

SCARA Robot **IXA**

IXA



Fastest in the industry!

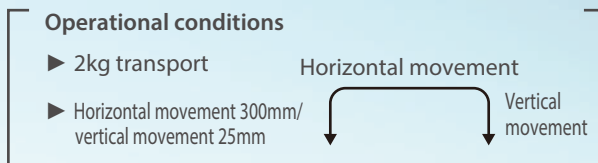
Introducing the new SCARA Robot IXA!

1

Industry top

Fastest cycle times

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



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.



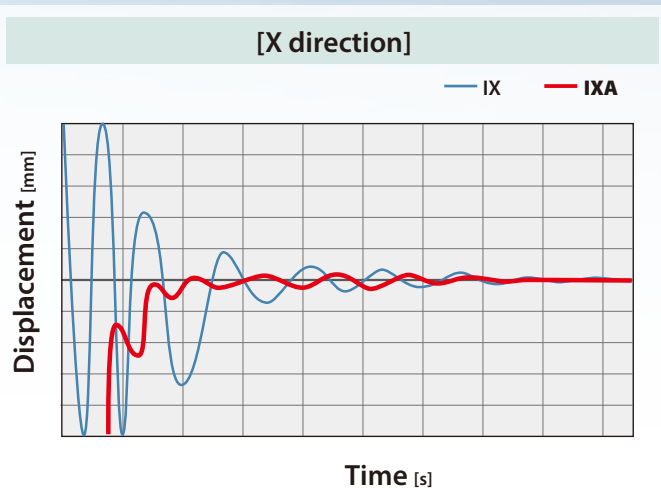
3 Low vibration, accurate positioning

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.



