Build the machine you've dreamed of, today!

AC servo drive

Sigma Five
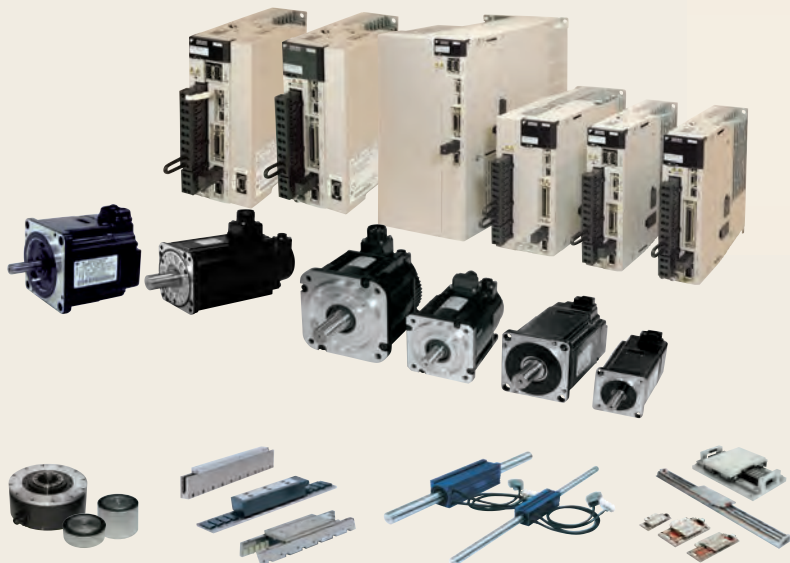
Σ-V

You want maximum effect quickly and easily,
as does every engineer in the field.
And now the Σ-V series is here with
the practical answer to your dreams!

How many times have you heard people say servos need
adjustment to work well? Our new tuning-less function
means it works as soon as you hook it up!

And if you want more performance than ever before,
the Σ-V series advanced autotuning function lets
you set up for it rapidly.

Advanced technology makes possible a host of safety
standards compliance for the first time in Japan (as of April 2007),
compliance with key international standards, a diverse motor
line-up, compact size, high speed and simple maintenance:
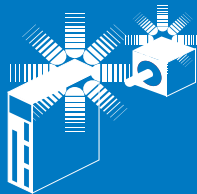everything you need to answer today's requirements.

Features

Superlative Performance

Operate your machinery faster and with higher precision than ever!

The Σ-V delivers the highest performance in the industry.

● Servo Adjustment Example: When the ball screw slider was run using a combination of the SGMJV-02ADA servomotor and SGDV-1R6A SERVOPACK.

● **The best amplifier response in the industry slashes settling time**

In-house comparison: 1/12th

Outstanding frequency response
1.6 kHz*

Position Error

0

Reference Speed

Positioning Completed

Settling Time 0 to 4 ms !

* Representative value when using a combination of the SGMAV-02ADA servomotor and SGDV-1R6A SERVOPACK at one time of the load moment of inertia ratio.
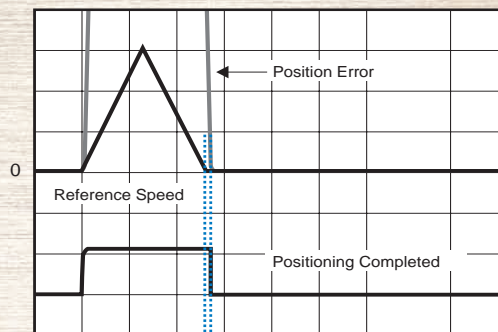
● **Enhanced vibration suppression**

Existing functions to minimize vibration have been enhanced, and new ones added, improving tracking and further improving settling time. Vibration and noise during driving have also been cut, along with vibration at machine edges when stopping.

● **Contributing to machine performance in conjunction with a medium-inertia motor**

Small Capacity

SGMJV Series

Low Heating

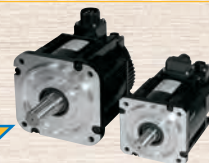Improved motor constants have reduced both losses and heating.

