YASKAWA

ACservo drive

Σ-X

SERVOPACK

FTspecification

FT70

Gantry application function
option

Gantry application function
Torque/thrust
Built-in assist function

Σ-X SERVOPACK **FT70** The specifications are a SERVOPACK that supports functions optimized for gantry drive and torque/thrust assist functions. We provide the best solution for your problems with the gantry mechanism.
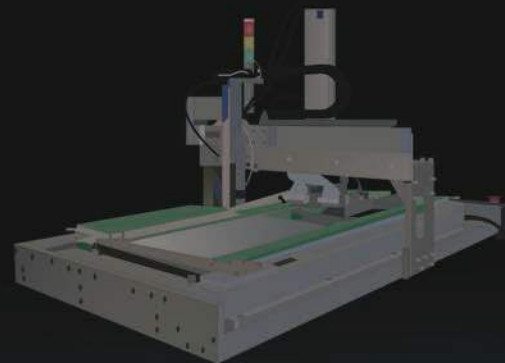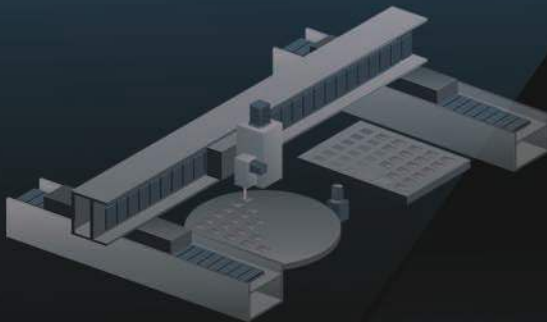
■ FT70 product system

○ : Available ✕ : Not available

SERVOPACK	analog pulse train	MECHATROLINK-4/III	EtherCAT
Σ-XS	✕	○	○
Σ-XW	-	○	○
Servomotor	rotation	direct drive	linear
Applicable motor	○	✕	○

☑ *Gantry application function*

- ☑ flip chip bonding machine
- ☑ Semiconductor inspection equipment (I Chandler)

☑ *Torque/thrust assist function*

- ☑ Winding mechanism
- ☑ Linked linear system
- ☑ Double-sided drive ball screw
- ☑ Tire control of traveling cart

Features

Optimal control of difficult-to-control gantry mechanisms can be achieved.

We provide solutions to solve the problems of gantry mechanisms.

Issues with conventional gantry systems (mechanism/control)	FT70 solution by

[Excessive shaft deviation detection function]

primary axis   secondary axis

Position between axes deviation

Xshaft

Due to equipment failure, etc.,2shaft the position deviation between IfXshaft twisted

Mechanical damage and line stop occur!

primary axis   secondary axis

Maximum allowable deviation

Xshaft

2The position deviation between the axes is the parameter set toover threshold display and alarm or issue a ning

2Monitoring of position deviation between axes

mechanical damage and line Stoppages can be prevented!

[Coordinated stop function when an alarm occurs]

Mecha Corruption

Alarm generated stop at

primary axis   secondary axis

Xshaft

Alarm on primary axis Secondary Axes cannot stop simultaneously

XThe axis is twisted,
Mechanical damage has occurred!

the primary axis with an alarm stopped

primary axis   secondary axis

Xshaft

Stop working primary With the position of the axis as the target, Coordinated stop of secondary axis do

In a coordinated stop,Xof the axis
You can prevent twisting!

[Twisting suppression function] (MECHATROLINK-III communication cannot be used)

beam   primary axis   secondary axis

During high acceleration/deceleration operation, the load bias and machine assembly error , the torsion-induced interaxial Position deviation occurs

Mechanical damage occurs due to torsional vibration!

Reduces torsional vibration and inter-axis position deviation
Torque/thrust index
Compensate for the decree.

Torsional vibration and position deviation between axes By reducing the acceleration/deceleration time Shortened and improved positioning accuracy!


