

**High-Power SCARA Robot
With Battery-less Absolute Encoder**

IXA Series

IXA



One of the fastest in the industry !

Introducing the new SCARA Robot IXA !

1

Industry top

Fastest cycle times

* The following measurements were taken during arch motion cycle operation under the following conditions and operation setting.

Operational conditions (*)		(*) Please see (Note 3) of P.19 for further details.	
▶ 2kg transport	Horizontal movement		
▶ Horizontal movement 300mm/ vertical movement 25mm	Vertical movement		

Standard cycle time

High-speed type
(IXA-NSN)

0.26s

Standard type
(IXA-NNN)

0.38s

Continuous cycle time (duty 100%)

High-speed type
(IXA-NSN)

0.45s

Standard type
(IXA-NNN)

0.55s

2

Achieves a lower price

Our new SCARA robot is even more affordable than previous models. Plus, it offers even better performance and functionality.

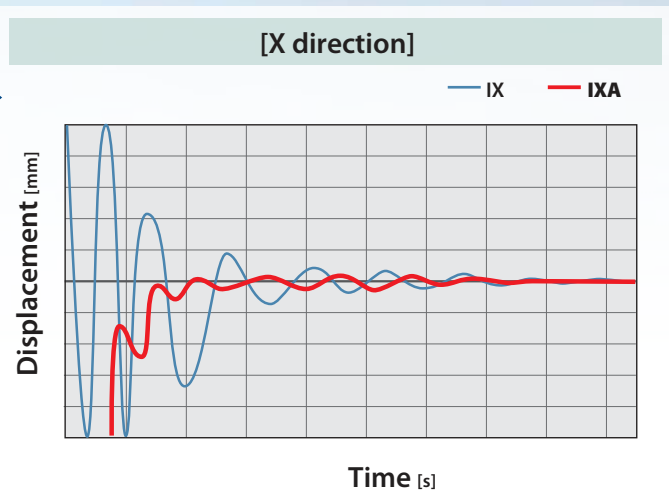
3 Low vibration, accurate positioning

Higher rigidity and optimized control mean significantly less vibration during Stopping.

Operational conditions		
Model	IXA-4NSN4518	IX-NSN5016H
Payload	2kg	
Cycle time	0.26s	0.29s



Stops on a dime

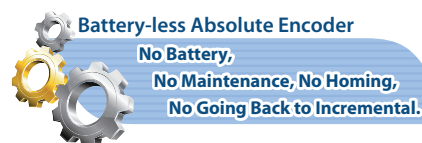


4 Equipped with a Battery-less Absolute Encoder as standard

There is no need to replace batteries and less maintenance.

Advantages of Battery-less Absolute

- ▶ The machine will no longer stop due to battery error (voltage drop, etc.).
- ▶ There is no need to purchase replacement batteries.
- ▶ No tiresome battery replacement or absolute reset.



5 Dust / Splash-proof specification suitable for environment

Compliant to degree of protection of **IP65**.



IP65	Solid particle	(Summary) Dust-proof * Dusts are totally shut out and do not ingress the main body.
	Water	(Summary) Protection against water jet * Direct water jet from any direction shall have no harmful effects.

*IEC 60529

Indication for the degree of protection

IP

First digit

Protection against human bodies and solid particles.

Second digit

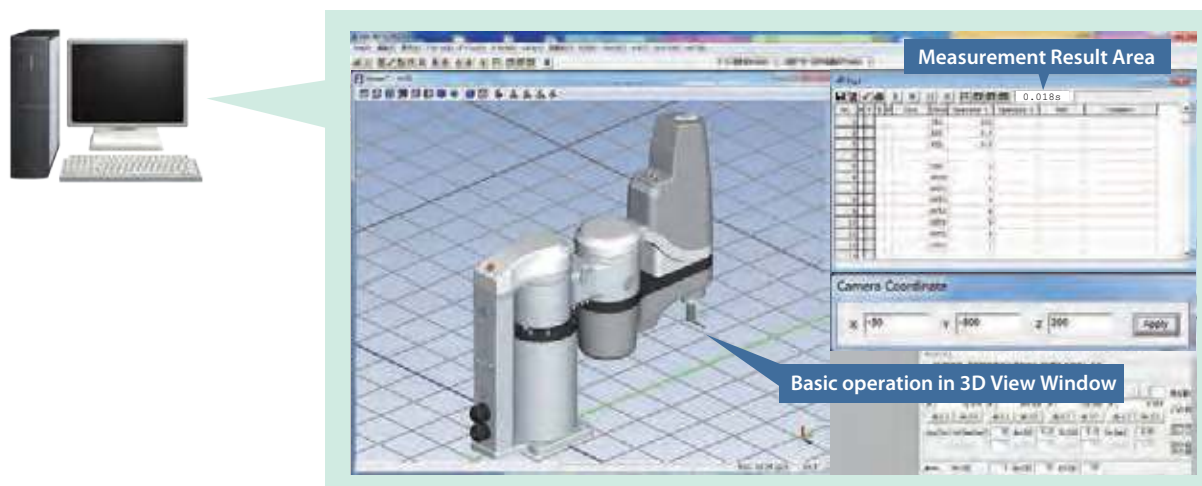
Protection against water ingress

6 Mechanical structure / features



7 Simulation Software

You can check the motion of SCARA without a robot, if you use the PC software. In addition, you can measure the cycle time easily.

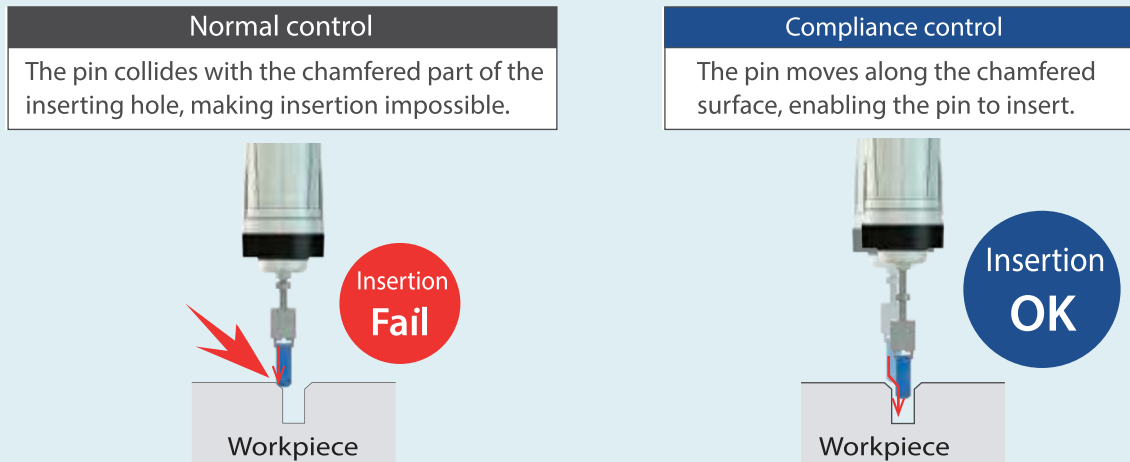


8 Control functions by Controller

■ Compliance control

It controls the robot motion softly by sensing external forces and supports fitting of the workpiece by reducing the contact force at the time of insertion.

(Example) In case positional errors exist when inserting a pin into a part (workpiece).



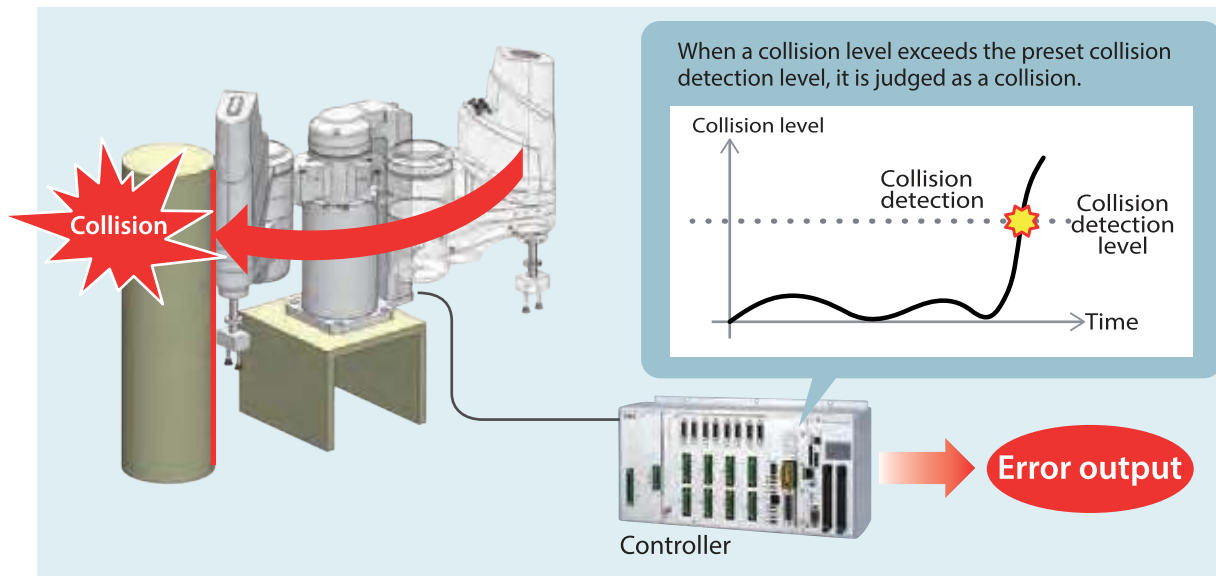
[Note]

- * Workpieces may not be inserted depending on the condition of use.
- * Inclination to the Z-axis cannot be traced.
- * Depending on the materials of the workpiece and the hole, damages may occur.

* This is not applicable to the arm length of 180 and dust- and splash-proof specification.

■ Collision detection function

If the SCARA robot detects a collision with an object, it stops the operation immediately. It reduces damages on the gripper, workpiece and robot when a collision occurs.



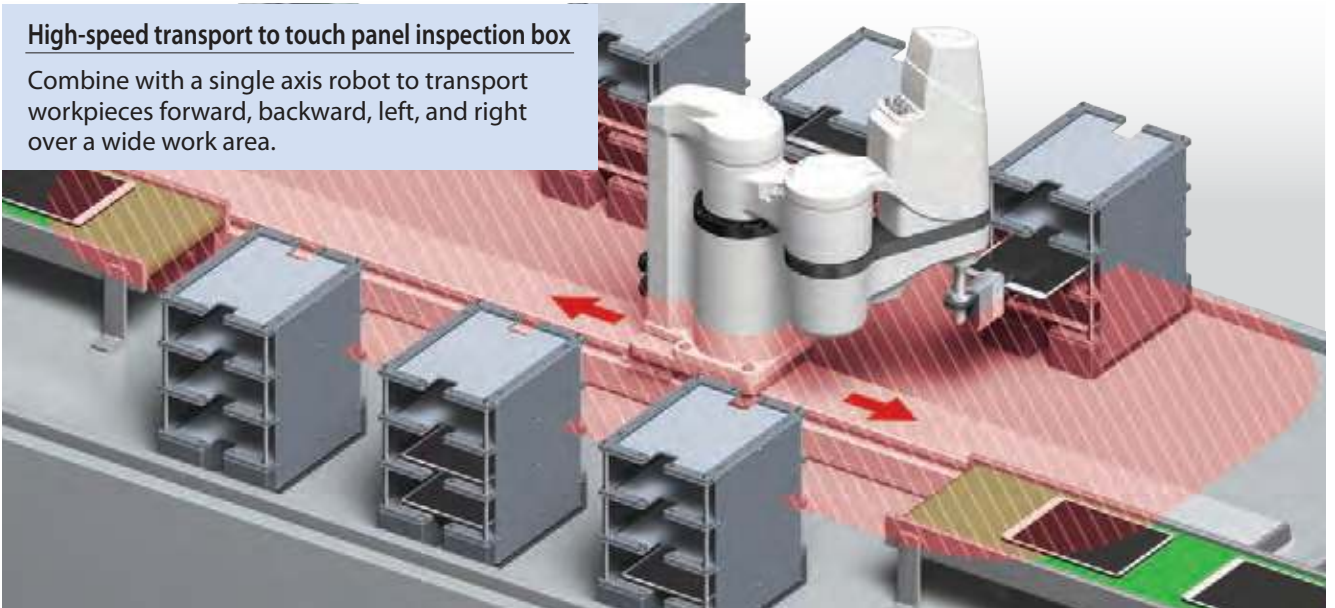
[Note]

- * It does not guarantee safety for the human body.
- * It is an auxiliary function to reduce damages on the peripheral devices or the like. This function will not prevent damage 100%.

* This is not applicable to the arm length of 180 and dust- and splash-proof specification.

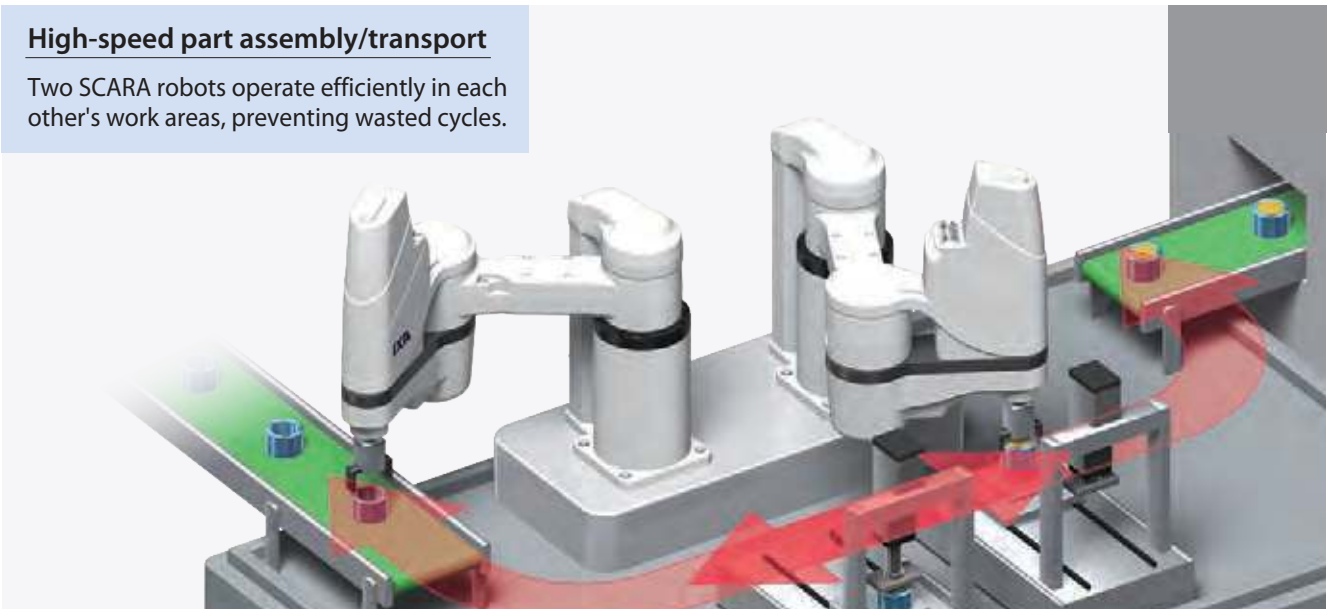
High-speed transport to touch panel inspection box

Combine with a single axis robot to transport workpieces forward, backward, left, and right over a wide work area.



High-speed part assembly/transport

Two SCARA robots operate efficiently in each other's work areas, preventing wasted cycles.



High-speed pick and place of radiators and chips

Parts supplied from the parts feeder can be picked and placed at high-speed.



Type	Model	Number of axes	Arm length (mm)		Vertical axis stroke (mm)	Standard cycle time (s)	Continuous cycle time (s)	Maximum payload (kg)	Reference page
			First arm	Second arm					
Standard type	IXA-3NNN1805	3 axes	80	100	50	0.26	0.45	1	▶P6-1
	IXA-4NNN1805	4 axes							▶P6-1
	IXA-3NNN3015	3 axes	120	180	150	0.38	0.55	3	▶P7
	IXA-4NNN3015	4 axes							▶P7
	IXA-3NNN4518	3 axes	200	250	180			3	▶P9
	IXA-4NNN4518	4 axes			330				▶P9
	IXA-3NNN4533	3 axes							▶P9
	IXA-4NNN4533	4 axes							▶P9
	IXA-3NNN6018	3 axes	350	250	180			6	▶P11
	IXA-4NNN6018	4 axes			330				▶P11
	IXA-3NNN6033	3 axes							▶P11
	IXA-4NNN6033	4 axes							▶P11
High-speed type	IXA-3NSN3015	3 axes	120	180	150	0.26	0.45	8	▶P13
	IXA-4NSN3015	4 axes							▶P13
	IXA-3NSN4518	3 axes	200	250	180			10	▶P15
	IXA-4NSN4518	4 axes			330				▶P15
	IXA-3NSN4533	3 axes							▶P15
	IXA-4NSN4533	4 axes							▶P15
	IXA-3NSN6018	3 axes	350	250	180			12	▶P17
	IXA-4NSN6018	4 axes			330				▶P17
	IXA-3NSN6033	3 axes							▶P17
	IXA-4NSN6033	4 axes							▶P17
Coming soon Dust / splash-proof specification, high-speed type	IXA-4NSW3015	4 axes	155	145	150	0.38	0.69	6	▶P18-1
	IXA-4NSW4518	4 axes	200	250	180	0.38	0.55	8	▶P18-3
	IXA-4NSW4533				330				▶P18-3
	IXA-4NSW6018	4 axes	350	250	180	0.38	0.57	10	▶P18-5
	IXA-4NSW6033				330				▶P18-5

IXA
Series

Type

Cable Length

T2
Applicable Controllers

Options

3NNN1805	3-axis standard type/arm length 180mm/vertical axis 50mm
4NNN1805	4-axis standard type/arm length 180mm/vertical axis 50mm
3NNN3015	3-axis standard type/arm length 300mm/vertical axis 150mm
4NNN3015	4-axis standard type/arm length 300mm/vertical axis 150mm
3NNN4518	3-axis standard type/arm length 450mm/vertical axis 180mm
4NNN4518	4-axis standard type/arm length 450mm/vertical axis 180mm
3NNN4533	3-axis standard type/arm length 450mm/vertical axis 330mm
4NNN4533	4-axis standard type/arm length 450mm/vertical axis 330mm
3NNN6018	3-axis standard type/arm length 600mm/vertical axis 180mm
4NNN6018	4-axis standard type/arm length 600mm/vertical axis 180mm
3NNN6033	3-axis standard type/arm length 600mm/vertical axis 330mm
4NNN6033	4-axis standard type/arm length 600mm/vertical axis 330mm
3NSN3015	3-axis high-speed type/arm length 300mm/vertical axis 150mm
4NSN3015	4-axis high-speed type/arm length 300mm/vertical axis 150mm
3NSN4518	3-axis high-speed type/arm length 450mm/vertical axis 180mm
4NSN4518	4-axis high-speed type/arm length 450mm/vertical axis 180mm
3NSN4533	3-axis high-speed type/arm length 450mm/vertical axis 330mm
4NSN4533	4-axis high-speed type/arm length 450mm/vertical axis 330mm
3NSN6018	3-axis high-speed type/arm length 600mm/vertical axis 180mm
4NSN6018	4-axis high-speed type/arm length 600mm/vertical axis 180mm
3NSN6033	3-axis high-speed type/arm length 600mm/vertical axis 330mm
4NSN6033	4-axis high-speed type/arm length 600mm/vertical axis 330mm
4NSW3015	Dust-/Splash-proof spec., 4-axis high-speed type/arm length 300mm/vertical axis 150mm
4NSW4518	Dust-/Splash-proof spec., 4-axis high-speed type/arm length 450mm/vertical axis 180mm
4NSW4533	Dust-/Splash-proof spec., 4-axis high-speed type/arm length 450mm/vertical axis 330mm
4NSW6018	Dust-/Splash-proof spec., 4-axis high-speed type/arm length 600mm/vertical axis 180mm
4NSW6033	Dust-/Splash-proof spec., 4-axis high-speed type/arm length 600mm/vertical axis 330mm

T2	XSEL-RAX/SAX
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LED	Indicator
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* Only available for the standard type with arm lengths of 300/450/600mm.

