (fixed)

Excites the machine with a cycle wave.

Excitation Amplitude [±%/Rated torque (force)] Range: 1% to 300%

Select the size of the reference amplitude applying excitation to the machine as a percentage of the ratio of size to rated torque (force).

A larger excitation amplitude tends to give more accurate measurements, but an excessively large amplitude can cause overspeed (A.510) and overcurrent (A.100) alarms. Problems with the load inertia (mass) and the balance would cause the alarms to occur, and accurate measurements would be impossible.

Also, the excitation amplitude must be set to a value below the "Torque (Force) Limit." Remember that accurate measurement is not possible if the torque (force) is restricted during excitation.

See the user's manual of the individual SERVOPACK for details of the Torque (Force) Limiting function.

Allowable Rotations [Rotation] Range: ± 1 to 1000 Rotations Allowable Movements [mm] Range: ± 1 to 1000 mm (for linear motors)

Select the limit for motor rotations (movements) during measurement. If the allowable number of rotations (movements) is exceeded, the motor will stop by zero clamp function and measurement will be halted.

Consider the deceleration ratios for the pulley radius, ball screws, and so on, and then select a number of motor rotations (movements).

When reducing the number of motor rotations (movements), also reduce the excitation amplitude and the sampling time.

- The allowable rotations (movements) is a restriction for each excitation period. In multiple excitation applications, the excitation start position might shift. Check the range of motion each time excitation is applied.
- Detection of the allowable rotation (movement) in the SERVOPACK may be delayed by a maximum of 2 ms. If so, operation may exceed the settings due to factors such as inertia (mass) size and interference from speed. Include a margin when setting the allowable number of rotations (movements).

No. of Measurements [Set] Range: 1 to 5

Select the number of times that the measurements should be taken to get an average of the measurements. One set is a back-and-forth operation that starts excitation or measurement from the forward side and excitation/measurement from the reverse side. More measurement repetitions tend to yield more accurate measurements, but the time required for measurement will increase.

Line Color

Select the colors of the lines used in the graph of the measurement results.

Reference Transmission

In the Reference Transmission box, transfer the reference conditions to the SERVOPACK. Click **Start** to begin the transfer.

dechanical Analysis (Reference Transmission)
Reference Reference Excitation / Conditions Setting Transmission Measurement
Transferring Reference Conditions to the Servopack.
37%
< <u>B</u> ack <u>N</u> ext > Cancel

Reference Transmission Box

Start

Click Start to transfer the reference conditions to the SERVOPACK. A progress bar displays the progress status of the transfer.

Cancel

The Cancel button is available only during the transfer to the SERVOPACK. After the transmission is finished, it is unavailable and cannot be selected.

Next>

The Next button is available if the data is transferred successfully. If an error occurs or if the transmission is interrupted, it is unavailable and cannot be selected.

Click Next to view the Excitation/Measurement box.

<Back

Click **Back** to return to the Reference Conditions Setting box. The Back button is unavailable during a data transfer.

Cancel

Click **Cancel** to stop processing and return to the main window without transferring the reference conditions.

After the data has been successfully transferred, click **Next**, and the Excitation/ Measurement box appears.

Excitation/Measurement

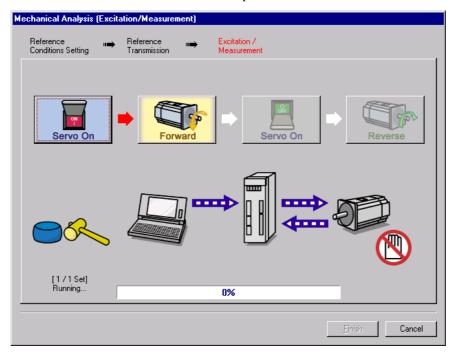
Note: Strange noises may be made by the motor during excitation or measurement, but this is not unusual and it is not a mechanical error.

In the Excitation/Measurement box, excite the actual motor and take measurements. The measurement will be taken the number of times designated in the Reference Conditions Setting box.

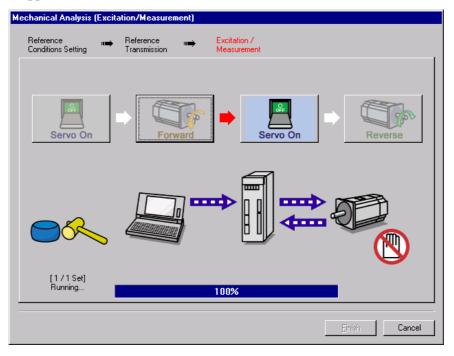
Excite the motor and take measurements using the following procedure.

<For horizontal mode>

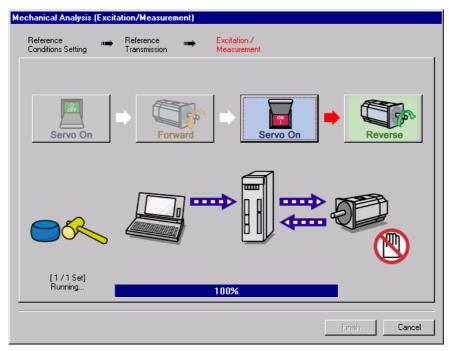
1. Click Servo ON to turn on the servo power.



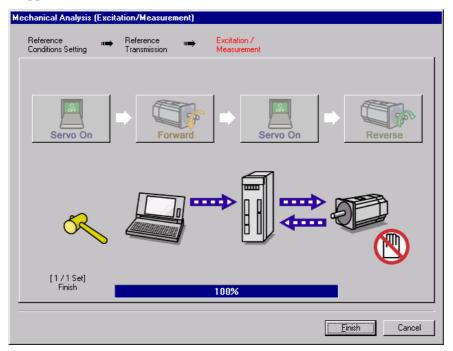
2. Click **Forward** to take measurements by turning (moving) the motor forward. After the measurements and the data transmission are finished, the following window appears.



3. Click Servo ON to turn on the servo power.



4. Click **Reverse** to take measurements by turning (moving) the motor in reverse. After the measurements and the data transmission are finished, the following window appears.



5. Repeat steps 1 through 4 until all the measurements have been taken the specified number of times.

The actual number of times the measurements have been taken is displayed in the lower left part on the screen.

The progress bar displays the transfer status of the current batch.

