IAI
Quality and Innovation

ISPA/ICSPA

Single-Axis Robot/ Cartesian Robot Catalog
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- Features and Configurations (p41-66)
- ICSA2/ ICSPA2 2-Axes Cartesian Robots (p67-128)
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Catalog No. ISPA-CJ0063-3A

Quality and Innovation

INTELLIGENT ACTUATOR

Cartesian Robots

ICSA2/ICSPA2
ICSA3/ICSPA3

Contents

Cartesian Robot Series Contents

* In the above model names, □ indicates the configuration direction (1 through 4).

Cartesian Robot Series Features

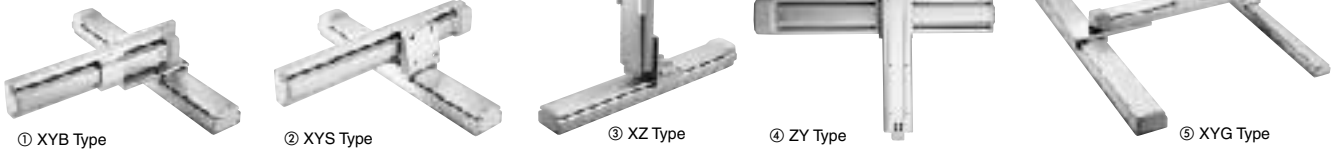
The ICSA/ICSPA Cartesian robots are configuration units based on the two-axes and three-axes configuration patterns that are frequently used. These actuators come pre-wired with brackets attached, so they can be installed in your equipment and used immediately after delivery.

1. Configuration Variations

Fifty-seven standard configuration types are provided, so the user can find the model best suited to existing conditions. We can also build custom configurations not currently represented in the standard range. Please contact us regarding your specifications.

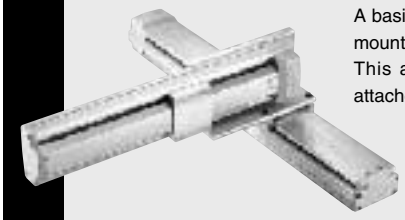
Two-Axes Configuration Type

Two-axes configuration units are available in **31 types**, each combining one of five configuration patterns with different speeds and motor capacities.



① XYB Type ② XYS Type ③ XZ Type ④ ZY Type ⑤ XYG Type

① XYB (Y-Axis Base Mount)Type

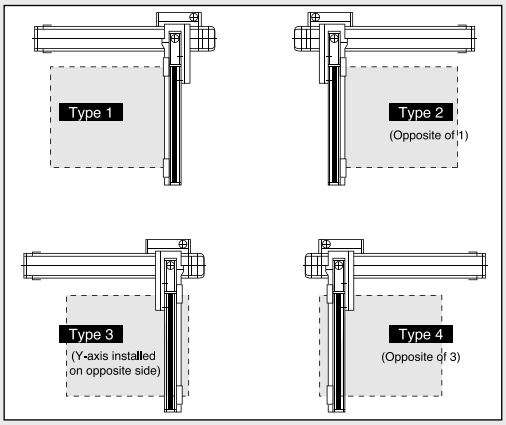


A basic configuration type where the Y-axis base is mounted to the X-axis bracket.
This actuator operates with a device or Z-axis attached to the Y-axis slider.

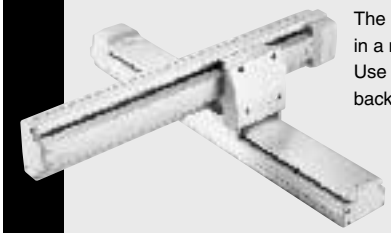
Point 1 There are four patterns of Y-axis configuration directions to choose from (refer to the figure shown to right).

Point 2 Select the Y-axis wiring specification from the two options of self-standing cable (standard) and cable track.

■ Configuration Direction



② XYS (Y-Axis Slider Mount) Type

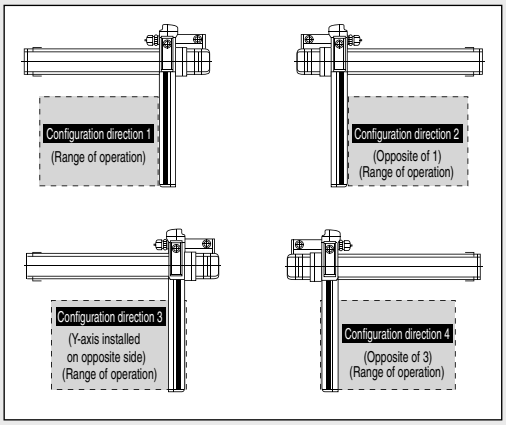


The Y-axis slider is mounted to the X-axis bracket in a manner allowing the Y-axis to move.
Use this type when the Y-axis itself must be moved back and forth to avoid an obstacle, etc.

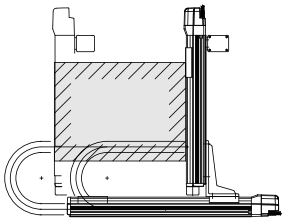
Point 1 There are four patterns of Y-axis configuration directions to choose from (refer to the figure shown to right).

Point 2 Only the self-standing cable option is available for the Y-axis wiring specification.

■ Configuration Direction



③ XZ (Z-Axis Base Mount) Type

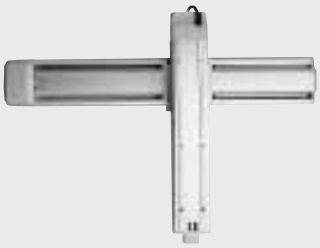


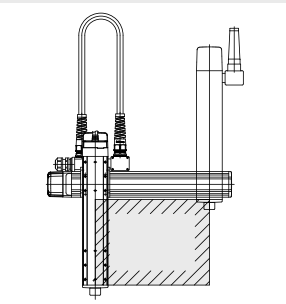
The Z-axis (vertical axis) is positioned vertically on the X-axis.
Use this type in such applications as inserting loads into a stocker or moving a pallet up and down.

Point 1 Since the Z-axis comes standard with a brake, the slider will not drop even when the power is turned off.

Point 2 The maximum stroke is 2500 mm for the X-axis and 500mm for the Z-axis.
(Consult IAI if you need a longer stroke.)

④ YZ (Y-Axis Slider Mount) Type





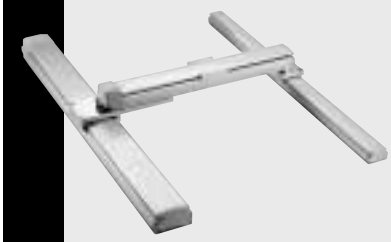
The Y-axis is positioned on its side and its slider is connected to the slider of the Z-axis (vertical axis).
Since the Z-axis moves vertically, this type can be fitted with a chuck or other device on the Z-axis for transfer of loads.

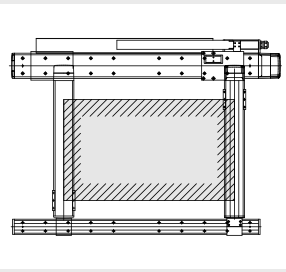
Point 1 Since the Z-axis comes standard with a brake, the slider will not drop even when the power is turned off.

Point 2 The standard wiring specification of the Z-axis is the self-standing cable, but the cable track can also be used (custom order).

Point 3 The Z-axis base can be mounted (custom order).

⑤ XYG (Gantry) Type





The Y-axis of the XYB type is placed flat and a support guide is attached at the tip of the Y-axis.
Use this type for transferring heavy objects or when the Y-axis stroke is long and the tip might sag.

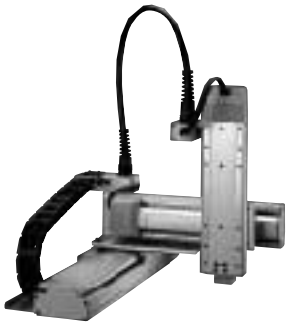
Point 1 A maximum of 40 kg can be transferred.

Point 2 The maximum stroke is 2500 mm for the X-axis and 1200 mm for the Y-axis.
(Consult IAI if you need a longer stroke.)

Three-Axes Configuration Type

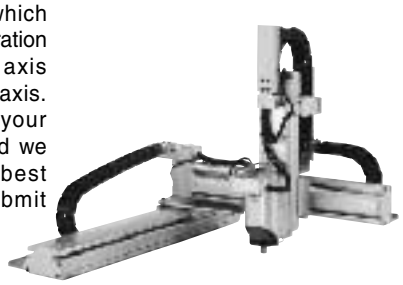
Three-axes configuration units are available in **102 types**, each combining either the basic XYB (Y-axis base mount) type or high-rigidity XYG (gantry) type with a Z-axis (vertical axis) of high-speed, medium-speed or low-speed specification, providing a maximum load capacity of 19 kg.

Consult IAI for details on three-axes combined types.



Four-Axes Configuration Type

We also offer four-axes configuration types, which are three-axes configuration units with a rotating axis integrated with the Z-axis. Please advise us of your desired conditions, and we will select the best configuration and submit drawings.



Cartesian Robot Series Product Types

■ Two-Axes Configuration

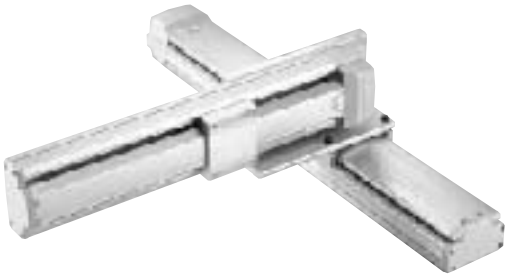
X-Y Two-Axes Configuration

Y-axis base mount

The Y-axis slider moves horizontally.

XYB type

BA□H, BA□M
BB□H, BB□M
BC□H, BC□M
BD□H
BE□H, BE□M
BF□H



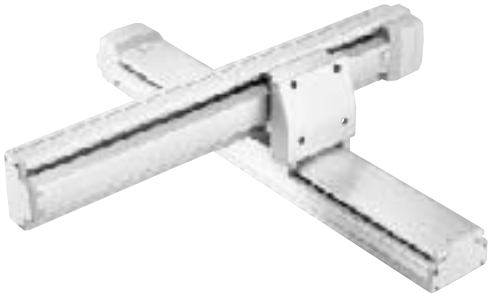
P67~86

Y-axis slider mount

The entire Y-axis moves horizontally.

XYS type

SA□H, SA□M
S1C□H, S1C□M
S2C□H
SG□H



P87~98

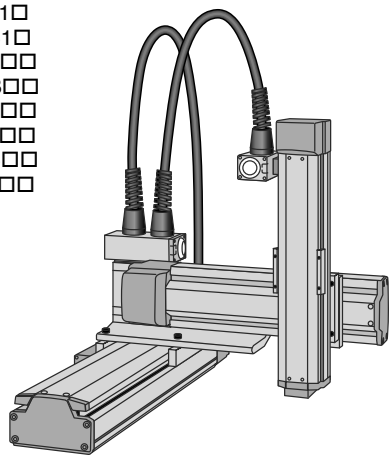
■ Three-Axes Configuration

X-Y Base Mount (XYB)+Z-Axis Configuration

Z-Axis Base Mount Type

The Z-axis is base mounted to the Y slider.
The Z slider moves vertically.
The Y-axis slider moves horizontally.

BA□MB1□
BB□HB1□
BB□MB1□
BC□HB□□
BC□MB□□
BD□HB□□
BE□HB□□
BE□MB□□
BF□HB□□

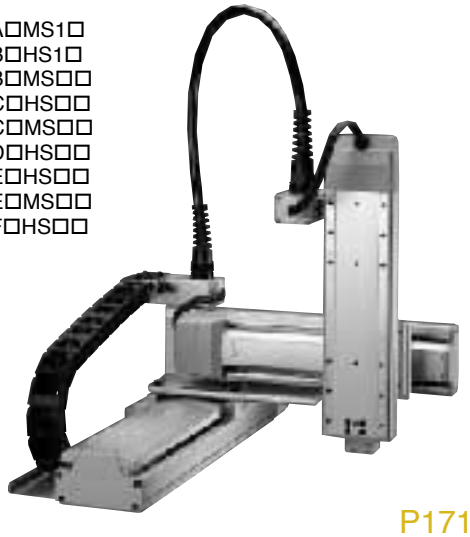


P129~170

Z-Axis Slider Mount Type

The Z-axis slider is mounted to the Y-axis slider.
The body of the Z-axis moves vertically.
The Y-axis slider moves horizontally.

BA□MS1□
BB□HS1□
BB□MS□□
BC□HS□□
BC□MS□□
BD□HS□□
BE□HS□□
BE□MS□□
BF□HS□□



P171~200

Z-axis base mount

The Z-axis is positioned vertically and mounted to the X-axis. The Z-axis slider moves vertically.

XZ type

ZAH, ZAM
Z1CH, Z1CM
Z2CH
ZDH
ZGH
ZHH

P99~114

Y-axis slider mount

The Z-axis slider is mounted to the Y-axis positioned on its side. The entire Z-axis moves vertically.

YZ type

YAH, YAM
YCH, YCM
YGH

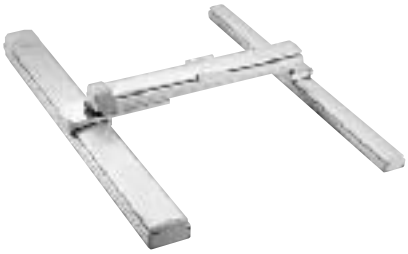
P115~124

Gantry

A support axis is added in parallel with the X-axis and the Y-axis base is mounted to the sliders on the two axes. The Y-axis slider moves horizontally.

XYG type

G1JH
G2JH



P125~128

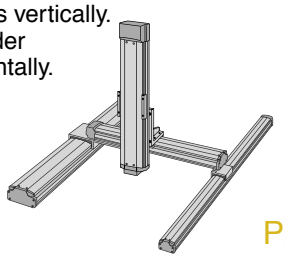
Four-Axes Configuration

X-Y Gantry (XYG)+Z-Axis Configuration

Z-Axis Base Mount Type

The Z-axis base mounted to the Y-axis, Z slider moves vertically. The Y-axis slider moves horizontally.

G1JHB□□
G2JHB□□

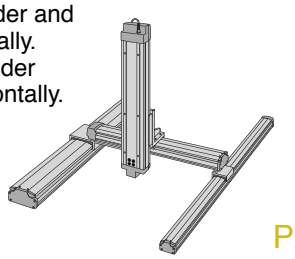


P201~212

Z-Axis Slider Mount Type

The Z-axis slider is mounted to the Y-axis slider and moves vertically. The Y-axis slider moves horizontally.

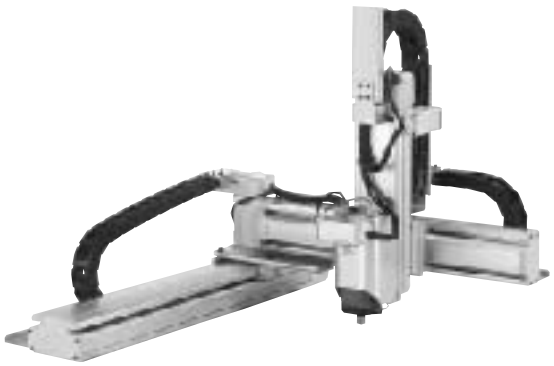
G1JHS□□
G2JHS□□



P213~224

X-Y Base Mount + Z-Axis + Rotating-Axis Configuration

Rotating-axis mounted to the Z-axis base (Z-slider mounted to Y) of three-axes configuration provides theta motion.



Cartesian Robot Series Two-Axes Configuration Unit Selection Table

How to Select a Unit (Explanation of the Table)

Start from • •and move toward right as you confirm each condition to select a desired type.

① Select the configuration.

XYB type The Y-axis base is mounted to the X-axis. (The Y-axis slider moves horizontally.)

XYS type The Y-axis slider is mounted to the X-axis. (The Y-axis itself moves horizontally.)

XZ type The Z-axis is positioned vertically and mounted to the X-axis. (The Z-axis slider moves vertically.)

YZ type The Z-axis slider is mounted to the Y-axis positioned on its side. (The Z-axis itself moves vertically.)

XYG type A support axis is added in parallel with the X-axis and the Y-axis base is mounted to the sliders on the two axes. (The Y-axis slider moves horizontally.)

② Select the line that satisfies both the required Y-axis (Z-axis) stroke and load capacity, and then follow that line to the next column on right.

(Fields with a "-" indicate that this particular configuration is not supported.)

③ Check the X-axis stroke.

If the condition is not satisfied, go down to the line below and select a larger type.

④ Select the desired speed.

⑤ You have selected the type that satisfies all your desired conditions.

Refer to page 43 for the X/Y-axis configuration directions.

Select the X/Y-axis and Z-axis wiring specifications from the following two options:

SC : Self-standing cable
CT : Cable track

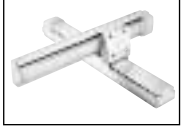
* Refer to page 45.

① Configuration ② Y-axis stroke (mm)

XYB type

Load capacity (kg)	100	200	300	400	500	600	700
	5.2	4.5	3.8	3.1	–	–	–
	18.2	16.6	12.1	8.1	–	–	–
	12.0		11.8	11.1	–	–	–
	25.0			21.8	–	–	–
	20.0				18.7	–	–
	28.8	27.8	26.8	21.8	18.7	–	–
	20.0				18.7	–	–
	–	40.0		33.0	27.3	22.9	19.3
	–	51.2	40.5	33.0	27.3	22.9	19.3
	–	40.0		33.0	27.3	22.9	19.3

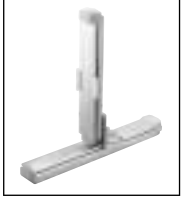
XYS type



Y-axis stroke (mm)

Load capacity (kg)	100	200	300	400	500	600	700
	6.2	5.5	4.8	4.1	–	–	–
	19.2	14.3	9.3	6.4	–	–	–
	9.7	8.7	7.7	6.7	5.6	–	–
	29.7	29.1	19.3	13.6	9.7	–	–
	29.2	28.2	19.3	13.6	9.7	–	–
	–	–	20.7	18.2	12.5	8.4	–

XZ type



Z-axis stroke (mm)

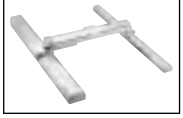
Load capacity (kg)	100	200	300	400	500	600	700
	4.0	3.3	2.6	–	–	–	–
	10.0	7.5	6.0	–	–	–	–
	8.5	7.5	6.5	5.5	–	–	–
	19.0	17.0	14.0	12.0	–	–	–
	19.0	16.0	13.0	11.0	–	–	–
	19.0	16.0	13.0	11.0	–	–	–
	22.0	18.0	16.0	12.0	10.0	–	–
	22.0	18.0	16.0	12.0	10.0	–	–

YZ type

Z-axis stroke (mm)

Load capacity (kg)	100	200	300	400	500	600	700
	3.0	2.3	1.6	–	–	–	–
	11.0	10.3	9.6	–	–	–	–
	11.9	10.9	9.9	8.9	–	–	–
	13.1	12.1	11.1	10.1	–	–	–
	27.0	25.5	23.9	22.3	20.7	–	–

XYG type



Y-axis stroke (mm)

Load capacity (kg)	500 ~ 700	800 ~ 1200
	40.0	–
	–	40.0

Caution

The maximum speed of some long-stroke types (indicated by *) has been reduced to prevent the ball screw from reaching a dangerous speed. Once the desired type has been selected, check the actual speed specification on the page corresponding to the selected type.

③ X-axis stroke	④ Maximum speed (X-axis/Y-axis)	⑤ Applicable type	
(mm)	(mm/sec)	Configuration type	Page
100 ~ 600	800/800	BA□H	→ P67
100 ~ 600	400/400	BA□M	→ P69
200 ~ 800	*1000/800	BB□H	→ P71
200 ~ 800	*500/400	BB□M	→ P73
200 ~ 800	*1000/1000	BC□H	→ P75
200 ~ 800	*500/500	BC□M	→ P77
800 ~ 2000	*1000/1000	BD□H	→ P79
300 ~ 1000	*1000/1000	BE□H	→ P81
300 ~ 1000	*500/500	BE□M	→ P83
1000 ~ 2500	*1000/1000	BF□H	→ P85

X-axis stroke	Maximum speed (X-axis/Y-axis)	Configuration type	Page
(mm)	(mm/sec)		
100 ~ 600	800/800	SA□H	→ P87
100 ~ 600	400/400	SA□M	→ P89
200 ~ 800	*1000/1000	S1C□H	→ P91
200 ~ 800	*500/500	S1C□M	→ P93
200 ~ 800	*1000/1000	S2C□H	→ P95
300 ~ 800	1000/1000	SG□H	→ P97

X-axis stroke	Maximum speed (X-axis/Z-axis)	Configuration type	Page
(mm)	(mm/sec)		
100 ~ 600	800/400	ZAH	→ P99
100 ~ 600	400/200	ZAM	→ P101
200 ~ 800	*1000/500	Z1CH	→ P103
200 ~ 800	*500/250	Z1CM	→ P105
200 ~ 800	*1000/500	Z2CH	→ P107
800 ~ 2000	*1000/500	ZDH	→ P109
200 ~ 800	1000/500	ZGH	→ P111
1000 ~ 2500	*1000/500	ZHH	→ P113

Y-axis stroke	Maximum speed (Y-axis/Z-axis)	Configuration type	Page
(mm)	(mm/sec)		
100 ~ 400	800/400	YAH	→ P115
100 ~ 400	400/200	YAM	→ P117
200 ~ 700	1000/500	YCH	→ P119
200 ~ 700	*500/250	YCM	→ P121
200 ~ 700	1000/500	YGH	→ P123

X-axis stroke	Maximum speed (X-axis/Y-axis)	Configuration type	Page
(mm)	(mm/sec)		
1000 ~ 2500	*1000/1000	G1JH	→ P125
1000 ~ 2500	*1000/1000	G2JH	→ P127

Cartesian Robots Series Three-Axes Configuration Unit Selection Table

How to Select a Unit (Explanation of the Table) Start from ① and move toward right as you confirm each condition to select a desired type.

① Select the installation method of Z-axis from the followings:

[Z-Axis Base Mount]
(The Z-axis base is mounted to the Y-axis slider: The Z-axis slider moves vertically.)

[Z-Axis Slider Mount]
(The Z-axis slider is mounted to the Y-axis slider: The Z-axis itself moves vertically.)

② Select the Z-axis type from High-speed, Mid-speed, and Low-speed.
(The Slider Mount Type is available only in Mid-speed and Low-speed.

③ Select the load capacity for Z-axis
(total weight of load and jig)

④ Select the desired Z-axis stroke from the chart.

⑤ Check the Y-axis stroke and load capacity.
(If the condition is not satisfied, go down to the line below and select larger load capacity.)

⑥ Check the X-axis stroke.
If the condition is not satisfied, go down to the line below and select larger type.
*( ) specifies the case of BD□HB□□ or BF□HB□□.

⑦ Check the maximum speed for X-axis and Y-axis.
If the condition is not satisfied, go down to the line below and select larger type.

⑧ You have selected the type that satisfies all your desired conditions.

Refer to page 45 for the X/Y-Axis configuration directions.
Select the X/Y-Axis and Z-Axis wiring specifications from the two options to the right.
Only cable track is available for X/Y-Axis type D, F, 1J, and 2J.
Only Self-standing cable is available for Z-Axis Slider Mount Type.
We can also build custom configurations not currently represented in the standard range.
Please contact us regarding your specifications.

SC: Self-standing cable
CT: Cable track

* Refer to page 225.

[Z-Axis Base Mount] ①

② Z-Axis Speed Type	③ Z-Axis Load Capacity	④ Z-Axis Stroke (mm)			⑤ Y-Axis Stroke (mm) 100	200	300	400	500	600	700	800~1200	
High-Speed Type 800~1000 mm/sec	3kg or less	100~300	→	Load Capacity (kg)	3.0				–	–	–	–	
		100~400			3.0					–	–	–	
		100~500			–	3.0						–	→
		100~600			–	–	–	–	3.0			–	
		100~600			–	–	–	–	–	–	–	3.0	
	9kg or less	100			9.0					–	–	–	
					–	9.0						–	
		200			9.0				8.4	–	–	–	
					–	9.0						–	
		300	→		8.6				7.3	–	–	–	
					–	9.0					7.9	–	→
		400			7.6				6.3	–	–	–	
					–	9.0					6.9	–	
		500			–	9.0					5.8	–	
		1000~600			–	–	–	–	9.0			–	
					–	–	–	–	–	–	–	9.0	

Example of Selection

Conditions

The Z-Axis is subject to base mount.
Allowable tip load : 2kg
Speed : 800mm/sec or more
Z-Axis Stroke : 200mm
Y-Axis Stroke : 500mm
X-Axis Stroke : 700MM

1. Select the chart of [Z-Axis Base Mount Type].
2. Select ""High-speed"" type since the desired speed is 800mm/sec."
3. Select "3kg or less" since the load capacity is 2kg."
4. Move the line for 100~300 to the right since Z-Axis stroke is 200mm.
5. The crossed column for Z-Axis stroke 100~300mm and Y-Axis stroke 500mm reads "---" (Not applicable), so apply the line below. Since the Y-Axis stroke on the line covers 500mm, shift to the right."
6. The X-Axis stroke is applicable up to 800mm, so shift to the right."
7. The maximum speed for X-Axis/ Y Axis is 1000mm/sec and satisfy the condition. Shift to the right.
8. As a result, Unit Type [BC☐HB1H] is the selected suitable model."

Note The numbers in ( ) in X-Axis stroke in the chart below are for models in ( ) listed in Applicable Type's configuration type.
Example: If the X-Axis stroke in the above example is 1000mm, configuration Applicable Type will be [BD☐HB1H].

⑥ *( ) is for the type BD☐HB☐☐ or BF☐HB☐☐.

⑦

⑧ Applicable Type

X-Axis Stroke (mm)	Maximum Speed (X-axis / Y-axis) (mm/sec)	Configuration Type	Page
200~800	1000/800	ICSA [ICSPA] 3-BB☐HB1H	· P131
200~800 (800~2000)	1000/1000	ICSA [ICSPA] 3-BC☐HB1H (BD☐HB1H)	· P137 (P149)
300~1000 (1000~2500)	1000/1000	ICSA [ICSPA] 3-BE☐HB1H (BF☐HB1H)	· P155 (P165)
1000~2500	1000/1000	ICSA [ICSPA] 3-G1JHB1H	· P201
	1000/1000	ICSA [ICSPA] 3-G2JHB1H	· P207
200~800 (800~2000)	1000/1000	ICSA [ICSPA] 3-BC☐HB3H (BD☐HB3H)	· P141 (P153)
300~1000 (1000~2500)	1000/1000	ICSA [ICSPA] 3-BE☐HB3H (BF☐HB3H)	· P159 (P169)
200~800 (800~2000)	1000/1000	ICSA [ICSPA] 3-BC☐HB3H (BD☐HB3H)	· P141 (P153)
300~1000 (1000~2500)	1000/1000	ICSA [ICSPA] 3-BE☐HB3H (BF☐HB3H)	· P159 (P169)
200~800 (800~2000)	1000/1000	ICSA [ICSPA] 3-BC☐HB3H (BD☐HB3H)	· P141 (P153)
300~1000 (1000~2500)	1000/1000	ICSA [ICSPA] 3-BE☐HB3H (BF☐HB3H)	· P159 (P169)
200~800 (800~2000)	1000/1000	ICSA [ICSPA] 3-BC☐HB3H (BD☐HB3H)	· P141 (P153)
300~1000 (1000~2500)	1000/1000	ICSA [ICSPA] 3-BE☐HB3H (BF☐HB3H)	· P159 (P169)
300~1000 (1000~2500)	1000/1000	ICSA [ICSPA] 3-BE☐HB3H (BF☐HB3H)	· P159 (P169)
1000~2500	1000/1000	ICSA [ICSPA] 3-G1JHB3H	· P205
	1000/1000	ICSA [ICSPA] 3-G2JHB3H	· P211

[Z-Axis Base Mount] ①

② ③ ④ ⑤

Z-Axis Speed Type	Z-Axis			Y-Axis Stroke (mm)								
	Load Capacity	Stroke (mm)			100	200	300	400	500	600	700	800~1200
Mid-Speed Type 400~500 mm/sec	6kg or less	100	→	Load Capacity (kg)	6.0			2.9	–	–	–	–
					6.0			5.9	–	–	–	–
					6.0				–	–	–	–
		200			6.0			2.3	–	–	–	–
					6.0			5.3	–	–	–	–
					6.0				–	–	–	–
		300			6.0		5.7	1.7	–	–	–	–
					5.6		5.4	4.7	–	–	–	–
					6.0				–	–	–	–
		100~400			6.0					–	–	–
		100~500			–	6.0						–
		100~600			–	–	–	–	6.0			–
		100~600			–	–	–	–	–	–	–	6.0
	9kg or less	100	→	Load Capacity (kg)	9.0				–	–	–	–
					9.0					–	–	–
					9.0							–
		200			9.0				8.4	–	–	–
					9.0							–
		300			8.6				7.3	–	–	–
					9.0						7.9	–
		400			7.6				6.3	–	–	–
					9.0						6.9	–
		500			9.0						5.8	–
		100~600			–	–	–	–	9.0			–
		100~600			–	–	–	–	–	–	–	9.0
	19kg or less	100	→	Load Capacity (kg)	10.7				9.4	–	–	–
					19.0	18.5	17.5	12.5	9.4	–	–	–
					–	19.0			18.0	13.6	10.0	–
					–	–	–	–	19.0			–
					–	–	–	–	–	–	–	19.0
		200			9.7				8.4	–	–	–
					18.5	17.5	16.5	11.5	8.4	–	–	–
					–	19.0			17.0	12.6	9.0	–
					–	–	–	–	19.0			–
					–	–	–	–	–	–	–	19.0
		300	→		8.6				7.3	–	–	
					17.4	16.4	15.4	10.4	7.3	–	–	
					–	19.0			15.9	11.5	7.9	
					–	–	–	–	19.0			
					–	–	–	–	–	–	–	19.0
		400			7.6				6.3	–	–	–
					16.4	15.4	14.4	9.4	6.3	–	–	–
					–	19.0			14.9	10.5	6.9	–
					–	–	–	–	18.7			–
					–	–	–	–	–	–	–	18.7
		500			–	19.0			13.8	9.4	5.8	–
					–	–	–	–	17.6			–
					–	–	–	–	–	–	–	17.6
		600			–	–	–	–	16.6			–
					–	–	–	–	–	–	–	16.6

⑥ *( ) is for the type BD□HB□□ or BF□HB□□.

	⑦ X-Axis Stroke		Maximum Speed (X-axis / Y-axis)		⑧ Applicable Type	
	(mm)		(mm/sec)		Configuration Type	Page
	100~600		400/400		ICSA [ICSPA] 3-BA□MB1M	• P129
	200~800		1000/800		ICSA [ICSPA] 3-BB□HB1M	• P131
	200~800		500/400		ICSA [ICSPA] 3-BB□MB1M	• P133
	100~600		400/400		ICSA [ICSPA] 3-BA□MB1M	• P129
	200~800		1000/800		ICSA [ICSPA] 3-BB□HB1M	• P131
	200~800		500/400		ICSA [ICSPA] 3-BB□MB1M	• P133
→	100~600	→	400/400	→	ICSA [ICSPA] 3-BA□MB1M	• P129
	200~800		1000/800		ICSA [ICSPA] 3-BB□HB1M	• P131
	200~800		500/400		ICSA [ICSPA] 3-BB□MB1M	• P133
	200~800		1000/1000		ICSA [ICSPA] 3-BC□HB1M (BD□HB1M)	• P137 (P149)
	300~1000		1000/1000		ICSA [ICSPA] 3-BE□HB1M (BF□HB1M)	• P155 (P165)
	1000~2500		1000/1000		ICSA [ICSPA] 3-G1JHB1M	• P201
			1000/1000		ICSA [ICSPA] 3-G2JHB1M	• P207
	200~800		500/400		ICSA [ICSPA] 3-BB□MB2M	• P135
	200~800 (800~2000)		1000/1000		ICSA [ICSPA] 3-BC□HB2M (BD□HB2M)	• P139 (P151)
	300~1000 (1000~2500)		1000/1000		ICSA [ICSPA] 3-BE□HB2M (BF□HB2M)	• P157 (P167)
	200~800 (800~2000)		1000/1000		ICSA [ICSPA] 3-BC□HB2M (BD□HB2M)	• P139 (P151)
	300~1000 (1000~2500)		1000/1000		ICSA [ICSPA] 3-BE□HB2M (BF□HB2M)	• P157 (P167)
→	200~800 (800~2000)	→	1000/1000	→	ICSA [ICSPA] 3-BC□HB2M (BD□HB2M)	• P139 (P151)
	300~1000 (1000~2500)		1000/1000		ICSA [ICSPA] 3-BE□HB2M (BF□HB2M)	• P157 (P167)
	200~800 (800~2000)		1000/1000		ICSA [ICSPA] 3-BC□HB2M (BD□HB2M)	• P139 (P151)
	300~1000 (1000~2500)		1000/1000		ICSA [ICSPA] 3-BE□HB2M (BF□HB2M)	• P157 (P167)
	300~1000 (1000~2500)		1000/1000		ICSA [ICSPA] 3-BE□HB2M (BF□HB2M)	• P157 (P167)
	1000~2500		1000/1000		ICSA [ICSPA] 3-G1JHB2M	• P203
			1000/1000		ICSA [ICSPA] 3-G2JHB2M	• P209
	200~800 (800~2000)		1000/1000		ICSA [ICSPA] 3-BC□HB3M (BD□HB3M)	• P141 (P153)
	200~800		500/500		ICSA [ICSPA] 3-BC□MB3M	• P147
	300~1000 (1000~2500)		1000/1000		ICSA [ICSPA] 3-BE□HB3M (BF□HB3M)	• P159 (P169)
	1000~2500		1000/1000		ICSA [ICSPA] 3-G1JHB3M	• P205
			1000/1000		ICSA [ICSPA] 3-G2JHB3M	• P211
	200~800 (800~2000)		1000/1000		ICSA [ICSPA] 3-BC□HB3M (BD□HB3M)	• P141 (P153)
	200~800		50/500		ICSA [ICSPA] 3-BC□MB3M	• P147
	300~1000 (1000~2500)		1000/1000		ICSA [ICSPA] 3-BE□HB3M (BF□HB3M)	• P159 (P169)
	1000~2500		1000/1000		ICSA [ICSPA] 3-G1JHB3M	• P205
			1000/1000		ICSA [ICSPA] 3-G2JHB3M	• P211
	200~800 (800~2000)		1000/1000		ICSA [ICSPA] 3-BC□HB3M (BD□HB3M)	• P141 (P153)
	200~800		500/500		ICSA [ICSPA] 3-BC□MB3M	• P147
→	300~1000 (1000~2500)	→	1000/1000	→	ICSA [ICSPA] 3-BE□HB3M (BF□HB3M)	• P159 (P169)
	1000~2500		1000/1000		ICSA [ICSPA] 3-G1JHB3M	• P205
			1000/1000		ICSA [ICSPA] 3-G2JHB3M	• P211
	200~800 (800~2000)		1000/1000		ICSA [ICSPA] 3-BC□HB3M (BD□HB3M)	• P141 (P153)
	200~800		500/500		ICSA [ICSPA] 3-BC□MB3M	• P147
	300~1000 (1000~2500)		1000/1000		ICSA [ICSPA] 3-BE□HB3M (BF□HB3M)	• P159 (P169)
	1000~2500		1000/1000		ICSA [ICSPA] 3-G1JHB3M	• P205
			1000/1000		ICSA [ICSPA] 3-G2JHB3M	• P211
	300~1000 (1000~2500)		1000/1000		ICSA [ICSPA] 3-BE□HB3M (BF□HB3M)	• P159 (P169)
	1000~2500		1000/1000		ICSA [ICSPA] 3-G1JHB3M	• P205
			1000/1000		ICSA [ICSPA] 3-G2JHB3M	• P211
	1000~2500		1000/1000		ICSA [ICSPA] 3-G1JHB3M	• P205
			1000/1000		ICSA [ICSPA] 3-G2JHB3M	• P211

[Z-Axis Base Mount] ①

② ③ ④ ⑤

Z-Axis Speed Type	Z-Axis			Y-Axis Stroke (mm)								
	Load Capacity	Stroke (mm)			100	200	300	400	500	600	700	800~1200
Low-Speed Type 200~250 mm/sec	14kg or less	100	→	Load Capacity (kg)	13.0	11.4	6.9	2.9	–	–	–	–
					7.1		6.9	6.2	–	–	–	–
					14.0				–	–	–	–
					14.0				13.5	–	–	–
					–	14.0						–
		200			12.4	10.8	6.3	2.3	–	–	–	–
					6.1		5.9	5.2	–	–	–	–
					14.0				–	–	–	–
					14.0				12.9	–	–	–
					–	14.0					13.5	–
		300			11.8	10.2	5.7	1.7	–	–	–	–
					5.6		5.4	4.7	–	–	–	–
					14.0				–	–	–	–
					14.0				12.3	–	–	–
					–	14.0					12.9	
		400			13.5				11.7	–	–	–
					–	14.0					12.3	–
		500			–	14.0					11.7	–
		100~600			–	–	–	–	14.0			–
		100~600			–	–	–	–	–	–	–	14.0
	19kg or less	100	→	Load Capacity (kg)	15.9			12.7	–	–	–	
					10.7				9.4	–	–	–
					19.0	18.5	17.5	12.5	9.4	–	–	–
					–	19.0			18.0	13.6	10.0	–
					–	–	–	–	19.0			–
					–	–	–	–	–	–	–	19.0
		200			14.6			11.4	–	–	–	–
					9.7				8.4	–	–	–
					18.5	17.5	16.5	11.5	8.4	–	–	–
					–	19.0			17.0	12.6	9.0	–
					–	–	–	–	19.0			–
					–	–	–	–	–	–	–	19.0
		300			13.8			10.6	–	–	–	–
					8.6				7.3	–	–	–
					17.4	16.4	15.4	10.4	7.3	–	–	–
					–	19.0			15.9	11.5	7.9	–
					–	–	–	–	19.0			
					–	–	–	–	–	–	–	19.0
		400			12.8			9.6	–	–	–	–
					7.6				6.3	–	–	–
					16.4	15.4	14.4	9.4	6.3	–	–	–
					–	19.0			14.9	10.5	6.9	–
					–	–	–	–	18.7			–
					–	–	–	–	–	–	–	18.7
		500			–	19.0			13.8	9.4	5.8	–
					–	–	–	–	17.6			–
					–	–	–	–	–	–	–	17.6
		100~600			–	–	–	–	16.6			–
		100~600			–	–	–	–	–	–	–	16.6

⑥ *( ) is for the type BD☐HB☐☐ or BF☐HB☐☐.

⑦

⑧ Applicable Type

X-Axis Stroke (mm)	Maximum Speed (X-axis / Y-axis) (mm/sec)	Configuration Type	Page
100~600	400/400	ICSA [ICSPA] 3-BA☐MB1L	・ P129
200~800	1000/1000	ICSA [ICSPA] 3-BB☐HB1L	・ P131
200~800	500/400	ICSA [ICSPA] 3-BB☐MB1L	・ P133
200~800 (800~2000)	1000/1000	ICSA [ICSPA] 3-BC☐HB1L (BD☐HB1L)	・ P137 (P149)
300~1000 (1000~2500)	1000/1000	ICSA [ICSPA] 3-BE☐HB1L (BF☐HB1L)	・ P155 (P165)
100~600	400/400	ICSA [ICSPA] 3-BA☐MB1L	・ P129
200~800	1000/1000	ICSA [ICSPA] 3-BB☐HB1L	・ P131
200~800	500/400	ICSA [ICSPA] 3-BB☐MB1L	・ P133
200~800 (800~2000)	1000/1000	ICSA [ICSPA] 3-BC☐HB1L (BD☐HB1L)	・ P137 (P149)
300~1000 (1000~2500)	1000/1000	ICSA [ICSPA] 3-BE☐HB1L (BF☐HB1L)	・ P155 (P165)
100~600	400/400	ICSA [ICSPA] 3-BA☐MB1L	・ P129
200~800	1000/1000	ICSA [ICSPA] 3-BB☐HB1L	・ P131
200~800	500/400	ICSA [ICSPA] 3-BB☐MB1L	・ P133
200~800 (800~2000)	1000/1000	ICSA [ICSPA] 3-BC☐HB1L (BD☐HB1L)	・ P137 (P149)
300~1000 (1000~2500)	1000/1000	ICSA [ICSPA] 3-BE☐HB1L (BF☐HB1L)	・ P155 (P165)
200~800	1000/1000	ICSA [ICSPA] 3-BC☐HB1L (BD☐HB1L)	・ P137 (P149)
300~1000 (1000~2500)	1000/1000	ICSA [ICSPA] 3-BE☐HB1L (BF☐HB1L)	・ P155 (P165)
300~1000 (1000~2500)	1000/1000	ICSA [ICSPA] 3-BE☐HB1L (BF☐HB1L)	・ P155 (P165)
1000~2500	1000/1000	ICSA [ICSPA] 3-G1JHB1L	・ P201
	1000/1000	ICSA [ICSPA] 3-G2JHB1L	・ P207
200~800	1000/1000	ICSA [ICSPA] 3-BB☐MB2L	・ P135
200~800 (800~2000)	500/500	ICSA [ICSPA] 3-BC☐HB2L (BD☐HB2L)	・ P139 (P151)
200~800	1000/1000	ICSA [ICSPA] 3-BC☐MB2L	・ P145
300~1000 (1000~2500)	1000/1000	ICSA [ICSPA] 3-BE☐HB2L (BF☐HB2L)	・ P157 (P167)
1000~2500	1000/1000	ICSA [ICSPA] 3-G1JHB2L	・ P203
	500/400	ICSA [ICSPA] 3-G2JHB2L	・ P209
200~800	1000/1000	ICSA [ICSPA] 3-BB☐MB2L	・ P135
200~800	500/500	ICSA [ICSPA] 3-BC☐HB2L (BD☐HB2L)	・ P139 (P151)
200~800	1000/1000	ICSA [ICSPA] 3-BC☐MB2L	・ P145
300~1000 (1000~2500)	1000/1000	ICSA [ICSPA] 3-BE☐HB2L (BF☐HB2L)	・ P157 (P167)
1000~2500	1000/1000	ICSA [ICSPA] 3-G1JHB2L	・ P203
	500/400	ICSA [ICSPA] 3-G2JHB2L	・ P209
200~800	1000/1000	ICSA [ICSPA] 3-BB☐MB2L	・ P135
200~800 (800~2000)	500/500	ICSA [ICSPA] 3-BC☐HB2L (BD☐HB2L)	・ P139 (P151)
200~800	1000/1000	ICSA [ICSPA] 3-BC☐MB2L	・ P145
300~1000 (1000~2500)	1000/1000	ICSA [ICSPA] 3-BE☐HB2L (BF☐HB2L)	・ P157 (P167)
1000~2500	1000/1000	ICSA [ICSPA] 3-G1JHB2L	・ P203
	500/400	ICSA [ICSPA] 3-G2JHB2L	・ P209
200~800	1000/1000	ICSA [ICSPA] 3-BB☐MB2L	・ P135
200~800 (800~2000)	500/500	ICSA [ICSPA] 3-BC☐HB2L (BD☐HB2L)	・ P139 (P151)
200~800	1000/1000	ICSA [ICSPA] 3-BC☐MB2L	・ P145
300~1000 (1000~2500)	1000/1000	ICSA [ICSPA] 3-BE☐HB2L (BF☐HB2L)	・ P157 (P167)
1000~2500	1000/1000	ICSA [ICSPA] 3-G1JHB2L	・ P203
	1000/1000	ICSA [ICSPA] 3-G2JHB2L	・ P209
300~1000 (1000~2500)	1000/1000	ICSA [ICSPA] 3-BE☐HB2L (BF☐HB2L)	・ P157 (P167)
1000~2500	1000/1000	ICSA [ICSPA] 3-G1JHB2L	・ P203
	1000/1000	ICSA [ICSPA] 3-G2JHB2L	・ P209
1000~2500	1000/1000	ICSA [ICSPA] 3-G1JHB2L	・ P203
	1000/1000	ICSA [ICSPA] 3-G2JHB2L	・ P209

[Z-Axis Slider Mount] ①

② ③ ④ ⑤

Z-Axis Speed Type	Z-Axis			Y-Axis Stroke (mm)								
	Load Capacity	Stroke (mm)			100	200	300	400	500	600	700	800~1200
Mid-Speed Type 400~500 mm/sec	3kg or less	100		Load Capacity (kg)	3.0				–	–	–	–
					3.0				–	–	–	–
					3.0				–	–	–	–
					3.0					–	–	–
					–	3.0						–
					–	–	–	–	3.0			–
					–	–	–	–	–	–	–	3.0
		200			2.3				–	–	–	–
					2.3				–	–	–	–
					2.3				–	–	–	–
					2.3					–	–	–
					–	2.3						–
					–	–	–	–	2.3			
					–	–	–	–	–	–	–	2.3
		300			1.6				–	–	–	–
					1.6				–	–	–	–
					1.6				–	–	–	–
					1.6					–	–	–
					–	1.6						–
					–	–	–	–	1.6			–
					–	–	–	–	–	–	–	1.6
		400			–	0.9						–
					–	–	–	–	0.9			–
					–	–	–	–	–	–	–	0.9
	12kg or less	100		Load Capacity (kg)	10.0				8.7	–	–	–
					–	11.9					10.5	–
					–	–	–	–	11.9			–
					–	–	–	–	–	–	–	11.9
		200			9.0				7.7	–	–	–
					–	10.9					9.5	–
					–	–	–	–	10.9			–
					–	–	–	–	–	–	–	10.9
		300			8.0				6.7	–	–	–
					–	9.9					8.5	–
					–	–	–	–	9.9			–
					–	–	–	–	–	–	–	9.9
		400			–	8.9					7.5	–
					–	–	–	–	8.9			–
					–	–	–	–	–	–	–	8.9
		500			–	–	–	–	7.8			19.0
					–	–	–	–	–	–	–	7.8

⑥ *( ) is for the type BD□HB□□ or BF□HB□□.

	⑦ X-Axis Stroke (mm)		Maximum Speed (X-axis / Y-axis) (mm/sec)		⑧ Applicable Type: Configuration Type	Page
	100~600		400/400		ICSA [ICSPA] 3-BA□MS1M	• P171
	200~800		1000/800		ICSA [ICSPA] 3-BB□HS1M	• P173
	200~800		500/500		ICSA [ICSPA] 3-BB□MS1M	• P175
	200~800 (800~2000)		1000/1000		ICSA [ICSPA] 3-BC□HS1M (BD□HS1M)	• P177 (P185)
	300~1000 (1000~2500)		1000/1000		ICSA [ICSPA] 3-BE□HS1M (BF□HS1M)	• P189 (P197)
	1000~2500		1000/1000		ICSA [ICSPA] 3-G1JHS1M	• P213
			1000/1000		ICSA [ICSPA] 3-G2JHS1M	• P219
	100~600		400/400		ICSA [ICSPA] 3-BA□MS1M	• P171
	200~800		1000/800		ICSA [ICSPA] 3-BB□HS1M	• P173
	200~800		500/500		ICSA [ICSPA] 3-BB□MS1M	• P175
	200~800 (800~2000)		1000/1000		ICSA [ICSPA] 3-BC□HS1M (BD□HS1M)	• P177 (P185)
→	300~1000 (1000~2500)	→	1000/1000	→	ICSA [ICSPA] 3-BE□HS1M (BF□HS1M)	• P189 (P197)
	1000~2500		1000/1000		ICSA [ICSPA] 3-G1JHS1M	• P213
			1000/1000		ICSA [ICSPA] 3-G2JHS1M	• P219
	100~600		400/400		ICSA [ICSPA] 3-BA□MS1M	• P171
	200~800		1000/800		ICSA [ICSPA] 3-BB□HS1M	• P173
	200~800		500/500		ICSA [ICSPA] 3-BB□MS1M	• P175
	200~800 (800~2000)		1000/1000		ICSA [ICSPA] 3-BC□HS1M (BD□HS1M)	• P177 (P185)
	300~1000 (1000~2500)		1000/1000		ICSA [ICSPA] 3-BE□HS1M (BF□HS1M)	• P189 (P197)
	1000~2500		1000/1000		ICSA [ICSPA] 3-G1JHS1M	• P213
			1000/1000		ICSA [ICSPA] 3-G2JHS1M	• P219
	300~1000 (1000~2500)		1000/1000		ICSA [ICSPA] 3-BE□HS1M (BF□HS1M)	• P189 (P197)
	1000~2500		1000/1000		ICSA [ICSPA] 3-G1JHS1M	• P213
			1000/1000		ICSA [ICSPA] 3-G2JHS1M	• P219
	200~800 (800~2000		1000/1000		ICSA [ICSPA] 3-BC□HS3M (BD□HS3M)	• P179 (P187)
	300~1000 (1000~2500)		1000/1000		ICSA [ICSPA] 3-BE□HS3M (BF□HS3M)	• P191 (P199)
	1000~2500		1000/1000		ICSA [ICSPA] 3-G1JHS3M	• P217
			1000/1000		ICSA [ICSPA] 3-G2JHS3M	• P223
	200~800 (800~2000)		1000/1000		ICSA [ICSPA] 3-BC□HS3M (BD□HS3M)	• P179 (P187)
	300~1000 (1000~2500)		1000/1000		ICSA [ICSPA] 3-BE□HS3M (BF□HS3M)	• P191 (P199)
	1000~2500		1000/1000		ICSA [ICSPA] 3-G1JHS3M	• P217
			1000/1000		ICSA [ICSPA] 3-G2JHS3M	• P223
→	200~800 (800~2000)	→	1000/1000	→	ICSA [ICSPA] 3-BC□HS3M (BD□HS3M)	• P179 (P187)
	300~1000 (1000~2500)		1000/1000		ICSA [ICSPA] 3-BE□HS3M (BF□HS3M)	• P191 (P199)
	1000~2500		1000/1000		ICSA [ICSPA] 3-G1JHS3M	• P217
			1000/1000		ICSA [ICSPA] 3-G2JHS3M	• P223
	300~1000 (1000~2500)		1000/1000		ICSA [ICSPA] 3-BE□HS3M (BF□HS3M)	• P191 (P199)
	1000~2500		1000/1000		ICSA [ICSPA] 3-G1JHS3M	• P217
			1000/1000		ICSA [ICSPA] 3-G2JHS3M	• P223
			1000/1000		ICSA [ICSPA] 3-G1JHS3M	• P217
			1000/1000		ICSA [ICSPA] 3-G2JHS3M	• P223

[Z-Axis Slider Mount] ①

② ③ ④ ⑤

Z-Axis Speed Type	Z-Axis			Y-Axis Stroke (mm)							
	Load Capacity	Stroke (mm)	Load Capacity (kg)	100	200	300	400	500	600	700	800~1200
Low-Speed Type 400~500 mm/sec	11 kg or less	100		11.0		7.6	3.6	–	–	–	–
				7.2		7.0	6.3	–	–	–	–
				11.0				–	–	–	–
				11.0					–	–	–
				–	11.0						–
				–	–	–	–	11.0			–
				–	–	–	–	–	–	–	11.0
		200		10.3		6.9	2.9	–	–	–	–
				6.5		6.3	5.6	–	–	–	–
				10.3				–	–	–	–
				10.3					–	–	–
				–	10.3						–
				–	–	–	–	10.3			
				–	–	–	–	–	–	–	10.3
		300		9.6		6.2	2.2	–	–	–	–
				5.8		5.6	4.9	–	–	–	–
				9.6				–	–	–	–
				9.6					–	–	–
				–	9.6						–
				–	–	–	–	9.6			–
				–	–	–	–	–	–	–	9.6
		400		–	8.9						–
				–	–	–	–	8.9			–
				–	–	–	–	–	–	–	8.9

6 *( ) is for the type BD□HB□□ or BF□HB□□.

7

8 Applicable Type

X-Axis Stroke (mm)	Maximum Speed (X-axis / Y-axis) (mm/sec)	Configuration Type	Page
100~600	400~400	ICSA [ICSPA] 3-BA□MS1L	· P171
200~800	1000~800	ICSA [ICSPA] 3-BB□HS1L	· P173
200~800	500~400	ICSA [ICSPA] 3-BB□MS1L	· P175
200~800 (800~2000)	1000~1000	ICSA [ICSPA] 3-BC□HS1L (BD□HS1L)	· P177 (P185)
300~1000 (1000~2500)	1000~1000	ICSA [ICSPA] 3-BE□HS1L (BF□HS1L)	· P189 (P197)
1000~2500	1000~1000	ICSA [ICSPA] 3-G1JHS1L	· P213
	1000~1000	ICSA [ICSPA] 3-G2JHS1L	· P219
100~600	400~400	ICSA [ICSPA] 3-BA□MS1L	· P171
200~800	1000~800	ICSA [ICSPA] 3-BB□HS1L	· P173
200~800	500~400	ICSA [ICSPA] 3-BB□MS1L	· P175
200~800 (800~2000)	1000~1000	ICSA [ICSPA] 3-BC□HS1L (BD□HS1L)	· P177 (P185)
300~1000 (1000~2500)	1000~1000	ICSA [ICSPA] 3-BE□HS1L (BF□HS1L)	· P189 (P197)
1000~2500	1000~1000	ICSA [ICSPA] 3-G1JHS1L	· P213
	1000~1000	ICSA [ICSPA] 3-G2JHS1L	· P219
100~600	400~400	ICSA [ICSPA] 3-BA□MS1L	· P171
200~800	1000~800	ICSA [ICSPA] 3-BB□HS1L	· P173
200~800	500~400	ICSA [ICSPA] 3-BB□MS1L	· P175
200~800 (800~2000)	1000~1000	ICSA [ICSPA] 3-BC□HS1L (BD□HS1L)	· P177 (P185)
300~1000 (1000~2500)	1000~1000	ICSA [ICSPA] 3-BE□HS1L (BF□HS1L)	· P189 (P197)
1000~2500	1000~1000	ICSA [ICSPA] 3-G1JHS1L	· P213
	1000~1000	ICSA [ICSPA] 3-G2JHS1L	· P219
300~1000 (1000~2500)	1000~1000	ICSA [ICSPA] 3-BE□HS1L (BF□HS1L)	· P189 (P197)
1000~2500	1000~1000	ICSA [ICSPA] 3-G1JHS1L	· P213
	1000~1000	ICSA [ICSPA] 3-G2JHS1L	· P219

Cartesian Robot Series Points to Note

Notes on Catalog Specifications

Speed

"Speed" refers to the specified speed at which the actuator slider will move. The slider accelerates from a stationary state, and once the specified speed is reached it will maintain that speed until the specified position (immediately before the target position), where it will begin decelerating to stop at the target position.

< Caution >

① With all Cartesian robot models, the maximum speed will not change even when the load placed on the slider is changed.
② The time needed to reach the specified speed will vary according to the acceleration (deceleration).
③ If the travel distance is short, the specified speed may not be reached.
④ With a long-stroke axis, the maximum speed will drop to avoid reaching a dangerous speed.
(If you are using a 600 or longer stroke, check the maximum speed for the applicable stroke.)
⑤ When calculating the travel time, consider acceleration, deceleration and stabilization periods in addition to the travel time at the specified speed. (Refer to pages 39 and 40 for the method to calculate travel time.)
⑥ Speed can be set in increments of 1 mm/sec in a program.

Acceleration/Deceleration

"Acceleration" refers to the rate of change of speed when the speed rises from zero (stationary state) to the specified speed.
"Deceleration" refers to the rate of change of speed when the specified speed drops to zero (stationary state).

< Caution >

① Increasing the acceleration (deceleration) will shorten the duration the actuator accelerates (decelerates) and decrease the travel time. However, doing so will also cause rapid acceleration (deceleration), resulting in increased shock.
② The load capacity of each type assumes operation at the rated acceleration and maximum speed.
(The rated acceleration is 0.3 G for the standard type and 0.15 G when the lead is 4 or 5 mm.)
③ The ICSA2/ICSPA2 supports a maximum acceleration of 1.0 G.
The load capacity will decrease when the specified acceleration is increased beyond the rated acceleration.
For the load capacity at a raised acceleration, refer to the table of load capacity by acceleration corresponding to each actuator type.
④ Acceleration can be set (specified) in increments of 0.01 G for each position movement in a program.

Positioning Repeatability

"Positioning repeatability" refers to the positioning accuracy of repeated movements to a pre-stored position.
This is not the same as "absolute positioning accuracy," so exercise caution.

Home

The home is set on the motor side for the standard specification, or on the counter-motor side for the reversed-home specification.

< Caution >

- The incremental actuator always requires homing every time the power is reconnected. (Homing is not required for the absolute type even after reconnecting the power.)
- During homing the slider (or rod or arm) will move to the mechanical end before reversing, so be careful to prevent contact with surrounding parts.
- Note that changing the home position from the standard to reverse homing specification will require the actuator to be returned to IAI for adjustment.

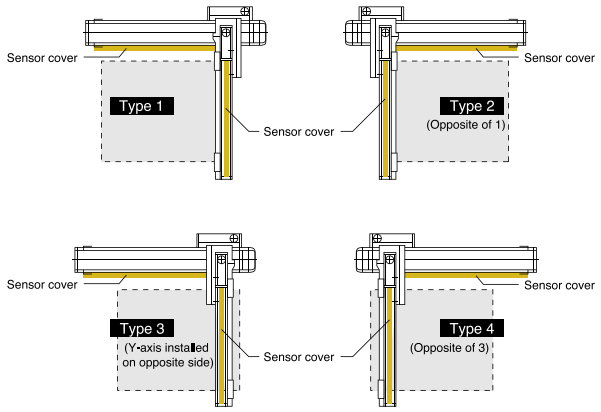
Duty

IAI recommends that our actuators be used at a duty of 50% or less as a guideline in view of the relationship of service life and accuracy.

$$\text{Duty (\%)} = \frac{\text{Acceleration / Deceleration Time}}{\text{Motion time + Inactivity}} \times 100$$

Options

If the creep sensor (C) or home limit switch (L) is specified, a sensor cover will be provided on the side face of each axis. Therefore, be careful to prevent contact between each cover and peripheral equipment.
As a rule, a sensor cover is installed on the inside of the X-axis (Y-axis overhung direction), or the top side of the Y-axis. The installation position on the Z-axis will vary depending on the configuration pattern.
With a single-axis robot, the option codes will change when the sensor installation position is reversed (opposite side specification). With a Cartesian robot, however, the option codes need not be changed (only C and L are available).



[ICSA2/ICSPA2]

* In the standard specification the creep sensor (C) and home limit switch (L) are installed on the right side as viewed from the motor.

Configuration type	Configuration direction	X-axis installation side	Y-axis installation side	Z-axis installation side
XYB	1	Opposite side	Opposite side	—
	2	Standard	Standard	—
	3	Opposite side	Standard	—
	4	Standard	Opposite side	—
XYS	1	Opposite side	Standard	—
	2	Standard	Opposite side	—
	3	Opposite side	Opposite side	—
	4	Standard	Standard	—
XZ		Opposite side	—	Opposite side
YZ		—	Standard	Opposite side
XYG		Opposite side	Opposite side	—

Cartesian Robot Series Explanation of Model Specification Items

Cartesian robot series features two-axes and three-axes.
Refer to the right page for the explanation of each model specification item.
The selection range for each item will vary depending on the actuator type. For details, refer to the page corresponding to each actuator type.

	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)		(9)		(10)
Number of axes	Series		Type		Encoder type		Axis 1 (X-axis, Z-axis) Stroke (cm)	Axis 1 (X-axis, Z-axis) Options	Axis 2 (X-axis, Z-axis) Stroke (cm)	Axis 2 (X-axis, Z-axis) Options	Axis 3 (Z-axis) Stroke (cm)	Axis 3 (Z-axis) Options	Applicable controller		Cable length		Cable management between axis 1 and 2		Cable management between axis 2 and 3
2 axes	ICSA2 ICSPA2	-	BA□H BA□M BB□H BB□M BC□H BC□M BD□H BE□H BE□M BF□H SA□H SA□M S1C□H S1C□M SA□M S2C□H SG□M ZAH ZAM Z1CH Z1CM Z2CH ZDH ZGH ZHH YAH YAM YCH YCM YGH G1JH G2JH	-	A I	-	10 ~ 250	AQ B C L NM RT	10 ~ 120	AQ B C L NM RT			T1	-	3L 5L □L (Custom order)	-	CT SC	-	
3 axes	ICSA3 ICSPA3	-	BB□MB□□ BC□HB□□ BC□MB□□ BD□HB□□ BE□HB□□ BE□MB□□ BF□HB□□ G1JHB□□ G2JHB□□ BA□MS1□ BB□HS1□ BB□MS1□ BC□HS□□ BC□MS□□ BD□HS□□ BE□HS□□ BE□MS□□ BF□HS□□ G1JHS□□ G2JHS□□	-		-	10 ~ 250	AQ B C L NM RT	10 ~ 120	AQ B C L NM RT	10 ~ 60	AQ B C L NM RT		-		-	CT-CT SC-SC (CT-SC)		

* In the above model names, □ indicates the configuration direction (1 through 4) (refer to page 43).

(1) Series

Indicate the name of each series.

ICSA2: ISA Two-axes configuration
ICSPA2: ISPA Two-axes configuration
ICSA3: ISA Three-axes configuration
ICSPA3: ISPA Three-axes configuration

(2) Type

Indicate the configuration pattern, configuration direction, configuration model and speed type.

Two-Axes Configuration $\frac{B}{(1)}\ \frac{B}{(2)}\ \frac{1}{(3)}\ \frac{H}{(4)}$ Three-Axes Configuration $\frac{B}{(1)}\ \frac{B}{(2)}\ \frac{1}{(3)}\ \frac{H}{(4)}\ \frac{B}{(5)}\ \frac{1}{(6)}\ \frac{M}{(7)}$

(1) XY-axis configuration / component type (*1)	B:XYB Type / S: XYS Type / Z: XZ Type / Y: YZ Type / G: XYG Type
(2) XY-axis configuration / size type	A / B / C / 1C / 2C / D / E / F / G / 1J / 2J
(3) XY-axis configuration direction (*2)	1 / 2 / 3 / 4
(4) XY-axis speed type	H: High-speed type / M: Mid-speed type
(5) Z-axis installation type	B: Base mounted / S: Slider mounted
(6) Z-axis motor output	1: 60W / 2: 100W / 3: 200W
(7) Z-axis speed type	H: High-speed type / M: Mid-speed type / L: Low-speed type

(*1) B(XYB type) and G(XYG type) are available for three-axes configuration.
(*2) Specify only when XY-axis configuration type is B(XYB type) or S(XYS type).

(3) Encoder type

Indicate whether the encoder installed in the actuator is an “absolute type” or “incremental type.”

A: Absolute type	Since the current slider position will be retained after the power is turned off, homing is not required when the actuator is powered up.
I: Incremental type	Since the slider position data are cleared when the power is turned off, homing must be performed every time the actuator is powered up.

(4) Axis 1 details

Indicate the stroke of axis 1 of the two-axes configuration type, as well as an option(s) to be equipped on that axis.
Enter the stroke in centimeters (e.g., 500-mm stroke → 50).
When selecting multiple options, specify them in alphabetical order without a hyphen in between (e.g., AQ seal + Creep sensor + Limit switch + Reversed home specification→ AQCLNM).

* Refer to the explanation of single-axis robot models (page 13) for the details of options.

(5) Axis 2 details

Indicate the stroke of axis 2 of the two-axes configuration type, as well as an option(s) to be equipped on that axis.
Other details are the same as above.

(6) Axis 3 details

Indicate the stroke of axis 3 of the three-axes configuration type, as well as an option(s) to be equipped on that axis.
Other details are the same as above.

(7) Applicable controller

Indicate the type of controller to be used with the actuator.
T1: XSEL-J/K, E-Con, P-Driver
T2: XSEL-P/Q

(8) Cable length

Indicate the length of the motor/encoder cable connecting the axis-1 actuator to the controller.
Two standard lengths of 3L (3 m) and 5L (5 m) are available.
You can also specify a different length as a custom order.
(Maximum length is 20m)

(9) Cable management between axis 1 and 2

Indicate the cable management between axis 1 and 2.

SC: Self-standing cable
CT: Cable track

* The cable management between axis 1 and 2 for types below are available in cable track (CT).

BD□H, BF□H, BD□HB□□, BF□HB□□, G1JHB□□, G2JHB□□, BD□HS□□, BF□HS□□, G1JHS□□, G2JHS□□

(10) Cable management between axis 2 and 3

Indicate the cable management from axis 2 to axis 3.

SC: Self-standing cable
CT: Cable track

* The cable management between axis 2 and 3 is basically the same as that between axis 1 and 2 except the types listed to the left.

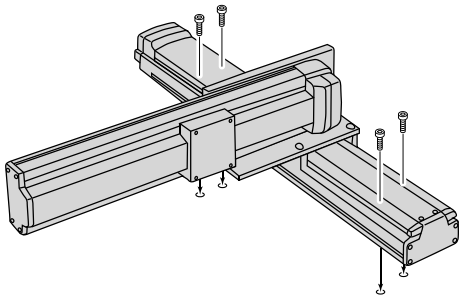
Cartesian Robots Installation Method ICSA2/ICSPA2/ICSA3/ICSPA3

Two-Axes Configuration

XYB type

■ Affix the actuators using the through holes provided on the bottom surface of the X-axis.

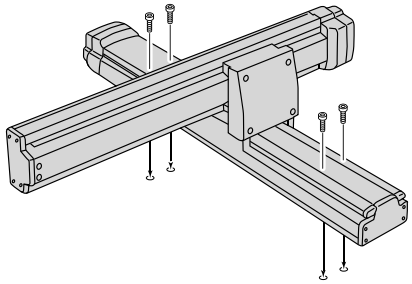
- BA□H, BA□M : ø7 (P15 ISA-SXM Refer to the bottom plan view.)
- BB□H, BB□M : ø9 (P18 ISA-MXM Refer to the bottom plan view.)
- BC□H, BC□M : ø9 (P19 ISA-MXM Refer to the bottom plan view.)
- BD□H, : ø9 (P20 ISA-MXMX Refer to the bottom plan view.)
- BE□H, BE□M : ø9 (P26 ISA-LXM Refer to the bottom plan view.)
- BF□H, : ø9 (P28 ISA-LXMX Refer to the bottom plan view.)



XYS type

■ Affix the actuators using the through holes provided on the bottom surface of the X-axis.

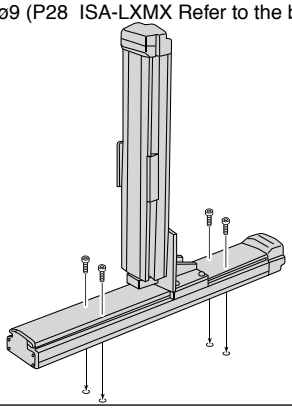
- SA□H, SA□M : ø7 (P15 ISA-SXM Refer to the bottom plan view.)
- S1C□H, S1C□M : ø9 (P18 ISA-MXM Refer to the bottom plan view.)
- S2C□H : ø9 (P19 ISA-MXM Refer to the bottom plan view.)



XZ type

■ Affix the actuators using the through holes provided on the bottom surface of the X-axis.

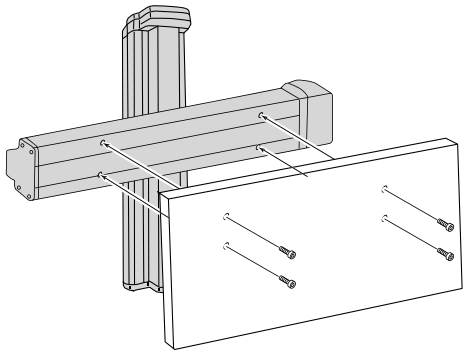
- ZAH, ZAM : ø7 (P15 ISA-SXM Refer to the bottom plan view.)
- Z1CH, Z1CM : ø9 (P18 ISA-MXM Refer to the bottom plan view.)
- Z2CH : ø9 (P19 ISA-MXM Refer to the bottom plan view.)
- ZDH, : ø9 (P20 ISA-MXMX Refer to the bottom plan view.)
- ZGH : ø9 (P26 ISA-LXM Refer to the bottom plan view.)
- ZHH : ø9 (P28 ISA-LXMX Refer to the bottom plan view.)