Better Cycle Time

Instantaneous peak torque has been boosted from 300% to 350%, contributing to shorter cycle times

Ease of Use

Moment of inertia ratio has been doubled in the same motor, reducing the moment of inertia ratio and boosting gain for faster settling

Medium Capacity

SGMGV Series

Compact Design

Smaller package and about 20% lighter, but with the same moment of inertia ratio as the conventional model. A small encoder connector is applied.
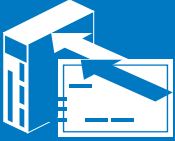
Improved Vibration Resistance

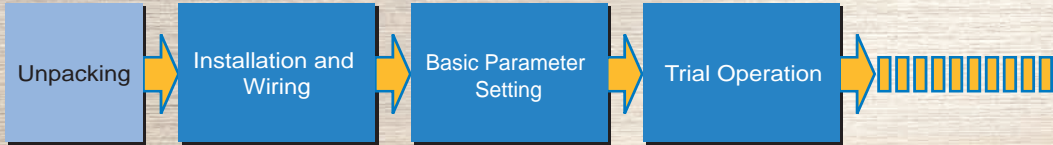New coupling delivers typical 5G vibration resistance

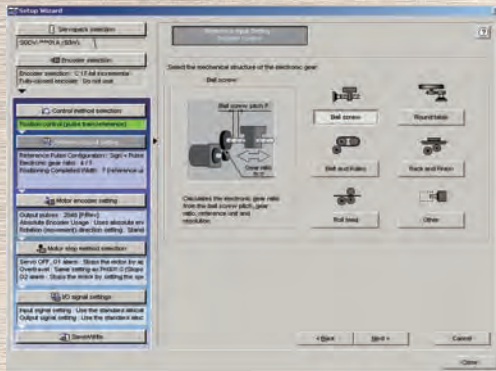Encoder resolution 1,048,576 pulses/revolution

Simple Start-up

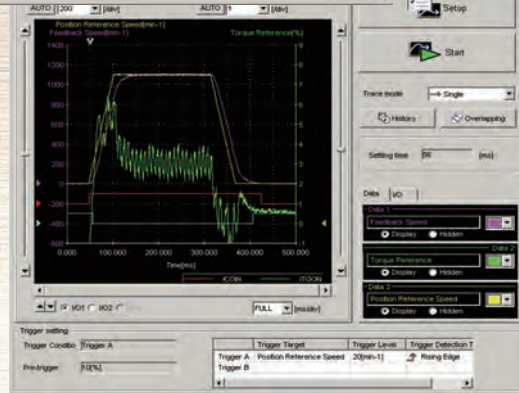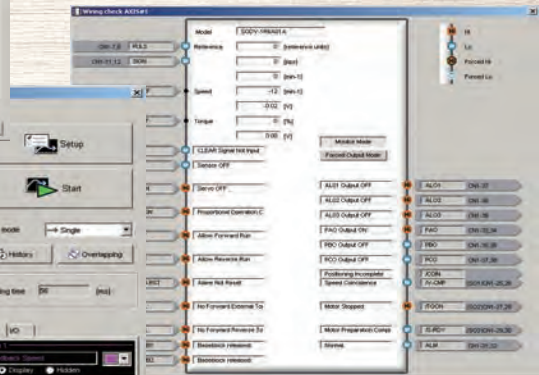Unpacking → Installation and Wiring → Basic Parameter Setting → Trial Operation →

Faster setup

SigmaWin+

Setup Wizard
Simple parameter set-up with wizard-aided input

Wiring Check Function
The SigmaWin+ wiring check function checks your wiring in a single operation

USB1.1 Support

Trace Function
Realtime trace of adjustment state means you can check instantly.