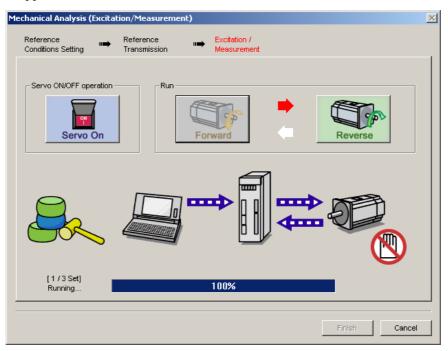
6. After the measurement has been successfully completed, click **Finish** to return to the main window.

<For vertical mode>

1. Click Servo ON to turn on the servo power.



2. Click **Forward** to take measurements by turning (moving) the motor forward. After the measurements and the data transmission are finished, the following window appears.



3. Click **Reverse** to take measurements by turning (moving) the motor in reverse. After the measurements and the data transmission are finished, the following window appearsClick **Reverse** to take measurements by turning (moving) the motor in reverse. After the measurements and the data transmission are finished, the following window appears.



4. Repeat steps 1 through 3 until all the measurements have been taken.

The actual number of times the measurements have been taken is displayed in the lower left part on the screen.

The progress bar displays the transfer status of the current batch.

- 5. After the measurement has been successfully completed, click **Servo ON** to turn to the servo OFF status.
- 6. Click **Finish** to return to the main window.

When **Finish** is clicked without turning to servo OFF status, the following window appears.

Mechanical Ana	lysis 🔀
1t turr	ns the Servo OFF.
ОК	Cancel

Click **OK** to turn to servo OFF status.

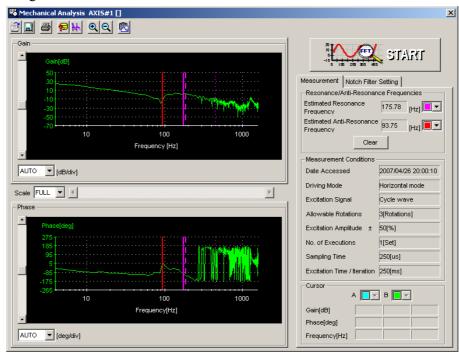
For both the horizontal and vertical modes, if the motor stops because the excitation was excessive, an error message appears prompting you to change the settings.



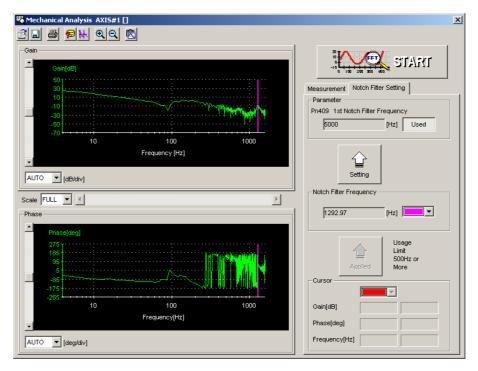
Click **OK** to stop taking measurements and return to the main window.

Main Window

The Mechanical Analysis main window displays the analysis results. To view the conditions in which the analysis was done, click the Measurement tab or the Notch Filter Setting tab.

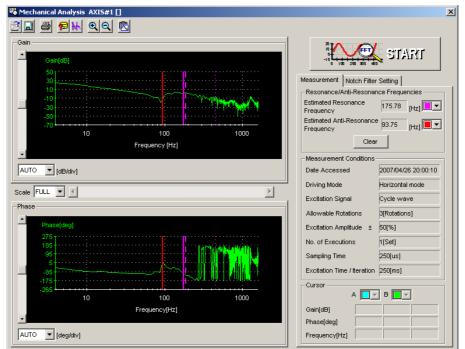


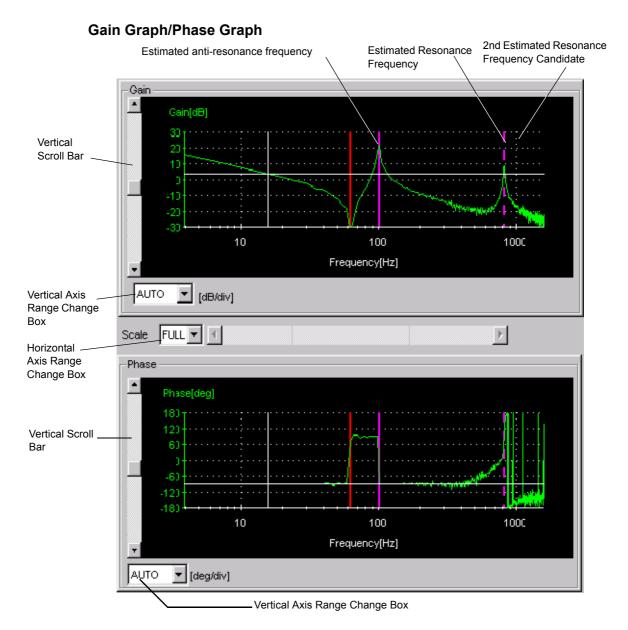
Mechanical Analysis Main Window (Measurement Tab)



Mechanical Analysis Main Window (Notch Filter Setting Tab)

Measurement Tab





Gain Graph and Phase Graph

Vertical Axis Range Change Box/Vertical Scroll Bar

The individual range for the vertical axis for both the gain graph and the phase graph can be set.

Select the range from the corresponding box. The units for the gain graph are "dB" and the units for the phase graph are "deg."

If AUTO is selected, the range widths will be automatically adjusted so that all of the data can be shown in the graph. When the window is too small to show all of the vertical axis, a vertical scroll bar is displayed to allow you to view all of the axis.

The range must be selected from the list.

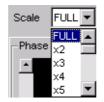


Vertical Axis Range Change Box

Horizontal Axis Range Change Box/Horizontal Scroll Bar

The horizontal axis range is for both the gain graph and the phase graph, and so is displayed with a multiple. The unit of both the gain and phase graph is "Hz."

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 Change Box

Resonance/Anti-Resonance

In case that the estimated model is double inertia model, the corresponding text boxes display the estimated resonance and anti-resonance frequencies. The cursor shows the positions of the estimated resonance and anti-resonance frequencies on the graph.

If the estimated candidate differs from the resonance point, a maximum of two can be displayed. The candidates are displayed with various lines to identify them.