YZ type

■ Affix the actuators using the threaded holes provided on the bottom surface of the actuator.

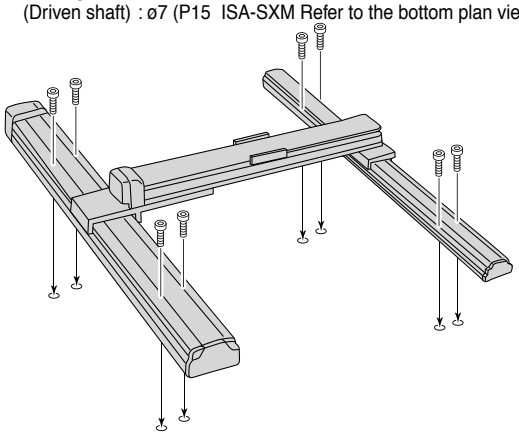
- YAH, YAM : M6 (P16 ISA-SYM Refer to the bottom plan view.)
- YCH, YCM : M8 (P22 ISA-MYM Refer to the bottom plan view.)
- YGH : M8 (P32 ISA-LYM Refer to the bottom plan view.)



XYG type

■ Affix the actuators using the through holes provided on the bottom surface of the X-axis (driving shart / driven shaft).

- G1JH (Driving shaft) : ø9 (P30 ISA-LXUWX Refer to the bottom plan view.)
  (Driven shaft) : ø7 (P15 ISA-SXM Refer to the bottom plan view.)
- G2JH (Driving shaft) : ø9 (P30 ISA-LXUWX Refer to the bottom plan view.)
  (Driven shaft) : ø7 (P15 ISA-SXM Refer to the bottom plan view.)

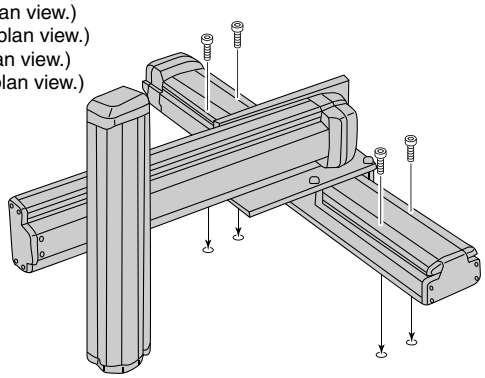


Three-Axes Configuration

XYB+Z Axis type

■ Affix the actuators using the through holes provided on the bottom surface of the X-axis.

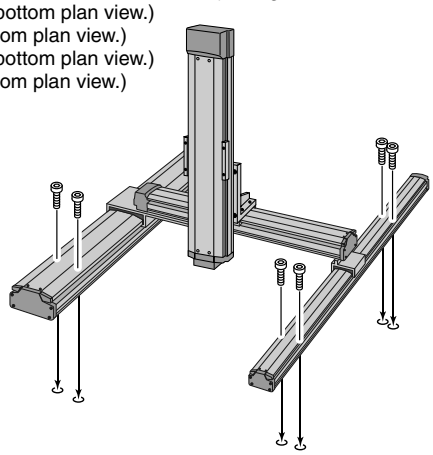
- BA□MS□□ : ø7 (P15 ISA-SXM Refer to the bottom plan view.)
- BB□□□□□ : ø9 (P18 ISA-MXM Refer to the bottom plan view.)
- BC□□□□□ : ø9 (P19 ISA-MXM Refer to the bottom plan view.)
- BD□□□□□ : ø9 (P20 ISA-MXMX Refer to the bottom plan view.)
- BE□□□□□ : ø9 (P26 ISA-LXM Refer to the bottom plan view.)
- BF□□□□□ : ø9 (P28 ISA-LXMX Refer to the bottom plan view.)



XYG+Z Axis type

■ Affix the actuators using the through holes provided on the bottom surface of the X-axis (driving shaft / driven shaft).

- G1JH□□□ (Driving shaft) : ø9 (P30 ISA-LXUWX Refer to the bottom plan view.)
  (Driven shaft) : ø7 (P15 ISA-SXM Refer to the bottom plan view.)
- G2JH□□□ (Driving shaft) : ø9 (P30 ISA-LXUWX Refer to the bottom plan view.)
  (Driven shaft) : ø7 (P15 ISA-SXM Refer to the bottom plan view.)



Cartesian Robots Series System Configurations

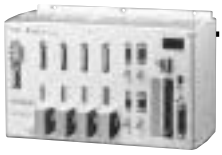
Actuator

ICSA2 Series
ICSPA2 Series
ICSA3 Series
ICSPA3 Series

Motor Cable
Encoder Cable

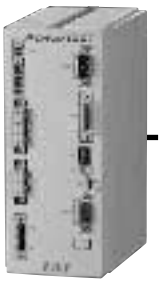
Controller

X-SEL



(Refer to page 241)

P-Driver



(Refer to page 234)

* Operating with P-Driver requires as many P-Driver controller as the number of axis to operate.

Options

Teaching pendant
<IA-T-X>

PC Software
<IA-101-X-MW>
<IA-101-X-CW>

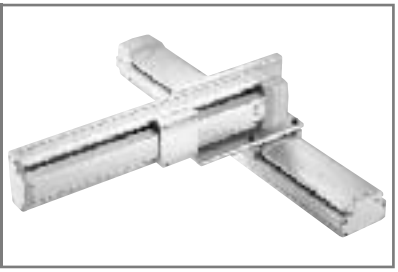
(Refer to page 251)

PC Software
<PDR-101-MW>

(Refer to page 239)

ICSA2-BA□H Cartesian Robot: X-Y 2-Axes Configuration, XYB (Y-Axis Base Mount) Type

ICSPA2-BA□H Cartesian Robot: X-Y 2-Axes Configuration, XYB (Y-Axis Base Mount) Type High-Precision Specification



Type: XYB type

Stroke: X-axis: 100~600mm Y-axis: 100~400mm

Load capacity: 5.2kg ~ 3.1kg

• Model specification items

Series	Type	Encoder type	X-axis stroke + options	Y-axis stroke + options	Applicable controller	Cable length	Cable management
ICSA2 –	BA1H –	A –	60AQLNM –	40AQL –	T1 –	5L –	SC

* Refer to page 61 for the details of model specification items.

Models/Specifications

Model	Axis configuration		Encoder type	Motor output (W)	Lead (mm)	Stroke (mm) In increments of 100mm	Speed (mm/s)	Load capacity (Note 1)	Positioning repeatability (mm) (Note 2)
ICSA2 [ICSPA2] -BA□H-A-• •• •• •-• •• •• •-T1-◦ -◦	X-axis	ISA [ISPA] -SXM-A-60-16-• •• •• •-T1	Absolute	60	16	100 ~ 600	1 ~ 800	5.2 ~ 3.1	±0.02 [±0.01]
	Y-axis	ISA [ISPA] -SYM-A-60-16-• •• •• •-T1				100 ~ 400			
ICSA2 [ICSPA2] -BA□H-I-• •• •• •-• •• •• •-T1-◦ -◦	X-axis	ISA [ISPA] -SXM-I-60-16-• •• •• •-T1	Incremental			100 ~ 600			
	Y-axis	ISA [ISPA] -SYM-I-60-16-• •• •• •-T1				100 ~ 400			

* In the above model names, □ indicates the configuration direction, • •• •• the stroke/applicable options (stroke is specified in centimeters), ◦ •the cable length and ◦ the wiring.

Options

Name	Code	Page	Remarks
AQ seal	AQ	• •P13	
Brake	B	• •P13	
Creep sensor	C	• •P13	
Home limit switch	L	• •P14	
Reverse homing specification	NM	• •P14	
Guide with ball-retaining mechanism	RT	• •P14	

Common Specifications

Drive system (Note 3)	Ball screw, rolled C10 [equivalent to rolled C5]
Backlash (Note 4)	0.05mm or less [0.02mm or less]
Guide	Integrated with base
Base	Material: Aluminum with white alumite treatment
Cable length (Note 5)	3L: 3m, 5L: 5m, □L : Length specification
Cable management	SC: Self-standing cable CT: Cable track

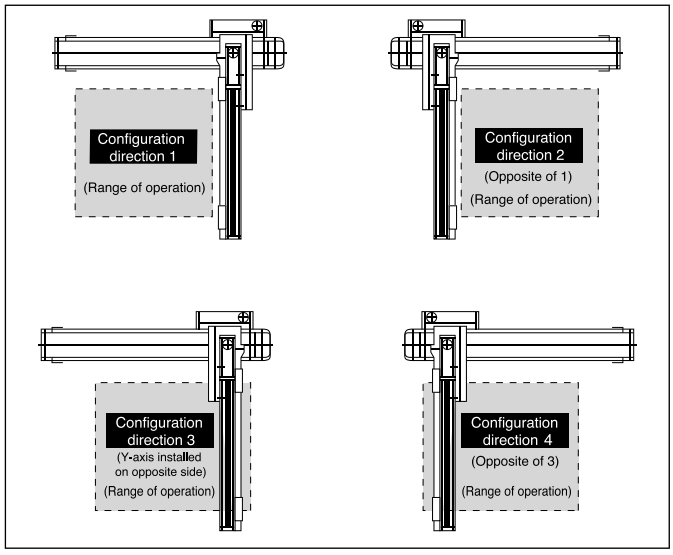
Load Capacity by Acceleration (kg)

Acceleration (G) \ Y-axis stroke (mm)	100	200	300	400
0.3	5.2	4.5	3.8	3.1
0.4	2.2	1.5	0.8	0.1
0.5	0.2			
0.6				
0.7				
0.8				
0.9				
1.0				

Maximum Speed by Stroke (mm/sec)

Axis \ Stroke (mm)	100 ~ 400	500 ~ 600
X-axis	800	
Y-axis	800	–

Configuration direction



Applicable Controller Specifications

Applicable controller	Controller type	Model	Page
X-SEL	General-purpose type	XSEL-K-2-60□-60□-□-□□□-□-□	• P241
	Compact type	XSEL-J-2-60□-60□-□-□□□-□-□	• P241

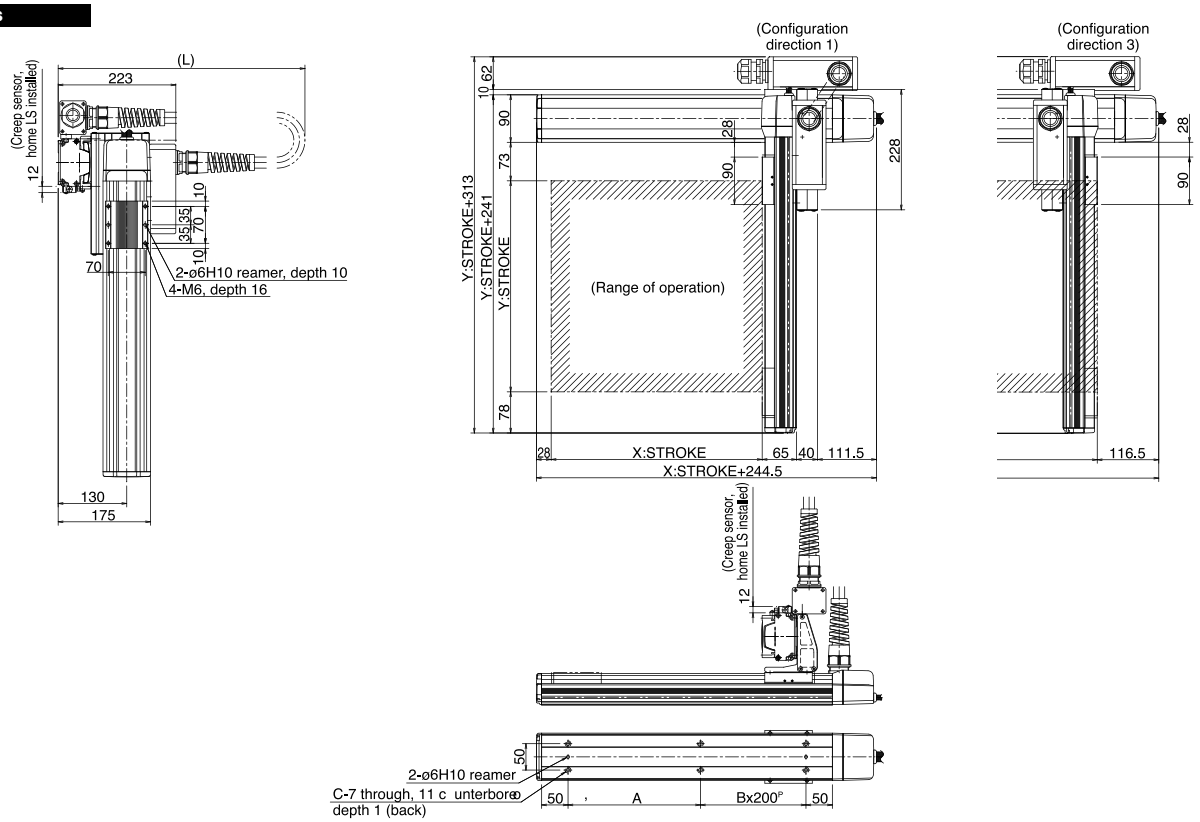
Caution

(Note 1) The load capacity assumes operation at the rated acceleration (0.3 G). The actuator can be operated at accelerations beyond the rated acceleration, but the load capacity will decrease (refer to the table of load capacity by acceleration).
(Notes 2, 3, 4) The figures in brackets apply to the ICSPA2.
(Note 5) The cable length measures from the X-axis connector box to the controller. The standard lengths are 3 m and 5 m, but other lengths can also be specified in meters up to 20 m (e.g., 10L = 10 m).

* Refer to page 59 for other points to note.

Self-standing Cable Specification (Cable Management Code: SC)

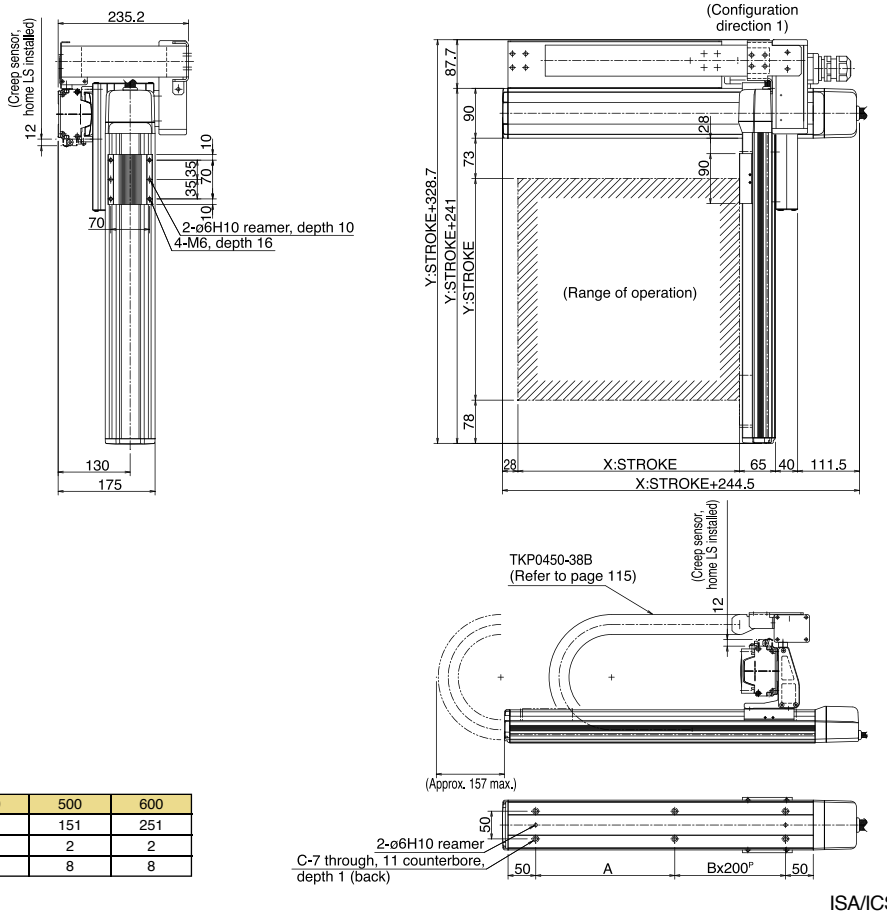
Dimensions



X stroke	100	200	300	400	500	600
L	(500)	(550)	(600)	(650)	(700)	(750)
A	151	251	151	251	151	251
B	0	0	1	1	2	2
C	4	4	6	6	8	8

Cable Track Specification (Cable Management Code: CT)

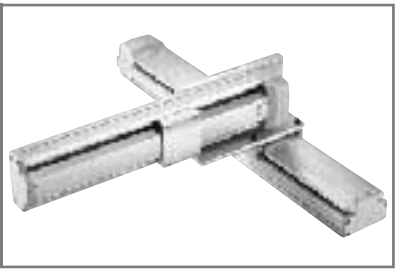
Dimensions



X stroke	100	200	300	400	500	600
A	151	251	151	251	151	251
B	0	0	1	1	2	2
C	4	4	6	6	8	8

ICSA2-BA□M Cartesian Robot: X-Y 2-Axes Configuration, XYB (Y-Axis Base Mount) Type

ICSPA2-BA□M Cartesian Robot: X-Y 2-Axes Configuration, XYB (Y-Axis Base Mount) Type High-Precision Specification



Type	XYB type	Stroke	X-axis: 100~600mm Y-axis: 100~400mm	Load capacity	18.2kg ~ 8.1kg

■ Model specification items

Series	Type	Encoder type	X-axis stroke + options	Y-axis stroke + options	Applicable controller	Cable length	Cable management
ICSA2 –	BA1M –	A –	60AQLNM –	40AQL –	T1 –	5L –	SC

* Refer to page 61 for the details of model specification items.

Models/Specifications

Model	Axis configuration		Encoder type	Motor output (W)	Lead (mm)	Stroke (mm) In increments of 100mm	Speed (mm/s)	Load capacity (Note 1)	Positioning repeatability (mm) (Note 2)
ICSA2 [ICSPA2] -BA□M-A-✻✻✻-✻✻✻-T1-△-○	X-axis	ISA [ISPA] -SXM-A-60-8-✻✻✻-T1	Absolute	60	8	100 ~ 600	1 ~ 400	18.2 ~ 8.1	±0.02 [±0.01]
	Y-axis	ISA [ISPA] -SYM-A-60-8-✻✻✻-T1				100 ~ 400			
ICSA2 [ICSPA2] -BA□M-I-✻✻✻-✻✻✻-T1-△-○	X-axis	ISA [ISPA] -SXM-I-60-8-✻✻✻-T1	Incremental			100 ~ 600			
	Y-axis	ISA [ISPA] -SYM-I-60-8-✻✻✻-T1				100 ~ 400			

* In the above model names, □ indicates the configuration direction, ✻✻✻ the stroke/applicable options (stroke is specified in centimeters), △ the cable length and ○ the wiring.

Options

Name	Code	Page	Remarks
AQ seal	AQ	➔ P13	
Brake	B	➔ P13	
Creep sensor	C	➔ P13	
Home limit switch	L	➔ P14	
Reverse homing specification	NM	➔ P14	
Guide with ball-retaining mechanism	RT	➔ P14	

Common Specifications

Drive system (Note 3)	Ball screw, rolled C10 [equivalent to rolled C5]
Backlash (Note 4)	0.05mm or less [0.02mm or less]
Guide	Integrated with base
Base	Material: Aluminum with white alumite treatment
Cable length (Note 5)	3L: 3m, 5L: 5m, □L : Length specification
Cable management	SC: Self-standing cable CT: Cable track

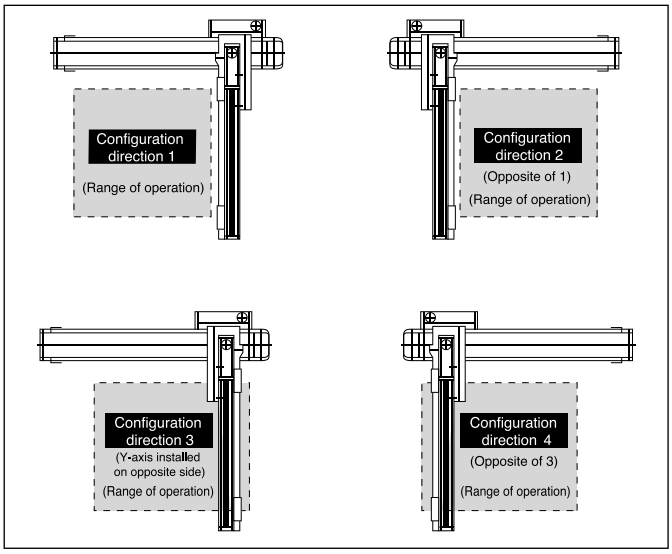
Load Capacity by Acceleration (kg)

Acceleration (G) \ Y-axis stroke (mm)	100	200	300	400
0.3	18.2	16.6	12.1	8.1
0.4	11.7	11	10.3	8.1
0.5	8.2	7.5	6.8	6.1
0.6	5.2	4.5	3.8	3.1
0.7				
0.8				
0.9				
1.0				

Maximum Speed by Stroke (mm/sec)

Axis \ Stroke (mm)	100 ~ 400	500 ~ 600
X-axis	400	
Y-axis	400	–

Configuration direction



Applicable Controller Specifications

Applicable controller	Controller type	Model	Page
X-SEL	General-purpose type	XSEL-K-2-60□-60□-□-□□□-□-□	➔P131
	Compact type	XSEL-J-2-60□-60□-□-□□□-□-□	➔P131

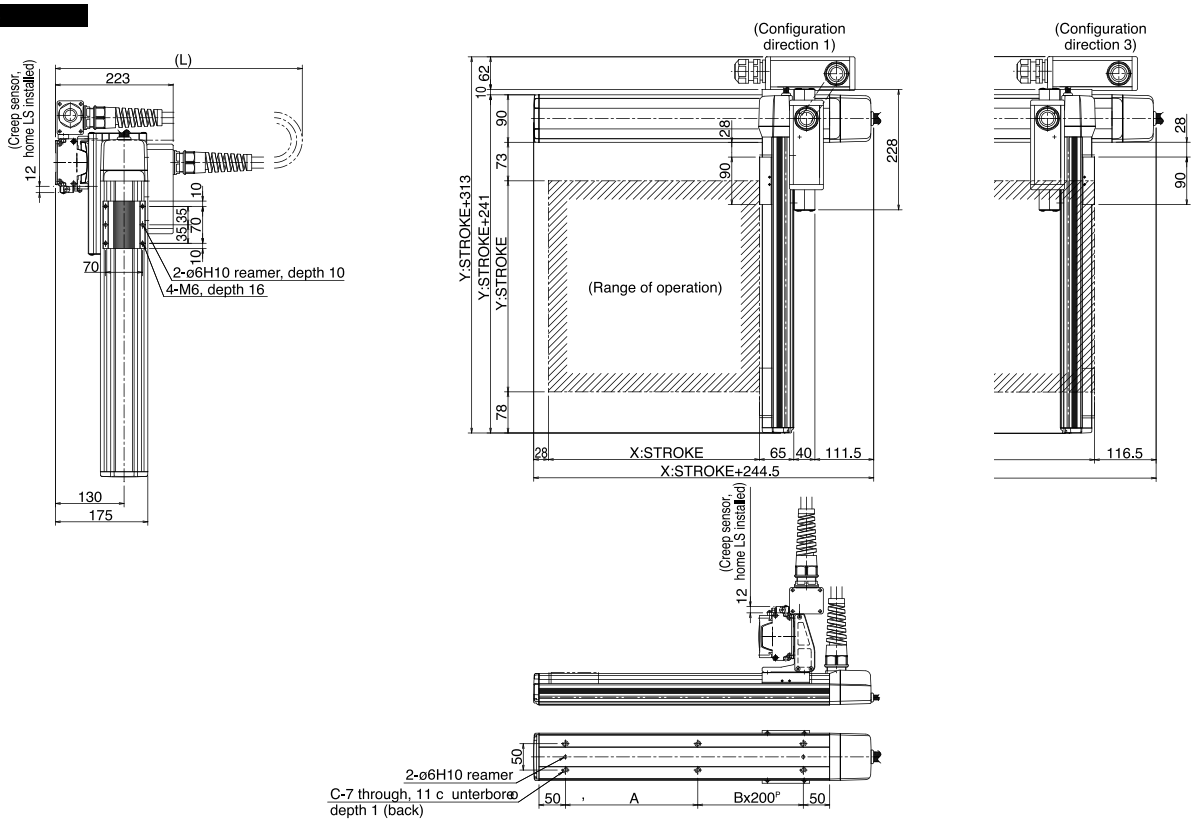
Caution

(Note 1) The load capacity assumes operation at the rated acceleration (0.3 G). The actuator can be operated at accelerations beyond the rated acceleration, but the load capacity will decrease (refer to the table of load capacity by acceleration).
(Notes 2, 3, 4) The figures in brackets apply to the ICSPA2.
(Note 5) The cable length measures from the X-axis connector box to the controller. The standard lengths are 3 m and 5 m, but other lengths can also be specified in meters up to 20 m (e.g., 10L = 10 m).

* Refer to page 59 for other points to note.

Self-standing Cable Specification (Cable Management Code: SC)

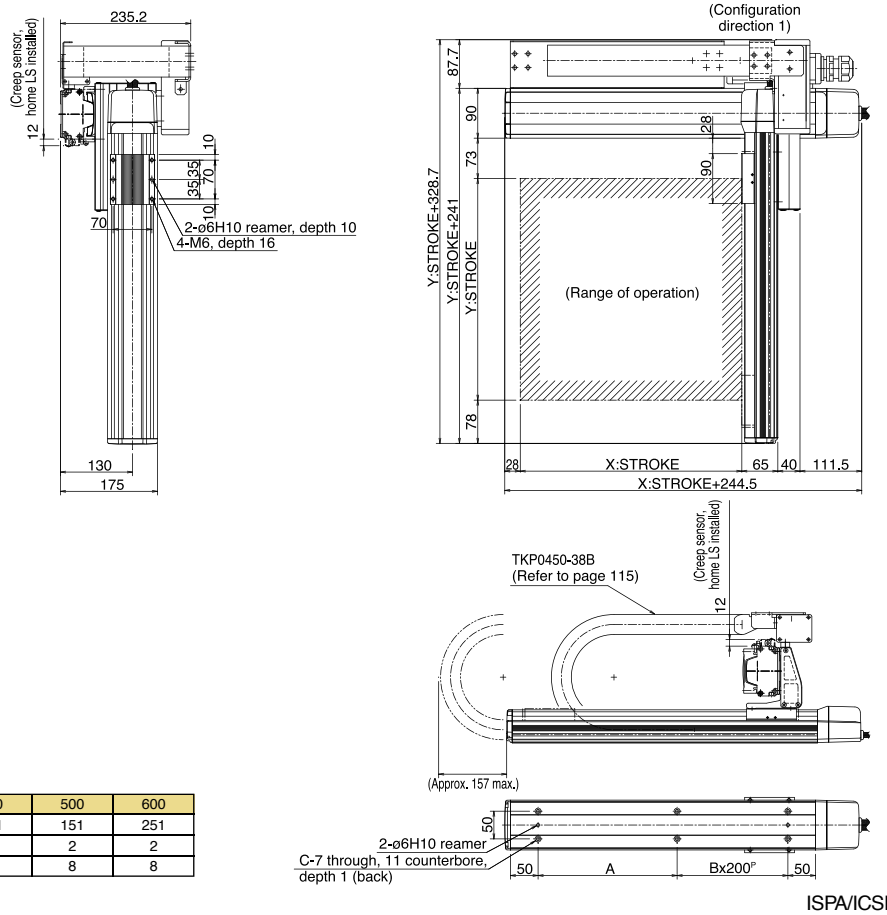
Dimensions



X stroke	100	200	300	400	500	600
L	(500)	(550)	(600)	(650)	(700)	(750)
A	151	251	151	251	151	251
B	0	0	1	1	2	2
C	4	4	6	6	8	8

Cable Track Specification (Cable Management Code: CT)

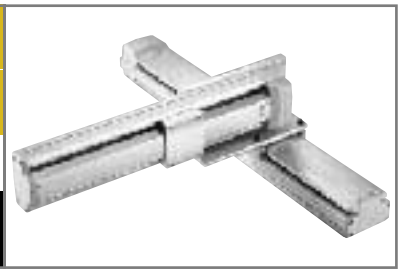
Dimensions



X stroke	100	200	300	400	500	600
A	151	251	151	251	151	251
B	0	0	1	1	2	2
C	4	4	6	6	8	8

ICSA2-BB□H
Cartesian Robot: X-Y 2-Axes Configuration, XYB (Y-Axis Base Mount) Type

ICSPA2-BB□H
Cartesian Robot: X-Y 2-Axes Configuration, XYB (Y-Axis Base Mount) Type
High-Precision Specification



Type: XYB type | Stroke: X-axis: 200~800mm Y-axis: 100~400mm | Load capacity: 12kg ~ 11.1kg

■ Model specification items

Series	Type	Encoder type	X-axis stroke + options	Y-axis stroke + options	Applicable controller	Cable length	Cable management
ICSA2 –	BB1H –	A –	80AQLNM –	40AQL –	T1 –	5L –	SC

* Refer to page 61 for the details of model specification items.

Models/Specifications

Model	Axis configuration		Encoder type	Motor output (W)	Lead (mm)	Stroke (mm) In increments of 100mm	Speed (mm/s) (Note 1)	Load capacity (Note 2)	Positioning repeatability (mm) (Note 3)
ICSA2 [ICSPA2] -BB□H-A-＊＊＊-＊＊＊-T1-△-○	X-axis	ISA [ISPA] -MXM-A-100-20-＊＊＊-T1	Absolute	100	20	200 ~ 800	1 ~ 1000	12 ~ 11.1	±0.02 [±0.01]
	Y-axis	ISA [ISPA] -SXM-A-60-16-＊＊＊-T1		60	16	100 ~ 400	1 ~ 800		
ICSA2 [ICSPA2] -BB□H-I-＊＊＊-＊＊＊-T1-△-○	X-axis	ISA [ISPA] -MXM-I-100-20-＊＊＊-T1	Incremental	100	20	200 ~ 800	1 ~ 1000		
	Y-axis	ISA [ISPA] -SXM-I-60-16-＊＊＊-T1		60	16	100 ~ 400	1 ~ 800		

* In the above model names, □ indicates the configuration direction, ＊＊＊ the stroke/applicable options (stroke is specified in centimeters), △ the cable length and ○ the wiring.

Options

Name	Code	Page	Remarks
AQ seal	AQ	➔ P13	
Brake	B	➔ P13	
Creep sensor	C	➔ P13	
Home limit switch	L	➔ P14	
Reverse homing specification	NM	➔ P14	
Guide with ball-retaining mechanism	RT	➔ P14	

Common Specifications

Drive system (Note 4)	Ball screw, rolled C10 [equivalent to rolled C5]
Backlash (Note 5)	0.05mm or less [0.02mm or less]
Guide	Integrated with base
Base	Material: Aluminum with white alumite treatment
Cable length (Note 6)	3L: 3m, 5L: 5m, □L : Length specification
Cable management	SC: Self-standing cable CT: Cable track

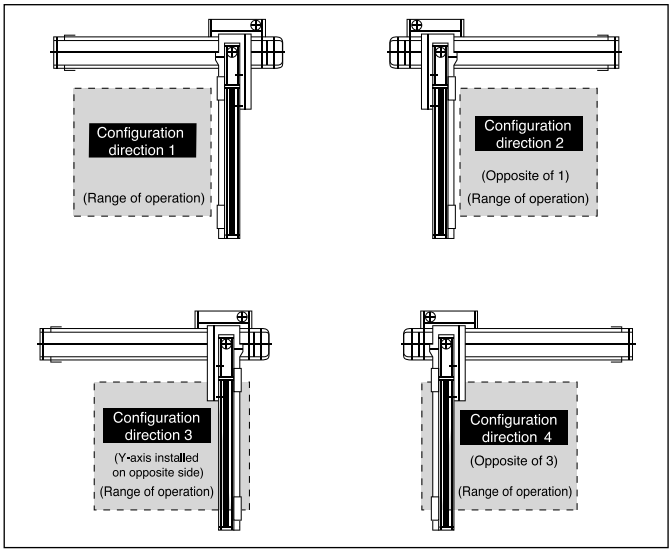
Load Capacity by Acceleration (kg)

Acceleration (G) \ Y-axis stroke (mm)	100	200	300	400
0.3	12.0	12.0	11.8	11.1
0.4	8.2	7.5	6.8	6.1
0.5	5.2	4.5	3.8	3.1
0.6	3.2	2.5	1.8	1.1
0.7	1.7	1.0	0.3	
0.8	0.7			
0.9				
1.0				

Maximum Speed by Stroke (mm/sec)

Axis \ Stroke (mm)	100	200 ~ 400	500 ~ 700	800
X-axis	–	1000		795
Y-axis	800		–	–

Configuration direction



Applicable Controller Specifications

Applicable controller	Controller type	Model	Page
X-SEL	General-purpose type	XSEL-K-2-100□-60□-□-□□□-□-□	➔ P241
	Compact type	XSEL-J-2-100□-60□-□-□□□-□-□	➔ P241

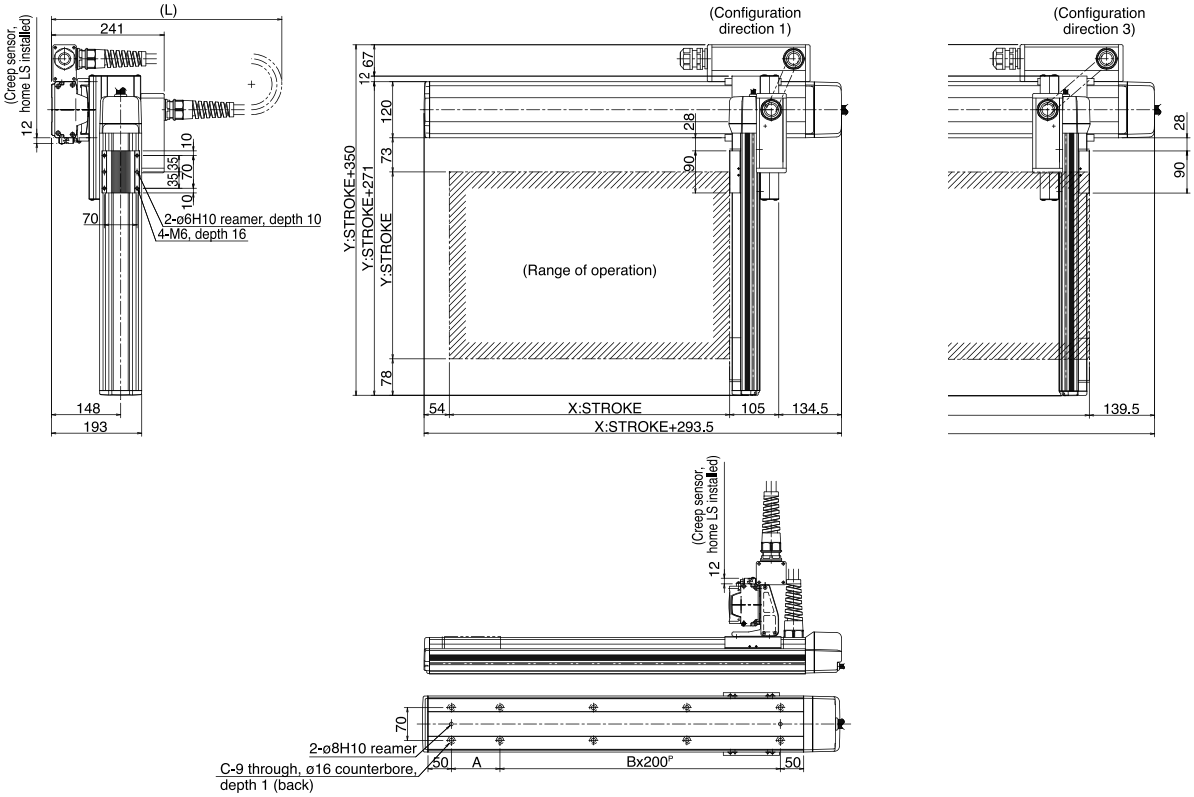
Caution

(Note 1) The maximum speed will vary depending on the stroke. (Refer to the table of maximum speed by stroke.)
(Note 2) The load capacity assumes operation at the rated acceleration (0.3 G). The actuator can be operated at accelerations beyond the rated acceleration, but the load capacity will decrease (refer to the table of load capacity by acceleration).
(Notes 3, 4, 5) The figures in brackets apply to the ICSPA2.
(Note 6) The cable length measures from the X-axis connector box to the controller. The standard lengths are 3 m and 5 m, but other lengths can also be specified in meters up to 20 m (e.g., 10L = 10 m).

* Refer to page 59 for other points to note.

Self-standing Cable Specification (Cable Management Code: SC)

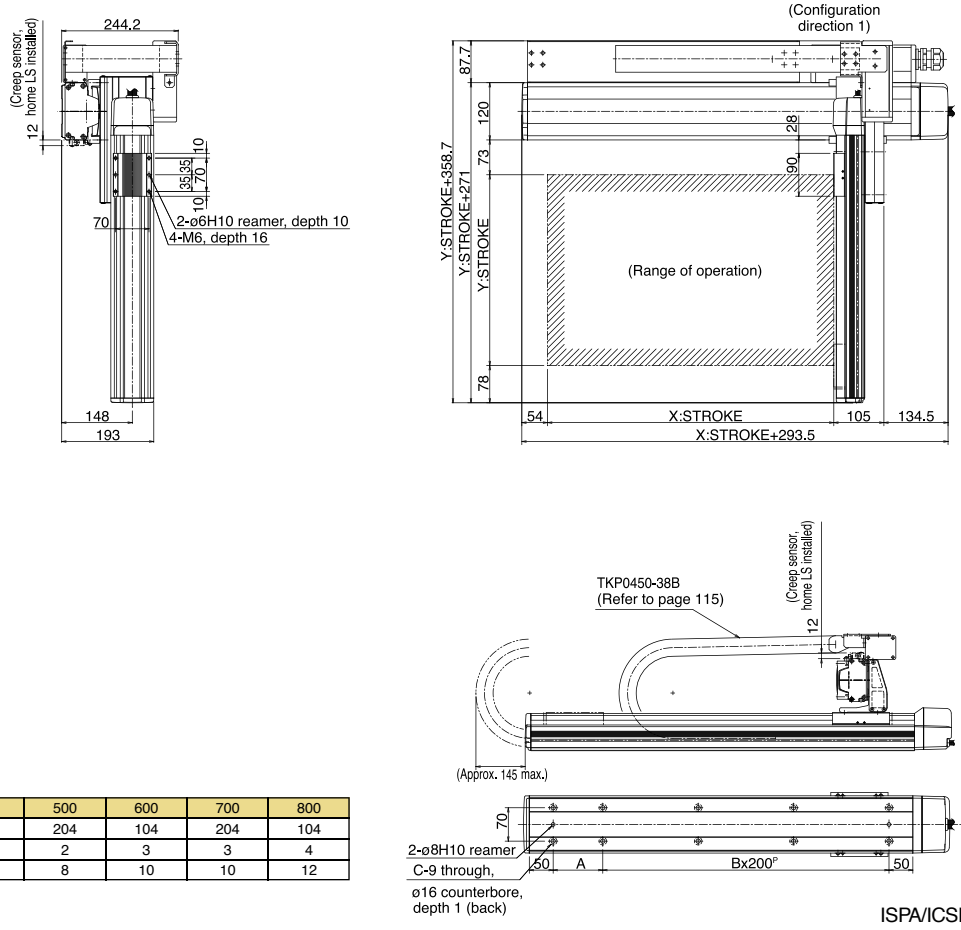
Dimensions



X stroke	200	300	400	500	600	700	800
L	(550)	(600)	(650)	(700)	(750)	(800)	(850)
A	104	204	104	204	104	204	104
B	1	1	2	2	3	3	4
C	6	6	8	8	10	10	12

Cable Track Specification (Cable Management Code: CT)

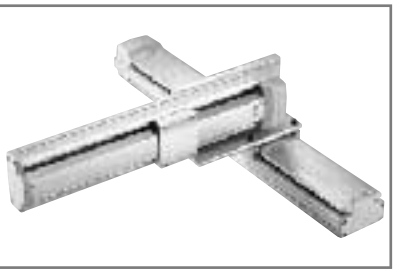
Dimensions



X stroke	200	300	400	500	600	700	800
A	104	204	104	204	104	204	104
B	1	1	2	2	3	3	4
C	6	6	8	8	10	10	12

ICSA2-BB□M
Cartesian Robot: X-Y 2-Axes Configuration, XYB (Y-Axis Base Mount) Type

ICSPA2-BB□M
Cartesian Robot: X-Y 2-Axes Configuration, XYB (Y-Axis Base Mount) Type
High-Precision Specification



Type	Stroke	Load capacity
XYB type	X-axis: 200~800mm Y-axis: 100~400mm	25kg ~ 21.8kg

■ Model specification items

Series	Type	Encoder type	X-axis stroke + options	Y-axis stroke + options	Applicable controller	Cable length	Cable management
ICSA2 –	BB1M –	A –	80AQLNM –	40AQL –	T1 –	5L –	SC

* Refer to page 61 for the details of model specification items.

Models/Specifications

Model	Axis configuration		Encoder type	Motor output (W)	Lead (mm)	Stroke (mm) In increments of 100mm	Speed (mm/s) (Note 1)	Load capacity (Note 2)	Positioning repeatability (mm) (Note 3)
ICSA2 [ICSPA2] -BB□M-A-✻✻✻-✻✻✻-T1-△-○	X-axis	ISA [ISPA] -MXM-A-100-10-✻✻✻-T1	Absolute	100	10	200 ~ 800	1 ~ 500	25 ~ 21.8	±0.02 [±0.01]
	Y-axis	ISA [ISPA] -SYM-A-60-8-✻✻✻-T1		60	8	100 ~ 400	1 ~ 400		
ICSA2 [ICSPA2] -BB□M-I-✻✻✻-✻✻✻-T1-△-○	X-axis	ISA [ISPA] -MXM-I-100-10-✻✻✻-T1	Incremental	100	10	200 ~ 800	1 ~ 500		
	Y-axis	ISA [ISPA] -SYM-I-60-8-✻✻✻-T1		60	8	100 ~ 400	1 ~ 400		

* In the above model names, □ indicates the configuration direction, ✻✻✻ the stroke/applicable options (stroke is specified in centimeters), △ the cable length and ○ the wiring.

Options

Name	Code	Page	Remarks
AQ seal	AQ	➔ P13	
Brake	B	➔ P13	
Creep sensor	C	➔ P13	
Home limit switch	L	➔ P14	
Reverse homing specification	NM	➔ P14	
Guide with ball-retaining mechanism	RT	➔ P14	

Common Specifications

Drive system (Note 4)	Ball screw, rolled C10 [equivalent to rolled C5]
Backlash (Note 5)	0.05mm or less [0.02mm or less]
Guide	Integrated with base
Base	Material: Aluminum with white alumite treatment
Cable length (Note 6)	3L: 3m, 5L: 5m, □L : Length specification
Cable management	SC: Self-standing cable CT: Cable track

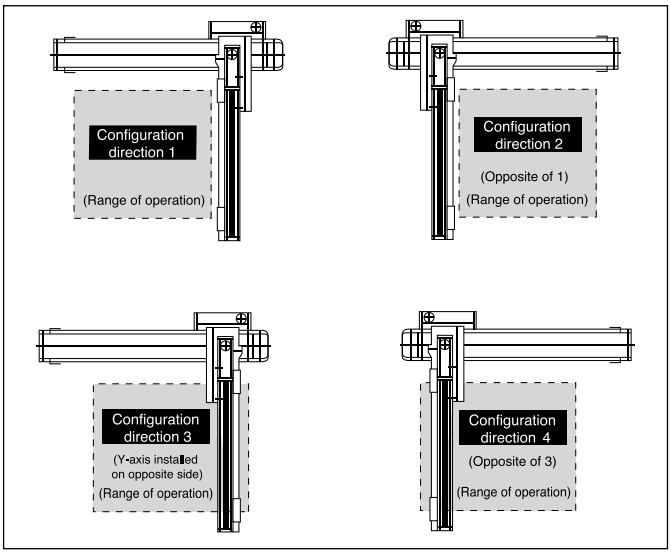
Load Capacity by Acceleration (kg)

Acceleration (G) \ Y-axis stroke (mm)	100	200	300	400
0.3	25.0	25.0	25.0	21.8
0.4	18.5	18.5	18.5	18.5
0.5	15.0	15.0	15.0	15.0
0.6	12.0	12.0	11.8	11.1
0.7				
0.8				
0.9				
1.0				

Maximum Speed by Stroke (mm/sec)

Axis \ Stroke (mm)	100	200 ~ 400	500 ~ 600	700	800
X-axis	–	500		480	380
Y-axis	400		–	–	–

Configuration direction



Applicable Controller Specifications

Applicable controller	Controller type	Model	Page
X-SEL	General-purpose type	XSEL-K-2-100□-60□-□-□□□-□-□	➔ P241
	Compact type	XSEL-J-2-100□-60□-□-□□□-□-□	➔ P241

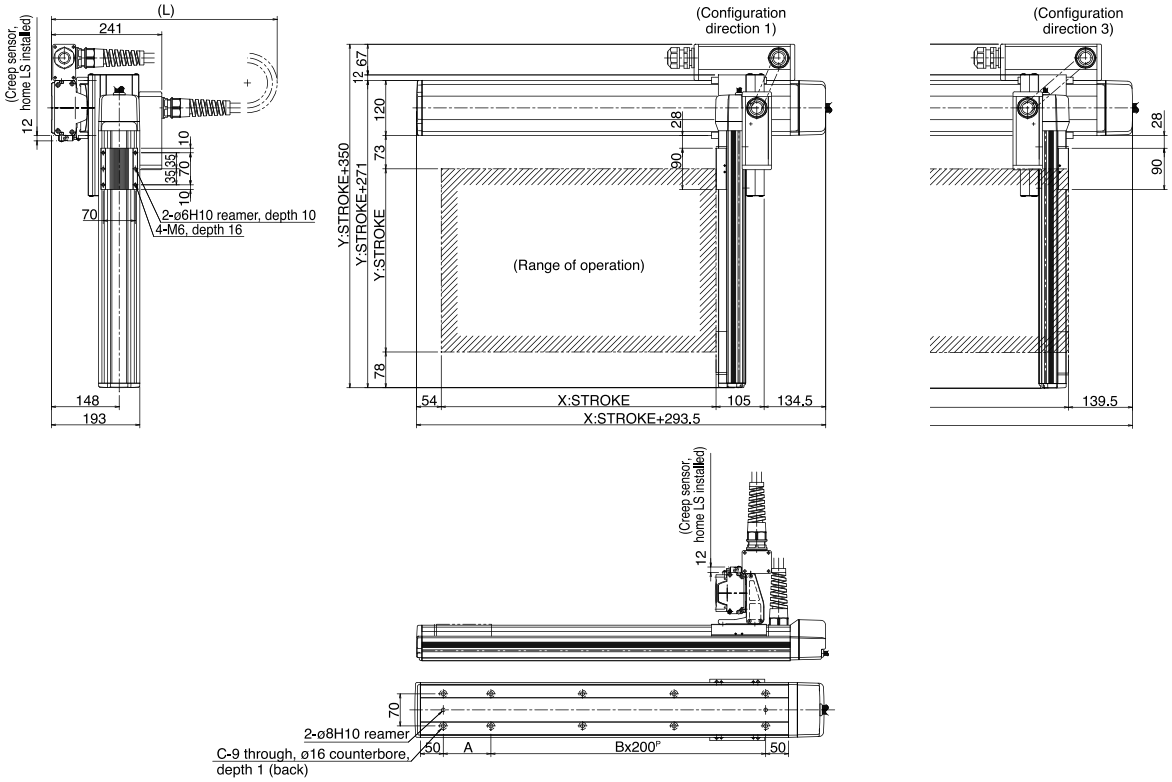
Caution

(Note 1) The maximum speed will vary depending on the stroke. (Refer to the table of maximum speed by stroke.)
(Note 2) The load capacity assumes operation at the rated acceleration (0.3 G). The actuator can be operated at accelerations beyond the rated acceleration, but the load capacity will decrease (refer to the table of load capacity by acceleration).
(Notes 3, 4, 5) The figures in brackets apply to the ICSPA2.
(Note 6) The cable length measures from the X-axis connector box to the controller. The standard lengths are 3 m and 5 m, but other lengths can also be specified in meters up to 20 m (e.g., 10L = 10 m).

* Refer to page 59 for other points to note.

Self-standing Cable Specification (Cable Management Code: SC)

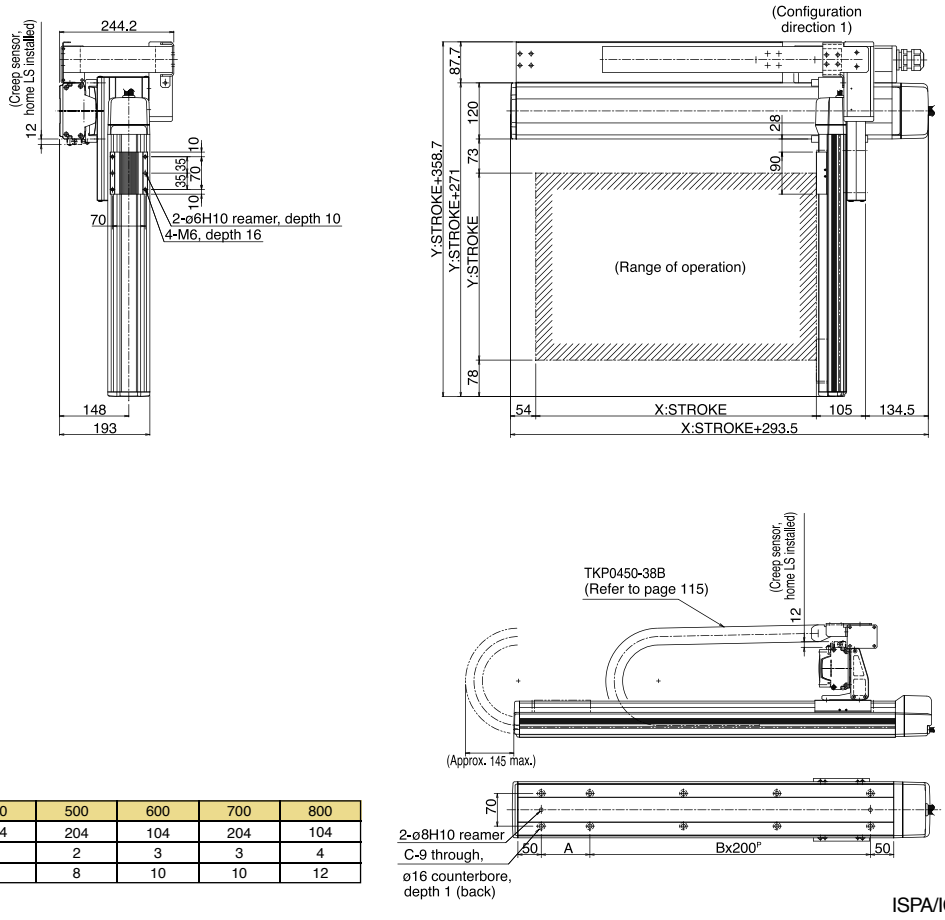
Dimensions



X stroke	200	300	400	500	600	700	800
L	(550)	(600)	(650)	(700)	(750)	(800)	(850)
A	104	204	104	204	104	204	104
B	1	1	2	2	3	3	4
C	6	6	8	8	10	10	12

Cable Track Specification (Cable Management Code: CT)

Dimensions



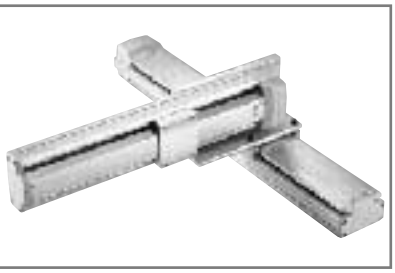
X stroke	200	300	400	500	600	700	800
A	104	204	104	204	104	204	104
B	1	1	2	2	3	3	4
C	6	6	8	8	10	10	12

ICSA2-BC□H

Cartesian Robot: X-Y 2-Axes Configuration, XYB (Y-Axis Base Mount) Type

ICSPA2-BC□H

Cartesian Robot: X-Y 2-Axes Configuration, XYB (Y-Axis Base Mount) Type High-Precision Specification



Type	Stroke	Load capacity
XYB type	X-axis: 200~800mm Y-axis: 100~500mm	20kg ~ 18.7kg

■ Model specification items

Series	Type	Encoder type	X-axis stroke + options	Y-axis stroke + options	Applicable controller	Cable length	Cable management
ICSA2 –	BC1H –	A –	80AQLNM –	50AQL –	T1 –	5L –	SC

* Refer to page 61 for the details of model specification items.

Models/Specifications

Model	Axis configuration		Encoder type	Motor output (W)	Lead (mm)	Stroke (mm) In increments of 100mm	Speed (mm/s) (Note 1)	Load capacity (Note 2)	Positioning repeatability (mm) (Note 3)
ICSA2 [ICSPA2] -BC□H-A-＊＊＊-＊＊＊-T1-△-○	X-axis	ISA [ISPA] -MXM-A-200-20-＊＊＊-T1	Absolute	200	20	200 ~ 800	1 ~ 1000	20 ~ 18.7	±0.02 [±0.01]
	Y-axis	ISA [ISPA] -MYM-A-100-20-＊＊＊-T1		100		100 ~ 500			
ICSA2 [ICSPA2] -BC□H-I-＊＊＊-＊＊＊-T1-△-○	X-axis	ISA [ISPA] -MXM-I-200-20-＊＊＊-T1	Incremental	200		200 ~ 800			
	Y-axis	ISA [ISPA] -MYM-I-100-20-＊＊＊-T1		100		100 ~ 500			

* In the above model names, □ indicates the configuration direction, ＊＊＊ the stroke/applicable options (stroke is specified in centimeters), △ the cable length and ○ the wiring.

Options

Name	Code	Page	Remarks
AQ seal	AQ	➔ P13	
Brake	B	➔ P13	
Creep sensor	C	➔ P13	
Home limit switch	L	➔ P14	
Reverse homing specification	NM	➔ P14	
Guide with ball-retaining mechanism	RT	➔ P14	

Common Specifications

Drive system (Note 4)	Ball screw, rolled C10 [equivalent to rolled C5]
Backlash (Note 5)	0.05mm or less [0.02mm or less]
Guide	Integrated with base
Base	Material: Aluminum with white alumite treatment
Cable length (Note 6)	3L: 3m, 5L: 5m, □L : Length specification
Cable management	SC: Self-standing cable CT: Cable track

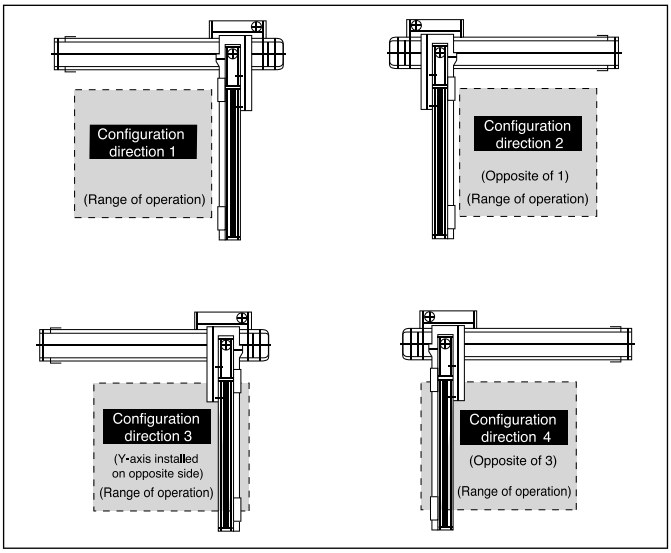
Load Capacity by Acceleration (kg)

Acceleration (G) \ Y-axis stroke (mm)	100	200	300	400	500
0.3	20.0	20.0	20.0	20.0	18.7
0.4	15.0	15.0	15.0	15.0	14.8
0.5	12.0	11.8	10.8	9.8	8.8
0.6	8.8	7.8	6.8	5.8	4.8
0.7	5.8	4.8	3.8	2.8	1.8
0.8	3.8	2.8	1.8	0.8	
0.9	2.3	1.3	0.3		
1.0	0.8				

Maximum Speed by Stroke (mm/sec)

Axis \ Stroke (mm)	100	200 ~ 500	600 ~ 700	800
X-axis	–	1000		795
Y-axis	1000		–	–

Configuration direction



Applicable Controller Specifications

Applicable controller	Controller type	Model	Page
X-SEL	General-purpose type	XSEL-K-2-200□-100□-□-□□□-□-□	➔ P241
	Compact type	XSEL-J-2-200□-100□-□-□□□-□-□	➔ P241

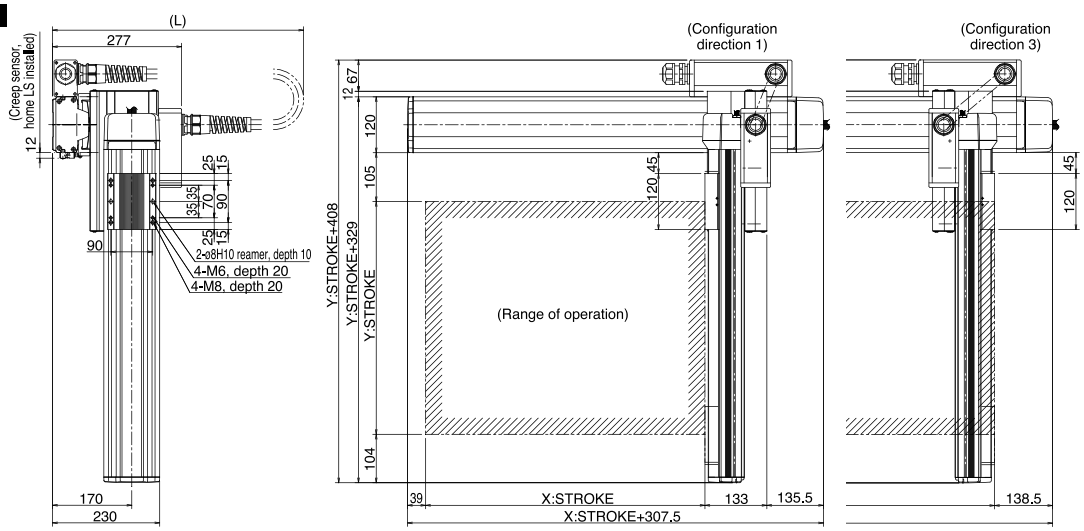
Caution

(Note 1) The maximum speed will vary depending on the stroke. (Refer to the table of maximum speed by stroke.)
(Note 2) The load capacity assumes operation at the rated acceleration (0.3 G). The actuator can be operated at accelerations beyond the rated acceleration, but the load capacity will decrease (refer to the table of load capacity by acceleration).
(Notes 3, 4, 5) The figures in brackets apply to the ICSPA2.
(Note 6) The cable length measures from the X-axis connector box to the controller. The standard lengths are 3 m and 5 m, but other lengths can also be specified in meters up to 20 m (e.g., 10L = 10 m).

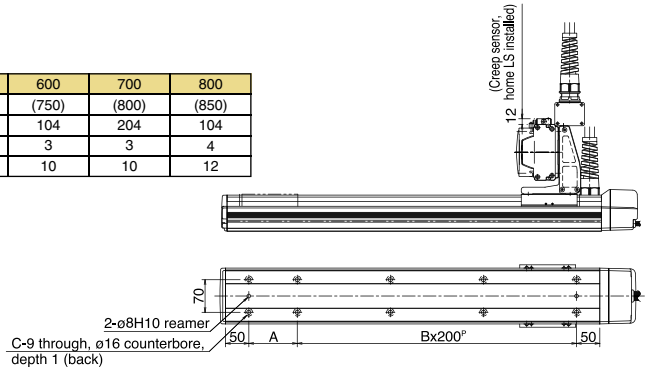
* Refer to page 59 for other points to note.

Self-standing Cable Specification (Cable Management Code: SC)

Dimensions

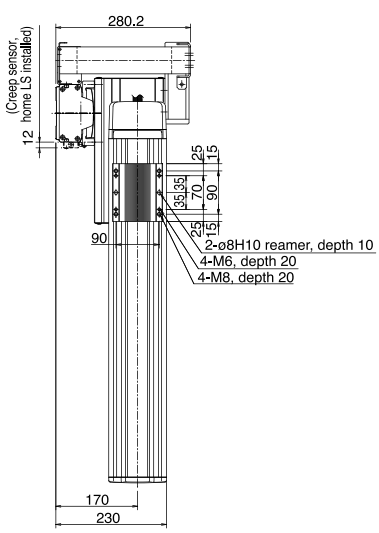


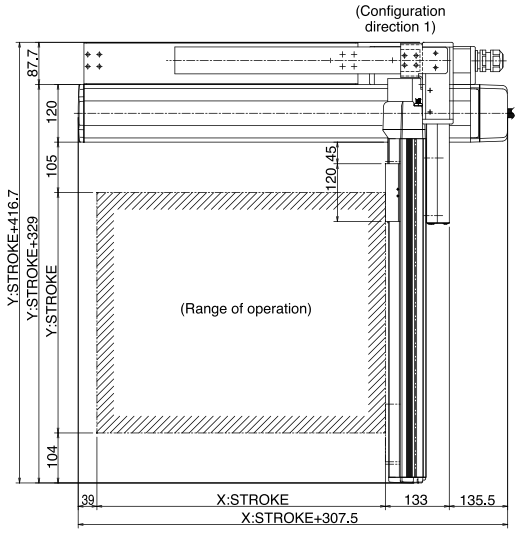
X stroke	200	300	400	500	600	700	800
L	(550)	(600)	(650)	(700)	(750)	(800)	(850)
A	104	204	104	204	104	204	104
B	1	1	2	2	3	3	4
C	6	6	8	8	10	10	12

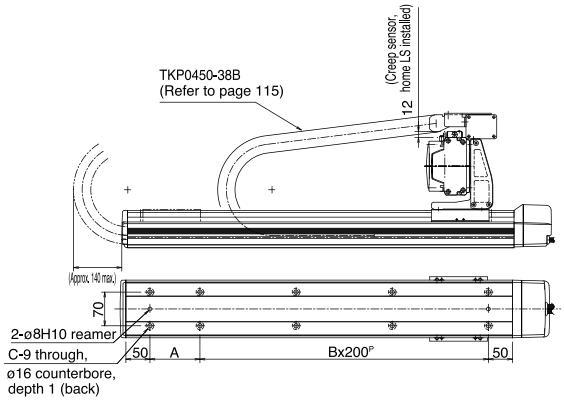


Cable Track Specification (Cable Management Code: CT)

Dimensions



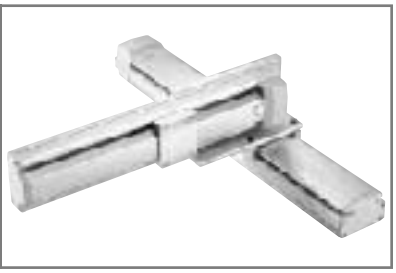




X stroke	200	300	400	500	600	700	800
A	104	204	104	204	104	204	104
B	1	1	2	2	3	3	4
C	6	6	8	8	10	10	12

ICSA2-BC□M
Cartesian Robot: X-Y 2-Axes Configuration, XYB (Y-Axis Base Mount) Type

ICSPA2-BC□M
Cartesian Robot: X-Y 2-Axes Configuration, XYB (Y-Axis Base Mount) Type High-Precision Specification



Type	Stroke	Load capacity
XYB type	X-axis: 200~800mm Y-axis: 100~500mm	28.8kg ~ 18.7kg

• Model specification items

Series	Type	Encoder type	X-axis stroke + options	Y-axis stroke + options	Applicable controller	Cable length	Cable management
ICSA2 –	BC1M –	A –	80AQLNM –	50AQL –	T1 –	5L –	SC

* Refer to page 61 for the details of model specification items.

Models/Specifications

Model	Axis configuration		Encoder type	Motor output (W)	Lead (mm)	Stroke (mm) In increments of 100mm	Speed (mm/s) (Note 1)	Load capacity (Note 2)	Positioning repeatability (mm) (Note 3)
ICSA2 [ICSPA2] -BC□M-A-• •• •• ••-• •• •• ••-T1-○ -○	X-axis	ISA [ISPA] -MXM-A-100-10-• •• •• ••-T1	Absolute	100	10	200 ~ 800	1 ~ 500	28.8 ~ 18.7	±0.02 [±0.01]
	Y-axis	ISA [ISPA] -MYM-A-100-10-• •• •• ••-T1				100 ~ 500			
ICSA2 [ICSPA2] -BC□M-I-• •• •• ••-• •• •• ••-T1-○ -○	X-axis	ISA [ISPA] -MXM-I-100-10-• •• •• ••-T1	Incremental			200 ~ 800			
	Y-axis	ISA [ISPA] -MYM-I-100-10-• •• •• ••-T1				100 ~ 500			

* In the above model names, □ indicates the configuration direction, • •• •• the stroke/applicable options (stroke is specified in centimeters), ○ the cable length and ○ the wiring.

