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Uerman



Alignment Stage SA200DE X-axis added for improved θ -axis torque

Updated SA200DE

Alignment Stage SA Structure

Since this alignment stage uses IKO Miniature Linear Ways in the linear motion guiding parts, IKO Crossed Roller Bearings in the rotation part and direct drive method in the drive section, it has a low profile and compact XY θ motion.



SA200DE Features

Easy combination of X, Y, and θ axes

The SA200DE/X linear positioning X-table is now included as a standard feature. When combined with SA200DE/S for rotational positioning, it is easy to configure an extremely compact alignment stage with three directions of movement (X, Y, and θ axes).

Thin and Compact

With a coreless linear motor and IKO Linear Way L and IKO Crossed Roller Bearings built in, it has an extremely low cross sectional height as compared with ball screw-driven stages.

Low Power and High Tact

The design of the θ -axis (SA200DE/S) motor has been revised for higher torque. Compared with conventional products, it operates at lower power and with a reduced tact time.

<Operating conditions> SA200DE θ -axis Carrying mass: 10kg Operation velocity: 80deg/s

a standard-equipped X-axis and higher torque on the θ -axis

9

The SA Series Alignment Stage

(200 size) has been updated with



same power consumption conditions



Remarks These results are theoretical values. They may differ from values during actual operation

Identification Number





Model code SA…DE: Alignment Stage SA



Size Table size [mm] Symbol 200 🗌 200, **þ**200



Resolution

Symbol	Resolution value
1	0.1µm
5	0.5µm

Specify the resolution of the encoder for X-axis or XY-axis. When selecting only S: heta -axis in the entry of section (4) , set "No symbol" for the resolution.



Axial configuration

Symbol	Axial configuration
Х	Only X-axis
S	Only $ heta$ -axis
XY	X and Y-based two-axis configuration
XS	X and $ heta$ -based two-axis configuration
XYS	X, Y, and θ -based three-axis configuration



Surface treatment

Symbol	Surface treatment
No symbol	Electroless nickel plating
R	Black chrome surface treatment

Surface treatment is performed on the surfaces of table and bed.



0	Symbol Specification number	
	Symbol	Specification number
	4	Specification number 4

The specification number is limited to 4.

Specifications and Performance

Model and size	SA200DE/1X	SA200DE/5X	SA200DE/S	
Maximum thrust/torque(1)	400(25	50)N(⁶)	8.0(6.0)N⋅m(⁶)	
Rated thrust/torque(2)	70N		2.0N·m	
Maximum load mass	30.0(20.0)kg(⁶)		21.2(17.1)kg(6)	
Effective stroke length, operating angle	20mm		280 degree	
Resolution	0.1µm	0.5µm	0.25 sec 14400 pulse/deg	
Maximum speed(3) 270mm		800mm/s	270 deg/sec	
Positioning repeatability(4)	±0.5µm		±0.5 sec	
Mass of moving table	3.4kg		-	
Inertia moment of moving table	-		0.013kg⋅m²	
Total mass(⁵)	7.2kg		6.0kg	
Ambient temperature and humidity in operation	0~40°C, 20~80%RH (k		eep condensation free)	

Notes (') The duration of maximum thrust/torque is up to 1 second.
(°) This is based on the case of mounting on a metal mating member material at an ambient temperature of 20°C.
(°) For the case of exceeding the displayed speed, please contact IKO.
(°) When the temperature of the product is constant.
(°) Mass of the cord is not included.
(°) Numbers in parentheses indicate values when used with an ADVA-R5ML driver.





Remark: Dynamic load mass of θ -axis is a value calculated as cube of steel. Acceleration is converted as value of stage periphery.

Mounting

The typical tightening torque to be used when fixing SA200DE in place is indicated in the following table. When high accuracy is required with no vibration and shock, it is recommended to tighten the screws with a lower torque than that indicated in the table and use an adhesive to prevent screws from loosening.

Bolt size Aluminum a Steel
M6 × 1 13.3 About 60% of steel value Ab
M5 × 0.8 7.9 About 60% of steel value 60% of



unit: N·m
alloy
Screw insert
oout 80% of steel value

Sensor Specifications

SA200DE X-axis sensor timing chart



SA200DE θ -axis sensor timing chart



Remarks: 1. Respective values are for reference and are not guaranteed values. For detailed dimensions, please contact IKO. 2. For detailed specifications of respective sensors, please see the sensor specifications section in IKO Mechatronics Series General Catalog.