2nd Estimated resonance frequency candidate: Long dotted line	()
---	-----

3rd Estimated resonance frequency candidate: Dash-dot line

(-----)

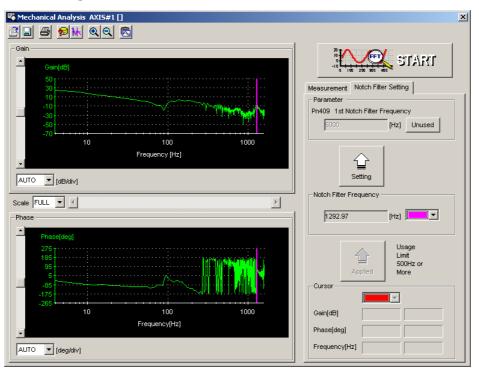
Click Clear to delete the values for the estimated resonance and

anti-resonance frequencies. When the frequencies are deleted, the cursors representing their values on the graphs are also deleted. The 2nd and 3rd candidates for the estimated resonance frequency are also deleted.

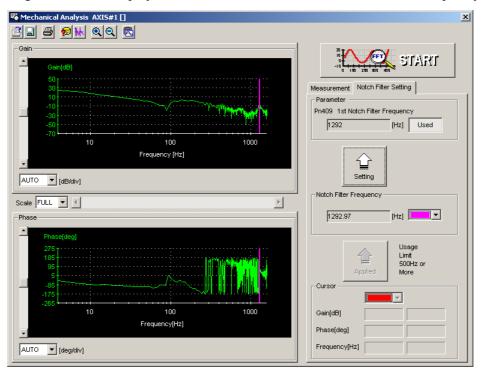
In case that the estimated model is rigid model, the estimated resonance and anti-resonance frequencies are not displayed. In this case, the following message appears when **Display** is clicked.

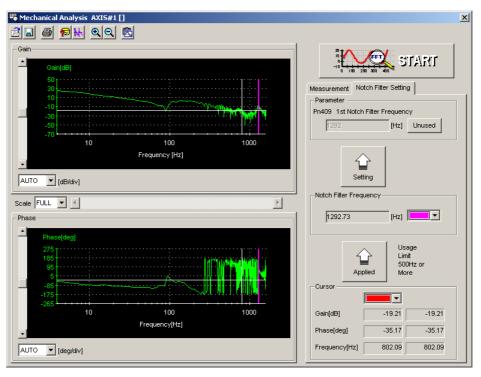


Notch Filter Setting Tab



The notch filter frequency is calculated automatically and displayed in the column of the "Notch Filter Frequency." Click **Setting** and new frequency, which is compensated for digitalization, is displayed in the column of the "Pn409: Notch Filter Frequency."





The notch filter frequency can also be set by using the cursor. See "
Toolbar Details" for details on the cursor.

Toolbar



Mechanical Analysis Window Toolbar

Toolbar Button	Click this button to:
Ē	Load the mechanical analysis data file.
Open	
	Save a copy of the on-screen gain graph and phase graph to a specified file.
Save As	
a	Print the Mechanical Analysis main window.
Print	
ø	View the conditions to measure the mechanical analysis.
Measurement Conditions	
bk	View the information for the location where a cursor is shown.
Cursor	
۹	Enlarge the view of a selected area.
Zoom In	
Q	Restore the area shown in the window to its usual size.
Return	
慶	Copy the displayed screen to the clipboard.
Clipboard Copy	

See "
Toolbar Details" for details on the toolbar buttons.

Toolbar Details

(Open) Button

The mechanical analysis data file can be loaded in the Open dialog box. To load the file,

click the 🗾 button. The Open dialog box appears.

Open					?	
Look jn:	TE_Applications	•	£	<u>e</u> ż:	0-0- 0-0- 0-0-	
	114119.myd					
📓 20001106 [.]	152538.myd					
File <u>n</u> ame:	20001106114119.myd				<u>O</u> pen	
Files of type:	Measurement Results File (*.myd)		•		Cancel	
<u>C</u> omment:	Itest			_		
<u>_</u>						

When the 🛃 Button is Clicked in the Main Window

Open

Click **Open** to load the selected measurement results data file.

Cancel

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

(Save As) Button

he on-screen measurement results gain graph and phase graph can be saved to a file. To

save the graph, click the 📃 button. The Save As dialog box appears.

Save As					?	×
Save jn:	TE_Applications	•	E	Ċ	0-0- 0-0- 0-0-	
	i6114119.myd i6152538.myd					
File <u>n</u> ame:					<u>S</u> ave	
Save as type	e: Measurement Results File (*.myd)		-		Cancel	
<u>C</u> omment:						

When the 📃 Button is Clicked in the Main Window

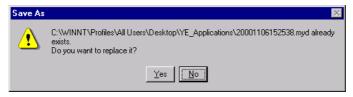
Up to 256 characters can be typed as a comment.

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

Save

lick Save to save the data to a designated measurement results data 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 Mechanical Analysis main window can be printed. To print the

graph and data, click the 🛃 button. The Printing Item Setting dialog box appears.

Printing Item Setting	Printing Item Setting
Cover	Cover
Attaching the Cover Cover Editing	Z Attaching the Cover Cover Editing
Vhere to Submit Vhere to Submit (No.1) Vhere to Submit (No.2) Submit (No.3) Item Name SigmaWin 200 Company Name Paskawa Department Name MCKJ Name Tarou Yaskawa	Where to Submit Where to Submit (No.1) Where to Submit (No.2) Submit (No.1) Submit (No.2) Submit (No.3) Item Name Setting Value Title SigmaWin 200 Company Name Yaskawa Department Name MCKJ Name Tarou Yaskawa
Data for each function Mechanical Analysis Header Footer Printing Items Header Info Title Mechanical Analysis Models Info. Printing Date File Name Footer Info Pages	Data for each function Mechanical Analysis Header Footer Oraph Relations Graph Relations Notch Filters Info. Notch Filters Info. Measurement Conditions Acquisition Date of the Data Others Comments Color Selection Color Selection
OK Cancel	OK Cancel

Header Footer Tab

Printing Items Tab

Cover

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

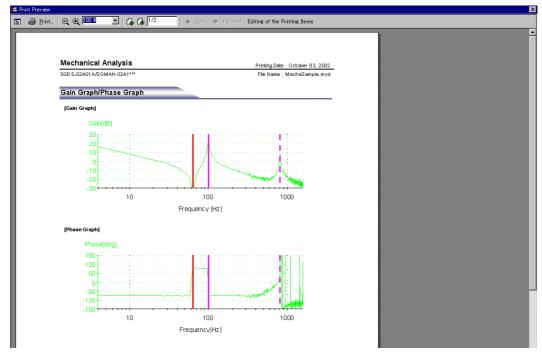
Printing Item Setting Box

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 box and change some settings, click **Editing of the Printing Items**.