Options

Name	Code	Page	Remarks
AQ seal	AQ	• P13	
Brake	B	• P13	
Creep sensor	C	• P13	
Home limit switch	L	• P14	
Reverse homing specification	NM	• P14	
Guide with ball-retaining mechanism	RT	• P14	

Common Specifications

Drive system (Note 4)	Ball screw, rolled C10 [equivalent to rolled C5]
Backlash (Note 5)	0.05mm or less [0.02mm or less]
Guide	Integrated with base
Base	Material: Aluminum with white alumite treatment
Cable length (Note 6)	3L: 3m, 5L: 5m, □L : Length specification
Cable management	SC: Self-standing cable CT: Cable track

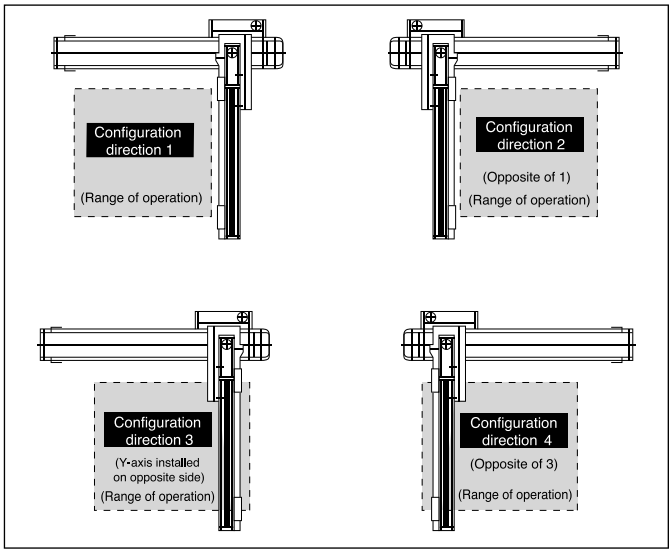
Load Capacity by Acceleration (kg)

Acceleration (G) \ Y-axis stroke (mm)	100	200	300	400	500
0.3	28.8	27.8	26.8	21.8	18.7
0.4	18.8	17.8	16.8	15.8	14.8
0.5	12.8	11.8	10.8	9.8	8.8
0.6	8.8	7.8	6.8	5.8	4.8
0.7					
0.8					
0.9					
1.0					

Maximum Speed by Stroke (mm/sec)

Axis \ Stroke (mm)	100	200 ~ 500	600	700	800
X-axis	–	500		480	380
Y-axis	500		–	–	–

Configuration direction



Applicable Controller Specifications

Applicable controller	Controller type	Model	Page
X-SEL	General-purpose type	XSEL-K-2-100□-100□-□-□□□-□-□	• P241
	Compact type	XSEL-J-2-100□-100□-□-□□□-□-□	• P241

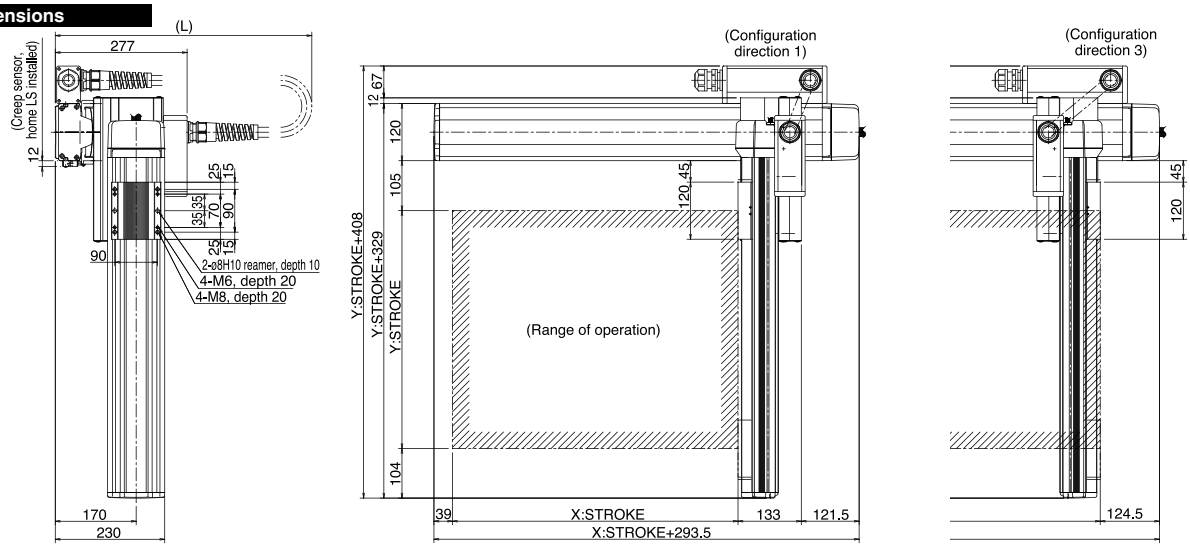
Caution

(Note 1) The maximum speed will vary depending on the stroke. (Refer to the table of maximum speed by stroke.)
(Note 2) The load capacity assumes operation at the rated acceleration (0.3 G). The actuator can be operated at accelerations beyond the rated acceleration, but the load capacity will decrease (refer to the table of load capacity by acceleration).
(Notes 3, 4, 5) The figures in brackets apply to the ICSPA2.
(Note 6) The cable length measures from the X-axis connector box to the controller. The standard lengths are 3 m and 5 m, but other lengths can also be specified in meters up to 20 m (e.g., 10L = 10 m).

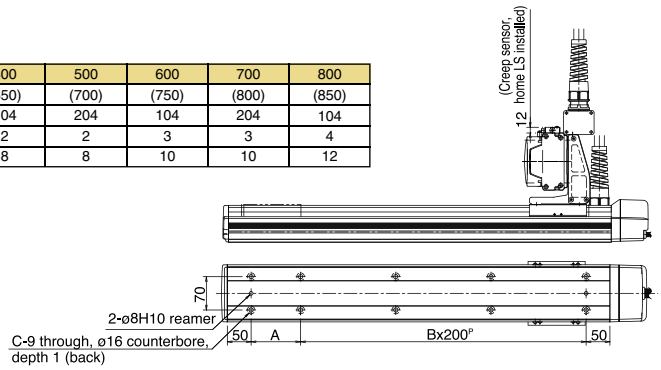
* Refer to page 59 for other points to note.

Self-standing Cable Specification (Cable Management Code: SC)

Dimensions

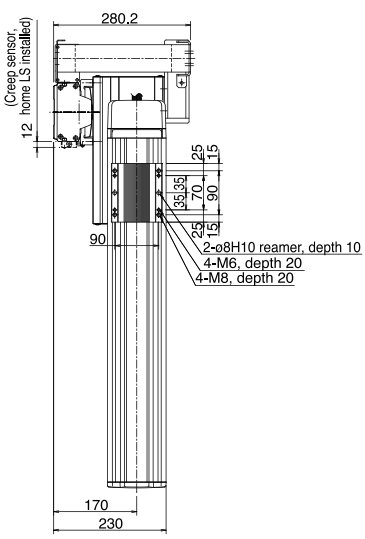


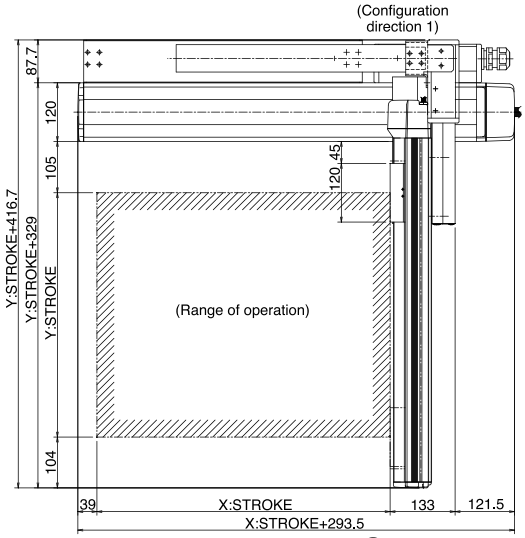
X stroke	200	300	400	500	600	700	800
L	(550)	(600)	(650)	(700)	(750)	(800)	(850)
A	104	204	104	204	104	204	104
B	1	1	2	2	3	3	4
C	6	6	8	8	10	10	12

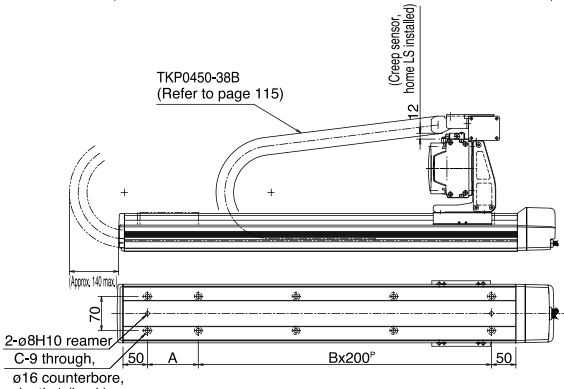


Cable Track Specification (Cable Management Code: CT)

Dimensions



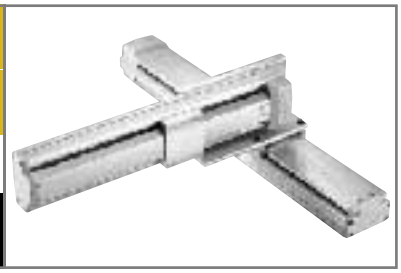




X stroke	200	300	400	500	600	700	800
A	104	204	104	204	104	204	104
B	1	1	2	2	3	3	4
C	6	6	8	8	10	10	12

ICSA2-BD□H
Cartesian Robot: X-Y 2-Axes Configuration, XYB (Y-Axis Base Mount) Type

ICSPA2-BD□H
Cartesian Robot: X-Y 2-Axes Configuration, XYB (Y-Axis Base Mount) Type High-Precision Specification



Type	Stroke	Load capacity
XYB type	X-axis: 800~2000mm Y-axis: 100~500mm	20kg ~ 18.7kg

■ Model specification items

Series	Type	Encoder type	X-axis stroke + options	Y-axis stroke + options	Applicable controller	Cable length	Cable management
ICSA2	– BD1M	– A	– 200AQLNM	– 50AQL	– T1	– 5L	– CT

* Refer to page 61 for the details of model specification items.

Models/Specifications

Model	Axis configuration		Encoder type	Motor output (W)	Lead (mm)	Stroke (mm) In increments of 100mm	Speed (mm/s) (Note 1)	Load capacity (Note 2)	Positioning repeatability (mm) (Note 3)
ICSA2 [ICSPA2] -BD□H-A-✻✻✻-✻✻✻-T1-△-○	X-axis	ISA [ISPA] -MXMX-A-200-20-✻✻✻-T1	Absolute	200	20	800 ~ 2000	1 ~ 1000	20 ~ 18.7	±0.02 [±0.01]
	Y-axis	ISA [ISPA] -MYM-A-100-20-✻✻✻-T1		100		100 ~ 500			
ICSA2 [ICSPA2] -BD□H-I-✻✻✻-✻✻✻-T1-△-○	X-axis	ISA [ISPA] -MXMX-I-200-20-✻✻✻-T1	Incremental	200		800 ~ 2000			
	Y-axis	ISA [ISPA] -MYM-I-100-20-✻✻✻-T1		100		100 ~ 500			

* In the above model names, □ indicates the configuration direction, ✻✻✻ the stroke/applicable options (stroke is specified in centimeters), △ the cable length and ○ the wiring.

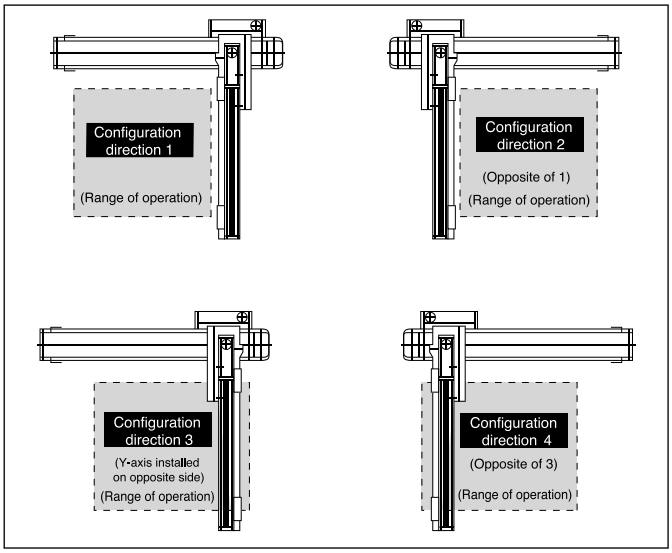
Options

Name	Code	Page	Remarks
AQ seal	AQ	→ P13	
Brake	B	→ P13	
Creep sensor	C	→ P13	
Home limit switch	L	→ P14	
Reverse homing specification	NM	→ P14	
Guide with ball-retaining mechanism	RT	→ P14	

Common Specifications

Drive system (Note 4)	Ball screw, rolled C10 [equivalent to rolled C5]
Backlash (Note 5)	0.05mm or less [0.02mm or less]
Guide	Integrated with base
Base	Material: Aluminum with white alumite treatment
Cable length (Note 6)	3L: 3m, 5L: 5m, □L : Length specification
Cable management	CT: Cable track

Configuration direction



Load Capacity by Acceleration (kg)

Acceleration (G) \ Y-axis stroke (mm)	100	200	300	400	500
0.3	20.0	20.0	20.0	20.0	18.7
0.4					
0.5					
0.6					
0.7					
0.8					
0.9					
1.0					

Maximum Speed by Stroke (mm/sec)

Axis \ Stroke (mm)	100 ~ 500	800 ~ 1300	1400	1500	1600	1700	1800	1900	2000
X-axis	–	1000	950	800	700	600	550	500	450
Y-axis	–	–	–	–	–	–	–	–	–

Applicable Controller Specifications

Applicable controller	Controller type	Model	Page
X-SEL	General-purpose type	XSEL-K-2-200□-100□-□-□□□-□-□	→ P241
	Compact type	XSEL-J-2-200□-100□-□-□□□-□-□	→ P241

Caution

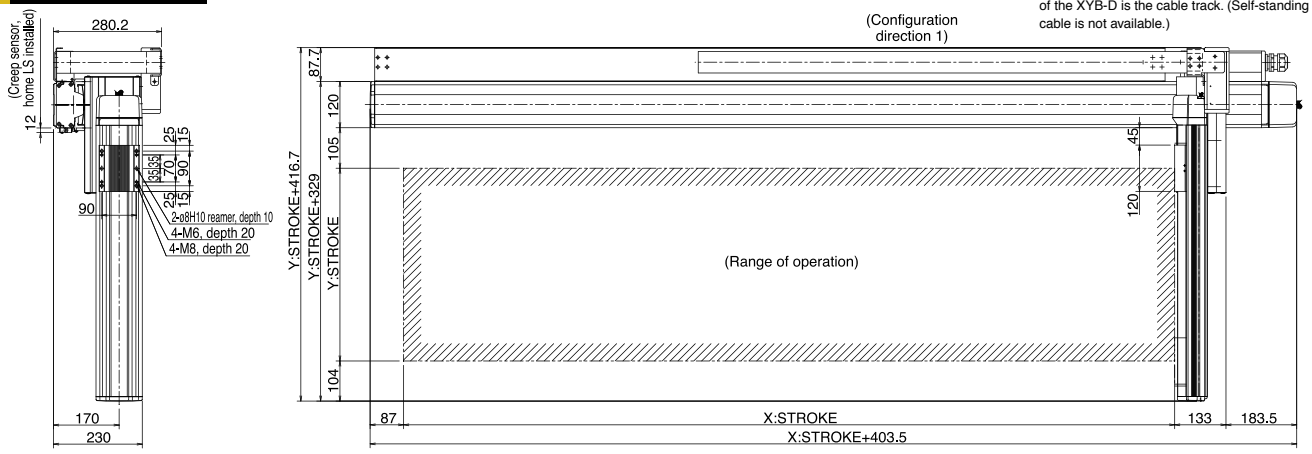
(Note 1) The maximum speed will vary depending on the stroke. (Refer to the table of maximum speed by stroke.)
(Note 2) The load capacity assumes operation at the rated acceleration (0.3 G). The rated acceleration is the maximum specifiable acceleration for both the ICSA2 and ICSPA2.
(Notes 3, 4, 5) The figures in brackets apply to the ICSPA2.
(Note 6) The cable length measures from the X-axis connector box to the controller. The standard lengths are 3 m and 5 m, but other lengths can also be specified in meters up to 20 m (e.g., 10L = 10 m).

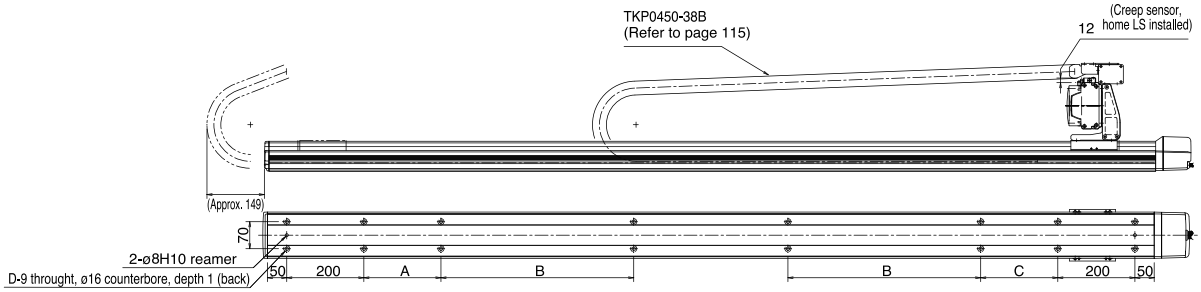
* Refer to page 59 for other points to note.

Cable Track Specification (Cable Management Code: CT)

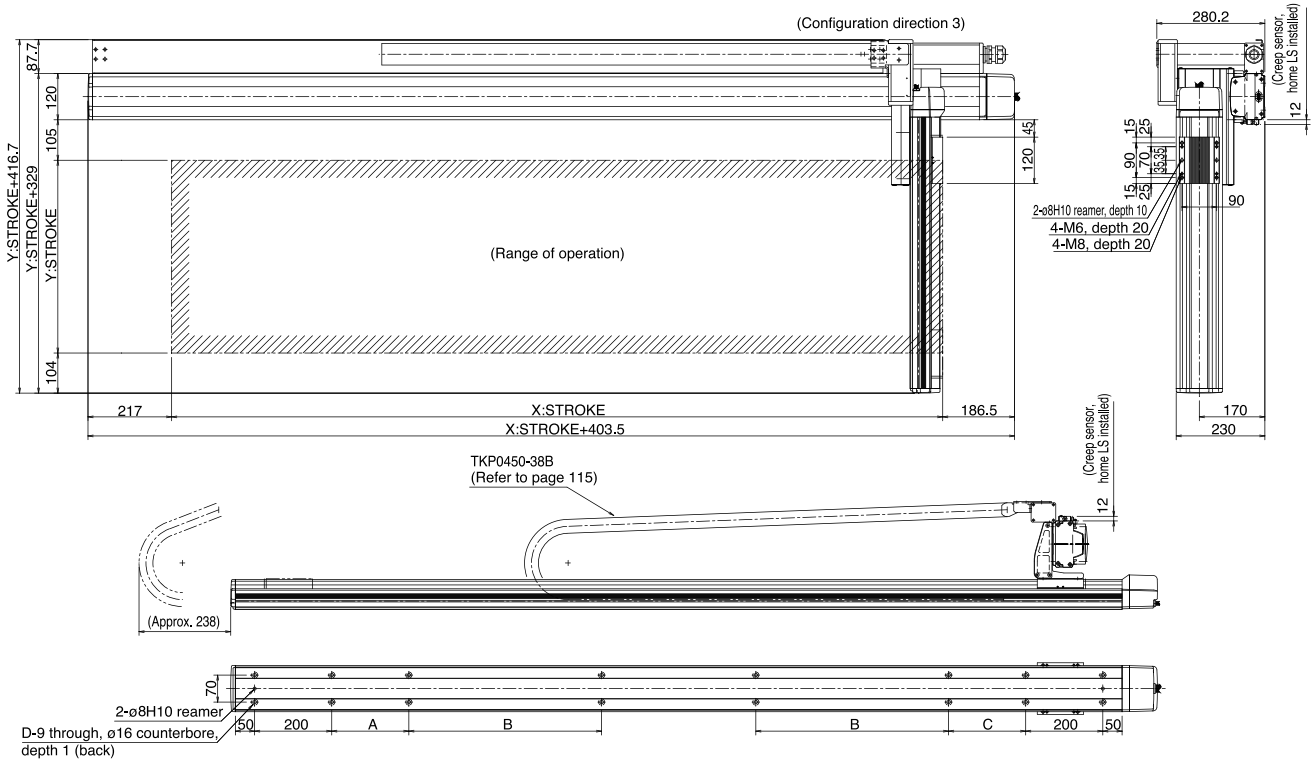
Dimensions

* The standard cable management specification of the XYB-D is the cable track. (Self-standing cable is not available.)





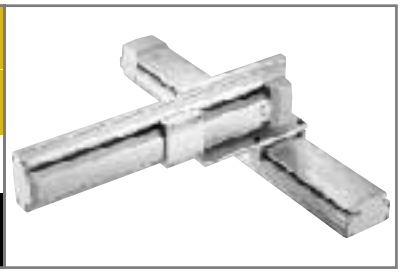
X stroke	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
A	0	0	200	250	300	350	400	450	500	550	200	200	200
B	0	0	0	0	0	0	0	0	0	0	400	450	500
C	200	200	200	250	300	350	400	450	500	550	200	200	200
D	10	10	12	12	12	12	12	12	12	12	16	16	16



X stroke	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
A	0	0	200	250	300	350	400	450	500	550	200	200	200
B	0	0	0	0	0	0	0	0	0	0	400	450	500
C	200	200	200	250	300	350	400	450	500	550	200	200	200
D	10	10	12	12	12	12	12	12	12	12	16	16	16

ICSA2-BE□H
Cartesian Robot: X-Y 2-Axes Configuration, XYB (Y-Axis Base Mount) Type

ICSPA2-BE□H
Cartesian Robot: X-Y 2-Axes Configuration, XYB (Y-Axis Base Mount) Type High-Precision Specification



Type: XYB type | Stroke: X-axis: 300~1000mm Y-axis: 200~700mm | Load capacity: 40kg ~ 19.3kg

■ Model specification items

Series	Type	Encoder type	X-axis stroke + options	Y-axis stroke + options	Applicable controller	Cable length	Cable management
ICSA2	– BE1H	– A	– 100AQLNM	– 70AQL	– T1	– 5L	– SC

* Refer to page 61 for the details of model specification items.

Models/Specifications

Model	Axis configuration		Encoder type	Motor output (W)	Lead (mm)	Stroke (mm) In increments of 100mm	Speed (mm/s) (Note 1)	Load capacity (Note 2)	Positioning repeatability (mm) (Note 3)
ICSA2 [ICSPA2] -BE□H-A-✻✻✻-✻✻✻-T1-△-○	X-axis	ISA [ISPA] -LXM-A-400-20-✻✻✻-T1	Absolute	400	20	300 ~ 1000	1 ~ 1000	40 ~ 19.3	±0.02 [±0.01]
	Y-axis	ISA [ISPA] -MYM-A-200-20-✻✻✻-T1		200		200 ~ 700			
ICSA2 [ICSPA2] -BE□H-I-✻✻✻-✻✻✻-T1-△-○	X-axis	ISA [ISPA] -LXM-I-400-20-✻✻✻-T1	Incremental	400		300 ~ 1000			
	Y-axis	ISA [ISPA] -MYM-I-200-20-✻✻✻-T1		200		200 ~ 700			

* In the above model names, □ indicates the configuration direction, ✻✻✻ the stroke/applicable options (stroke is specified in centimeters), △ the cable length and ○ the wiring.

Options

Name	Code	Page	Remarks
AQ seal	AQ	→ P13	
Brake	B	→ P13	
Creep sensor	C	→ P13	
Home limit switch	L	→ P14	
Reverse homing specification	NM	→ P14	
Guide with ball-retaining mechanism	RT	→ P14	

Common Specifications

Drive system (Note 4)	Ball screw, rolled C10 [equivalent to rolled C5]
Backlash (Note 5)	0.05mm or less [0.02mm or less]
Guide	Integrated with base
Base	Material: Aluminum with white alumite treatment
Cable length (Note 6)	3L: 3m, 5L: 5m, □L : Length specification
Cable management	SC: Self-standing cable CT: Cable track

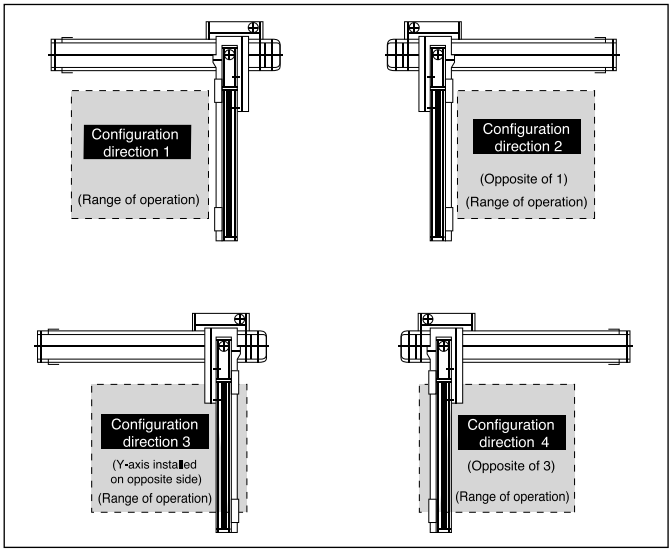
Load Capacity by Acceleration (kg)

Acceleration (G) \ Y-axis stroke (mm)	200	300	400	500	600	700
0.3	40.0	40.0	33.0	27.3	22.9	19.3
0.4	30.0	30.0	30.0	27.3	22.9	19.3
0.5	24.0	24.0	24.0	24.0	22.9	19.3
0.6	20.0	20.0	20.0	20.0	20.0	19.3
0.7	17.0	17.0	17.0	17.0	17.0	16.0
0.8	15.0	15.0	14.6	13.5	12.5	11.5
0.9	13.5	12.6	11.6	10.5	9.5	8.5
1.0	10.6	9.6	8.6	7.5	6.5	5.5

Maximum Speed by Stroke (mm/sec)

Axis \ Stroke (mm)	200	300 ~ 700	800	900	1000
X-axis	–	1000		830	690
Y-axis	1000		–	–	–

Configuration direction



Applicable Controller Specifications

Applicable controller	Controller type	Model	Page
X-SEL	General-purpose type	XSEL-K-2-400□-200□-□-□□□-□-□	→ P241
	Compact type	XSEL-J-2-400□-200□-□-□□□-□-□	→ P241

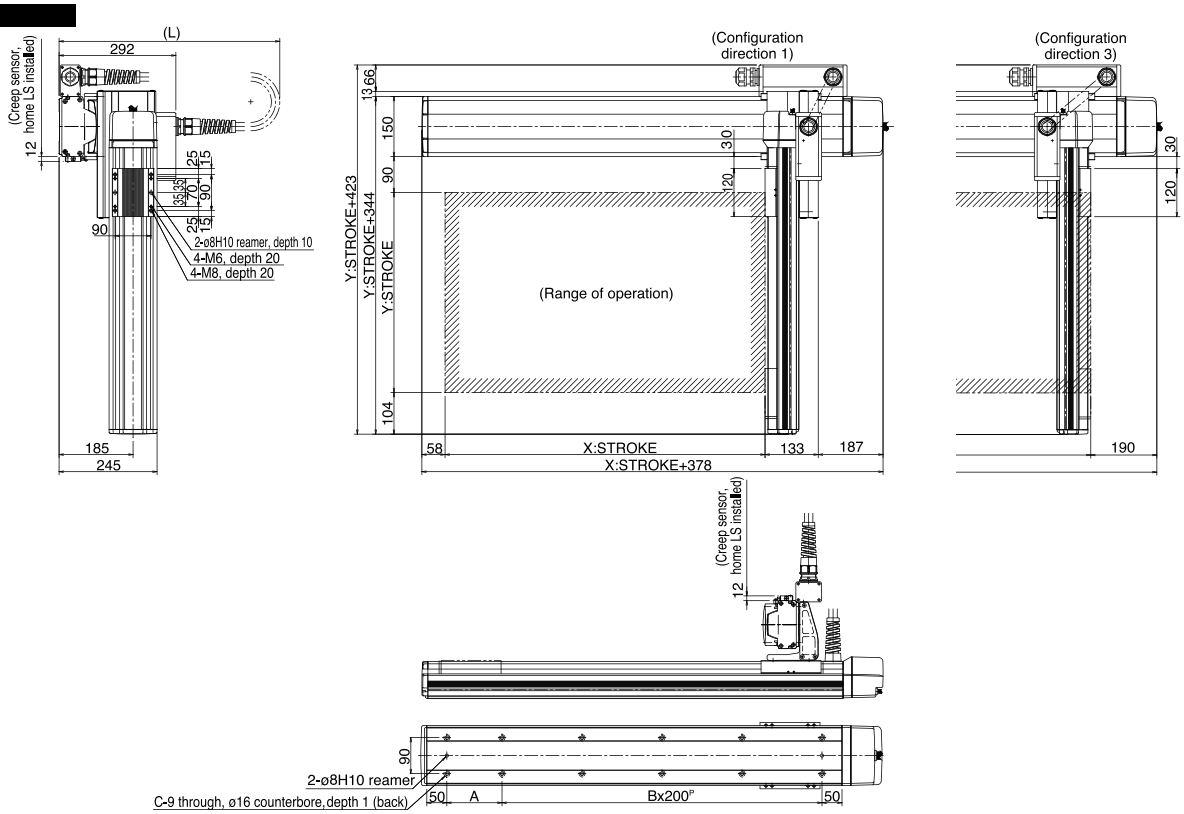
Caution

(Note 1) The maximum speed will vary depending on the stroke. (Refer to the table of maximum speed by stroke.)
(Note 2) The load capacity assumes operation at the rated acceleration (0.3 G). The actuator can be operated at accelerations beyond the rated acceleration, but the load capacity will decrease (refer to the table of load capacity by acceleration).
(Notes 3, 4, 5) The figures in brackets apply to the ICSPA2.
(Note 6) The cable length measures from the X-axis connector box to the controller. The standard lengths are 3 m and 5 m, but other lengths can also be specified in meters up to 20 m (e.g., 10L = 10 m).

* Refer to page 59 for other points to note.

Self-standing Cable Specification (Cable Management Code: SC)

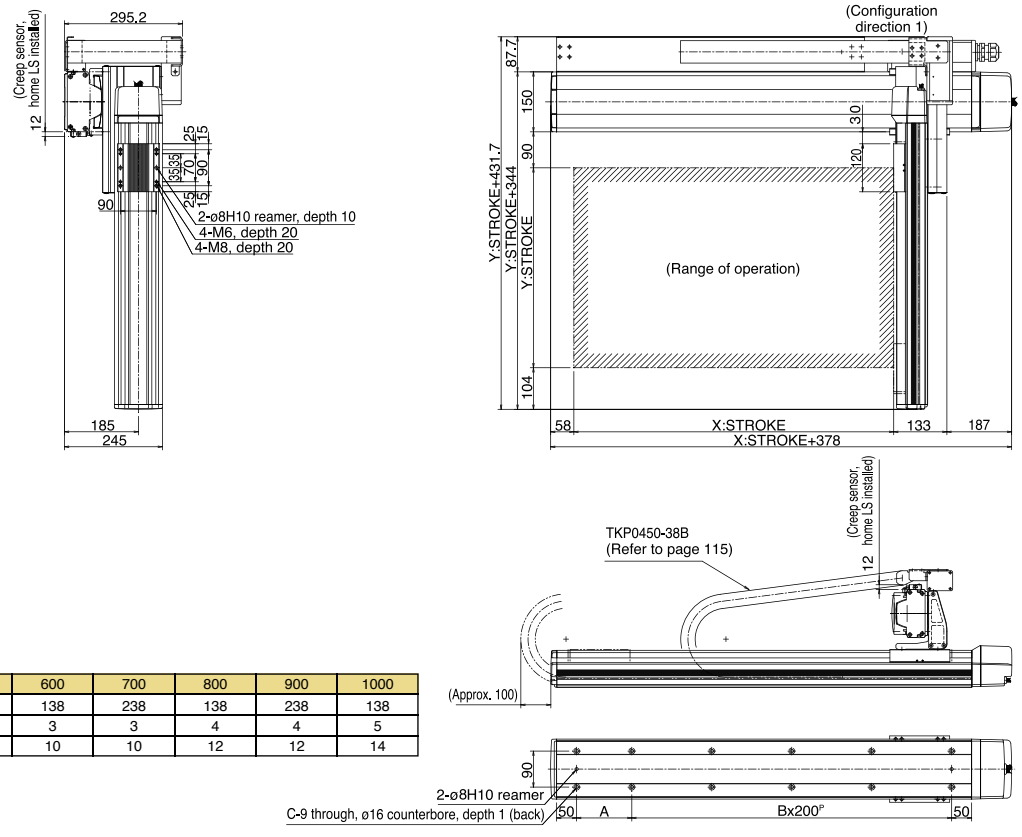
Dimensions



X stroke	300	400	500	600	700	800	900	1000
L	600	650	700	750	800	850	900	950
A	238	138	238	138	238	138	238	138
B	1	2	2	3	3	4	4	5
C	6	8	8	10	10	12	12	14

Cable Track Specification (Cable Management Code: CT)

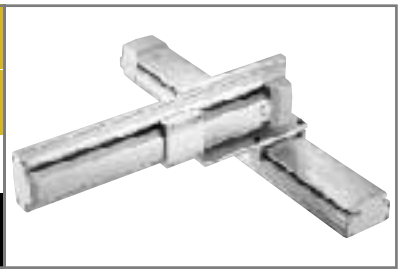
Dimensions



X stroke	300	400	500	600	700	800	900	1000
A	238	138	238	138	238	138	238	138
B	1	2	2	3	3	4	4	5
C	6	8	8	10	10	12	12	14

ICSA2-BE□M
Cartesian Robot: X-Y 2-Axes Configuration, XYB (Y-Axis Base Mount) Type

ICSPA2-BE□M
Cartesian Robot: X-Y 2-Axes Configuration, XYB (Y-Axis Base Mount) Type High-Precision Specification



Type	Stroke	Load capacity
XYB type	X-axis: 300~1000mm Y-axis: 200~700mm	51.2kg ~ 19.3kg

■ Model specification items

Series	Type	Encoder type	X-axis stroke + options	Y-axis stroke + options	Applicable controller	Cable length	Cable management
ICSA2 –	BE1M –	A –	100AQLNM –	70AQL –	T1 –	5L –	SC

* Refer to page 61 for the details of model specification items.

Models/Specifications

Model	Axis configuration		Encoder type	Motor output (W)	Lead (mm)	Stroke (mm) In increments of 100mm	Speed (mm/s) (Note 1)	Load capacity (Note 2)	Positioning repeatability (mm) (Note 3)
ICSA2 [ICSPA2] -BE□M-A-＊＊＊-＊＊＊-T1-△-○	X-axis	ISA [ISPA] -LXM-A-200-10-＊＊＊-T1	Absolute	200	10	300 ~ 1000	1 ~ 500	51.2 ~ 19.3	±0.02 [±0.01]
	Y-axis	ISA [ISPA] -MYM-A-200-10-＊＊＊-T1				200 ~ 700			
ICSA2 [ICSPA2] -BE□M-I-＊＊＊-＊＊＊-T1-△-○	X-axis	ISA [ISPA] -LXM-I-200-10-＊＊＊-T1	Incremental			300 ~ 1000			
	Y-axis	ISA [ISPA] -MYM-I-200-10-＊＊＊-T1				200 ~ 700			

* In the above model names, □ indicates the configuration direction, ＊＊＊ the stroke/applicable options (stroke is specified in centimeters), △ the cable length and ○ the wiring.

Options

Name	Code	Page	Remarks
AQ seal	AQ	→ P13	
Brake	B	→ P13	
Creep sensor	C	→ P13	
Home limit switch	L	→ P14	
Reverse homing specification	NM	→ P14	
Guide with ball-retaining mechanism	RT	→ P14	

Common Specifications

Drive system (Note 4)	Ball screw, rolled C10 [equivalent to rolled C5]
Backlash (Note 5)	0.05mm or less [0.02mm or less]
Guide	Integrated with base
Base	Material: Aluminum with white alumite treatment
Cable length (Note 6)	3L: 3m, 5L: 5m, □L : Length specification
Cable management	SC: Self-standing cable CT: Cable track

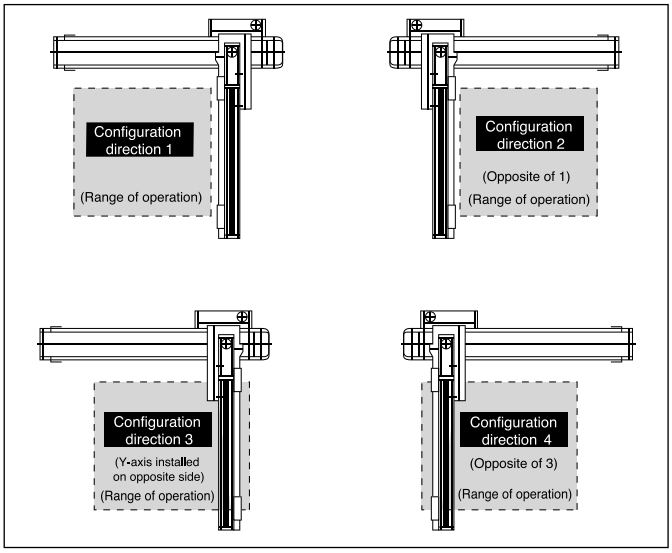
Load Capacity by Acceleration (kg)

Acceleration (G) \ Y-axis stroke (mm)	200	300	400	500	600	700
0.3	51.2	40.5	33.0	27.3	22.9	19.3
0.4	46.6	40.5	33.0	27.3	22.9	19.3
0.5	35.1	34.1	33.0	27.3	22.9	19.3
0.6	26.6	25.6	24.6	23.5	22.5	19.3
0.7						
0.8						
0.9						
1.0						

Maximum Speed by Stroke (mm/sec)

Axis \ Stroke (mm)	200	300 ~ 600	700	800	900	1000
X-axis	–	500		470	385	320
Y-axis	500		480	–	–	–

Configuration direction



Applicable Controller Specifications

Applicable controller	Controller type	Model	Page
X-SEL	General-purpose type	XSEL-K-2-200□-200□-□-□□□-□-□	→ P241
	Compact type	XSEL-J-2-200□-200□-□-□□□-□-□	→ P241

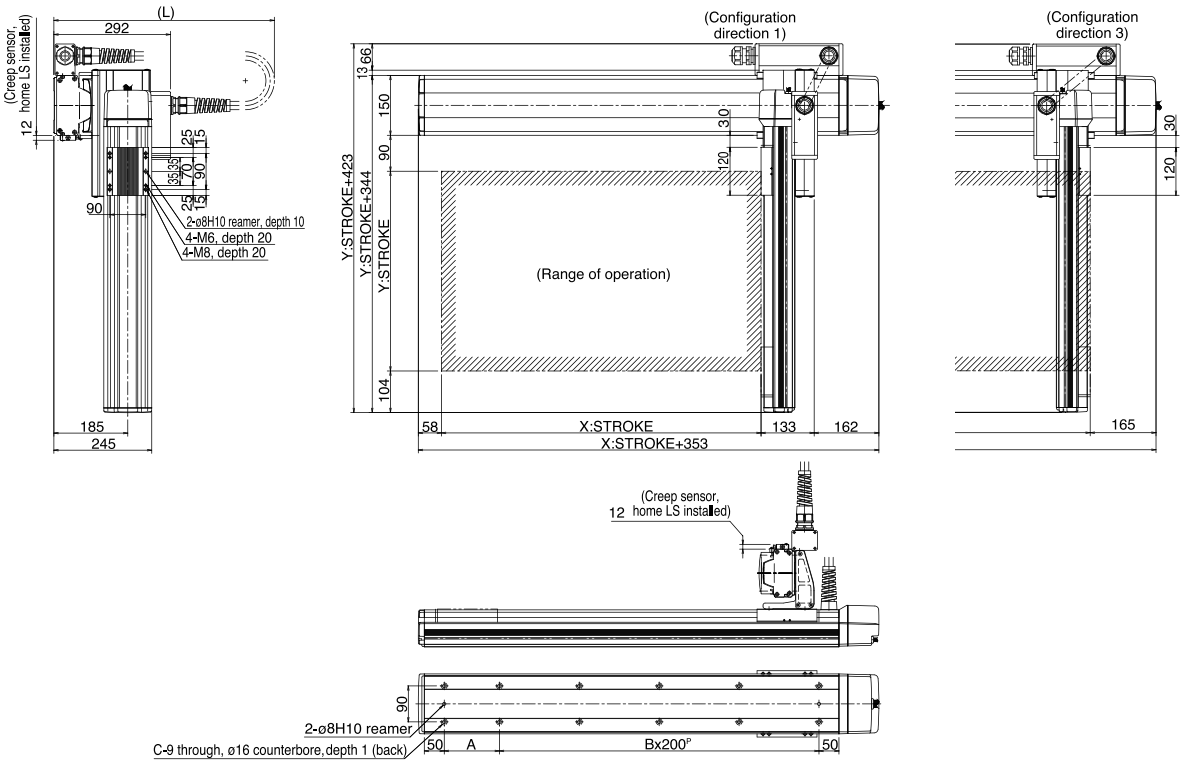
Caution

(Note 1) The maximum speed will vary depending on the stroke. (Refer to the table of maximum speed by stroke.)
(Note 2) The load capacity assumes operation at the rated acceleration (0.3 G). The actuator can be operated at accelerations beyond the rated acceleration, but the load capacity will decrease (refer to the table of load capacity by acceleration).
(Notes 3, 4, 5) The figures in brackets apply to the ICSPA2.
(Note 6) The cable length measures from the X-axis connector box to the controller. The standard lengths are 3 m and 5 m, but other lengths can also be specified in meters up to 20 m (e.g., 10L = 10 m).

* Refer to page 59 for other points to note.

Self-standing Cable Specification (Cable Management Code: SC)

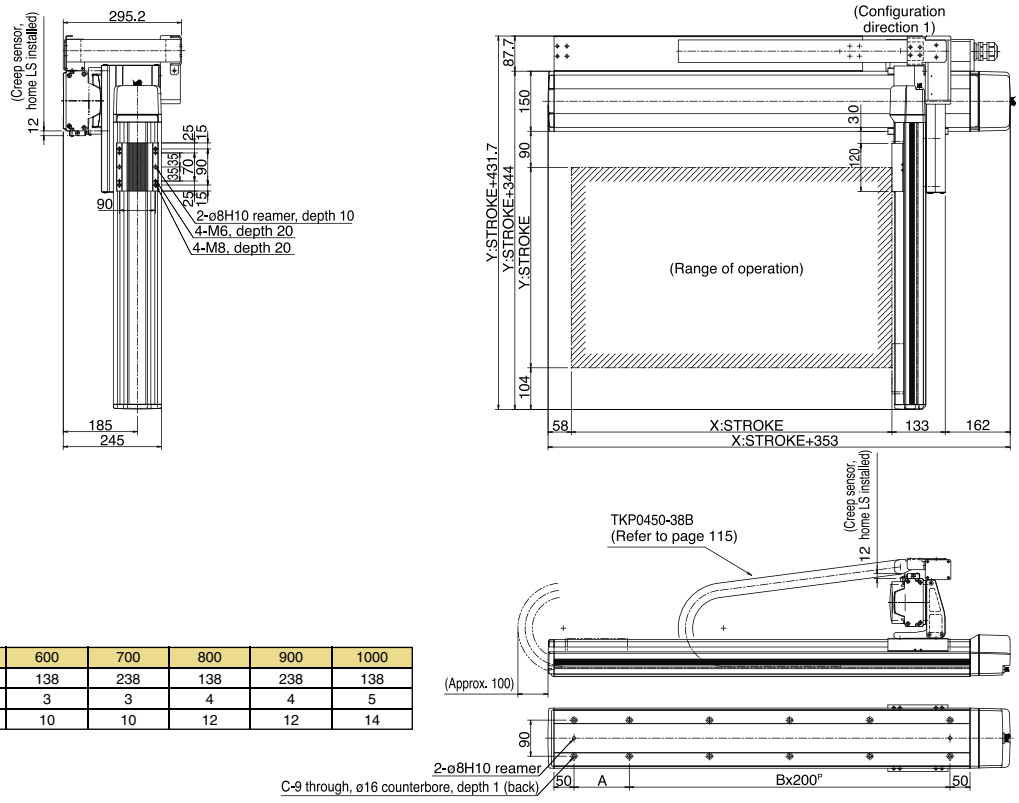
Dimensions



X stroke	300	400	500	600	700	800	900	1000
L	600	650	700	750	800	850	900	950
A	238	138	238	138	238	138	238	138
B	1	2	2	3	3	4	4	5
C	6	8	8	10	10	12	12	14

Cable Track Specification (Cable Management Code: CT)

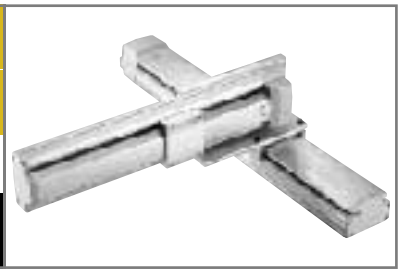
Dimensions



X stroke	300	400	500	600	700	800	900	1000
A	238	138	238	138	238	138	238	138
B	1	2	2	3	3	4	4	5
C	6	8	8	10	10	12	12	14

ICSA2-BF□H
Cartesian Robot: X-Y 2-Axes Configuration, XYB (Y-Axis Base Mount) Type

ICSPA2-BF□H
Cartesian Robot: X-Y 2-Axes Configuration, XYB (Y-Axis Base Mount) Type High-Precision Specification



Type	Stroke	Load capacity
XYB type	X-axis: 1000~2500mm Y-axis: 200~700mm	40kg ~ 19.3kg

■ Model specification items

Series	Type	Encoder type	X-axis stroke + options	Y-axis stroke + options	Applicable controller	Cable length	Cable management
ICSA2 – BF1H –	A	– 250AQLNM	– 70AQL	– T1	– 5L	– CT	

* Refer to page 61 for the details of model specification items.

Models/Specifications

Model	Axis configuration		Encoder type	Motor output (W)	Lead (mm)	Stroke (mm) In increments of 100mm	Speed (mm/s) (Note 1)	Load capacity (Note 2)	Positioning repeatability (mm) (Note 3)
ICSA2 [ICSPA2] -BF□H-A-✻✻✻-✻✻✻-T1-△-CT	X-axis	ISA [ISPA] -LXMX-A-400-20-✻✻✻-T1	Absolute	400	20	1000 ~ 2500	1 ~ 1000	40 ~ 19.3	±0.02 [±0.01]
	Y-axis	ISA [ISPA] -MYM-A-200-20-✻✻✻-T1		200		200 ~ 700			
ICSA2 [ICSPA2] -BF□H-I-✻✻✻-✻✻✻-T1-△-CT	X-axis	ISA [ISPA] -LXMX-I-400-20-✻✻✻-T1	Incremental	400		1000 ~ 2500			
	Y-axis	ISA [ISPA] -MYM-I-200-20-✻✻✻-T1		200		200 ~ 700			

* In the above model names, □ indicates the configuration direction, ✻✻✻ the stroke/applicable options (stroke is specified in centimeters), △ the cable length.

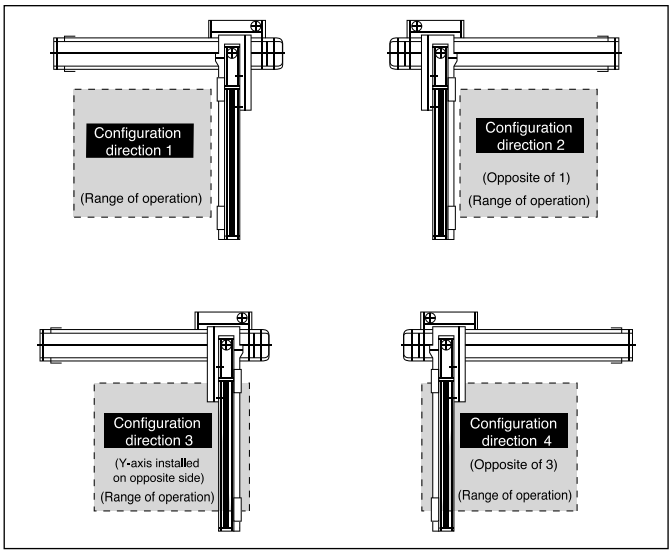
Options

Name	Code	Page	Remarks
AQ seal	AQ	➔ P13	
Brake	B	➔ P13	
Creep sensor	C	➔ P13	
Home limit switch	L	➔ P14	
Reverse homing specification	NM	➔ P14	
Guide with ball-retaining mechanism	RT	➔ P14	

Common Specifications

Drive system (Note 4)	Ball screw, rolled C10 [equivalent to rolled C5]
Backlash (Note 5)	0.05mm or less [0.02mm or less]
Guide	Integrated with base
Base	Material: Aluminum with white alumite treatment
Cable length (Note 6)	3L: 3m, 5L: 5m, □L : Length specification
Cable management	CT: Cable track

Configuration direction



Load Capacity by Acceleration (kg)

Acceleration (G) \ Y-axis stroke (mm)	200	300	400	500	600	700
0.3	40.0	40.0	33.0	27.3	22.9	19.3
0.4						
0.5						
0.6						
0.7						
0.8						
0.9						
1.0						

Maximum Speed by Stroke (mm/sec)

Axis \ Stroke (mm)	200 ~ 700	1000 ~ 1400	1500	1600	1700	1800	1900	2000	2500
X-axis	–	1000	950	830	740	650	590	540	340
Y-axis	1000	–	–	–	–	–	–	–	–

Applicable Controller Specifications

Applicable controller	Controller type	Model	Page
X-SEL	General-purpose type	XSEL-K-2-400□-200□-□-□□□-□-□	➔ P241
	Compact type	XSEL-J-2-400□-200□-□-□□□-□-□	➔ P241

Caution

(Note 1) The maximum speed will vary depending on the stroke. (Refer to the table of maximum speed by stroke.)
(Note 2) The load capacity assumes operation at the rated acceleration (0.3 G). The rated acceleration is the maximum specifiable acceleration for both the ICSA2 and ICSPA2.
(Notes 3, 4, 5) The figures in brackets apply to the ICSPA2.
(Note 6) The cable length measures from the X-axis connector box to the controller. The standard lengths are 3 m and 5 m, but other lengths can also be specified in meters up to 20 m (e.g., 10L = 10 m).

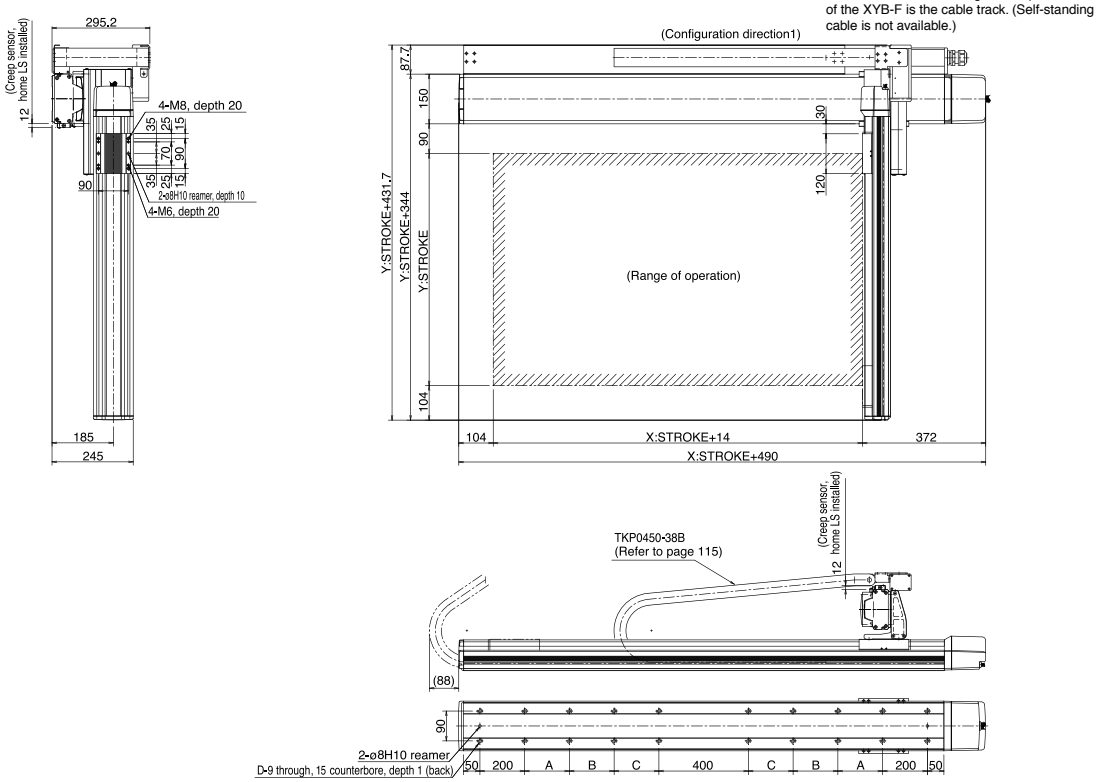
* Refer to page 59 for other points to note.

Cable Track Specification (Cable Management Code: CT)

Dimensions

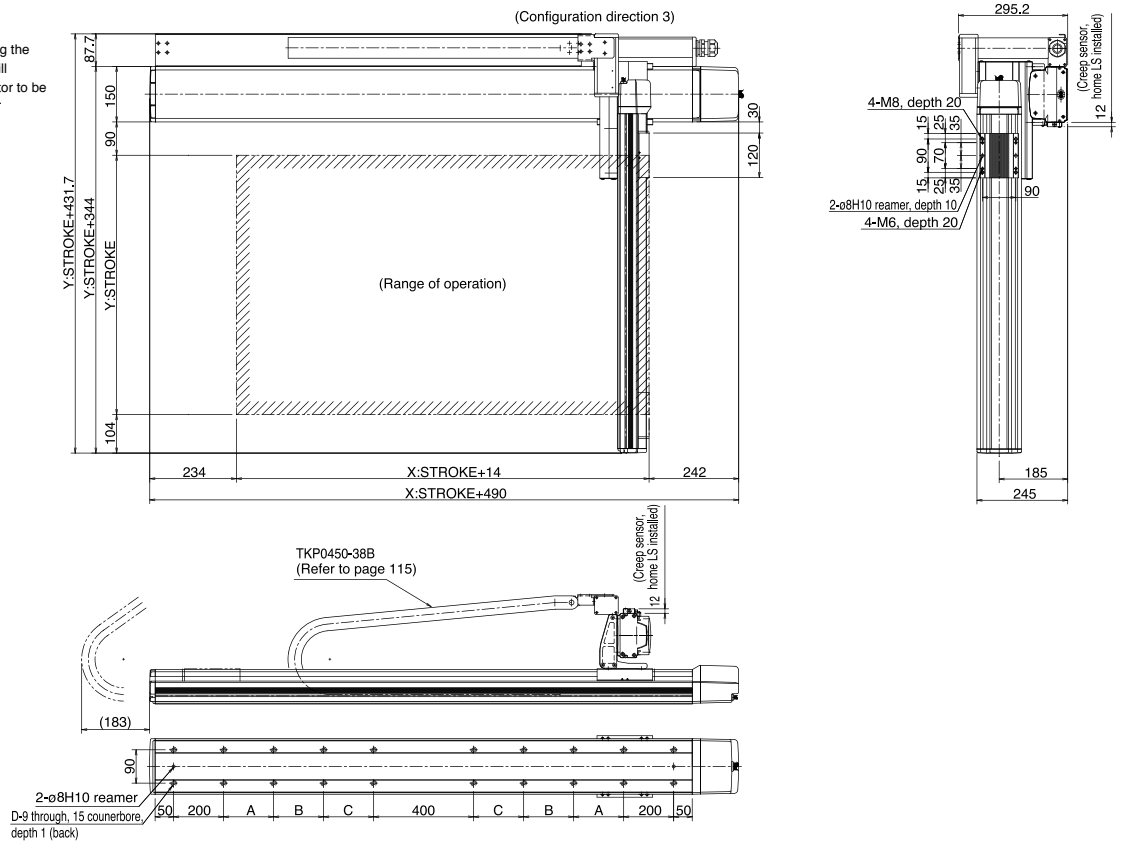
* Note that changing the home direction will require the actuator to be returned to IAI for adjustment.

* The standard cable management specification of the XYB-F is the cable track. (Self-standing cable is not available.)



X stroke	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500
A	225	275	325	375	425	475	525	575	200	200	200	200	200	200	200	200
B	0	0	0	0	0	0	0	0	425	475	525	575	200	200	200	200
C	0	0	0	0	0	0	0	0	0	0	0	0	425	475	525	575
D	12	12	12	12	12	12	12	12	16	16	16	16	20	20	20	20

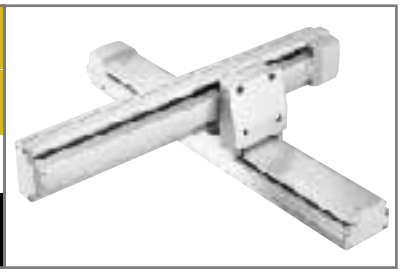
* Note that changing the home direction will require the actuator to be returned to IAI for adjustment.



X stroke	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500
A	225	275	325	375	425	475	525	575	200	200	200	200	200	200	200	200
B	0	0	0	0	0	0	0	0	425	475	525	575	200	200	200	200
C	0	0	0	0	0	0	0	0	0	0	0	0	425	475	525	575
D	12	12	12	12	12	12	12	12	16	16	16	16	20	20	20	20

ICSA2-SA□H
Cartesian Robot: X-Y 2-Axes Configuration, XYS (Y-Axis Slider Mount) Type

ICSPA2-SA□H
Cartesian Robot: X-Y 2-Axes Configuration, XYS (Y-Axis Slider Mount) Type High-Precision Specification



Type: XYS type | Stroke: X-axis: 100~600mm Y-axis: 100~400mm | Load capacity: 6.2kg ~ 4.1kg

■ Model specification items

Series	Type	Encoder type	X-axis stroke + options	Y-axis stroke + options	Applicable controller	Cable length	Cable management
ICSA2 –	SA1H –	A –	60AQLNM –	40AQL –	T1 –	5L –	SC

* Refer to page 61 for the details of model specification items.

Models/Specifications

Model	Axis configuration		Encoder type	Motor output (W)	Lead (mm)	Stroke (mm) In increments of 100mm	Speed (mm/s)	Load capacity (Note 1)	Positioning repeatability (mm) (Note 2)
ICSA2 [ICSPA2] -SA□H-A-＊＊＊-＊＊＊-T1-△-SC	X-axis	ISA [ISPA] -SXM-A-60-16-＊＊＊-T1	Absolute	60	16	100 ~ 600	1 ~ 800	6.2 ~ 4.1	±0.02 [±0.01]
	Y-axis	ISA [ISPA] -SYM-A-60-16-＊＊＊-T1				100 ~ 400			
ICSA2 [ICSPA2] -SA□H-I-＊＊＊-＊＊＊-T1-△-SC	X-axis	ISA [ISPA] -SXM-I-60-16-＊＊＊-T1	Incremental			100 ~ 600			
	Y-axis	ISA [ISPA] -SYM-I-60-16-＊＊＊-T1				100 ~ 400			

* In the above model names, □ indicates the configuration direction, ＊＊＊ the stroke/applicable options (stroke is specified in centimeters), △ the cable length.

Options

Name	Code	Page	Remarks
AQ seal	AQ	→ P13	
Brake	B	→ P13	
Creep sensor	C	→ P13	
Home limit switch	L	→ P14	
Reverse homing specification	NM	→ P14	
Guide with ball-retaining mechanism	RT	→ P14	

Common Specifications

Drive system (Note 4)	Ball screw, rolled C10 [equivalent to rolled C5]
Backlash (Note 5)	0.05mm or less [0.02mm or less]
Guide	Integrated with base
Base	Material: Aluminum with white alumite treatment
Cable length (Note 6)	3L: 3m, 5L: 5m, □L : Length specification
Cable management	SC: Self-standing cable

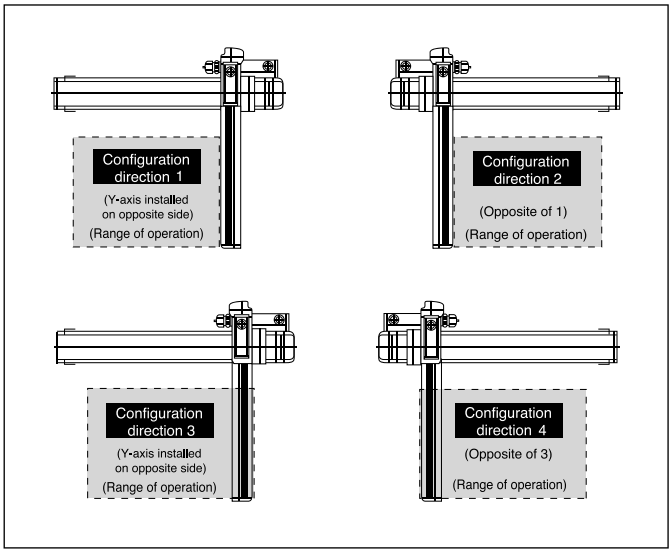
Load Capacity by Acceleration (kg)

Acceleration (G) \ Y-axis stroke (mm)	100	200	300	400
0.3	6.2	5.5	4.8	4.1
0.4	3.2	2.5	1.8	1.1
0.5	1.2	0.5		
0.6	0.2			
0.7				
0.8				
0.9				
1.0				

Maximum Speed by Stroke (mm/sec)

Axis \ Stroke (mm)	100 ~ 400	500 ~ 600
X-axis	800	
Y-axis	800	–

Configuration direction



Applicable Controller Specifications

Applicable controller	Controller type	Model	Page
X-SEL	General-purpose type	XSEL-K-2-60□-60□-□-□□□-□-□	→ P241
	Compact type	XSEL-J-2-60□-60□-□-□□□-□-□	→ P241

Caution

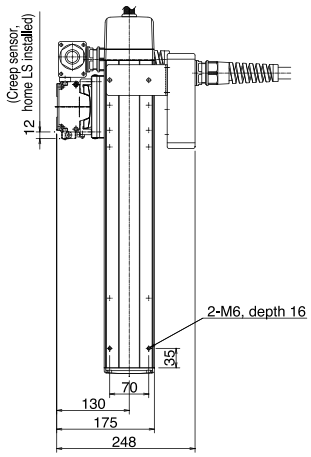
(Note 1) The load capacity assumes operation at the rated acceleration (0.3 G). The actuator can be operated at accelerations beyond the rated acceleration, but the load capacity will decrease (refer to the table of load capacity by acceleration).
(Notes 2, 3, 4) The figures in brackets apply to the ICSPA2.
(Note 5) The cable length measures from the X-axis connector box to the controller. The standard lengths are 3 m and 5 m, but other lengths can also be specified in meters up to 20 m (e.g., 10L = 10 m).

* Refer to page 59 for other points to note.

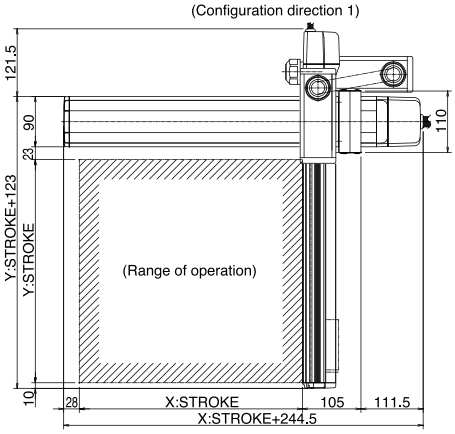
Self-standing Cable Specification (Cable Management Code: SC)

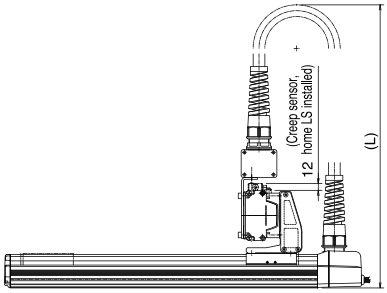
Dimensions

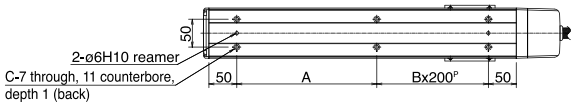
* Note that changing the home direction will require the actuator to be returned to IAI for adjustment.



(Configuration direction 1)







Dimension L						
Yst \ Xst	100	200	300	400	500	600
100	480	530	580	630	680	730
200	530	580	630	680	730	780
300	580	630	680	730	780	830
400	630	680	730	780	830	880

X stroke	100	200	300	400	500	600
A	151	251	151	251	151	251
B	0	0	1	1	2	2
C	4	4	6	6	8	8

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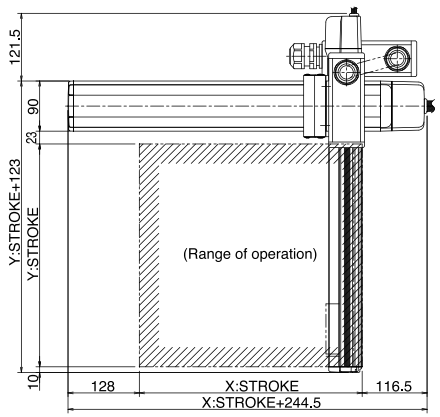
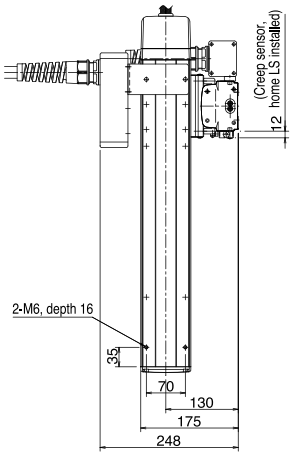
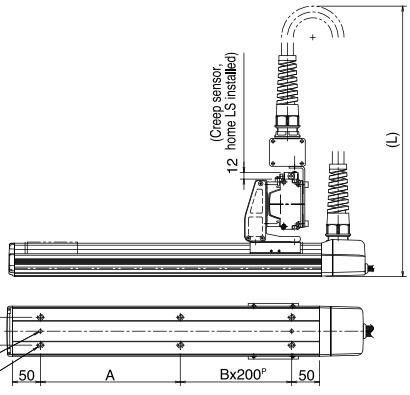
* Note that changing the home direction will require the actuator to be returned to IAI for adjustment.

(Configuration direction 3)





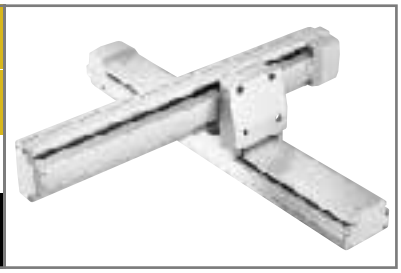


Dimension L						
Yst \ Xst	100	200	300	400	500	600
100	480	530	580	630	680	730
200	530	580	630	680	730	780
300	580	630	680	730	780	830
400	630	680	730	780	830	880

X stroke	100	200	300	400	500	600
A	151	251	151	251	151	251
B	0	0	1	1	2	2
C	4	4	6	6	8	8

ICSA2-SA□M Cartesian Robot: X-Y 2-Axes Configuration, XYS (Y-Axis Slider Mount) Type

ICSPA2-SA□M Cartesian Robot: X-Y 2-Axes Configuration, XYS (Y-Axis Slider Mount) Type High-Precision Specification



Type: XYS type | Stroke: X-axis: 100~600mm Y-axis: 100~400mm | Load capacity: 19.2kg ~ 6.4kg

■ Model specification items

Series	Type	Encoder type	X-axis stroke + options	Y-axis stroke + options	Applicable controller	Cable length	Cable management
ICSA2 –	SA1M –	A –	60AQLNM –	40AQL –	T1 –	5L –	SC

* Refer to page 61 for the details of model specification items.

Models/Specifications

Model	Axis configuration		Encoder type	Motor output (W)	Lead (mm)	Stroke (mm) In increments of 100mm	Speed (mm/s)	Load capacity (Note 1)	Positioning repeatability (mm) (Note 2)
ICSA2 [ICSPA2] -SA□M-A-✻✻✻-✻✻✻-T1-△-SC	X-axis	ISA [ISPA] -SXM-A-60-8-✻✻✻-T1	Absolute	60	8	100 ~ 600	1 ~ 400	19.2 ~ 6.4	±0.02 [±0.01]
	Y-axis	ISA [ISPA] -SYM-A-60-8-✻✻✻-T1				100 ~ 400			
ICSA2 [ICSPA2] -SA□M-I-✻✻✻-✻✻✻-T1-△-SC	X-axis	ISA [ISPA] -SXM-I-60-8-✻✻✻-T1	Incremental			100 ~ 600			
	Y-axis	ISA [ISPA] -SYM-I-60-8-✻✻✻-T1				100 ~ 400			

* In the above model names, □ indicates the configuration direction, ✻✻✻ the stroke/applicable options (stroke is specified in centimeters), △ the cable length.