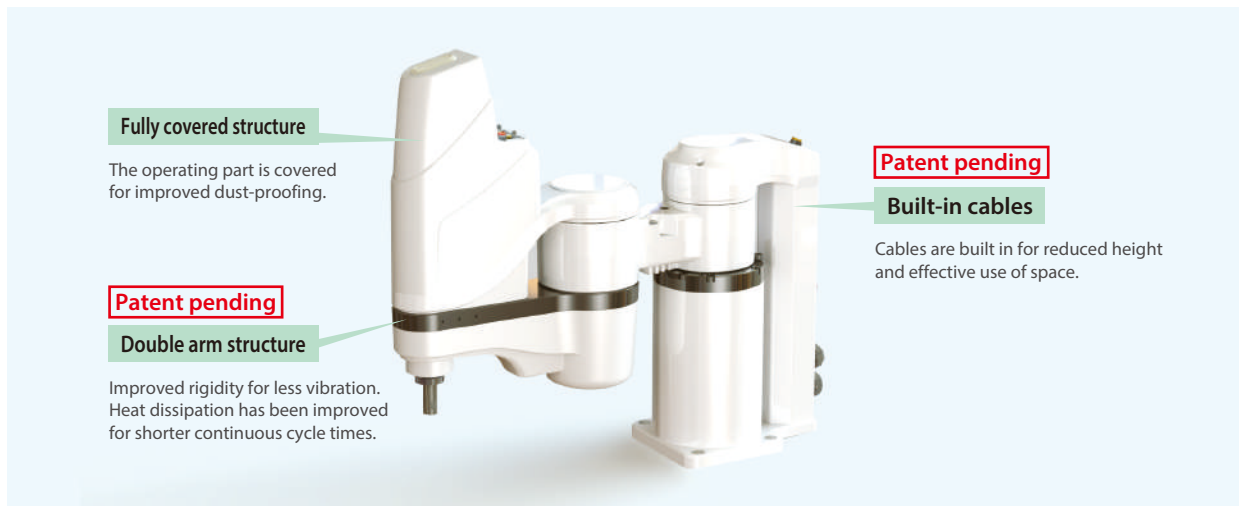
Battery-less Absolute Encoder

No Battery,

No Maintenance, No Homing,

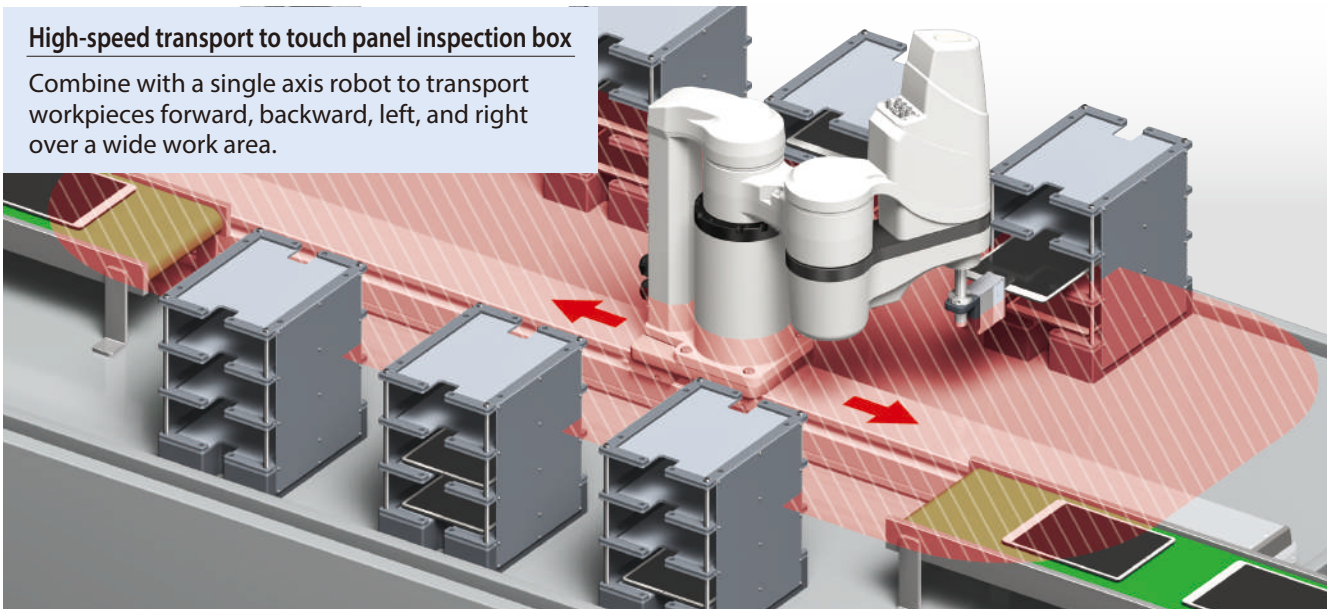