(Measurement Conditions) Button

The conditions for measuring the mechanical analysis can be viewed. To view the

conditions, click the 😰 button. The Measurement Conditions dialog box appears. If not already selected, click the **Measurement Conditions** tab to view the conditions for measuring the mechanical analysis.

easurement Conditions	
Measurement Conditions Comment	
16	
Date&Time:	2005/03/23 20:59:12
Servopack:	SGDS-02A01A
Servomotor:	SGMAS-02ACA21
Sampling Time:	250[us]
Excitation Time / Iteration:	250[ms]
Estimated Resonance Frequency:	1359.38[Hz]
Estimated Anti-Resonance Frequency:	1019.53[Hz]
Notch Filter Frequency:	1359.38[Hz]
Reference Conditions	
Driving Mode:	Horizontal mode
Excitation Signal:	Cycle wave
Allowable Rotations:	3[Rotations]
Excitation Amplitude:	±50[%]
No. of Executions:	1[Set]
Line Color:	
	OK Cancel

Measurement Conditions Tab

leasurement Conditions				х
Measurement Conditions Comm	nent			1
1				
		ок	Cancel	1

Comments Tab

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

ΟΚ

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

Cancel

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

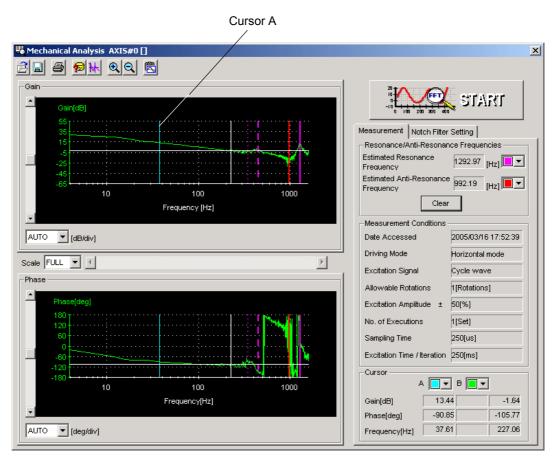
\rm (Cursor) Button

The information for the location where the vertical and horizontal cursor bars intersect can be viewed. Information for the cursor locations A and B can be viewed.

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

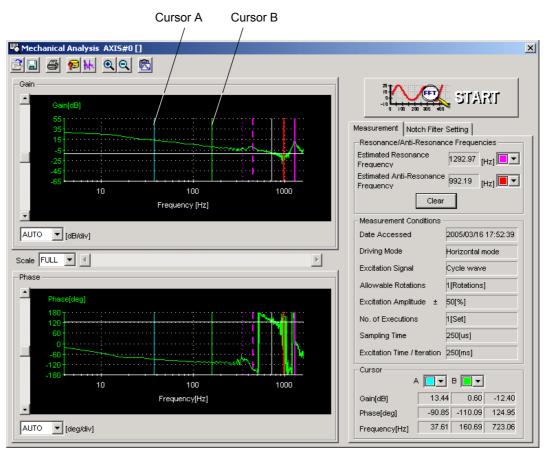
Display the data using the following procedure.

- 1. Click the **b**utton. The cursor changes into a crosshairs pointer.
- 2. To confirm the location of the cursor, click the intersection point of the cursor bars and the information related to its location is shown in the cursor location A box in the lower right of the window.



Cursor A Selection Mode

3. Next, confirm the cursor location B. Click the intersection point and the information related to its location is shown in cursor location B box in the lower right of the window.



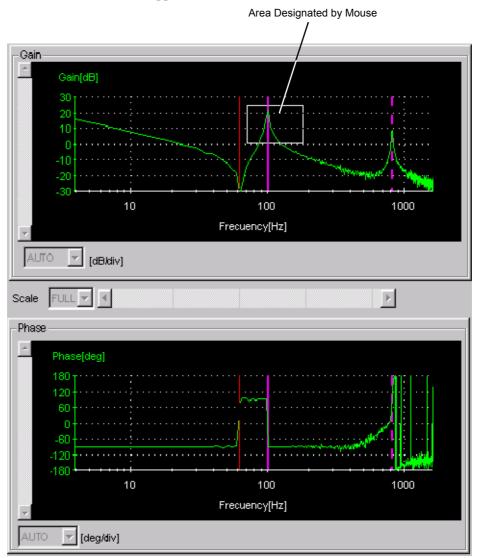
Cursor B Selection Mode

- 4. If you move the cursor bar with the mouse to another location and then click the intersection point, the information in the cursor location A box changes to represent the new location.
- 5. The next time you move the cursor bar and click the intersection point, the information in the cursor location B box changes and so on everytime the location changes.

🔍 (Zoom) Button

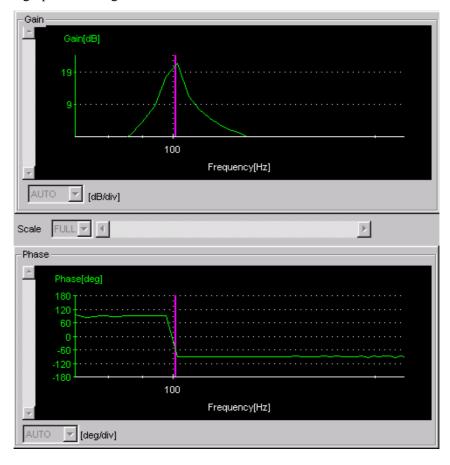
A view of an area selected by the mouse can be magnified. Zoom in on an area using the following procedure.

- 1. Click the 🔍 button.
- 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 phase graph as well as the gain graph are enlarged.



Magnified Area

4. Click the 🔍 button to view the original graph.

🖄 (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 the 🖾 button, and the Clipboard Copy dialog box appears.



Select the area to be copied to the clipboard.

οκ

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

Cancel

Click Cancel to return to the main window.