Options

Name	Code	Page	Remarks
AQ seal	AQ	→ P13	
Brake	B	→ P13	
Creep sensor	C	→ P13	
Home limit switch	L	→ P14	
Reverse homing specification	NM	→ P14	
Guide with ball-retaining mechanism	RT	→ P14	

Common Specifications

Drive system (Note 4)	Ball screw, rolled C10 [equivalent to rolled C5]
Backlash (Note 5)	0.05mm or less [0.02mm or less]
Guide	Integrated with base
Base	Material: Aluminum with white alumite treatment
Cable length (Note 6)	3L: 3m, 5L: 5m, □L : Length specification
Cable management	SC: Self-standing cable

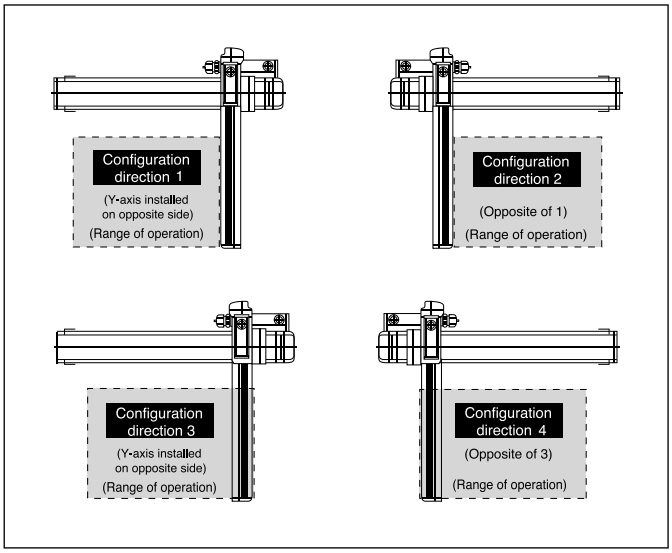
Load Capacity by Acceleration (kg)

Acceleration (G) \ Y-axis stroke (mm)	100	200	300	400
0.3	19.2	14.3	9.3	6.4
0.4	12.7	12	9.3	6.4
0.5	9.2	8.5	7.8	6.4
0.6	6.2	5.5	4.8	4.1
0.7				
0.8				
0.9				
1.0				

Maximum Speed by Stroke (mm/sec)

Axis \ Stroke (mm)	100 ~ 400	500 ~ 600
X-axis	400	
Y-axis	400	–

Configuration direction



Applicable Controller Specifications

Applicable controller	Controller type	Model	Page
X-SEL	General-purpose type	XSEL-K-2-60□-60□-□-□□□-□-□	→ P241
	Compact type	XSEL-J-2-60□-60□-□-□□□-□-□	→ P241

Caution

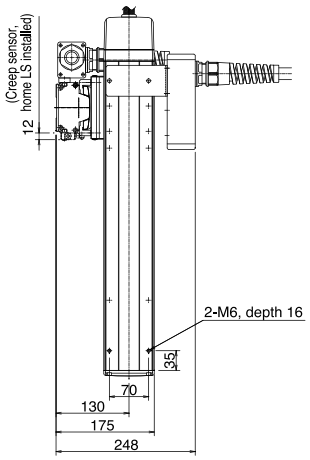
(Note 1) The load capacity assumes operation at the rated acceleration (0.3 G). The actuator can be operated at accelerations beyond the rated acceleration, but the load capacity will decrease (refer to the table of load capacity by acceleration).
(Notes 2, 3, 4) The figures in brackets apply to the ICSPA2.
(Note 5) The cable length measures from the X-axis connector box to the controller. The standard lengths are 3 m and 5 m, but other lengths can also be specified in meters up to 20 m (e.g., 10L = 10 m).

* Refer to page 59 for other points to note.

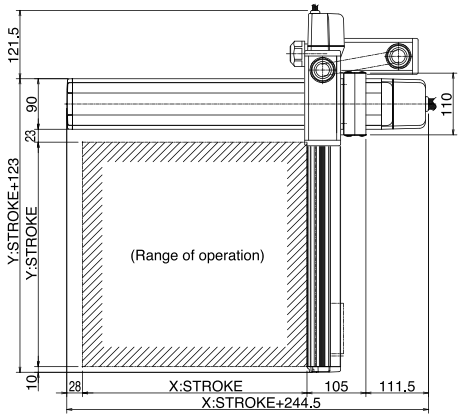
Self-standing Cable Specification (Cable Management Code: SC)

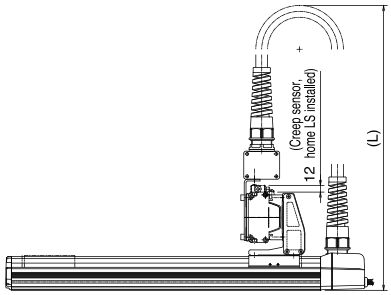
Dimensions

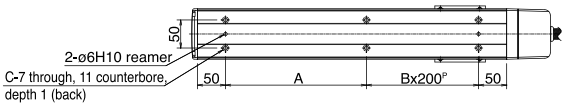
* Note that changing the home direction will require the actuator to be returned to IAI for adjustment.



(Configuration direction 1)







Dimension L						
Yst \ Xst	100	200	300	400	500	600
100	480	530	580	630	680	730
200	530	580	630	680	730	780
300	580	630	680	730	780	830
400	630	680	730	780	830	880

X stroke	100	200	300	400	500	600
A	151	251	151	251	151	251
B	0	0	1	1	2	2
C	4	4	6	6	8	8

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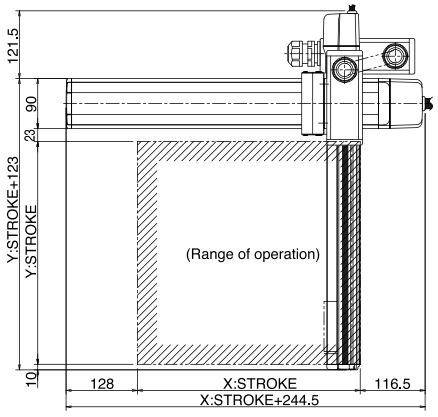
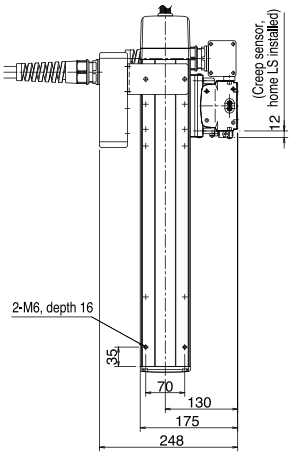
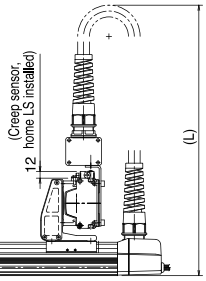
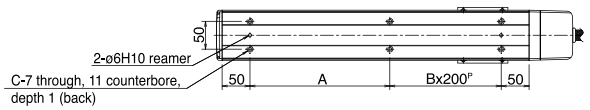
* Note that changing the home direction will require the actuator to be returned to IAI for adjustment.

(Configuration direction 3)







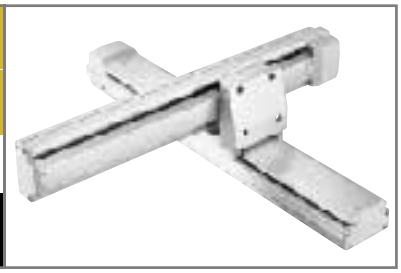


Dimension L						
Yst \ Xst	100	200	300	400	500	600
100	480	530	580	630	680	730
200	530	580	630	680	730	780
300	580	630	680	730	780	830
400	630	680	730	780	830	880

X stroke	100	200	300	400	500	600
A	151	251	151	251	151	251
B	0	0	1	1	2	2
C	4	4	6	6	8	8

ICSA2-S1C□H
Cartesian Robot: X-Y 2-Axes Configuration, XYS (Y-Axis Slider Mount) Type

ICSPA2-S1C□H
Cartesian Robot: X-Y 2-Axes Configuration, XYS (Y-Axis Slider Mount) Type High-Precision Specification



Type: XYS type | Stroke: X-axis: 200~800mm Y-axis: 100~500mm | Load capacity: 9.7kg ~ 5.6kg

■ Model specification items

Series	Type	Encoder type	X-axis stroke + options	Y-axis stroke + options	Applicable controller	Cable length	Cable management
ICSA2	S1C1H	A	80AQLNM	50AQL	T1	5L	SC

* Refer to page 61 for the details of model specification items.

Models/Specifications

Model	Axis configuration		Encoder type	Motor output (W)	Lead (mm)	Stroke (mm) In increments of 100mm	Speed (mm/s) (Note 1)	Load capacity (Note 2)	Positioning repeatability (mm) (Note 3)
ICSA2 [ICSPA2] -S1C□H-A-∗∗∗-∗∗∗-T1-△-SC	X-axis	ISA [ISPA] -MXM-A-100-20-∗∗∗-T1	Absolute	100	20	200 ~ 800	1 ~ 1000	9.7 ~ 5.6	±0.02 [±0.01]
	Y-axis	ISA [ISPA] -MYM-A-100-20-∗∗∗-T1				100 ~ 500			
ICSA2 [ICSPA2] -S1C□H-I-∗∗∗-∗∗∗-T1-△-SC	X-axis	ISA [ISPA] -MXM-I-100-20-∗∗∗-T1	Incremental			200 ~ 800			
	Y-axis	ISA [ISPA] -MYM-I-100-20-∗∗∗-T1				100 ~ 500			

* In the above model names, □ indicates the configuration direction, ∗∗∗ the stroke/applicable options (stroke is specified in centimeters), △ the cable length.

Options

Name	Code	Page	Remarks
AQ seal	AQ	→ P13	
Brake	B	→ P13	
Creep sensor	C	→ P13	
Home limit switch	L	→ P14	
Reverse homing specification	NM	→ P14	
Guide with ball-retaining mechanism	RT	→ P14	

Common Specifications

Drive system (Note 4)	Ball screw, rolled C10 [equivalent to rolled C5]
Backlash (Note 5)	0.05mm or less [0.02mm or less]
Guide	Integrated with base
Base	Material: Aluminum with white alumite treatment
Cable length (Note 6)	3L: 3m, 5L: 5m, □L : Length specification
Cable management	SC: Self-standing cable

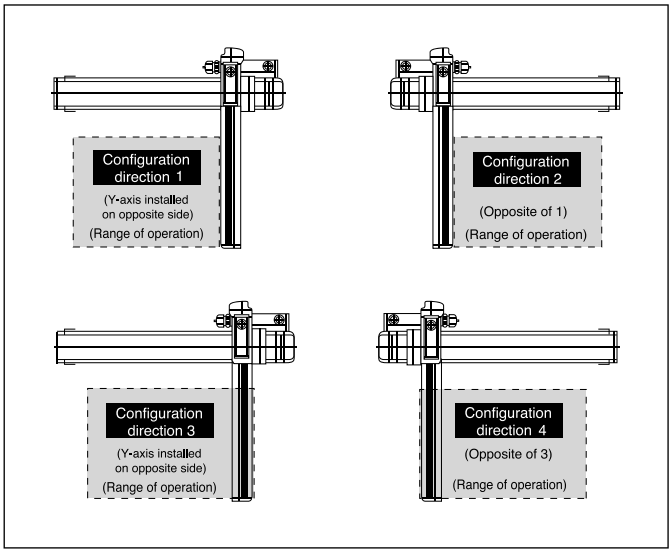
Load Capacity by Acceleration (kg)

Acceleration (G) \ Y-axis stroke (mm)	100	200	300	400	500
0.3	9.7	8.7	7.7	6.7	5.6
0.4	4.7	3.7	2.7	1.7	0.6
0.5	1.7	0.7			
0.6					
0.7					
0.8					
0.9					
1.0					

Maximum Speed by Stroke (mm/sec)

Axis \ Stroke (mm)	100	200 ~ 500	600 ~ 700	800
X-axis	–	1000		795
Y-axis	1000		–	–

Configuration direction



Applicable Controller Specifications

Applicable controller	Controller type	Model	Page
X-SEL	General-purpose type	XSEL-K-2-100□-100□-□-□□□-□-□	→ P241
	Compact type	XSEL-J-2-100□-100□-□-□□□-□-□	→ P241

Caution

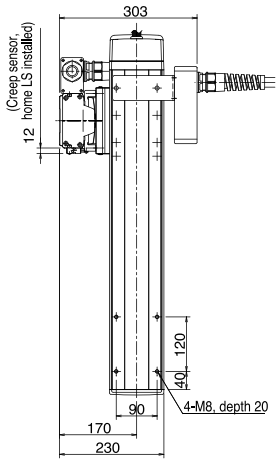
(Note 1) The maximum speed will vary depending on the stroke. (Refer to the table of maximum speed by stroke.)
(Note 2) The load capacity assumes operation at the rated acceleration (0.3 G). The actuator can be operated at accelerations beyond the rated acceleration, but the load capacity will decrease (refer to the table of load capacity by acceleration).
(Notes 3, 4, 5) The figures in brackets apply to the ICSPA2.
(Note 6) The cable length measures from the X-axis connector box to the controller. The standard lengths are 3 m and 5 m, but other lengths can also be specified in meters up to 20 m (e.g., 10L = 10 m).

* Refer to page 59 for other points to note.

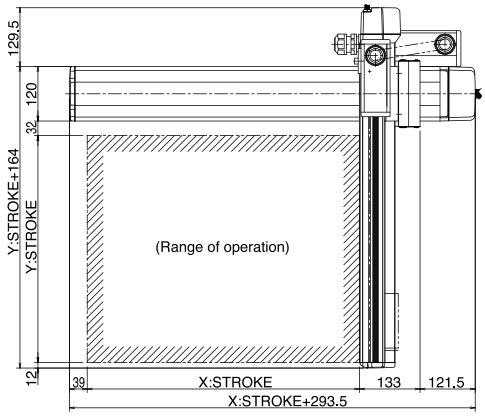
Self-standing Cable Specification (Cable Management Code: SC)

Dimensions

* Note that changing the home direction will require the actuator to be returned to IAI for adjustment.

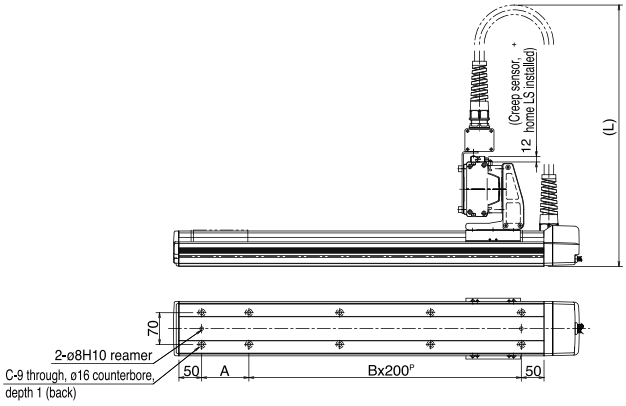


(Configuration direction 1)



Dimension L							
Yst \ Xst	200	300	400	500	600	700	800
100	550	600	650	700	750	800	850
200	600	650	700	750	800	850	900
300	650	700	750	800	850	900	950
400	700	750	800	850	900	950	1000
500	750	800	850	900	950	1000	1050

X stroke	200	300	400	500	600	700	800
A	104	204	104	204	104	204	104
B	1	1	2	2	3	3	4
C	6	6	8	8	10	10	12



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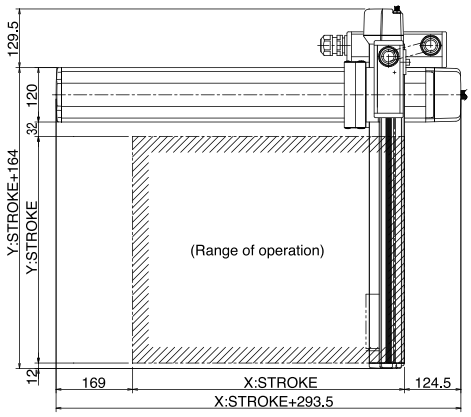
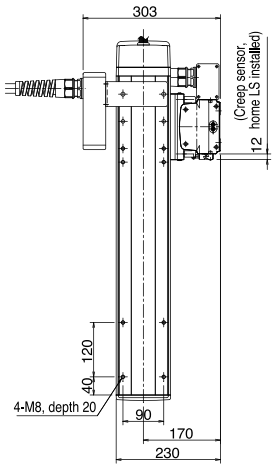
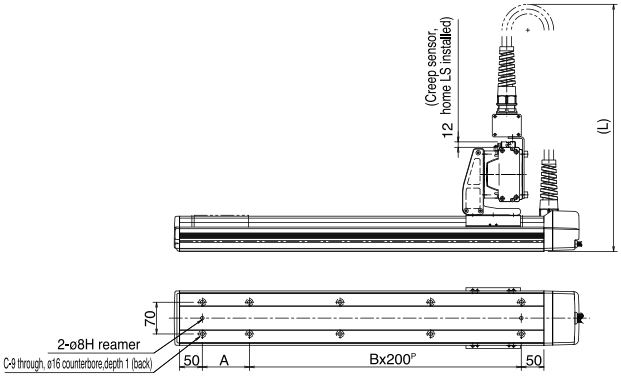
* Note that changing the home direction will require the actuator to be returned to IAI for adjustment.

(Configuration direction 3)





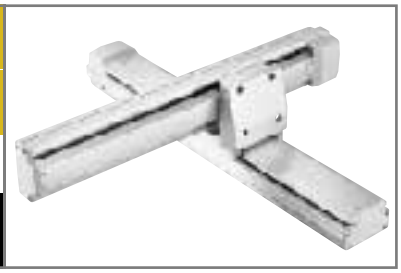


Dimension L							
Yst \ Xst	200	300	400	500	600	700	800
100	550	600	650	700	750	800	850
200	600	650	700	750	800	850	900
300	650	700	750	800	850	900	950
400	700	750	800	850	900	950	1000
500	750	800	850	900	950	1000	1050

X stroke	200	300	400	500	600	700	800
A	104	204	104	204	104	204	104
B	1	1	2	2	3	3	4
C	6	6	8	8	10	10	12

ICSA2-S1C□M
Cartesian Robot: X-Y 2-Axes Configuration, XYS (Y-Axis Slider Mount) Type

ICSPA2-S1C□M
Cartesian Robot: X-Y 2-Axes Configuration, XYS (Y-Axis Slider Mount) Type High-Precision Specification



Type: XYS type | Stroke: X-axis: 200~800mm Y-axis: 100~500mm | Load capacity: 29.7kg ~ 9.7kg

■ Model specification items

Series	Type	Encoder type	X-axis stroke + options	Y-axis stroke + options	Applicable controller	Cable length	Cable management
ICSA2	S1C1M	A	80AQLNM	50AQL	T1	5L	SC

* Refer to page 61 for the details of model specification items.

Models/Specifications

Model	Axis configuration		Encoder type	Motor output (W)	Lead (mm)	Stroke (mm) In increments of 100mm	Speed (mm/s) (Note 1)	Load capacity (Note 2)	Positioning repeatability (mm) (Note 3)
ICSA2 [ICSPA2] -S1C□M-A-✻✻✻-✻✻✻-T1-△-SC	X-axis	ISA [ISPA] -MXM-A-100-10-✻✻✻-T1	Absolute	100	10	200 ~ 800	1 ~ 500	29.7 ~ 9.7	±0.02 [±0.01]
	Y-axis	ISA [ISPA] -MYM-A-100-10-✻✻✻-T1				100 ~ 500			
ICSA2 [ICSPA2] -S1C□M-I-✻✻✻-✻✻✻-T1-△-SC	X-axis	ISA [ISPA] -MXM-I-100-10-✻✻✻-T1	Incremental			200 ~ 800			
	Y-axis	ISA [ISPA] -MYM-I-100-10-✻✻✻-T1				100 ~ 500			

* In the above model names, □ indicates the configuration direction, ✻✻✻ the stroke/applicable options (stroke is specified in centimeters), △ the cable length.

* In the above model names, □ indicates the configuration direction, ✻✻✻ the stroke/applicable options (stroke is specified in centimeters), △ the cable length.

Options

Name	Code	Page	Remarks
AQ seal	AQ	→ P13	
Brake	B	→ P13	
Creep sensor	C	→ P13	
Home limit switch	L	→ P14	
Reverse homing specification	NM	→ P14	
Guide with ball-retaining mechanism	RT	→ P14	

Common Specifications

Drive system (Note 4)	Ball screw, rolled C10 [equivalent to rolled C5]
Backlash (Note 5)	0.05mm or less [0.02mm or less]
Guide	Integrated with base
Base	Material: Aluminum with white alumite treatment
Cable length (Note 6)	3L: 3m, 5L: 5m, □L : Length specification
Cable management	SC: Self-standing cable

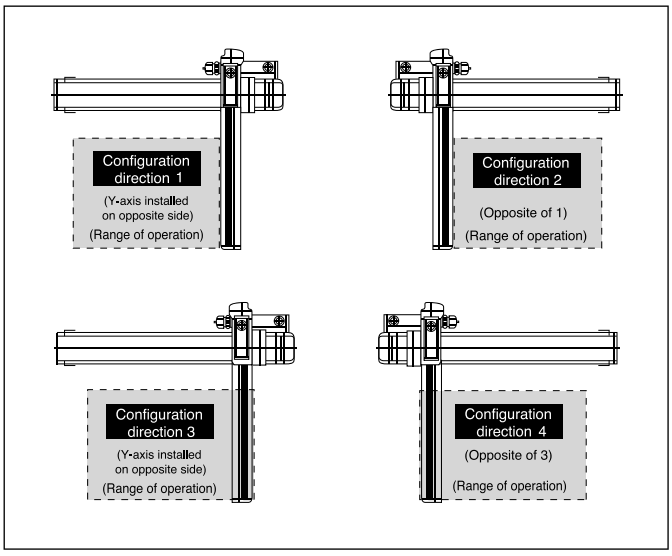
Load Capacity by Acceleration (kg)

Acceleration (G) \ Y-axis stroke (mm)	100	200	300	400	500
0.3	29.7	28.7	19.3	13.6	9.7
0.4	19.7	18.7	17.7	13.6	9.7
0.5	13.7	12.7	11.7	10.7	9.7
0.6	9.7	8.7	7.7	6.7	5.6
0.7					
0.8					
0.9					
1.0					

Maximum Speed by Stroke (mm/sec)

Axis \ Stroke (mm)	100	200 ~ 500	600	700	800
X-axis	–	500		480	380
Y-axis	500		–	–	–

Configuration direction



Applicable Controller Specifications

Applicable controller	Controller type	Model	Page
X-SEL	General-purpose type	XSEL-K-2-100□-100□-□-□□□-□-□	→ P241
	Compact type	XSEL-J-2-100□-100□-□-□□□-□-□	→ P241

Caution

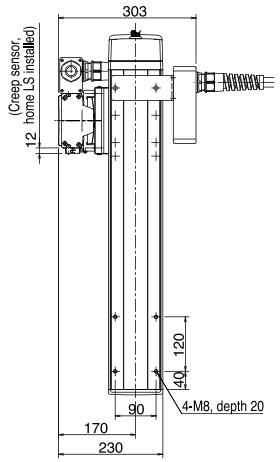
(Note 1) The maximum speed will vary depending on the stroke. (Refer to the table of maximum speed by stroke.)
(Note 2) The load capacity assumes operation at the rated acceleration (0.3 G). The actuator can be operated at accelerations beyond the rated acceleration, but the load capacity will decrease (refer to the table of load capacity by acceleration).
(Notes 3, 4, 5) The figures in brackets apply to the ICSPA2.
(Note 6) The cable length measures from the X-axis connector box to the controller. The standard lengths are 3 m and 5 m, but other lengths can also be specified in meters up to 20 m (e.g., 10L = 10 m).

* Refer to page 59 for other points to note.

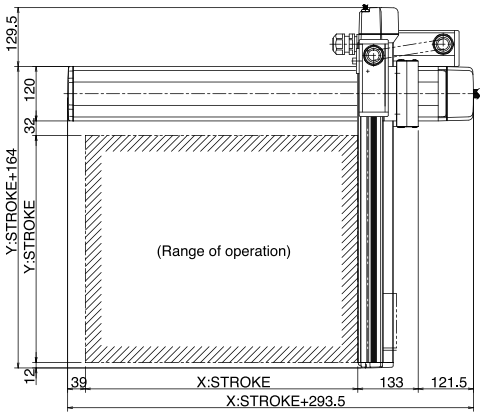
Self-standing Cable Specification (Cable Management Code: SC)

Dimensions

* Note that changing the home direction will require the actuator to be returned to IAI for adjustment.

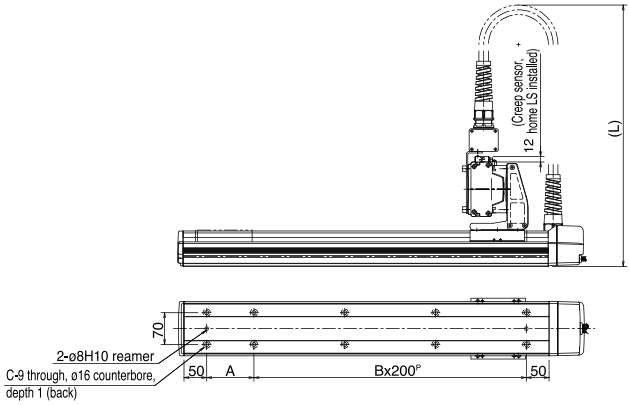


(Configuration direction 1)



Dimension L							
Yst \ Xst	200	300	400	500	600	700	800
100	550	600	650	700	750	800	850
200	600	650	700	750	800	850	900
300	650	700	750	800	850	900	950
400	700	750	800	850	900	950	1000
500	750	800	850	900	950	1000	1050

X stroke	200	300	400	500	600	700	800
A	104	204	104	204	104	204	104
B	1	1	2	2	3	3	4
C	6	6	8	8	10	10	12



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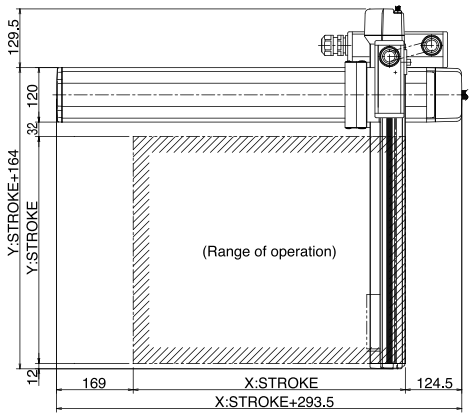
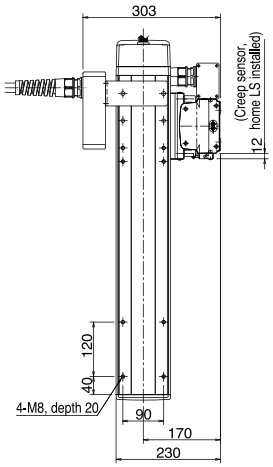
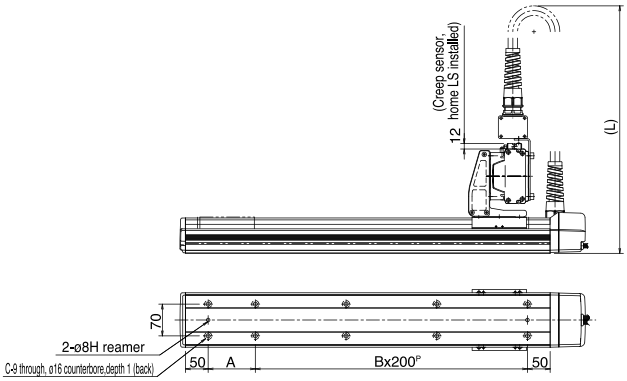
* Note that changing the home direction will require the actuator to be returned to IAI for adjustment.

(Configuration direction 3)





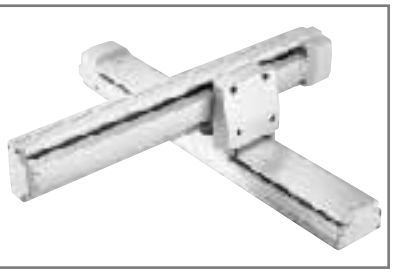


Dimension L							
Yst \ Xst	200	300	400	500	600	700	800
100	550	600	650	700	750	800	850
200	600	650	700	750	800	850	900
300	650	700	750	800	850	900	950
400	700	750	800	850	900	950	1000
500	750	800	850	900	950	1000	1050

X stroke	200	300	400	500	600	700	800
A	104	204	104	204	104	204	104
B	1	1	2	2	3	3	4
C	6	6	8	8	10	10	12

ICSA2-S2C□H
Cartesian Robot: X-Y 2-Axes Configuration, XYS (Y-Axis Slider Mount) Type

ICSPA2-S2C□H
Cartesian Robot: X-Y 2-Axes Configuration, XYS (Y-Axis Slider Mount) Type High-Precision Specification



Type	Stroke	Load capacity
XYS type	X-axis: 200~800mm Y-axis: 100~500mm	29.2kg ~ 9.7kg

Model specification items

Series	Type	Encoder type	X-axis stroke + options	Y-axis stroke + options	Applicable controller	Cable length	Cable management
ICSA2	S2C1H	A	80AQLNM	50AQL	T1	5L	SC

* Refer to page 61 for the details of model specification items.

Models/Specifications

Model	Axis configuration		Encoder type	Motor output (W)	Lead (mm)	Stroke (mm) In increments of 100mm	Speed (mm/s) (Note 1)	Load capacity (Note 2)	Positioning repeatability (mm) (Note 3)
ICSA2 [ICSPA2] -S2C□H-A-∗∗∗-∗∗∗-T1-△-SC	X-axis	ISA [ISPA] -MXM-A-200-20-∗∗∗-T1	Absolute	200	20	200 ~ 800	1 ~ 1000	29.2 ~ 9.7	±0.02 [±0.01]
	Y-axis	ISA [ISPA] -MYM-A-200-20-∗∗∗-T1				100 ~ 500			
ICSA2 [ICSPA2] -S2C□H-I-∗∗∗-∗∗∗-T1-△-SC	X-axis	ISA [ISPA] -MXM-I-200-20-∗∗∗-T1	Incremental			200 ~ 800			
	Y-axis	ISA [ISPA] -MYM-I-200-20-∗∗∗-T1				100 ~ 500			

* In the above model names, □ indicates the configuration direction, ∗∗∗ the stroke/applicable options (stroke is specified in centimeters), △ the cable length.

Options

Name	Code	Page	Remarks
AQ seal	AQ	➔ P13	
Brake	B	➔ P13	
Creep sensor	C	➔ P13	
Home limit switch	L	➔ P14	
Reverse homing specification	NM	➔ P14	
Guide with ball-retaining mechanism	RT	➔ P14	

Common Specifications

Drive system (Note 4)	Ball screw, rolled C10 [equivalent to rolled C5]
Backlash (Note 5)	0.05mm or less [0.02mm or less]
Guide	Integrated with base
Base	Material: Aluminum with white alumite treatment
Cable length (Note 6)	3L: 3m, 5L: 5m, □L : Length specification
Cable management	SC: Self-standing cable

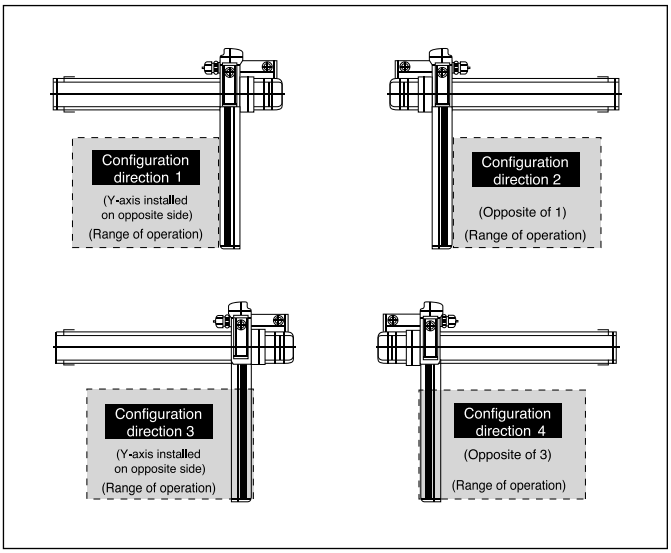
Load Capacity by Acceleration (kg)

Acceleration (G) \ Y-axis stroke (mm)	100	200	300	400	500
0.3	29.2	28.2	19.3	13.6	9.7
0.4	19.2	18.2	17.2	13.6	9.7
0.5	13.2	12.2	11.2	10.2	9.1
0.6	9.2	8.2	7.2	6.2	5.1
0.7	6.2	5.2	4.2	3.2	2.1
0.8	4.2	3.2	2.2	1.2	0.1
0.9	2.7	1.7	0.7		
1.0	1.2	0.2			

Maximum Speed by Stroke (mm/sec)

Axis \ Stroke (mm)	100	200 ~ 500	600 ~ 700	800
X-axis	–	1000		795
Y-axis	1000		–	–

Configuration direction



Applicable Controller Specifications

Applicable controller	Controller type	Model	Page
X-SEL	General-purpose type	XSEL-K-2-200□-200□-□-□□□-□-□	➔ P241
	Compact type	XSEL-J-2-200□-200□-□-□□□-□-□	➔ P241

Caution

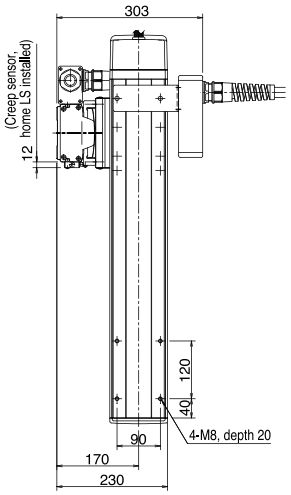
(Note 1) The maximum speed will vary depending on the stroke. (Refer to the table of maximum speed by stroke.)
(Note 2) The load capacity assumes operation at the rated acceleration (0.3 G). The actuator can be operated at accelerations beyond the rated acceleration, but the load capacity will decrease (refer to the table of load capacity by acceleration).
(Notes 3, 4, 5) The figures in brackets apply to the ICSPA2.
(Note 6) The cable length measures from the X-axis connector box to the controller. The standard lengths are 3 m and 5 m, but other lengths can also be specified in meters up to 20 m (e.g., 10L = 10 m).

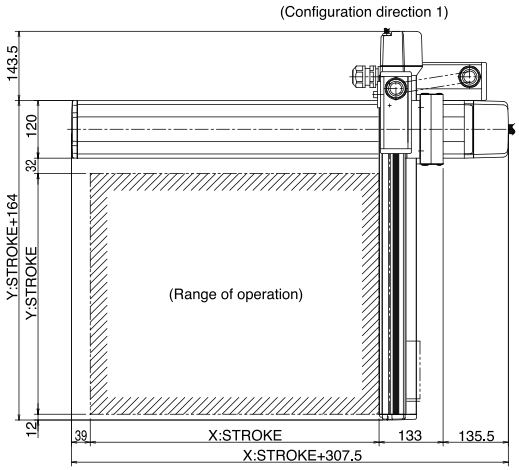
* Refer to page 59 for other points to note.

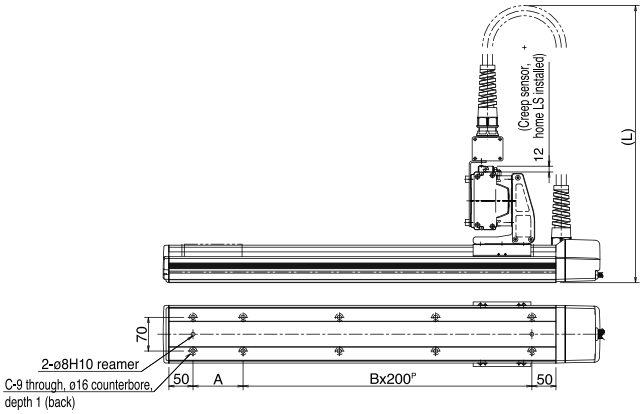
Self-standing Cable Specification (Cable Management Code: SC)

Dimensions

* Note that changing the home direction will require the actuator to be returned to IAI for adjustment.



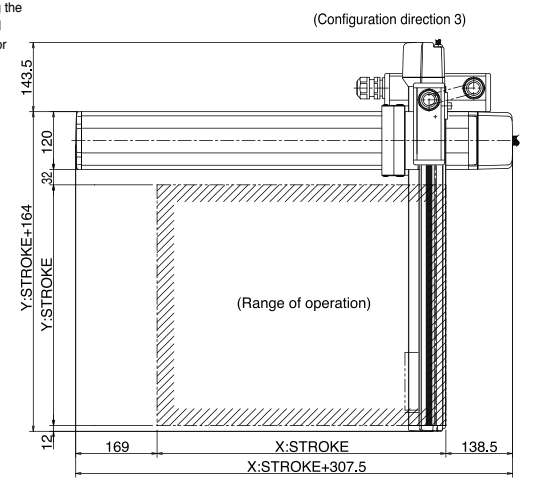


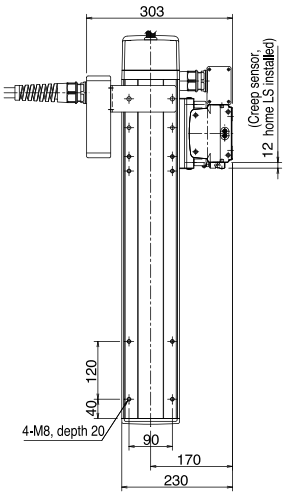


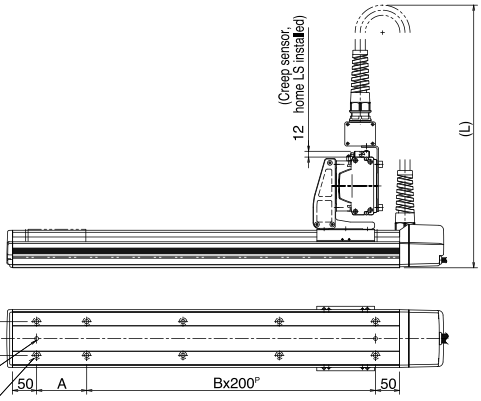
Dimension L							
Yst \ Xst	200	300	400	500	600	700	800
100	550	600	650	700	750	800	850
200	600	650	700	750	800	850	900
300	650	700	750	800	850	900	950
400	700	750	800	850	900	950	1000
500	750	800	850	900	950	1000	1050

X stroke	200	300	400	500	600	700	800
A	104	204	104	204	104	204	104
B	1	1	2	2	3	3	4
C	6	6	8	8	10	10	12

* Note that changing the home direction will require the actuator to be returned to IAI for adjustment.





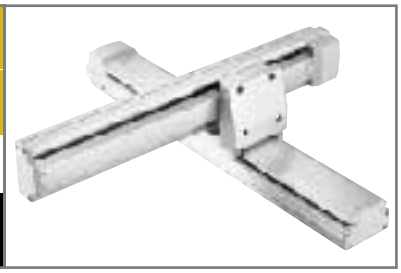


Dimension L							
Yst \ Xst	200	300	400	500	600	700	800
100	550	600	650	700	750	800	850
200	600	650	700	750	800	850	900
300	650	700	750	800	850	900	950
400	700	750	800	850	900	950	1000
500	750	800	850	900	950	1000	1050

X stroke	200	300	400	500	600	700	800
A	104	204	104	204	104	204	104
B	1	1	2	2	3	3	4
C	6	6	8	8	10	10	12

ICSA2-SG□H
Cartesian Robot: X-Y 2-Axes Configuration, XYS (Y-Axis Slider Mount) Type

ICSPA2-SG□H
Cartesian Robot: X-Y 2-Axes Configuration, XYS (Y-Axis Slider Mount) Type High-Precision Specification



Type: XYS type | Stroke: X-axis: 300~800mm Y-axis: 300~600mm | Load capacity: 20.7kg ~ 8.4kg

■ Model specification items

Series	Type	Encoder type	X-axis stroke + options	Y-axis stroke + options	Applicable controller	Cable length	Cable management
ICSA2 –	SG1H –	A –	80AQLNM –	60AQL –	T1 –	5L –	SC

* Refer to page 61 for the details of model specification items.

Models/Specifications

Model	Axis configuration		Encoder type	Motor output (W)	Lead (mm)	Stroke (mm) In increments of 100mm	Speed (mm/s)	Load capacity (Note 1)	Positioning repeatability (mm) (Note 2)
ICSA2 [ICSPA2] -SG□H-A-＊＊＊-＊＊＊-T1-△-SC	X-axis	ISA [ISPA] -LXM-A-200-20-＊＊＊-T1	Absolute	200	20	300 ~ 800	1 ~ 1000	20.7 ~ 8.4	±0.02 [±0.01]
	Y-axis	ISA [ISPA] -LYM-A-200-20-＊＊＊-T1				300 ~ 600			
ICSA2 [ICSPA2] -SG□H-I-＊＊＊-＊＊＊-T1-△-SC	X-axis	ISA [ISPA] -LXM-I-200-20-＊＊＊-T1	Incremental			300 ~ 800			
	Y-axis	ISA [ISPA] -LYM-I-200-20-＊＊＊-T1				300 ~ 600			

* In the above model names, □ indicates the configuration direction, ＊＊＊ the stroke/applicable options (stroke is specified in centimeters), △ the cable length.

Options

Name	Code	Page	Remarks
AQ seal	AQ	→ P13	
Brake	B	→ P13	
Creep sensor	C	→ P13	
Home limit switch	L	→ P14	
Reverse homing specification	NM	→ P14	
Guide with ball-retaining mechanism	RT	→ P14	

Common Specifications

Drive system (Note 3)	Ball screw, rolled C10 [equivalent to rolled C5]
Backlash (Note 4)	0.05mm or less [0.02mm or less]
Guide	Integrated with base
Base	Material: Aluminum with white alumite treatment
Cable length (Note 5)	3L: 3m, 5L: 5m, □L : Length specification
Cable management	SC: Self-standing cable

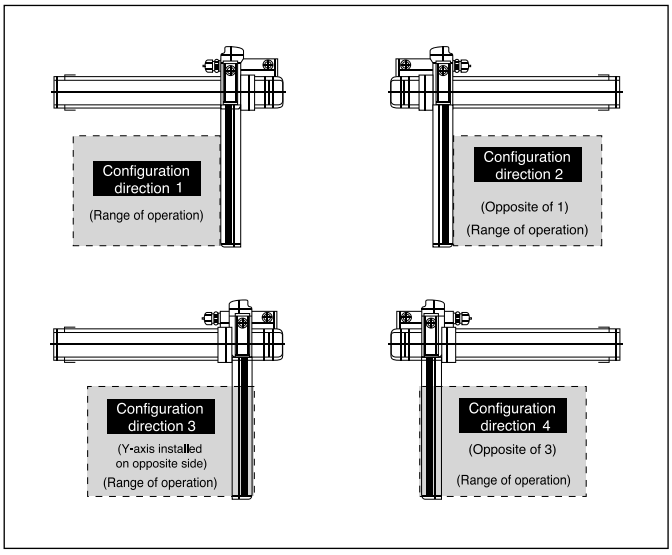
Load Capacity by Acceleration (kg)

Acceleration (G) \ Y-axis stroke (mm)	300	400	500	600
0.3	20.7	18.2	12.5	8.4
0.4	10.7	9.1	7.5	6.0
0.5	4.7	3.1	1.5	
0.6	0.7			
0.7				
0.8				
0.9				
1.0				

Maximum Speed by Stroke (mm/sec)

Axis \ Stroke (mm)	300 ~ 600	700 ~ 800
X-axis	1000	
Y-axis	1000	–

Configuration direction



Applicable Controller Specifications

Applicable controller	Controller type	Model	Page
X-SEL	General-purpose type	XSEL-K-2-200□-200□-□-□□□-□-□	→ P241
	Compact type	XSEL-J-2-200□-200□-□-□□□-□-□	→ P241

Caution

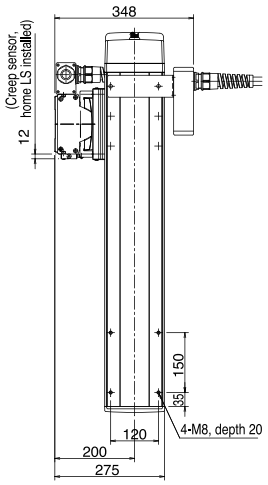
(Note 1) The load capacity assumes operation at the rated acceleration (0.3 G). The actuator can be operated at accelerations beyond the rated acceleration, but the load capacity will decrease (refer to the table of load capacity by acceleration).
(Notes 2, 3, 4) The figures in brackets apply to the ICSPA2.
(Note 5) The cable length measures from the X-axis connector box to the controller. The standard lengths are 3 m and 5 m, but other lengths can also be specified in meters up to 20 m (e.g., 10L = 10 m).

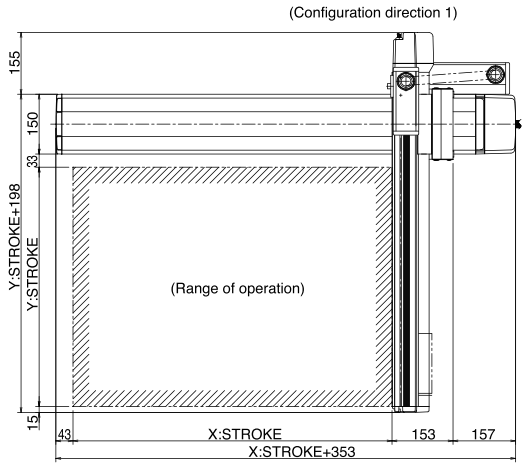
* Refer to page 59 for other points to note.

Self-standing Cable Specification (Cable Management Code: SC)

Dimensions

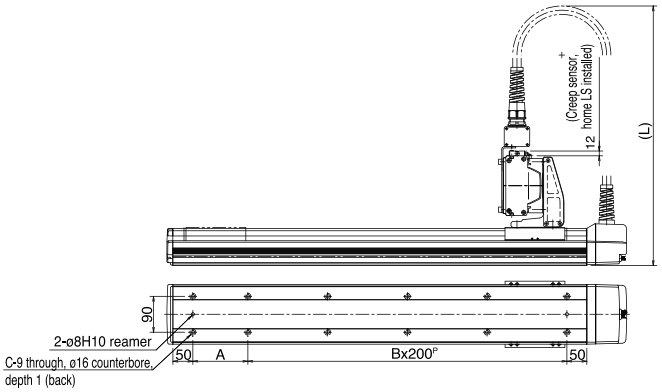
* Note that changing the home direction will require the actuator to be returned to IAI for adjustment.





Dimension L						
Yst \ Xst	300	400	500	600	700	800
300	700	750	800	850	900	950
400	750	800	850	900	950	1000
500	800	850	900	950	1000	1050
600	850	900	950	1000	1050	1100

X stroke	300	400	500	600	700	800
A	238	138	238	138	238	138
B	1	2	2	3	3	4
C	6	8	8	10	10	12



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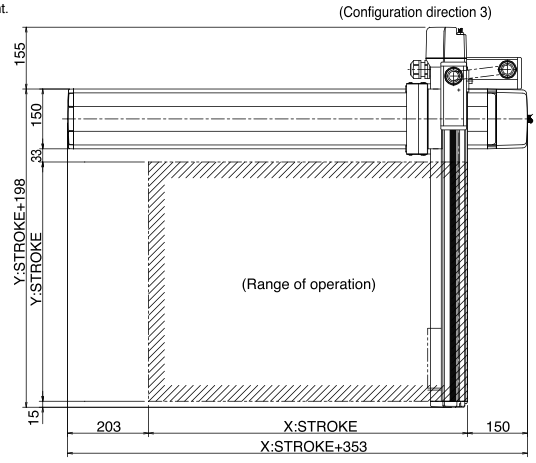
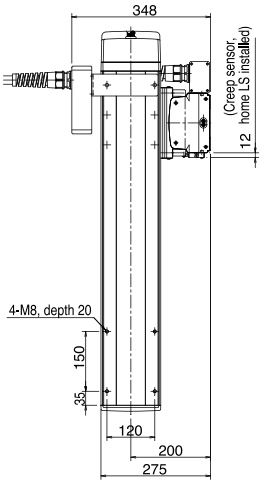
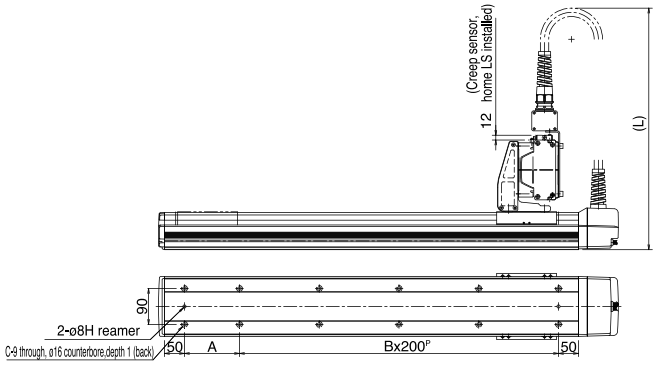
* Note that changing the home direction will require the actuator to be returned to IAI for adjustment.





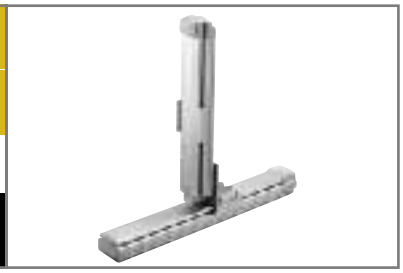


Dimension L						
Yst \ Xst	300	400	500	600	700	800
300	700	750	800	850	900	950
400	750	800	850	900	950	1000
500	800	850	900	950	1000	1050
600	850	900	950	1000	1050	1100

X stroke	300	400	500	600	700	800
A	238	138	238	138	238	138
B	1	2	2	3	3	4
C	6	8	8	10	10	12

ICSA2-ZAH
Cartesian Robot: X-Z 2-Axes Configuration, XZ (Z-Axis Base Mount) Type

ICSPA2-ZAH
Cartesian Robot: X-Z 2-Axes Configuration, XZ (Z-Axis Base Mount) Type High-Precision Specification



Type: XZ type | Stroke: X-axis: 100~600mm Z-axis: 100~300mm | Load capacity: 4kg ~ 2.6kg

■ Model specification items

Series	Type	Encoder type	X-axis stroke + options	Z-axis stroke + options	Applicable controller	Cable length	Cable management
ICSA2 – ZAH –	A	–	60AQLNM	– 30AQBL	– T1	– 5L	– CT

* Refer to page 61 for the details of model specification items.

Models/Specifications

Model	Axis configuration		Encoder type	Motor output (W)	Lead (mm)	Stroke (mm) In increments of 100mm	Speed (mm/s)	Load capacity (Note 1)	Positioning repeatability (mm) (Note 2)
ICSA [ICSPA2] -ZAH-A-✻✻✻-✻✻✻B-T1-△-CT	X-axis	ISA [ISA] -SXM-A-60-16-✻✻✻-T1	Absolute	60	16	100 ~ 600	1 ~ 800	4 ~ 2.6	±0.02 [±0.01]
	Z-axis	ISA [ISA] -SZM-A-60-8-✻✻✻-T1-B			8	100 ~ 300	1 ~ 400		
ICSA [ICSPA2] -ZAH-I-✻✻✻-✻✻✻B-T1-△-CT	X-axis	ISA [ISA] -SXM-I-60-16-✻✻✻-T1	Incremental		16	100 ~ 600	1 ~ 800		
	Z-axis	ISA [ISA] -SZM-I-60-8-✻✻✻-T1-B			8	100 ~ 300	1 ~ 400		

* In the above model names, ✻✻✻ indicates the stroke/applicable options (stroke is specified in centimeters), and △ the cable length.

Options

Name	Code	Page	Remarks
AQ seal	AQ	→ P13	
Brake	B	→ P13	Standard equipment on Z-axis
Creep sensor	C	→ P13	
Home limit switch	L	→ P14	
Reverse homing specification	NM	→ P14	
Guide with ball-retaining mechanism	RT	→ P14	

Common Specifications

Drive system (Note 3)	Ball screw, rolled C10 [equivalent to rolled C5]
Backlash (Note 4)	0.05mm or less [0.02mm or less]
Guide	Integrated with base
Base	Material: Aluminum with white alumite treatment
Cable length (Note 5)	3L: 3m, 5L: 5m, □L : Length specification
Cable management	CT: Cable track

Load Capacity by Acceleration (kg)

Acceleration (G) \ Z-axis stroke (mm)	100	200	300
0.3	4.0	3.3	2.6
0.4	1.0	0.3	
0.5			
0.6			
0.7			
0.8			
0.9			
1.0			

Maximum Speed by Stroke (mm/sec)

Axis \ Stroke (mm)	100 ~ 300	400 ~ 600
X-axis	800	
Z-axis	400	–

Applicable Controller Specifications

Applicable controller	Controller type	Model	Page
X-SEL	General-purpose type	XSEL-K-2-60□-60B□–□–□□□–□–□	→ P241
	Compact type	XSEL-J-2-60□-60B□–□–□□□–□–□	→ P241

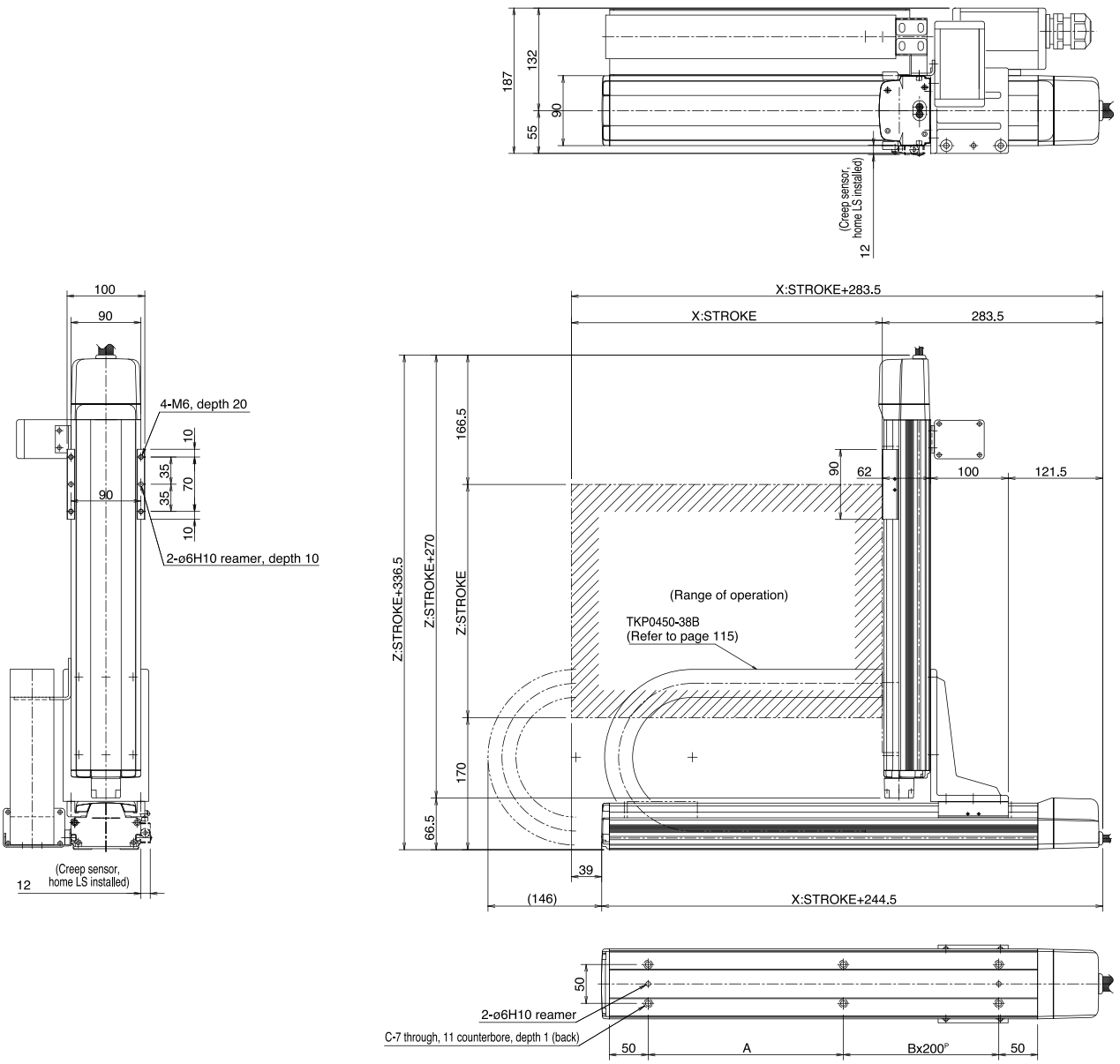
Caution

(Note 1) The load capacity assumes operation at the rated acceleration (0.3 G). The actuator can be operated at accelerations beyond the rated acceleration, but the load capacity will decrease (refer to the table of load capacity by acceleration).
(Notes 2, 3, 4) The figures in brackets apply to the ICSPA2.
(Note 5) The cable length measures from the X-axis connector box to the controller. The standard lengths are 3 m and 5 m, but other lengths can also be specified in meters up to 20 m (e.g., 10L = 10 m).

* Refer to page 59 for other points to note.

Cable Track Specification (Cable Management Code: CT)

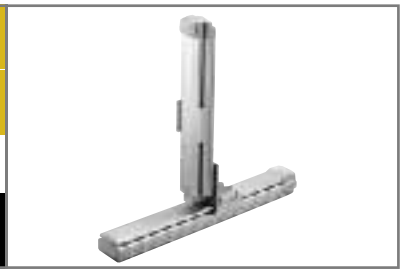
Dimensions



X stroke	100	200	300	400	500	600
A	151	251	151	251	151	251
B	0	0	1	1	2	2
C	4	4	6	6	8	8

ICSA2-ZAM
Cartesian Robot: X-Z 2-Axes Configuration, XZ (Z-Axis Base Mount) Type

ICSPA2-ZAM
Cartesian Robot: X-Z 2-Axes Configuration, XZ (Z-Axis Base Mount) Type High-Precision Specification



Type: XZ type | Stroke: X-axis: 100~600mm Z-axis: 100~300mm | Load capacity: 10kg ~ 6kg

■Model specification items

Series	Type	Encoder type	X-axis stroke + options	Z-axis stroke + options	Applicable controller	Cable length	Cable management
ICSA2 – ZAM –	A	– 60AQLNM	– 30AQBL	– T1	– 5L	– CT	

* Refer to page 61 for the details of model specification items.

Models/Specifications

Model	Axis configuration		Encoder type	Motor output (W)	Lead (mm)	Stroke (mm) In increments of 100mm	Speed (mm/s)	Load capacity (Note 1)	Positioning repeatability (mm) (Note 2)
ICSA2 [ICSPA2] -ZAM-A-＊＊＊-＊＊＊B-T1-△-CT	X-axis	ISA [ISPA] -SXM-A-60-8-＊＊＊-T1	Absolute	60	8	100 ~ 600	1 ~ 400	10 ~ 6	±0.02 [±0.01]
	Z-axis	ISA [ISPA] -SZM-A-60-4-＊＊＊-T1-B			4	100 ~ 300	1 ~ 200		
ICSA2 [ICSPA2] -ZAM-I-＊＊＊-＊＊＊B-T1-△-CT	X-axis	ISA [ISPA] -SXM-I-60-8-＊＊＊-T1	Incremental		8	100 ~ 600	1 ~ 400		
	Z-axis	ISA [ISPA] -SZM-I-60-4-＊＊＊-T1-B			4	100 ~ 300	1 ~ 200		

* In the above model names, ＊＊＊ indicates the stroke/applicable options (stroke is specified in centimeters), and △ the cable length.

Options

Name	Code	Page	Remarks
AQ seal	AQ	➔ P13	
Brake	B	➔ P13	Standard equipment on Z-axis
Creep sensor	C	➔ P13	
Home limit switch	L	➔ P14	
Reverse homing specification	NM	➔ P14	
Guide with ball-retaining mechanism	RT	➔ P14	

Common Specifications

Drive system (Note 3)	Ball screw, rolled C10 [equivalent to rolled C5]
Backlash (Note 4)	0.05mm or less [0.02mm or less]
Guide	Integrated with base
Base	Material: Aluminum with white alumite treatment
Cable length (Note 5)	3L: 3m, 5L: 5m, □L : Length specification
Cable management	CT: Cable track

Load Capacity by Acceleration (kg)

Acceleration (G) \ Z-axis stroke (mm)	100	200	300
0.3	10.0	7.5	6.0
0.4	8.5	6.0	4.0
0.5	7.0	4.5	3.0
0.6	4.0	3.3	2.0
0.7			
0.8			
0.9			
1.0			

* Assuming operation of the Z axis at its rated acceleration of 0.15 G, the load capacity varies according to the changes in acceleration of the X axis.

Maximum Speed by Stroke (mm/sec)

Axis \ Stroke (mm)	100 ~ 300	400 ~ 600
X-axis	400	
Z-axis	200	–

Applicable Controller Specifications

Applicable controller	Controller type	Model	Page
X-SEL	General-purpose type	XSEL-K-2-60□-60B□-□-□□□-□-□	➔ P241
	Compact type	XSEL-J-2-60□-60B□-□-□□□-□-□	➔ P241

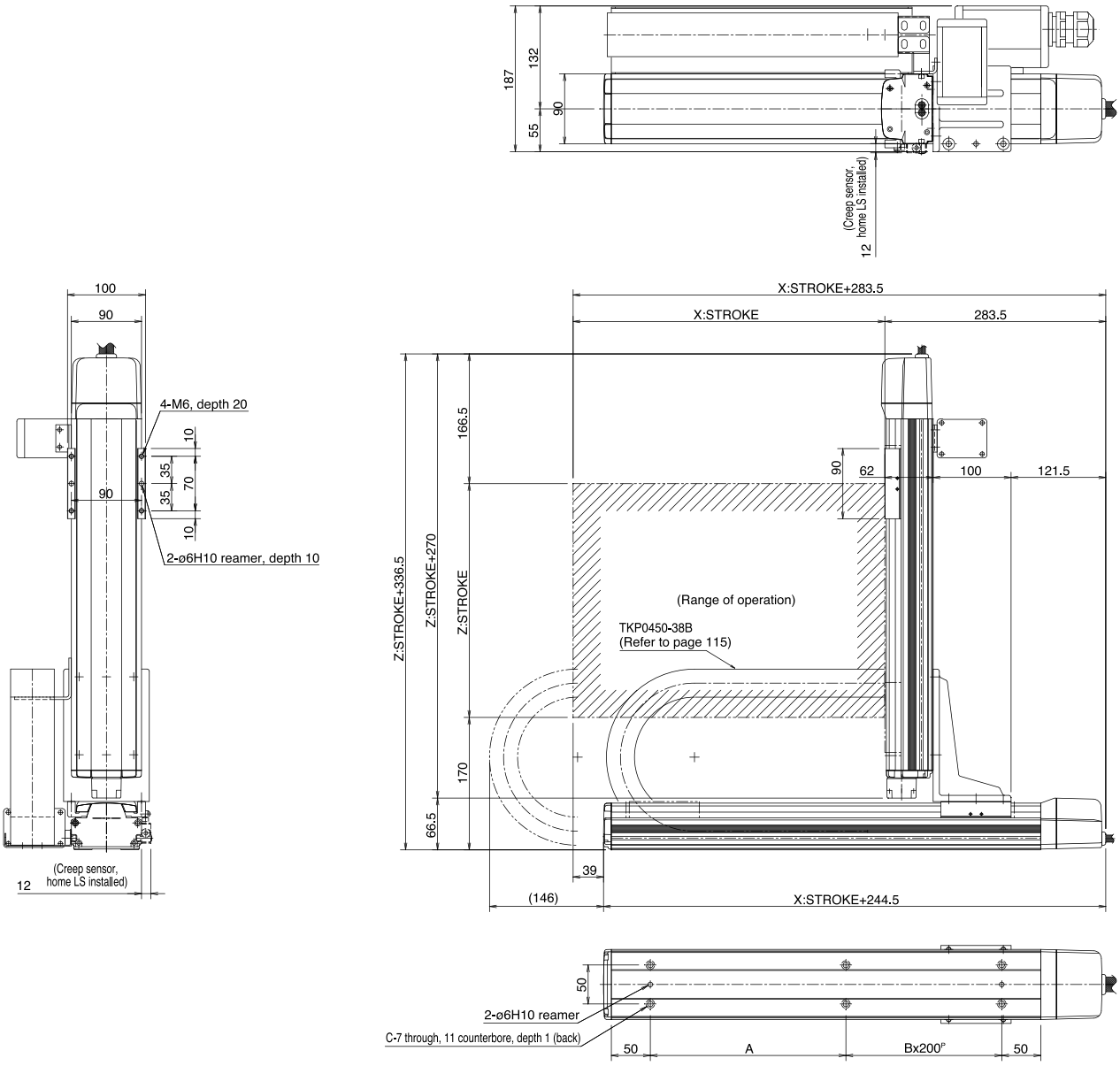
Caution

(Note 1) The load capacity assumes operation at the rated acceleration (0.3 G for the X-axis, 0.15 G for the Z-axis). The actuator can be operated at accelerations beyond the rated acceleration, but the load capacity will decrease (refer to the table of load capacity by acceleration).
(Notes 2, 3, 4) The figures in brackets apply to the ICSPA2.
(Note 5) The cable length measures from the X-axis connector box to the controller. The standard lengths are 3 m and 5 m, but other lengths can also be specified in meters up to 20 m (e.g., 10L = 10 m).

* Refer to page 59 for other points to note.

Cable Track Specification (Cable Management Code: CT)

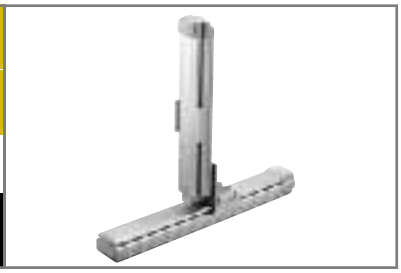
Dimensions



X stroke	100	200	300	400	500	600
A	151	251	151	251	151	251
B	0	0	1	1	2	2
C	4	4	6	6	8	8

ICSA2-Z1CH
Cartesian Robot: X-Z 2-Axes Configuration, XZ (Z-Axis Base Mount) Type

ICSPA2-Z1CH
Cartesian Robot: X-Z 2-Axes Configuration, XZ (Z-Axis Base Mount) Type High-Precision Specification



Type: XZ type | Stroke: X-axis: 200~800mm Z-axis: 100~400mm | Load capacity: 8.5kg ~ 5.5kg

■ Model specification items

Series	Type	Encoder type	X-axis stroke + options	Z-axis stroke + options	Applicable controller	Cable length	Cable management
ICSA2 –	Z1CH –	A	– 80AQLNM	– 40AQBL	– T1	– 5L	– CT

* Refer to page 61 for the details of model specification items.

Models/Specifications

Model	Axis configuration		Encoder type	Motor output (W)	Lead (mm)	Stroke (mm) In increments of 100mm	Speed (mm/s) (Note 1)	Load capacity (Note 2)	Positioning repeatability (mm) (Note 3)
ICSA2 [ICSPA2] -Z1CH-A-＊＊＊-＊＊＊B-T1-△-CT	X-axis	ISA [ISPA] -MXM-A-100-20-＊＊＊-T1	Absolute	100	20	200 ~ 800	1 ~ 1000	8.5 ~ 5.5	±0.02 [±0.01]
	Z-axis	ISA [ISPA] -MZM-A-100-10-＊＊＊-T1-B			10	100 ~ 400	1 ~ 500		
ICSA2 [ICSPA2] -Z1CH-I-＊＊＊-＊＊＊B-T1-△-CT	X-axis	ISA [ISPA] -MXM-I-100-20-＊＊＊-T1	Incremental		20	200 ~ 800	1 ~ 1000		
	Z-axis	ISA [ISPA] -MZM-I-100-10-＊＊＊-T1-B			10	100 ~ 400	1 ~ 500		

* In the above model names, ＊＊＊ indicates the stroke/applicable options (stroke is specified in centimeters), and △ the cable length.