No Going Back to Incremental.

5 Mechanical structure/features



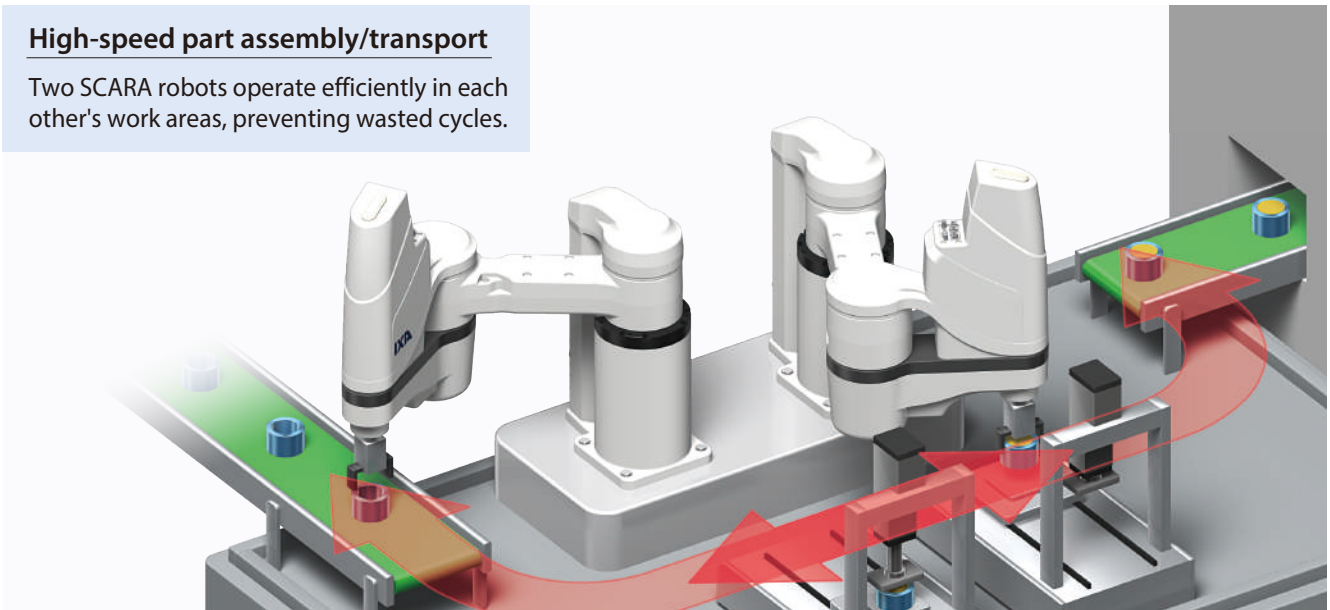
High-speed transport to touch panel inspection box