Appendix A Cable Between the PC and SERVOPACK

Two types of cables to connect the PC and SERVOPACK are available: USB and RS-232C The cable type differs in accordance with the SERVOPACK type. SERVOPACKs in the Σ -V series: USB or RS-232C SERVOPACKs in the DC power input Σ -V series: USB

A.1 USB

Cable

The following cable is available from Yaskawa. Contact Yaskawa if necessary. JZSP-CVS06-02-E

Communications Specifications

The communication specifications are as follows:

Item	Specifications	Remarks
Complied Standards	USB2.0 full-speed function	
Bus Speed	Full speed (12 Mbps)	
Format	Asynchronous serial	
Communications Type	Half-duplex communications	
No. of Connectable Devices	USB host: 1, slaves: 127	Including hubs
Cable Length	5 m at full speed (30 m max. at full speed by connecting five hubs)	
Connector Type	Series mini B plug	
Power Supply	Self-powered method	Supplied from the SERVO- PACK power supply

A.2 RS-232C

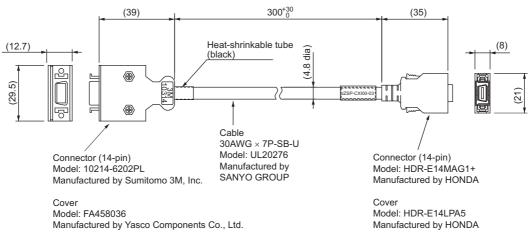
Prepare a dedicated cables for connecting the PC to the SERVOPACK. Contact Yaskawa for dedicated cables for RS-232C communications.

For RS232C communications, two types of cables are required: A digital operator conversion cable and a connection cable between the PC and SERVOPACK.

Digital Operator Conversion Cable

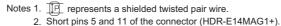
Model: JZSP-CVS05-A3-E

Appearance and External Dimensions in mm



Connection Circuit

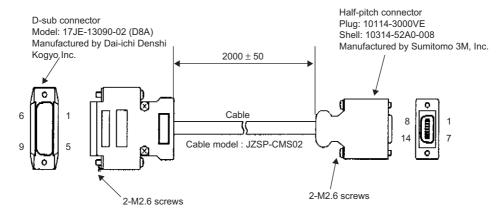
0	operator/P0 214-6202P				ACK side 4MAG1+
	$ \begin{array}{c} 1 & 0 \\ 2 & 0 \\ 3 & 0 \\ 4 & 0 \\ 5 & 0 \\ 6 & 0 \\ 7 & 0 \\ 9 & 0 \\ 10 & 0 \\ 11 & 0 \\ 12 & 0 \\ 13 & 0 \\ 14 & 0 \\ \end{array} $	Orange with one red dot Orange with one black dot Gray with one red dot Gray with one red dot Yellow with one red dot White with one black dot Pink with one black dot Pink with one black dot Yellow with one black dot White with one red dot Orange with series of red dots			1 2 3 4 5 6 7 8 9 10 11 11 12 13 14
			$\$	/T	



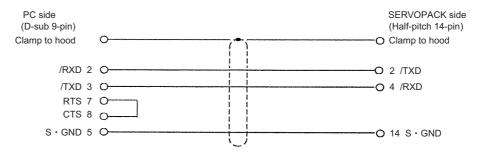
■ Connection Cable Between SERVOPACK and PC

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

Appearance and External Dimensions in mm



Connection Circuit



Communications Specifications

The communications specifications are as follows:

 Baud Rate 	19200 bps
• Bit Structure	Start: 1 bit Data: 8 bits Stop: 1 bit Odd Number Parity: 1 bit
 Synchronization Type 	Start-stop synchronization
XON/XOFF Control	None
Shift Control	None
Communication Type	Half-duplex communication

Appendix B Install File List

SigmaWin+ Σ -V component installs the following files into two directories on the PC. The application default installation directories are as follows.

Main application file	
Microsoft foundation support file	
DAO support file	
Tool OCX	C:\Program Files\SigmaIDE\SigmaWinPlus\SigmaWinFV
Electronic manual	
VisualBasic runtime library	
Others	
USB driver	C:\Program Files\SigmaIDE\SigmaWinPlus\Driver

Main Application Files

File Name	Function	Installation Directory
SIGMAFUNCEXECUTOR.exe	Executable Module (EXE)	Application Directory\Bin
SIGMAWINFV.exe	Executable Module (EXE)	Application Directory\Bin
YEPRN.exe	Executable Module (EXE)	Application Directory\Bin
BASELIB.dll	Executable Module (DLL)	Application Directory\Bin
CMIF.dll	Executable Module (DLL)	Application Directory\Bin
COMMMBUS.dll	Executable Module (DLL)	Application Directory\Bin
CYELIB.dll	Executable Module (DLL)	Application Directory\Bin
IFDCM.dll	Executable Module (DLL)	Application Directory\Bin
IFDCOM.dll	Executable Module (DLL)	Application Directory\Bin
IFDUSB.dll	Executable Module (DLL)	Application Directory\Bin
SVAATEX.dll	Executable Module (DLL)	Application Directory\Bin
SVADJUST.dll	Executable Module (DLL)	Application Directory\Bin
SVADVTUNE2.dll	Executable Module (DLL)	Application Directory\Bin
SVALARM.dll	Executable Module (DLL)	Application Directory\Bin
SVAXISNAME.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

File Name	Function	Installation Directory
SVDAMPING1.dll	Executable Module (DLL)	Application Directory\Bin
SVDAMPING2.dll	Executable Module (DLL)	Application Directory\Bin
SVDETVIB.dll	Executable Module (DLL)	Application Directory\Bin
SVEASYFFT.dll	Executable Module (DLL)	Application Directory\Bin
SVENCABS.dll	Executable Module (DLL)	Application Directory\Bin
SVGAINSW.dll	Executable Module (DLL)	Application Directory\Bin
SVGRAPH.dll	Executable Module (DLL)	Application Directory\Bin
SVINERTIA.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
SVMECHA.dll	Executable Module (DLL)	Application Directory\Bin
SVMON.dll	Executable Module (DLL)	Application Directory\Bin
SVMONIO.dll	Executable Module (DLL)	Application Directory\Bin
SVMOTORSCALE.dll	Executable Module (DLL)	Application Directory\Bin
SVMONSETTING.dll	Executable Module (DLL)	Application Directory\Bin
SVMULTITURN.dll	Executable Module (DLL)	Application Directory\Bin
SVONEPARA.dll	Executable Module (DLL)	Application Directory\Bin
SVOPCARD.dll	Executable Module (DLL)	Application Directory\Bin
SVPASSWORD.dll	Executable Module (DLL)	Application Directory\Bin
SVPOLEDETECT.dll	Executable Module (DLL)	Application Directory\Bin
SVPRGJOG.dll	Executable Module (DLL)	Application Directory\Bin
SVPLUSRES.dll	Executable Module (DLL)	Application Directory\Bin
SVPRN.dll	Executable Module (DLL)	Application Directory\Bin
SVREALTRACE.dll	Executable Module (DLL)	Application Directory\Bin
SVRESPONSE LEVELSET.dll	Executable Module (DLL)	Application Directory\Bin
SVSRESET.dll	Executable Module (DLL)	Application Directory\Bin