Options

Name	Code	Page	Remarks
AQ seal	AQ	➔ P13	
Brake	B	➔ P13	Standard equipment on Z-axis
Creep sensor	C	➔ P13	
Home limit switch	L	➔ P14	
Reverse homing specification	NM	➔ P14	
Guide with ball-retaining mechanism	RT	➔ P14	

Common Specifications

Drive system (Note 4)	Ball screw, rolled C10 [equivalent to rolled C5]
Backlash (Note 5)	0.05mm or less [0.02mm or less]
Guide	Integrated with base
Base	Material: Aluminum with white alumite treatment
Cable length (Note 6)	3L: 3m, 5L: 5m, □L : Length specification
Cable management	CT: Cable track

Load Capacity by Acceleration (kg)

Acceleration (G) \ Z-axis stroke (mm)	100	200	300	400
0.3	8.5	7.5	6.5	5.5
0.4	3.5	2.5	1.5	0.5
0.5	0.5			
0.6				
0.7				
0.8				
0.9				
1.0				

Maximum Speed by Stroke (mm/sec)

Axis \ Stroke (mm)	100	200 ~ 400	500 ~ 700	800
X-axis	–	1000		795
Z-axis	500		–	–

Applicable Controller Specifications

Applicable controller	Controller type	Model	Page
X-SEL	General-purpose type	XSEL-K-2-100□-100B□-□-□□□-□-□	➔ P241
	Compact type	XSEL-J-2-100□-100B□-□-□□□-□-□	➔ P241

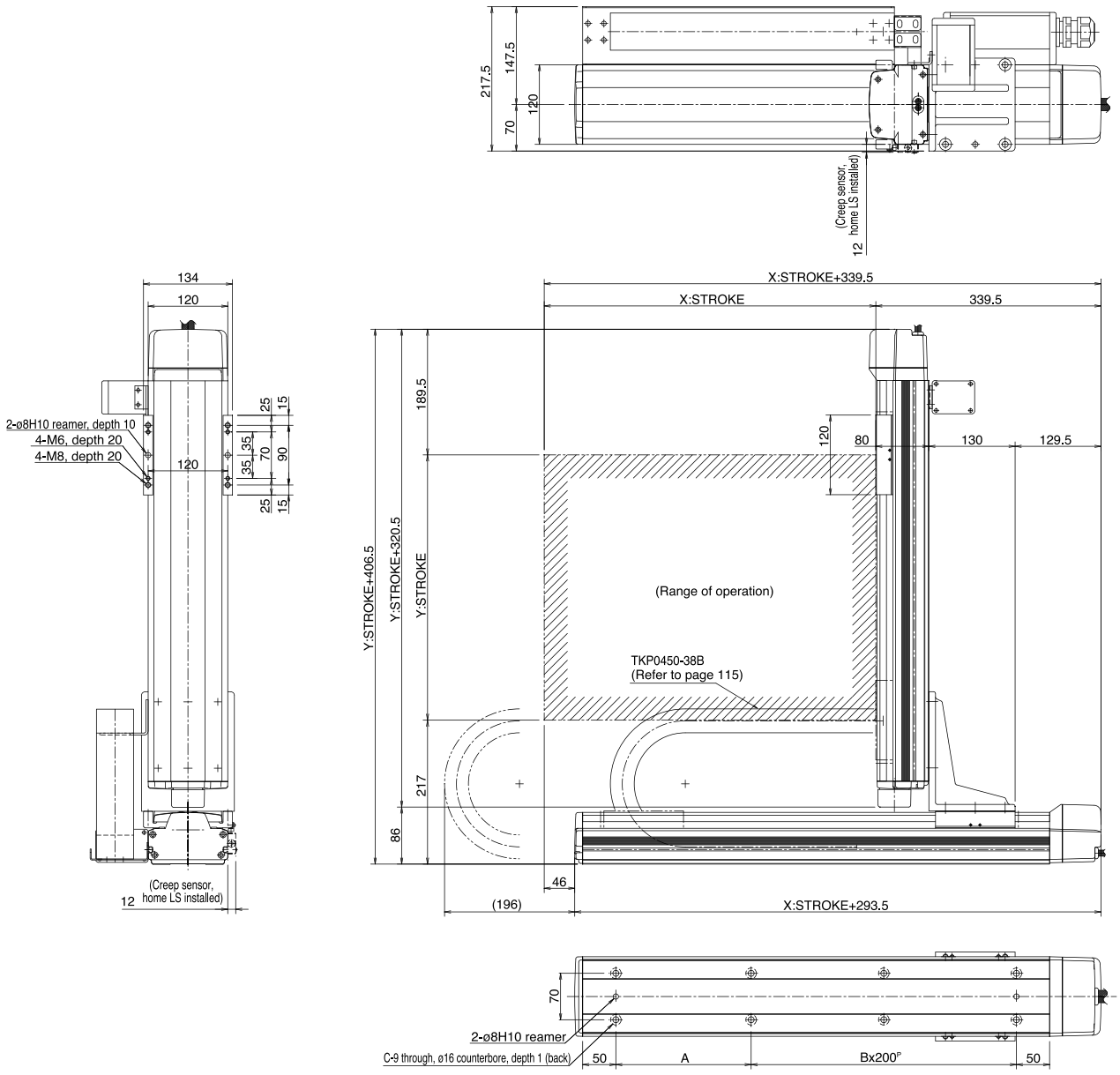
Caution

(Note 1) The maximum speed will vary depending on the stroke. (Refer to the table of maximum speed by stroke.)
(Note 2) The load capacity assumes operation at the rated acceleration (0.3 G). The actuator can be operated at accelerations beyond the rated acceleration, but the load capacity will decrease (refer to the table of load capacity by acceleration).
(Notes 3, 4, 5) The figures in brackets apply to the ICSPA2.
(Note 6) The cable length measures from the X-axis connector box to the controller. The standard lengths are 3 m and 5 m, but other lengths can also be specified in meters up to 20 m (e.g., 10L = 10 m).

* Refer to page 59 for other points to note.

Cable Track Specification (Cable Management Code: CT)

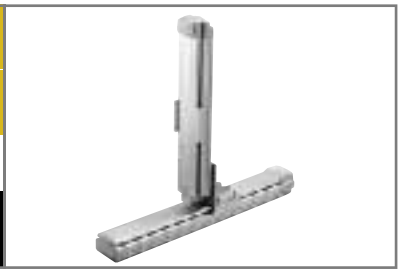
Dimensions



X stroke	200	300	400	500	600	700	800
A	104	204	104	204	104	204	104
B	1	1	2	2	3	3	4
C	6	6	8	8	10	10	12

ICSA2-Z1CM
Cartesian Robot: X-Z 2-Axes Configuration, XZ (Z-Axis Base Mount) Type

ICSPA2-Z1CM
Cartesian Robot: X-Z 2-Axes Configuration, XZ (Z-Axis Base Mount) Type High-Precision Specification



Type: XZ type | Stroke: X-axis: 200~800mm Z-axis: 100~400mm | Load capacity: 19kg ~ 12kg

■ Model specification items

Series	Type	Encoder type	X-axis stroke + options	Z-axis stroke + options	Applicable controller	Cable length	Cable management
ICSA2 – Z1CM –	A	– 80AQLNM	– 40AQBL	– T1	– 5L	– CT	

* Refer to page 61 for the details of model specification items.

Models/Specifications

Model	Axis configuration		Encoder type	Motor output (W)	Lead (mm)	Stroke (mm) In increments of 100mm	Speed (mm/s) (Note 1)	Load capacity (Note 2)	Positioning repeatability (mm) (Note 3)
ICSA2 [ICSPA2] -Z1CM-A-＊＊＊-＊＊＊B-T1-△-CT	X-axis	ISA [ISPA] -MXM-A-100-10-＊＊＊-T1	Absolute	100	10	200 ~ 800	1 ~ 500	19 ~ 12	±0.02 [±0.01]
	Z-axis	ISA [ISPA] -MZM-A-100-5-＊＊＊-T1-B			5	100 ~ 400	1 ~ 250		
ICSA2 [ICSPA2] -Z1CM-I-＊＊＊-＊＊＊B-T1-△-CT	X-axis	ISA [ISPA] -MXM-I-100-10-＊＊＊-T1	Incremental		10	200 ~ 800	1 ~ 500		
	Z-axis	ISA [ISPA] -MZM-I-100-5-＊＊＊-T1-B			5	100 ~ 400	1 ~ 250		

* In the above model names, ＊＊＊ indicates the stroke/applicable options (stroke is specified in centimeters), and △ the cable length.

Options

Name	Code	Page	Remarks
AQ seal	AQ	➔ P13	
Brake	B	➔ P13	Standard equipment on Z-axis
Creep sensor	C	➔ P13	
Home limit switch	L	➔ P14	
Reverse homing specification	NM	➔ P14	
Guide with ball-retaining mechanism	RT	➔ P14	

Common Specifications

Drive system (Note 4)	Ball screw, rolled C10 [equivalent to rolled C5]
Backlash (Note 5)	0.05mm or less [0.02mm or less]
Guide	Integrated with base
Base	Material: Aluminum with white alumite treatment
Cable length (Note 6)	3L: 3m, 5L: 5m, □L : Length specification
Cable management	CT: Cable track

Load Capacity by Acceleration (kg)

Acceleration (G) \ Z-axis stroke (mm)	100	200	300	400
0.3	19.0	17.0	14.0	12.0
0.4	18.5	14.0	11.0	9.0
0.5	12.5	11.5	9.0	7.0
0.6	8.5	7.5	6.5	5.0
0.7				
0.8				
0.9				
1.0				

* Assuming operation of the Z axis at its rated acceleration of 0.15 G, the load capacity varies according to the changes in acceleration of the X axis.

Maximum Speed by Stroke (mm/sec)

Axis \ Stroke (mm)	100	200 ~ 400	500 ~ 600	700	800
X-axis	–	500		480	380
Z-axis	250		–	–	–

Applicable Controller Specifications

Applicable controller	Controller type	Model	Page
X-SEL	General-purpose type	XSEL-K-2-100□-100B□-□-□□□-□-□	➔ P241
	Compact type	XSEL-J-2-100□-100B□-□-□□□-□-□	➔ P241

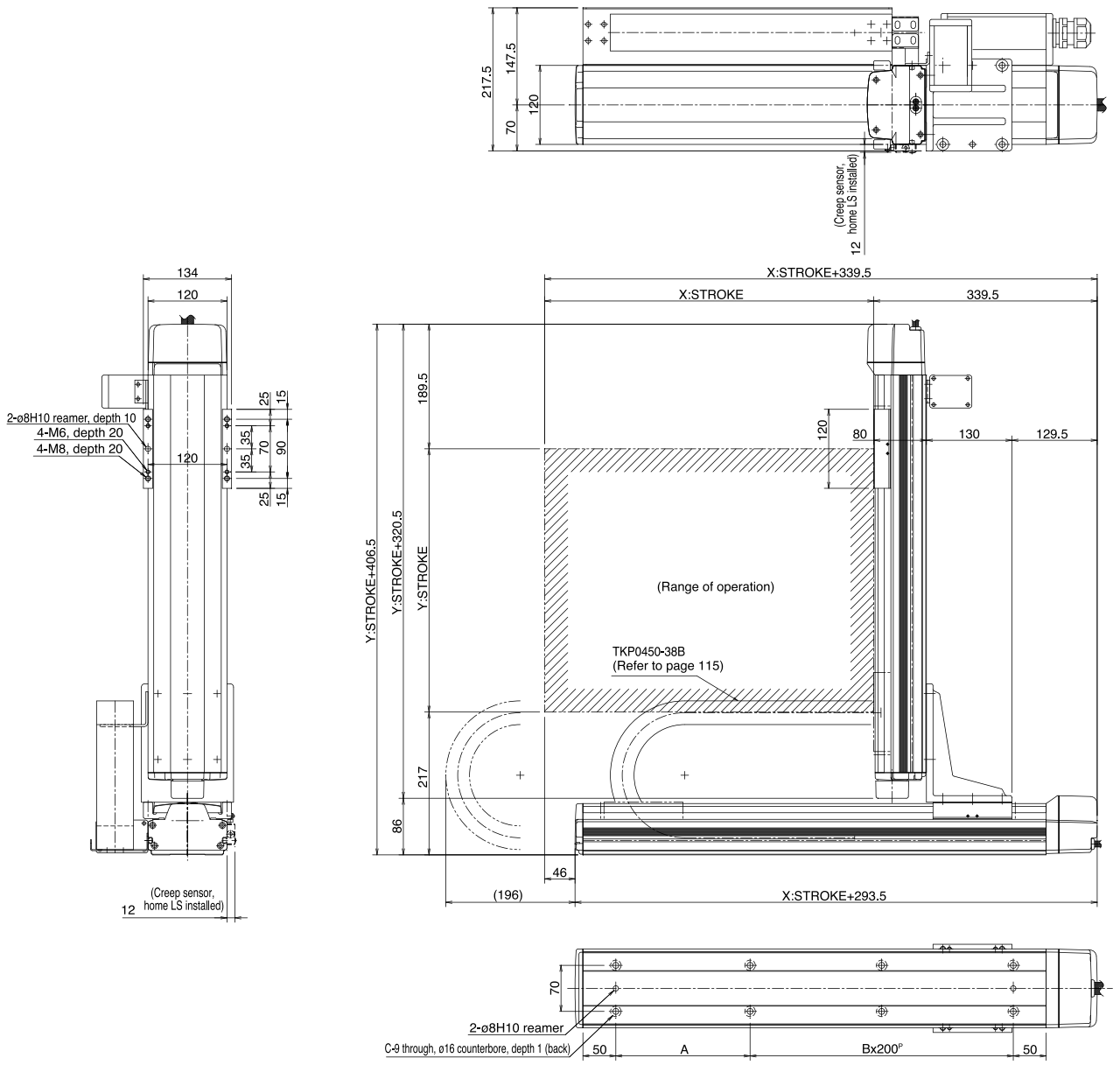
Caution

(Note 1) The maximum speed will vary depending on the stroke. (Refer to the table of maximum speed by stroke.)
(Note 2) The load capacity assumes operation at the rated acceleration (0.3 G for the X-axis, 0.15 G for the Z-axis). The actuator can be operated at accelerations beyond the rated acceleration, but the load capacity will decrease (refer to the table of load capacity by acceleration).
(Notes 3, 4, 5) The figures in brackets apply to the ICSPA2.
(Note 6) The cable length measures from the X-axis connector box to the controller. The standard lengths are 3 m and 5 m, but other lengths can also be specified in meters up to 20 m (e.g., 10L = 10 m).

* Refer to page 59 for other points to note.

Cable Track Specification (Cable Management Code: CT)

Dimensions



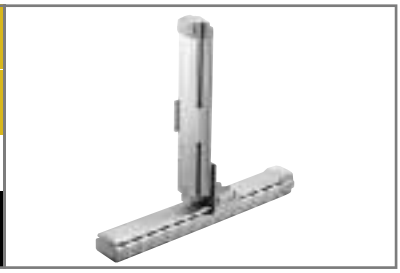
X stroke	200	300	400	500	600	700	800
A	104	204	104	204	104	204	104
B	1	1	2	2	3	3	4
C	6	6	8	8	10	10	12

ICSA2-Z2CH

Cartesian Robot: X-Z 2-Axes Configuration, XZ (Z-Axis Base Mount) Type

ICSPA2-Z2CH

Cartesian Robot: X-Z 2-Axes Configuration, XZ (Z-Axis Base Mount) Type High-Precision Specification



Type: XZ type | Stroke: X-axis: 200~800mm Z-axis: 100~400mm | Load capacity: 19kg ~ 11kg

■ Model specification items

Series	Type	Encoder type	X-axis stroke + options	Z-axis stroke + options	Applicable controller	Cable length	Cable management
ICSA2 – Z2CH –	A	–	80AQLNM	–	40AQBL	–	T1	–	5L	–	CT

* Refer to page 61 for the details of model specification items.

Models/Specifications

Model	Axis configuration		Encoder type	Motor output (W)	Lead (mm)	Stroke (mm) In increments of 100mm	Speed (mm/s) (Note 1)	Load capacity (Note 2)	Positioning repeatability (mm) (Note 3)
ICSA2 [ICSPA2] -Z2CH-A-＊＊＊-＊＊＊B-T1-△-CT	X-axis	ISA [ISPA] -MXM-A-200-20-＊＊＊-T1	Absolute	200	20	200 ~ 800	1 ~ 1000	19 ~ 11	±0.02 [±0.01]
	Z-axis	ISA [ISPA] -MZM-A-200-10-＊＊＊-T1-B			10	100 ~ 400	1 ~ 500		
ICSA2 [ICSPA2] -Z2CH-I-＊＊＊-＊＊＊B-T1-△-CT	X-axis	ISA [ISPA] -MXM-I-200-20-＊＊＊-T1	Incremental		20	200 ~ 800	1 ~ 1000		
	Z-axis	ISA [ISPA] -MZM-I-200-10-＊＊＊-T1-B			10	100 ~ 400	1 ~ 500		

* In the above model names, ＊＊＊ indicates the stroke/applicable options (stroke is specified in centimeters), and △ the cable length.

Options

Name	Code	Page	Remarks
AQ seal	AQ	➔ P13	
Brake	B	➔ P13	Standard equipment on Z-axis
Creep sensor	C	➔ P13	
Home limit switch	L	➔ P14	
Reverse homing specification	NM	➔ P14	
Guide with ball-retaining mechanism	RT	➔ P14	

Common Specifications

Drive system (Note 4)	Ball screw, rolled C10 [equivalent to rolled C5]
Backlash (Note 5)	0.05mm or less [0.02mm or less]
Guide	Integrated with base
Base	Material: Aluminum with white alumite treatment
Cable length (Note 6)	3L: 3m, 5L: 5m, □L : Length specification
Cable management	CT: Cable track

Load Capacity by Acceleration (kg)

Acceleration (G) \ Z-axis stroke (mm)	100	200	300	400
0.3	19.0	16.0	13.0	11.0
0.4	16.3	13.0	10.0	8.0
0.5	11.3	10.3	8.0	6.0
0.6				
0.7				
0.8				
0.9				
1.0				

Maximum Speed by Stroke (mm/sec)

Axis \ Stroke (mm)	100	200 ~ 400	500 ~ 700	800
X-axis	–	1000		795
Z-axis	500		–	–

Applicable Controller Specifications

Applicable controller	Controller type	Model	Page
X-SEL	General-purpose type	XSEL-K-2-200□-200B□-□-□□□-□-□	➔ P241
	Compact type	XSEL-J-2-200□-200B□-□-□□□-□-□	➔ P241

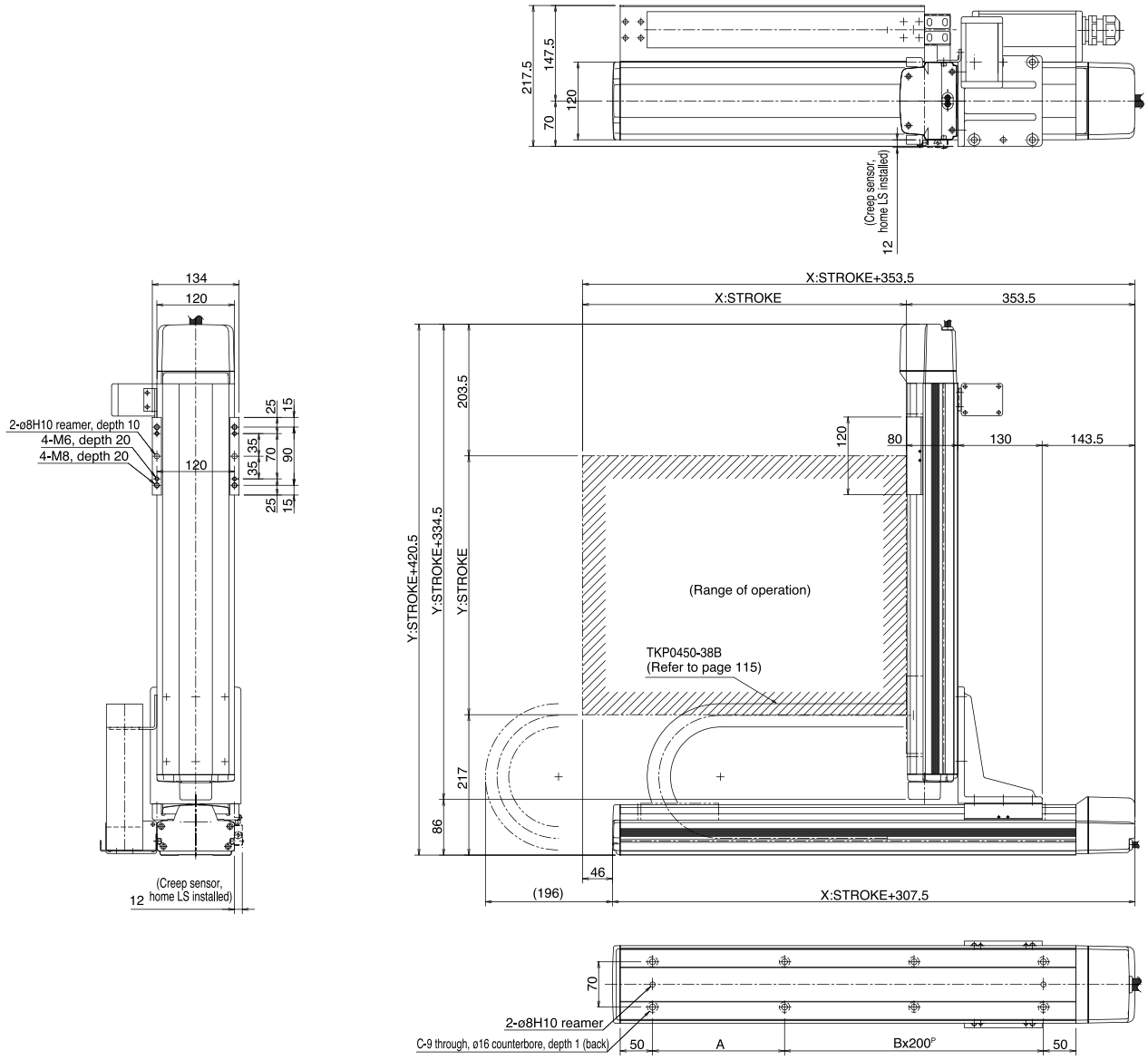
Caution

(Note 1) The maximum speed will vary depending on the stroke. (Refer to the table of maximum speed by stroke.)
(Note 2) The load capacity assumes operation at the rated acceleration (0.3 G). The actuator can be operated at accelerations beyond the rated acceleration, but the load capacity will decrease (refer to the table of load capacity by acceleration).
(Notes 3, 4, 5) The figures in brackets apply to the ICSPA2.
(Note 6) The cable length measures from the X-axis connector box to the controller. The standard lengths are 3 m and 5 m, but other lengths can also be specified in meters up to 20 m (e.g., 10L = 10 m).

* Refer to page 59 for other points to note.

Cable Track Specification (Cable Management Code: CT)

Dimensions



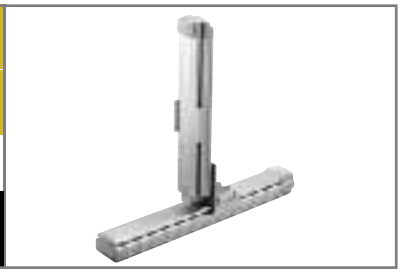
X stroke	200	300	400	500	600	700	800
A	104	204	104	204	104	204	104
B	1	1	2	2	3	3	4
C	6	6	8	8	10	10	12

ICSA2-ZDH

Cartesian Robot: X-Z 2-Axes Configuration, XZ (Z-Axis Base Mount) Type

ICSPA2-ZDH

Cartesian Robot: X-Z 2-Axes Configuration, XZ (Z-Axis Base Mount) Type High-Precision Specification



Type	Stroke	Load capacity
XZ type	X-axis: 800~2000mm Z-axis: 100~400mm	19kg ~ 11kg

Model specification items

Series	Type	Encoder type	X-axis stroke + options	Z-axis stroke + options	Applicable controller	Cable length	Cable management
ICSA2 – ZDH –	A	–	200AQLNM	– 40AQBL	– T1	– 5L	– CT

* Refer to page 61 for the details of model specification items.

Models/Specifications

Model	Axis configuration		Encoder type	Motor output (W)	Lead (mm)	Stroke (mm) In increments of 100mm	Speed (mm/s) (Note 1)	Load capacity (Note 2)	Positioning repeatability (mm) (Note 3)
ICSA2 [ICSPA2] -ZDH-A-✻✻✻-✻✻✻B-T1-△-CT	X-axis	ISA [ISPA] -MXMX-A-200-20-✻✻✻-T1	Absolute	200	20	800 ~ 2000	1 ~ 1000	19 ~ 11	±0.02 [±0.01]
	Z-axis	ISA [ISPA] -MZM-A-200-10-✻✻✻-T1-B			10	100 ~ 400	1 ~ 500		
ICSA2 [ICSPA2] -ZDH-I-✻✻✻-✻✻✻B-T1-△-CT	X-axis	ISA [ISPA] -MXMX-I-200-20-✻✻✻-T1	Incremental		20	800 ~ 2000	1 ~ 1000		
	Z-axis	ISA [ISPA] -MZM-I-200-10-✻✻✻-T1-B			10	100 ~ 400	1 ~ 500		

* In the above model names, ✻✻✻ indicates the stroke/applicable options (stroke is specified in centimeters), and △ the cable length.

Options

Name	Code	Page	Remarks
AQ seal	AQ	➔ P13	
Brake	B	➔ P13	Standard equipment on Z-axis
Creep sensor	C	➔ P13	
Home limit switch	L	➔ P14	
Reverse homing specification	NM	➔ P14	
Guide with ball-retaining mechanism	RT	➔ P14	

Common Specifications

Drive system (Note 4)	Ball screw, rolled C10 [equivalent to rolled C5]
Backlash (Note 5)	0.05mm or less [0.02mm or less]
Guide	Integrated with base
Base	Material: Aluminum with white alumite treatment
Cable length (Note 6)	3L: 3m, 5L: 5m, □L : Length specification
Cable management	CT: Cable track

Load Capacity by Acceleration (kg)

Acceleration (G) \ Z-axis stroke (mm)	100	200	300	400
0.3	19.0	16.0	13.0	11.0
0.4				
0.5				
0.6				
0.7				
0.8				
0.9				
1.0				

Maximum Speed by Stroke (mm/sec)

Axis \ Stroke (mm)	100~ 400	800~1300	1400	1500	1600	1700	1800	1900	2000
X-axis	–	1000	950	800	700	600	550	500	450
Z-axis	500		–	–	–	–	–	–	–

Applicable Controller Specifications

Applicable controller	Controller type	Model	Page
X-SEL	General-purpose type	XSEL-K-2-200□-200B□-□-□□□-□-□	➔ P241
	Compact type	XSEL-J-2-200□-200B□-□-□□□-□-□	➔ P241

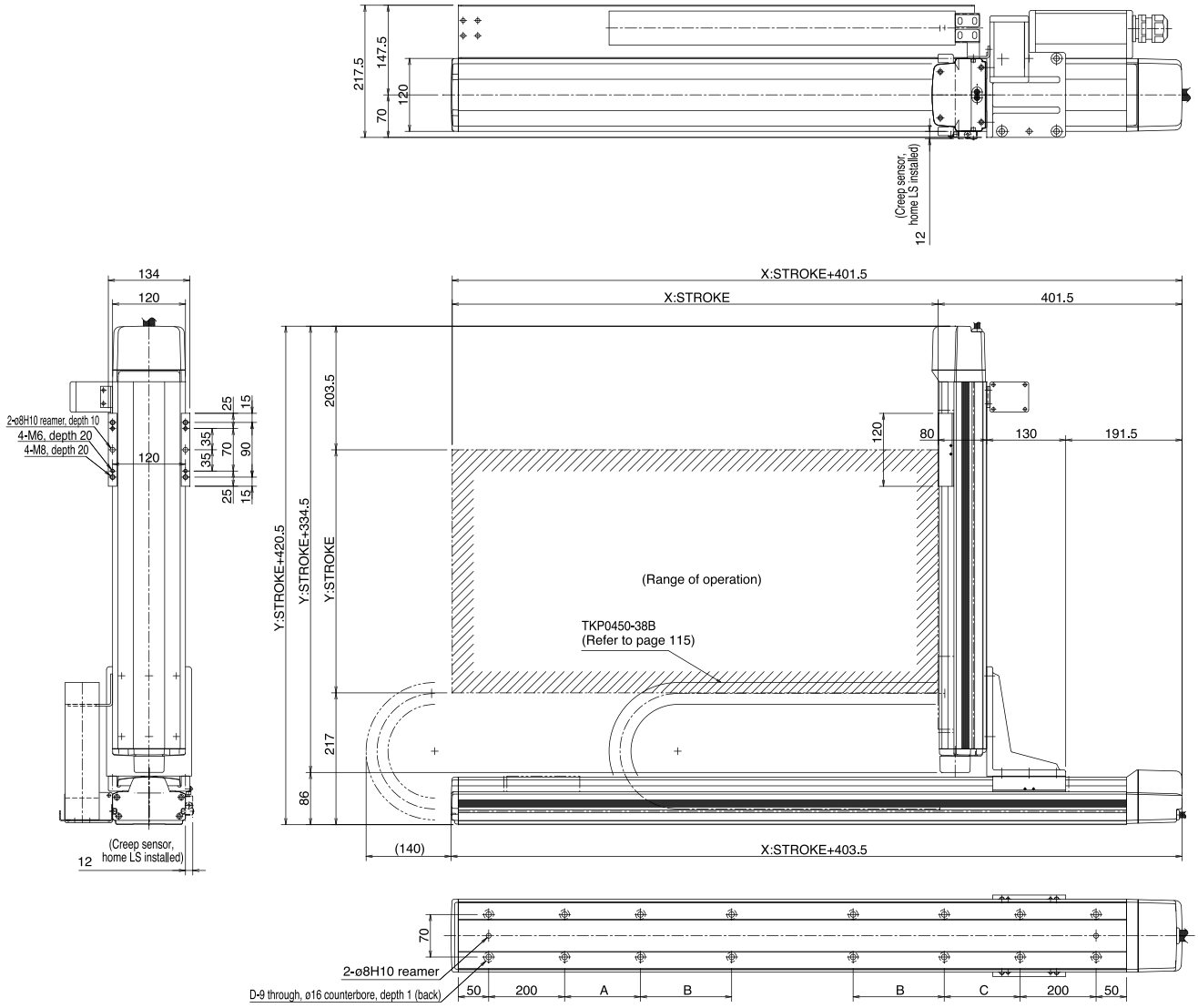
Caution

(Note 1) The maximum speed will vary depending on the stroke. (Refer to the table of maximum speed by stroke.)
(Note 2) The load capacity assumes operation at the rated acceleration (0.3 G). The rated acceleration is the maximum specifiable acceleration for both the ICSA2 and ICSPA2.
(Notes 3, 4, 5) The figures in brackets apply to the ICSPA2.
(Note 6) The cable length measures from the X-axis connector box to the controller. The standard lengths are 3 m and 5 m, but other lengths can also be specified in meters up to 20 m (e.g., 10L = 10 m).

* Refer to page 59 for other points to note.

Cable Track Specification (Cable Management Code: CT)

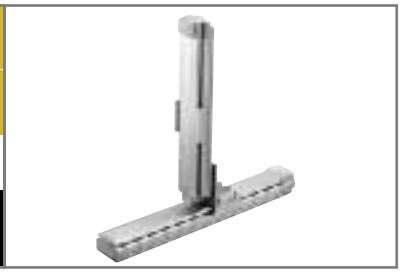
Dimensions



X stroke	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
A	0	0	200	250	300	350	400	450	500	550	200	200	200
B	0	0	0	0	0	0	0	0	0	0	400	450	500
C	200	200	200	250	300	350	400	450	500	550	200	200	200
D	10	10	12	12	12	12	12	12	12	12	16	16	16

ICSA2-ZGH
Cartesian Robot: X-Z 2-Axes Configuration, XZ (Z-Axis Base Mount) Type

ICSPA2-ZGH
Cartesian Robot: X-Z 2-Axes Configuration, XZ (Z-Axis Base Mount) Type High-Precision Specification



Type: XZ type | Stroke: X-axis: 200~800mm Z-axis: 100~500mm | Load capacity: 22kg ~ 10kg

Model specification items: Series — Type — Encoder type — X-axis stroke + options — Z-axis stroke + options — Applicable controller — Cable length — Cable management

ICSA2 – ZGH – A – 80AQLNM – 50AQBL – T1 – 5L – CT

* Refer to page 61 for the details of model specification items.

Models/Specifications

Model	Axis configuration		Encoder type	Motor output (W)	Lead (mm)	Stroke (mm) In increments of 100mm	Speed (mm/s)	Load capacity (Note 1)	Positioning repeatability (mm) (Note 2)
ICSA2 [ICSPA2] -ZGH-A-＊＊＊-＊＊＊B-T1-△-CT	X-axis	ISA [ISPA] -LXM-A-400-20-＊＊＊-T1	Absolute	400	20	200 ~ 800	1 ~ 1000	22 ~ 10	±0.02 [±0.01]
	Z-axis	ISA [ISPA] -LZM-A-400-10-＊＊＊-T1-B			10	100 ~ 500	1 ~ 500		
ICSA2 [ICSPA2] -ZGH-I-＊＊＊-＊＊＊B-T1-△-CT	X-axis	ISA [ISPA] -LXM-I-400-20-＊＊＊-T1	Incremental		20	200 ~ 800	1 ~ 1000		
	Z-axis	ISA [ISPA] -LZM-I-400-10-＊＊＊-T1-B			10	100 ~ 500	1 ~ 500		

* In the above model names, ＊＊＊ indicates the stroke/applicable options (stroke is specified in centimeters), and △ the cable length.

Options

Name	Code	Page	Remarks
AQ seal	AQ	➔ P13	
Brake	B	➔ P13	Standard equipment on Z-axis
Creep sensor	C	➔ P13	
Home limit switch	L	➔ P14	
Reverse homing specification	NM	➔ P14	
Guide with ball-retaining mechanism	RT	➔ P14	

Common Specifications

Drive system (Note 3)	Ball screw, rolled C10 [equivalent to rolled C5]
Backlash (Note 4)	0.05mm or less [0.02mm or less]
Guide	Integrated with base
Base	Material: Aluminum with white alumite treatment
Cable length (Note 5)	3L: 3m, 5L: 5m, □L : Length specification
Cable management	CT: Cable track

Load Capacity by Acceleration (kg)

Acceleration (G) \ Z-axis stroke (mm)	100	200	300	400	500
0.3	22.0	18.0	16.0	12.0	10.0
0.4	20.0	16.0	12.0	9.0	6.0
0.5	16.0	12.0	9.0	6.0	3.0
0.6					
0.7					
0.8					
0.9					
1.0					

Maximum Speed by Stroke (mm/sec)

Axis \ Stroke (mm)	100	200 ~ 500	600 ~ 800
X-axis	–	1000	
Z-axis	500		–

Applicable Controller Specifications

Applicable controller	Controller type	Model	Page
X-SEL	General-purpose type	XSEL-K-2-400□-400B□-□-□□□-□-□	➔ P241
	Compact type	XSEL-J-2-400□-400B□-□-□□□-□-□	➔ P241

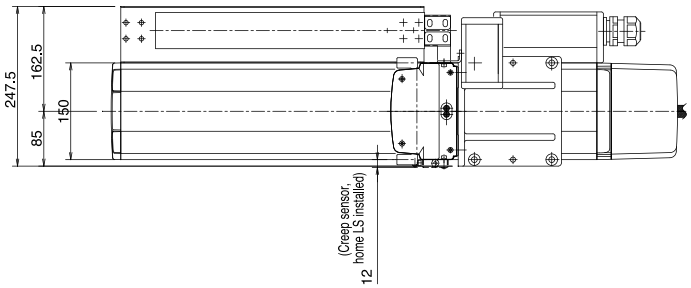
Caution

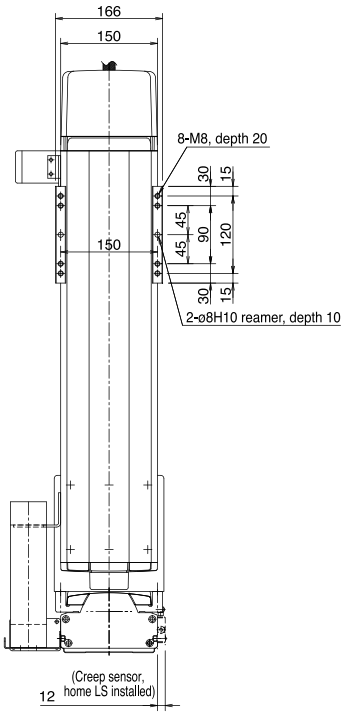
(Note 1) The load capacity assumes operation at the rated acceleration (0.3 G). The actuator can be operated at accelerations beyond the rated acceleration, but the load capacity will decrease (refer to the table of load capacity by acceleration).
(Notes 2, 3, 4) The figures in brackets apply to the ICSPA2.
(Note 5) The cable length measures from the X-axis connector box to the controller. The standard lengths are 3 m and 5 m, but other lengths can also be specified in meters up to 20 m (e.g., 10L = 10 m).

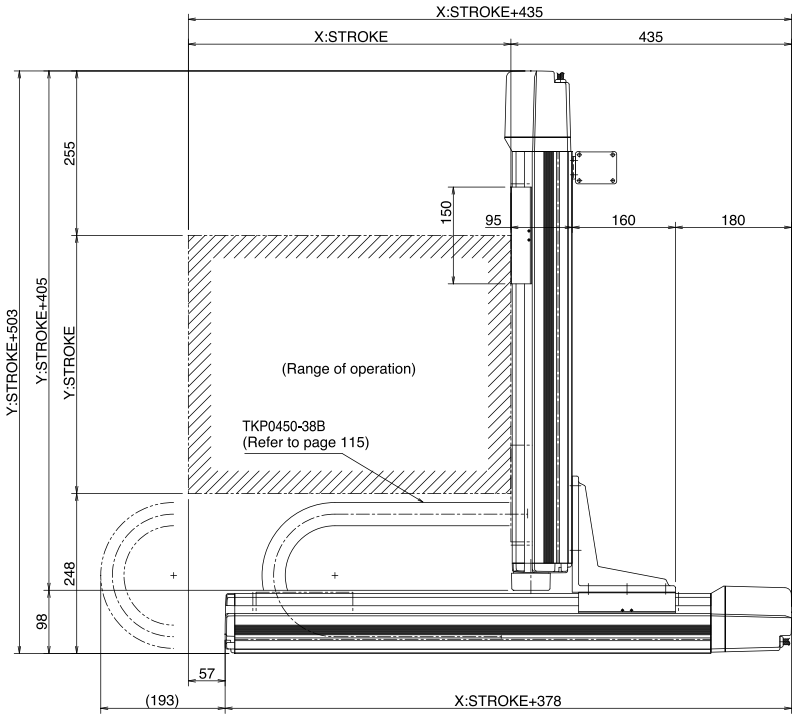
* Refer to page 59 for other points to note.

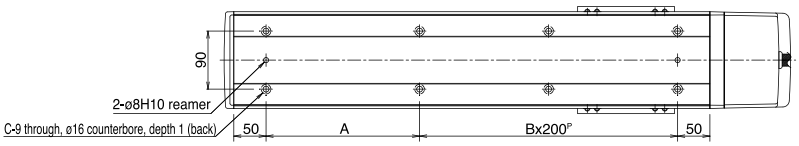
Cable Track Specification (Cable Management Code: CT)

Dimensions





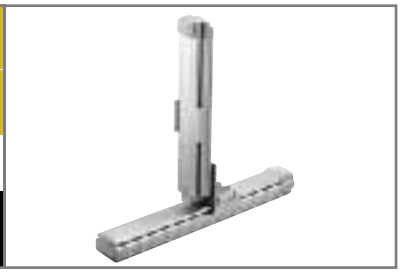




X stroke	200	300	400	500	600	700	800
A	138	238	138	238	138	238	138
B	1	1	2	2	3	3	4
C	6	6	8	8	10	10	12

ICSA2-ZHH
Cartesian Robot: X-Z 2-Axes Configuration, XZ (Z-Axis Base Mount) Type

ICSPA2-ZHH
Cartesian Robot: X-Z 2-Axes Configuration, XZ (Z-Axis Base Mount) Type High-Precision Specification



Type	Stroke	Load capacity
XZ type	X-axis: 1000~2500mm Z-axis: 100~500mm	22kg ~ 10kg

■ Model specification items

Series	Type	Encoder type	X-axis stroke + options	Z-axis stroke + options	Applicable controller	Cable length	Cable management
ICSA2 –	ZHH –	A	– 250AQLNM	– 50AQBL	– T1	– 5L	– CT

* Refer to page 61 for the details of model specification items.

Models/Specifications

Model	Axis configuration		Encoder type	Motor output (W)	Lead (mm)	Stroke (mm) In increments of 100mm	Speed (mm/s) (Note 1)	Load capacity (Note 2)	Positioning repeatability (mm) (Note 3)
ICSA2 [ICSPA2] -ZHH-A-✻✻✻-✻✻✻B-T1-△-CT	X-axis	ISA [ISPA] -LXM-A-400-20-✻✻✻-T1	Absolute	400	20	1000 ~ 2500	1 ~ 1000	22 ~ 10	±0.02 [±0.01]
	Z-axis	ISA [ISPA] -LZM-A-400-10-✻✻✻-T1-B			10	100 ~ 500	1 ~ 500		
ICSA2 [ICSPA2] -ZHH-I-✻✻✻-✻✻✻B-T1-△-CT	X-axis	ISA [ISPA] -LXM-I-400-20-✻✻✻-T1	Incremental		20	1000 ~ 2500	1 ~ 1000		
	Z-axis	ISA [ISPA] -LZM-I-400-10-✻✻✻-T1-B			10	100 ~ 500	1 ~ 500		

* In the above model names, ✻✻✻ indicates the stroke/applicable options (stroke is specified in centimeters), and △ the cable length.

Options

Name	Code	Page	Remarks
AQ seal	AQ	➔ P13	
Brake	B	➔ P13	Standard equipment on Z-axis
Creep sensor	C	➔ P13	
Home limit switch	L	➔ P14	
Reverse homing specification	NM	➔ P14	
Guide with ball-retaining mechanism	RT	➔ P14	

Common Specifications

Drive system (Note 4)	Ball screw, rolled C10 [equivalent to rolled C5]
Backlash (Note 5)	0.05mm or less [0.02mm or less]
Guide	Integrated with base
Base	Material: Aluminum with white alumite treatment
Cable length (Note 6)	3L: 3m, 5L: 5m, □L : Length specification
Cable management	CT: Cable track

Load Capacity by Acceleration (kg)

Z-axis stroke (mm) / Acceleration (G)	100	200	300	400	500
0.3	22.0	18.0	16.0	12.0	10.0
0.4					
0.5					
0.6					
0.7					
0.8					
0.9					
1.0					

Maximum Speed by Stroke (mm/sec)

Stroke (mm) / Axis	100 ~ 500	1000 ~ 1400	1500	1600	1700	1800	1900	2000	2500
X-axis	–	1000	950	830	740	650	590	540	340
Z-axis	500	–	–	–	–	–	–	–	–

Applicable Controller Specifications

Applicable controller	Controller type	Model	Page
X-SEL	General-purpose type	XSEL-K-2-400□-400B□-□-□□□-□-□	➔ P241
	Compact type	XSEL-J-2-400□-400B□-□-□□□-□-□	➔ P241

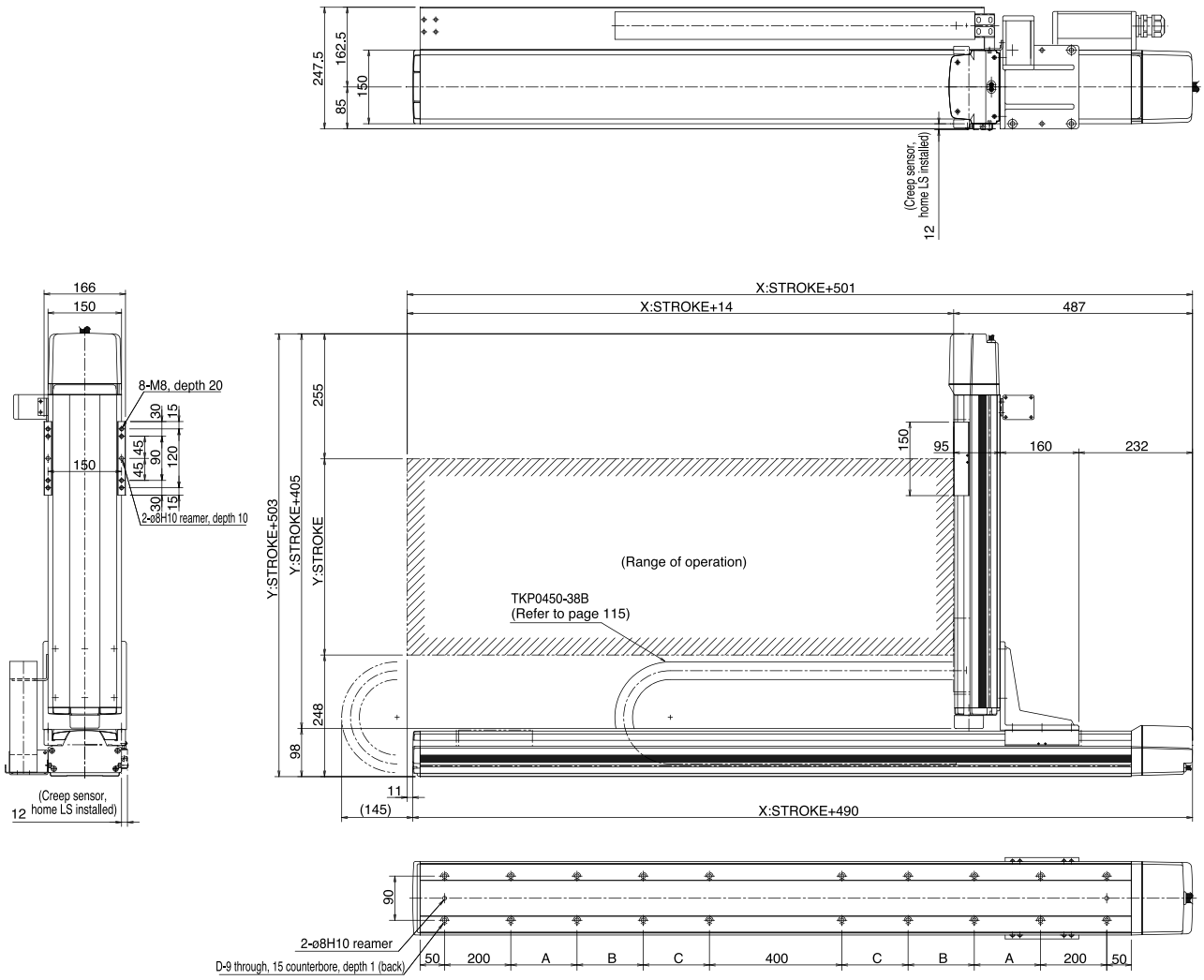
Caution

(Note 1) The maximum speed will vary depending on the stroke. (Refer to the table of maximum speed by stroke.)
(Note 2) The load capacity assumes operation at the rated acceleration (0.3 G). The rated acceleration is the maximum specifiable acceleration for both the ICSA2 and ICSPA2.
(Notes 3, 4, 5) The figures in brackets apply to the ICSPA2.
(Note 6) The cable length measures from the X-axis connector box to the controller. The standard lengths are 3 m and 5 m, but other lengths can also be specified in meters up to 20 m (e.g., 10L = 10 m).

* Refer to page 49 for other points to note.

Self-standing Cable Specification (Cable Management Code: CT)

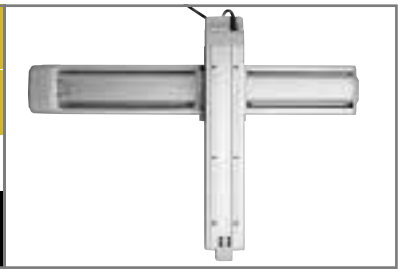
Dimensions



X stroke	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500
A	225	275	325	375	425	475	525	575	200	200	200	200	200	200	200	200
B	0	0	0	0	0	0	0	0	425	475	525	575	200	200	200	200
C	0	0	0	0	0	0	0	0	0	0	0	0	425	475	525	575
D	12	12	12	12	12	12	12	12	16	16	16	16	20	20	20	20

ICSA2-YAH
Cartesian Robot: Y-Z 2-Axes Configuration, YZ (Z-Axis Slider Mount) Type

ICSPA2-YAH
Cartesian Robot: Y-Z 2-Axes Configuration, YZ (Z-Axis Slider Mount) Type
High-Precision Specification



Type	Stroke	Load capacity
YZ type	Y-axis: 100~400mm Z-axis: 100~300mm	3kg ~ 1.6kg

■ Model specification items

Series	Type	Encoder type	Y-axis stroke + options	Z-axis stroke + options	Applicable controller	Cable length	Cable management
ICSA2 – YAH –	A	– 40AQLNM	– 30AQBL	– T1	– 5L	– SC	

* Refer to page 61 for the details of model specification items.

Models/Specifications

Model	Axis configuration		Encoder type	Motor output (W)	Lead (mm)	Stroke (mm) In increments of 100mm	Speed (mm/s)	Load capacity (Note 1)	Positioning repeatability (mm) (Note 2)
ICSA2 [ICSPA2] -YAH-A-✻✻✻-✻✻✻B-T1-△-SC	Y-axis	ISA [ISPA] -SYM-A-60-16-✻✻✻-T1	Absolute	60	16	100 ~ 400	1 ~ 800	3 ~ 1.6	±0.02 [±0.01]
	Z-axis	ISA [ISPA] -SZM-A-60-8-✻✻✻-T1-B			8	100 ~ 300	1 ~ 400		
ICSA2 [ICSPA2] -YAH-I-✻✻✻-✻✻✻B-T1-△-SC	Y-axis	ISA [ISPA] -SYM-A-60-16-✻✻✻-T1	Incremental		16	100 ~ 400	1 ~ 800		
	Z-axis	ISA [ISPA] -SZM-A-60-8-✻✻✻-T1-B			8	100 ~ 300	1 ~ 400		

* In the above model names, ✻✻✻ indicates the stroke/applicable options (stroke is specified in centimeters), and △ the cable length.

Options

Name	Code	Page	Remarks
AQ seal	AQ	→ P13	
Brake	B	→ P13	Standard equipment on Z-axis
Creep sensor	C	→ P13	
Home limit switch	L	→ P14	
Reverse homing specification	NM	→ P14	
Guide with ball-retaining mechanism	RT	→ P14	

Common Specifications

Drive system (Note 3)	Ball screw, rolled C10 [equivalent to rolled C5]
Backlash (Note 4)	0.05mm or less [0.02mm or less]
Guide	Integrated with base
Base	Material: Aluminum with white alumite treatment
Cable length (Note 5)	3L: 3m, 5L: 5m, □L : Length specification
Cable management	SC: Self-standing cable

Load Capacity by Acceleration (kg)

Acceleration (G) \ Z-axis stroke (mm)	100	200	300
0.3	3.0	2.3	1.6
0.4	2.5	1.8	1.1
0.5	1.0	0.3	
0.6			
0.7			
0.8			
0.9			
1.0			

Maximum Speed by Stroke (mm/sec)

Axis \ Stroke (mm)	100 ~ 300	400
Y-axis	800	
Z-axis	400	–

Applicable Controller Specifications

Applicable controller	Controller type	Model	Page
X-SEL	General-purpose type	XSEL-K-2-60□-60B□-□-□□□-□-□	→ P241
	Compact type	XSEL-J-2-60□-60B□-□-□□□-□-□	→ P241

Caution

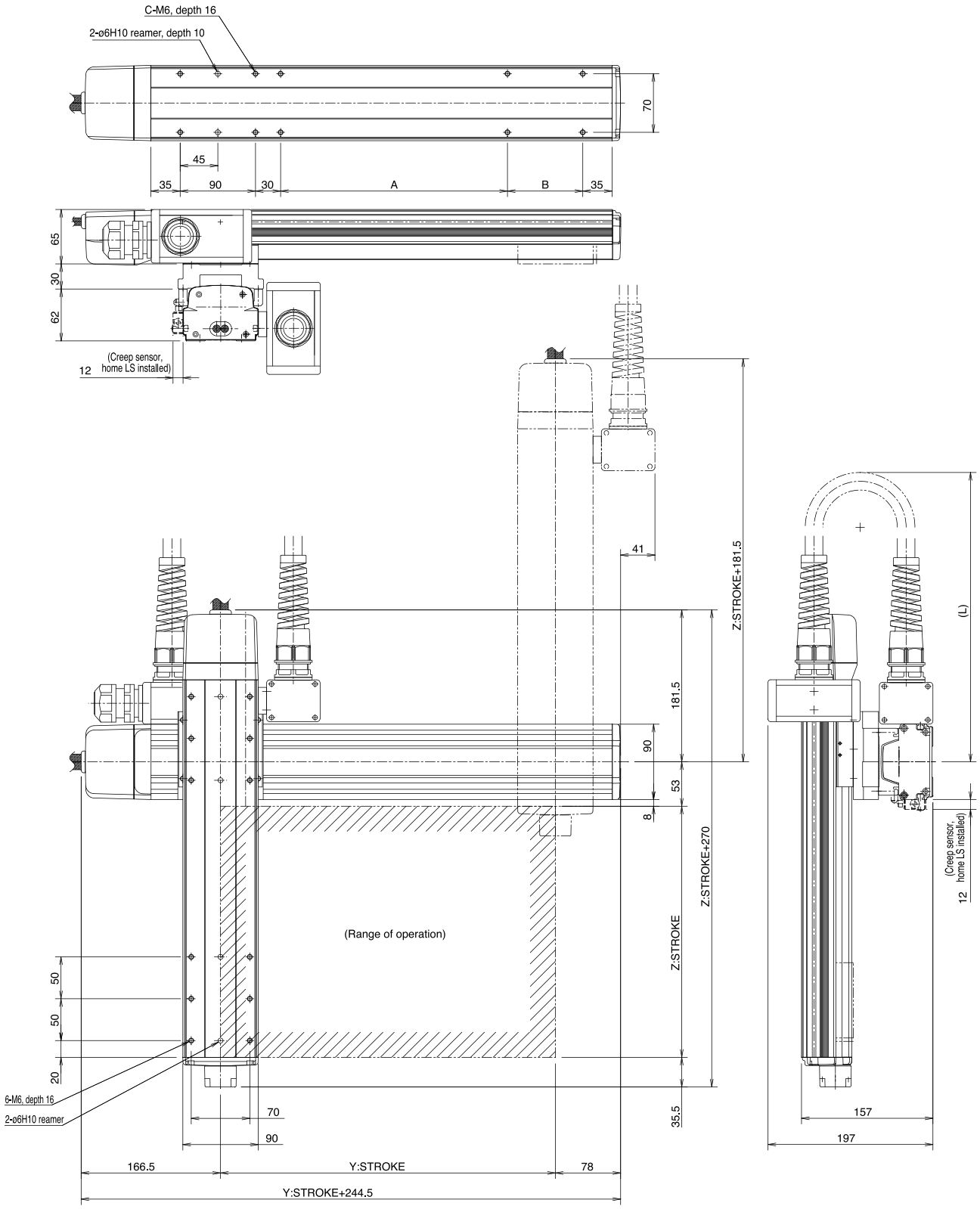
(Note 1) The load capacity assumes operation at the rated acceleration (0.3 G). The actuator can be operated at accelerations beyond the rated acceleration, but the load capacity will decrease (refer to the table of load capacity by acceleration).
(Notes 2, 3, 4) The figures in brackets apply to the ICSPA2.
(Note 5) The cable length measures from the X-axis connector box to the controller. The standard lengths are 3 m and 5 m, but other lengths can also be specified in meters up to 20 m (e.g., 10L = 10 m).

* Refer to page 59 for other points to note.

Self-standing Cable Specification (Cable Management Code: SC)

Dimensions

* Note that changing the home direction will require the actuator to be returned to IAI for adjustment.

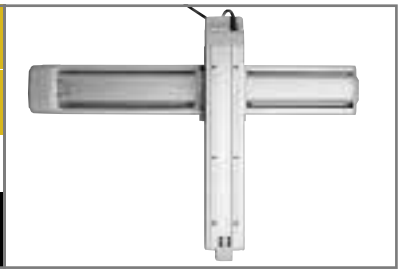


Dimension L				
Zst \ Yst	100	200	300	400
100	450	500	550	600
200	550	600	650	700
300	650	700	750	800

Y stroke	100	200	300	400
A	61	71	171	271
B	–	90	90	90
C	8	10	10	10

ICSA2-YAM
Cartesian Robot: Y-Z 2-Axes Configuration, YZ (Z-Axis Slider Mount) Type

ICSPA2-YAM
Cartesian Robot: Y-Z 2-Axes Configuration, YZ (Z-Axis Slider Mount) Type
High-Precision Specification



Type	Stroke	Load capacity
YZ type	Y-axis: 100~400mm Z-axis: 100~300mm	11kg ~ 9.6kg

■ Model specification items

Series	Type	Encoder type	Y-axis stroke + options	Z-axis stroke + options	Applicable controller	Cable length	Cable management
ICSA2 – YAM –	A	– 40AQLNM	– 30AQBL	– T1	– 5L	– SC	

* Refer to page 61 for the details of model specification items.

Models/Specifications

Model	Axis configuration		Encoder type	Motor output (W)	Lead (mm)	Stroke (mm) In increments of 100mm	Speed (mm/s)	Load capacity (Note 1)	Positioning repeatability (mm) (Note 2)
ICSA2 [ICSPA2] -YAM-A-✻✻✻-✻✻✻B-T1-△-SC	Y-axis	ISA [ISPA] -SYM-A-60-8-✻✻✻-T1	Absolute	60	8	100 ~ 400	1 ~ 400	11 ~ 9.6	±0.02 [±0.01]
	Z-axis	ISA [ISPA] -SZM-A-60-4-✻✻✻-T1-B			4	100 ~ 300	1 ~ 200		
ICSA2 [ICSPA2] -YAM-I-✻✻✻-✻✻✻B-T1-△-SC	Y-axis	ISA [ISPA] -SYM-I-60-8-✻✻✻-T1	Incremental		8	100 ~ 400	1 ~ 400		
	Z-axis	ISA [ISPA] -SZM-I-60-4-✻✻✻-T1-B			4	100 ~ 300	1 ~ 200		

* In the above model names, ✻✻✻ indicates the stroke/applicable options (stroke is specified in centimeters), and △ the cable length.

Options

Name	Code	Page	Remarks
AQ seal	AQ	→ P13	
Brake	B	→ P13	Standard equipment on Z-axis
Creep sensor	C	→ P13	
Home limit switch	L	→ P14	
Reverse homing specification	NM	→ P14	
Guide with ball-retaining mechanism	RT	→ P14	

Common Specifications

Drive system (Note 3)	Ball screw, rolled C10 [equivalent to rolled C5]
Backlash (Note 4)	0.05mm or less [0.02mm or less]
Guide	Integrated with base
Base	Material: Aluminum with white alumite treatment
Cable length (Note 5)	3L: 3m, 5L: 5m, □L : Length specification
Cable management	SC: Self-standing cable

Load Capacity by Acceleration (kg)

Acceleration (G) \ Z-axis stroke (mm)	100	200	300
0.3	11.0	10.3	9.6
0.4	11.0	10.3	9.6
0.5	9.0	8.3	7.6
0.6	6.0	5.3	4.6
0.7			
0.8			
0.9			
1.0			

* Assuming operation of the Z axis at its rated acceleration of 0.15 G, the load capacity varies according to the changes in acceleration of the X axis.

Maximum Speed by Stroke (mm/sec)

Axis \ Stroke (mm)	100 ~ 300	400
Y-axis	400	
Z-axis	200	–

Applicable Controller Specifications

Applicable controller	Controller type	Model	Page
X-SEL	General-purpose type	XSEL-K-2-60□-60B□-□-□□□-□-□	→ P241
	Compact type	XSEL-J-2-60□-60B□-□-□□□-□-□	→ P241

Caution

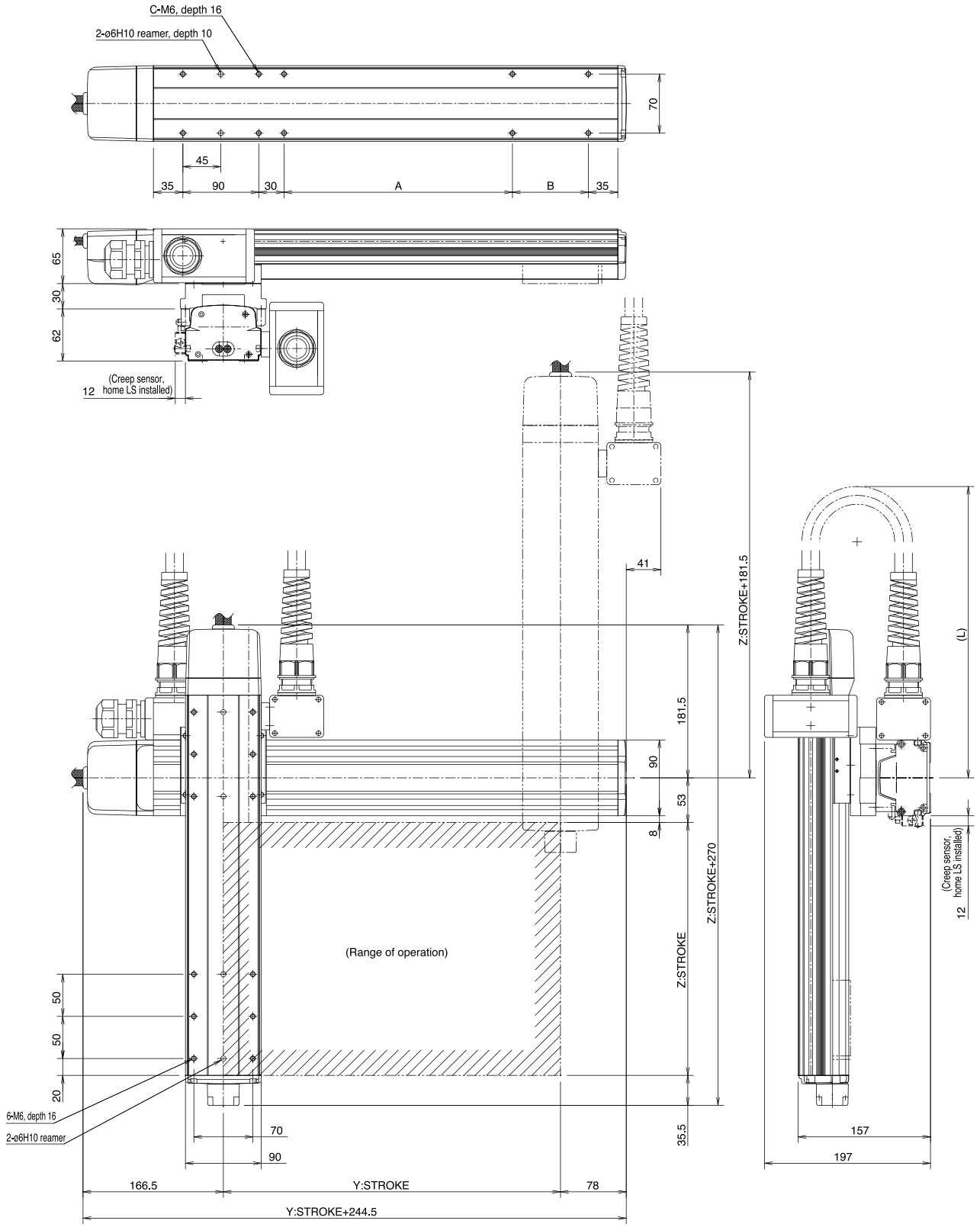
(Note 1) The load capacity assumes operation at the rated acceleration (0.3 G for the Y-axis, 0.15 G for the Z-axis). The actuator can be operated at accelerations beyond the rated acceleration, but the load capacity will decrease (refer to the table of load capacity by acceleration).
(Notes 2, 3, 4) The figures in brackets apply to the ICSPA2.
(Note 5) The cable length measures from the X-axis connector box to the controller. The standard lengths are 3 m and 5 m, but other lengths can also be specified in meters up to 20 m (e.g., 10L = 10 m).

* Refer to page 59 for other points to note.

Self-standing Cable Specification (Cable Management Code: SC)

Dimensions

* Note that changing the home direction will require the actuator to be returned to IAI for adjustment.

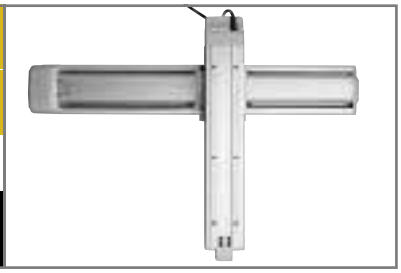


Dimension L				
Zst \ Yst	100	200	300	400
100	450	500	550	600
200	550	600	650	700
300	650	700	750	800

Y stroke	100	200	300	400
A	61	71	171	271
B	–	90	90	90
C	8	10	10	10

ICSA2-YCH
Cartesian Robot: Y-Z 2-Axes Configuration, YZ (Z-Axis Slider Mount) Type

ICSPA2-YCH
Cartesian Robot: Y-Z 2-Axes Configuration, YZ (Z-Axis Slider Mount) Type
High-Precision Specification



Type: YZ type | Stroke: Y-axis: 200~700mm Z-axis: 100~400mm | Load capacity: 11.9kg ~ 8.9kg

■ Model specification items

Series	Type	Encoder type	Y-axis stroke + options	Z-axis stroke + options	Applicable controller	Cable length	Cable management
ICSA2 – YCH –	A	– 70AQLNM	– 40AQBL	– T1	– 5L	– SC	

* Refer to page 61 for the details of model specification items.

Models/Specifications

Model	Axis configuration		Encoder type	Motor output (W)	Lead (mm)	Stroke (mm) In increments of 100mm	Speed (mm/s)	Load capacity (Note 1)	Positioning repeatability (mm) (Note 2)
ICSA2 [ICSPA2] -YCH-A-＊＊＊-＊＊＊B-T1-△-SC	Y-axis	ISA [ISPA] -MYM-A-200-20-＊＊＊-T1	Absolute	200	20	200 ~ 700	1 ~ 1000	11.9 ~ 8.9	±0.02 [±0.01]
	Z-axis	ISA [ISPA] -MZM-A-200-20-＊＊＊-T1-B			10	100 ~ 400	1 ~ 500		
ICSA2 [ICSPA2] -YCH-I-＊＊＊-＊＊＊B-T1-△-SC	Y-axis	ISA [ISPA] -MYM-I-200-20-＊＊＊-T1	Incremental		20	200 ~ 700	1 ~ 1000		
	Z-axis	ISA [ISPA] -MZM-I-200-20-＊＊＊-T1-B			10	100 ~ 400	1 ~ 500		

* In the above model names, ＊＊＊ indicates the stroke/applicable options (stroke is specified in centimeters), and △ the cable length.