● Full of handy functions for start-up and more effective operation!
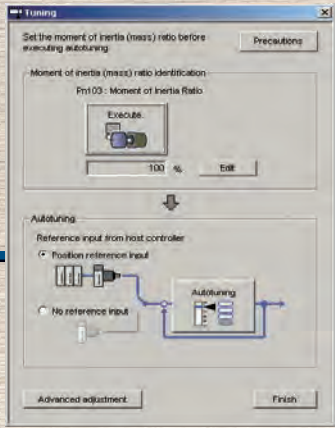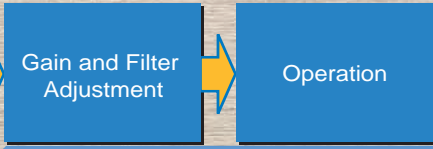
■ Selection

Servomotor capacity selection software

SigmaJunmaSize+

Optimal selection for your application:
With consideration of moment of inertia, DB resistance, etc.

Let the Σ-V series simplify your life!

Gain and Filter Adjustment → Operation

New Advanced Autotuning Window

Simple Tuning

Get up and running quickly after hooking up the motor
● New Tuning-less Function

Even without servo adjustment and with load changes, oscillation- and vibration-free drive is possible up to 20 times the load moment of inertia.

Settling time: 100 to 150 ms level

Minimize settling time with less vibration
● New Advanced Autotuning

The reference filter and feedback gain adjustment functions have a new automatic feed forward gain adjustment for optimal adjustment performance. The friction compensation function automatically cancels out the effect of friction on machine characteristics.

Settling time: 10 ms level

Fine-tuning is a must
● New "One-parameter" Tuning

Fine-tuning can tweak machine performance to the max.

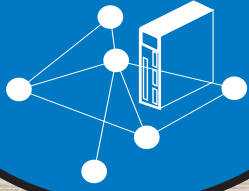Settling time: 0 to 4 ms level

■ Maintenance
Faster Troubleshooting

Engineering tool
SigmaWin+

Alarm diagnostic function:
Presumes possible causes of the alarm and immediately displays suggested corrective actions.
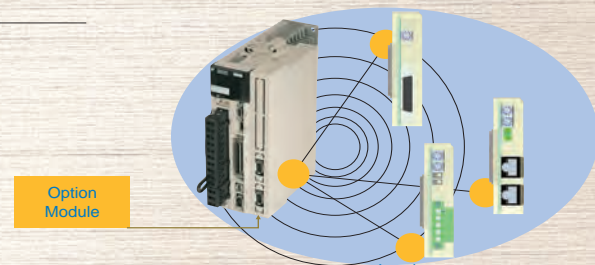
Alarm Diagnostic Information
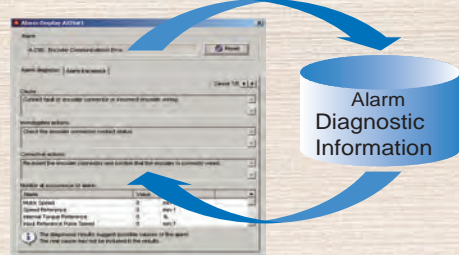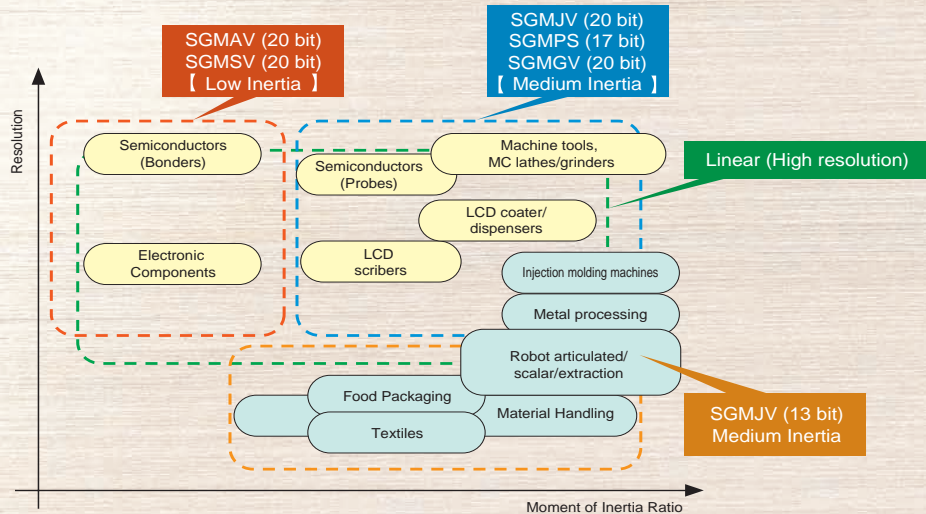
Outstanding Expandability