N	None	10L	10m
5L	5m	<input type="checkbox"/> L:	Specified length (1m increm.), maximum length 15m

Description of options

LED indicator (standard type only)		
Model	LED	Description
		Installation of an LED that can be turned on and off as required. (Standard configuration for high-speed type.)

Single unit option models

Series	Type	Flange	Metal cap for user wiring
IXA	NNN	1805	IX-FL-4
		3015	
		45□□	
	NSN	3015	IX-FL-1
		45□□	
		60□□	
	NSW	3015	IXA-MC-1
		45□□	
		60□□	

IX-FL-1

IX-FL-4

IXA-MC-1

Metal cap for user wiring

A cap to cover the plug for user wiring that is located on the upper panel.

(Example)

IXA - 3 NNN 45 18 - 5L - T2 - LED

Number of axes: 3
 Type: Standard

Arm length: 450mm
 Vertical axis stroke: 180mm

Cable length: 5m

Controller: XSEL-RAX/SAX

Option: Indicator

IXA - 3NNN1805 / 4NNN1805

Standard Type	Battery-less Absolute	Arm Length: 180 mm	Vertical Axis: 50 mm
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■ Model Specification Items	IXA	□	NNN	18	05	□	T2
	Series	Number of Axes	Type	Arm Length	Vertical Axis Stroke	Cable Length	Applicable Controllers
		3: 3-axis 4: 4-axis	Standard type	18 : 180mm	5 : 50mm	N : No cable 5L : 5m 10L : 10m □L : Specified length (1m increments)	T2 : XSEL-RAX/SAX

* Does not include a controller.



Please refer to P.19 for (Note 1) to (Note 9).

(Note 10) The maximum set value for acceleration/deceleration varies depending on the weight of the object being transported, the traverse distance, and the location. Operating continuously at the maximum set value could cause an overload error. For continuous operation, either lower the acceleration/deceleration value or refer to the duty (guideline) and set a stop time after acceleration/deceleration.

(Note 11) If the motor or controller is replaced, absolute reset must be performed. An adjustment jig (option model: JG-IXA2) will be required to perform absolute reset on the rotational axis (4th axis).

Model / Specifications

Model	Axis configuration		Arm length (mm)	Motor (W)	Operation range	Positioning repeatability (Note 1)	Maximum operation speed during PTP operation (Note 2)	Standard cycle time (s) (Note 3)	Continuous cycle time (s) (Note 3)	Payload (kg) (Note 4)	3rd axis (vertical axis) push force control range (N)*		4th axis allowable load	
											Upper limit (Note 5)	Lower limit (Note 5)	Allowable inertia moment (kg-m²) (Note 6)	Allowable torque (N-m)
[3-axis specification] IXA-3NNN1805-□ - T2	1-axis	1st arm	80	50	±125 degrees	±0.010mm	2638mm/s (composite speed)	0.26	0.45	1	40.0	5.0	0.004	0.35
	2-axis	2nd arm	100	50	±145 degrees		540/540 deg/s (1st/2nd arm speed)							
[4-axis specification] IXA-4NNN1805-□ - T2	3-axis	Vertical axis	-	50	50mm	±0.010mm	850mm/s							
	4-axis	Rotational axis	-	50	±360 degrees	±0.01 deg.	1600 deg/s							

Legend: □ Cable length

Note: The SCARA robot cannot operate continuously at 100% speed/acceleration. Refer to the Reference Data from P.20 for feasible operating conditions.
*Speed limitation applies to the push force. Contact IAI for details.

Cable Length

Type	Cable code
Standard type	5L(5m)
	10L(10m)
Specified length	1L(1m)~4L(4m)
	6L(6m)~9L(9m)
	11L(11m)
	12L(12m)
	13L(13m)
	14L(14m)
	15L(15m)

[3-axis specification] · Motor cables: 3 · Encoder cables: 3 · Brake cable: 1
[4-axis specification] · Motor cables: 4 · Encoder cables: 4 · Brake cable: 1

Common Specifications

Item	Description
Encoder Type	Battery-less Absolute Encoder
User wiring	10-core (9-core + shield) AWG25 (rated 30V/max. 1A)
User piping	3 air tubes with ø4 outer diameter and ø2.5 inner diameter (max. operating pressure 0.6MPa)
Alarm indicator (Note 7)	1 small amber LED indicator (24 VDC supply required)
Brake release switch (Note 8)	Brake release switch for vertical axis fall prevention
Allowable load moment	0.5N-m
Ambient temp./humidity	Temperature: 0~40°C, Humidity: 20~85% RH or less (Non-condensing)
Ingress protection	IP20
Unit weight	3-axis specification: 5.8kg, 4-axis specification: 6.2kg
Noise (Note 9)	80dB or less

Single Unit Options

Name	Model name	Reference page
Flange	IX-FL-4	See P.6

(Note) Please purchase separately.

IXA - 3NNN3015 / 4NNN3015

Standard
Type

Battery-
less
Absolute

Arm Length:
300
mm

Vertical Axis:
150
mm

Model Specification Items

IXA - ☐
NNN
30
15
T2 - ☐

Series - Number of Axes

3: 3-axis

4: 4-axis

Type
Standard type

Arm Length
30: 300mm

Vertical Axis Stroke
15: 150mm

Cable Length

N : No cable

5L : 5m

10L : 10m

□L : Specified length (1m increments)

Applicable Controllers
T2 : XSEL-RAX/SAX

Options

Refer to Options
table below.

* Does not include a controller.



Please refer to P.19 for (Note 1) to (Note 9).

(Note 10) The maximum set value for acceleration/deceleration varies depending on the weight of the object being transported, the traverse distance, and the location. Operating continuously at the maximum set value could cause an overload error. For continuous operation, either lower the acceleration/deceleration value or refer to the duty (guideline) and set a stop time after acceleration/deceleration.

(Note 11) If the motor or controller is replaced, absolute reset must be performed.

An adjustment jig (option model: JG-IXA1) will be required to perform absolute reset on the rotational axis (4th axis).

Model / Specifications

Model	Axis configuration		Arm length (mm)	Motor (W)	Operation range	Positioning repeatability (Note 1)	Maximum operation speed during PTP operation (Note 2)	Standard cycle time (s) (Note 3)	Continuous cycle time (s) (Note 3)	Payload (kg) (Note 4)	3rd axis (vertical axis) push force control range (N)*		4th axis allowable load	
											Upper limit (Note 5)	Lower limit (Note 5)	Allowable inertia moment (kg-m²) (Note 6)	Allowable torque (N-m)
[3-axis specification]	1-axis	1st arm	120	400	±135 degrees	±0.010mm	5529mm/s (composite speed) 660/660 deg/s (1st/2nd arm speed)	0.38	0.55	3	60.0	10.0	0.06	3.2
IXA-3NNN3015-①-T2-②	2-axis	2nd arm	180	200	±142 degrees									
[4-axis specification]	3-axis	Vertical axis	-	100	150mm	±0.010mm	1400mm/s	0.38	0.55	3	60.0	10.0	0.06	3.2
IXA-4NNN3015-①-T2-②	4-axis	Rotational axis	-	100	±360 degrees	±0.005 deg.	1600 deg/s							

Legend: ① Cable length ② Options

Note: The SCARA robot cannot operate continuously at 100% speed/acceleration. Refer to the Reference Data from P.20 for feasible operating conditions.
*Speed limitation applies to the push force. Contact IAI for details.

Cable Length

Type	Cable code
Standard type	5L(5m)
	10L(10m)
Specified length	1L(1m)~4L(4m)
	6L(6m)~9L(9m)
	11L(11m)
	12L(12m)
	13L(13m)
	14L(14m)
	15L(15m)

[3-axis specification] · Motor cables: 3 · Encoder cables: 3 · Brake cable: 1

[4-axis specification] · Motor cables: 4 · Encoder cables: 4 · Brake cable: 1

Common Specifications

Item	Description
Encoder Type	Battery-less Absolute Encoder
User wiring	10-core (9-core + shield) AWG24 (rated 30V/max. 1A)
User piping	3 air tubes with ø4 outer diameter and ø2.5 inner diameter (max. operating pressure 0.6MPa)
Alarm indicator (*) (Note 7)	1 small amber LED indicator (24 VDC supply required)
Brake release switch (Note 8)	Brake release switch for vertical axis fall prevention
Allowable load moment	4.5N-m
Ambient temp./humidity	Temperature: 0~40°C, Humidity: 20~85% RH or less (Non-condensing)
Ingress protection	IP20
Unit weight	3-axis specification: 21kg, 4-axis specification: 22kg
Noise (Note 9)	80dB or less

(*) An alarm indicator is equipped when the LED option is selected.

Options

Name	Model name	Reference page
Indicator	LED	See P.6

Single Unit Options

Name	Model name	Reference page
Flange	IX-FL-1	See P.6

(Note) Please purchase separately.

IXA - 3NNN4518 / 4NNN4518 3NNN4533 / 4NNN4533

Standard Type	Battery-less Absolute	Arm Length: 450 mm	Vertical Axis: 180/330 mm
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Model Specification Items	IXA	NNN	45	T2	
Series	3: 3-axis 4: 4-axis	Standard type	Arm Length 45: 450mm	Vertical Axis Stroke 18: 180mm 33: 330mm	Cable Length N: No cable 5L: 5m 10L: 10m □L: Specified length (1m increments)
Applicable Controllers	T2: XSEL-RAX/SAX	Options	Refer to Options table below.		

* Does not include a controller.



Please refer to P.19 for (Note 1) to (Note 9).

(Note 10) The maximum set value for acceleration/deceleration varies depending on the weight of the object being transported, the traverse distance, and the location. Operating continuously at the maximum set value could cause an overload error. For continuous operation, either lower the acceleration/deceleration value or refer to the duty (guideline) and set a stop time after acceleration/deceleration.

(Note 11) If the motor or controller is replaced, absolute reset must be performed.

An adjustment jig (option model: JG-IXA1) will be required to perform absolute reset on the rotational axis (4th axis).

Model / Specifications

Model	Axis configuration		Arm length (mm)	Motor (W)	Operation range	Positioning repeatability (Note 1)	Maximum operation speed during PTP operation (Note 2)	Standard cycle time (s) (Note 3)	Continuous cycle time (s) (Note 3)	Payload (kg) (Note 4)	3rd axis (vertical axis) push force control range (N)*		4th axis allowable load	
											Upper limit (Note 5)	Lower limit (Note 5)	Allowable inertia moment (kg-m²) (Note 6)	Allowable torque (N-m)
[3-axis specification] IXA-3NNN4518-①-T2-② [IXA-3NNN4533-①-T2-②]	1-axis	1st arm	200	400	±137 degrees	±0.010mm	7453mm/s (composite speed) 610/610 deg/s (1st/2nd arm speed)	0.38	0.55	3	55.0	10.0	0.05	3.2
	2-axis	2nd arm	250	200	±137 degrees									
[4-axis specification] IXA-4NNN4518-①-T2-② [IXA-4NNN4533-①-T2-②]	3-axis	Vertical axis	-	100	180mm [330mm]	±0.010mm	1200mm/s							
	4-axis	Rotational axis	-	100	±360 degrees	±0.005 deg.	2000 deg/s							

Legend: ① Cable length ② Options

Note: The SCARA robot cannot operate continuously at 100% speed/acceleration. Refer to the Reference Data from P.20 for feasible operating conditions.
* Values in [] are for models with vertical axis of 330mm. Other specifications are the same for both 180mm and 330mm vertical axis models.
* Speed limitation applies to the push force. Contact IAI for details.

Cable Length

Type	Cable code
Standard type	5L(5m)
	10L(10m)
Specified length	1L(1m)~4L(4m)
	6L(6m)~9L(9m)
	11L(11m)
	12L(12m)
	13L(13m)
	14L(14m)
	15L(15m)

[3-axis specification] - Motor cables: 3 - Encoder cables: 3 - Brake cable: 1
[4-axis specification] - Motor cables: 4 - Encoder cables: 4 - Brake cable: 1

Common Specifications

Item	Description
Encoder Type	Battery-less Absolute Encoder
User wiring	10-core (9-core + shield) AWG24
User piping	3 air tubes with ø6 outer diameter and ø4 inner diameter (max. operating pressure 0.6MPa)
Alarm indicator (*) (Note 7)	1 small amber LED indicator (24 VDC supply required)
Brake release switch (Note 8)	Brake release switch for vertical axis fall prevention
Allowable load moment	8.3N-m
Ambient temp./humidity	Temperature: 0~40°C, Humidity: 20~85% RH or less (Non-condensing)
Ingress protection	IP20
Unit weight	3-axis specification: 25.5kg, 4-axis specification: 27kg
Noise (Note 9)	80dB or less

(*) An alarm indicator is equipped when the LED option is selected.

Options

Name	Model name	Reference page
Indicator	LED	See P.6

Single Unit Options

Name	Model name	Reference page
Flange	IX-FL-1	See P.6

(Note) Please purchase separately.

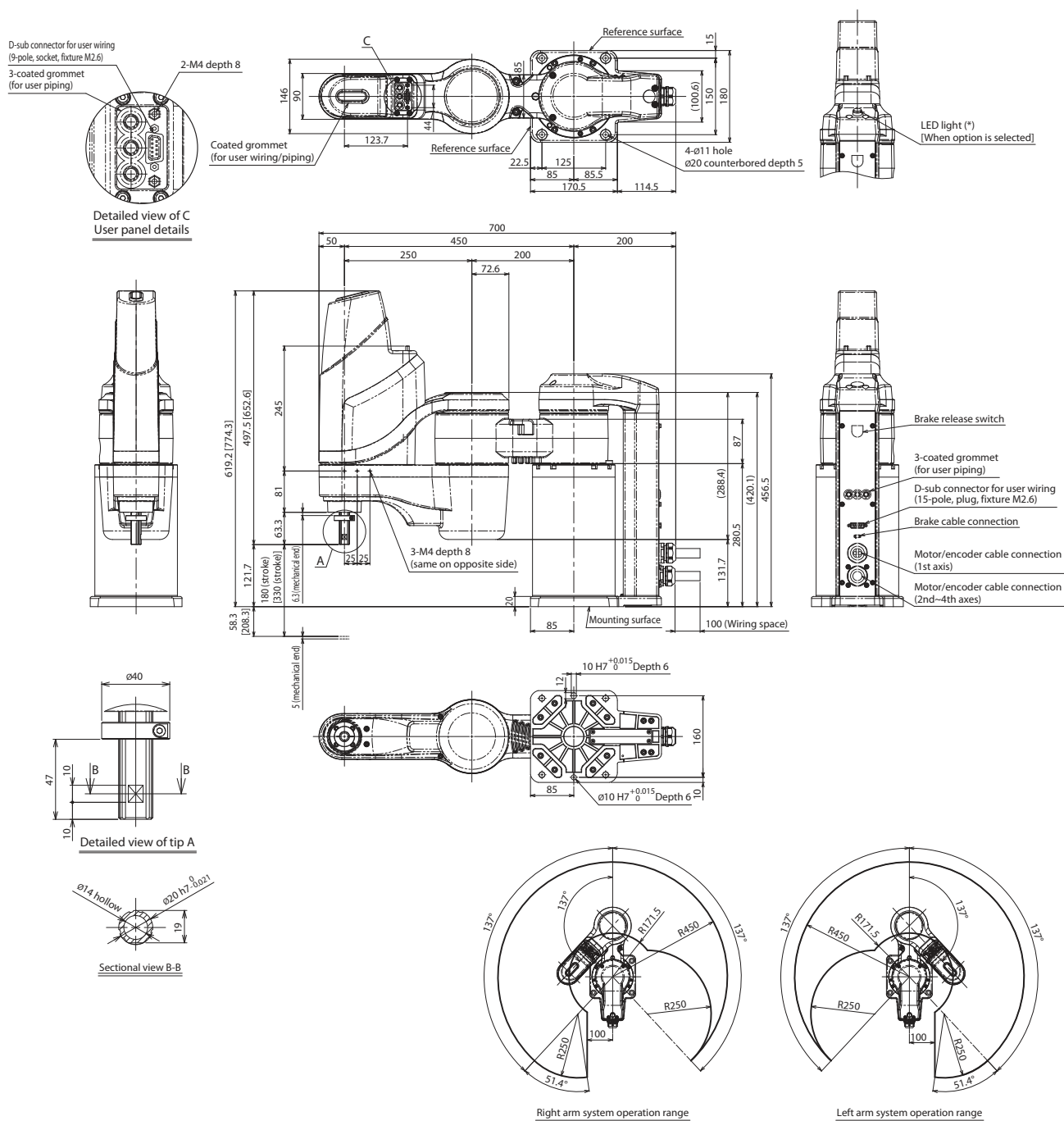
Dimensions

CAD drawings can be downloaded from our website.
www.intelligentactuator.de

2D
CAD

3D
CAD


* Values in [] are dimensions for vertical axis of 330mm.



(*) To operate the LED, wire a controller output to apply 24VDC to the LED terminal of the user wiring.

Applicable Controllers

The IXA series actuators can be operated by the controllers indicated below. Please select the type depending on your intended use.

Name	External view	Max. number of connectable axes	Power supply voltage	Control method				Maximum number of positioning points	Reference page
				Positioner	Pulse-train	Program	Network * option		
XSEL-RAX/SAX		8	Three-phase 230VAC	—	—	•	DeviceNet CC-Link EtherNet/IP EtherCAT	36666 (Depending on the type)	See P.24

IXA - 3NNN6018 / 4NNN6018 3NNN6033 / 4NNN6033

Standard Type	Battery-less Absolute	Arm Length: 600 mm	Vertical Axis: 180/330 mm
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Model Specification Items	IXA	□	NNN	60	□	-	□	-	T2	-	□
	Series	- Number of Axes	Type	Arm Length	Vertical Axis Stroke	-	Cable Length	-	Applicable Controllers	-	Options
		3: 3-axis 4: 4-axis	Standard type	60 : 600mm	18 : 180mm 33 : 330mm		N : No cable 5L : 5m 10L : 10m □L : Specified length (1m increments)		T2 : XSEL-RAX/SAX		Refer to Options table below.