[Position correction table function]

Due to machine differences, the shafts pull each other during driving, generating wasted torque.

primary axis   secondary axis

torque

torque

speed

time

torque

primary axis

0   only this Useless the torque is It has occurred

time

secondary axis

By driving while correcting the position of the secondary axis based on the correction amount set in the table, it is possible to suppress wasted torque caused by machine differences.

primary axis   secondary axis

Pm5   Ps5
Pm4   Ps4
Pm3   Ps3
Pm2   Ps2
pm1   Ps1

speed

time

torque

between primary and secondary axis No wasted torque is generated

0   time

System configuration example of gantry application function

●Σ-XSFor SERVOPACK*1

Σ-XS((single-axis) SERVOPACKs allow up to 15kW×2Axis system configuration is possible.
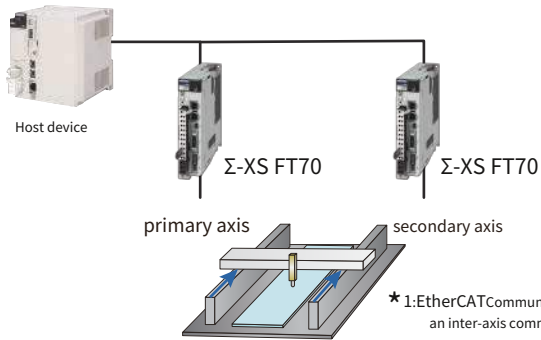
Host device

Σ-XS FT70   Σ-XS FT70

primary axis   secondary axis

＊1:EtherCATCommunication Σ-XSWhen using a SERVOPACK, an inter-axis communication cable is required.

●Σ-XWFor SERVOPACK

Host device

Σ-XW FT70

primary axis   secondary axis
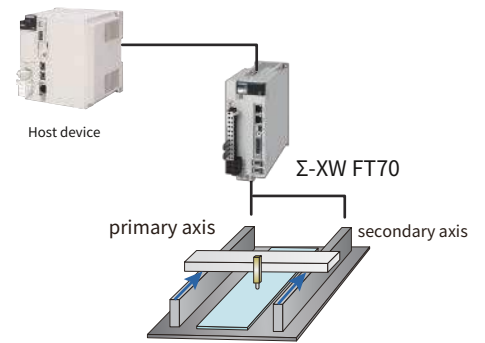
Features

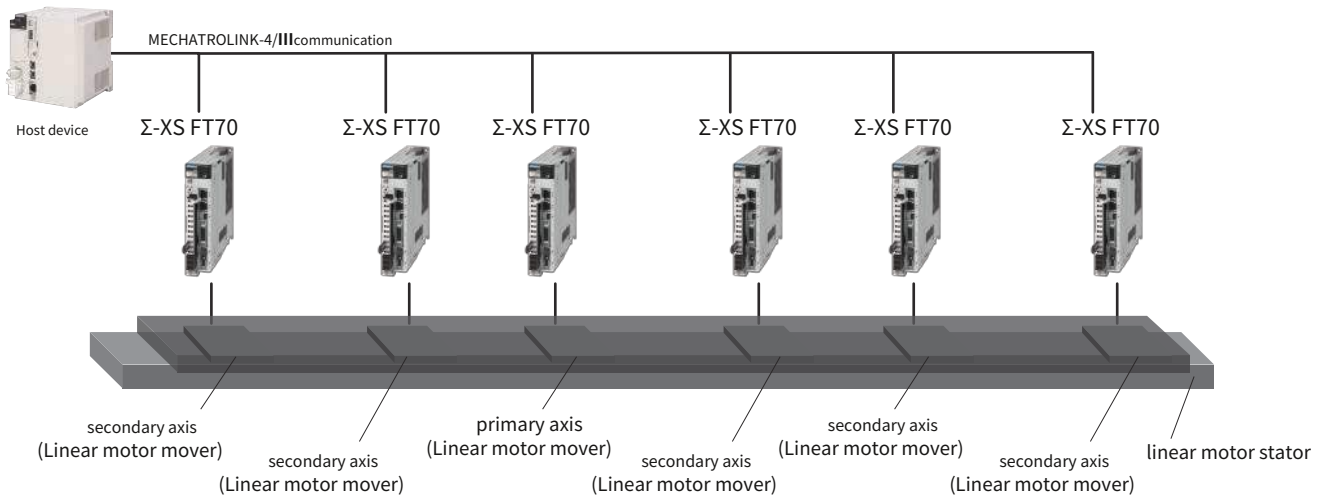**Restrictions on motor mounting dimensions are reduced,**

It is possible to downsize the device and lower the center of gravity.