Main Application Files (cont'd)

File Name	Function	Installation Directory
/TRACE.dll	Executable Module (DLL)	Application Directory\Bin
TUNINGGUIDE.dll	Executable Module (DLL)	Application Directory\Bin
UPWIZARD.dll	Executable Module (DLL)	Application Directory\Bin
/USER.dll	Executable Module (DLL)	Application Directory\Bin
/USERCONVERT.dll	Executable Module (DLL)	Application Directory\Bin
/USERDIRECT.dll	Executable Module (DLL)	Application Directory\Bin
/USERLIB.dll	Executable Module (DLL)	Application Directory\Bin
VIBMON.dll	Executable Module (DLL)	Application Directory\Bin
ZEROPOS.dll	Executable Module (DLL)	Application Directory\Bin
ECIPHER.dll	Executable Module (DLL)	Application Directory\Bin
ECMLIB.dll	Executable Module (DLL)	Application Directory\Bin
EDBASE.dll	Executable Module (DLL)	Application Directory\Bin
ESIGMA.dll	Executable Module (DLL)	Application Directory\Bin
EINFOJ.mdb	Database File	Application Directory\Bin
GMAIDE.atb	SigmaWin+Σ-V Component Menu File	Application Direc- tory\Bin\Dat\ToolBar
GMAFUNCINFO.swi	Component Information File	Application Directory\Bin\Dat
GMATOUR.chm	Help File	Application Directory\Help
ASEORIGINL.bmp	Bitmap File for SvTrace	Application Directory\Bin\Dat\Bmp
ASEORIGINR.bmp	Bitmap File for SvTrace	Application Directory\Bin\Dat\Bmp
ASEOVERLAP.bmp	Bitmap File for SvTrace	Application Directory\Bin\Dat\Bmp
ASETARGETLINE.bmp	Bitmap File for SvTrace	Application Directory\Bin\Dat\Bmp
ASETRIGGER.bmp	Bitmap File for SvTrace	Application Directory\Bin\Dat\Bmp
RG_BLUE_LEFT.bmp	Bitmap File for SvTrace	Application Directory\Bin\Dat\Bmp
RG_BLUE_LEFT_ RINTC.bmp	Bitmap File for SvTrace	Application Directory\Bin\Dat\Bmp
RG_BLUE_RIGHT.bmp	Bitmap File for SvTrace	Application Directory\Bin\Dat\Bmp
RG_BLUE_RIGHT_ RINTC.bmp	Bitmap File for SvTrace	Application Directory\Bin\Dat\Bmp
ASETRIGGER.bmp RG_BLUE_LEFT.bmp RG_BLUE_LEFT_ RINTC.bmp RG_BLUE_RIGHT.bmp RG_BLUE_RIGHT_	Bitmap File for SvTrace Bitmap File for SvTrace Bitmap File for SvTrace Bitmap File for SvTrace	Application Directory\Bin\Dat\ Application Directory\Bin\Dat\ Application Directory\Bin\Dat\ Application Directory\Bin\Dat\

Main Application Files (cont'd)

Main	Application	Files	(cont'd)
mann	, application	1 1100	

File Name	Function	Installation Directory
ORG_DARKGREEN_ LEFT.bmp	Bitmap File for SvTrace	Application Directory\Bin\Dat\Bmp
ORG_DARKGREEN_ LEFT_PRINTC.bmp	Bitmap File for SvTrace	Application Directory\Bin\Dat\Bmp
ORG_DARKGREEN_ RIGHT.bmp	Bitmap File for SvTrace	Application Directory\Bin\Dat\Bmp
ORG_DARKGREEN_ RIGHT_PRINTC.bmp	Bitmap File for SvTrace	Application Directory\Bin\Dat\Bmp
ORG_GREEN_LEFT.bmp	Bitmap File for SvTrace	Application Directory\Bin\Dat\Bmp
ORG_GREEN_LEFT_ PRINTC.bmp	Bitmap File for SvTrace	Application Directory\Bin\Dat\Bmp
ORG_GREEN_RIGHT. bmp	Bitmap File for SvTrace	Application Directory\Bin\Dat\Bmp
ORG_GREEN_RIGHT_ PRINTC.bmp	Bitmap File for SvTrace	Application Directory\Bin\Dat\Bmp
ORG_PERPLE_LEFT.bmp	Bitmap File for SvTrace	Application Directory\Bin\Dat\Bmp
ORG_PERPLE_LEFT_ PRINTC.bmp	Bitmap File for SvTrace	Application Directory\Bin\Dat\Bmp
ORG_PERPLE_RIGHT. bmp	Bitmap File for SvTrace	Application Directory\Bin\Dat\Bmp
ORG_PERPLE_RIGHT_ PRINTC.bmp	Bitmap File for SvTrace	Application Directory\Bin\Dat\Bmp
ORG_PINK_LEFT.bmp	Bitmap File for SvTrace	Application Directory\Bin\Dat\Bmp
ORG_PINK_LEFT_ PRINTC.bmp	Bitmap File for SvTrace	Application Directory\Bin\Dat\Bmp
ORG_PINK_RIGHT.bmp	Bitmap File for SvTrace	Application Directory\Bin\Dat\Bmp
ORG_PINK_RIGHT_ PRINTC.bmp	Bitmap File for SvTrace	Application Directory\Bin\Dat\Bmp
ORG_PRINT_LEFT.bmp	Bitmap File for SvTrace	Application Directory\Bin\Dat\Bmp
ORG_PRINT_RIGHT.bmp	Bitmap File for SvTrace	Application Directory\Bin\Dat\Bmp
ORG_RED_LEFT.bmp	Bitmap File for SvTrace	Application Directory\Bin\Dat\Bmp
ORG_RED_LEFT_ PRINTC.bmp	Bitmap File for SvTrace	Application Directory\Bin\Dat\Bmp
ORG_RED_RIGHT.bmp	Bitmap File for SvTrace	Application Directory\Bin\Dat\Bmp