* Does not include a controller.



Please refer to P.19 for (Note 1) to (Note 9).

(Note 10) The maximum set value for acceleration/deceleration varies depending on the weight of the object being transported, the traverse distance, and the location. Operating continuously at the maximum set value could cause an overload error. For continuous operation, either lower the acceleration/deceleration value or refer to the duty (guideline) and set a stop time after acceleration/deceleration.

(Note 11) If the motor or controller is replaced, absolute reset must be performed. An adjustment jig (option model: JG-IXA1) will be required to perform absolute reset on the rotational axis (4th axis).

Model / Specifications

Model	Axis configuration		Arm length (mm)	Motor (W)	Operation range	Positioning repeatability (Note 1)	Maximum operation speed during PTP operation (Note 2)	Standard cycle time (s) (Note 3)	Continuous cycle time (s) (Note 3)	Payload (kg) (Note 4)	3rd axis (vertical axis) push force control range (N)*		4th axis allowable load	
											Upper limit (Note 5)	Lower limit (Note 5)	Allowable inertia moment (kg-m²) (Note 6)	Allowable torque (N-m)
[3-axis specification] IXA-3NNN6018-①-T2-② [IXA-3NNN6033-①-T2-②]	1-axis	1st arm	350	600	±137 degrees	±0.010mm	5934mm/s (composite speed) 400/400 deg/s (1st/2nd arm speed)	0.38	0.55	6	110.0	25.0	0.06	3.2
	2-axis	2nd arm	250	200	±140 degrees									
[4-axis specification] IXA-4NNN6018-①-T2-② [IXA-4NNN6033-①-T2-②]	3-axis	Vertical axis	-	200	180mm [330mm]	±0.010mm	1600mm/s							
	4-axis	Rotational axis	-	100	±360 degrees	±0.005 deg.	2000 deg/s							

Legend: ① Cable length ② Options

Note: • The SCARA robot cannot operate continuously at 100% speed/acceleration. Refer to the Reference Data from P.20 for feasible operating conditions.
• Values in [] are for models with vertical axis of 330mm. Other specifications are the same for both 180mm and 330mm vertical axis models.
* Speed limitation applies to the push force. Contact IAI for details.

Cable Length

Type	Cable code
Standard type	5L(5m)
	10L(10m)
Specified length	1L(1m)~4L(4m)
	6L(6m)~9L(9m)
	11L(11m)
	12L(12m)
	13L(13m)
	14L(14m)
	15L(15m)

[3-axis specification] - Motor cables: 3 - Encoder cables: 3 - Brake cable: 1
[4-axis specification] - Motor cables: 4 - Encoder cables: 4 - Brake cable: 1

Common Specifications

Item	Description
Encoder Type	Battery-less Absolute Encoder
User wiring	10-core (9-core + shield) AWG24 (rated 30V/max 1A)
User piping	3 air tubes with ø6 outer diameter and ø4 inner diameter (max. operating pressure 0.6MPa)
Alarm indicator (*) (Note 7)	1 small amber LED indicator (24 VDC supply required)
Brake release switch (Note 8)	Brake release switch for vertical axis fall prevention
Allowable load moment	8.3N-m
Ambient temp./humidity	Temperature: 0~40°C, Humidity: 20~85% RH or less (Non-condensing)
Ingress protection	IP20
Unit weight	3-axis specification: 30.5kg, 4-axis specification: 32.0kg
Noise (Note 9)	80dB or less

(*) An alarm indicator is equipped when the LED option is selected.

Options

Name	Model name	Reference page
Indicator	LED	See P.6

Single Unit Options

Name	Model name	Reference page
Flange	IX-FL-1	See P.6

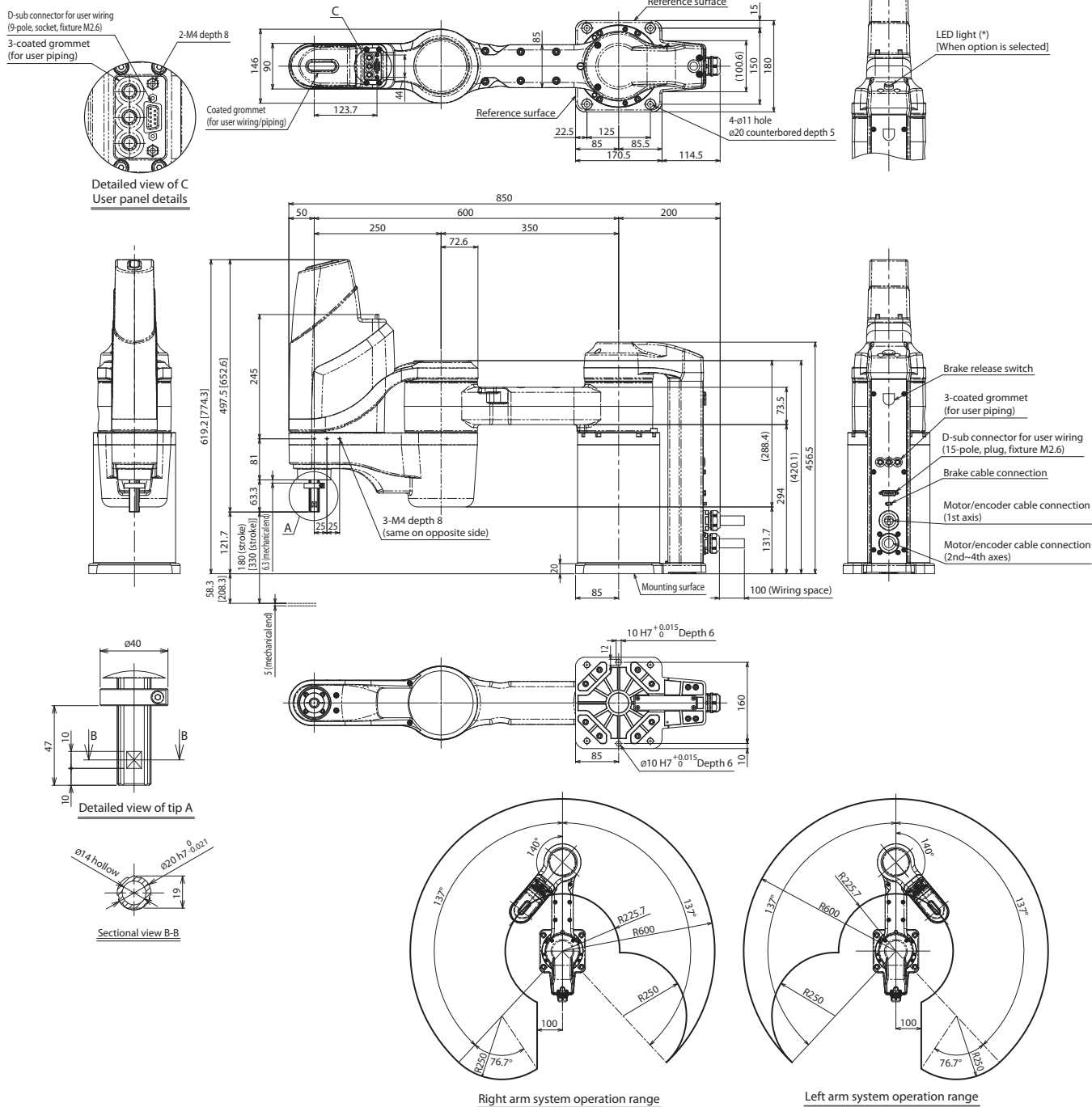
(Note) Please purchase separately.

Dimensions

CAD drawings can be downloaded from our website.
www.intelligentactuator.de



* Values in [] are dimensions for vertical axis of 330mm.



(*) To operate the LED, wire a controller output to apply 24VDC to the LED terminal of the user wiring.

Applicable Controllers

The IXA series actuators can be operated by the controllers indicated below. Please select the type depending on your intended use.

Name	External view	Max. number of connectable axes	Power supply voltage	Positioner	Pulse-train	Control method	Network * option	Maximum number of positioning points	Reference page
XSEL-RAX/SAX		8	Three-phase 230VAC	—	—	•	DeviceNet CC-Link EtherNet/IP EtherCAT	36666 (Depending on the type)	See P.24

IXA - 3NSN3015 / 4NSN3015

High-Speed Type
Battery-less Absolute
Arm Length: 300 mm
Vertical Axis: 150 mm

Model Specification Items

IXA	-	<input type="checkbox"/>	NSN	30	15	-	<input type="checkbox"/>	-	T2
Series	-	Number of Axes	Type	Arm Length	Vertical Axis Stroke	-	Cable Length	-	Applicable Controllers
	-	3: 3-axis 4: 4-axis	High-speed type	30 : 300mm	15 : 150mm		N : No cable 5L : 5m 10L : 10m <input type="checkbox"/> L : Specified length (1m increments)		T2 : XSEL-RAX/SAX

* Does not include a controller.



Please refer to P.19 for (Note 1) to (Note 9).

(Note 10) The maximum set value for acceleration/deceleration varies depending on the weight of the object being transported, the traverse distance, and the location. Operating continuously at the maximum set value could cause an overload error. For continuous operation, either lower the acceleration/deceleration value or refer to the duty (guideline) and set a stop time after acceleration/deceleration.

(Note 11) If the motor or controller is replaced, absolute reset must be performed. An adjustment jig (option model: JG-IXA1) will be required to perform absolute reset on the rotational axis (4th axis).

Model / Specifications

Model	Axis configuration		Arm length (mm)	Motor (W)	Operation range	Positioning repeatability (Note 1)	Maximum operation speed during PTP operation (Note 2)	Standard cycle time (s) (Note 3)	Continuous cycle time (s) (Note 3)	Payload (kg) (Note 4)	3rd axis (vertical axis) push force control range (N)*		4th axis allowable load	
											Upper limit (Note 5)	Lower limit (Note 5)	Allowable inertia moment (kg-m ²) (Note 6)	Allowable torque (N-m)
[3-axis specification] IXA-3NSN3015- <input type="checkbox"/> - T2	1-axis	1st arm	120	600	±135 degrees	±0.010mm	6032mm/s (composite speed) 720/720 deg/s (1st/2nd arm speed)	0.26	0.45	8	100.0	25.0	0.12	3.2
	2-axis	2nd arm	180	400	±142 degrees									
[4-axis specification] IXA-4NSN3015- <input type="checkbox"/> - T2	3-axis	Vertical axis	-	150	150mm	±0.010mm	1600mm/s	0.26	0.45	8	100.0	25.0	0.12	3.2
	4-axis	Rotational axis	-	100	±360 degrees	±0.005 deg.	1600 deg/s							

Legend: ☐ Cable length

Note: The SCARA robot cannot operate continuously at 100% speed/acceleration. Refer to the Reference Data from P.20 for feasible operating conditions.
* Speed limitation applies to the push force. Contact IAI for details.

Cable Length

Type	Cable code
Standard type	5L (5m)
	10L (10m)
Specified length	1L (1m)~ 4L (4m)
	6L (6m)~ 9L (9m)
	11L (11m)
	12L (12m)
	13L (13m)
	14L (14m)
	15L (15m)

[3-axis specification] · Motor cables: 3 · Encoder cables: 3 · Brake cable: 1
[4-axis specification] · Motor cables: 4 · Encoder cables: 4 · Brake cable: 1

Common Specifications

Item	Description
Encoder Type	Battery-less Absolute Encoder
User wiring	10-core (9-core + shield) AWG24 (rated 30V/max 1A)
User piping	3 air tubes with ø4 outer diameter and ø2.5 inner diameter (max. operating pressure 0.6MPa)
Alarm indicator (Note 7)	1 small amber LED indicator (24 VDC supply required)
Brake release switch (Note 8)	Brake release switch for vertical axis fall prevention
Allowable load moment	12N-m
Ambient temp./humidity	Temperature: 0~40°C, Humidity: 20~85% RH or less (Non-condensing)
Ingress protection	IP20
Unit weight	3-axis specification: 26.5kg, 4-axis specification: 27.5kg
Noise (Note 9)	80dB or less

Single Unit Options

Name	Model name	Reference page
Flange	IX-FL-1	See P.6

(Note) Please purchase separately.

IXA - 3NSN4518 / 4NSN4518 3NSN4533 / 4NSN4533

High-Speed Type
Battery-less Absolute
Arm Length: 450 mm
Vertical Axis: 180/330 mm

Model Specification Items	IXA	NSN	45	T2
Series	3: 3-axis 4: 4-axis	Type	High-speed type	Applicable Controllers
Arm Length	45 : 450mm	Vertical Axis Stroke	18 : 180mm 33 : 330mm	Cable Length
				N : No cable 5L : 5m 10L : 10m □L : Specified length (1m increments)

* Does not include a controller.



Please refer to P.19 for (Note 1) to (Note 9).

(Note 10) The maximum set value for acceleration/deceleration varies depending on the weight of the object being transported, the traverse distance, and the location. Operating continuously at the maximum set value could cause an overload error. For continuous operation, either lower the acceleration/deceleration value or refer to the duty (guideline) and set a stop time after acceleration/deceleration.

(Note 11) If the motor or controller is replaced, absolute reset must be performed.

An adjustment jig (option model: JG-IXA1) will be required to perform absolute reset on the rotational axis (4th axis).

Model / Specifications

Model	Axis configuration		Arm length (mm)	Motor (W)	Operation range	Positioning repeatability (Note 1)	Maximum operation speed during PTP operation (Note 2)	Standard cycle time (s) (Note 3)	Continuous cycle time (s) (Note 3)	Payload (kg) (Note 4)	3rd axis (vertical axis) push force control range (N)*		4th axis allowable load	
											Upper limit (Note 5)	Lower limit (Note 5)	Allowable inertia moment (kg-m²) (Note 6)	Allowable torque (N-m)
[3-axis specification] IXA-3NSN4518-□ - T2 [IXA-3NSN4533-□ - T2]	1-axis	1st arm	200	600	±137 degrees	±0.010mm	8282 mm/s (composite speed) 610/800 deg/s (1st/2nd arm speed)	0.26	0.45	10	110.0	25.0	0.12	3.2
	2-axis	2nd arm	250	400	±137 degrees									
[4-axis specification] IXA-4NSN4518-□ - T2 [IXA-4NSN4533-□ - T2]	3-axis	Vertical axis	-	200	180mm [330mm]	±0.010mm	1600mm/s							
	4-axis	Rotational axis	-	100	±360 degrees	±0.005 deg.	2000 deg/s							

Legend: □ Cable length

Note: • The SCARA robot cannot operate continuously at 100% speed/acceleration. Refer to the Reference Data from P.20 for feasible operating conditions.
• Values in [] are for models with vertical axis of 330mm. Other specifications are the same for both 180mm and 330mm vertical axis models.
* Speed limitation applies to the push force. Contact IAI for details.

Cable Length

Type	Cable code
Standard type	5L(5m)
	10L(10m)
Specified length	1L(1m)~4L(4m)
	6L(6m)~9L(9m)
	11L(11m)
	12L(12m)
	13L(13m)
	14L(14m)
	15L(15m)

[3-axis specification] · Motor cables: 3 · Encoder cables: 3 · Brake cable: 1
[4-axis specification] · Motor cables: 4 · Encoder cables: 4 · Brake cable: 1

Common Specifications

Item	Description
Encoder Type	Battery-less Absolute Encoder
User wiring	10-core (9-core + shield) AWG24 (rated 30V/max 1A)
User piping	3 air tubes with ø6 outer diameter and ø4 inner diameter (max. operating pressure 0.6MPa)
Alarm indicator (Note 7)	1 small amber LED indicator (24 VDC supply required)
Brake release switch (Note 8)	Brake release switch for vertical axis fall prevention
Allowable load moment	8.3N-m
Ambient temp./humidity	Temperature: 0~40°C, Humidity: 20~85% RH or less (Non-condensing)
Ingress protection	IP20
Unit weight	3-axis specification: 31.0kg, 4-axis specification: 32.5kg
Noise (Note 9)	80dB or less

Single Unit Options

Name	Model name	Reference page
Flange	IX-FL-1	See P.6

(Note) Please purchase separately.

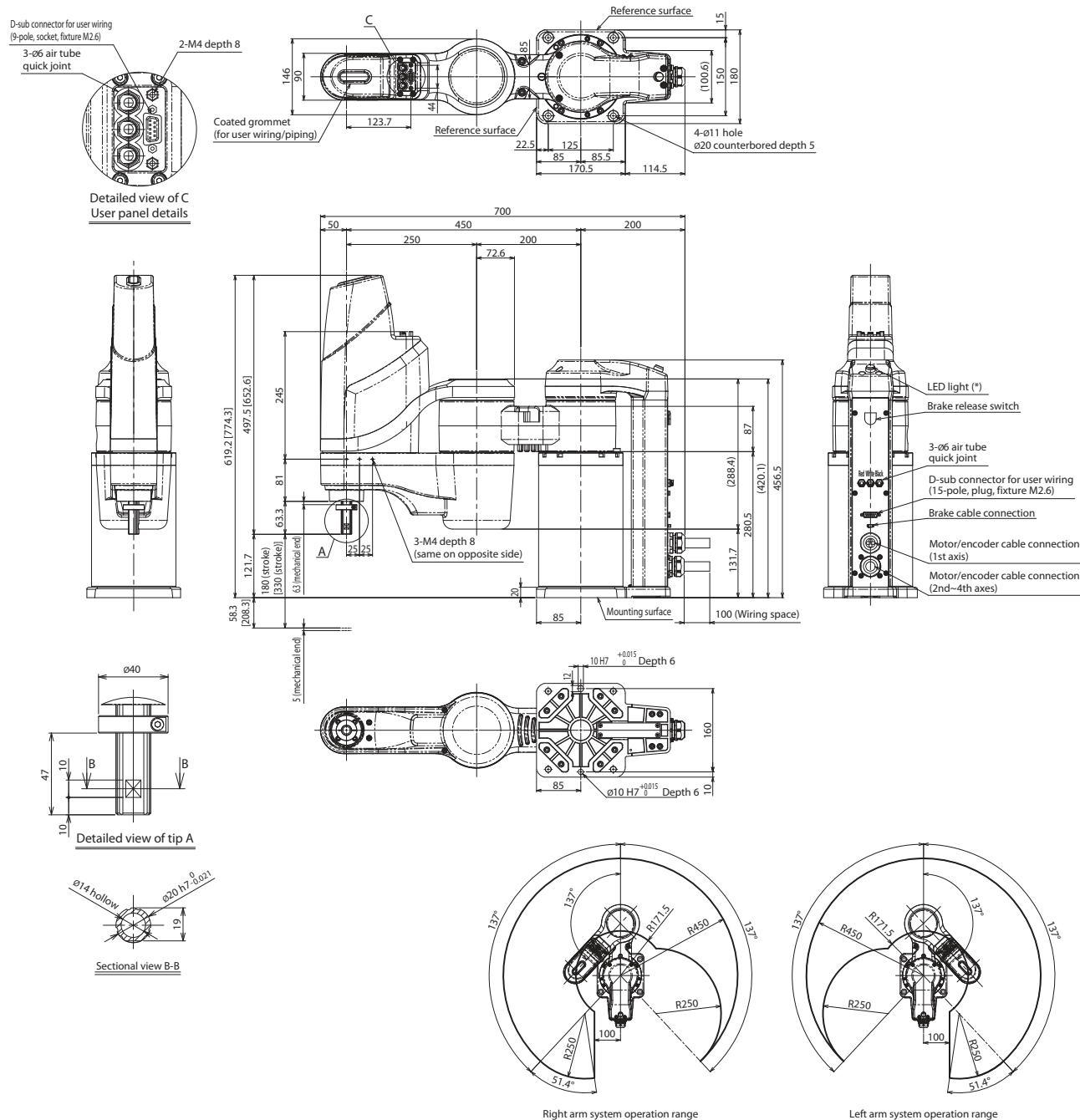
Dimensions

CAD drawings can be downloaded from our website.
www.intelligentactuator.de

2D
CAD

3D
CAD

* Values in [] are dimensions for vertical axis of 330mm.