A large thrust (torque) system can be realized by operating multiple SERVOPACKs in coordination.

Σ-XS FT70Example of coupled linear system (thrust assist) using

Σ-XSSERVOPACKMECHATROLINK-4/**III**When using for communication, set the secondary axis to maximum**Five**You can use up to the axis.
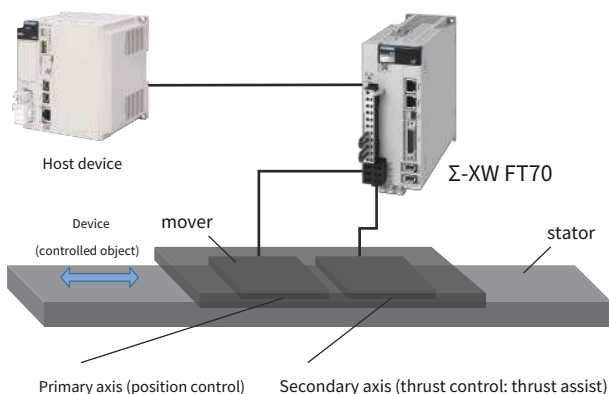
*EtherCATFor communication, the secondary axis is**1**up to the axis.

MECHATROLINK-4/**III**communication

Host device   Σ-XS FT70   Σ-XS FT70   Σ-XS FT70   Σ-XS FT70   Σ-XS FT70   Σ-XS FT70

secondary axis (Linear motor mover)   primary axis (Linear motor mover)   secondary axis (Linear motor mover)   linear motor stator

secondary axis (Linear motor mover)   secondary axis (Linear motor mover)   secondary axis (Linear motor mover)

＊1   EtherCATCommunication Σ-XSWhen using a SERVOPACK, an inter-axis communication cable is required.
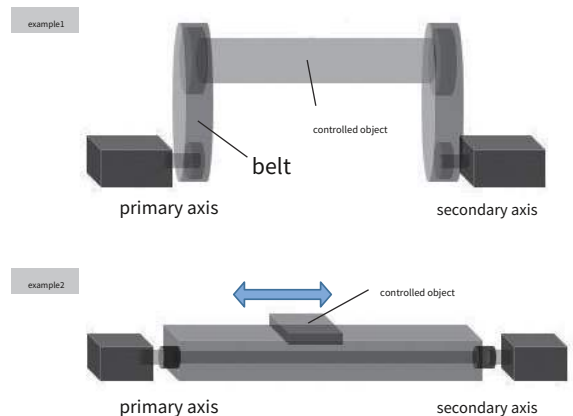

Σ-XW FT70Example of coupled linear system (thrust assist) using

A large-thrust linear servo motor with multiple movers arranged in a row of stators.1You can use it as a table.

Host device

Σ-XW FT70

Device (controlled object)   mover   stator

Primary axis (position control)   Secondary axis (thrust control: thrust assist)

Example of rotary servo motor (torque assist)

1one load2Moved by a motor on the platform,1It compensates for the insufficient torque with a single motor.

example1

controlled object

belt

primary axis   secondary axis

example2

controlled object

primary axis   secondary axis

How to read the SERVOPACK format

Σ-XS model

SGDXS -R70 A. 40 A. 0000 70 B.