File Name	Function	Installation Directory
ORG_RED_RIGHT_ PRINTC.bmp	Bitmap File for SvTrace	Application Directory\Bin\Dat\Bmp
ORG_SYAN_LEFT.bmp	Bitmap File for SvTrace	Application Directory\Bin\Dat\Bmp
ORG_SYAN_LEFT_ PRINTC.bmp	Bitmap File for SvTrace	Application Directory\Bin\Dat\Bmp
ORG_SYAN_RIGHT.bmp	Bitmap File for SvTrace	Application Directory\Bin\Dat\Bmp
ORG_SYAN_RIGHT_ PRINTC.bmp	Bitmap File for SvTrace	Application Directory\Bin\Dat\Bmp
ORG_YELLOW_LEFT. bmp	Bitmap File for SvTrace	Application Directory\Bin\Dat\Bmp
ORG_YELLOW_LEFT_ PRINTC.bmp	Bitmap File for SvTrace	Application Directory\Bin\Dat\Bmp
ORG_YELLOW_RIGHT. bmp	Bitmap File for SvTrace	Application Directory\Bin\Dat\Bmp
ORG_YELLOW_RIGHT_ PRINTC.bmp	Bitmap File for SvTrace	Application Directory\Bin\Dat\Bmp

Main Application Files (cont'd)

Microsoft Foundation Support File

File Name	Function	Installation Directory
MFC71.dll	MFC Core Code	Application Directory\Bin Windows System Directory
MSVCP71.dll	C Runtime Library	Application Directory\Bin Windows System Directory
MSVCR71.dll	C Runtime Library	Application Directory\Bin Windows System Directory
MFC71LOC.dll	MFC locale DLL	Application Directory\Bin
ODBC32.dll	MFC DLL	Application Directory\Bin
OLEPRO32.dll	Microsoft OLE Property Support DLL	Windows System Directory
OLEAUT32.dll	Automation Support DLL	Windows System Directory

DAO Support File

File Name	Function	Installation Directory
DAO360.dll	DAO DLL	DAO 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 Tool Bar *3	Windows System Directory
ACTRPT15J.dll	Active 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.

Electronic Manual

File Name	Function	Installation Directory
SIGMAWINFV.pdf	Electronic Manual	Application Directory\Help

VisualBasic Runtime Library and Others

File Name	Function	Installation Directory
MSVBVM60.dll	Visual Basic Runtime Library	Windows System Directory
VB6JP.dll	Visual Basic locale DLL	Windows System Directory
TABCTL32.ocx	Tab Control OCX	Windows System Directory
COMDLG32.ocx	Common Dialog OCX	Windows System Directory
7-ZIP32.dll	Archiver DLL	Windows System Directory

USB Driver	

File Name	Function	Installation Directory
CPUSB.sys	USB Driver (for x86)	Driver Directory\USB
CPUSB2K.inf	USB Driver (for x86)	Driver Directory\USB
CPUSB.sys	USB Driver (for x64)	Driver Directory\USB\x64
CPUSB2K.inf	USB Driver (for x64)	Driver Directory\USB\x64
CPUSB.cat	USB Driver (for x64)	Driver Directory\USB\x64

Appendix C USB Driver Installation

This section describes how to install the USB driver software for SERVOPACK.

The SERVOPACK USB driver cannot be installed by using the SigmaWin+ installer.

When a SigmaWin+ equipped PC is connected to the SERVOPACK through a USB connection, use the following procedure to install the USB driver.

The installation method will vary depending on the operating system (hereinafter referred to as OS). Use the correct procedure for your OS.

The installation procedure is explained assuming that the SigmaWin+ installed folder directory is "C:\Program Files\SigmaIDE" and that the CD-ROM drive is D drive. Use the folder directory and drive according to the settings of your PC.

C.1 Installing the Driver

For Windows 7/Vista

For Windows XP

C.2 Confirming the Installation Status

C.3 Removing a USB Device

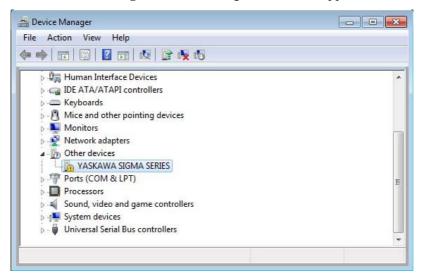
C.1 Installing the Driver

■ For Windows 7/Vista

- 1. Turn on the power to the PC to start Windows 7 or Vista.
- 2. Confirm that SigmaWin+ has been installed. If it has not yet been installed, follow the procedures described in "1.5 Installing SigmaWin+ Program".
- 3. Connect the SERVOPACK to the PC using a USB cable, and then turn on the power to the SERVOPACK. The following message will appear.

J Driver Software Installation	×
Device driver software was not successf	ully installed
YASKAWA SIGMA SERIES	lo driver found
You can change your setting to automatically search Change setting	n Windows Update for drivers
What can I do if my device did not install properly?	
	Close

- 4. Click Close.
- 5. On the **Start** menu, right-click **Computer** and select **Properties**. The property window will appear.
- 6. Select Device Manager. The following window will appear.



7. Right-click YASKAWA SIGMA SERIES and select Update Drive Software...

8. Select Browse my computer for driver software.

The following window will appear.

Constant of the	se for driver software on your co	omputer			
Search	for driver software in this location:				
D:\Dr	iver\USB		•	Browse	

9. Select the Include subfolders check box. Click Browse to select the folder.

< For Windows 7 (32 bit) or Windows Vista >

"C:\Program Files\SigmaIDE\SigmaWinPlus\Driver\USB"

< For Windows 7 (64 bit) >

"C:\Program Files (x86)\SigmaIDE\SigmaWinPlus\Driver\USB\x64"

10. Click Next.

Installation starts by copying the necessary files. Wait until a message appears informing you that the installation is finished.

< If a Security Error Message is Displayed >

Select Install this driver software anyway.



11. When the installation is finished, click Close.

This completes the driver installation.

■ For Windows XP

- 1. Turn on the power to the PC to start Windows XP.
- 2. Confirm that SigmaWin+ has been installed. If it has not yet been installed, follow the procedures described in "1.5 Installing SigmaWin+ Program".
- 3. Connect the SERVOPACK to the PC using a USB cable, and then turn on the power to the SERVOPACK. The Found New Hardware Wizard will appear.

Found New Hardware Wizard			
	Welcome to the Found New Hardware Wizard		
	This wizard helps you install software for:		
	SIGMA Series USB Device		
	If your hardware came with an installation CD or floppy disk, insert it now.		
	What do you want the wizard to do?		
	 Install the software automatically (Recommended) Install from a list or specific location (Advanced) 		
	Click Next to continue.		
	< Back Next > Cancel		

4. Confirm that the **Install from a list or specified location [Advanced]** option is selected, and then click **Next**.