(*) To operate the LED, wire a controller output to apply 24VDC to the LED terminal of the user wiring.

Applicable Controllers

The IXA series actuators can be operated by the controllers indicated below. Please select the type depending on your intended use.

Name	External view	Max. number of connectable axes	Power supply voltage	Positioner	Pulse-train	Control method	Network * option	Maximum number of positioning points	Reference page
XSEL-RAX3/SAX3		3	Three-phase 230VAC	-	-	●	DeviceNet CC-Link EtherCAT 	41250 (Depending on the type)	See P.24
XSEL-RAX4/SAX4		4						36666 (Depending on the type)	

IXA - 3NSN6018 / 4NSN6018 3NSN6033 / 4NSN6033

High-Speed
Type

Battery-less
Absolute

Arm Length:
600
mm

Vertical Axis:
180/330
mm

Model Specification Items	IXA	NSN	60	T2
Series	3: 3-axis 4: 4-axis	Type	High-speed type	Arm Length
Number of Axes	3: 3-axis 4: 4-axis	Type	High-speed type	Arm Length
Type	High-speed type	Arm Length	60 : 600mm	Vertical Axis Stroke
Arm Length	60 : 600mm	Vertical Axis Stroke	18 : 180mm 33 : 330mm	Cable Length
Vertical Axis Stroke	18 : 180mm 33 : 330mm	Cable Length	N : No cable 5L : 5m 10L : 10m □ L : Specified length (1m increments)	Applicable Controllers
Cable Length	N : No cable 5L : 5m 10L : 10m □ L : Specified length (1m increments)	Applicable Controllers	T2 : XSEL-RAX/SAX	

* Does not include a controller.



Please refer to P.19 for (Note 1) to (Note 9).

(Note 10) The maximum set value for acceleration/deceleration varies depending on the weight of the object being transported, the traverse distance, and the location. Operating continuously at the maximum set value could cause an overload error. For continuous operation, either lower the acceleration/deceleration value or refer to the duty (guideline) and set a stop time after acceleration/deceleration.

(Note 11) If the motor or controller is replaced, absolute reset must be performed.

An adjustment jig (option model: JG-IXA1) will be required to perform absolute reset on the rotational axis (4th axis).

Model / Specifications

Model	Axis configuration		Arm length (mm)	Motor (W)	Operation range	Positioning repeatability (Note 1)	Maximum operation speed during PTP operation (Note 2)	Standard cycle time (s) (Note 3)	Continuous cycle time (s) (Note 3)	Payload (kg) (Note 4)	3rd axis (vertical axis) push force control range (N)*		4th axis allowable load	
											Upper limit (Note 5)	Lower limit (Note 5)	Allowable inertia moment (kg-m ²) (Note 6)	Allowable torque (N-m)
[3-axis specification] IXA-3NSN6018-□ - T2 [IXA-3NSN6033-□ - T2]	1-axis	1st arm	350	750	±137 degrees	±0.010mm	6414 mm/s (composite speed) 300/750 deg/s (1st/2nd arm speed)	0.26	0.45	12	110.0	25.0	0.12	3.2
	2-axis	2nd arm	250	400	±140 degrees									
[4-axis specification] IXA-4NSN6018-□ - T2 [IXA-4NSN6033-□ - T2]	3-axis	Vertical axis	-	200	180mm [330mm]	±0.010mm	1600mm/s	0.26	0.45	12	110.0	25.0	0.12	3.2
	4-axis	Rotational axis	-	100	±360 degrees	±0.005 deg.	2000 deg/s							

Legend: □ Cable length

Note: • The SCARA robot cannot operate continuously at 100% speed/acceleration. Refer to the Reference Data from P.20 for feasible operating conditions.
• Values in [] are for models with vertical axis of 330mm. Other specifications are the same for both 180mm and 330mm vertical axis models.

* Speed limitation applies to the push force. Contact IAI for details.

Cable Length

Type	Cable code
Standard type	5L(5m)
	10L(10m)
Specified length	1L(1m)~4L(4m)
	6L(6m)~9L(9m)
	11L(11m)
	12L(12m)
	13L(13m)
	14L(14m)
	15L(15m)

[3-axis specification] - Motor cables: 3 - Encoder cables: 3 - Brake cable: 1
[4-axis specification] - Motor cables: 4 - Encoder cables: 4 - Brake cable: 1

Common Specifications

Item	Description
Encoder Type	Battery-less Absolute Encoder
User wiring	10-core (9-core + shield) AWG24 (rated 30V/max 1A)
User piping	3 air tubes with ø6 outer diameter and ø4 inner diameter (max. operating pressure 0.6MPa)
Alarm indicator (Note 7)	1 small amber LED indicator (24 VDC supply required)
Brake release switch (Note 8)	Brake release switch for vertical axis fall prevention
Allowable load moment	8.3N-m
Ambient temp/humidity	Temperature: 0~40°C, Humidity: 20~85% RH or less (Non-condensing)
Ingress protection	IP20
Unit weight	3-axis specification: 31.5kg, 4-axis specification: 33.0kg
Noise (Note 9)	80dB or less

Single Unit Options

Name	Model name	Reference page
Flange	IX-FL-1	See P.6

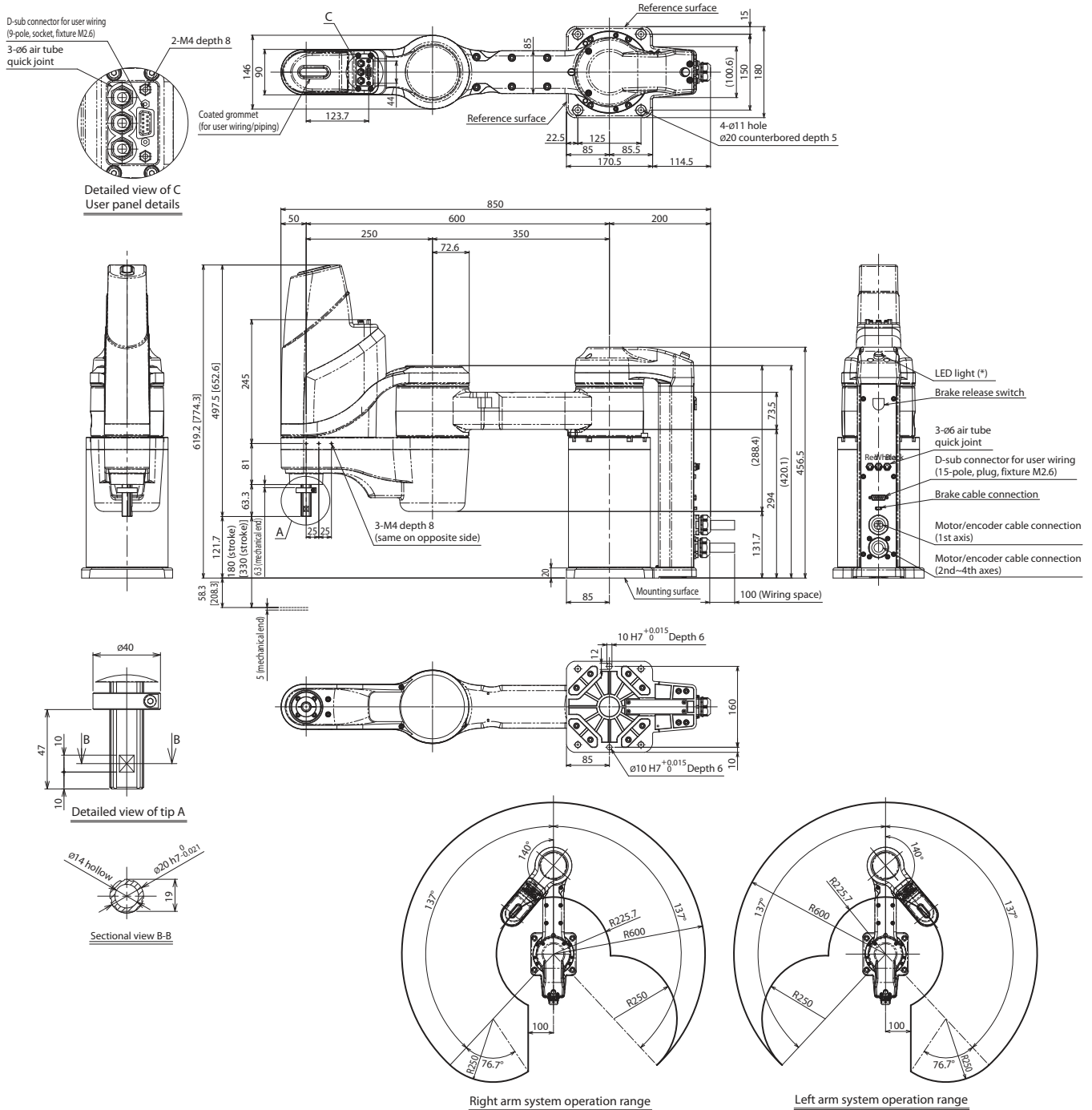
(Note) Please purchase separately.

Dimensions

CAD drawings can be downloaded from our website.
www.intelligentactuator.de










* Values in [] are dimensions for vertical axis of 330mm.



(*) To operate the LED, wire a controller output to apply 24VDC to the LED terminal of the user wiring.

Applicable Controllers

The IXA series actuators can be operated by the controllers indicated below. Please select the type depending on your intended use.

Name	External view	Max. number of connectable axes	Power supply voltage	Control method				Maximum number of positioning points	Reference page
				Positioner	Pulse-train	Program	Network * option		
XSEL-RAX3/SAX3		3	Three-phase 230VAC	—	—		    	41250 (Depending on the type)	See P.24
XSEL-RAX4/SAX4		4						36666 (Depending on the type)	

IXA - 4NSW3015

Dust/
Splash-
proof

Battery-
less
Absolute

Arm Length:
300
mm

Vertical Axis:
150
mm

Model Specification Items							
IXA	-	4	NSW	30	15	-	T2
Series	-	Number of Axes	Type	Arm Length	Vertical Axis Stroke	-	Cable Length
		4: 4-axis	Dust/splash-proof high-speed type	30 : 300mm	15 : 150mm		N : No cable 5L : 5m 10L : 10m □ L : Specified length (1m increments)
							Applicable Controllers T2 : XSEL-RAX/SAX

* Does not include a controller.



**Coming
soon**

* Please contact IAI for availability and further details.



Please refer to P.19 for (Note 1) to (Note 9).

(Note 10) The maximum set value for acceleration/deceleration varies depending on the weight of the object being transported, the traverse distance, and the location. Operating continuously at the maximum set value could cause an overload error. For continuous operation, either lower the acceleration/deceleration value or refer to the duty (guideline) and set a stop time after acceleration/deceleration.

(Note 11) Do not attempt to apply direct water jet on the bellows. Connect an air tube with ø16 to the air supply and exhaust bellows joint and release the tube end to a space in clean air with no humidity.

Model / Specifications

Model	Axis configuration		Arm length (mm)	Motor (W)	Operation range	Positioning repeatability (Note 1)	Maximum operation speed during PTP operation (Note 2)	Standard cycle time (s) (Note 3)	Continuous cycle time (s) (Note 3)	Payload (kg) (Note 4)	3rd axis (vertical axis) push force control range (N)*		4th axis allowable load	
											Upper limit (Note 5)	Lower limit (Note 5)	Allowable inertia moment (kg-m²) (Note 6)	Allowable torque (N-m)
IXA-4NSW3015 - ① - T2	1-axis	1st arm	155	600	±121 degrees	±0.010mm	5126mm/s (composite speed)	0.38	0.69	6	98.0	23.0	0.12	4.5
	2-axis	2nd arm	145	400	±125 degrees		690/690 deg/s (1st/2nd arm speed)							
	3-axis	Vertical axis	-	200	150mm	±0.010mm	1500mm/s							
	4-axis	Rotational axis	-	100	±360 degrees	±0.005 deg.	1600 deg/s							

Legend: ① Cable length

Note: The SCARA robot cannot operate continuously at 100% speed/acceleration. Refer to the Reference Data from P.20 for feasible operating conditions.
* Speed limitation applies to the push force. Contact IAI for details.

Cable Length

Type	Cable code
Standard type	5L(5m)
	10L(10m)
Specified length	1L(1m)~4L(4m)
	6L(6m)~9L(9m)
	11L(11m)
	12L(12m)
	13L(13m)
	14L(14m)
	15L(15m)

· Motor cables: 4 · Encoder cables: 4 · Brake cable: 1

Common Specifications

Item	Description
Encoder Type	Battery-less Absolute Encoder
User wiring	10-core (9-core + shield) AWG24 (rated 30V/max 1A)
User piping	3 air tubes with ø4 outer diameter and ø2.5 inner diameter (max. operating pressure 0.6MPa)
Alarm indicator (Note 7)	No alarm lamp
Brake release switch (Note 8)	Brake release switch for vertical axis fall prevention
Allowable load moment	7.1N-m
Ambient temp./humidity	Temperature: 0~40°C, Humidity: 20~85% RH or less (Non-condensing)
Ingress protection	IP65 (except for bellows)
Air purge pressure	35kPa
Unit weight	48.0kg
Noise (Note 9)	80dB or less

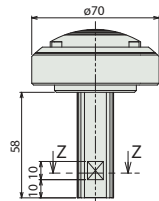
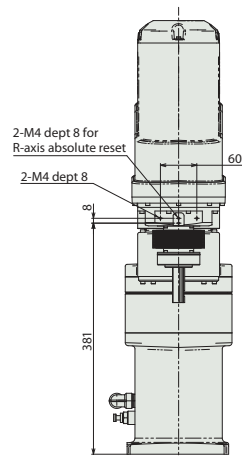
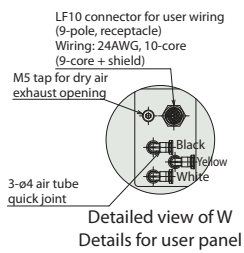
Single Unit Options

Name	Model name	Reference page
Flange	IX-FL-1	See P.6
Metal cap for user wiring	IXA-MC-1	See P.6

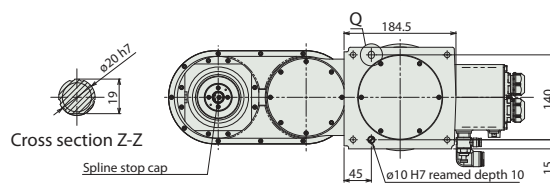
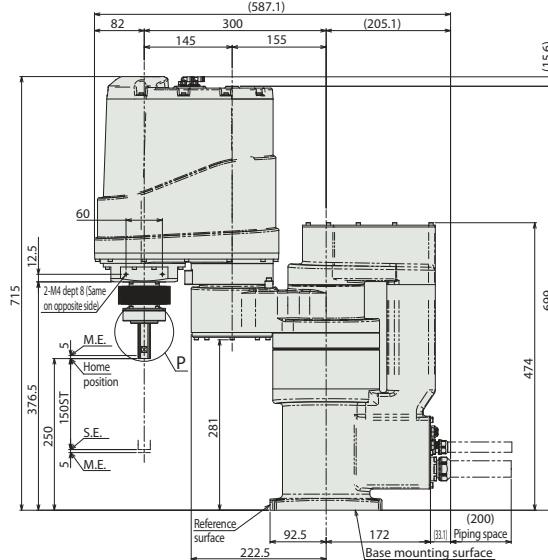
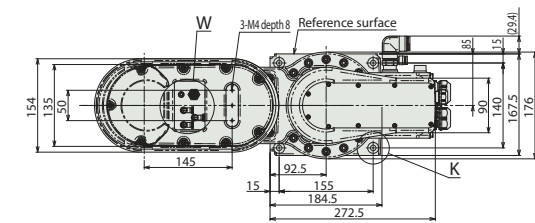
(Note) Please purchase separately.

Dimensions

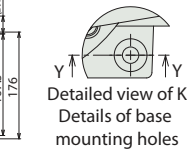
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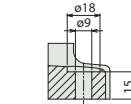
Detailed view of P



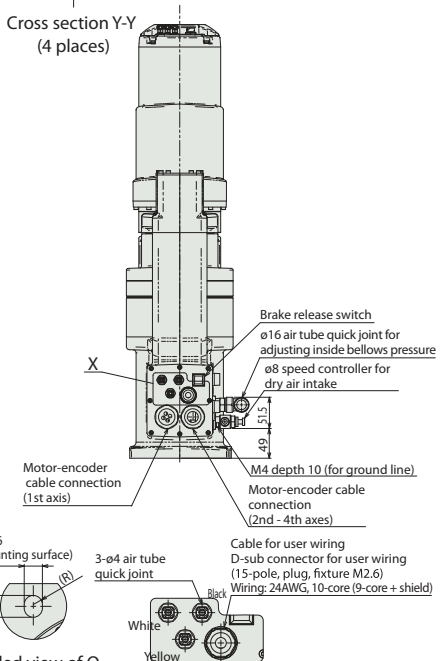
Cross section Z-Z



Detailed view of K
Details of base
mounting holes



Cross section
(4 places)



Motor-encoder
cable connection
(1st axis)

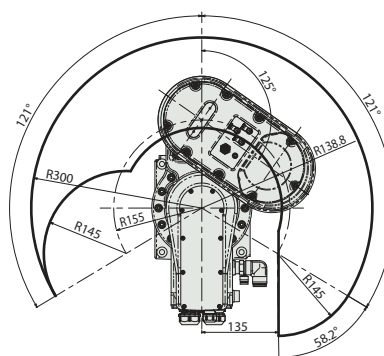
M4 depth 10 (for ground line)
Motor-encoder cable
connection
(2nd - 4th axes)

Cable for user wiring
D-sub connector for user wiring
(15-pole, plug, fixture M2.6)
Wiring: 24AWG, 10-core (9-core + shield)

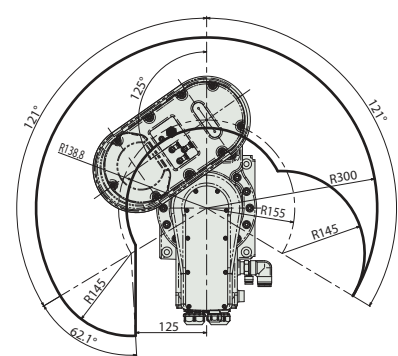
White

Yellow

Detailed view of X
Details of rear panel







Left arm system operation range



Right arm system operation range

Applicable Controllers

The IXA series actuators can be operated by the controllers indicated below. Please select the type depending on your intended use.