Options

Name	Code	Page	Remarks
AQ seal	AQ	→ P13	
Brake	B	→ P13	Standard equipment on Z-axis
Creep sensor	C	→ P13	
Home limit switch	L	→ P14	
Reverse homing specification	NM	→ P14	
Guide with ball-retaining mechanism	RT	→ P14	

Common Specifications

Drive system (Note 3)	Ball screw, rolled C10 [equivalent to rolled C5]
Backlash (Note 4)	0.05mm or less [0.02mm or less]
Guide	Integrated with base
Base	Material: Aluminum with white alumite treatment
Cable length (Note 5)	3L: 3m, 5L: 5m, □L : Length specification
Cable management	SC: Self-standing cable

Load Capacity by Acceleration (kg)

Acceleration (G) \ Z-axis stroke (mm)	100	200	300	400
0.3	11.9	10.9	9.9	8.9
0.4	9.2	8.2	7.2	6.2
0.5	7.9	6.9	5.9	4.9
0.6				
0.7				
0.8				
0.9				
1.0				

Maximum Speed by Stroke (mm/sec)

Axis \ Stroke (mm)	100	200 ~ 400	500 ~ 700
Y-axis	–	1000	
Z-axis	500		–

Applicable Controller Specifications

Applicable controller	Controller type	Model	Page
X-SEL	General-purpose type	XSEL-K-2-200□-200B□-□-□□□-□-□	→ P241
	Compact type	XSEL-J-2-200□-200B□-□-□□□-□-□	→ P241

Caution

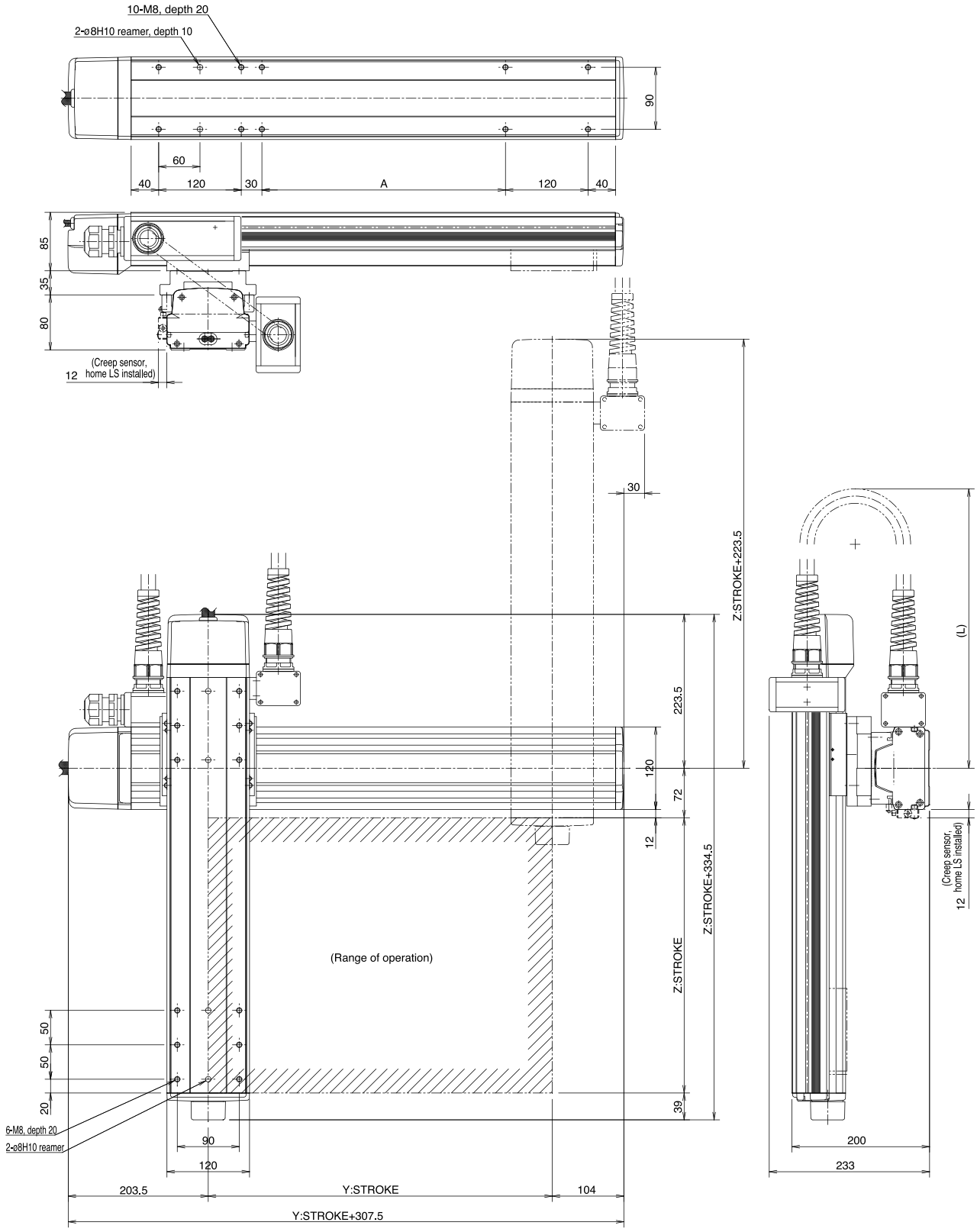
(Note 1) The load capacity assumes operation at the rated acceleration (0.3 G). The actuator can be operated at accelerations beyond the rated acceleration, but the load capacity will decrease (refer to the table of load capacity by acceleration).
(Notes 2, 3, 4) The figures in brackets apply to the ICSPA2.
(Note 5) The cable length measures from the X-axis connector box to the controller. The standard lengths are 3 m and 5 m, but other lengths can also be specified in meters up to 20 m (e.g., 10L = 10 m).

* Refer to page 59 for other points to note.

Self-standing Cable Specification (Cable Management Code: SC)

Dimensions

* Note that changing the home direction will require the actuator to be returned to IAI for adjustment.

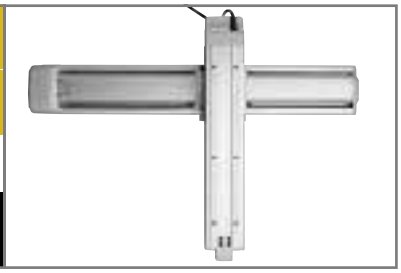


Dimension L						
Zst \ Yst	200	300	400	500	600	700
100	500	550	600	650	700	750
200	600	650	700	750	800	850
300	700	750	800	850	900	950
400	800	850	900	950	1000	1050

Y stroke	200	300	400	500	600	700
A	404	504	604	704	804	904

ICSA2-YCM
Cartesian Robot: Y-Z 2-Axes Configuration, YZ (Z-Axis Slider Mount) Type

ICSPA2-YCM
Cartesian Robot: Y-Z 2-Axes Configuration, YZ (Z-Axis Slider Mount) Type
High-Precision Specification



Type	Stroke	Load capacity
YZ type	Y-axis: 200~700mm Z-axis: 100~400mm	13.1kg ~ 10.1kg

Model specification items

Series	Type	Encoder type	Y-axis stroke + options	Z-axis stroke + options	Applicable controller	Cable length	Cable management
ICSA2 – YCM –	A	– 70AQLNM	– 40AQBL	– T1	– 5L	– SC	

* Refer to page 61 for the details of model specification items.

Models/Specifications

Model	Axis configuration		Encoder type	Motor output (W)	Lead (mm)	Stroke (mm) In increments of 100mm	Speed (mm/s) (Note 1)	Load capacity (Note 2)	Positioning repeatability (mm) (Note 3)
ICSA2 [ICSPA2] -YCM-A-＊＊＊-＊＊＊B-T1-△-SC	Y-axis	ISA [ISPA] -MYM-A-100-10-＊＊＊-T1	Absolute	100	10	200 ~ 700	1 ~ 500	13.1 ~ 10.1	±0.02 [±0.01]
	Z-axis	ISA [ISPA] -MZM-A-100-5-＊＊＊-T1-B			5	100 ~ 400	1 ~ 250		
ICSA2 [ICSPA2] -YCM-I-＊＊＊-＊＊＊B-T1-△-SC	Y-axis	ISA [ISPA] -MYM-I-100-10-＊＊＊-T1	Incremental		10	200 ~ 700	1 ~ 500		
	Z-axis	ISA [ISPA] -MZM-I-100-5-＊＊＊-T1-B			5	100 ~ 400	1 ~ 250		

* In the above model names, ＊＊＊ indicates the stroke/applicable options (stroke is specified in centimeters), and △ the cable length.

Options

Name	Code	Page	Remarks
AQ seal	AQ	➔ P13	
Brake	B	➔ P13	Standard equipment on Z-axis
Creep sensor	C	➔ P13	
Home limit switch	L	➔ P14	
Reverse homing specification	NM	➔ P14	
Guide with ball-retaining mechanism	RT	➔ P14	

Common Specifications

Drive system (Note 4)	Ball screw, rolled C10 [equivalent to rolled C5]
Backlash (Note 5)	0.05mm or less [0.02mm or less]
Guide	Integrated with base
Base	Material: Aluminum with white alumite treatment
Cable length (Note 6)	3L: 3m, 5L: 5m, □L : Length specification
Cable management	SC: Self-standing cable

Load Capacity by Acceleration (kg)

Acceleration (G) \ Z-axis stroke (mm)	100	200	300	400
0.3	13.1	12.1	11.1	10.1
0.4	13.1	12.1	11.1	10.1
0.5	13.1	12.1	11.1	10.1
0.6	10.1	9.1	8.1	7.1
0.7				
0.8				
0.9				
1.0				

* Assuming operation of the Z axis at its rated acceleration of 0.15 G, the load capacity varies according to the changes in acceleration of the X axis.

Maximum Speed by Stroke (mm/sec)

Axis \ Stroke (mm)	100	200 ~ 400	500 ~ 600	700
Y-axis	–	500		480
Z-axis	250		–	

Applicable Controller Specifications

Applicable controller	Controller type	Model	Page
X-SEL	General-purpose type	XSEL-K-2-100□-100B□-□-□□□-□-□	➔ P241
	Compact type	XSEL-J-2-100□-100B□-□-□□□-□-□	➔ P241

Caution

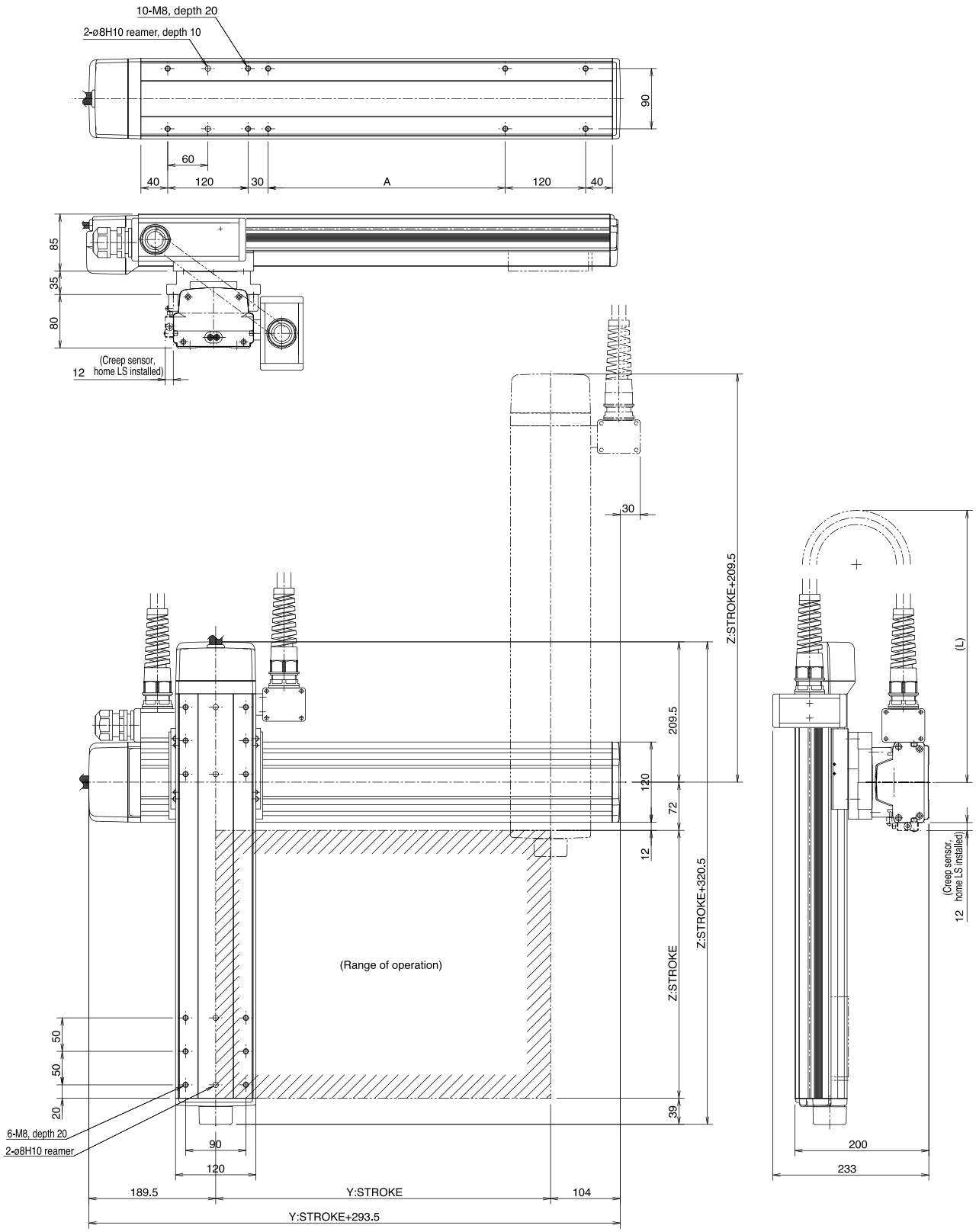
(Note 1) The maximum speed will vary depending on the stroke. (Refer to the table of maximum speed by stroke.)
(Note 2) The load capacity assumes operation at the rated acceleration (0.3 G for the Y-axis, 0.15 G for the Z-axis). The actuator can be operated at accelerations beyond the rated acceleration, but the load capacity will decrease (refer to the table of load capacity by acceleration).
(Notes 3, 4, 5) The figures in brackets apply to the ICSPA2.
(Note 6) The cable length measures from the Y-axis connector box to the controller. The standard lengths are 3 m and 5 m, but other lengths can also be specified in meters up to 20 m (e.g., 10L = 10 m).

* Refer to page 59 for other points to note.

Self-standing Cable Specification (Cable Management Code: SC)

Dimensions

* Note that changing the home direction will require the actuator to be returned to IAI for adjustment.

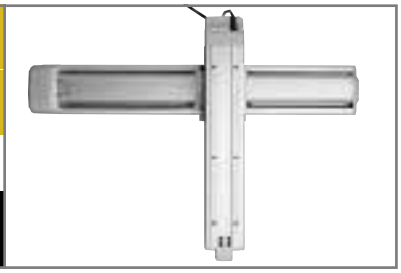


Dimension L						
Zst \ Yst	200	300	400	500	600	700
100	500	550	600	650	700	750
200	600	650	700	750	800	850
300	700	750	800	850	900	950
400	800	850	900	950	1000	1050

Y stroke	200	300	400	500	600	700
A	404	504	604	704	804	904

ICSA2-YGH
Cartesian Robot: Y-Z 2-Axes Configuration, YZ (Z-Axis Slider Mount) Type

ICSPA2-YGH
Cartesian Robot: Y-Z 2-Axes Configuration, YZ (Z-Axis Slider Mount) Type
High-Precision Specification



Type: YZ type | Stroke: Y-axis: 200~700mm Z-axis: 100~500mm | Load capacity: 27kg ~ 20.7kg

■ Model specification items

Series	Type	Encoder type	Y-axis stroke + options	Z-axis stroke + options	Applicable controller	Cable length	Cable management
ICSA2 – YCH –	A	– 70AQLNM	– 50AQBL	– T1	– 5L	– SC	

* Refer to page 61 for the details of model specification items.

Models/Specifications

Model	Axis configuration		Encoder type	Motor output (W)	Lead (mm)	Stroke (mm) In increments of 100mm	Speed (mm/s)	Load capacity (Note 1)	Positioning repeatability (mm) (Note 2)
ICSA2 [ICSPA2] -YGH-A-＊＊＊-＊＊＊B-T1-△-SC	Y-axis	ISA [ISPA] -LYM-A-400-20-＊＊＊-T1	Absolute	400	20	200 ~ 700	1 ~ 1000	27 ~ 20.7	±0.02 [±0.01]
	Z-axis	ISA [ISPA] -LZM-A-400-10-＊＊＊-T1-B			10	100 ~ 500	1 ~ 500		
ICSA2 [ICSPA2] -YGH-I-＊＊＊-＊＊＊B-T1-△-SC	Y-axis	ISA [ISPA] -LYM-A-400-20-＊＊＊-T1	Incremental		20	200 ~ 700	1 ~ 1000		
	Z-axis	ISA [ISPA] -LZM-A-400-10-＊＊＊-T1-B			10	100 ~ 500	1 ~ 500		

* In the above model names, ＊＊＊ indicates the stroke/applicable options (stroke is specified in centimeters), and △ the cable length.

Options

Name	Code	Page	Remarks
AQ seal	AQ	➔ P13	
Brake	B	➔ P13	Standard equipment on Z-axis
Creep sensor	C	➔ P13	
Home limit switch	L	➔ P14	
Reverse homing specification	NM	➔ P14	
Guide with ball-retaining mechanism	RT	➔ P14	

Common Specifications

Drive system (Note 3)	Ball screw, rolled C10 [equivalent to rolled C5]
Backlash (Note 4)	0.05mm or less [0.02mm or less]
Guide	Integrated with base
Base	Material: Aluminum with white alumite treatment
Cable length (Note 5)	3L: 3m, 5L: 5m, □ L : Length specification
Cable management	SC: Self-standing cable

Load Capacity by Acceleration (kg)

Acceleration (G) \ Z-axis stroke (mm)	100	200	300	400	500
0.3	27.0	25.5	23.9	22.3	20.7
0.4	20.1	18.6	17.0	15.4	13.8
0.5	15.6	14.1	12.5	10.9	9.3
0.6					
0.7					
0.8					
0.9					
1.0					

Maximum Speed by Stroke (mm/sec)

Axis \ Stroke (mm)	100	200 ~ 500	600~ 700
Y-axis	–	1000	
Z-axis	500		–

Applicable Controller Specifications

Applicable controller	Controller type	Model	Page
X-SEL	General-purpose type	XSEL-K-2-400□-400B□-□-□□□-□-□	➔ P241
	Compact type	XSEL-J-2-400□-400B□-□-□□□-□-□	➔ P241

Caution

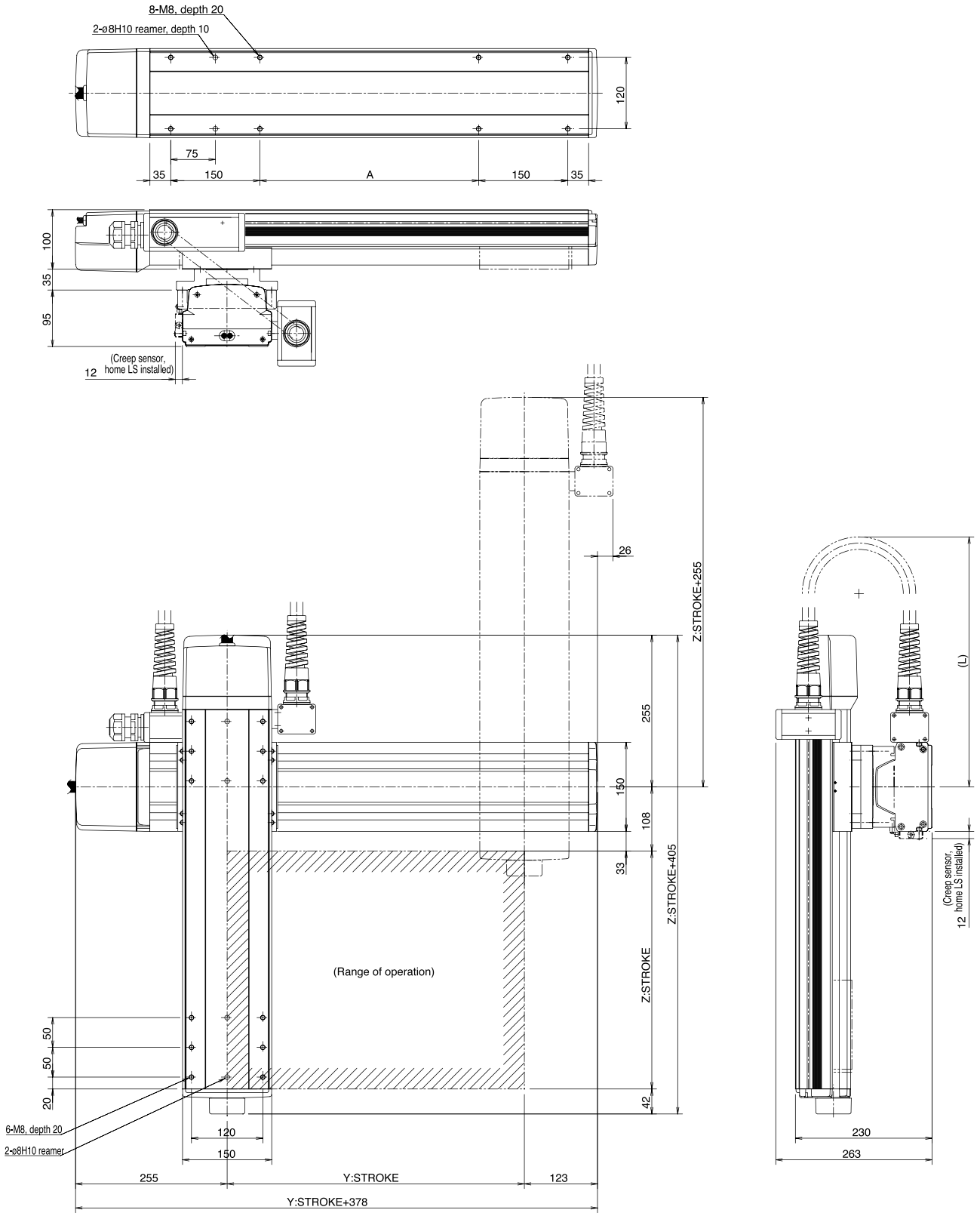
(Note 1) The load capacity assumes operation at the rated acceleration (0.3 G). The actuator can be operated at accelerations beyond the rated acceleration, but the load capacity will decrease (refer to the table of load capacity by acceleration).
(Notes 2, 3, 4) The figures in brackets apply to the ICSPA2.
(Note 5) The cable length measures from the X-axis connector box to the controller. The standard lengths are 3 m and 5 m, but other lengths can also be specified in meters up to 20 m (e.g., 10L = 10 m).

* Refer to page 59 for other points to note.

Self-standing Cable Specification (Cable Management Code: SC)

Dimensions

* Note that changing the home direction will require the actuator to be returned to IAI for adjustment.

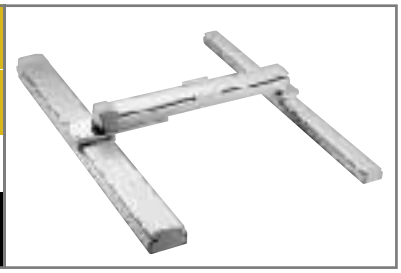


Dimension L						
Zst \ Yst	200	300	400	500	600	700
100	500	550	600	650	700	750
200	600	650	700	750	800	850
300	700	750	800	850	900	950
400	800	850	900	950	1000	1050
500	900	950	1000	1050	1100	1150

Y stroke	200	300	400	500	600	700
A	438	538	638	738	838	938

ICSA2-G1JH Cartesian Robot: X-Y 2-Axes Configuration, XYG (Y-Axis Gantry) Type

ICSPA2-G1JH Cartesian Robot: X-Y 2-Axes Configuration, XYG (Y-Axis Gantry) Type High-Precision Specification



Type: XYG type | Stroke: X-axis: 1000~2500mm Y-axis: 500~700mm | Load capacity: 40kg

Model specification items

Series	Type	Encoder type	X-axis stroke + options	Y-axis stroke + options	Applicable controller	Cable length	Cable management
ICSA2 –	G1JH –	A	– 250AQLNM	– 70AQBL	– T1	– 5L	– CT

* Refer to page 61 for the details of model specification items.

Models/Specifications

Model	Axis configuration		Encoder type	Motor output (W)	Lead (mm)	Stroke (mm) In increments of 100mm	Speed (mm/s) (Note 1)	Load capacity (Note 2)	Positioning repeatability (mm) (Note 3)
ICSA2 [ICSPA2] -G1JH-A-＊＊＊-＊＊＊-T1-△-CT	X-axis	ISA [ISPA] -LXUWX-A-400-20-＊＊＊-T1	Absolute	400	20	1000 ~ 2500	1 ~ 1000	40	±0.02 [±0.01]
	Y-axis	ISA [ISPA] -MXM-A-200-20-＊＊＊-T1		200		500 ~ 700			
ICSA2 [ICSPA2] -G1JH-I-＊＊＊-＊＊＊-T1-△-CT	X-axis	ISA [ISPA] -LXUWX-I-400-20-＊＊＊-T1	Incremental	400		1000 ~ 2500			
	Y-axis	ISA [ISPA] -MXM-I-200-20-＊＊＊-T1		200		500 ~ 700			

* In the above model names, ＊＊＊ indicates the stroke/applicable options (stroke is specified in centimeters), and △ the cable length.

Options

Name	Code	Page	Remarks
AQ seal	AQ	→ P13	
Brake	B	→ P13	
Creep sensor	C	→ P13	
Home limit switch	L	→ P14	
Reverse homing specification	NM	→ P14	
Guide with ball-retaining mechanism	RT	→ P14	

Common Specifications

Drive system (Note 4)	Ball screw, rolled C10 [equivalent to rolled C5]
Backlash (Note 5)	0.05mm or less [0.02mm or less]
Guide	Integrated with base
Base	Material: Aluminum with white alumite treatment
Cable length (Note 6)	3L: 3m, 5L: 5m, □L : Length specification
Cable management	CT: Cable track

Load Capacity by Acceleration (kg)

Acceleration (G) \ Y-axis stroke (mm)	500	600	700
0.3	40.0	40.0	40.0
0.4			
0.5			
0.6			
0.7			
0.8			
0.9			
1.0			

Maximum Speed by Stroke (mm/sec)

Axis \ Stroke (mm)	500 ~ 700	1000 ~ 1400	1500	1600	1700	1800	1900	2000	2500
X-axis	–	1000	950	830	740	650	590	540	300
Y-axis	1000	–	–	–	–	–	–	–	–

Applicable Controller Specifications

Applicable controller	Controller type	Model	Page
X-SEL	General-purpose type	XSEL-K-2-400□-200□-□-□□□-□-□	→ P241
	Compact type	XSEL-J-2-400□-200□-□-□□□-□-□	→ P241

Caution

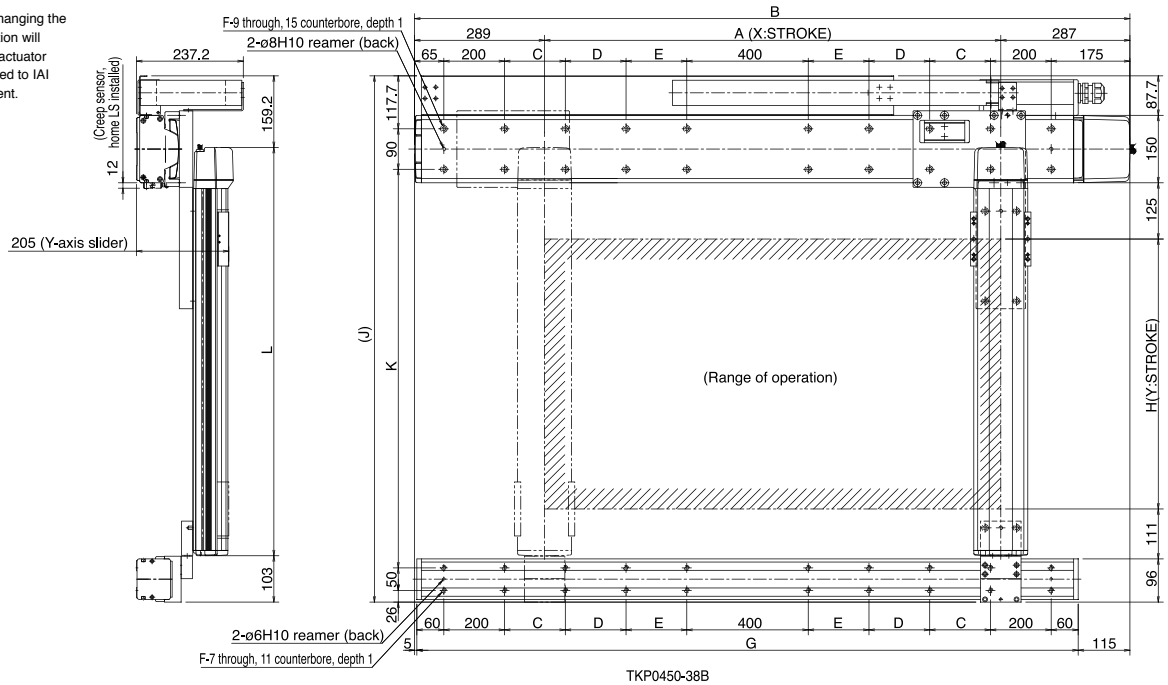
(Note 1) The maximum speed will vary depending on the stroke. (Refer to the table of maximum speed by stroke.)
(Note 2) The load capacity assumes operation at the rated acceleration (0.3 G). The rated acceleration is the maximum specifiable acceleration for both the ICSA2 and ICSPA2.
(Notes 3, 4, 5) The figures in brackets apply to the ICSPA2.
(Note 6) The cable length measures from the X-axis connector box to the controller. The standard lengths are 3 m and 5 m, but other lengths can also be specified in meters up to 20 m (e.g., 10L = 10 m).

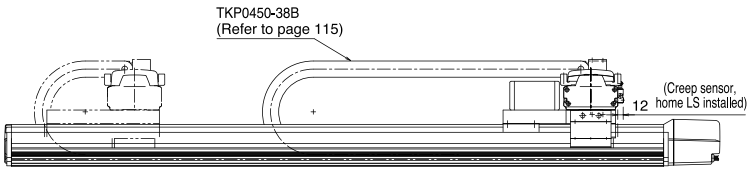
* Refer to page 59 for other points to note.

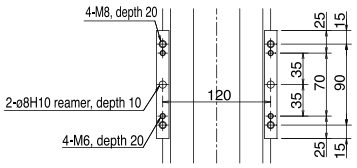
Cable Track Specification (Cable Management Code: CT)

Dimensions

* Note that changing the home direction will require the actuator to be returned to IAI for adjustment.







Detail view of Y-axis slider

Y-axis dimensions

H	500	600	700
J	1069.7	1169.7	1269.7
K	786	886	986
L	807.5	907.5	1007.5

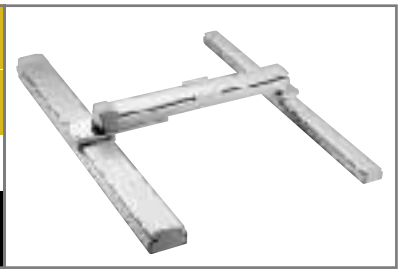
* Shipment of a combined type requires frame (to be provided separately).

X-axis dimensions

A	1014	1114	1214	1314	1414	1514	1614	1714	1814	1914	2014	2114	2214	2314	2414	2514
B	1590	1690	1790	1890	1990	2090	2190	2290	2390	2490	2590	2690	2790	2890	2990	3090
C	275	325	375	425	475	525	575	200	200	200	200	200	200	200	200	200
D	0	0	0	0	0	0	0	425	475	525	575	200	200	200	200	200
E	0	0	0	0	0	0	0	0	0	0	0	425	475	525	575	625
F	12	12	12	12	12	12	12	16	16	16	16	20	20	20	20	20
G	1470	1570	1670	1770	1870	1970	2070	2170	2270	2370	2470	2570	2670	2770	2870	2970

ICSA2-G2JH
Cartesian Robot: X-Y 2-Axes Configuration, XYG (Y-Axis Gantry) Type

ICSPA2-G2JH
Cartesian Robot: X-Y 2-Axes Configuration, XYG (Y-Axis Gantry) Type High-Precision Specification



Type: XYG type | Stroke: X-axis: 1000~2500mm Y-axis: 800~1200mm | Load capacity: 40kg

Model specification items

Series	Type	Encoder type	X-axis stroke + options	Y-axis stroke + options	Applicable controller	Cable length	Cable management
ICSA2 –	G2JH –	A	– 250AQLNM	– 120AQBL	– T1	– 5L	– CT

* Refer to page 61 for the details of model specification items.

Models/Specifications

Model	Axis configuration		Encoder type	Motor output (W)	Lead (mm)	Stroke (mm) In increments of 100mm	Speed (mm/s) (Note 1)	Load capacity (Note 2)	Positioning repeatability (mm) (Note 3)
ICSA2 [ICSPA2] -G2JH-A-＊＊＊-＊＊＊-T1-△-CT	X-axis	ISA [ISPA] -LXUWX-A-400-20-＊＊＊-T1	Absolute	400	20	1000 ~ 2500	1 ~ 1000	40	±0.02 [±0.01]
	Y-axis	ISA [ISPA] MXMX-A-200-20-＊＊＊-T1		200		800 ~ 1200			
ICSA2 [ICSPA2] -G2JH-I-＊＊＊-＊＊＊-T1-△-CT	X-axis	ISA [ISPA] -LXUWX-I-400-20-＊＊＊-T1	Incremental	400		1000 ~ 2500			
	Y-axis	ISA [ISPA] MXMX-I-200-20-＊＊＊-T1		200		800 ~ 1200			

* In the above model names, ＊＊＊ indicates the stroke/applicable options (stroke is specified in centimeters), and △ the cable length.

Options

Name	Code	Page	Remarks
AQ seal	AQ	→ P13	
Brake	B	→ P13	
Creep sensor	C	→ P13	
Home limit switch	L	→ P14	
Reverse homing specification	NM	→ P14	
Guide with ball-retaining mechanism	RT	→ P14	

Common Specifications

Drive system (Note 4)	Ball screw, rolled C10 [equivalent to rolled C5]
Backlash (Note 5)	0.05mm or less [0.02mm or less]
Guide	Integrated with base
Base	Material: Aluminum with white alumite treatment
Cable length (Note 6)	3L: 3m, 5L: 5m, □L : Length specification
Cable management	CT: Cable track

Load Capacity by Acceleration (kg)

Acceleration (G) \ Y-axis stroke (mm)	800	900	1000	1100	1200
0.3	40.0	40.0	40.0	40.0	40.0
0.4					
0.5					
0.6					
0.7					
0.8					
0.9					
1.0					

Maximum Speed by Stroke (mm/sec)

Axis \ Stroke (mm)	800 ~ 1200	1000 ~ 1400	1500	1600	1700	1800	1900	2000	2500
X-axis	–	1000	950	830	740	650	590	540	300
Y-axis	1000	–	–	–	–	–	–	–	–

Applicable Controller Specifications

Applicable controller	Controller type	Model	Page
X-SEL	General-purpose type	XSEL-K-2-400□-200□-□-□□□-□-□	→ P241
	Compact type	XSEL-J-2-400□-200□-□-□□□-□-□	→ P241

Caution

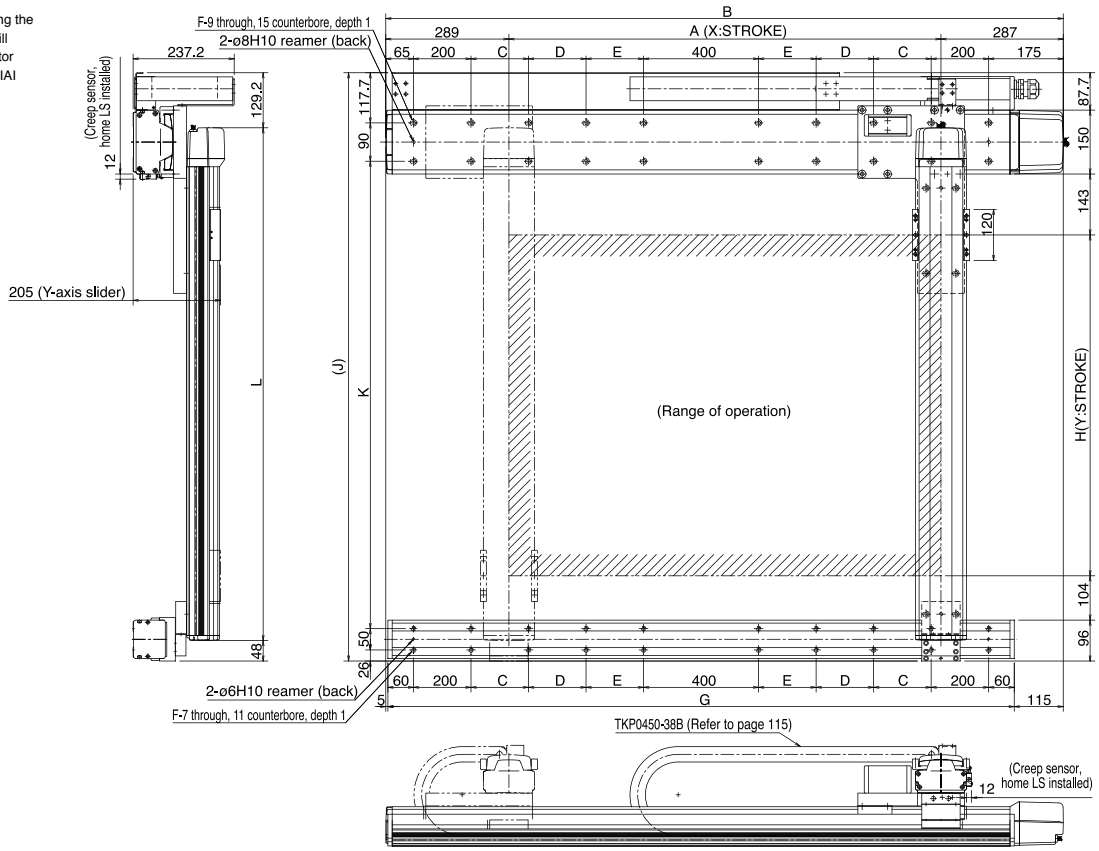
(Note 1) The maximum speed will vary depending on the stroke. (Refer to the table of maximum speed by stroke.)
(Note 2) The load capacity assumes operation at the rated acceleration (0.3 G). The rated acceleration is the maximum specifiable acceleration for both the ICSA2 and ICSPA2.
(Notes 3, 4, 5) The figures in brackets apply to the ICSPA2.
(Note 6) The cable length measures from the X-axis connector box to the controller. The standard lengths are 3 m and 5 m, but other lengths can also be specified in meters up to 20 m (e.g., 10L = 10 m).

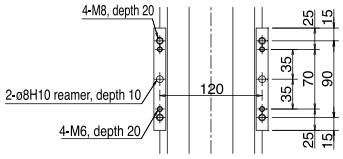
* Refer to page 59 for other points to note.

Cable Track Specification (Cable Management Code: CT)

Dimensions

* Note that changing the home direction will require the actuator to be returned to IAI for adjustment.





Detail view of Y-axis slider

Y-axis dimensions

H	800	900	1000	1100	1200
J	1380.7	1480.7	1580.7	1680.7	1780.7
K	1097	1197	1297	1397	1497
L	1203.5	1303.5	1403.5	1503.5	1603.5

* Shipment of a combined type requires frame (to be provided separately).

X-axis dimensions

A	1014	1114	1214	1314	1414	1514	1614	1714	1814	1914	2014	2114	2214	2314	2414	2514
B	1590	1690	1790	1890	1990	2090	2190	2290	2390	2490	2590	2690	2790	2890	2990	3090
C	275	325	375	425	475	525	575	200	200	200	200	200	200	200	200	200
D	0	0	0	0	0	0	0	425	475	525	575	200	200	200	200	200
E	0	0	0	0	0	0	0	0	0	0	0	425	475	525	575	625
F	12	12	12	12	12	12	12	16	16	16	16	20	20	20	20	20
G	1470	1570	1670	1770	1870	1970	2070	2170	2270	2370	2470	2570	2670	2770	2870	2970

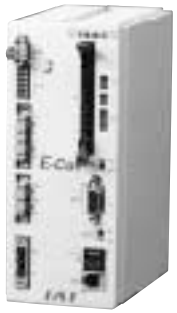
Controllers

E-Con
P-Driver
XSEL-J/K/KE

Single-Axis Only	Dedicated Controller for Positioner Operation	Single-Axis Robot Controller	**E-Con**	227
	Positioning Driver with Pulse-Train Input	Single-Axis Robot Controller	**P-Driver**	234
Single-Axis/Multi-Axes	General-Purpose Controller for Program Operation	Single-Axis/Cartesian Robot Controller	**XSEL-J/K/KE**	241

E-Con Position Controller for Single-Axis Robot

Operating method	Positioner operation
Number of storable positions	64 positions
Supply voltage	100/200 VAC, selectable



1 Features

1 Driving High-Performance Single-Axis Robot IA Series

The E-Con is able to drive the various actuators in the IA Series.

■ Drivable Actuator Specifications

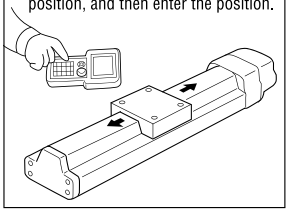
Stroke	Control output	Maximum speed	Maximum load capacity	Maximum load capacity
100 ~ 3000 mm	20W ~ 750W	2000 mm/ sec	150 kg (horizontal)	60 kg (vertical)

2 Positioning to Maximum 64 Points with Easy Operation

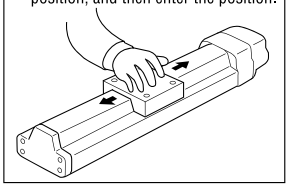
Operation is easy. Simply store the target positions as position data and specify the applicable position numbers from a PLC, etc. There is no need to create a complicated program.
Number of positioning points: 64
Positions can be entered in the following three ways:

① Enter coordinates (mm) directly.

② Jog the actuator to a desired position, and then enter the position.



③ Turn off the servo and move the actuator by hand to a desired position, and then enter the position.



3 Incremental/Absolute Specifications

The E-Con supports the absolute specification that will retain the current position even after the power is turned off. Your equipment can therefore be operated immediately after startup or upon reset following an emergency stop.
You can also select the conventional incremental specification.

4 Wide-Ranging Functions

The E-Con provides a range of functions beyond normal positioning.
The desired functions can be combined to accommodate various applications.

E-Con Function	E-Con Function	E-Con Function	E-Con Function	E-Con Function	E-Con Function	E-Con Function
Incremental moves	Pause	Zone output	Acceleration only MAX	Positioning band	Speed variation	Serial communication

(Refer to the Robo Cylinder catalog for the details of each function.)

5 Supporting Various Field Networks

The E-Con, with its wire-saving design, can connect to many different field networks for communication with equipment from various manufacturers without the need for cumbersome wiring.
* Consult IAI beforehand if you are considering a ProfiBus connection.

6 Conformance with the CE Mark

* Contact IAI for details.

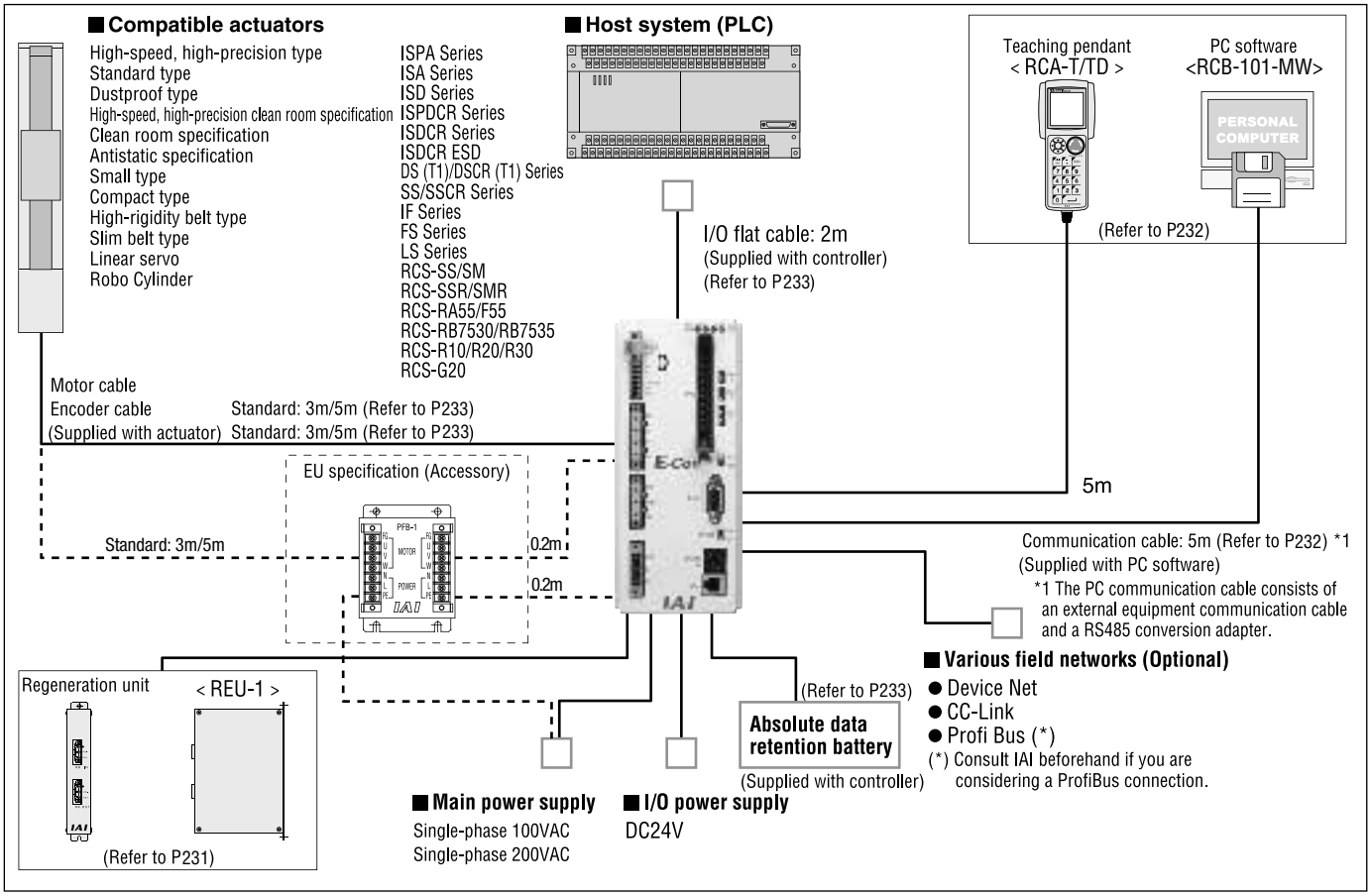
2 Model

ECON - I - 750BL - DV - 2 - EU - P
❶ ❷ ❸ ❹ ❺ ❻ ❼

❶ Series	❷ Encoder type	❸ Connected axis details (1 axis only)				❹ Network	❺ Supply voltage	❻ CE compliance	❼ I/O signal type (Note 2)
		Motor capacity (Note 1)	Brake	Creep	Limit switch				
ECON	I (Incremental) A (Absolute)	20 (20W) 30 (30W) 60 (60W) 100 (100W) 150 (150W) 200 (200W) 300 (300W) 400 (400W) 600 (600W) 750 (750W)	Not specified (Without brake) B (With brake)	Not specified (Without creep sensor) C (With creep sensor)	Not specified (Without limit switch) L (With limit switch)	Not specified (Network not supported) DV (DeviceNet specification) CC (CC-Link specification) PR (ProfiBus specification)	1 (100V) 2 (200V)	Not specified (Standard specification) EU (CE-compliant)	Not specified (NPN) P (PNP)

(Note 1) 20/30-watt specifications will be available from October 2003.
(Note 2) Even when you have selected a CE-compliant specification, be sure to specify NPN or PNP as the I/O signal type.

3 System Configuration Diagram



EU Specification Details

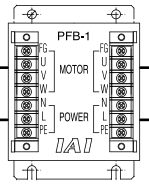
The E-Con's EU specification comes with the following filter box (model: PFB-1) and dedicated cable for noise elimination purposes.

Filter Box Wiring

* The total length of the motor cable on the actuator side and that on the controller (E-Con) side must not exceed 30 m.

←To actuator
CB-PFB-MA□□□-PAS
CB-PFB-MA□□□-WAS

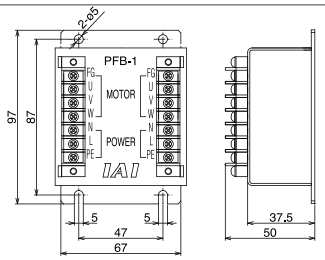
←To power supply
(Wired by the user)



To E-Con→
CB-PFB-MA□□□-CS

To E-Con→
CB-PFB-PW□□□-CS

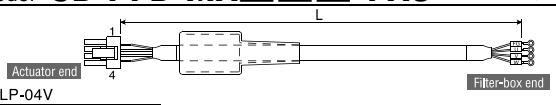
Filter Box Dimensions



Actuator Motor Cable (Robo Cylinder)

Model **CB-PFB-MA□□□-PAS**

* Indicate the desired cable length (L) of up to 30 m in □□□(e.g., 080 = 8 m).



SLP-04V

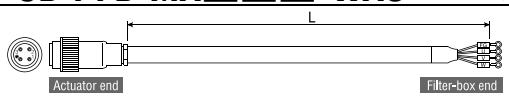
Wire	Color	Signal	No.	
0.75 sq (Crimp)	Red	U	1	Red
	White	V	2	White
	Black	W	3	Black
	Green	FG	4	Green

Terminals on filter-box end

Actuator Motor Cable (Single-Axis Robot)

Model **CB-PFB-MA□□□-WAS**

* Indicate the desired cable length (L) of up to 30 m in □□□(e.g., 080 = 8 m).



99-4222-00-04

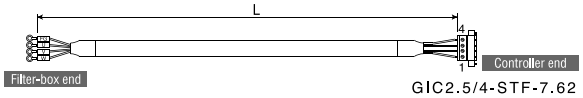
Wire	Color	Signal	No.	
0.75 sq (Crimp)	Green/Yellow	FG	⏚	Green/Yellow
	Black with "1" in white	U	1	Black with "1" in white
	Black with "2" in white	V	2	Black with "2" in white
	Black with "3" in white	W	3	Black with "3" in white

Terminals on filter-box end

Controller Motor Cable (Common to All Models)

Model **CB-PFB-MA002-CS**

* Indicate the desired cable length (L) of up to 30 m in □□□(e.g., 080 = 8 m).



GIC2.5/4-STF-7.62

Terminals on filter-box end

	No.	Signal	Color	Wire
Green	1	FG	Green	0.75 sq
Red	2	U	Red	
White	3	V	White	
Black	4	W	Black	

Controller Power Cable (Common to All Models)

Model **CB-PFB-PW002-CS**

* Indicate the desired cable length (L) of up to 30 m in □□□(e.g., 080 = 8 m).

GMSTB2.5/3-STF-7.62

Terminals on filter-box end

	No.	Signal	Color	Wire
Light Blue	1	N	Light Blue	1 sq
Brown	2	L	Brown	
Green/Yellow	3	PE	Green/Yellow	

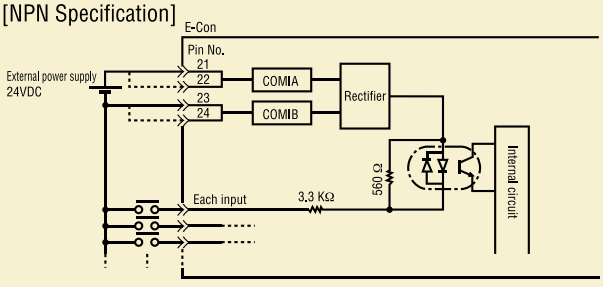
4 I/O Wiring

RCS-C Type (Insulated I/O Specification)

Input Part — 24-V external I/O specification

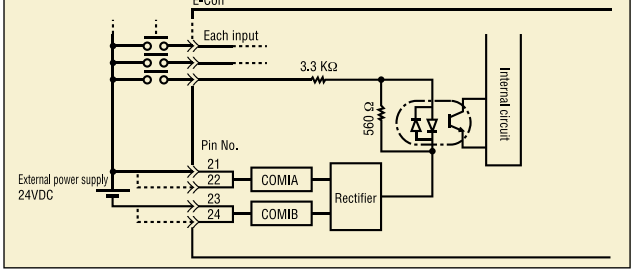
Item	Specification
Number of input points	10 points
Input voltage	24VDC ±20%
Input current	7mA/point
Operating voltage	ON voltage --- Min. 16V (4.5mA) OFF voltage --- Max. 6V (1.4mA)
Insulation method	Photocoupler

[NPN Specification]



- Supply 24 VDC to COMIA or COMIB. COMIA and COMIB have no polarity.
- Connect the negative side of the external power supply to the common side of the input.
- Pin Nos. 21 and 22 of COMIA, and pin Nos. 23 and 24 of COMIB, are connected internally.

[PNP Specification]

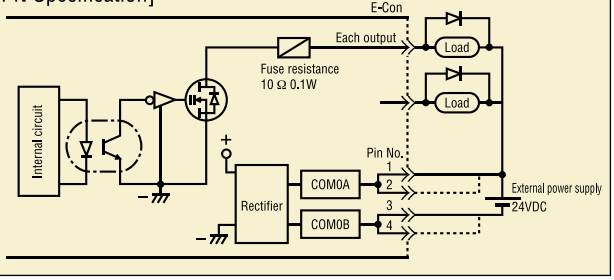


- Supply 24 VDC between COMOA and COMOB. COMOA and COMOB have no polarity.
- Connect the positive side of the external power supply to the common side of the input.
- Pin Nos. 21 and 22 of COMIA, and pin Nos. 23 and 24 of COMIB, are connected internally.

Output Part — 100-mA output circuit by Power MOSFET

Item	Specification
Number of output points	13 points
Rated load voltage	24VDC/60V (peak) (No flywheel diode)
Maximum load current	100mA/point
Insulation method	Photocoupler
Leak current	Fuse resistance: 10Ω, 0.1W

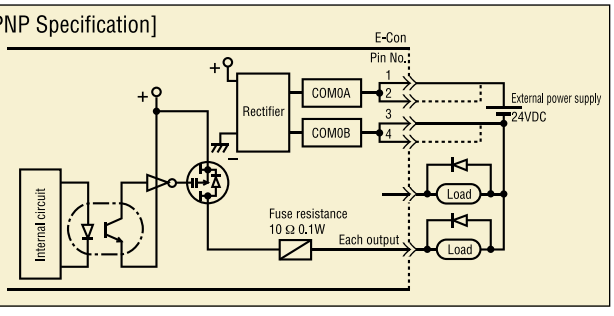
[NPN Specification]



- Supply 24 VDC to COMIA or COMIB. COMIA and COMIB have no polarity.
- Pin Nos. 1 and 2, and pin Nos. 3 and 4, are connected internally.

Note 1) The output circuit uses a Power MOSFET open drain and has no flywheel diode. Be sure to provide a fly-back voltage inhibition measure using a diode, etc., for the load L of a relay, etc. (Inserting a diode in a position as close as possible to the coil is the most effective way to prevent spike noise.)

[PNP Specification]



5 I/O Signal Table

E-Con

Pin No.	Category	Signal name	Description
1	-	COM-0A	Output port power (Note 1)
2		COM-0A	
3		COM-0B	
4		COM-0B	
5		NC	Not used
6		NC	(Do not connect anything)
7	Output (Note 3)	*Battery alarm	Battery alarm (Contact B)
8		NC	Not used
9		Moving	Moving output
10		PM32	Position complete output 32
11		*EMG	Emergency-stop output (Contact B)
12		PM16	Position complete output 16
13		*ALM	Alarm output (Contact B)
14		PM8	Position complete output 8
15		ZONE	Zone
16		PM4	Position complete output 4
17		ZFIN	Home complete output
18		PM2	Position complete output 2
19		PFIN	Position complete output
20		PM1	Position complete output 1

Pin No.	Category	Signal name	Description
21	-	COM-IA	Input port power (Note 2)
22		COM-IA	
23		COM-IB	
24		COM-IB	
25		NC	Not used (Do not connect anything)
26		NC	
27		NC	
28		NC	
29		NC	
30	Input (Note 3)	PC32	Specified position input 32
31		NC	Not used (Do not connect anything)
32		PC16	Specified position input 16
33		*ILK	Pause input (Contact B)
34		PC8	Specified position input 8
35		SVON	Servo ON input
36		PC4	Specified position input 4
37		RESET	Reset input
38		PC2	Specified position input 2
39		CSTR	Start input
40		PC1	Specified position input 1

(Note 1) Connect the 24-VDC power supply between COM-OA and COM-OB. COM-OA and COM-OB have no polarity. Pin Nos. 1 and 2, and pin Nos. 3 and 4, are connected internally.
(Note 2) Connect the positive side of the 24-VDC power supply to either COM-IA or COM-IB (pin Nos. 21 through 24). COM-IA and COM-IB have no polarity. Pin Nos. 21 and 22, and pin Nos. 23 and 24, are connected internally.
(Note 3) The ports indicated by * conform to the contact B signal logic (always ON).
Never connect the ports denoted "Not used."

6 Specification Table

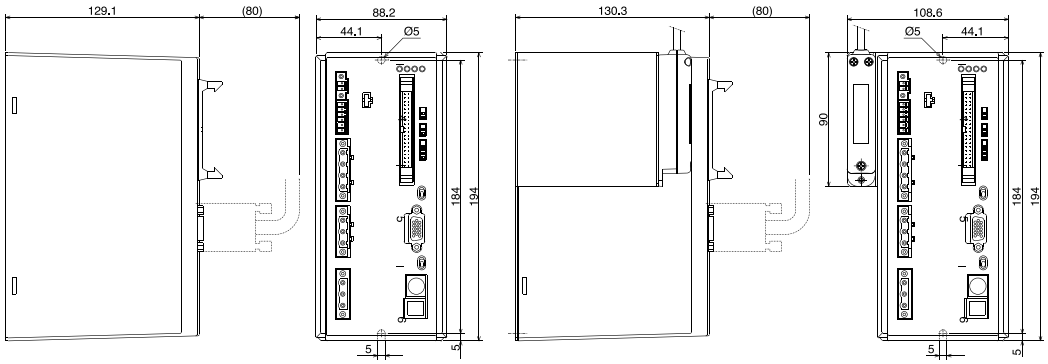
Item	Description							
Controller series/type	ECON							
Compatible actuators	ISA, ISPA, ISD, ISDCR (ESD), ISPDCR, DS, DSCR, SS, SSCR, IF, FS, LS RCS-SS/SSR/SM/SMR/RA55/F55/R10/R20/R30/G20							
Applicable motor capacity (W)	60	100	150	200	300	400	600	750
Number of controlled axis	1 axis only							
Maximum output of connected axis (W)	750							
Power supply	100-V specification: Single-phase 100~115VAC 200-V specification: Single-phase 200~230VAC				200-V specification: Single-phase 200~230VAC			
Power supply voltage range	±10%							
Power frequency	50/60Hz							
Power capacity (Note 1)	100W	150W	210W (290W)	270W	(410W)	520W	770W	1000W
	160VA	240VA	350VA (490W)	450VA	(680VA)	870VA	1300VA	1600VA
Position detection method	Incremental encoder/absolute encoder							
Speed setting	1mm/s or more; upper limit determined by the actuator specification							
Acceleration setting	0.01G or more; upper limit determined by the actuator specification							
Program language	-							
Number of programs	-							
Number of program steps	-							
Number of multitask programs	-							
Number of positions	64							
Data storage device	EEPROM							
Data input method	Teaching pendant, PC software							
Standard I/Os	10 dedicated inputs/12 dedicated outputs							
Expanded I/Os	Not expandable							
Serial communication function	Comes standard with a RS485 port.							
Other I/Os	Emergency-stop input (contact-B terminal block)							
Protective functions	Motor overvoltage, motor overcurrent, motor overload, driver temperature error, encoder error, etc.							
Operating temperature/humidity	Temperature: 0~40 ℃, humidity: 85%RH or less							
Operating environment	Not subject to corrosive gases or significant dust.							
Weight	1.2kg <Incremental type> 1.5kg <Absolute type>							
Accessory	PIO flat cable (2m)							

(Note 1) The figures in parentheses apply only to the LS type (linear servo actuator).

6 External Dimensions

Controller

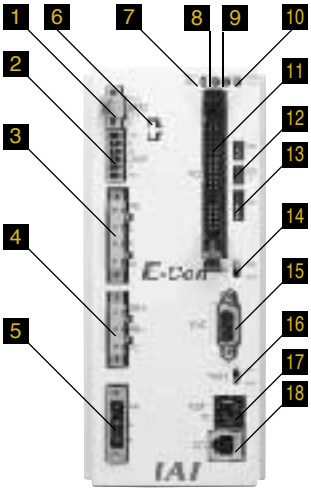
E-Con



External view of incremental specification

External view of absolute specification

7 Name and Function of Each Part



1 EMG terminal

A connector for the emergency-stop switch.
The controller will actuate an emergency stop when this connector becomes open.

2 Actuator-sensor input connector

An input terminal for the LS, CREEP or OT sensor, etc., installed on the actuator.
The pins are assigned to 24V, N, LS, CREEP and OT from the top. Use a dedicated cable for connection.

3 Motor cable connector

A connector for the actuator's motor power cable.
The pins are assigned to PE, U, V and W from the top.
Use a dedicated cable for connection.

4 Regeneration resistor unit connector

A connector for the regeneration resistor unit.
The pins are assigned to RB+, RB- and PE from the top.

5 Main power input connector

A connector for the controller power.
The pins are assigned to PE, L and N from the top.

6 Absolute battery connector

A connector for the battery unit to be used with an ABS actuator.

7 ~ 10 Indicator LEDs

These LEDs indicate the controller condition.
The details of each LED are as follows:

7	RDY	(Green) Lit when the controller is operating normally.
8	RUN	(Green) Lit during movement.
9	ALM	(Red) Lit while an alarm is present.
10	ENC	(Orange) Lit if the encoder is open or cannot be recognized.

11 PIO connector

A 40-pin connector for parallel communication with a PLC, etc.

12 DIP switch (SW2)

A data setting switch for rotation data clear and remote update used on an ABS actuator.
Refer to the explanation below for the function/setting corresponding to each switch number:

SW2-1	ON to enable rotation data clear
SW2-2	ON to enable remote update

13 DIP switch (SW1)

An axis ID setting switch.

14 Brake release switch

RLS	Brake is forcibly released.
NOM	Brake is in use (normal setting).

15 Encoder cable connector

A connector for the actuator's encoder cable.

16 Port switch

A switch for enabling/disabling Termi-Bus communication with a teaching pendant or PC.

17 Main communication port connector

A connector for Termi-Bus communication with a teaching pendant or PC.
It also serves as a link cable connector when multiple controllers are connected.

18 SIO connector

A connector for linking multiple controllers.

8 Options

Regeneration Resistor Unit

Model **REU-1**

Description

This unit converts to heat the regenerative current generated when the motor decelerates. A regeneration resistor is provided inside the controller, but its capacity may not be sufficient when a large load is applied to the vertical axis. In this case, this optional unit is required. (Refer to the table at bottom right.)

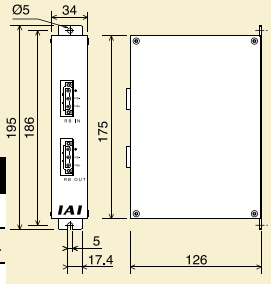
Specification

Item	Specification
Dimensions	W34mm X H195mm X D126mm
Weight	0.9kg
Built-in regeneration resistor	220Ω 80W
Accessory	Controller link cable (model: CB-ST-REU010), 1m

Installation Standards

Motor output	Horizontal use	Vertical use
0~150W		Not required.
200~600W	Not required.	1 unit is required.
750W		2 units are required.

* The above are reference settings assuming the rated conditions (load capacity, speed and acceleration).



9 Options

Teaching Pendant

Model

RCA-T (Standard) **RCA-TD** (With deadman switch)

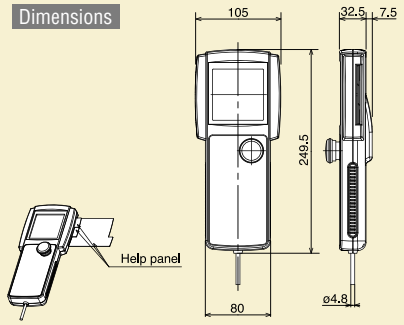
Features

- A teaching device that provides all of the functions needed for test operation/adjustment, such as position-data input, test operation and monitoring of the current axis position and I/O signals.
- The interactive-type panel ensures easy operation. All you need is to enter values in the required fields, so you won't need the operation manual for basic operations.

Specification

Items	Specification
Operating temperature, humidity	Temperature: 0~40°C, humidity: 85%RH or less
Operating environment	Not subject to corrosive gases or significant dust.
Weight	Approx. 550g (including cable)
Cable length	5m
Display	21 characters x 16 lines, LCD

Dimensions



Simple Teaching Pendant

Model

RCA-E

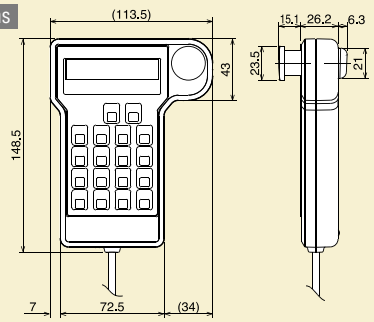
Features

- A highly cost-effective teaching pendant that provides the same functions as the RCA-T at a significantly lower price.
- The unit size has been reduced through the use of a two-line display.

Specification

Items	Specification
Operating temperature, humidity	Temperature: 0~40°C, humidity: 85%RH or less
Operating environment	Not subject to corrosive gases or significant dust.
Weight	Approx. 400g (including cable)
Cable length	5m
Display	16 characters x 2 lines, LCD

Dimensions



Data Setting Unit

Model

RCA-P *Operations involving axis movement cannot be performed.

Features

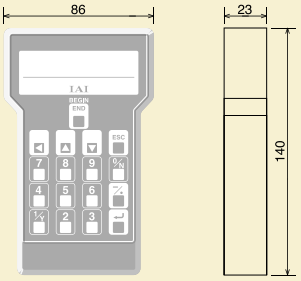
An affordable data setting unit offering edit functions, except for operations involving axis movement.

Edit functions • Position data input • Confirmation of current axis position • I/O signal monitoring, etc.

Specification

Items	Specification
Operating temperature, humidity	Temperature: 0~40°C, humidity: 85%RH or less
Operating environment	Not subject to corrosive gases or significant dust.
Weight	Approx. 360g
Cable length	5m
Display	16 characters x 2 lines, LCD

Dimensions



PC Software

Model

RCB-101-MW (DOS/V, Windows version)

[Content] Floppy disk, PC communication cable (5m) (*1)

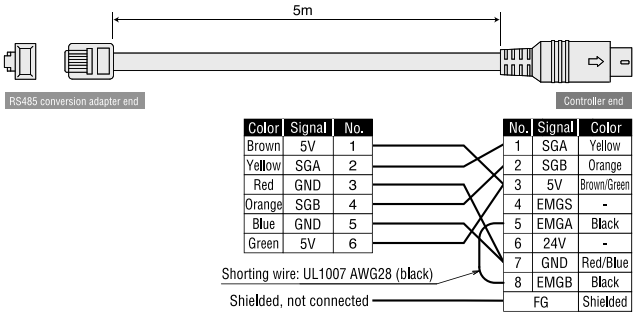
Features

- A support software for position data input and test operation.
- This software significantly improves the equipment debugging operations by offering wide-ranging functions such as jogging, inching, step operation and continuous operation, and also by allowing easy operation via a large PC screen.

(*1) The PC communication cable consists of CB-RCA-SIO050 and RCB-CV-MW (refer to the drawing below).

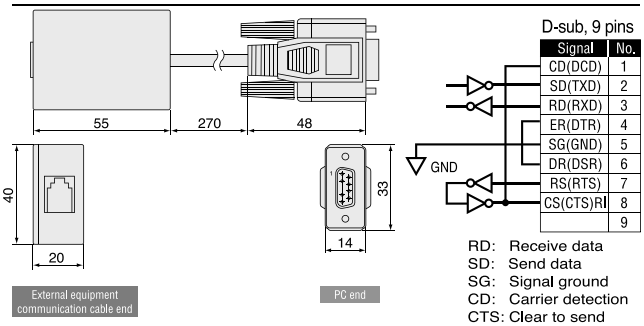
External Equipment Communication Cable

Model **CB-RCA-SIO050**



RS485 Conversion Adapter

Model **RCB-CV-MW**



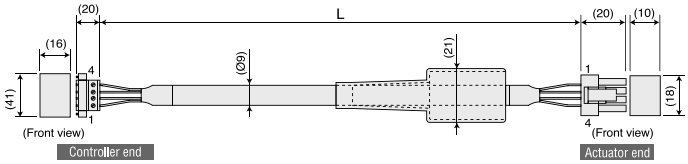
9 Service Parts

Motor Cable (Single-Axis Robot Connection)

Model **CB-X-MA□□□**

* Indicate the desired cable length (L) of up to 30 m in □□□ (e.g., 080 = 8 m).