1+2+3digit | Fourdigit | 5+6digit | 7digit | 8+9+10+11digit | 12+13digit | 14digit

symbol	Product series
SGDXS	Σ-XSmodel

SGDXS
1+2+3Digit: Maximum applicable motor capacity

Voltage	symbol	Specifications (Unit:kW)
	R70*1	0.05 kW
	R90*1	0.1 kW
	1R6*1	0.2 kW
	2R8*1	0.4 kW
	3R8	0.5 kW
	5R5*1	0.75 kW
Three-phase AC 200V	7R6	1.0 kW
	120*2	1.5 kW
	180	2.0 kW
	200	3.0 kW
	330	5.0 kW
	470	6.0 kW
	550	7.5 kW
	590	11 kW
	780	15 kW

FourDigit: Voltage

symbol	specification
A.	AC200V

5+6Digit: Interface*3

symbol	specification
40	MECHATROLINK-4/III communication order
A0	EtherCAT communication order

★1: Can be used with single-phase and three-phase inputs.
★2: Single-phase with hardware option specificationsAC200VWe are preparing compatible products.
  (MECHATROLINK-4/IIICommunication directive:SGDXS-120A40A0008，
   EtherCATCommunication directive:SGDXS-120AA0A4008)
★3: Common to rotary servomotors and linear servomotors.
★Four: For details, refer to the following manuals. Σ-XSeries Σ-XS/Σ-XW/Σ-XTSERVOPACK Hardware Option Specifications Dynamic Brake Option Product Manual (Document number: SIJP C710812 14)

A.

7digit

8+9+10+11Digit: Hardware option specification

symbol	specification	Compatible models
MECHATROLINK-4/IIISupports communication commands		
0000	no option	All models
0002	varnish treatment	
0008	Single-phaseAC200VPower input specifications	SGDXS-120A
0020*Four	No dynamic brake function	SGDXS-R70A~ -2R8A
	External dynamic brake resistor	SGDXS-3R8A~ -780A
EtherCATSupports communication commands		
4000	Communication between axes	All models
4002	Inter-axis communication, varnishing	All models
4008	Inter-axis communication, single-phaseAC200VPower input specifications	SGDXS-120A
4020*Four	No inter-axis communication, no dynamic brake function	SGDXS-R70A~ -2R8A
	Inter-axis communication, external dynamic brake resistor	SGDXS-3R8A~ -780A

12+13Digit:FTspecification

symbol	specification
70	Gantry application function

14Digit:BTOSpecifications (under development)

symbol	specification
none	none
B.	BTOspecification

Σ-XW model

SGDXW -1R6 A. 40 A. 0000 70 B.

1+2+3digit | Fourdigit | 5+6digit | 7digit | 8+9+10+11digit | 12+13digit | 14digit

symbol	Product series
SGDXW	Σ-XW model

SGDXW
1+2+3Digit:1per axis
Maximum applicable motor capacity

Voltage	symbol	Specifications (Unit:kW)
Three-phase AC 200V	1R6*1	0.2
	2R8*1	0.4
	5R5*1*2	0.75
	7R6	1.0

FourDigit: Voltage

symbol	specification
A.	AC200V

5+6Digit: Interface*3

symbol	specification
40	MECHATROLINK-4/III communication order
A0	EtherCAT communication order

7Digit: Design order
A.

8+9+10+11Digit: Hardware option specification

symbol	specification	Compatible models
0000	no option	All models
0002	varnish treatment	
0020*Four	No dynamic brake function	SGDXW-1R6A~ -2R8A
	External dynamic brake resistor	SGDXW-5R5A~ -7R6A
1000	HWBBFunctional option	

12+13Digit:FTspecification

symbol	specification
70	Gantry application function

14Digit:BTOSpecifications (under development)

symbol	specification
none	none
B.	BTOspecification

★1: Can be used with single-phase and three-phase inputs.
★2:Single-phaseAC200VWhen using with power input, the load factor should be65%Please derate to For example:
  1The load factor of the axis is90%in the case of,2The load factor of the axis is40%year,2Let the average load factor of one axis be65%please.
  ((90% + 40%)/2 = 65%)
★3: Common to rotary servomotors and linear servomotors.
★Four: For details, refer to the following manuals.
  Σ-XSeries Σ-XS/Σ-XW/Σ-XTSERVOPACK Hardware Option Specifications Dynamic Brake Option Product Manual (Document No.:SIJP C710812 14)

Compliant standard

CE   UL CERTIFIED   KC *

*: Scheduled to be supported sequentially