Name	External view	Max. number of connectable axes	Power supply voltage	Control method				Maximum number of positioning points	Reference page
				Positioner	Pulse-train	Program	Network * option		
XSEL-RAX4/SAX4		4	Three-phase 230VAC	—	—	●	DeviceNet   EtherNet/IP® 	36666 (Depending on the type)	See P.24

IXA - 4NSW4518 / 4NSW4533

Dust/
Splash-
proof

Battery-
less
Absolute

Arm Length:
450
mm

Vertical Axis:
180/330
mm

Model Specification Items

IXA	4	NSW	45			T2
Series	Number of Axes	Type	Arm Length	Vertical Axis Stroke	Cable Length	Applicable Controllers
	4: 4-axis	Dust-/splash-proof high-speed type	45 : 450mm	18 : 180mm 33 : 330mm	N : No cable 5L : 5m 10L : 10m □ L : Specified length (1m increments)	T2 : XSEL-RAX/SAX

* Does not include a controller.



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soon**

* Please contact IAI for availability and further details.



Please refer to P.19 for (Note 1) to (Note 9).

(Note 10) The maximum set value for acceleration/deceleration varies depending on the weight of the object being transported, the traverse distance, and the location. Operating continuously at the maximum set value could cause an overload error. For continuous operation, either lower the acceleration/deceleration value or refer to the duty (guideline) and set a stop time after acceleration/deceleration.

(Note 11) Do not attempt to apply direct water jet on the bellows. Connect an air tube with ø16 to the air supply and exhaust bellows joint and release the tube end to a space in clean air with no humidity.

Model / Specifications

Model	Axis configuration		Arm length (mm)	Motor (W)	Operation range	Positioning repeatability (Note 1)	Maximum operation speed during PTP operation (Note 2)	Standard cycle time (s) (Note 3)	Continuous cycle time (s) (Note 3)	Payload (kg) (Note 4)	3rd axis (vertical axis) push force control range (N)*		4th axis allowable load	
											Upper limit (Note 5)	Lower limit (Note 5)	Allowable inertia moment (kg-m²) (Note 6)	Allowable torque (N-m)
IXA-4NSW4518-① - T2 [IXA-4NSW4533 - ① - T2]	1-axis	1st arm	200	600	±137 degrees	±0.010mm	6981mm/s (composite speed) 500/700 deg/s (1st/2nd arm speed)	0.38	0.55	8	110.0	25.0	0.12	3.2
	2-axis	2nd arm	250	400	±133 degrees									
	3-axis	Vertical axis	-	200	180mm [330mm]	±0.010mm	1600mm/s							
	4-axis	Rotational axis	-	100	±360 degrees	±0.005 deg.	2000 deg/s							

Legend: ① Cable length

Note: • The SCARA robot cannot operate continuously at 100% speed/acceleration. Refer to the Reference Data from P.20 for feasible operating conditions.
• Values in [] are for models with vertical axis of 330mm. Other specifications are the same for both 180mm and 330mm vertical axis models.
* Speed limitation applies to the push force. Contact IAI for details.

Cable Length

Type	Cable code
Standard type	5L(5m)
	10L(10m)
Specified length	1L(1m)~4L(4m)
	6L(6m)~9L(9m)
	11L(11m)
	12L(12m)
	13L(13m)
	14L(14m)
	15L(15m)

• Motor cables: 4 • Encoder cables: 4 • Brake cable: 1

Common Specifications

Item	Description
Encoder Type	Battery-less Absolute Encoder
User wiring	10-core (9-core + shield) AWG24 (rated 30V/max 1A)
User piping	3 air tubes with ø6 outer diameter and ø4 inner diameter (max. operating pressure 0.6MPa)
Alarm indicator (Note 7)	No alarm lamp
Brake release switch (Note 8)	Brake release switch for vertical axis fall prevention
Allowable load moment	9.6N-m
Ambient temp./humidity	Temperature: 0~40°C, Humidity: 20~85% RH or less (Non-condensing)
Ingress protection	IP65 (except for bellows)
Air purge pressure	35kPa
Unit weight	52.0kg
Noise (Note 9)	80dB or less

Single Unit Options

Name	Model name	Reference page
Flange	IX-FL-1	See P.6
Metal cap for user wiring	IXA-MC-1	See P.6

(Note) Please purchase separately.

IXA - 4NSW6018 / 4NSW6033

Dust/ Splash- proof	Battery- less Absolute	Arm Length: 600 mm	Vertical Axis: 180/330 mm
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Model Specification Items	IXA	4	NSW	60			T2
Series		Number of Axes	Type	Arm Length	Vertical Axis Stroke	Cable Length	Applicable Controllers
		4: 4-axis	Dust-/splash-proof high-speed type	60 : 600mm	18 : 180mm 33 : 330mm	N : No cable 5L : 5m 10L : 10m □ L : Specified length (1m increments)	T2 : XSEL-RAX/SAX

* Does not include a controller.



Coming soon

* Please contact IAI for availability and further details.



Please refer to P.19 for (Note 1) to (Note 9).
(Note 10) The maximum set value for acceleration/deceleration varies depending on the weight of the object being transported, the traverse distance, and the location. Operating continuously at the maximum set value could cause an overload error. For continuous operation, either lower the acceleration/deceleration value or refer to the duty (guideline) and set a stop time after acceleration/deceleration.
(Note 11) Do not attempt to apply direct water jet on the bellows. Connect an air tube with ø16 to the air supply and exhaust bellows joint and release the tube end to a space in clean air with no humidity.

Model / Specifications

Model	Axis configuration		Arm length (mm)	Motor (W)	Operation range	Positioning repeatability (Note 1)	Maximum operation speed during PTP operation (Note 2)	Standard cycle time (s) (Note 3)	Continuous cycle time (s) (Note 3)	Payload (kg) (Note 4)	3rd axis (vertical axis) push force control range (N)*		4th axis allowable load	
											Upper limit (Note 5)	Lower limit (Note 5)	Allowable inertia moment (kg-m ²) (Note 6)	Allowable torque (N-m)
IXA-4NSW6018-① - T2 [IXA-4NSW6033-① - T2]	1-axis	1st arm	350	750	±137 degrees	±0.010mm	6039mm/s (composite speed) 285/700 deg/s (1st/2nd arm speed)	0.38	0.57	10	110.0	25.0	0.12	3.2
	2-axis	2nd arm	250	400	±133 degrees									
	3-axis	Vertical axis	-	200	180mm [330mm]	±0.010mm	1600mm/s							
	4-axis	Rotational axis	-	100	±360 degrees	±0.005 deg.	2000 deg/s							

Legend: ① Cable length

Note: • The SCARA robot cannot operate continuously at 100% speed/acceleration. Refer to the Reference Data from P.20 for feasible operating conditions.
• Values in [] are for models with vertical axis of 330mm. Other specifications are the same for both 180mm and 330mm vertical axis models.
* Speed limitation applies to the push force. Contact IAI for details.

Cable Length

Type	Cable code
Standard type	5L(5m)
	10L(10m)
Specified length	1L(1m)~4L(4m)
	6L(6m)~9L(9m)
	11L(11m)
	12L(12m)
	13L(13m)
	14L(14m)
	15L(15m)

• Motor cables: 4 • Encoder cables: 4 • Brake cable: 1

Single Unit Options

Name	Model name	Reference page
Flange	IX-FL-1	See P.6
Metal cap for user wiring	IXA-MC-1	See P.6

(Note) Please purchase separately.

Common Specifications

Item	Description
Encoder Type	Battery-less Absolute Encoder
User wiring	10-core (9-core + shield) AWG24 (rated 30V/max 1A)
User piping	3 air tubes with ø6 outer diameter and ø4 inner diameter (max. operating pressure 0.6MPa)
Alarm indicator (Note 7)	No alarm lamp
Brake release switch (Note 8)	Brake release switch for vertical axis fall prevention
Allowable load moment	9.6N-m
Ambient temp./humidity	Temperature: 0~40°C, Humidity: 20~85% RH or less (Non-condensing)
Ingress protection	IP65 (except for bellows)
Air purge pressure	35kPa
Unit weight	53.0kg
Noise (Note 9)	80dB or less

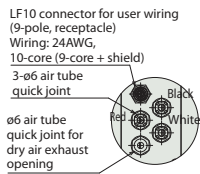
Dimensions

CAD drawings can be downloaded from our website.
www.intelligentactuator.de

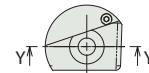
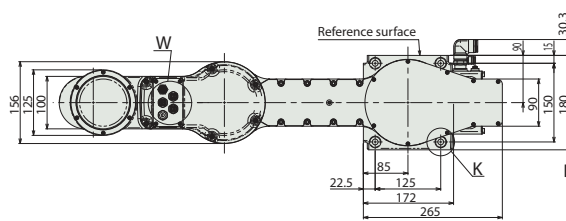


* Values in [] are dimensions for vertical axis of 330mm.

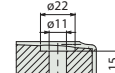
S.T.: Stroke
M.E.: Mechanical end
S.E.: Stroke end



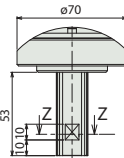
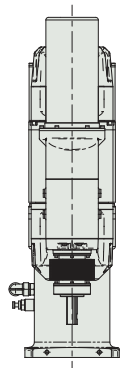
Detailed view of W
Details for user panel



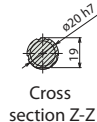
Detailed view of K
Details of base mounting holes



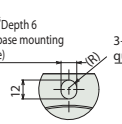
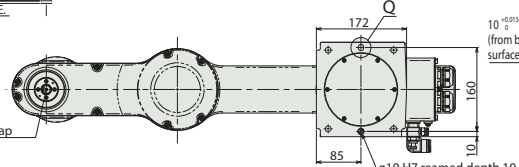
Cross section Y-Y
(4 places)



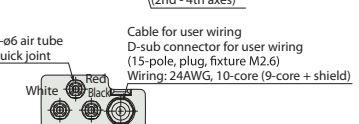
Detailed view of P



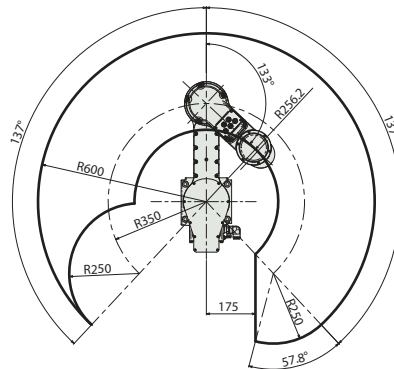
Cross section Z-Z



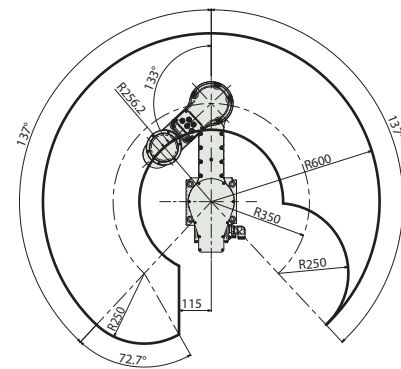
Detailed view of Q
Details of base oblong holes



Detailed view of X
Details of rear panel



Left arm system operation range



Right arm system operation range

Applicable Controllers

The IXA series actuators can be operated by the controllers indicated below. Please select the type depending on your intended use.

Name	External view	Max. number of connectable axes	Power supply voltage	Positioner	Pulse-train	Control method	Network * option	Maximum number of positioning points	Reference page
XSEL-RAX4/SAX4		4	Three-phase 230VAC	—	—	•	<div> DeviceNet CC-Link EtherCAT EtherNet/IP </div>	36666 (Depending on the type)	See P.24

Precautions

(Note 1) Positioning repeatability

This represents the ability to reproduce the same positioning result when an operation is repeated at the same speed, acceleration/deceleration, and arm system, between the operation start position and the target position (when ambient temperature is a constant 20°C). This is not absolute positioning accuracy. Note that when the arm system is switched while starting from multiple positions to the target position, or when the operation conditions (such as operation speed or acceleration/deceleration setting) are changed, the value may fall outside of the positioning repeatability specification value.

(Note 2) Maximum operation speed during PTP operation

The value of the maximum operation speed in the specifications is for PTP command operation. For CP operation commands (interpolation operation), there are limitations on operations at high speed.

(Note 3) Standard cycle time Continuous cycle time

The standard/continuous cycle time represents the time required when an operation is performed under the setting of the fastest cycle operation and the following conditions.

2kg transport, vertical movement 25mm, horizontal movement 300mm (rough positioning arch motion)

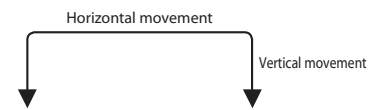
[Standard cycle time]

The time required for maximum speed operation. This is a general guideline for high speed performance.

Note that continuous operation is not possible under maximum speed operation.

[Continuous cycle time]

The cycle time for continuous operation.



(Note 4) Payload

The payload is the maximum weight that can be carried.

The optimal acceleration is automatically set by setting the weight of the load and the moment of inertia in the program.

A heavier load will cause a lower acceleration to be configured.

(Note 5) 3rd axis push force control range

The 3rd axis push force control range is the push force of the vertical axis tip.

This will be the push force when there is no load (nothing mounted) on the 3rd axis.

The upper limit is the push force when the push force setting value (driver parameter No. 38) is 70%.

The lower limit is the push force when the parameter setting value is 30% for NNN1805 and 4NSW3015, and 20% for other types.

Speed limitation applies to the push force. Contact IAI for details.

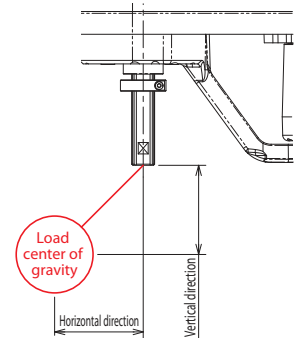
(Note 6) 4th axis allowable inertia moment

The 4th axis allowable inertia moment is the allowable inertia moment value for the center of rotation conversion of the 4th axis (rotational axis) of the SCARA robot.

Make sure that the offset amount from the center of rotation of the 4th axis to the center of gravity of the tool is within the values listed below.

If the center of gravity of the tool is located away from the center of the 4th axis, the acceleration/deceleration will need to be appropriately reduced.

Model	Horizontal direction	Vertical direction
IXA-□NNN1805	30mm or less	20mm or less
IXA-□NNN3515 / IXA-□NSN3515	150mm or less	100mm or less
IXA-□NNN45□□ / IXA-□NNN60□□	120mm or less	
IXA-□NSN45□□ / IXA-□NSN60□□	180mm or less	
IXA-4NSW3515 / IXA-4NSW45□□ / IXA-4NSW60□□	120mm or less	



(Note 7) Alarm indicator

The alarm indicator is installed on the 1st axis (J1) base upper part on the SCARA robot.

For standard type NNN, this is an option. (Option model LED)

It can be used for such applications as lighting when a controller error occurs. To operate it, use the I/O output signal from your controller to build a circuit that adds 24VDC to the LED terminal in the user wiring.

(Note 8) Brake release switch

The brake release switch is installed on the rear of the 1st axis (J1) base.

24VDC power must be supplied from the controller to release the brake, regardless of whether the brake release switch is used or not.

(Note 9) Noise

This is the value measured when all axes are operating at maximum speed.

Noise may change depending on operating conditions and the surrounding reverberation environment.

SCARA Robot IXA Acceleration/Deceleration Setting Guidelines

SCARA Robot IXA cannot operate continuously under the maximum acceleration/deceleration or maximum speed listed in the catalog.

To operate under the maximum acceleration/deceleration, refer to the continuous operation duty guideline graph and set a stop time.

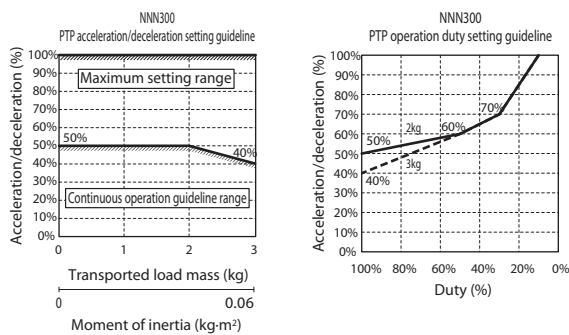
If continuous operation is required, do so under acceleration/deceleration settings within the continuous operation guideline range listed in the acceleration/deceleration setting guideline graph.

(Notes)

- 1) For PTP operation, always use WGHT commands in the program to set the weight and moment of inertia prior to operation.
SCARA high speed compatible products set the maximum acceleration/deceleration for operation at each payload as 100%.
If the payload differs even at the same acceleration/deceleration or speed setting, the operation time will also differ.
- 2) Adjust the acceleration/deceleration setting value by gradually increasing it from the continuous operation reference value.
- 3) If an overload error occurs, lower the acceleration/deceleration as required, or adjust by referring to the continuous operation duty guideline and setting a stop time.
- 4) $\text{Duty (\%)} = (\text{Operation time} / (\text{Operation time} + \text{Stop time})) \times 100$
- 5) When moving the robot horizontally at high speed, operate the vertical axis as close to the rising edge as possible.
- 6) Set the moment of inertia and payload to the allowable value or lower.
- 7) The transported load shows the moment of inertia and weight at the center of rotation of the 4th axis.
- 8) Use a robot that maintains appropriate acceleration/deceleration according to the weight and moment of inertia for the 4-axis specification. Otherwise, the drive section may become prematurely unusable or damaged, or vibration may be created.
- 9) If the load moment of inertia is high, vibration may occur in the vertical axis, depending on the position of the vertical axis. If vibration occurs, decrease the acceleration/deceleration as required prior to use.