System Configuration

Two series of dedicated drivers, ADVA and MR-J4, are available for the Alignment Stage SA, and the system configuration varies depending on the driver used. For ADVA, two types of specification, pulse train specification and high speed network EtherCAT specification, are available. For MR-J4, only high speed network SSCNET III/H specification is available. The following table shows an example of an ADVA identification number, as well as the identification numbers of tables and applicable MR-J4. For detailed driver specifications, please see the driver specification section in IKO Mechatronics Series General Catalog.

Identification number of ADVA

ADVA	-	01NL	EC	/	SA200DE-S2
(1) Model		(2)	(3)		(4)

(2) Power supply voltage				
01NL	Single-phase / three-phase 200V			
R5ML	Single-phase 100V			
(3) Command type				
No symbol Pulse train command				
EC	EtherCAT			

Identification numbers of SA200DE and applicable MR-J4

dentification number of table	Identification number of driver
SA200DE/X	MR-J4-10B-RJ/SA200DE-X
SA200DE/S	MR-J4-10B-RJ/SA200DE-S2

Setup Software

To operate Alignment Stage SA, an initial setting of driver parameters is required. Driver parameter setting is performed using the setup software. It can also be used for gain adjustment and operational status check. The setup software and PC connection cable are not provided with the driver. These can be shared with other drivers but at least one set is required. Please obtain these on your own or place an order separately according to your requirement.

System configuration for SA200DE with driver ADVA



Note (!) For specific cord length, please contact IKO. (?) The length of the sensor extension cord are specified in the (?) I/O connector TAE20R5-CN is a combined product of 10150-3000PE (connector) and 10350-52F0-008 (cover) from 3M Japan Limited.

(4) Applicable alignment stage model		
SA200DE-X	SA200DE/X	
SA200DE-S2	SA200DE/S	

No.	Name	Identification number
8	Motor extension cord (3m)(1)	TAE20V3-AM03
4	Encoder extension cord (2m)(1)	TAE20V4-EC02
6	Sensor extension cord(2)	TAE10V8-LC
6	PC connection cable	USB mini B cable This must be prepared by the customer.
0	Setup software	ProDriveNext Please download from the official website of Hitachi Industrial Equipment Systems Co., Ltd.
8	I/O connector	TAE20R5-CN (3)
9	Power cord	This must be prepared by the customer.
0	Higher-level device	
0	I/O connector connection cable	

System Configuration

System configuration for SA200DE with driver ADVA···EC



No.	Name	Identification number
0	Motor extension cord (3m)(')	TAE20V3-AM03
4	Encoder extension cord (2m)(1)	TAE20V4-EC02
6	Sensor extension cord(2)	TAE10V8-LC
6	PC connection cable	USB mini B cable This must be prepared by the customer.
0	Setup software	ProDriveNext Please download from the official website of Hitachi Industrial Equipment Systems Co., Ltd.
8	I/O connector	TAE20V5-CN (3)
9	Ethernet cable	
0	Power cord	This must be prepared by the
0	Higher-level device	customer.
ß	I/O connector connection cable	

Product Dimensions

SA200DE/X





Note (!) For specific cord length, please contact IKO. (?) The length of the sensor extension cord are specified in the (?) I/O connector TAE20V5-CN is a combined product of 10120-3000PE (connector) and 10320-52F0-008 (cover) from 3M Japan Limited.

System configuration (SSCNET III/H supported) for SA200DE with driver MR-J4-10B



INO.	INdifie	Identification number
8	Motor extension cord (3m)(¹)	TAE20V3-AM03
4	Encoder extension cord (2m)(1)	TAE20V6-EC02
6	Sensor extension cord(2)	TAE10V8-LC
6	PC connection cable (3m)	MR-J3USBCBL3M
1	Setup software	SW1DNC-MRC2-J
8	Connectors for input/output connection	MR-CCN1 (3)
9	Power cord	
0	Higher-level device(4)	This must be prepared by the customer.
0	Connection cable for SSCNET III/H	

SA200DE/S



Note (1) For specific cord length, please contact IKO.

(*) For specific cord length, please contact INO.
 (*) The length of the sensor extension cord are specified in the □□ located at the end of the identification number for length of 3 to 10m in units of 1m.
 (*) I/O connector MR-CCN1 is a combined product of 10120-3000PE (connector) and 10320-52F0-008 (cover) from 3M Japan Limited.
 (*) The higher-level devices are a motion controller, positioning unit, and DC24V power supply ready for SSCNETII/H from Mitsubishi Electric Corporation.



Product Dimensions

SA200DE/XY





SA200DE/XS





SA200DE/XYS