Compatible actuators: DS/DSCR/ISP/IS/ISD/IF/FS/SS/SSCR/ISPDCR/ISDCR/ISDCR-ESD



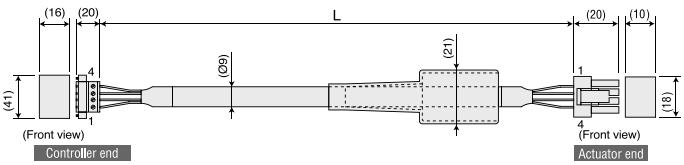
Wire	Color	Signal	No.		No.	Signal	Color	Wire
0.75 sq	Green	PE	1		1	U	Red	0.75 sq (Crimp)
	Red	U	2		2	V	White	
	White	V	3		3	W	Black	
	Black	W	4		4	PE	Green	

Motor Cable (Robo Cylinder/Linear Connection)

Model **CB-RCC-MA□□□**
Model **CB-RCC-MA□□□-RB** (Linear Servo)

* Indicate the desired cable length (L) of up to 30 m in □□□ (e.g., 080 = 8 m).

Compatible actuators: RCS-SS/SM/SSR/SMR/RA55/RB-7530/RB-7535/F55/G20/R10/R20/R30/LS



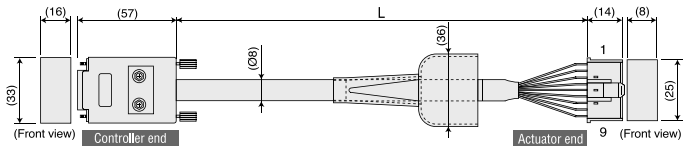
Wire	Color	Signal	No.		No.	Signal	Color	Wire
0.75 sq	Green	PE	1		1	U	Red	0.75 sq (Crimp)
	Red	U	2		2	V	White	
	White	V	3		3	W	Black	
	Black	W	4		4	PE	Green	

Encoder Cable (Single-Axis Robot Connection)

Model **CB-X-PA□□□**

* Indicate the desired cable length (L) of up to 30 m in □□□ (e.g., 080 = 8 m).

Compatible actuators: DS/DSCR/ISP/IS/ISD/IF/FS/SS/SSCR/ISPDCR/ISDCR/ISDCR-ESD



Wire	Color	Signal	No.		No.	Signal	Color	Wire
	-	-	1		1	BAT+	Black	
	-	-	2		2	BAT-	Yellow	
	-	-	3		3	SD	Blue	
	-	-	4		4	$\overline{SD}$	Orange	
	-	-	5		5	VCC	Green	
	-	-	6		6	GND	Brown	
0.15 sq (Crimp)	Blue	SD	7		7	FG	Ground	0.15 sq (Crimp)
	Orange	$\overline{SD}$	8		8	BK-	Gray	
	Black	BAT+	9		9	BK+	Red	
	Yellow	BAT-	10					
	Green	VCC	11					
	Brown	GND	12					
	Gray	BK-	13					
	Red	BK+	14					
	-	-	15					

Connect the shielded wire to the hood using a clamp.

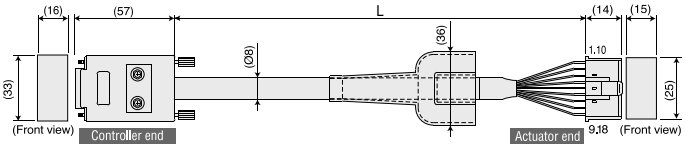
Ground wire and shielded wire, braided

Encoder Cable (Robo Cylinder/Linear Connection)

Model **CB-RCBC-PA□□□**
Model **CB-RCBC-PA□□□-RB** (Linear Servo)

* Indicate the desired cable length (L) of up to 30 m in □□□ (e.g., 080 = 8 m).

Compatible actuators: RCS-SS/SM/SSR/SMR/RA55/RB-7530/RB-7535/F55/G20/R10/R20/R30/LS



Wire	Color	Signal	No.		No.	Signal	Color	Wire
	Pink	A/U	1		1	A/U	Pink	
	Purple	$\overline{A/U}$	2		2	$\overline{A/U}$	Purple	
	White	B/V	3		3	B/V	White	
	Blue/Red	$\overline{B/V}$	4		4	$\overline{B/V}$	Blue/Red	
	Orange/White	Z/W	5		5	Z/W	Orange/White	
	Green/White	$\overline{Z/W}$	6		6	$\overline{Z/W}$	Green/White	
0.15 sq (Crimp)	Blue	SD	7		7	-	-	
	Orange	$\overline{SD}$	8		8	-	-	
	Black	BAT+	9		9	FG	Ground	0.15 sq (Crimp)
	Yellow	BAT-	10		10	SD	Blue	
	Green	VCC	11		11	$\overline{SD}$	Orange	
	Brown	GND	12		12	BAT+	Black	
	Gray	BK-	13		13	BAT-	Yellow	
	Red	BK+	14		14	VCC	Green	
	-	-	15		15	GND	Brown	
					16	-	-	
					17	BK-	Gray	
					18	BK+	Red	

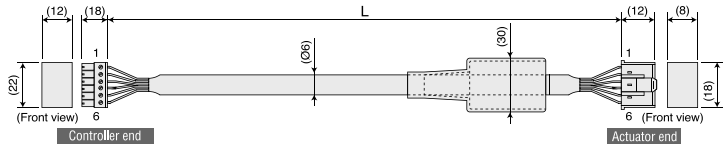
Connect the shielded wire to the hood using a clamp.

Ground wire and shielded wire, braided

Limit Switch Cable (Single-Axis Robot Connection)

Model **CB-X-LC□□□**

* Indicate the desired cable length (L) of up to 30 m in □□□ (e.g., 080 = 8 m).

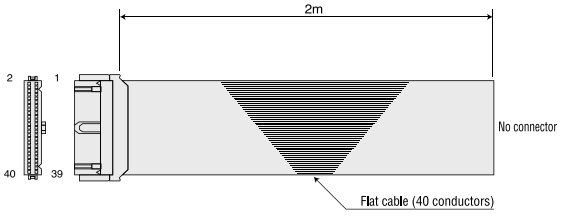


Wire	Color	Signal	No.		No.	Signal	Color	Wire
AWG24	Light Blue	24VOUT	6		1	24VOUT	Light Blue	AWG24 (Crimp)
	Pink	N	5		2	N	Pink	
	Grass	LS	4		3	LS	Grass	
	Orange	CREEP	3		4	CREEP	Orange	
	Gray	OT	2		5	OT	Gray	
	1B/Light Blue	RSV	1		6	RSV	1B/Light Blue	

Note) "1B" indicates one black dot mark.

I/O Flat Cable (E-Con)

Model **CB-RCBC-PIO020**



No.	Color	Signal name	No.	Color	Signal name	No.	Color	Signal name	No.	Color	Signal name
1	Brown-1	COM-0A	11	Brown-2	/EMG	21	Brown-3	COM-IA	31	Brown-4	NC
2	Red-1	COM-0A	12	Red-2	PM16	22	Red-3	COM-IA	32	Red-4	PC16
3	Orange-1	COM-0B	13	Orange-2	/ALM	23	Orange-3	COM-IB	33	Orange-4	/ILK
4	Yellow-1	COM-0B	14	Yellow-2	PM8	24	Yellow-3	COM-IB	34	Yellow-4	PC8
5	Green-1	NC	15	Green-2	ZONE	25	Green-3	NC	35	Green-4	SVON
6	Blue-1	NC	16	Blue-2	PM4	26	Blue-3	NC	36	Blue-4	PC4
7	Purple-1	NC	17	Purple-2	ZFIN	27	Purple-3	NC	37	Purple-4	RESET
8	Gray-1	Battery alarm	18	Gray-2	PM2	28	Gray-3	NC	38	Gray-4	PC2
9	White-1	Moving	19	White-2	PFIN	29	White-3	NC	39	White-4	CSTR
10	Black-1	PM32	20	Black-2	PM1	30	Black-3	PC32	40	Black-4	PC1

Absolute Data Retention Battery

Model **AB-1**

* Case is not included.

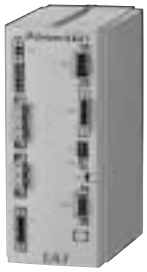
■ Specification

Item	Description
Battery type	Lithium battery
Battery capacity	2000mAh
Data retention time	Approx. 20,000 hours
Nominal voltage	3.6V

Compatible controllers: RCS-E/RCS-C/E-Con

P-Driver Positioning Driver with Pulse-Train Input

Operating method	Pulse-train control
Supply voltage	100/200 VAC, selectable



1 Features

1 Effective Control of Robo Cylinder and IAI's Single-Axis Robot with Pulse Train

The P-Driver lets you operate a variety of Robo Cylinders and single-axis robots (motor output: 20 to 750 W; stroke: 50 to 3000 mm) as desired.
It offers a dramatic cost savings because design, assembly and adjustment are much simpler than when building a system combining individual components such as a ball screw and motor.
Furthermore, pulse-train control does not limit the number of positioning points.

2 Dedicated Homing Signal

The dedicated homing input allows for automatic homing, thereby eliminating the need to program a complicated sequence.

3 Torque Limiting Function

Torque can be limited via external signal (based on parameter setting). When the specified torque is reached, a signal will be output. This function lets you implement push & hold, press-fitting and other operations.

4 Brake Control Function

Control of the actuator brake (actuator option) uses a dedicated circuit within the controller. There is no need to program a separate sequence.
By providing a dedicated power supply (24 VDC), the brake can be forcibly released even when the driver's main power supply is cut off.

5 Feedback Function

Position detection data can be output in pulse train (differential output) form. This allows the host controller to read the current position in real time (up to 115 kpps).

6 Feed-Forward Control Function

Response can be increased under certain conditions, such as when the load's inertia ratio is high. Increasing the parameter value will reduce the deviation (the difference between the commanded position and the position fed back), thus increasing response.

7 Primary Position-Command Filter Function

Soft start and stop is possible even in the command pulse input mode where acceleration/deceleration is not considered.

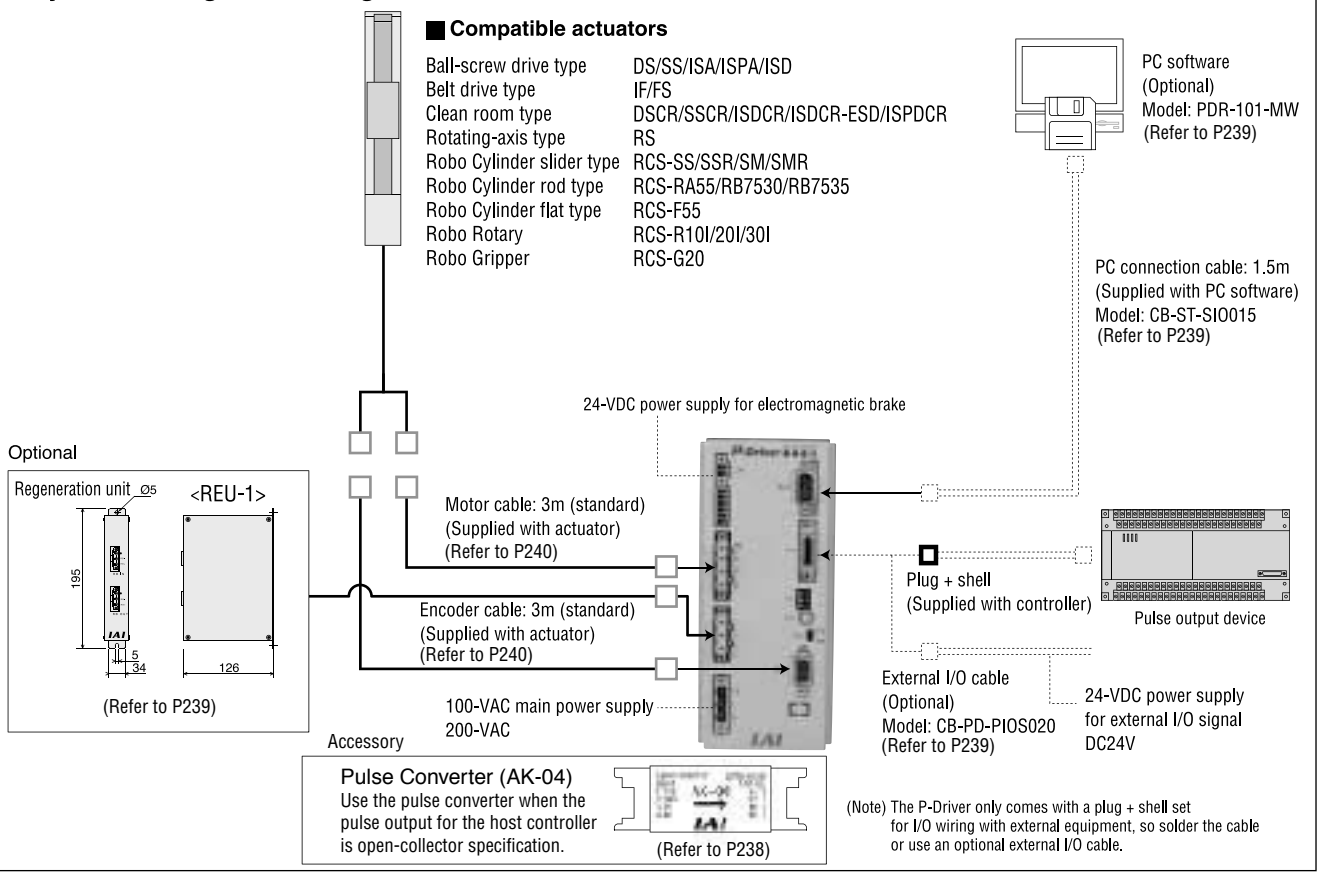
2 Model

PDR - I - 750BL - 2 - P
❶ ❷ ❸ ❹ ❺

❶ Series	❷ Encoder type	❸ Connected axis details (1 axis only)				❹ Supply voltage	❺ I/O signal specification
		Motor capacity	Brake	Creep	Limit switch		
PDR	I (Incremental)	20 (20W) 30 (30W) 60 (60W) 100 (100W) 150 (150W) 200 (200W) 400 (400W) 600 (600W) 750 (750W)	Not specified (Without brake) B (With brake)	Not specified (Creep not supported) C (Creep supported)	Not specified (Limit switch not supported) L (Limit switch supported)	1 (100V) 2 (200V)	Not specified (NPN) P (PNP)

3 System Configuration Diagram

System Configuration Diagram



4 I/O Wiring

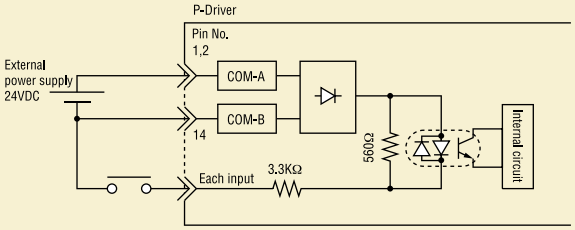
Input Part Sequence input specification

Item	Specification
Number of input signals	5 points
Input voltage	24VDC ±20%
Input current	7mA/point
Operating voltage	ON voltage --- Min. 16V (4.5mA) OFF voltage --- Max. 6V (1.4mA)
Insulation method	Photocoupler

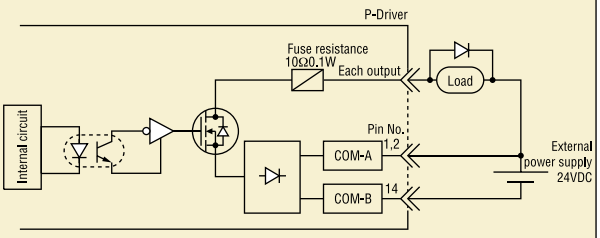
Output Part Sequence output specification

Item	Specification
Number of output signals	6 points
Rated load voltage	24/60VDC (Peak; no flywheel diode)
Maximum load current	100mA/point
Insulation method	Photocoupler
Overcurrent protection	Fuse resistance: 10Ω, 0.1W

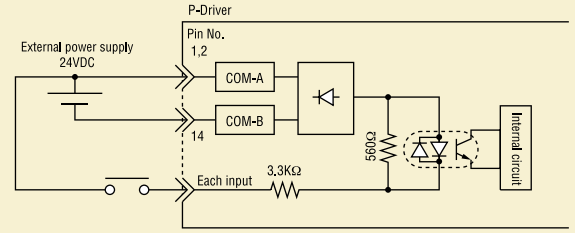
[NPN Specification]



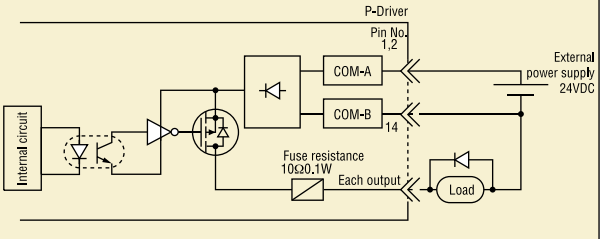
[NPN Specification]



[PNP Specification]



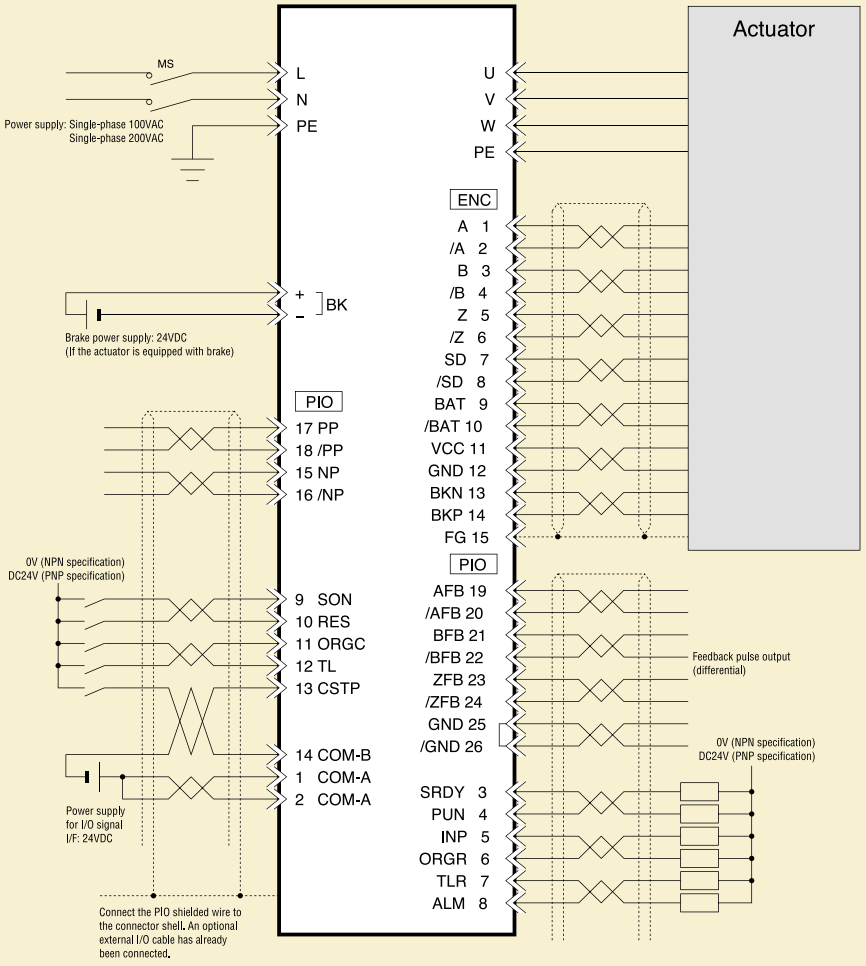
[PNP Specification]



5 I/O Signal Table

Pin No.	I/O category	Signal abbreviation	Signal name	Function
1	External I/O signal power	COM-A	Power common (+)	Connect to the positive side of the 24-VDC power supply common for external I/O signal.
2		COM-A		(Pins 1 and 2 are connected internally.)
3	Sequence signal output	SRDY	System ready	After the power is turned ON, this signal will turn ON when the P-Driver becomes control-ready. It is synchronized with the ON/OFF of the corresponding LED on the front panel of the enclosure.
4		RUN	Operation ready	This signal will turn ON when the servo is turned ON (the actuator is operation-ready). It is synchronized with the ON/OFF of the corresponding LED on the front panel of the enclosure.
5		INP	Position complete	This signal will turn ON when the actuator enters the in-position range set by the applicable parameter.
6		ORGR	Homing complete	This signal will turn ON when homing is completed.
7		TLR	Torque limiting	This signal will turn ON when the actuator output reaches the parameter-set torque limit while TL is ON.
8		ALM	Alarm	This signal will turn OFF when a protective circuit (function) has actuated and the base current is cut off (the signal is normally ON).
9	Sequence signal input	SON	Servo ON	The actuator is ready to operate when this signal turns ON (servo ON state).
10		RES	Alarm reset	An alarm will be reset when this signal is turned ON.
11		ORGC	Homing command	Homing will start when this signal is turned ON.
12		TL	Torque limiting selection	Actuator-torque limiting will start when this signal is turned ON. (Turning this signal OFF will cancel torque limiting.)
13		CSTP	Forced stop	When this signal is turned ON, the actuator will be decelerated to a stop by forced stopping torque and the servo will turn OFF.
14	External I/O signal power	COM-B	Power common (-)	Connect to the negative side of the 24-VDC power supply common for external I/O signal.
15	Command pulse input	NP	Pulse-train input	Command pulse-train input: Open-collector mode (Max. 200 kpps), Differential - receiver mode (Max. 500 kpps) Command pulse format is selectable from 6 types via parameter.
16		/NP		
17		PP		
18		/PP		
19	Feedback pulse differential output	AFB	+A	Position detection data is output as pulses (phases A, B and Z). Pulse output format is selectable from 6 types via parameter.
20		/AFB	-A	
21		BFB	+B	
22		/BFB	-B	
23		ZFB	+Z	
24		/ZFB	-Z	
25	Reference potential	GND	Reference potential	For feedback pulse output
26		GND		Line-driver ground line (Pins 25 and 26 are connected internally.)

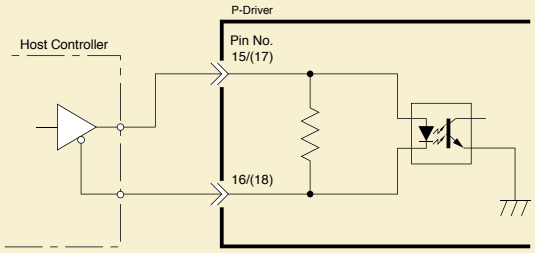
6 Standard Connection Diagram



7 Position Controller for Single-Axis Robot

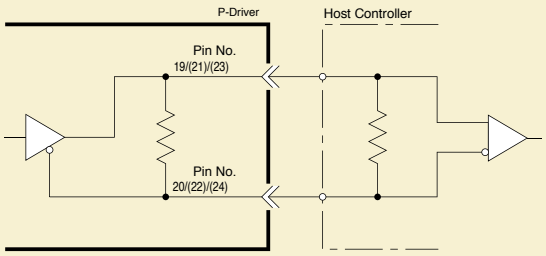
Input by Differential Line Driver

Applicable line driver: 26C31 or equivalent

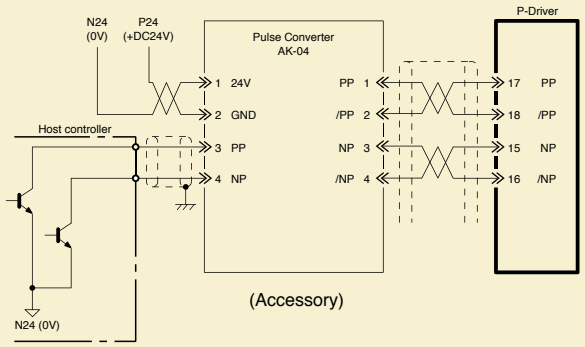


Feedback Pulse Output

Applicable line receiver: 26C32 or equivalent



Input by Open Collector



Caution

- Thoroughly confirm the compatibility with the host controller.
- If noise generation is a possibility, select a host controller that uses differential line-driver output.

8 Command Pulse Input Format

	Command pulse-train format	Input terminal	Forward	Reverse
Negative logic	Forward pulse train	PP•/PP		
	Reverse pulse train	NP•/NP		
	A forward pulse train indicates motor revolutions in the forward direction, while a reverse pulse train indicates motor revolutions in the reverse direction.			
	Pulse train	PP•/PP		
	Sign	NP•/NP	Low	High
	Command pulses indicate motor revolutions, while a command sign indicates direction of rotation.			
	Phase A/B pulse train	PP•/PP		
		NP•/NP		
	Phase A/B (4x multiplication) pulses of 90° phase difference command revolutions and direction of rotation.			
Positive logic	Forward pulse train	PP•/PP		
	Reverse pulse train	NP•/NP		
	Pulse train	PP•/PP		
	Sign	NP•/NP	High	Low
	Phase A/B pulse train	PP•/PP		
		NP•/NP		

* The same output formats apply to feedback pulses.

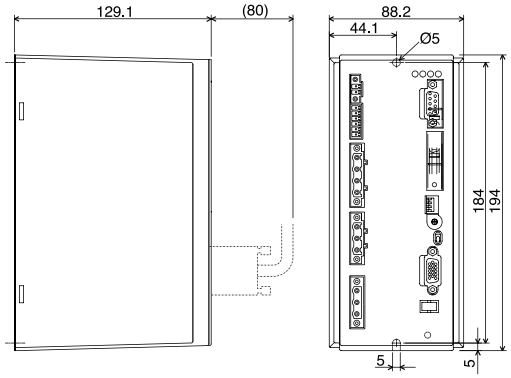
9 Specification Table

Item		Description								
Controller series/type		PDR								
Compatible actuators		DS, SS, ISA, ISPA, ISD, ISDCR, ISPDCR, IF, FS RCS-SS/SSR/SM/SMR/RA55/F55/G20/R10/R20/R30								
Applicable motor capacity (W)		20	30	60	100	150	200	400	600	750
Number of controlled axis		1 axis only								
Maximum output of connected axis (W)		750								
Power supply		100-V specification: Single-phase 100~115VAC 200-V specification: Single-phase 200~230VAC						200-V specification: Single-phase 200~230VAC		
Power supply voltage range		±10%								
Power frequency		50/60Hz								
Power capacity		34W	42W	100W	150W	210W	270W	520W	770W	1000W
		57VA	70VA	160VA	240VA	350VA	450VA	870VA	1300VA	1600VA
Control method		Sine wave PWM, vector current control								
Position detection method		Incremental encoder								
Drive system		Regeneration resistor								
Function/performance	Control mode	Position control by pulse-train input								
	Maximum input pulse frequency	Max. 500kpps (differential)/Max. 200kpps (open collector)								
	Command pulse multiplication (electronic gear: A/B)	A, B-1~4096 1/50<A/B<50/1 (Parameter setting)								
	Position complete band	1~4096 pulses (Parameter setting)								
I/O signal power supply		DC24V±20% 0.8A (Supplied externally)								
Electromagnetic brake power supply		DC24V±20% 1A (Max.) (Supplied externally)								
Standard I/Os		9 dedicated inputs/12 dedicated outputs								
Serial communication function		RS232 (For dedicated PC software)								
Protective functions		Motor overvoltage, motor overcurrent, motor overload, driver temperature error, encoder error, etc.								
Operating temperature/humidity		Temperature: 0~40℃, humidity: 85%RH or less								
Operating environment		Not subject to corrosive gases or significant dust.								
Vibration resistance		4.9m/s²								
Weight		1.2kg								
Accessory		DI/DO plug, shell								

10 External Dimensions

Controller

P-Driver



Accessory Pulse Converter (AK-04)

Description: Pulse converter (Model AK-04) + I/O e-CON connector

Use the pulse converter when the pulse output for the host controller is open-collector specification.

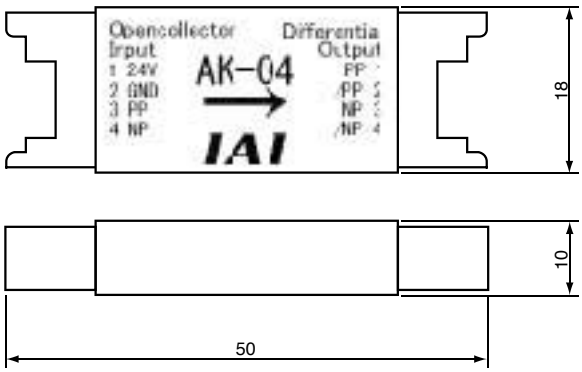
The converter is used to convert the command pulse to differential mode when the host controller is open-collector specification. Converting to differential mode enhances the noise resistance.

Output is 2-phase worth of line-driver 26C31 equivalent of differential output.

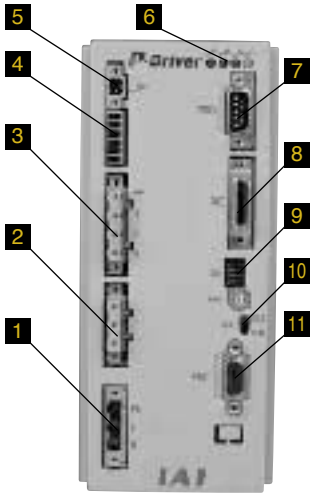
I/O connector is the field-wiring ready, easy e-CON connector.

Standard specification

- Input power supply : DC24V±10% (MAX50mA)
- Pulse input : Open-collector (collector current MAX12mA)
- Input frequency : 200kHz or less
- Pulse output : 26C31 equivalent differential output (MAX10mA)
- External dimensions : See the dimension to the right (without cable connector)
- Weight : 10g or less (without cable connector)
- Accessories : e-CON I/O connector 3M 37104-3122-000FL
  (Applicable electric wires: AWG No.24~26, 0.14~0.3mm² or less
  Final external dimension Ø1.0~1.2mm)



11 Name of Each Part



1 Main power input connector
Connect the power supply.

2 Regeneration resistor unit connector
Connect a regeneration resistor unit (optional).

3 Motor cable connector
Connect the actuator's motor cable.

4 Actuator-sensor input connector
Connect the actuator's LS, CREEP or OT sensor cable, etc. (optional).

5 Power input connector for electromagnetic brake
Connect the power supply for electromagnetic brake. (The electromagnetic brake requires an external power supply.)

6 Status indicators (LEDs)
These LEDs are used to monitor the operating condition of the controller.

7 Communication connector
Connect the PC software cable.

8 I/O signal connector
Connect the control I/O signals.

9 System setting switch
A switch for encoder voltage switching and remote update. (The rotary switch is used by IAI for adjustment.)

10 Brake release switch
A switch for forcibly releasing the brake.

11 Encoder cable connector
Connect the actuator's encoder cable.

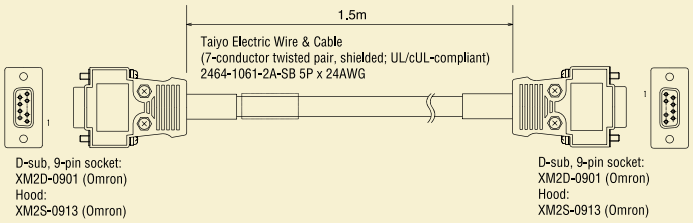
12 Options

PC Software

Model **PDR-101-MW**

Description

Floppy disk, PC connection cable (1.5m) (cable model: CB-ST-SIO015)
Use this software to set P-Driver parameters, perform jogging during debugging operation, monitor various signals, and so on.



Wiring Diagram

Controller end
XM2D-0901

Wire	Color	Signal	No.
			1
	Orange with black dot	RD	2
	Orange with red dot	SD	3
	Vinyl wire	ER	4
AWG24 x 7 conductors	Yellow with black dot	SG	5
	(Shorted)	DR	6
	Vinyl wire	RS	7
	(Shorted)	CS	8
			9

PC end
XM2D-0901

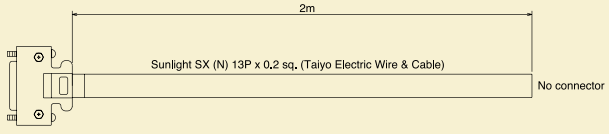
No.	Signal	Color	Wire
1			
2	TXD	Orange with black dot	
3	RXD	Orange with red dot	
4	DTR	Vinyl wire	
5	SG	Yellow with black dot	AWG24 x 7 conductors
6	DSR	(Shorted)	
7	RTS	Vinyl wire	
8	CTS	(Shorted)	
9			

External I/O Cable

Model **CB-PD-PIOS020**

Description

Plug + shell + shielded cable (2m) (no connector)
Use this cable for connection with a pulse output device.



Plug: 10126-3000VE (Sumitomo 3M)
Shell: 10326-52A0-008 (Sumitomo 3M)

Wiring Diagram

Note 1: Twisted pair

10126-3000VE

Wire	Color	Signal	No.	
	Black	COM-A	1	Black
	White/Black	COM-A	2	White/Black
	Red	SRDY	3	Red
	White/Red	RUN	4	White/Red
	Green	/NP	5	Green
	White/Green	ORGR	6	White/Green
	Yellow	TLR	7	Yellow
	White/Yellow	ALM	8	White/Yellow
	Brown	SON	9	Brown
	White/Brown	RES	10	White/Brown
	Blue	ORGC	11	Blue
0.2 sq. soldered	White/Blue	TL	12	White/Blue
	Gray	CSTP	13	Gray
	White/Gray	COM-B	14	White/Gray
	Orange	NP	15	Orange
	White/Orange	/NP	16	White/Orange
	Purple	PP	17	Purple
	White/Purple	/PP	18	White/Purple
	Light Green	AFB	19	Light Green
	White/Light Green	/AFB	20	White/Light Green
	Pink	BFB	21	Pink
	White/Pink	/BFB	22	White/Pink
	Light Blue	ZFB	23	Light Blue
	White/Light Blue	/ZFB	24	White/Light Blue
	White	GND	25	White
	Black/White	GND	26	Black/White

Connect the shield wire to a cable clamp.

Note 1

No-connector end

Shielded wire

Regeneration Unit

Model **REU-1**

Description

This unit converts to heat the regenerative current generated when the motor decelerates. A regeneration resistor is provided inside the controller, but its capacity may not be sufficient when a large load is applied to the vertical axis. In this case, this optional unit is required. (Refer to the table below.)

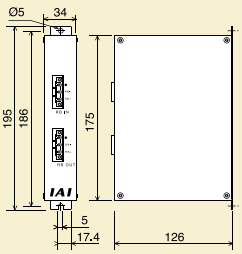
Specification

Item	Specification
Dimensions	W34mm x H195mm x D126mm
Weight	0.9kg
Built-in regeneration resistor	220Ω 80W
Accessory	Controller link cable (model: CB-ST-REU010), 1m

Installation Standards

Motor output	Horizontal use	Vertical use
0~150W	Not required.	Not required.
200~600W		1 unit is required.
750W		2 units are required.

* The above are reference settings assuming the rated conditions (load capacity, speed and acceleration).



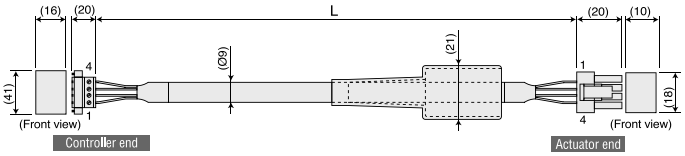
9 Service Parts

Motor Cable (Single-Axis Robot Connection)

Model **CB-X-MA□□□**

* Indicate the desired cable length (L) of up to 30 m in □□□ (e.g., 080 = 8 m).

Compatible actuators: DS/DSCR/ISP/IS/ISD/IF/FS/SS/SSCR/ISPDCR/ISDCR/ISDCR-ESD/RS



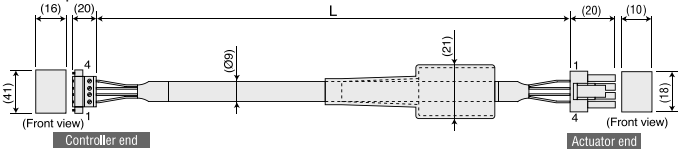
Wire	Color	Signal	No.		No.	Signal	Color	Wire
0.75 sq	Green	PE	1		1	U	Red	0.75 sq (Crimp)
	Red	U	2		2	V	White	
	White	V	3		3	W	Black	
	Black	W	4		4	PE	Green	

Motor Cable (Robo Cylinder Connection)

Model **CB-RCC-MA□□□**

* Indicate the desired cable length (L) of up to 30 m in □□□ (e.g., 080 = 8 m).

Compatible actuators: RCS-SS/SM/SSR/SMR/RA55/RB7530/RB7535/F55/G20/R10/R20/R30



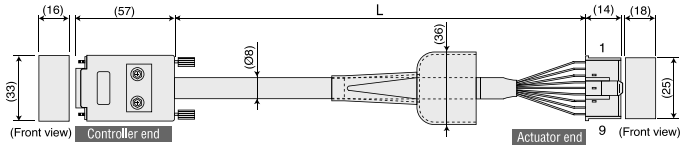
Wire	Color	Signal	No.		No.	Signal	Color	Wire
0.75 sq	Green	PE	1		1	U	Red	0.75 sq (Crimp)
	Red	U	2		2	V	White	
	White	V	3		3	W	Black	
	Black	W	4		4	PE	Green	

Encoder Cable (Single-Axis Robot Connection)

Model **CB-X-PA□□□**

* Indicate the desired cable length (L) of up to 30 m in □□□ (e.g., 080 = 8 m).

Compatible actuators: DS/DSCR/ISP/IS/ISD/IF/FS/SS/SSCR/ISPDCR/ISDCR/ISDCR-ESD/RS



Wire	Color	Signal	No.		No.	Signal	Color	Wire
0.15 sq (Crimp)	-	-	1		1	BAT+	Black	0.15 sq (Crimp)
	-	-	2		2	BAT-	Yellow	
	-	-	3		3	SD	Blue	
	-	-	4		4	SD	Orange	
	-	-	5		5	VCC	Green	
	-	-	6		6	GND	Brown	
	Blue	SD	7		7	FG	Ground	
	Orange	SD	8		8	BK-	Gray	
	Black	BAT+	9		9	BK+	Red	
	Yellow	BAT-	10					
	Green	VCC	11					
	Brown	GND	12					
	Gray	BK-	13					
	Red	BK+	14					
	-	-	15					

Connect the shielded wire to the hood using a clamp.

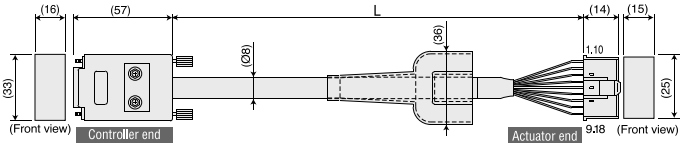
Ground wire and shielded wire, braided

Encoder Cable (Robo Cylinder Connection)

Model **CB-RCBC-PA□□□**

* Indicate the desired cable length (L) of up to 30 m in □□□ (e.g., 080 = 8 m).

Compatible actuators: RCS-SS/SM/SSR/SMR/RA55/RB7530/RB7535/F55/G20/R10/R20/R30



Wire	Color	Signal	No.		No.	Signal	Color	Wire
0.15 sq (Crimp)	Pink	A/U	1		1	A/U	Pink	0.15 sq (Crimp)
	Purple	Ā/U	2		2	Ā/U	Purple	
	White	B/V	3		3	B/V	White	
	Blue/Red	B̄/V	4		4	B̄/V	Blue/Red	
	Orange/White	Z/W	5		5	Z/W	Orange/White	
	Green/White	Z̄/W	6		6	Z̄/W	Green/White	
	Blue	SD	7		7	-	-	
	Orange	SD	8		8	-	-	
	Black	BAT+	9		9	FG	Ground	
	Yellow	BAT-	10		10	SD	Blue	
	Green	VCC	11		11	SD	Orange	
	Brown	GND	12		12	BAT+	Black	
	Gray	BK-	13		13	BAT-	Yellow	
	Red	BK+	14		14	VCC	Green	
	-	-	15		15	GND	Brown	
					16	-	-	
					17	BK-	Gray	
					18	BK+	Red	

Connect the shielded wire to the hood using a clamp.

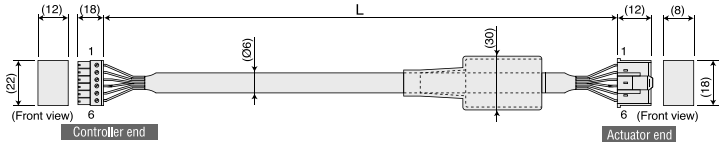
Ground wire and shielded wire, braided

Limit Switch Cable (Single-Axis Robot/Robo Rotary Connection)

Model **CB-X-LC□□□**

* Indicate the desired cable length (L) of up to 30 m in □□□ (e.g., 080 = 8 m).

Compatible actuators: ISP/IS/IF/ISPDCR/RS/R10/R20/R30



Wire	Color	Signal	No.		No.	Signal	Color	Wire
AWG24	Light Blue	24VOUT	6		1	24VOUT	Light Blue	AWG24 (Crimp)
	Pink	N	5		2	N	Pink	
	Grass	LS	4		3	LS	Grass	
	Orange	CREEP	3		4	CREEP	Orange	
	Gray	OT	2		5	OT	Gray	
	1B/Light Blue	RSV	1		6	RSV	1B/Light Blue	

Note) "1B" indicates one black dot mark.

X-SEL High-Function Multi-Axes Controller

Operating method programs	Program operation
Number of storable programs	64 programs (6000 steps)
Number of storable positions	3000 positions selectable
Supply voltage	AC100V/200V, selectable

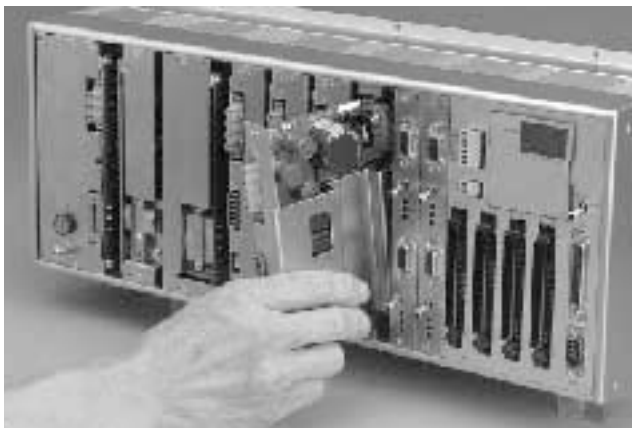
1 Features

1 All-in-One Controller Featuring a Newly Developed, Fully Programmable Digital Servo Driver

The driver is equipped with a newly developed, fully programmable digital servo driver supporting a 17-bit serial encoder.
Acceleration/deceleration performance, which is significantly higher than the conventional model (E/G type), reduces tact time.
This all-in-one controller with a built-in driver requires no driver connection, making installation easier.

2 Easy Maintenance

All boards can be replaced simply by removing the front panel.
The X-SEL ensures prompt, thorough maintenance and service.



3 Enhanced Safety Function Backed by CE Mark

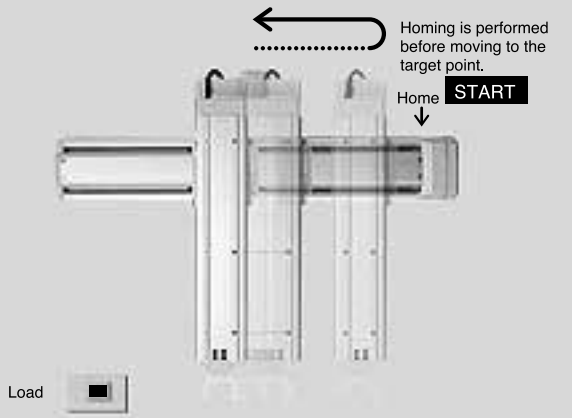
The X-SEL controller system protects your equipment with various RAS functions.
Safety is enhanced by a function that cuts off the motor drive power upon an emergency stop or error, a noise elimination feature, etc.
We offer models conforming to the “CE Mark” international safety standard. *

* Please contact IAI if you require a CE-compliant specification.

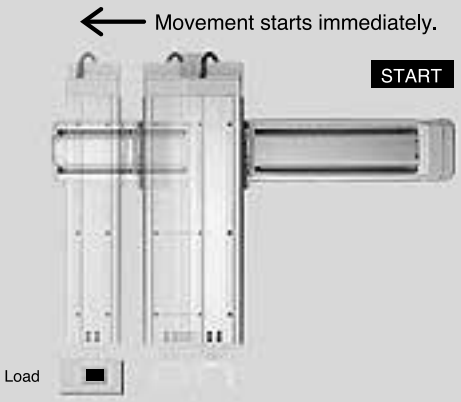
4 Greater Operating Efficiency with Support for Absolute Encoder

The X-SEL supports a 17-bit absolute encoder for rotation data backup, so homing is no longer required when starting your equipment or upon reset following an emergency stop.
The X-SEL saves setup time in the morning or reset time in operations requiring frequent stops, thereby improving efficiency.

Incremental

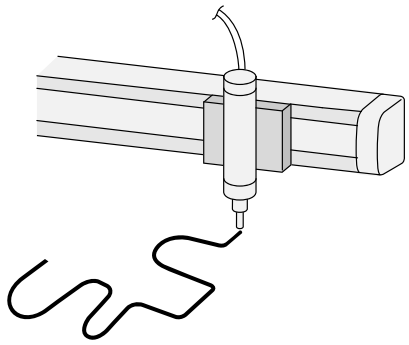


Absolute



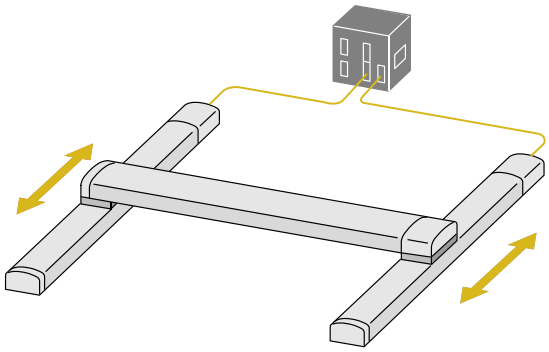
5 Significantly Higher Trace Accuracy

The higher processing speed of the X-SEL controller facilitates a significant improvement in trace accuracy.
The speed of path and arc movement has also increased, allowing for faster, more accurate coating operation.



6 Synchronized Operation

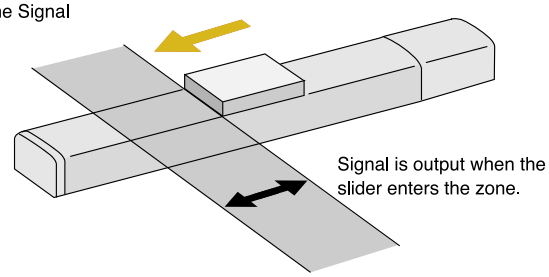
The operations of two actuators can be synchronized, allowing for the transfer of load weighing more than the load capacity of a single axis. The synchronized operation function is also useful when a gantry-type model is used with an extended Y-axis. (Certain conditions apply, so please consult with IAI.)



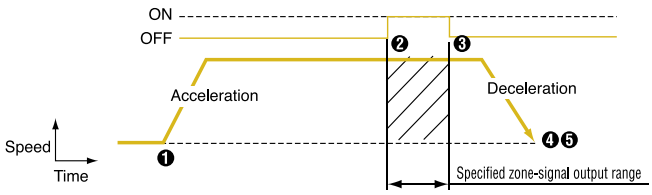
7 Zone Signal

The zone signal function lets you set a desired range (zone) between the stroke limits and cause a signal to be output when the slider enters the specified range. Use this function to provide an interlock, or to synchronize operation, with peripheral equipment. A maximum of four ranges (zones) can be set.

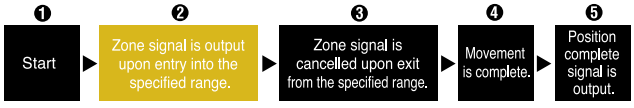
■Zone Signal



■Zone Signal Output



■Zone Operation

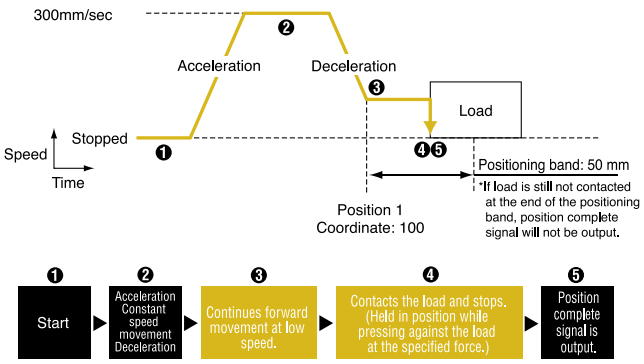


8 Push & Hold Operation

The slider can be held in position while pressing against the load, as in similar operations achieved with an air cylinder.
This function lets the user easily handle various operations such as applying pressure, clamping and press-fitting works.

The presence/absence of load is detected by setting the controller in such a way that a signal will be output upon contact with a load.

■Example of Push & Hold Operation



9 Significantly Larger Program Data Capacity

6000 programmable steps (largest in its class)
3000 position points
Additionally, up to 16 tasks can be executed simultaneously, easily accommodating complex controls and multi-variety work processes.

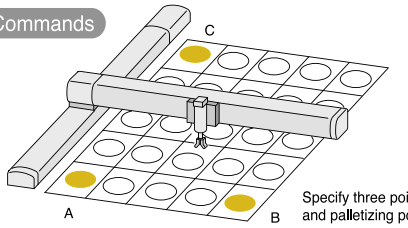
10 Supporting Pseudo-Ladder Task

Ladder tasks, similar to those generated by a PLC, can be constructed in a program (ladder mnemonic).
Since the extended conditions of AND and OR blocks are supported not only in ladder tasks but in all programs as well, so that even complex conditions are handled easily.

11 Many New Program Commands
E/G Type 111 Commands → X-SEL 183 Commands

Many new commands have been added to the Super SEL language, which is known for its ability to generate complex control programs with ease.

Examples of Additional Commands
- Palletizing command
- Arch motion command
- Spline command, and many more



Specify three points (A, B and C) and desired counts, and palletizing points will be set automatically.

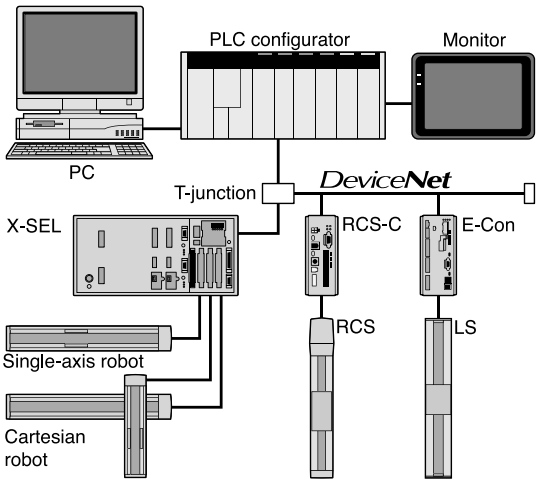
12 Variable Extension and Symbol Definition

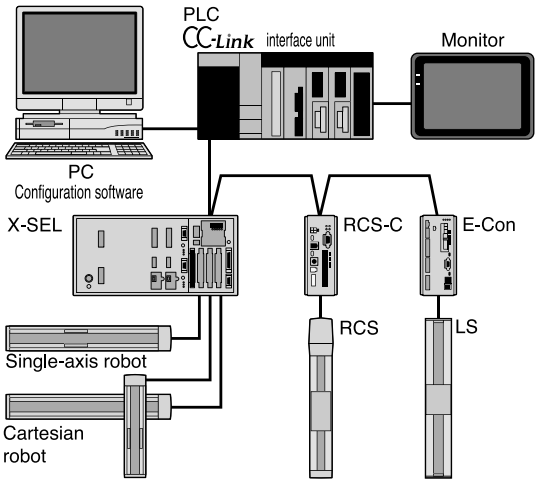
The number of variables that can be used in a program has been doubled from 100 to 200.
Additionally, variables, I/O ports, flags and points can now be assigned symbols (names), making it much easier to review the program.

13 Supporting Various Field Networks

The X-SEL supports leading field networks such as DeviceNet, CC-Link, ProfiBus and Ethernet.

(Note) DeviceNet is a registered trademark of ODVA.
CC-Link is a registered trademark of Mitsubishi Electric Corporation.





2 Features

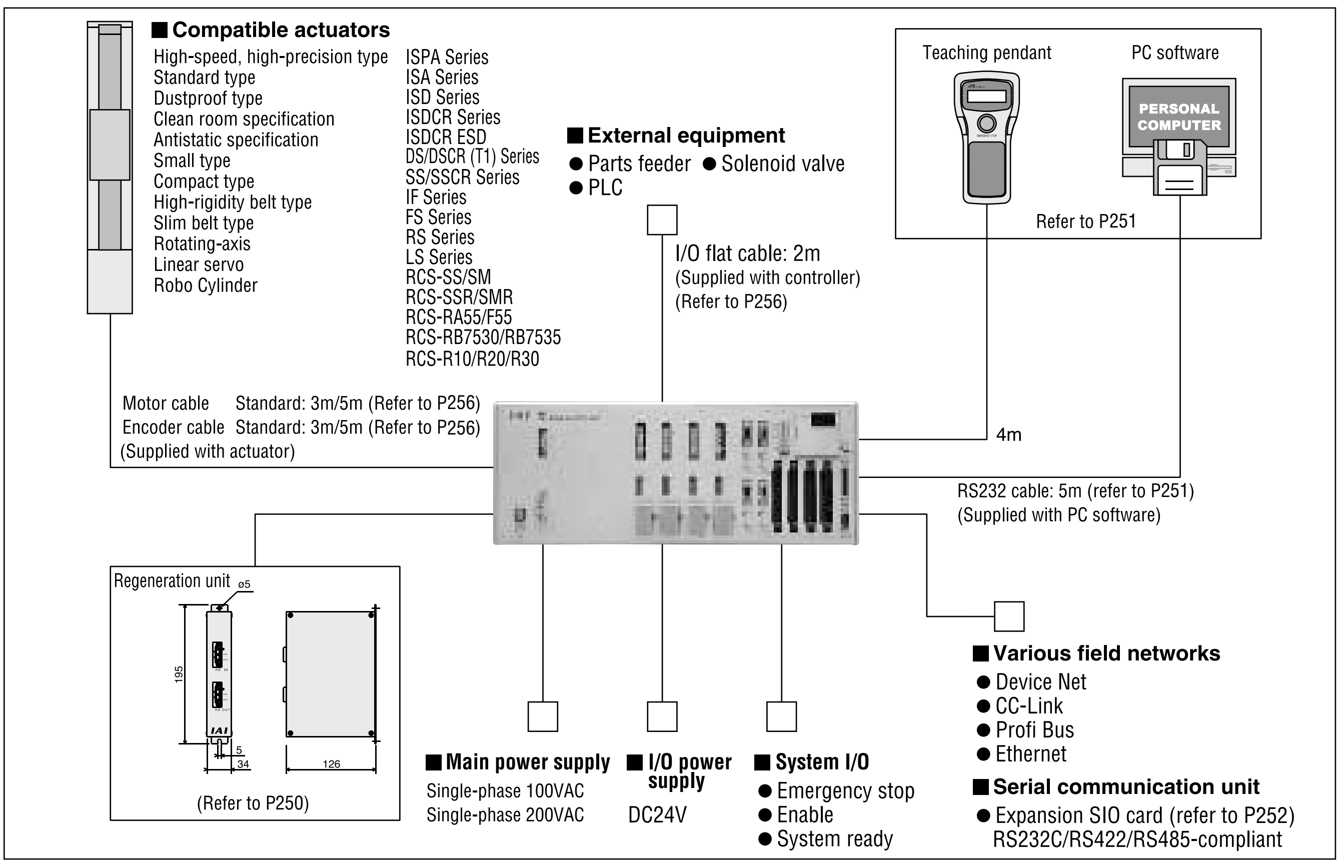
XSEL - K - 3 - 400A - 200ICL - 60IBL - N1 - EEE - 2 - 2

❶ ❷ ❸ ❹(Axis 1) ❹(Axis 2) ❹(Axis 3) ❺ ❻ ❼ ❽

❶ Series	❷ Controller type	❸ Number of axes	❹ Axis 1 to Axis 4 details: Motor output	Encoder type	Brake	Creep	Home sensor (LS)	Synchronization designation	❺ Standard I/O details: Slot 1	❻ Expansion I/O slots (Note 1): Slot 1	Slot 2	Slot 3	❼ I/O flat cable length (Note 2)	❽ Supply voltage
XSEL	J (Compact type) K (General-purpose type) KE (CE-compliant) KT (Global specification) KET (CE-compliance Global specification)	1 (1 axis) 2 (2 axes) 3 (3 axes) 4 (4 axes)	20 (20W) 30D (30W for DS) 30R (RS for 30W) 60 (60W) 100 (100W) 150 (150W) 200 (200W) 300 (300W) 400 (400W) 600 (600W) 750 (750W)	I (Incremental) A (Absolute)	Not specified (Without brake) B (With brake)	Not specified (Without creep sensor) C (With creep sensor)	Not specified (Without home sensor) L (With home sensor)	Not specified (No synchronization) M (Master-axis designation) S (Slave-axis designation)	N1 [32 inputs/16 outputs NPN board] N3 (Note 3) [48 inputs/48 outputs NPN board] P1 [32 inputs/16 outputs PNP board] P3 (Note 3) [48 inputs/48 outputs PNP board] DV [DeviceNet 256/256 board] CC [CC-Link 256/256 board] PR [ProfiBus 256/256 board] ET [Ethernet Data communication board]	E (Not used) C (Note 4) [CC-Link connection 16/16 board] N1 [Expansion I/O NPN32/16] N2 [Expansion I/O NPN16/32] N3 (Note 4) [Multipoint I/O NPN48/48] P1 [Expansion I/O PNP32/16] P2 [Expansion I/O PNP16/32] P3 (Note 4) [Multipoint I/O PNP48/48] SA (Note 4) [Expansion SIO Type A] SB (Note 4) [Expansion SIO Type B] SC (Note 4) [Expansion SIO Type C]	E (Not used) C (Note 4) [CC-Link connection 16/16 board] N1 [Expansion I/O NPN32/16] N2 [Expansion I/O NPN16/32] N3 (Note 4) [Multipoint I/O NPN48/48] P1 [Expansion I/O PNP32/16] P2 [Expansion I/O PNP16/32] P3 (Note 4) [Multipoint I/O PNP48/48] SA (Note 4) [Expansion SIO Type A] SB (Note 4) [Expansion SIO Type B] SC (Note 4) [Expansion SIO Type C]	E (Not used) C (Note 4) [CC-Link connection 16/16 board] N1 [Expansion I/O NPN32/16] N2 [Expansion I/O NPN16/32] N3 (Note 4) [Multipoint I/O NPN48/48] P1 [Expansion I/O PNP32/16] P2 [Expansion I/O PNP16/32] P3 (Note 4) [Multipoint I/O PNP48/48] SA (Note 4) [Expansion SIO Type A] SB (Note 4) [Expansion SIO Type B] SC (Note 4) [Expansion SIO Type C]	2:2m (Standard) 3:3m 5:5m 0: None	1:100V 2:200V

(Note 1) The J-type 1/2-axis models have no expansion slot, so enter EEE. Similarly, the J-type 3/4-axes models have only one expansion slot, so enter ☐EE. Refer to page 140 for the types of boards that can be installed.
(Note 2) The standard I/O, expansion I/O (50-conductor type) and multipoint I/O (100-conductor type) boards come with an I/O flat cable. The standard cable length for standard and expansion I/O boards is 2 m, but you can also specify 3 or 5 m.
The maximum cable length is 10 m, but if you need a cable of any length other than 2, 3 or 5 m, enter “0 (None)” here and order an optional I/O flat cable by specifying a length.
If you have selected a board other than the standard I/O, expansion I/O and multipoint I/O boards, enter “0 (None)” here.
(Note 3) Used exclusively with the J (compact) type. Use an expansion N3 or P3 board for the K (general-purpose) type.
(Note 4) Used exclusively with the K (general-purpose) type. C, SA, SB and SC cannot be specified for the J (compact) type.

3 System Configuration Diagram

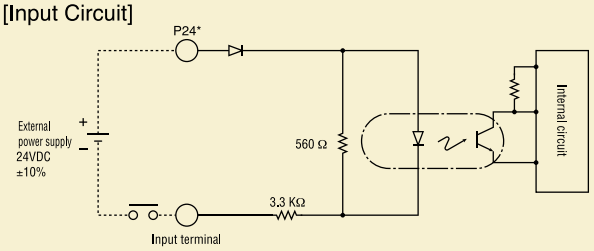


4 I/O Wiring

Input Part External input specification (NPN specification)

Item	Specification
Input power supply	DC24V ±10%
Input voltage	7mA/point
ON/OFF voltage	ON voltage –- Min DC16.0V OFF voltage –- Max DC5.0V
Insulation method	Photocoupler insulation
External equipment	①No-voltage contact (minimum load, approx. 5VDC/1mA) ②Photoelectric/proximity sensor (NPN type) ③Sequencer transistor output (open-collector type) ④Sequencer contact output (minimum load, approx. 5VDC/1mA)

[Input Circuit]



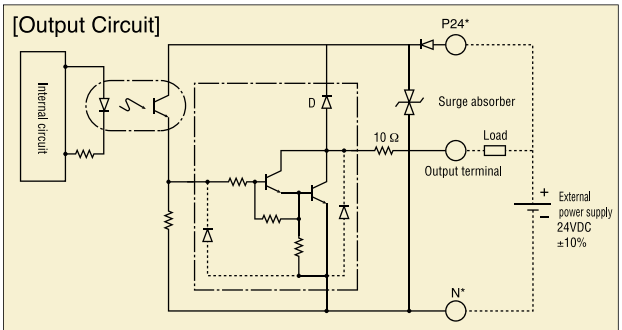
*

	K (general-purpose) type	J (compact) type
P24	I/O 24-V connector 24VIN	I/O interface pin No. 1

Output Part External output specification (NPN specification)

Item	Specification	
Load voltage	DC24V	Use TD62084 (or equivalent)
Maximum load current	100mA/point, 400mA Peak (total current)	
Leak current	Max. 0.1mA/point	
Insulation method	Photocoupler insulation	
External equipment	①Miniature relay ②Sequencer input unit	

[Output Circuit]



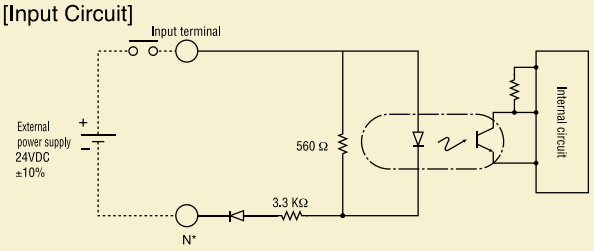
*

	K (general-purpose) type	J (compact) type
P24	I/O 24-V connector 24VIN	I/O interface pin No. 1
N	I/O 24-V connector 0V	I/O interface pin No. 50

Input Part External input specification (PNP specification)

Item	Specification
Input power supply	DC24V ±10%
Input voltage	7mA/point
ON/OFF voltage	ON voltage –- Max DC8V OFF voltage –- Min DC19V
Insulation method	Photocoupler insulation
External equipment	①No-voltage contact (minimum load, approx. 5VDC/1mA) ②Photoelectric/proximity sensor (PNP type) ③Sequencer transistor output (open-collector type) ④Sequencer contact output (minimum load, approx. 5VDC/1mA)

[Input Circuit]



*

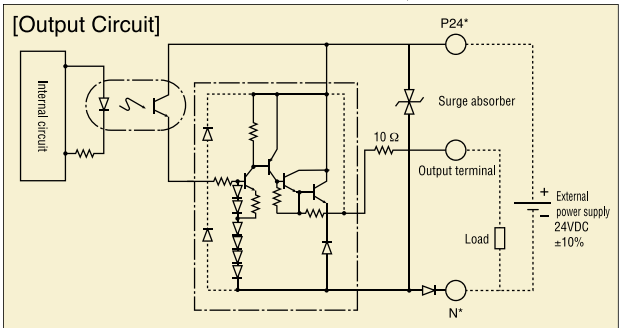
	K (general-purpose) type	J (compact) type
N	I/O 24-V connector 0VIN	I/O interface pin No. 50

Output Part External output specification (PNP specification)

Item	Specification	
Load voltage	DC24V	Use TD62784 (or equivalent)
Maximum load current	100mA/point 400mA/8 ports Note)	
Leak current	Max. 0.1mA/point	
Insulation method	Photocoupler insulation	
External equipment	①Miniature relay ②Sequencer input unit	

Note) The maximum total load current for every eight ports from output port No. 300 is 400 mA. (The maximum sum of load currents for output port No. 300+n through No. 300+n+7 is 400 mA; where n = 0 or a multiple of 8.)