● For standard type: arm length 300

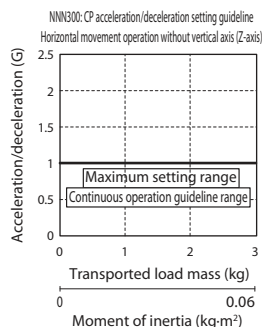
PTP operation / acceleration/deceleration setting guidelines



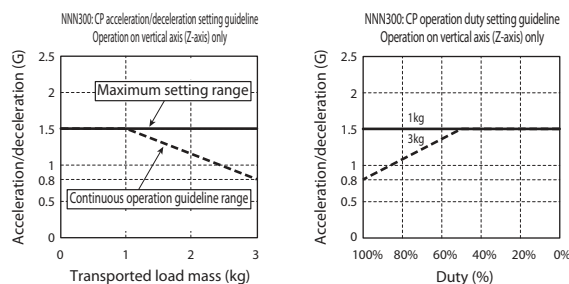
CP operation / acceleration/deceleration setting guidelines

Refer to "Acceleration/Deceleration Limitations" (P.23) for information on the maximum speed.

● Horizontal

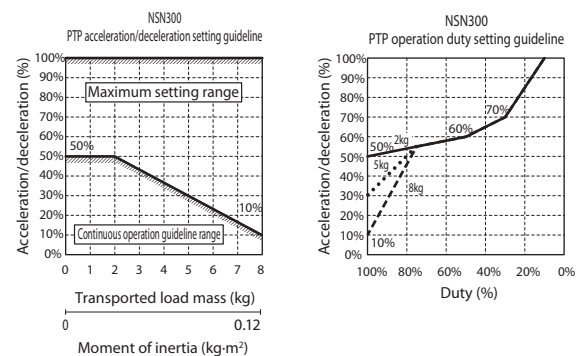


● Vertical



● For high-speed type: arm length 300

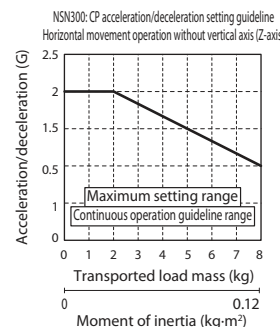
PTP operation / acceleration/deceleration setting guidelines



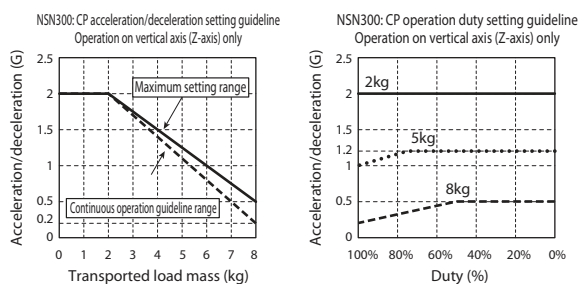
CP operation / acceleration/deceleration setting guidelines

Refer to "Acceleration/Deceleration Limitations" (P.23) for information on the maximum speed.

● Horizontal



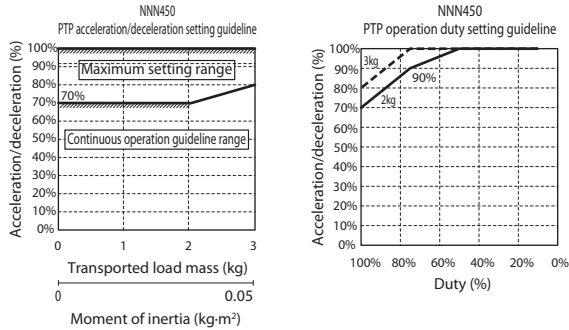
● Vertical



SCARA Robot IXA Acceleration/Deceleration Setting Guidelines

● For standard type: arm length 450

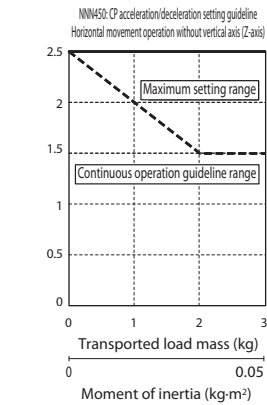
PTP operation / acceleration/deceleration setting guidelines



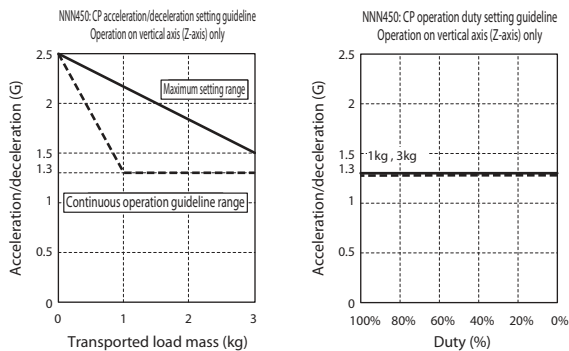
CP operation / acceleration/deceleration setting guidelines

Refer to "Acceleration/Deceleration Limitations" (P.23) for information on the maximum speed.

● Horizontal

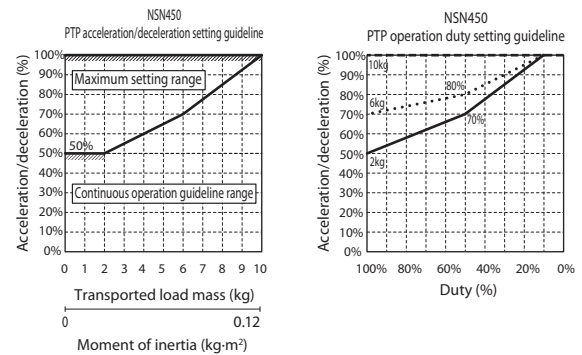


● Vertical



● For high-speed type: arm length 450

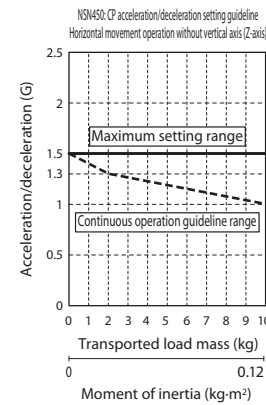
PTP operation / acceleration/deceleration setting guidelines



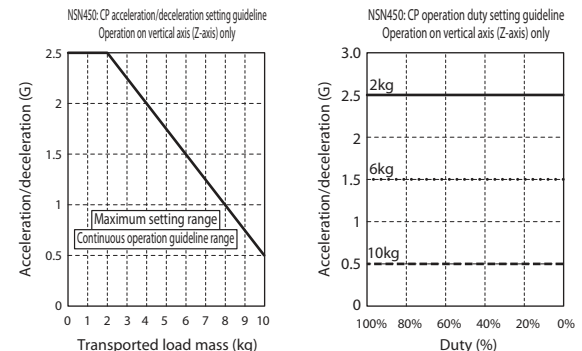
CP operation / acceleration/deceleration setting guidelines

Refer to "Acceleration/Deceleration Limitations" (P.23) for information on the maximum speed.

● Horizontal

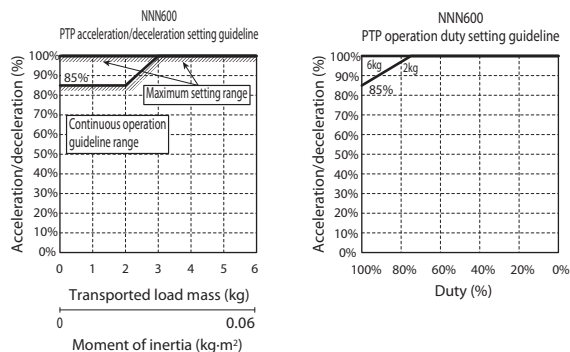


● Vertical



● For standard type: arm length 600

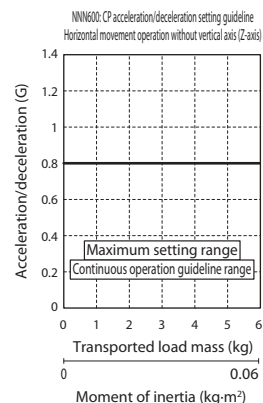
PTP operation / acceleration/deceleration setting guidelines



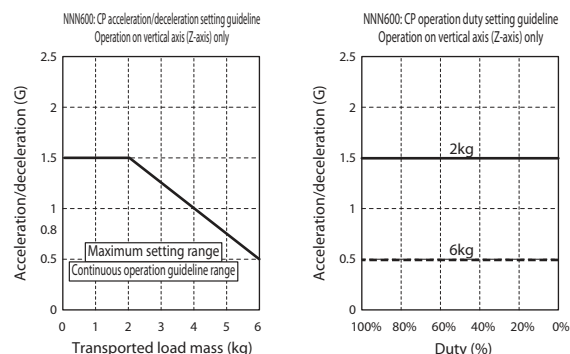
CP operation / acceleration/deceleration setting guidelines

Refer to "Acceleration/Deceleration Limitations" (P.23) for information on the maximum speed.

● Horizontal

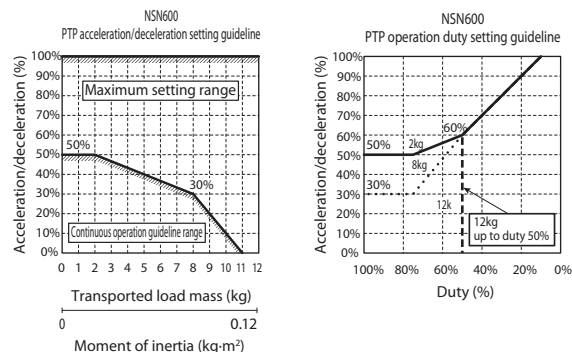


● Vertical



● For high-speed type: arm length 600

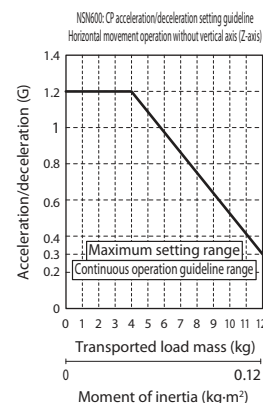
PTP operation / acceleration/deceleration setting guidelines



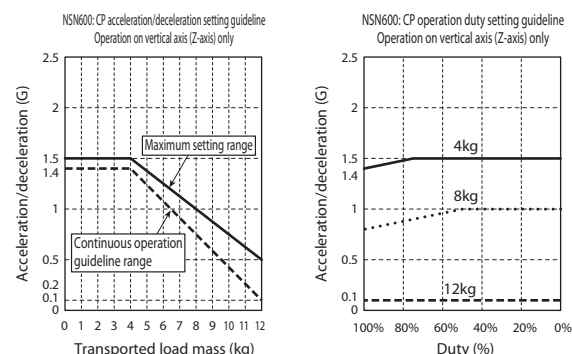
CP operation / acceleration/deceleration setting guidelines

Refer to "Acceleration/Deceleration Limitations" (P.23) for information on the maximum speed.

● Horizontal



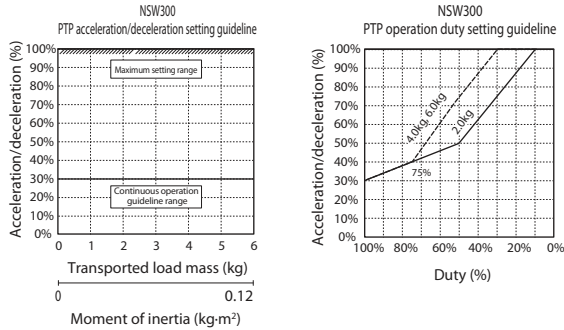
● Vertical



SCARA Robot IXA Acceleration/Deceleration Setting Guidelines

● For dust/splash-proof type: arm length 300

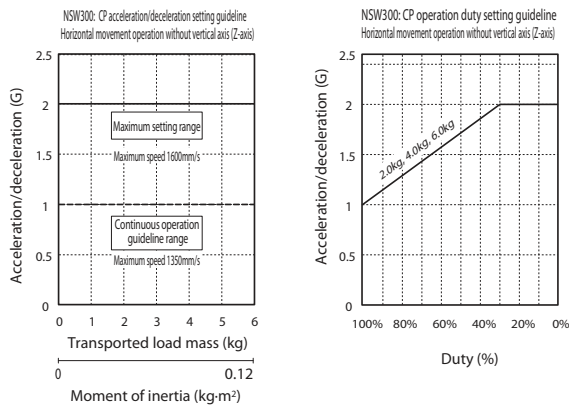
PTP operation / acceleration/deceleration setting guidelines



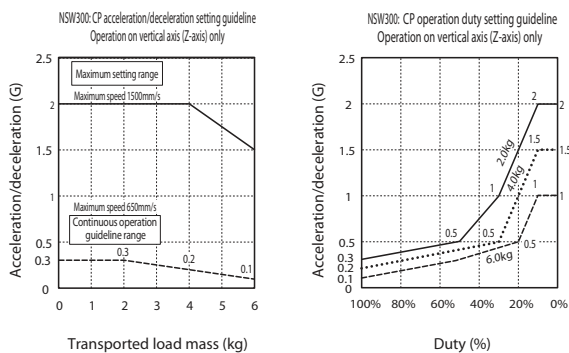
CP operation / acceleration/deceleration setting guidelines

Refer to "Acceleration/Deceleration Limitations" (P.23) for information on the maximum speed.

● Horizontal

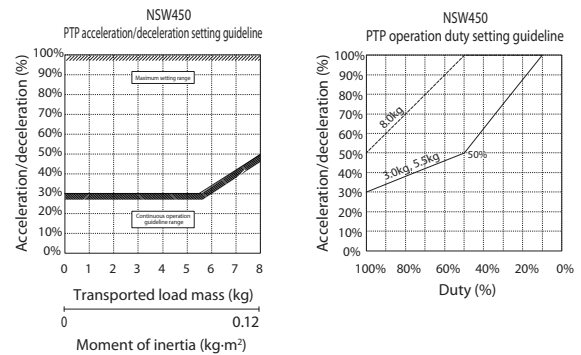


● Vertical



● For dust/splash-proof type: arm length 450

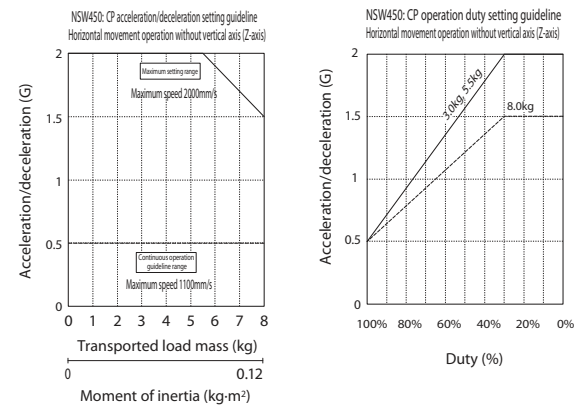
PTP operation / acceleration/deceleration setting guidelines



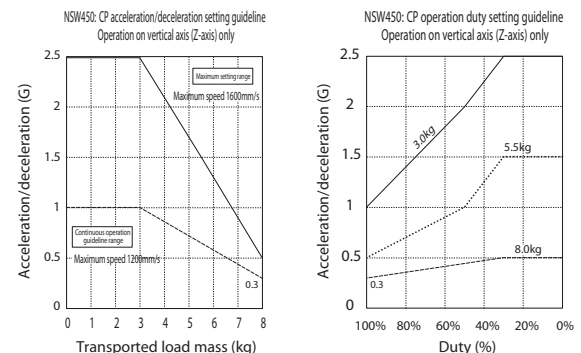
CP operation / acceleration/deceleration setting guidelines

Refer to "Acceleration/Deceleration Limitations" (P.23) for information on the maximum speed.

● Horizontal

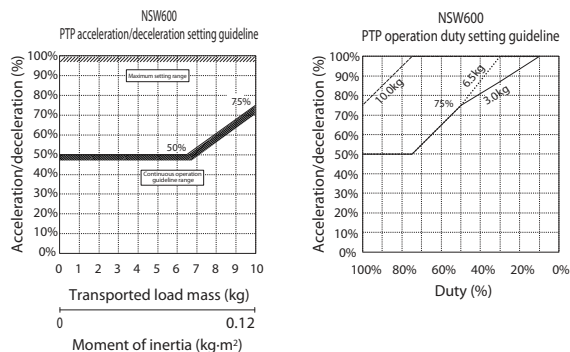


● Vertical



● For dust/splash-proof type: arm length 600

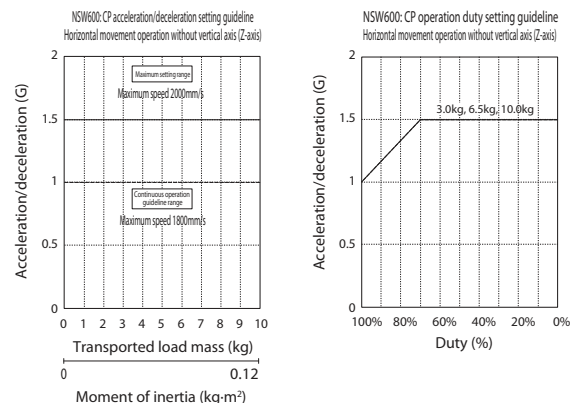
PTP operation / acceleration/deceleration setting guidelines



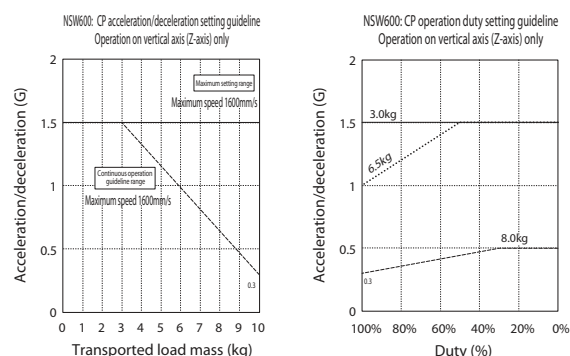
CP operation / acceleration/deceleration setting guidelines

Refer to "Acceleration/Deceleration Limitations" (P.23) for information on the maximum speed.

● Horizontal

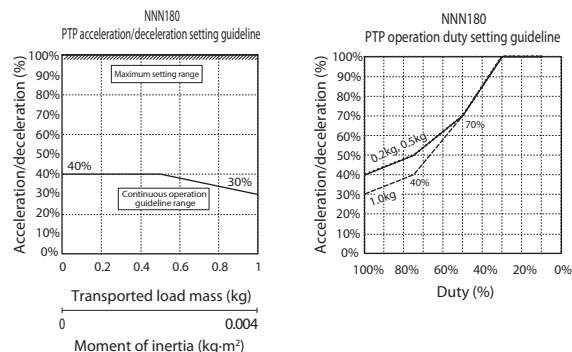


● Vertical



● For standard type: arm length 180

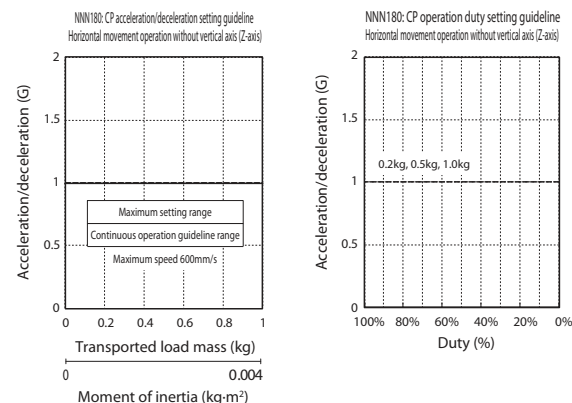
PTP operation / acceleration/deceleration setting guidelines



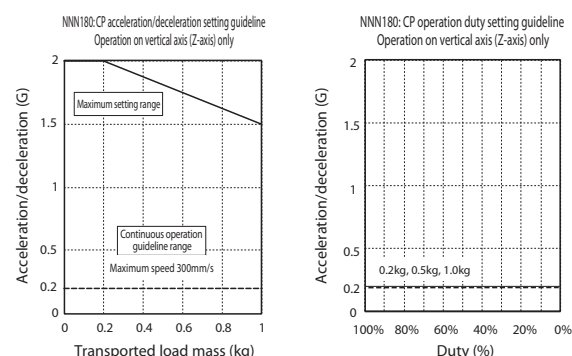
CP operation / acceleration/deceleration setting guidelines

Refer to "Acceleration/Deceleration Limitations" (P.23) for information on the maximum speed.