The next Wizard will appear.

Found New Hardware Wizard			
Please choose your search and installation options.			
● Search for the best driver in these locations.			
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.			
Search removable media (floppy, CD-ROM)			
✓ Include this location in the search:			
D:\DriverNUSB Browse			
O Don't search. I will choose the driver to install.			
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.			
< <u>B</u> ack <u>N</u> ext > Cancel			

- Select the Search for the best driver in these locations. option and then select the Include this location in the search: check box. Click Browse to select the folder "C:\Program Files\SigmaIDE\SigmaWinPlus\Driver\USB".
- 6. Click Next.

The Wizard starts installation by copying the necessary files. Wait until a message appears informing you that the installation is finished.

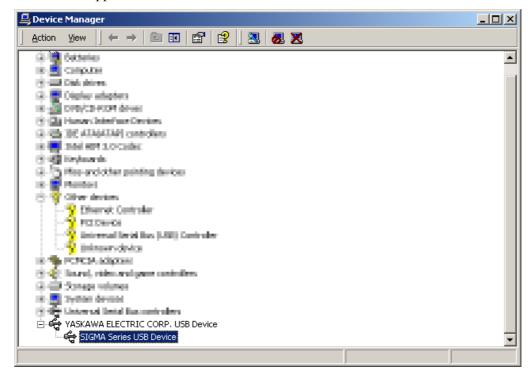
Found New Hardware Wizard			
	Completing the Found New Hardware Wizard		
	The wizard has finished installing the software for:		
	SIGMA Series USB Device		
	Click Finish to close the wizard.		
	< <u>B</u> ack Finish Cancel		

7. When the installation is finished, click **Finish**. This completes the driver installation.

C.2 Confirming the Installation Status

Use the following procedure to make sure that the system recognizes the SERVOPACK as a USB device and that the USB driver is installed correctly.

- 1. Click the Start button, point to Settings, and click Control Panel.
- 2. Double-click the System icon. The System Properties window will appear.
- 3. Click the **Hardware** tab and then click **Device Manager**. The Device Manager window will appear.



4. Double-click **SIGMA Series USB Device** in the **YASKAWA ELECTRIC CORP. USB Device** folder. The SIGMA Series USB Device Properties window will appear.

SIGMA Series USB Device Properties			<		
General Driver					
¢¢	SIGMA Series USB Device				
	Device type:	YASKAWA ELI	ECTRIC CORP. L	JSB Device	
	Manufacturer:	YASKAWA ELI	ECTRIC CORPOR	RATION	
	Location: YASKAWA SIGMA SERIES				
Device status This device is working properly. If you are having problems with this device, click Troubleshooter to start the troubleshooter.					
Troubleshooter					
Device usage:					
Use thi	s device (enable)			•	
			ОК	Cancel	

5. Make sure "This device is working properly." is displayed in the **Device status** field.

When "This device is working properly." is displayed, the SERVOPACK is ready to be used through a USB connection. If it is not displayed, reinstall the USB driver.

C.3 Removing a USB Device

While the power supply to the PC is on, remove the USB cable from the USB port on either the PC or the SERVOPACK. Or, turn off the power to the SERVOPACK. On the screen of Windows XP, an external device disconnection confirmation will appear. Safely remove the device using the following procedure.

1. Double-click the **Safely Remove Hardware** icon in the taskbar in the bottom right corner.



The Unplug or Eject Hardware window will appear.

萎 Unplu	ıg or Eject Hardware		? ×
\$	Select the device you want to unplug o Windows notifies you that it is safe to o computer.		
Hardwa	re devices:		
🚔 SIC	iMA Series USB Device		
SIGMA	Series USB Device at YASKAWA SIGM	IA SERIES	
		Decesion 1	<u> </u>
		Properties	Stop
🔽 Disp	lay device components		
🔽 Sho	w Unplug/Eject icon on the taskbar		Close

2. Select "SIGMA Series USB Device" in the **Hardware devices:** field, and then click **Stop.**

1	
🅉 Stop a Hardware device	<u>?</u> ×
Confirm devices to be stopped, Cł	poose DK to continue.
 Windows will attempt to stop the h stopped they may be removed saf 	ollowing devices. After the devices are elu
	-9.
😪 SIGMA Series USB Device	
1	
	OK Cancel

3. Confirm that the "SIGMA Series USB Device" is selected, and then click **OK**.

4. The processing to remove the selected device will be carried out and a message will appear informing you that the device can be safely removed.

The cable can then be safely removed or the power to the SERVOPACK can be safely turned off.

Revision History

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

MANUAL NO. SIEP S800000 73B

Published in Japan <u>April 2009</u> 09-3 Date of Date of original publication

Date of Publication	Rev. No.	Section	Revised Content
December 2012	\$	Preface	Addition: Information on the related manuals: those for ∑-V series of large-capacity models and DeviceNet Modules
		Preface, 1.3, Appendix C	Deletion: Windows 2000
		4.1.1	Revision: Description about the Write function
		Back cover	Revision: Address
December 2011	4>	1.2	Addition: Configurations
	∇	1.4	Addition: System requirements when using MPE720 Ver.7
		2.2	Addition: Operating procedure when using MPE720 Ver.7
		2.2.1	Deletion: Descriptions when using MECHATROLINK-II
		Back Cover	Revision: Address
September 2011	3>	Preface	Addition: Related manuals (DC power input Σ -V Series)
	V	Preface, 1.2, 2.2	Revision: MACHATROLINK-II → MACHATROLINK-II/III
		Preface	Deletion: Windows 98, Windows NT, Windows Me
		Preface, 1.3	Addition: Windows 7
		1.2, 2.2	Revision: Models of SERVOPACK
		1.3	Addition: System requirements for MACHATROLINK-III communications
		Appendix A	Addition: Information about cables
		Appendix B	Addition: Main application files, USB driver
		Appendix C	Addition: USB driver installation procedures for Windows 7/Vista
June 2010	$\langle \hat{2} \rangle$	Chapter 3 Chapter 4	Addition: Descriptions on how to operate when using a Safety Module
		Back Cover	Revision: Address Addition: The words "Original instructions"
April 2009	∢€	-	Based on Japanese user's manual, SIJPS80000073B<1> published in March 2009
March 2009	_	-	First edition

AC Servo Drives Engineering Tool SigmaWin+ ONLINE MANUAL Σ -V Component

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MANUAL NO. SIEP S800000 73F Published in Japan December 2012 09-3 12-7-7 Original instructions