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



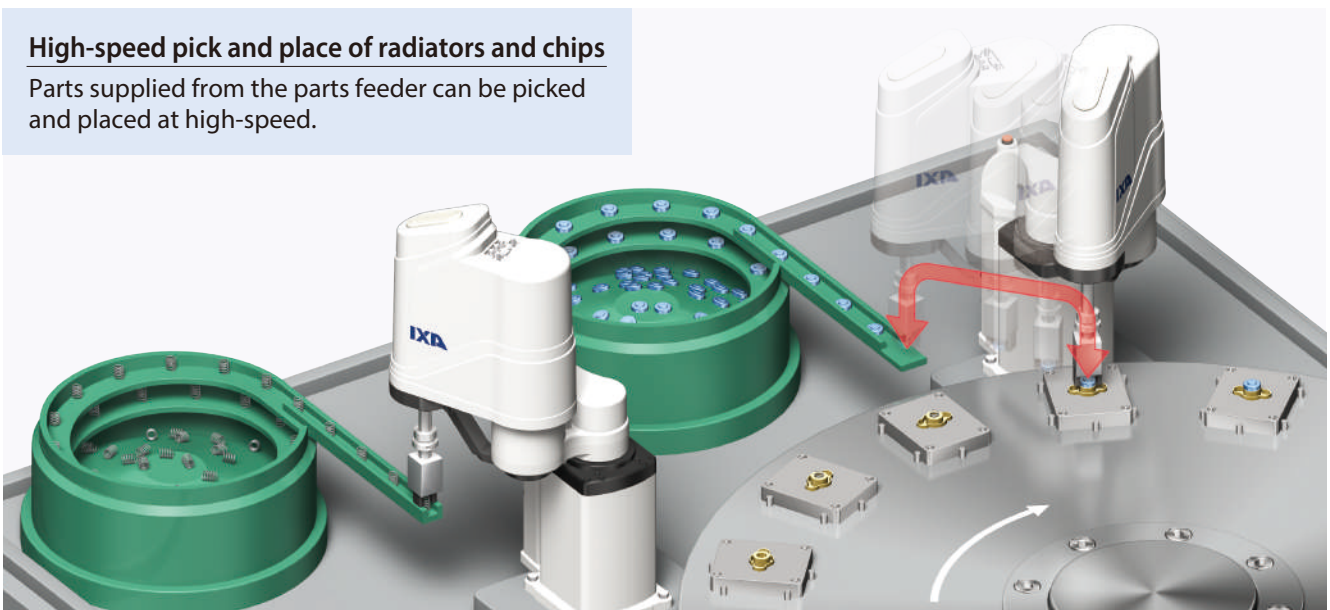
High-speed part assembly/transport

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 stroke (mm)	Standard cycle time (s)	Continuous cycle time (s)	Max. payload (kg)	Reference page
			1st arm	2nd arm					
Standard type	IXA-3NNN3015	3-axis	120	180	150	0.38	0.55	3	► P7
	IXA-4NNN3015	4-axis							► P7
	IXA-3NNN4518	3-axis	200	250	180			3	► P9
	IXA-4NNN4518	4-axis							
	IXA-3NNN4533	3-axis			330				► P9
	IXA-4NNN4533	4-axis							
	IXA-3NNN6018	3-axis	350	250	180			6	► P11
	IXA-4NNN6018	4-axis							
	IXA-3NNN6033	3-axis			330				► P11
	IXA-4NNN6033	4-axis							
High-speed type	IXA-3NSN3015	3-axis	120	180	150	0.26	0.45	8	► P13
	IXA-4NSN3015	4-axis							► P13
	IXA-3NSN4518	3-axis	200	250	180			10	► P15
	IXA-4NSN4518	4-axis							
	IXA-3NSN4533	3-axis			330				► P15
	IXA-4NSN4533	4-axis							
	IXA-3NSN6018	3-axis	350	250	180			12	► P17
	IXA-4NSN6018	4-axis							
	IXA-3NSN6033	3-axis			330				► P17
	IXA-4NSN6033	4-axis							

IXA — — — **T2** —

Series Type Cable Length Applicable Controllers Options

3NNN3015	3-axis standard type/arm length 300mm/vertical axis 150mm	5L 5m 10L 10m □L: Specified length (1m increments), maximum length 15m	T2 XSEL-RAX/SAX	LED indicator * Only available for standard type.
4NNN3015	4-axis standard type/arm length 300mm/vertical axis 150mm			
3NNN4518	3-axis standard type/arm length 450mm/vertical axis 180mm			
3NNN4533	3-axis standard type/arm length 450mm/vertical axis 330mm			
4NNN4518	4-axis standard type/arm length 450mm/vertical axis 180mm			
4NNN4533	4-axis standard type/arm length 450mm/vertical axis 330mm			
3NNN6018	3-axis standard type/arm length 600mm/vertical axis 180mm			
3NNN6033	3-axis standard type/arm length 600mm/vertical axis 330mm			
4NNN6018	4-axis standard type/arm length 600mm/vertical axis 180mm			
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			
3NSN4533	3-axis high-speed type/arm length 450mm/vertical axis 330mm			
4NSN4518	4-axis high-speed type/arm length 450mm/vertical axis 180mm			
4NSN4533	4-axis high-speed type/arm length 450mm/vertical axis 330mm			
3NSN6018	3-axis high-speed type/arm length 600mm/vertical axis 180mm			
3NSN6033	3-axis high-speed type/arm length 600mm/vertical axis 330mm			
4NSN6018	4-axis high-speed type/arm length 600mm/vertical axis 180mm			
4NSN6033	4-axis high-speed type/arm length 600mm/vertical axis 330mm			

Description of options

LED indicator (standard type only)

Model	LED
Description	An LED that lights under certain conditions can be installed as needed. (Standard configuration for high-speed type.)

Single unit option models

Series	Type name	Type	Flange model	
IXA	Standard type	NNN	3015	
		NNN	45□□	IX-FL-1
			60□□	
	High-speed type	NSN	3015	
		NSN	45□□	
			60□□	

(Example)

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

Number of axes: 3

Arm length:
450mm

Cable length: 5m

Controller:
XSEL-RAX/SAXOption:
Indicator

Type: Standard

Vertical axis stroke:
180mm

IXA-3NNN3015/4NNN3015

 Battery-less
Absolute

 Arm Length:
300
mm

 Vertical Axis:
150
mm

Model Specification Items

IXA	-	☐	NNN	30	15	-	☐	-	T2	-	☐
Series	-	Number of Axes	Type	Arm Length	Vertical Axis Stroke	-	Cable Length	-	Applicable Controllers	-	Options
	-	3: 3-axis 4: 4-axis	Standard type	30 : 300mm	15 : 150mm		5L : 5m 10L : 10m ☐ L : Specified length (1m increments)		T2 : XSEL-RAX/SAX		Refer to Options table below.

* Does not include a controller.