● Horizontal



● Vertical

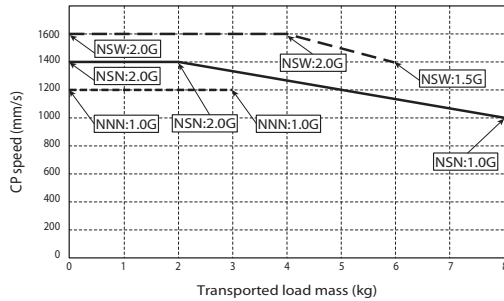


SCARA Robot IXA Acceleration/Deceleration Setting Guidelines

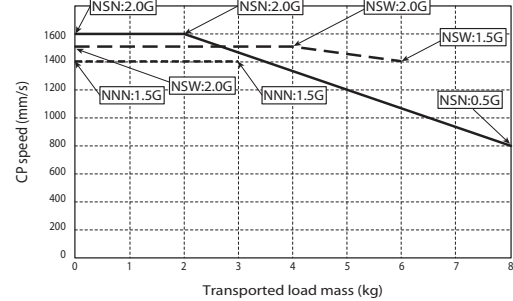
CP Operation: Acceleration/Deceleration Limitations

● For arm length 300

Horizontal movement operation without vertical axis (Z-axis) operation

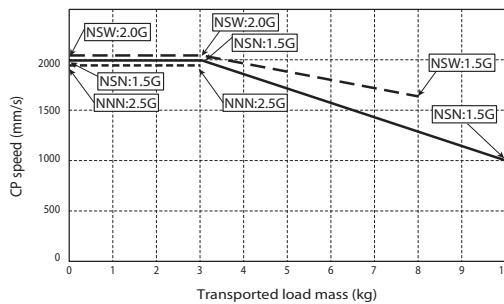


Operation on vertical axis (Z-axis) only

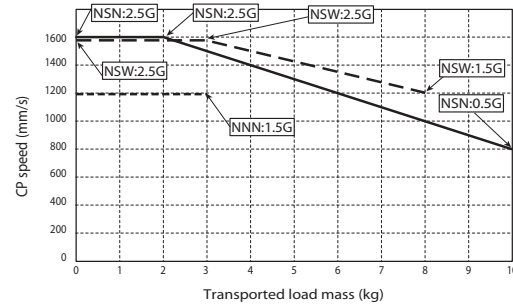


● For arm length 450

Horizontal movement operation without vertical axis (Z-axis) operation

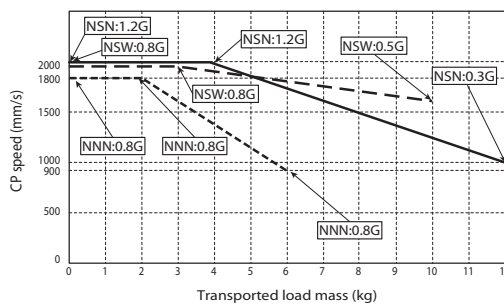


Operation on vertical axis (Z-axis) only

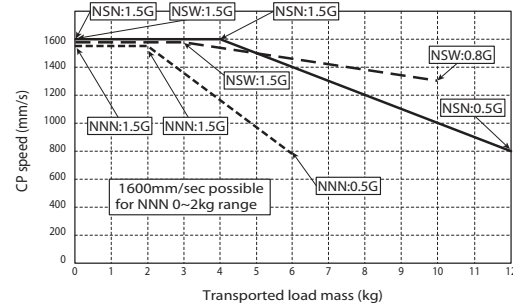


● For arm length 600

Horizontal movement operation without vertical axis (Z-axis) operation

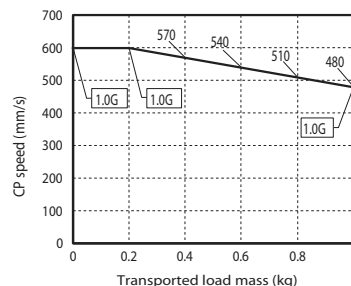


Operation on vertical axis (Z-axis) only

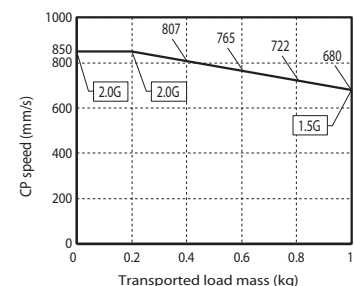


● For arm length 180

Horizontal movement operation w/o vert. axis (Z-axis) operation



Operation on vertical axis (Z-axis) only




X-SEL

SCARA Robot Program Controller



List of Models

Multi-axis program controller enabling SCARA robot operation.

Type name		RAX	SAX
Connectable axes		1 SCARA unit: single-axis and cartesian	
External view			
Type		Standard specification	Safety category compliant
Max. number of controlled axes		8-axis	
No. of positions		(3-axis specification) Maximum 41250 positions, (4-axis specification) Maximum 36666 positions * Varies depending on the number of axes. Refer to the specification table (P.27) for more information.	
Number of programs		255	
Number of program steps		20000	
Total number of connectable W		Three-phase 2400W	
Motor input power supply voltage		Three-phase 230VAC $\pm 10\%$	
Control power supply voltage		Single phase 230VAC $\pm 10\%$	
Safety category (*1)		B	Safety category 4 compatible
Safety standard		CE compliant	
RoboCylinder control function (*2)		Able to control up to 32 additional axes (only IAI controllers compatible with MECHATROLINK-III)	
Communication port	Ethernet	Equipped as standard: 10/100/1000BASE-T (RJ-45)	
	USB2.0	Equipped as standard: USB2.0 (Mini-B)	
	General-purpose RS-232C communication port	1 channel (maximum 230.4kbps)	

(*1) To comply with the safety category, the customer will need to install a safety circuit external to the controller.

(*2) Synchronous control is not available.

Model

[XSEL-RAX/SAX Type]

(Additional axis content 5th-8th axes)

XSEL - [] - [] - ([] [] [] []) - [] [] - [] [] - [] [] - [] []

Series Type SCARA Robot Main Body Type Motor Type Encoder Type Options Network Dedicated Slot(s) (Slot 1) (Slot 2) I/O Slot(s) (Slot 1) (Slot 2) I/O Cable Length Power Supply Voltage

RAX3	3-axis SCARA specification									
RAX4	3-axis SCARA + 1-axis specification / 4-axis SCARA specification									
RAX5	3-axis SCARA + 2-axis specification / 4-axis SCARA + 1-axis specification									
RAX6	3-axis SCARA + 3-axis specification / 4-axis SCARA + 2-axis specification									
RAX7	3-axis SCARA + 4-axis specification / 4-axis SCARA + 3-axis specification									
RAX8	4-axis SCARA + 4-axis specific.									
SAX3	3-axis SCARA global specification (safety category compliant)									
SAX4	3-axis SCARA + 1-axis global specification / 4-axis SCARA global specification (safety category compliant)									
SAX5	3-axis SCARA + 2-axis global specific. / 4-axis SCARA + 1-axis global specific. (safety category compliant)									
SAX6	3-axis SCARA + 3-axis global specific. / 4-axis SCARA + 2-axis global specific. (safety category compliant)									
SAX7	3-axis SCARA + 4-axis global specific. / 4-axis SCARA + 3-axis global specific. (safety category compliant)									
SAX8	4-axis SCARA + 4-axis global specific. (safety category compliant)									

* The housing size varies according to the type of SCARA robot to connect and the additional axes connected. Refer to the external dimensions on P.28 for more information.

(*) Soon available

WAI	Battery-less absolute incremental
A	Absolute
G	Quasi absolute
AI	Index absolute
AM	Absolute multi-rotation
B	Brake equipped specification
C	Creep sensor specification
HA	Hi-accel./decel. specification
L	Home sensor/LS compatible
M	Master axis specified
S	Slave axis specified

E	Not used
DV	DeviceNet
CC	CC-Link
PR	PROFIBUS-DP
E	Not used
EP	EtherNet/IP
EC	EtherCAT

E	Not used
N1	Input 32/Output 16 (NPN)
N2	Input 16/Output 32 (NPN)
N3	Input 48/Output 48 (NPN)
P1	Input 32/Output 16 (PNP)
P2	Input 16/Output 32 (PNP)
P3	Input 48/Output 48 (PNP)

(*) Selectable boards are fixed for the network dedicated slot.
(*) The network dedicated slot and I/O slot can be used together.

12	12W	150	150W
20	20W	200	200W
30D	30W for RCS2	300	300W
30R	30W for RS	400	400W
60	60W	600	600W
100	100W	750	750W

(Example) 12: 12 W servo motor supported

0	No cable
2	2m (Standard)
3	3m
5	5m
3	Three-phase 230V

3N□N3015	IXA-3N□N3015	3N□N6018	IXA-3N□N6018
4N□N3015	IXA-4N□N3015	3N□N6033	IXA-3N□N6033
3N□N4518	IXA-3N□N4518	4N□N6018	IXA-4N□N6018
3N□N4533	IXA-3N□N4533	4N□N6033	IXA-4N□N6033
4N□N4518	IXA-4N□N4518		
4N□N4533	IXA-4N□N4533		

* The following symbols are specified in □.
N: Standard type
S: High-speed type

Notes
In principle, the same type of motor as the type of motor of the actuator to be connected should be entered, but there are some models where the motor type of some controllers and actuators do not match. Be sure to check the corresponding models listed below during selection.
<30D / 30R Target Actuators>
● Controller motor type [30D]: 30W actuator other than RS (e.g. RCS2-SA6 / RCS2-R□4)
● Controller motor type [30R]: RS

Non-Connectable Actuators (Additional Axes)

RCS2-□□5N (incremental specification), RCS2-SRA7BD/SRGS7BD/SRGD7BD, NS-SXM□/SZM□ (incremental specification only for both), RCS3-CT□, RCS2-RA13R (with load cell), RCS3-RA□R, DD/DDA (high resolution specification)

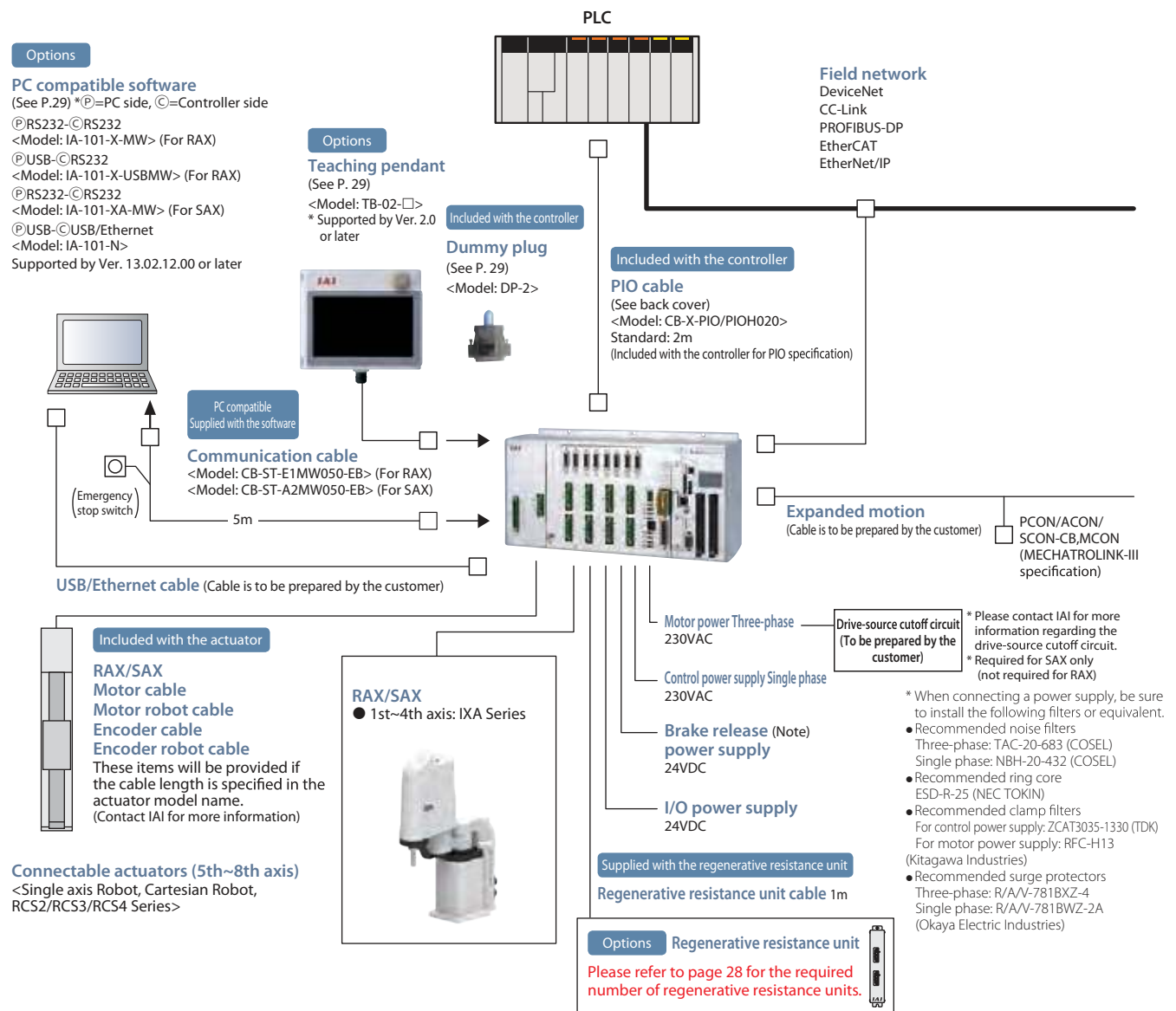
Limitations on Additional Axis Connection

For SCARA controllers, there is a limit to the total motor wattage of the additional axis actuator motor that can be connected besides SCARA robots. Make sure that it does not exceed the "total wattage and max. number of connectable axes" in the following table.

SCARA robot model		Number of additional axes connectable to XSEL-RAX/SAX and total wattage	
		For 4-axis housing	For 8-axis housing
Standard type	IXA-3NNN3015	Cannot be connected	4 axes (5th~8th axis) / Total wattage of 700W or less
	IXA-3NNN45□□		
	IXA-3NNN60□□		4 axes (5th~8th axis) / Total wattage of 600W or less
	IXA-4NNN3015		
	IXA-4NNN45□□		3 axes (6th~8th axis) / Total wattage of 600W or less
High-speed type	IXA-3NSN3015	Cannot be connected	Cannot be connected
	IXA-3NSN45□□		
	IXA-3NSN60□□		
	IXA-4NSN3015		
	IXA-4NSN45□□		
	IXA-4NSN60□□		

System Configuration

■ XSEL-RAX/SAX Type



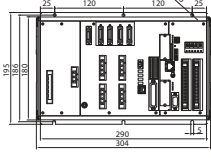
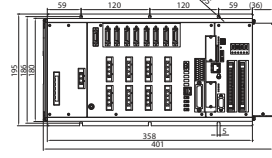
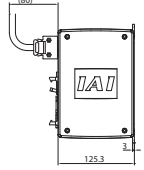
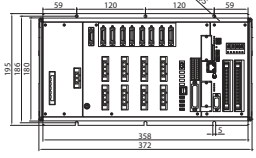
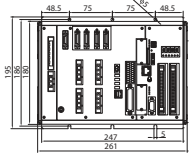
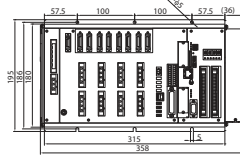
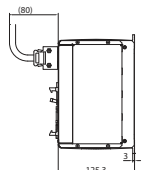
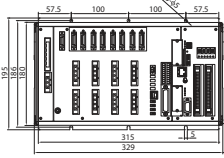
(Note) When connecting an actuator with brake, the brake power supply +24V is required for the controller.

Table of Specifications

Controller type	RAX type	SAX type
Compatible motor output	12W~750W	
Number of controlled axes	1st~4th axis: SCARA robot, 5th~8th axis: Additional axes	
Max. output of connected axes	[Three-phase] Up to 2400W	
Control power input	Single phase 230VAC ±10%	
Power frequency	50/60Hz	
Insulation resistance	10MΩ or more (Between the power supply terminal and I/O terminal, and between the external terminal batch and case, at 500VDC)	
Withstand voltage	1500 VAC (1 min)	
Power capacity (max)	5094VA (at max. output of connected axes)	
Position detection method	Incremental, absolute, battery-less absolute	
Safety circuit configuration	Duplication not possible	Duplication allowed
Drive-source cutoff method	Internal relay cut-off	External safety circuit
Emergency stop input	B contact input (Internal power supply)	B contact input (External power supply, duplication possible)
Enable input	B contact input (Internal power supply)	B contact input (External power supply, duplication possible)
Speed setting	1mm/s~ Upper limit depends on the actuator specification	
Acceleration/deceleration setting	0.01G~ Upper limit depends on the actuator specification	
Programming language	Super SEL language	
Number of programs	255 programs	
Number of program steps	20000 steps (total)	
No. of multi-tasking programs	16 programs	
Number of positions	Varies by the number of controlled axes 3-axis: 41250, 4-axis: 36666, 5-axis: 33000, 6-axis: 30000, 7-axis: 27500, 8-axis: 25384	
Data recording element	Flash ROM + non-volatile RAM (FRAM): system battery (button battery) not required	
Data input method	Teaching pendant or PC compatible software	
Standard I/O	I/O 48-point PIO board (NPN/PNP), I/O 96-point PIO board (NPN/PNP) 2 boards attachable	
Expansion I/O	None	
Serial communication function	Teaching port (D-sub25 pin), USB port (Mini-B) 1 ch RS232C port (D-sub 9 pin), Ethernet (RJ-45)	
RC gateway function	None	
Fieldbus communication function	DeviceNet, CC-Link, PROFIBUS-DP, EtherNet/IP, EtherCAT (EtherNet/IP, EtherCAT and DeviceNet, CC-Link, and PROFIBUS-DP can be installed at the same time)	
Clock function	Retention time: about 10 days Charging time: about 100 hours	
Regenerative resistor	Built-in 1kΩ/20W regenerative resistor (Can be expanded by external regenerative resistance unit connection)	
Absolute battery	AB-5 (built-in controller) * Additional axes for absolute specification only	
Protection function	Motor overcurrent, overload, motor driver temperature check, overload check, encoder disconnection detection, soft limit over, system malfunction, absolute battery error, etc.	
Ambient operating temperature, humidity and ambience	0 ~ 40°C, 85% RH or less (non-condensing), avoid corrosive gas and excessive dust	

* For the power supply capacity etc., please refer to the operation manual or contact IAL.