A rich selection of models and options to match your requirements

● **Extensive variety of motors to match any machine**

Medium-inertia servomotors ➡ Improved control stability
Low-inertia servomotors ➡ High-speed acceleration and deceleration

● **Selection of servo actuators**

Support for direct drive servomotors, linear servomotors and linear sliders

● **Standard support for analog voltage/pulse train reference series or MECHATROLINK-II communications reference series**

● **Wide selection of option modules for various communication interfaces and feedback**

Option Module

The first in the industry in Japan!
(as of April 2007)

● **Compliant with applicable safety standards**

Easy compliance with machine safety standards

● **Motor line-up to handle a wide range of markets and applications**

SGMAV (20 bit)
SGMSV (20 bit)
【 Low Inertia 】

SGMJV (20 bit)
SGMPS (17 bit)
SGMGV (20 bit)
【 Medium Inertia 】

Linear (High resolution)

SGMJV (13 bit)
Medium Inertia

Resolution

- Semiconductors (Bonders)
- Semiconductors (Probes)
- Machine tools, MC lathes/grinders
- LCD coater/ dispensers
- Electronic Components
- LCD scribers
- Injection molding machines
- Metal processing
- Robot articulated/ scalar/extraction
- Food Packaging
- Material Handling
- Textiles

Moment of Inertia Ratio

Product Line-up

Servomotors

◆Rotary Servomotors (Small Capacity)

SGMMV: 3.3 W to 30 W
(Low Inertia Inertia, Small Capacity)

SGMJV: 50 W to 750 W
(Medium Inertia, Small Capacity)

SGMAV: 50 W to 1 kW
(Low Inertia, Small Capacity)

◆Rotary Servomotors (Medium Capacity)

◆Direct Drive Servomotors

SGMGV: 300 W to 15 kW
(Medium Inertia, Medium Capacity)

SGMSV: 1.0 kW to 7.0 kW
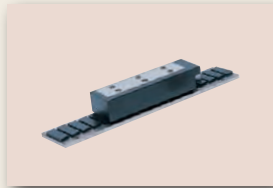(Low Inertia, Medium Capacity)

SGMCS: 2 to 3.5 Nm
(Small Capacity)

SGMCS: 45 to 200 Nm
(Medium Capacity)

◆Linear Servomotors
Linear Σ Series

◆Linear Slides Σ -Trac Series

SGLGW (Coreless Type)
12.5 to 750 N

SGLFW (With F-type Iron Core)
25 to 1120 N

SGLTW (With T-type Iron Core)
130 to 1300 N

SGT1F (Σ-Trac)
47 to 560 N

SERVOPACKs with AC Power Input

◆ Analog Voltage/Pulse
Train Reference

◆ MECHATROLINK-II
Reference

◆ MECHATROLINK-III
Reference

◆ Command Option
Attachable Type

Available Option Modules include:
  • EtherCAT (CoE) Communication
  • Fully Closed Loop Control
  • MP2600iec Single Axis Controller
  • Functional Safety
  • Indexer

SGDV-□□□01/05

SGDV-□□□11/15

SGDV-□□□21/25

SGDV with Additional Options

SERVOPACKs with DC Power Input

◆ Analog Voltage
Reference

◆ Pulse Train
Reference

◆ MECHATROLINK-II
Reference

◆ MECHATROLINK-III
Reference

SGDV-□□□ES1

SGDV-□□□EP1

SGDV-□□□E11

SGDV-□□□E21