[Output Circuit]



*

	K (general-purpose) type	J (compact) type
P24	I/O 24-V connector 24VIN	I/O interface pin No. 1
N	I/O 24-V connector 0VIN	I/O interface pin No. 50

5 I/O Signal Table

Standard I/O Signal Table

Pin No.	Category	Port No.	Standard setting
1		–	(J type: Connected to 24V / K type: NC)
2		000	Program start
3		001	General-purpose input
4		002	General-purpose input
5		003	General-purpose input
6		004	General-purpose input
7		005	General-purpose input
8		006	General-purpose input
9		007	Program specification (PRG No. 1)
10		008	Program specification (PRG No. 2)
11		009	Program specification (PRG No. 4)
12		010	Program specification (PRG No. 8)
13		011	Program specification (PRG No. 10)
14		012	Program specification (PRG No. 20)
15		013	Program specification (PRG No. 40)
16		014	General-purpose input
17	Input	015	General-purpose input
18		016	General-purpose input
19		017	General-purpose input
20		018	General-purpose input
21		019	General-purpose input
22		020	General-purpose input
23		021	General-purpose input
24		022	General-purpose input
25		023	General-purpose input
26		024	General-purpose input
27		025	General-purpose input
28		026	General-purpose input
29		027	General-purpose input
30		028	General-purpose input
31		029	General-purpose input
32		030	General-purpose input
33		031	General-purpose input
34		300	Alarm output
35		301	Ready output
36		302	Emergency-stop output
37		303	General-purpose output
38		304	General-purpose output
39		305	General-purpose output
40		306	General-purpose output
41	Output	307	General-purpose output
42		308	General-purpose output
43		309	General-purpose output
44		310	General-purpose output
45		311	General-purpose output
46		312	General-purpose output
47		313	General-purpose output
48		314	General-purpose output
49		315	General-purpose output
50		–	(J type: Connected to 0V / K type: NC)

Expansion I/O Signal Table (IA-103-X-32)

Pin No.	Category	Port No.	Standard setting
1		–	NC
2			General-purpose input
3			General-purpose input
4			General-purpose input
5			General-purpose input
6			General-purpose input
7			General-purpose input
8			General-purpose input
9			General-purpose input
10			General-purpose input
11			General-purpose input
12			General-purpose input
13			General-purpose input
14			General-purpose input
15			General-purpose input
16			General-purpose input
17	Input		General-purpose input
18			General-purpose input
19			General-purpose input
20			General-purpose input
21			General-purpose input
22			General-purpose input
23			General-purpose input
24			General-purpose input
25			General-purpose input
26			General-purpose input
27			General-purpose input
28			General-purpose input
29			General-purpose input
30			General-purpose input
31			General-purpose input
32			General-purpose input
33			General-purpose input
34			General-purpose output
35			General-purpose output
36			General-purpose output
37			General-purpose output
38			General-purpose output
39			General-purpose output
40			General-purpose output
41			General-purpose output
42	Output		General-purpose output
43			General-purpose output
44			General-purpose output
45			General-purpose output
46			General-purpose output
47			General-purpose output
48			General-purpose output
49			General-purpose output
50	–	–	NC

Expansion I/O Signal Table (IA-103-X-16)

Pin No.	Category	Port No.	Standard setting
1		–	NC
2			General-purpose input
3			General-purpose input
4			General-purpose input
5			General-purpose input
6			General-purpose input
7			General-purpose input
8			General-purpose input
9	Input		General-purpose input
10			General-purpose input
11			General-purpose input
12			General-purpose input
13			General-purpose input
14			General-purpose input
15			General-purpose input
16			General-purpose input
17			General-purpose input
18			General-purpose output
19			General-purpose output
20			General-purpose output
21			General-purpose output
22			General-purpose output
23			General-purpose output
24			General-purpose output
25			General-purpose output
26			General-purpose output
27			General-purpose output
28			General-purpose output
29			General-purpose output
30			General-purpose output
31			General-purpose output
32			General-purpose output
33			General-purpose output
34	Output		General-purpose output
35			General-purpose output
36			General-purpose output
37			General-purpose output
38			General-purpose output
39			General-purpose output
40			General-purpose output
41			General-purpose output
42			General-purpose output
43			General-purpose output
44			General-purpose output
45			General-purpose output
46			General-purpose output
47			General-purpose output
48			General-purpose output
49			General-purpose output
50	–	–	NC

Multipoint I/O Signal Table (J type: Installed in standard slot)

Cable 1

Pin No.	Category	Color	Port No.	Standard setting
1	–	Brown-1	–	Externally supplied 24-VDC power For pin Nos. 2 through 25 and 51 through 74
2		Red-1	000	Program start
3		Orange-1	001	General-purpose input
4		Yellow-1	002	General-purpose input
5		Green-1	003	General-purpose input
6		Blue-1	004	General-purpose input
7		Purple-1	005	General-purpose input
8		Gray-1	006	General-purpose input
9		White-1	007	Program specification (PRG No. 1)
10		Black-1	008	Program specification (PRG No. 2)
11		Brown-2	009	Program specification (PRG No. 4)
12		Red-2	010	Program specification (PRG No. 8)
13		Orange-2	011	Program specification (PRG No. 10)
14	Input	Yellow-2	012	Program specification (PRG No. 20)
15		Green-2	013	Program specification (PRG No. 40)
16		Blue-2	014	General-purpose input
17		Purple-2	015	General-purpose input
18		Gray-2	016	General-purpose input
19		White-2	017	General-purpose input
20		Black-2	018	General-purpose input
21		Brown-3	019	General-purpose input
22		Red-3	020	General-purpose input
23		Orange-3	021	General-purpose input
24		Yellow-3	022	General-purpose input
25		Green-3	023	General-purpose input
26	–	Blue-3	–	Externally supplied 24-VDC power For pin Nos. 27 through 50 and 76 through 99
27		Purple-3	024	General-purpose input
28		Gray-3	025	General-purpose input
29		White-3	026	General-purpose input
30		Black-3	027	General-purpose input
31		Brown-4	028	General-purpose input
32		Red-4	029	General-purpose input
33		Orange-4	030	General-purpose input
34		Yellow-4	031	General-purpose input
35		Green-4	032	General-purpose input
36		Blue-4	033	General-purpose input
37		Purple-4	034	General-purpose input
38		Gray-4	035	General-purpose input
39	Input	White-4	036	General-purpose input
40		Black-4	037	General-purpose input
41		Brown-5	038	General-purpose input
42		Red-5	039	General-purpose input
43		Orange-5	040	General-purpose input
44		Yellow-5	041	General-purpose input
45		Green-5	042	General-purpose input
46		Blue-5	043	General-purpose input
47		Purple-5	044	General-purpose input
48		Gray-5	045	General-purpose input
49		White-5	046	General-purpose input
50		Black-5	047	General-purpose input

Cable 2

Pin No.	Category	Color	Port No.	Standard setting
51		Brown-1	300	Alarm output
52		Red-1	301	Ready output
53		Orange-1	302	Emergency-stop output
54		Yellow-1	303	General-purpose output
55		Green-1	304	General-purpose output
56		Blue-1	305	General-purpose output
57		Purple-1	306	General-purpose output
58		Gray-1	307	General-purpose output
59		White-1	308	General-purpose output
60		Black-1	309	General-purpose output
61		Brown-2	310	General-purpose output
62	Output	Red-2	311	General-purpose output
63		Orange-2	312	General-purpose output
64		Yellow-2	313	General-purpose output
65		Green-2	314	General-purpose output
66		Blue-2	315	General-purpose output
67		Purple-2	316	General-purpose output
68		Gray-2	317	General-purpose output
69		White-2	318	General-purpose output
70		Black-2	319	General-purpose output
71		Brown-3	320	General-purpose output
72		Red-3	321	General-purpose output
73		Orange-3	322	General-purpose output
74		Yellow-3	323	General-purpose output
75	–	Green-3	–	Externally supplied 0-VDC power For pin Nos. 2 through 25 and 51 through 74
76		Blue-3	324	General-purpose output
77		Purple-3	325	General-purpose output
78		Gray-3	326	General-purpose output
79		White-3	327	General-purpose output
80		Black-3	328	General-purpose output
81		Brown-4	329	General-purpose output
82		Red-4	330	General-purpose output
83		Orange-4	331	General-purpose output
84		Yellow-4	332	General-purpose output
85		Green-4	333	General-purpose output
86		Blue-4	334	General-purpose output
87	Output	Purple-4	335	General-purpose output
88		Gray-4	336	General-purpose output
89		White-4	337	General-purpose output
90		Black-4	338	General-purpose output
91		Brown-5	339	General-purpose output
92		Red-5	340	General-purpose output
93		Orange-5	341	General-purpose output
94		Yellow-5	342	General-purpose output
95		Green-5	343	General-purpose output
96		Blue-5	344	General-purpose output
97		Purple-5	345	General-purpose output
98		Gray-5	346	General-purpose output
99		White-5	347	General-purpose output
100	–	Black-5	–	Externally supplied 0-VDC power For pin Nos. 27 through 50 and 76 through 99

Multipoint I/O Signal Table (K type: Installed in expansion slot)

Cable 1

Pin No.	Category	Color	Port No.	Standard setting
1	–	Brown-1	–	Externally supplied 24-VDC power For pin Nos. 2 through 25 and 51 through 74
2		Red-1	032	General-purpose input
3		Orange-1	033	General-purpose input
4		Yellow-1	034	General-purpose input
5		Green-1	035	General-purpose input
6		Blue-1	036	General-purpose input
7		Purple-1	037	General-purpose input
8		Gray-1	038	General-purpose input
9		White-1	039	General-purpose input
10		Black-1	040	General-purpose input
11		Brown-2	041	General-purpose input
12		Red-2	042	General-purpose input
13		Orange-2	043	General-purpose input
14	Input	Yellow-2	044	General-purpose input
15		Green-2	045	General-purpose input
16		Blue-2	046	General-purpose input
17		Purple-2	047	General-purpose input
18		Gray-2	048	General-purpose input
19		White-2	049	General-purpose input
20		Black-2	050	General-purpose input
21		Brown-3	051	General-purpose input
22		Red-3	052	General-purpose input
23		Orange-3	053	General-purpose input
24		Yellow-3	054	General-purpose input
25		Green-3	055	General-purpose input
26	–	Blue-3	–	Note) (DC24V)
27		Purple-3	056	General-purpose input
28		Gray-3	057	General-purpose input
29		White-3	058	General-purpose input
30		Black-3	059	General-purpose input
31		Brown-4	060	General-purpose input
32		Red-4	061	General-purpose input
33		Orange-4	062	General-purpose input
34		Yellow-4	063	General-purpose input
35		Green-4	064	General-purpose input
36		Blue-4	065	General-purpose input
37		Purple-4	066	General-purpose input
38	Input	Gray-4	067	General-purpose input
39		White-4	068	General-purpose input
40		Black-4	069	General-purpose input
41		Brown-5	070	General-purpose input
42		Red-5	071	General-purpose input
43		Orange-5	072	General-purpose input
44		Yellow-5	073	General-purpose input
45		Green-5	074	General-purpose input
46		Blue-5	075	General-purpose input
47		Purple-5	076	General-purpose input
48		Gray-5	077	General-purpose input
49		White-5	078	General-purpose input
50		Black-5	079	General-purpose input

Cable 2

Pin No.	Category	Color	Port No.	Standard setting
51		Brown-1	316	General-purpose output
52		Red-1	317	General-purpose output
53		Orange-1	318	General-purpose output
54		Yellow-1	319	General-purpose output
55		Green-1	320	General-purpose output
56		Blue-1	321	General-purpose output
57		Purple-1	322	General-purpose output
58		Gray-1	323	General-purpose output
59		White-1	324	General-purpose output
60		Black-1	325	General-purpose output
61		Brown-2	326	General-purpose output
62		Red-2	327	General-purpose output
63	Output	Orange-2	328	General-purpose output
64		Yellow-2	329	General-purpose output
65		Green-2	330	General-purpose output
66		Blue-2	331	General-purpose output
67		Purple-2	332	General-purpose output
68		Gray-2	333	General-purpose output
69		White-2	334	General-purpose output
70		Black-2	335	General-purpose output
71		Brown-3	336	General-purpose output
72		Red-3	337	General-purpose output
73		Orange-3	338	General-purpose output
74		Yellow-3	339	General-purpose output
75	–	Green-3	–	Externally supplied 0-VDC power For pin Nos. 2 through 25 and 51 through 74
76		Blue-3	340	General-purpose output
77		Purple-3	341	General-purpose output
78		Gray-3	342	General-purpose output
79		White-3	343	General-purpose output
80		Black-3	344	General-purpose output
81		Brown-4	345	General-purpose output
82		Red-4	346	General-purpose output
83		Orange-4	347	General-purpose output
84		Yellow-4	348	General-purpose output
85		Green-4	349	General-purpose output
86		Blue-4	350	General-purpose output
87	Output	Purple-4	351	General-purpose output
88		Gray-4	352	General-purpose output
89		White-4	353	General-purpose output
90		Black-4	354	General-purpose output
91		Brown-5	355	General-purpose output
92		Red-5	356	General-purpose output
93		Orange-5	357	General-purpose output
94		Yellow-5	358	General-purpose output
95		Green-5	359	General-purpose output
96		Blue-5	360	General-purpose output
97		Purple-5	361	General-purpose output
98		Gray-5	362	General-purpose output
99		White-5	363	General-purpose output
100	–	Black-5	–	Note) (0V)

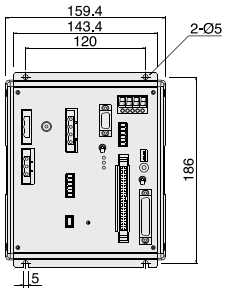
Note) Pin Nos. 26 (24 VDC) and 100 (0 V) are connected to the I/O 24-V power supply of the controller, so there is no need to supply power to these pins.

6 Specifications

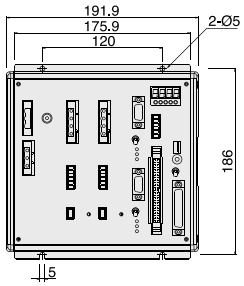
Item	Description							
Controller series/type	J (compact) type				K (general-purpose) type/KE (CE-compliant) type			
Compatible actuators	DS/DSCR/SS/ISA/ISPA/ISD/ISDCR/ISPDCR/SS/SSCR/IF/FS/RS/RCS(partial)/LS							
Applicable motor output (W)	20/30/60/100/150/200/300/400/600/750							
Number of controlled axis	1 axis	2 axes	3 axes	4 axes	1 axis	2 axes	3 axes	4 axes
Maximum output of connected axis (W)	Max 800 (Supply voltage: 200V) Max 400 (Supply voltage: 100V)				Max 800	Max 1600 (Supply voltage: 200V) Max 800 (Supply voltage: 100V)		
Power supply	100-V specification: Single-phase 100~115VAC 200-V specification: Single-phase 200~230VAC							
Power supply voltage range	±10%							
Power frequency	50Hz/60Hz							
Power capacity	Max 830VA		Max 1690VA	Max 1750VA	Max 830VA	Max 1570VA	Max 2310VA	Max 3050VA
Position detection method	17-bit incremental encoder (wire-saving type) 17-bit absolute encoder for rotation data backup (wire-saving type) (Control resolution: 14 bits for both encoders)							
Speed setting	1mm/s or more; upper limit determined by the actuator specification							
Acceleration setting	0.01G or more; upper limit determined by the actuator specification							
Program language	Super SEL language							
Number of programs	64 programs							
Number of program steps	6000 steps (total)							
Number of multitask programs	16 programs							
Number of positions	3000 positions							
Data storage device	FLASH ROM + SRAM battery backup							
Data input method	Teaching pendant or PC software							
Standard I/Os	32 points (dedicated inputs + general-purpose inputs) / 16 points (dedicated outputs + general-purpose outputs)							
Expanded I/Os	None		48 points/unit (1 unit can be added)		48 points/unit (Maximum of 3 units can be added)			
Serial communication function	RS232 port (D-sub, 25 pins) is installed as standard.				Standard RS232 port + Expansion SIO board can be installed (optional).			
Other I/Os	System I/O (emergency-stop input, enable input, system ready output)							
Protective functions	Motor overcurrent, overload, motor driver temperature check, overload check, encoder open detection, soft limit over, system error, battery error, etc.							
Operating temperature/humidity	Temperature: 0~40°C, humidity: 30~85%							
Operating environment	Not subject to corrosive gases or significant dust.							
Weight	2.6kg	3.3kg	5.0kg		6.0kg		7.0kg	
Accessory	I/O flat cable							

7 External Dimensions

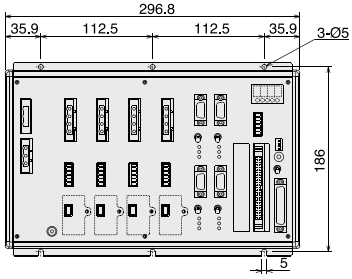
XSEL-J-1 (Compact, 1 axis)



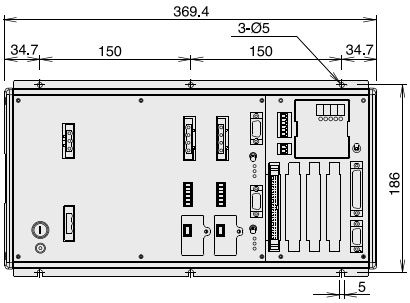
XSEL-J-2 (Compact, 2 axes)



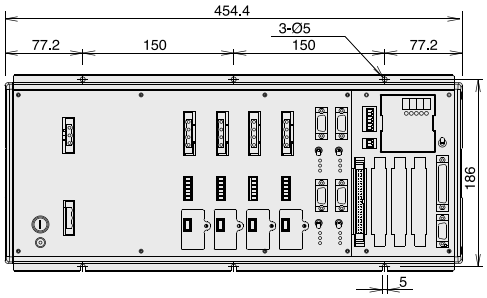
XSEL-J-3 (Compact, 3 axes)
XSEL-J-4 (Compact, 4 axes)

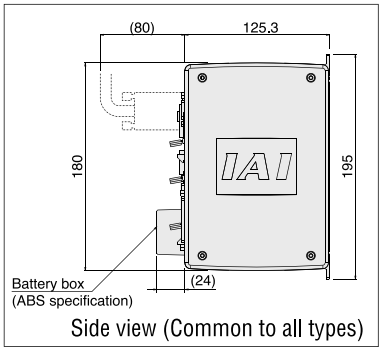


XSEL-K-1 (General-purpose, 1 axis)
XSEL-K-2 (General-purpose, 2 axes)



XSEL-K-3 (General-purpose, 3 axes)
XSEL-K-4 (General-purpose, 4 axes)

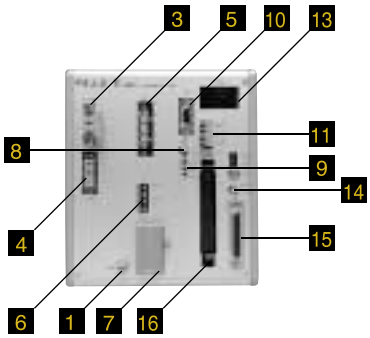




Side view (Common to all types)

8 Name of Each Part

J Type (Compact)



K Type (General-Purpose)

1 FG connection terminal

A terminal for connecting the FG of the enclosure.
The PE of the AC input part is connected to the enclosure inside the controller.

2 Fuse holder (K type only)

A half-cut fuse holder for overcurrent protection of the AC input part.

3 Main power input connector

A connector for 100/200-VAC single-phase input.
(A plug is attached on the cable end. Refer to page 139.)

4 Regeneration resistor unit connector

A connector for an optional regeneration resistor unit (REU-1), which will be used when the capacity of the built-in regeneration resistor is insufficient in high acceleration/high-load conditions, etc.

5 Motor cable connector

A connector for the actuator's motor power cable.

6 Actuator sensor input connector

A connector for the axis sensors such as LS, CREEP and OT.

7 Absolute data retention battery

A battery unit for encoder backup implemented when an absolute encoder is used. This connector is not used with a non-absolute axis.

8 Brake release switch (Brake specification only)

An alternate switch with lock for releasing the axis brake.
To operate the switch, pull it forward and then move.
Set the switch to RLS to forcibly release the brake, or set it to NOM to enable automatic control by the controller.

9 Axis driver status LEDs

These LEDs are used to monitor the operating status of the driver CPU that controls motor drive. The following three LEDs are available:

Name	Color	Meaning when the LED is lit
ALM	Orange	The driver has detected an error.
SVON	Green	The servo is ON and the motor is being driven.
BATT ALM	Orange	The absolute battery voltage is low.

10 Encoder cable connector

A 15-pin, D-sub connector for the actuator's encoder cable.

11 System I/O connector

A connector for three I/O signals including two controller-operation control inputs and one equipment status output. (A plug is attached on the cable end. Refer to page 139.)

Name		
EMG	Emergency-stop input	Operation is enabled when this signal is ON. An emergency stop will be actuated when the signal is turned OFF.
ENB	Safety gate input	Operation is enabled when this signal is ON. The servo will turn OFF when the signal is turned OFF.
RDY	System-ready relay output	Status output for this controller. Cascade connection is supported. Ready if shorted. Not ready if open.

12 I/O 24-V power connector (K type only)

A connector for externally supplying I/O power when DI/DOs are installed in the I/O part of 16 and 17 . (A plug is attached on the cable end. Refer to page 139.)

13 Panel window

The 4-digit, 7-segment LED and five LED lamps indicate the equipment status.

14 Mode switch

An alternate switch with lock for specifying the controller operation mode.
To operate the switch, pull it forward and then move.
Set the switch to MANU to enable the manual operation mode, or set it to AUTO to enable the automatic operation mode.
Teaching operation can only be performed in the MANU mode. In the MANU mode, automatic operation using external I/Os cannot be performed.

15 Teaching connector

A D-sub, 25-pin connector for inputting program positions from the connected teaching pendant or PC.

16 Standard I/O slot (Slot 1)

The controller comes standard with a 32-input/16-output PIO board.

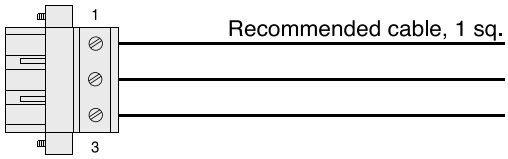
17 Expansion I/O slots (Slots 2, 3 and 4)

Use these slots to install expansion I/O boards (optional).

Main Power Input Connector

This connector is used to connect 100/200 VAC operating power.
(Cable is provided by the user.)

Controller



Recommended cable, 1 sq.

100/200-VAC power supply

Plug: GMSTB2.5/3-STF-7.62 (Phoenix)

Wiring Diagram

Signal	No.
N	1
L	2
PE	3

System I/O Connector

This connector is used to connect the controller contacts for emergency stop, enable and system ready to a PLC, etc. (Cable is provided by the user.)

Controller

Recommended cable, 0.75 sq.

PLC, etc.

Plug: MC1.5/6-ST-3.5 (Phoenix)

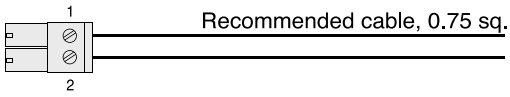
Wiring Diagram

Singal	No.
RDY–	1
RDY+	2
ENBIN	3
ENB+24VOUT	4
EMGIN	5
EMG+24VOUT	6

I/O 24-V Power Connector

This connector is used to supply 24-V power when the controller's I/Os are used.
(Cable is provided by the user.)

Controller



Recommended cable, 0.75 sq.

DC24V

Plug: MC1.5/2-ST-3.5 (Phoenix)

Wiring Diagram

Singal	No.
0V	1
24VIN	2

9 Options

X-SEL Controller Options Table

			General-purpose type		Compact type	
			K	KE	J	
Item		Details	1 to 4 axes	CE-compliant	1 to 2 axes	3 to 4 axes
Teaching Pendant		Standard type	IA-T-X			
		With deadman switch	IA-T-XD			
		ANSI type	IA-T-XA		Cannot be used.	
PC Software		DOS/V version	IA-101-X-MW			
		PC-98 version	IA-101-X-CW			
Expansion I/O Board	PIO Board	Expansion PIO (32 inputs/16 outputs, NPN specification)	IA-103-X-32		Cannot be installed.	IA-103-X-32
		Expansion PIO (32 inputs/16 outputs, PNP specification)	IA-103-X-32-P		Cannot be installed.	IA-103-X-32-P
		Expansion PIO (16 inputs/32 outputs, NPN specification)	IA-103-X-16		Cannot be installed.	IA-103-X-16
		Expansion PIO (16 inputs/32 outputs, PNP specification)	IA-103-X-16-P		Cannot be installed.	IA-103-X-16-P
	SIO Board	Expansion SIO, type A (for RS232C)	IA-105-X-MW-A		Cannot be installed.	
		Expansion SIO, type B (for RS422C)	IA-105-X-MW-B			
		Expansion SIO, type C (for RS485C)	IA-105-X-MW-C			
	Network Board	DeviceNet (256 inputs/256 outputs, for installation in standard slot)	IA-NT-3204-DV		IA-NT-3206-DV	
		CC-Link (256 inputs/256 outputs, for installation in standard slot)	IA-NT-3204-CC256		IA-NT-3206-CC256	
		CC-Link (16 inputs/16 outputs, for installation in expansion slot)	IA-NT-3204-CC16		Cannot be installed.	
		ProfiBus (256 inputs/256 outputs, for installation in standard slot)	IA-NT-3204-PB		IA-NT-3206-PB	
		Ethernet (Data communication specification, for installation in standard slot)	IA-NT-3204-ET		IA-NT-3206-ET	
	Multipoint I/O Board	Multipoint I/O board (48 inputs/48 outputs, NPN specification)	IA-IO-3204-NP (Note 1)		IA-IO-3205-NP (Note 2)	
		Multipoint I/O board (48 inputs/48 outputs, PNP specification)	IA-IO-3204-PN (Note 1)		IA-IO-3205-PN (Note 2)	
		Terminal block for multipoint I/O board (NPN specification)	TU-MA96		Cannot be used.	
		Terminal block for multipoint I/O board (PNP specification)	TU-MA96-P		Cannot be used.	
Regeneration Resistor Unit			REU-1			
External Brake Box			IA-110-X-0			
Absolute Data Retention Battery			IA-XAB-BT			

(Note 1) Installed only in an expansion slot (Note 2) Installed only in the standard slot.

Regeneration Resistor Unit

Model **REU-1**

Description

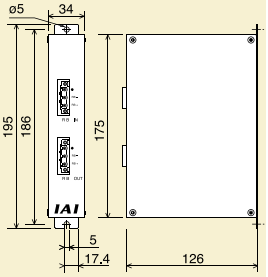
This unit converts to heat the regenerative current generated when the motor decelerates. A regeneration resistor is provided inside the controller, but its capacity may not be sufficient when a large load is applied to the vertical axis. In this case, this optional unit is required. (Refer to the table at bottom right.)

Specification

Item	Specification
Dimensions	W34mm x H195mm x D126mm
Weight	0.9kg
Built-in regeneration resistor	220Ω 80W
Accessory	Controller link cable (model: CB-ST-REU010), 1m

Installation Standards Determine the required number of units based on the total motor capacity for the connected vertical axes.

Total Z-axis motor capacity	K Type (General-Purpose)	J Type (Compact)
0 ~ 200W	Not required.	Not required.
~ 400W	Not required.	1 unit is required.
~ 600W	1 unit is required.	1 unit is required.
~ 800W	1 unit is required.	2 units are required.
~ 1200W	2 units are required.	——
~ 1600W	To be discussed separately.	——



Absolute Data Retention Battery

Model **IA-XAB-BT**

Features This battery is used with an absolute encoder for storing data. Replace the battery when a controller battery alarm is output.

Specification Integrated with case

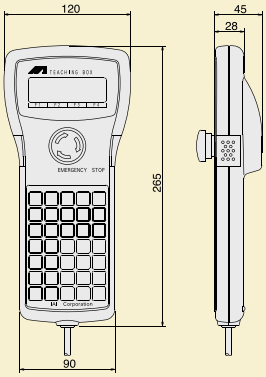
Simple Teaching Pendant

Model

IA-T-X (Standard)

IA-T-XD (With deadman switch)

Dimensions



Features

A teaching device with program/position input, test operation and monitoring functions.
The interactive-type panel ensures easy operation for anyone.
The deadman switch specification offering added safety is also available.

Specification

Items	Specification
Operating temperature, humidity	Temperature: 0~40°C, humidity: 85%RH or less
Operating environment	Not subject to corrosive gases or significant dust.
Weight	Approx. 650g
Cable length	4m
Display	20 characters x 4 lines, LCD

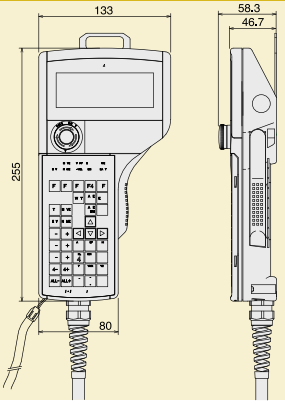
Caution
A product older than Ver. 1.08 cannot be used with the SCARA robot.

Teaching Pendant Conforming to ANSI/CE Mark Standards (General-Purpose Type Only)

Model

IA-T-XA

Dimensions



Features

This teaching pendant with a three-position enable switch conforms to the ANSI and CE Mark standards.
Using the large, interactive LCD screen, even a beginner can teach a robot easily and safely.

Specification

Items	Specification
Operating temperature, humidity	Temperature: 0~40°C, humidity: 30~85%RH or less (non-condensing)
Protection structure	IP54 (excluding cable connector)
Weight	600g or less (excluding cable)
Cable length	5m
Display	32 characters x 8 lines, LCD

PC Software (Windows Version Only)

Model

IA-101-X-MW (DOS/V version)

IA-101-X-CW (PC98 version)

Caution
A product older than Ver. 2.0.0.0 cannot be used with the SCARA robot.

Features

A support software with program/position data input, test operation and monitoring functions.It offers significantly improved debugging functions to help reduce the development time for your equipment.

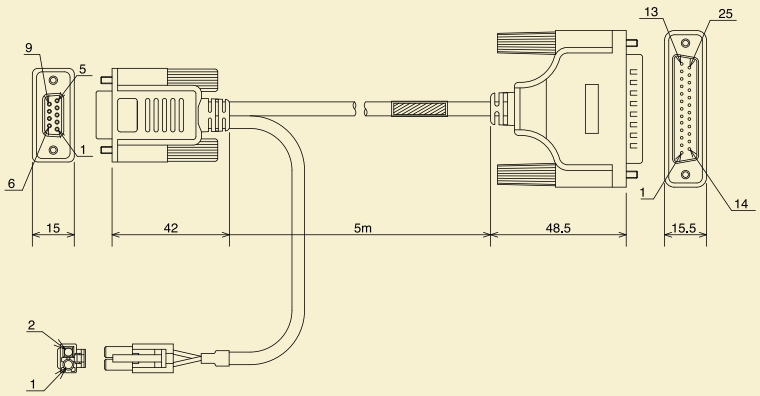
Description

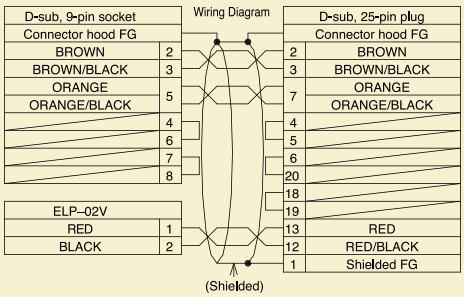
- Software (floppy disk)
  (Windows 95, 98, NT, 2000 and ME are supported)
- PC connection cable (5m) + Emergency-stop box (Model: CB-ST-E1MW050-EB)

Dimensions

PC connection cable (Model: CB-ST-E1MW050)

Caution
If you are ordering a PC connection cable separately for maintenance purposes, specify CB-ST-E1MW050. If you are ordering the cable together with an emergency-stop box, specify CB-ST-E1MW050-EB.





Expansion PIO Board

Description

An optional board for providing additional I/O points.
With a general-purpose controller, a maximum of three expansion PIO boards can be installed in its expansion slots.
(With a compact controller, one expansion PIO board can be installed, but only for the 3/4-axes type.)

Description	Expansion I/O board model	Ordering model (controller model)	Expansion I/O board slot	Total standard + expansion I/O points
32 inputs/16 outputs NPN specification	IA-103-X-32	XSEL-J-3(4)-□-N1-N1EE-□-□	Expansion slot 1	64 inputs/32 outputs
		XSEL-K-□-□-N1-N1EE-□-□	Expansion slot 1	64 inputs/32 outputs
		XSEL-K-□-□-N1-N1N1E-□-□	Expansion slot 1,2	96 inputs/48 outputs
		XSEL-K-□-□-N1-N1N1N1-□-□	Expansion slot 1,2,3	128 inputs/64 outputs
32 inputs/16 outputs PNP specification	IA-103-X-32-P	XSEL-J-3(4)-□-P1-P1EE-□-□	Expansion slot 1	64 inputs/32 outputs
		XSEL-K-□-□-P1-P1EE-□-□	Expansion slot 1	64 inputs/32 outputs
		XSEL-K-□-□-P1-P1P1E-□-□	Expansion slot 1,2	96 inputs/48 outputs
		XSEL-K-□-□-P1-P1P1P1-□-□	Expansion slot 1,2,3	128 inputs/64 outputs
16 inputs/32 outputs NPN specification	IA-103-X-16	XSEL-J-3(4)-□-N1-N2EE-□-□	Expansion slot 1	48 inputs/48 outputs
		XSEL-K-□-□-N1-N2EE-□-□	Expansion slot 1	48 inputs/48 outputs
		XSEL-K-□-□-N1-N2N2E-□-□	Expansion slot 1,2	64 inputs/80 outputs
		XSEL-K-□-□-N1-N2N2N2-□-□	Expansion slot 1,2,3	80 inputs/112 outputs
16 inputs/32 outputs PNP specification	IA-103-X-16-P	XSEL-J-3(4)-□-P1-P2EE-□-□	Expansion slot 1	48 inputs/48 outputs
		XSEL-K-□-□-P1-P2EE-□-□	Expansion slot 1	48 inputs/48 outputs
		XSEL-K-□-□-P1-P2P2E-□-□	Expansion slot 1,2	64 inputs/80 outputs
		XSEL-K-□-□-P1-P2P2P2-□-□	Expansion slot 1,2,3	80 inputs/112 outputs

Expansion SIO Board (General-Purpose Type Only)

Description

A board for establishing serial communication with external equipment. It has two channel ports and supports one of three communication formats depending on the supplied joint cable(s).

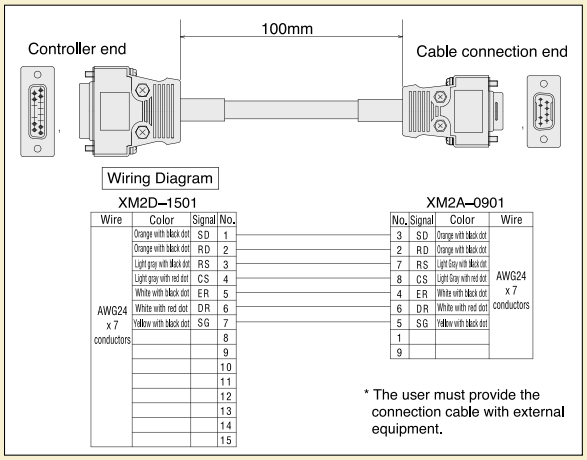
Specification

IA-105-X-MW-A (board + joint cable ① x 2)
IA-105-X-MW-B (board + joint cable ② x 1)
IA-105-X-MW-C (board + joint cable ② x 1)

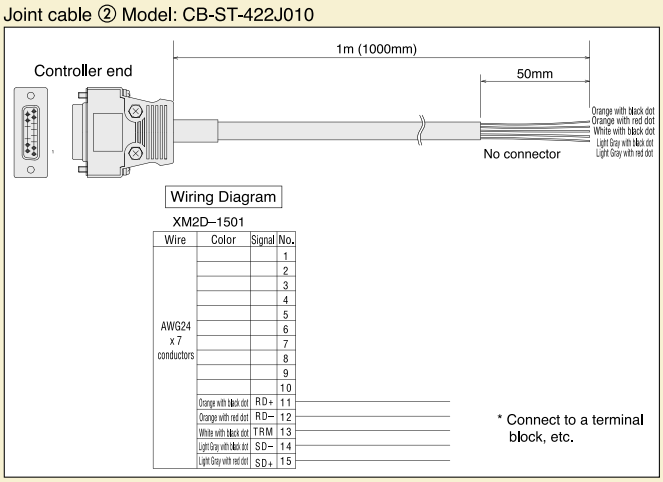
Communication format	Expansion SIO board model	Ordering model (controller model)	Network board slot	Remarks
RS232C	IA-105-X-MW-A	XSEL-K-□-□-N1-SAEE-□-□	Expansion slot 1	
RS422	IA-105-X-MW-B	XSEL-K-□-□-N1-SBEE-□-□	Expansion slot 1	A maximum of three boards can be installed. (Note 1)
RS485	IA-105-X-MW-C	XSEL-K-□-□-N1-SCEE-□-□	Expansion slot 1	

(Note 1) The current capacity may not be sufficient depending on the board installed in the standard slot. Consult IAI beforehand if you are planning to install three expansion SIO boards.

Joint cable ① Model: CB-ST-232J001



Joint cable ② Model: CB-ST-422J010



Network Board

Description

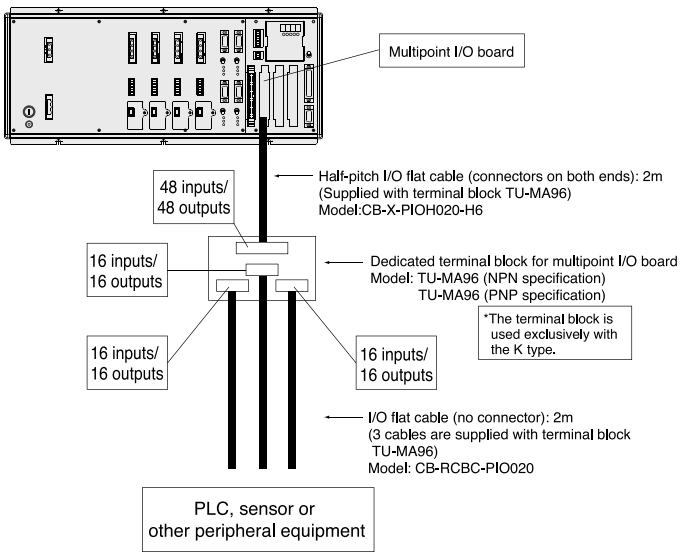
A communication board for connection to a field network.

Network type	Network board model	Ordering model (controller model)	Network board slot	Number of I/O points
DeviceNet	IA-NT-3206-DV	XSEL-J-□-□-DV-EEE-□-□	Standard slot	256 inputs/256 outputs
	IA-NT-3204-DV	XSEL-K-□-□-DV-EEE-□-□	Standard slot	256 inputs/256 outputs
CC-Link	IA-NT-3206-CC256	XSEL-J-□-□-CC-EEE-□-□	Standard slot	256 inputs/256 outputs
	IA-NT-3204-CC256	XSEL-K-□-□-CC-EEE-□-□	Standard slot	256 inputs/256 outputs
	IA-NT-3204-CC16	XSEL-K-□-□-N1-EEC-□-□	Expansion slot 3	16 inputs/16 outputs
		XSEL-K-□-□-N1-ECC-□-□	Expansion slot 2,3	16 inputs x 2/16 outputs x 2
		XSEL-K-□-□-N1-CCC-□-□	Expansion slot 1,2,3	16 inputs x 3/16 outputs x 3
ProfiBus	IA-NT-3206-PB	XSEL-J-□-□-PR-EEE-□-□	Standard slot	256 inputs/256 outputs
	IA-NT-3204-PB	XSEL-K-□-□-PR-EEE-□-□	Standard slot	256 inputs/256 outputs
Ethernet	IA-NT-3206-ET	XSEL-J-□-□-ET-EEE-□-□	Standard slot	Message communication
	IA-NT-3204-ET	XSEL-K-□-□-ET-EEE-□-□	Standard slot	

Multipoint I/O Board & Terminal Block

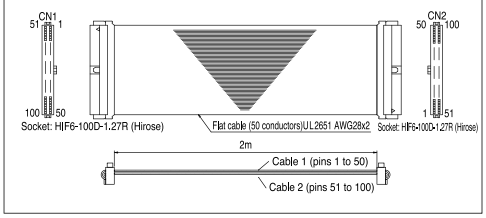
A set of board and terminal block used when many PIO points are required for the controller.

System Configuration



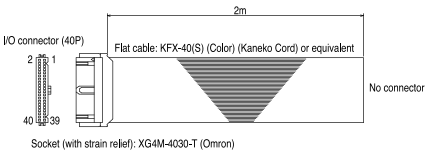
Half-Pitch I/O Flat Cable (Connectors on Both Ends)

Model: **CB-X-PIOH020-H6**



I/O Flat Cable (No Connector)

Model: **CB-RCBC-PIO020**



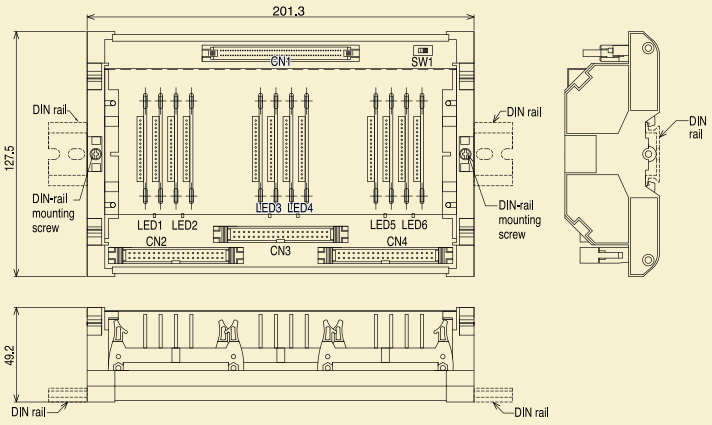
Multipoint I/O Board

Description: This I/O board uses a half-pitch connector to provide 48 inputs and 48 outputs on a single board.
The supplied half-pitch flat cable has thin wires and thus difficult to wire. Use a dedicated terminal block for connection with external equipment.

Description	Multipoint I/O board model	Ordering model (controller model)	Multipoint I/O board slot	Total number of I/O points
48 inputs/48 outputs NPN specification	IA-IO-3205-NP	XSEL-J-□-□-N3-EEE-□-□	Expansion slot	48 inputs/48 outputs
48 inputs/48 outputs PNP specification	IA-IO-3205-PN	XSEL-J-□-□-P3-EEE-□-□	Expansion slot	48 inputs/48 outputs
48 inputs/48 outputs NPN specification	IA-IO-3204-NP	XSEL-K-□-□-N1-N3EE-□-2	Expansion slot 1	80 inputs/64 outputs
		XSEL-K-□-□-N1-N3N3E-□-2	Expansion slot 1,2	128 inputs/112 outputs
		XSEL-K-□-□-N1-N3N3N3-□-2	Expansion slot 1,2,3	176 inputs/160 outputs
48 inputs/48 outputs PNP specification	IA-IO-3204-PN	XSEL-K-c-c-P1-P3EE-c-2	Expansion slot 1	80 inputs/64 outputs
		XSEL-K-c-c-P1-P3P3E-□-2	Expansion slot 1,2	128 inputs/112 outputs
		XSEL-K-□-□-P1-P3P3P3-□-2	Expansion slot 1,2,3	176 inputs/160 outputs

<Dedicated terminal block for multipoint I/O board> **K Type Only**

Model: **TU-MA96** (NPN specification)
TU-MA96-P (PNP specification)



Description: A terminal block for wiring a multipoint I/O board. This terminal block not only simplifies wiring, but it also offers the following functions:

1. The built-in transistor buffer circuit ensures output of 500 mA per point (0.8 A per eight points).
2. The power circuit can be divided into six input systems (each comprising eight inputs) and six output systems (each comprising eight outputs).
3. LEDs are provided for checking the power supply for output signal circuit.
   Six LEDs are provided, each corresponding to one output system (each system comprises eight outputs). The LED will turn off when the power is cut off or a fuse on the board is blown.

Caution: If you are using a terminal block, be sure to use a multipoint I/O board of NPN specification.
(The terminal block has been set to NPN, so a PNP board cannot be used.)
This terminal block is used exclusively with the K type. (It cannot be used with the JX type.)

Dedicated Terminal Block for Multipoint I/O Board–Connector Pin Assignment

This connector is used for connection with an external I/O device. One connector can connect 16 DI points and 16 DO points.

External I/O Connector Specification Table

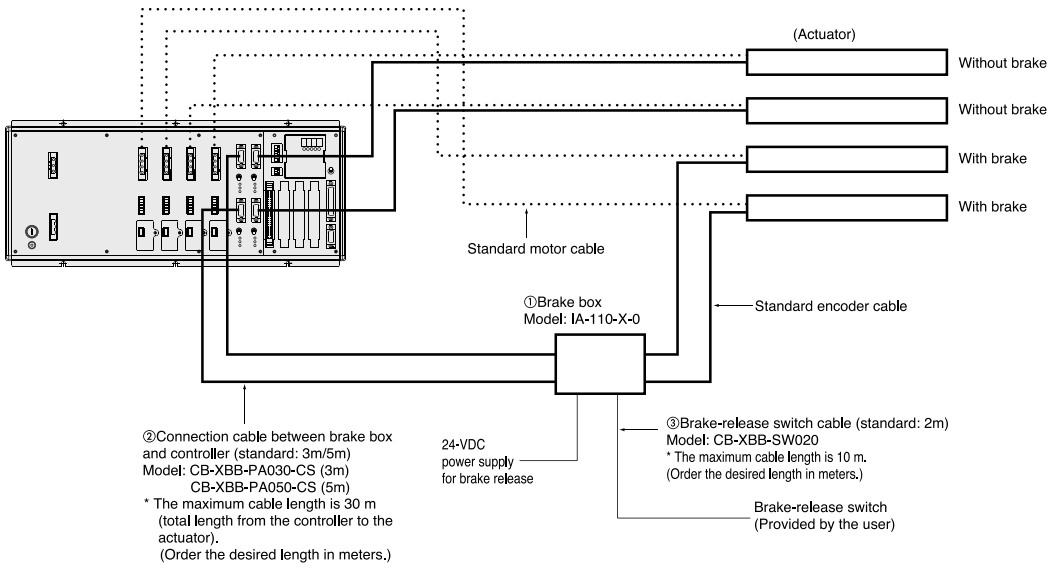
Item					
Applicable connector	XG4A-4031(OMRON) 40-pin, MIL flat connector				
DI	48 points				
DO	48 points				
Connected unit	External I/O device				
Connector name			CN2 connector	CN3 connector	CN4 connector
Pins and assigned inputs	1	Common	Common terminal (COM): For IN00 to IN07	Common terminal (COM): For IN16 to IN23	Common terminal (COM): For IN32 to IN39
	2	Common			
	3	General-purpose input	IN00	IN16	IN32
	4	General-purpose input	IN01	IN17	IN33
	5	General-purpose input	IN02	IN18	IN34
	6	General-purpose input	IN03	IN19	IN35
	7	General-purpose input	IN04	IN20	IN36
	8	General-purpose input	IN05	IN21	IN37
	9	General-purpose input	IN06	IN22	IN38
	10	General-purpose input	IN07	IN23	IN39
	11	General-purpose input	IN08	IN24	IN40
	12	General-purpose input	IN09	IN25	IN41
	13	General-purpose input	IN10	IN26	IN42
	14	General-purpose input	IN11	IN27	IN43
	15	General-purpose input	IN12	IN28	IN44
	16	General-purpose input	IN13	IN29	IN45
	17	General-purpose input	IN14	IN30	IN46
	18	General-purpose input	IN15	IN31	IN47
	19	Common	Common terminal (COM): For IN08 to IN15	Common terminal (COM): For IN24 to IN31	Common terminal (COM): For IN40 to IN47
	20	Common			
Pins and assigned outputs	21	+24V	External 24-V power input: For OUT00 to OUT07	External 24-V power input: For OUT16 to OUT23	External 24-V power input: For OUT32 to OUT39
	22	0V			
	23	General-purpose output	OUT00	OUT16	OUT32
	24	General-purpose output	OUT01	OUT17	OUT33
	25	General-purpose output	OUT02	OUT18	OUT34
	26	General-purpose output	OUT03	OUT19	OUT35
	27	General-purpose output	OUT04	OUT20	OUT36
	28	General-purpose output	OUT05	OUT21	OUT37
	29	General-purpose output	OUT06	OUT22	OUT38
	30	General-purpose output	OUT07	OUT23	OUT39
	31	General-purpose output	OUT08	OUT24	OUT40
	32	General-purpose output	OUT09	OUT25	OUT41
	33	General-purpose output	OUT10	OUT26	OUT42
	34	General-purpose output	OUT11	OUT27	OUT43
	35	General-purpose output	OUT12	OUT28	OUT44
	36	General-purpose output	OUT13	OUT29	OUT45
	37	General-purpose output	OUT14	OUT30	OUT46
	38	General-purpose output	OUT15	OUT31	OUT47
	39	+24V	External 24-V power input: For OUT08 to OUT15	External 24-V power input: For OUT24 to OUT31	External 24-V power input: For OUT40 to OUT47
	40	0V			

External Brake Box

Description

This force-release brake box can release the actuator brake even when the controller power is turned off. (Note 1)
The brake can be released using the switch on the brake box or by connecting an external switch (supplied with a dedicated cable).
When ordering, specify the models and quantities for the brake box and cable. (Up to two axes can be connected to one brake box.)
(Note 1) A dedicated 24-V power supply is required for releasing the brake.

System Configuration

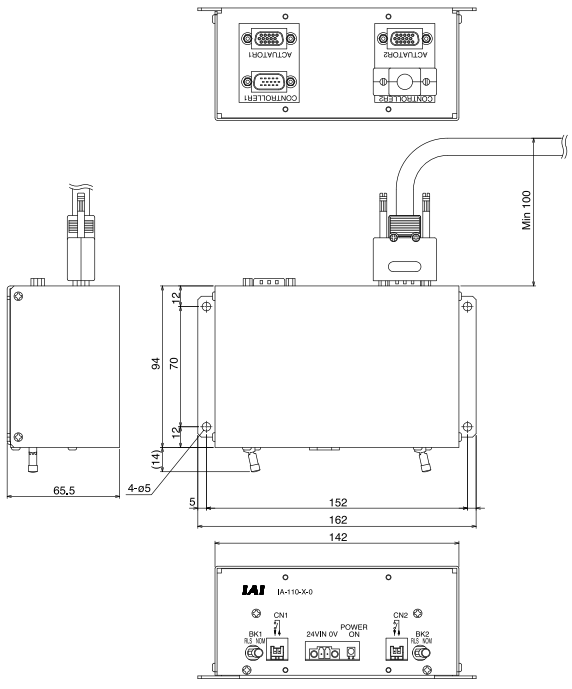


* To use an external brake box, you need a brake box (①) and a connection cable between brake box and controller (②).
Order a brake-release switch cable (③), if necessary.

①Brake box	Model: IA-110-X-0
②Connection cable between brake box and controller	Model: CB-XBB-PA□□□-CS
③Brake-release switch cable	Model: CB-XBB-SW□□□

External Dimensions of Brake Box

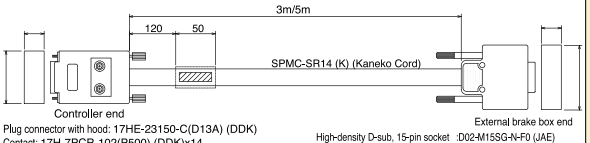
Model: **IA-110-X-0**



Connection cable between brake box and controller

Model: **CB-XBB-PA030-CS** (3m)
CB-XBB-PA050-CS (5m)

* The length can be changed. (Refer to the explanation above.)

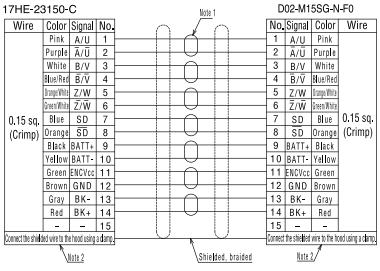


Plug connector with hood: 17HE-23150-C(D13A) (DDK)
Contact: 17H-7PCR-102(P500) (DDK)x14

High-density D-sub, 15-pin socket :D02-M15SG-N-F0 (JAE)
Socket contact :D02-22-26S-PKG100 (JAE)x14
Hood :DE-C8-J9F4-1(JAE)

Wiring Diagram

Note 1: Twisted pair cable
Note 2: Fold back the shielded, braided wire, wrap a shield tape around the folded section, and fix with a cable clamp.



Brake-release switch cable

Model: **CB-XBB-SW020** (3m)

* The length can be changed. (Refer to the explanation above.)

Housing :XAP-02V-1(J.S.T. Mfg.)
Socket contact :BXA-001T-P0.6(J.S.T. Mfg.)x2

Wiring Diagram

Wire	Color	Signal	No.
AWG26	Orange 1 black	BKMRL	1
X1P	Orange 1 red	COM	2

No connector

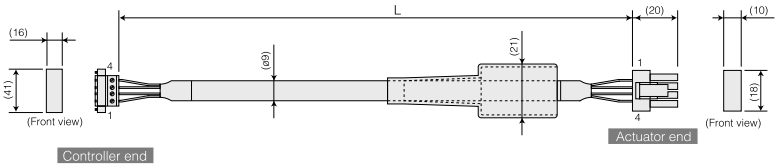
10 Service Parts

The following cables will be supplied with the actuator and controller you have purchased.
If you must replace the original cables or otherwise require additional cables, place an order by referencing the model names specified below.

Motor Cable (Single-Axis Robot Connection)

Model **CB-X-MA□□□**

* Indicate the desired cable length (L) of up to 30 m in □□□ (e.g., 080 = 8 m).



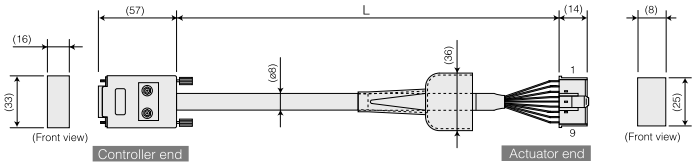
Wire	Color	Signal	No.
0.75sq	Green	PE	1
	Red	U	2
	White	V	3
	Black	W	4

No.	Signal	Color	Wire
1	U	Red	0.75sq (Crimp)
2	V	White	
3	W	Black	
4	PE	Green	

Encoder Cable (Single-Axis Robot Connection)

Model **CB-X-PA□□□**

* Indicate the desired cable length (L) of up to 30 m in □□□ (e.g., 080 = 8 m).



Wire	Color	Signal	No.
0.15sq (Crimp)	-	-	1
	-	-	2
	-	-	3
	-	-	4
	-	-	5
	-	-	6
	Blue	SD	7
	Orange	$\overline{SD}$	8
	Black	BAT+	9
	Yellow	BAT-	10
	Green	VCC	11
	Brown	GND	12
	Gray	BK-	13
	Red	BK+	14
	-	-	15

Connect the shielded wire to the hood using a clamp.

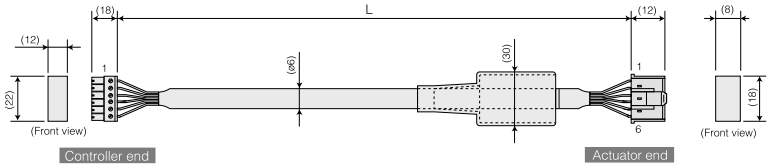
No.	Signal	Color	Wire
1	BAT+	Black	0.15sq (Crimp)
2	BAT-	Yellow	
3	SD	Blue	
4	$\overline{SD}$	Orange	
5	VCC	Green	
6	GND	Brown	
7	FG	Ground	
8	BK-	Gray	
9	BK+	Red	

Ground wire and shielded wire, braided

Limit Switch Cable (Single-Axis Robot Connection)

Model **CB-X-LC□□□**

* Indicate the desired cable length (L) of up to 30 m in □□□ (e.g., 080 = 8 m).



Wire	Color	Signal	No.
AWG24	Light Blue	24VOUT	6
	Pink	N	5
	Grass	LS	4
	Pink	CREEP	3
	Gray	OT	2
	1B/Light Blue	RSV	1

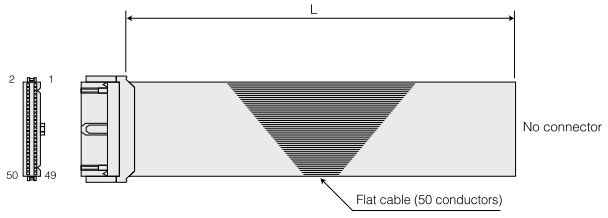
No.	Signal	Color	Wire
1	24VOUT	Light Blue	AWG24 (Crimp)
2	N	Pink	
3	LS	Grass	
4	CREEP	Pink	
5	OT	Gray	
6	RSV	1B/Light Blue	

Note) "1B" indicates one black dot mark.

I/O Flat Cable (X-SEL)

Model **CB-X-PIO□□□**

* Indicate the desired cable length (L) of up to 10 m in □□□ (e.g., 080 = 8 m).



No.	Color	Wire	No.	Color	Wire	No.	Color	Wire
1	Brown1	Flat cable	18	Gray2	Flat cable	35	Green4	Flat cable
2	Red1		19	White2		36	Blue4	
3	Orange1		20	Black2		37	Purple4	
4	Yellow1		21	Brown-3		38	Gray4	
5	Green1		22	Red3		39	White4	
6	Blue1		23	Orange3		40	Black4	
7	Purple1		24	Yellow3		41	Brown-5	
8	Gray1		25	Green3		42	Red5	
9	White1		26	Blue3		43	Orange5	
10	Black1		27	Purple3		44	Yellow5	
11	Brown-2		28	Gray3		45	Green5	
12	Red2		29	White3		46	Blue5	
13	Orange2		30	Black3		47	Purple5	
14	Yellow2		31	Brown-4		48	Gray5	
15	Green2		32	Red4		49	White5	
16	Blue2		33	Orange4		50	Black5	
17	Purple2		34	Yellow4				

Large Capacity Controller X-SEL

A Compact Yet Powerful Controller with a Maximum Output of 2400 W

A new high-performance controller series capable of controlling six axes

1 Maximum output of 2400 W

(Reference: IAI's conventional general-purpose type – 1600 W, compact type – 800 W)

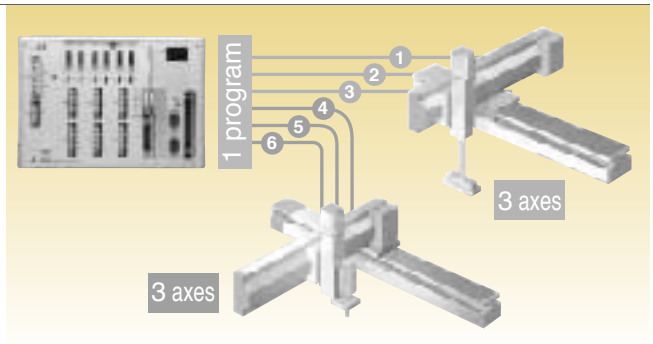
Six 400W single-axis robots or three 750W single-axis robots can be operated simultaneously.

2 "Global Specification" corresponding to Safety Category 4

The "Global Specification" provides an external safety circuit, instead of incorporating a drive-power cutoff circuit into the controller. This design ensures correspondence to Safety Category 4 under ISO 13849-1.

3 Capable of driving one to six axes

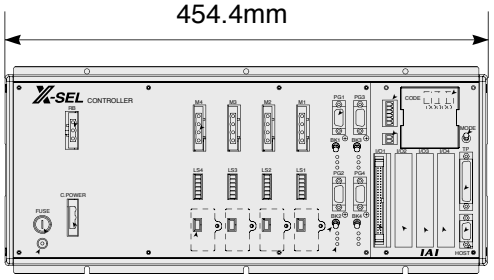
- A maximum of six axes can be operated complementarily using only one controller unit.
- Six axes are operated with a single program, allowing easy programming.



4 Compact and high performance

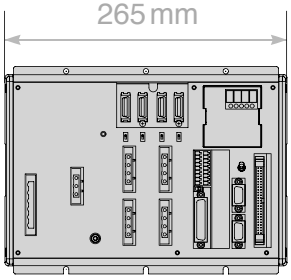
- A slim design of approx. 40% the volume of IAI's conventional controller (X-SEL general-purpose controller)
- Significantly higher speed compared with IAI's conventional controller (the command processing time is nearly half)
- Connectable to DeviceNet, CC-Link, Ethernet and other networks

Conventional product



XSEL-K (general-purpose type) 4 axes, 1.6 Kw

New product



XSEL-P 4 axes, 2.4 Kw

■ Models

XSEL - P - 3 - 400AL - 200AL - 60ABL - DV - NI - EEE - 2 - 3

① ② ③ ④ (Axis 1) ④ (Axis 2) ④ (Axis 3) ⑤ ⑥ ⑦ ⑧ ⑨

① Series	② Controller type	③ Number of axes	④ Details of axis 1 to axis 6						⑤ Network (dedicated slot)	⑥ Standard I/O (Slot 1)	⑦ Expansion I/O slots			⑧ Flat cable length	⑨ Power-supply voltage
			Motor Output	Encoder type	Brake	Creep	Home Sensor	Synchronization designation			Slot 2	Slot 3	Slot 4		
XSEL	P (Standard) Q (Global)	1 (1 axis) 2 (2 axes) 3 (3 axes) 4 (4 axes) 5 (5 axes) 6 (6 axes)	20 (20W) 30D (30W for DS) 30R (30W for RS) 60 (60W) 100 (100W) 150 (150W) 200 (200W) 30 (300W) 400 (400W) 600 (600W) 750 (750W)	I (Incremental) A (Absolute)	Not Specified (w/o brake) B (w/ brake)	Not Specified (w/o creep) C (w/ creep)	Not Specified (w/o home sensor) L (w/ home sensor)	Not Specified (No synchronization) M (Master-axis designation) S (Slave-axis designation)	Not Specified (No network) DV DeviceNet 256/256 board CC CC-Link 256/256 board PR ProfiBus 256/256 board ET Ethernet Data communication board	E (Not used) C CC-Link connection 16/16 board N1 Expansion I/O NPN 32/16 N2 Expansion I/O NPN 16/32 N3 Expansion I/O NPN 48/48 P1 Expansion I/O PNP 32/16 P2 Expansion I/O PNP 16/32 P3 Multipoint I/O PNP 48/48	E (Not used) C CC-Link connection 16/16 board N1 Expansion I/O NPN 32/16 N2 Expansion I/O NPN 16/32 N3 Expansion I/O NPN 48/48 P1 Expansion I/O PNP 32/16 P2 Expansion I/O PNP 16/32 P3 Multipoint I/O PNP 48/48	E (Not used) C CC-Link connection 16/16 board N1 Expansion I/O NPN 32/16 N2 Expansion I/O NPN 16/32 N3 Multipoint I/O NPN 48/48 P1 Expansion I/O PNP 32/16 P2 Expansion I/O PNP 16/32 P3 Multipoint I/O PNP 48/48	E (Not used) C CC-Link connection 16/16 board N1 Expansion I/O NPN 32/16 N2 Expansion I/O NPN 16/32 N3 Multipoint I/O NPN 48/48 P1 Expansion I/O PNP 32/16 P2 Expansion I/O PNP 16/32 P3 Multipoint I/O PNP 48/48	2 : 2 m (Standard) 3 : 3 m 5 : 5 m 0 : None	3: Three-phase 200V

■ Main Specifications

	Standard		Global	
	Axis 1 to axis 4	Axis 5 to axis 6	Axis 1 to axis 4	Axis 5 to axis 6
Total output when maximum number of axes are connected	2400W			
Control power input	Single-phase 200/230VAC -15%, +10%			
Motor power input	Three-phase 200/230VAC -10%, +10%			
Power capacity (*1)	MAX 4878VA (600W x 4 axes)	MAX 4998VA (400W x 6 axes)	MAX 4878VA (600W x 4 axes)	MAX 4998VA (400W x 6 axes)
Safety circuit configuration	Redundant design not supported		Redundant design supported	
Drive-power cutoff method	Internal relay cutoff		External safety circuit	
Enable input	Contact-B input (internal power supply)		Contact-B input (external power supply, redundancy)	
Position detection method	Incremental encoder/absolute encoder			
Speed setting (*2)	1 mm/sec ~ 2000 mm/sec			
Acceleration/deceleration setting (*2)	0.01 G ~ 1 G			
Program language	Super SEL language			
Number of program steps	6000 steps (total)			
Number of positions	4000 positions (total)			
Number of programs (multitasking)	64 programs (16 programs)			
Operating temperature/humidity	0~40°C, 10%~95% (non-condensing)			
Weight (*3)	5.2 kg	5.7 kg	4.5 kg	5 kg

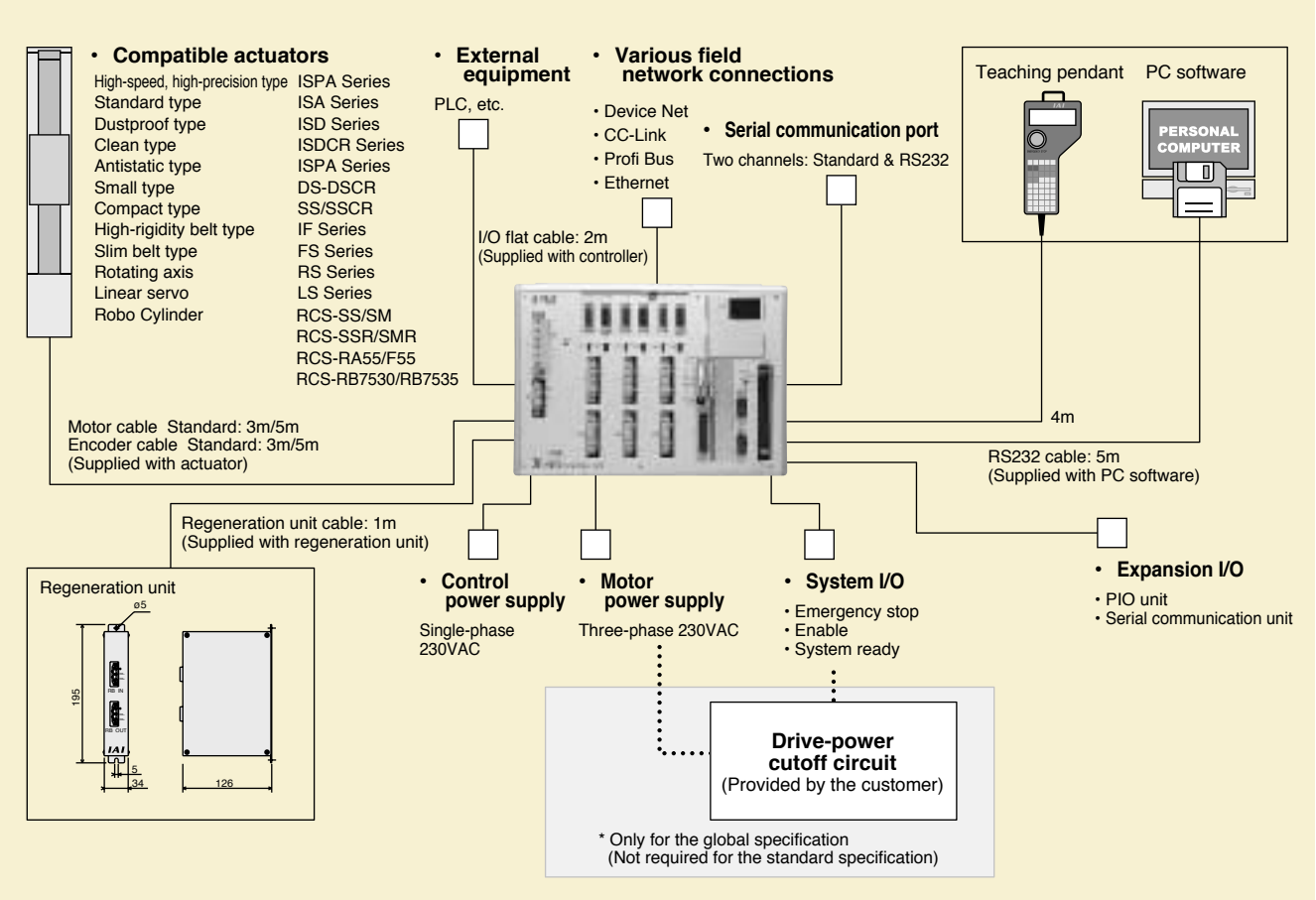
*1 Based on the maximum wattage of each connected axis.
*2 The maximum limit will vary depending on the actuator type.
*3 Including the absolute battery, brake mechanism and expansion I/O box.

■ X-SEL Series Product Lineup

	XSEL-J	XSEL-K	XSEL-KE	XSEL-KT	XSEL-P	XSEL-Q
	Compact type	General-purpose type	CE-compatible type	Global specification (Safety Category 4)	Large-capacity type, standard specification	Large-capacity type, global specification (Safety Category 4)
						
Operating method	Program operation					
Programs	64 programs (6000 steps)					
Number of positions	3000 positions				4000 positions	
Maximum number of connectable axes	4 axes				6 axes	
Maximum output	0.8 kw	1.6 kw	1.6 kw	1.6 kw	2.4 kw	2.4 kw
Power supply	Single-phase 100VAC / Single-phase 200VAC				Three-phase 200VAC	Three-phase 200VAC
Safety category	B			Corresponds to Category 4	B	Corresponds to Category 4
Safety standard	—	—	CE	ANSI (*1)	CE	CE, ANSI (*1)

*1 To support ANSI, the ANSI-compatible teaching pendant (IA-T-XA) is required.

• •System Configuration

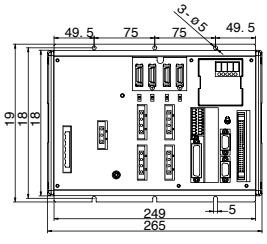


• •External Dimensions

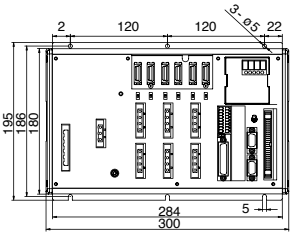
XSEL-P

Standard

Axis 1 to axis 4



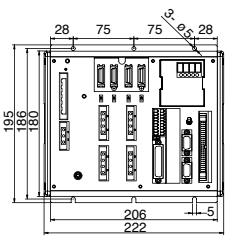
Axis 5 to axis 6



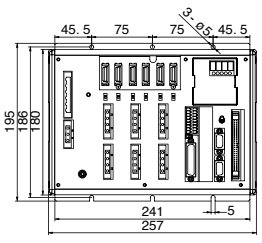
XSEL-Q

Global

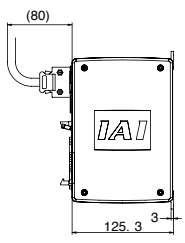
Axis 1 to axis 4



Axis 5 to axis 6



Side view (common to all types)



In the case of the following specifications, the overall width will follow the table below (mounting hole positions are the same).	Standard		Global	
	Axis 1 to axis 4	Axis 5 to axis 6	Axis 1 to axis 4	Axis 5 to axis 6
With absolute battery/brake unit *1	285	340	242	297
With I/O expansion base *2	338	373	295	330
With I/O expansion base + absolute battery/brake unit *3	358	413	315	370

*1 With absolute battery or brake, or absolute battery with brake.
*2 When expansion I/Os are added.
*3 With absolute battery or brake, or absolute battery with brake, plus expansion I/Os.