External Dimensions

	Controller Specification		Front View		Side View
			Battery-less absolute/Incremental specification /Quasi absolute specification/Index absolute specification	Absolute specification/ Absolute multi-rotation specification	
RAX	Three-phase specification	4-axis specification			 (Battery-less absolute/ Incremental specification/ Quasi absolute specification/ Index absolute specification)
		5~8-axis specification			
SAX	Three-phase specification	4-axis specification			 (Absolute specification /Absolute multi-rotation specification)
		5~8-axis specification			

* If absolute specification is included for at least 1 connected single actuator, the external dimensions will be that of the absolute specification.

** Controllers for standard type with arm length of 600mm (IXA-4NNN60□□) or with additional connected axes and controllers for high-speed type will have the controller size of the 5~8-axis specification.

Options

■ Regenerative resistance unit

Model **RESU-1** (Standard specification)
RESUD-1 (DIN rail mounting specification)

Specification

Model	RESU-1	RESUD-1
Unit weight	About 0.4kg	
Built-in regenerative resistance value	235Ω 80W	
Unit mounting method	Screw mount	DIN rail mount
Attached cable	CB-ST-REU010	

Description

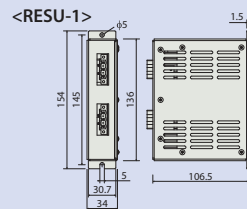
Unit that converts the regenerative current generated during motor deceleration to heat. Although the controller is equipped with a regenerative resistor inside, an additional external regenerative resistance unit may be necessary if the load in the vertical axis is large and the capacity is insufficient.

<When connecting a single axis robot>

Installation criteria Determined by the total motor wattage of connected axes.

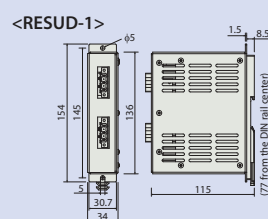
Horizontal specification

Total motor wattage	Required number of regenerative resistors
~100W	0
~600W	1
~1200W	2
~1800W	3
~2400W	4



Vertical specification

Total motor wattage	Required number of regenerative resistors
~100W	0
~600W	1
~1000W	2
~1400W	3
~2000W	4
~2400W	5



<When connecting a SCARA robot>

Estimated installation criteria

Model		Required number of regenerative resistance units
NNN	3015	2
	45□□	
	60□□	
NSN	3015	3
	45□□	4
	60□□	

* The required number is for a single SCARA robot. When connecting a single axis robot as an additional axis, be sure to add regenerative resistors for the single axis robot.

Examples: When operating IXA-3NNN3015 and ISB-MXM (200W).
IXA-3NNN3015 2 units required
ISB-MXM (200W); 1 unit required
Therefore, 3 regenerative resistance units are required.

■ Absolute data backup battery

Model **AB-5** * Only for additional axes with absolute specification

Features Absolute data storage battery for operating an actuator of the absolute specification.



■ Dummy plug

Model **DP-2**

Features A dummy plug to be attached to the teaching connector when a PC or teaching pendant is not connected.

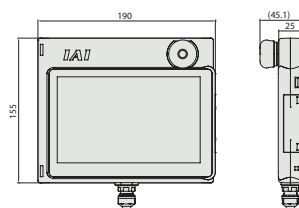


Touch Panel Teaching Pendant

Features A teaching device equipped with functions such as position teaching, trial operation, and monitoring.

Model **TB-02-□**

■ External dimensions



■ Specifications

Rated voltage	24V DC
Power consumption	3.6W or less (150mA or less)
Ambient operating temperature	0 to 40°C
Ambient operating humidity	20~85% RH (non-condensing)
Environmental resistance	IP20
Weight	470g (TB-02 unit only)

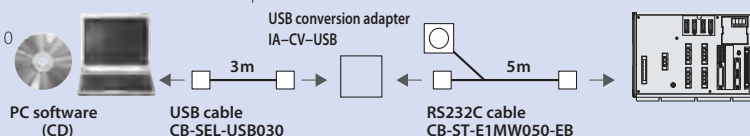
USB PC Software Kit (For XSEL-RAX)

Model **IA-101-X-USBMW**

Features This type has a USB adapter mounted on the RS232C cable to allow the use on a PC's USB port.

Description Software (CD-ROM), compatible with Windows: 7/8/8.1/10

(Accessories) PC connection cable 5m + emergency stop box + USB adapter + USB cable 3m



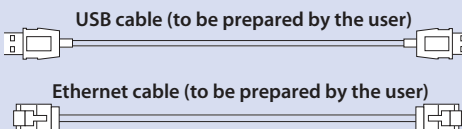
PC Software

Model **IA-101-N**

Features PC software (CD-ROM) without PC connection cables.
If you want to connect both the controller and PC side with a USB cable or Ethernet cable, only the software needs to be purchased. A cable that meets the following specifications is to be prepared by the customer.

Description Software (CD-ROM), compatible with Windows: 7/8/8.1/10

	Controller side connector	Maximum cable length
USB cable specification	USB Mini-B	5m
Ethernet cable specification	10/100/1000BASE-T (RJ-45)	5m



Notes

When operating the actuator by USB connection, be sure to connect the stop switch to the system I/O connector.
If an emergency switch is not available, use the emergency stop-equipped model "IA-101-X-USBMW".

PC Software Kit (For XSEL-RAX)

Model **IA-101-X-MW**

PC Software Kit Compatible with Safety Category 4 (For XSEL-SAX only)

Model **IA-101-XA-MW(-EB)***

* IA-101-XA-MW-EB: model set with emergency stop box

Maintenance Parts

When placing an order for the replacement cable, please use the model name shown below. (* Please contact IAI for more details.)

Table of applicable cables

Product model			Motor robot cable	Encoder robot cable	Brake cable
①	IXA	□NNN18	CB-X-MA□□□	CB-X1-PA□□□	CB-IXA-BK□□□-1
②		□NNN30			
③		□NNN45			CB-IXA-BK□□□-2
④		□NNN60			
⑤		□NS□30			CB-IXA-BK□□□-3
⑥		□NS□45			
⑦		□NS□60			

Product model		PIO flat cable
⑧	XSEL-RAX/SAX	CB-X-PIO□□□
		Flat cable for multi-point PIO
		CB-X-PIOH□□□

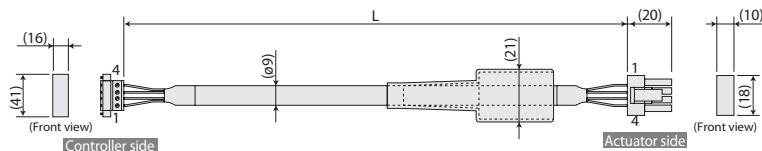
Motor robot cable (*)

(*) The alternative EU motor robot cable CB-XEU-MA□□□ (with round plastic connector) is not connectable to IXA SCARA robot.

Model: **CB-X-MA**□□□

* Please indicate the cable length (L) in □□□, (e.g. 050 = 5m), maximum 15m

(Fig.: Motor robot cable CB-X-MA□□□ with plastic connector)



Minimum bending R: r = 51 mm or more (for movable use)

* Only robot cable is available for this model.

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

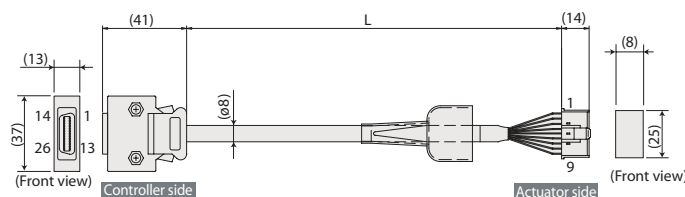
Encoder robot cable (*)

(*) The alternative EU encoder robot cable CB-XEU1-PA□□□ (with round metal connector) is not connectable to IXA SCARA robot.

Model: **CB-X1-PA**□□□

* Please indicate the cable length (L) in □□□, (e.g. 050 = 5m), maximum 15m

(Fig.: Encoder robot cable CB-X1-PA□□□ with plastic connector)



Minimum bend radius R: r = 44mm or larger (for movable use)

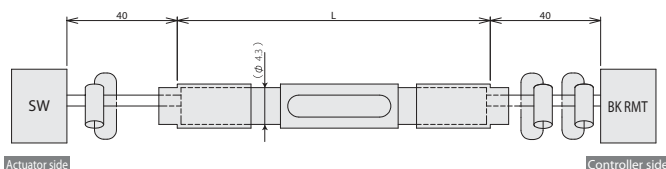
* Only robot cable is available for this model.

Wire	Color	Signal	No.	No.	Signal	Color	Wire
AWG26 (soldered)	—	—	10	1	BAT+	Purple	AWG26 (crimped)
	—	—	11	2	BAT-	Gray	
	—	E24V	12	3	SD	Orange	
	—	OV	13	4	SD	Green	
	—	LS	26	5	VCC	Red	
	—	CREEP	25	6	GND	Black	
	—	OT	24	7	FG	Ground	
	—	RSV	23	8	BK-	Blue	
	—	—	9	9	BK+	Yellow	
	—	—	18	—	—	—	The shield is clamped to the hood
	—	—	19	—	—	—	
	—	A+	1	—	—	—	
	—	A-	2	—	—	—	
	—	B+	3	—	—	—	
	—	B-	4	—	—	—	
	—	Z+	5	—	—	—	
	—	Z-	6	—	—	—	
	Orange	SRD+	7	—	—	—	
	Green	SRD-	8	—	—	—	
	Purple	BAT+	14	—	—	—	
	Gray	BAT-	15	—	—	—	
	Red	VCC	16	—	—	—	
	Black	GND	17	—	—	—	
	Blue	BKR-	20	—	—	—	
	Yellow	BKR+	21	—	—	—	
	—	—	22	—	—	—	

Brake cable (for IXA-□NNN18/□NNN30/□NNN45)

Model: **CB-IXA-BK**□□□-1

* Please indicate the cable length (L) in □□□, (e.g. 050 = 5m), maximum 15m

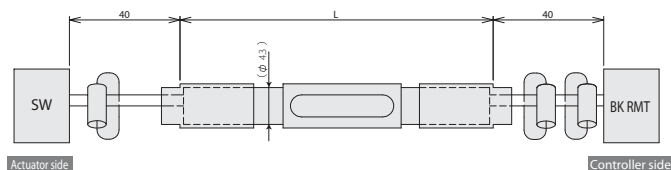


Connector	Identification	Signal	Pin No.	Pin No.	Signal	Identification	Connector
SW	Red	BK3	1		A2	BK3	BK RMT
	White	COM	2		A3	COM	
	—	—	3		Remaining	—	

Brake cable (For IXA-□NNN60)

Model: CB-IXA-BK□□□-2

* Please indicate the cable length (L) in □□□, (e.g. 050 = 5m), maximum 15m



Connector	Identification	Signal	Pin No.
SW	Red	BK4	1
	White	COM	2
	—	—	3

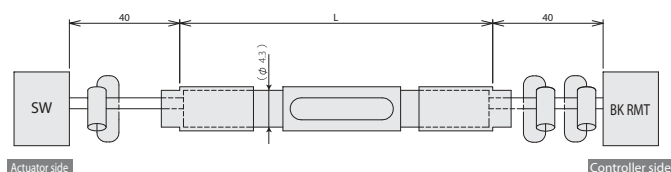
Pin No.	Signal	Identification	Connector
B2	BK4	Red	BK RMT
A3	COM	White	
Remaining	—	—	

Sheath

Brake cable (For IXA-□NSN30/□NSN45/□NSN60)

Model: CB-IXA-BK□□□-3

* Please indicate the cable length (L) in □□□, (e.g. 050 = 5m), maximum 15m



Connector	Identification	Signal	Pin No.
SW	Red	BK5	1
	White	COM	2
	—	—	3

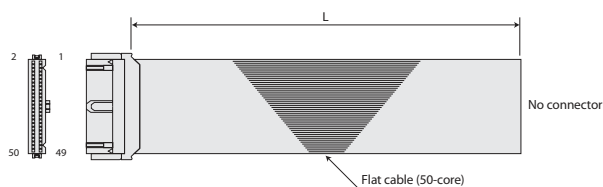
Pin No.	Signal	Identification	Connector
A4	BK5	Red	BK RMT
A3	COM	White	
Remaining	—	—	

Sheath

PIO flat cable

Model: CB-X-PIO□□□

* Please indicate the cable length (L) in □□□, (e.g. 080 = 8m), maximum 10m

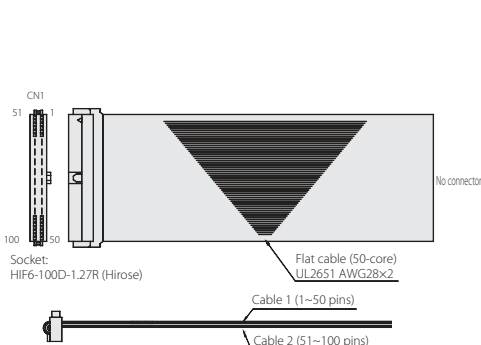


No.	Color	Wiring	No.	Color	Wiring	No.	Color	Wiring
1	Brown1		18	Gray2		35	Green4	
2	Red1		19	White2		36	Blue4	
3	Orange1		20	Black2		37	Purple4	
4	Yellow1		21	Brown-3		38	Gray4	
5	Green1		22	Red3		39	White4	
6	Blue1		23	Orange3		40	Black4	
7	Purple1		24	Yellow3		41	Brown-5	
8	Gray1		25	Green3		42	Red5	
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				

Multipoint PIO flat cable

Model: CB-X-PIOH□□□

* Please indicate the cable length (L) in □□□, (e.g. 080 = 8m), maximum 10m



Cable 1												Cable 2											
Pin No.	Color	Port No.	Function	Pin No.	Color	Port No.	Function	Pin No.	Color	Port No.	Function	Pin No.	Color	Port No.	Function								
1	Brown-1	—	External power supply 24VDC for pin No. 2-25, 51-74	26	Blue-3	—	External power supply 24VDC for pin No. 27-50, 76-99	51	Brown-1	300	Alarm output	76	Blue-3	324	General-purpose output								
2	Red-1	000	Program start	27	Purple-3	024	General-purpose input	52	Red-1	301	Ready output	77	Purple-3	325	General-purpose output								
3	Orange-1	001	General-purpose input	28	Gray-3	025	General-purpose input	53	Orange-1	302	Emergency stop output	78	Gray-3	326	General-purpose output								
4	Yellow-1	002	General-purpose input	29	White-3	026	General-purpose input	54	Yellow-1	303	General-purpose output	79	White-3	327	General-purpose output								
5	Green-1	003	General-purpose input	30	Black-3	027	General-purpose input	55	Green-1	304	General-purpose output	80	Black-3	328	General-purpose output								
6	Blue-1	004	General-purpose input	31	Brown-4	028	General-purpose input	56	Blue-1	305	General-purpose output	81	Brown-4	329	General-purpose output								
7	Purple-1	005	General-purpose input	32	Red-4	029	General-purpose input	57	Purple-1	306	General-purpose output	82	Red-4	330	General-purpose output								
8	Gray-1	006	General-purpose input	33	Orange-4	030	General-purpose input	58	Gray-1	307	General-purpose output	83	Orange-4	331	General-purpose output								
9	White-1	007	Program designation (PIG No.1)	34	Yellow-4	031	General-purpose input	59	White-1	308	General-purpose output	84	Yellow-4	332	General-purpose output								
10	Black-1	008	Program designation (PIG No.2)	35	Green-4	032	General-purpose input	60	Black-1	309	General-purpose output	85	Green-4	333	General-purpose output								
11	Brown-2	009	Program designation (PIG No.4)	36	Blue-4	033	General-purpose input	61	Brown-2	310	General-purpose output	86	Blue-4	334	General-purpose output								
12	Red-2	010	Program designation (PIG No.8)	37	Purple-4	034	General-purpose input	62	Red-2	311	General-purpose output	87	Purple-4	335	General-purpose output								
13	Orange-2	011	Program designation (PIG No.10)	38	Gray-4	035	General-purpose input	63	Orange-2	312	General-purpose output	88	Gray-4	336	General-purpose output								
14	Yellow-2	012	Program designation (PIG No.20)	39	White-4	036	General-purpose input	64	Yellow-2	313	General-purpose output	89	White-4	337	General-purpose output								
15	Green-2	013	Program designation (PIG No.40)	40	Black-4	037	General-purpose input	65	Green-2	314	General-purpose output	90	Black-4	338	General-purpose output								
16	Blue-2	014	General-purpose input	41	Brown-5	038	General-purpose input	66	Blue-2	315	General-purpose output	91	Brown-5	339	General-purpose input								
17	Purple-2	015	General-purpose input	42	Red-5	039	General-purpose input	67	Purple-2	316	General-purpose output	92	Red-5	340	General-purpose output								
18	Gray-2	016	General-purpose input	43	Orange-5	040	General-purpose input	68	Gray-2	317	General-purpose output	93	Orange-5	341	General-purpose output								
19	White-2	017	General-purpose input	44	Yellow-5	041	General-purpose input	69	White-2	318	General-purpose output	94	White-2	342	General-purpose output								
20	Black-2	018	General-purpose input	45	Green-5	042	General-purpose input	70	Black-2	319	General-purpose output	95	Green-5	343	General-purpose output								
21	Brown-3	019	General-purpose input	46	Blue-5	043	General-purpose input	71	Brown-3	320	General-purpose output	96	Blue-5	344	General-purpose output								
22	Red-3	020	General-purpose input	47	Purple-5	044	General-purpose input	72	Red-3	321	General-purpose output	97	Purple-5	345	General-purpose output								
23	Orange-3	021	General-purpose input	48	Gray-5	045	General-purpose input	73	Orange-3	322	General-purpose output	98	Gray-5	346	General-purpose output								
24	Yellow-3	022	General-purpose input	49	White-5	046	General-purpose input	74	Yellow-3	323	General-purpose output	99	White-5	347	General-purpose output								
25	Green-3	023	General-purpose input	50	Black-5	047	General-purpose input	75	Green-3	—	External power supply 0V for pin No. 27-50, 76-99	100	Black-5	—	External power supply 0V for pin No. 27-50, 76-99								