POINT
Selection
Notes

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]	1-axis	1st arm	120	400	±135 degrees	±0.010mm	5,529mm/s (composite 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 on P.20 for feasible operating conditions. *Speed limitation applies to the push force. Contact IAI America for details.

① Cable Length

Type	Cable code	3-axis specification	4-axis specification
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

② Options

Name	Model name	Reference page
Indicator	LED	See P.6

Actuator 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 φ4 outer diameter and φ2.5 inner diameter (maximum operating pressure 0.6MPa)
Alarm indicator *1 (Note 7)	1 small amber LED indicator (24 VDC supply required)
Brake release switch (Note 8)	Brake release switch for vertical axis fall prevention
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
Cable length	5L: 5m, 10L: 10m, ()L: Specified length, maximum 15m

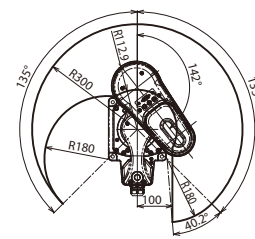
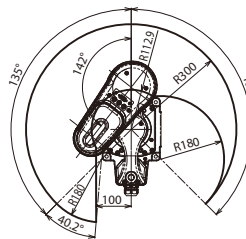
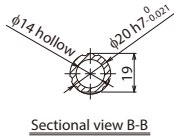
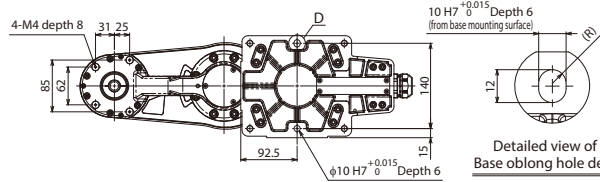
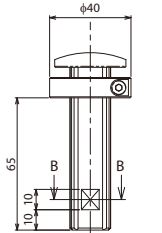
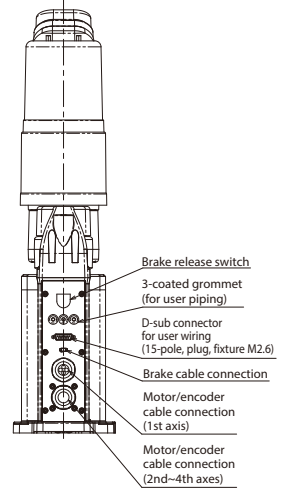
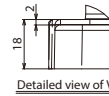
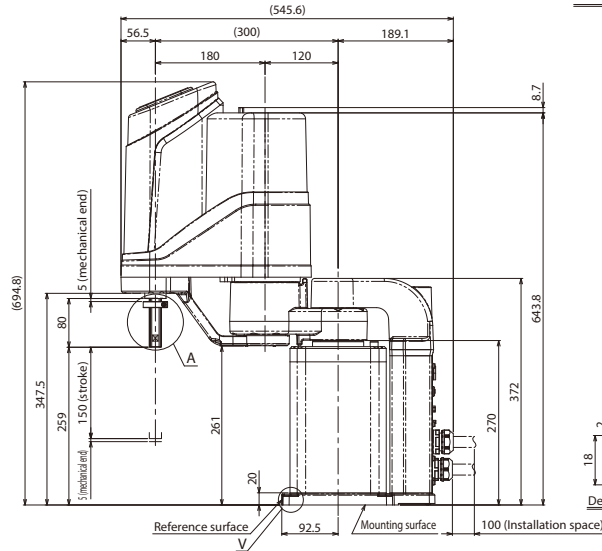
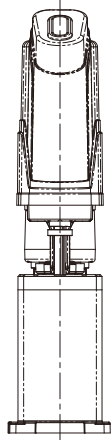
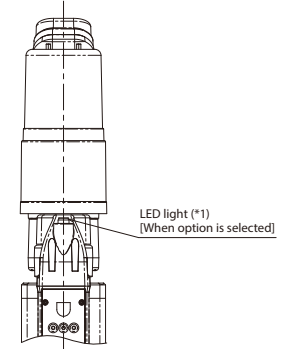
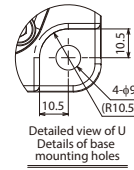
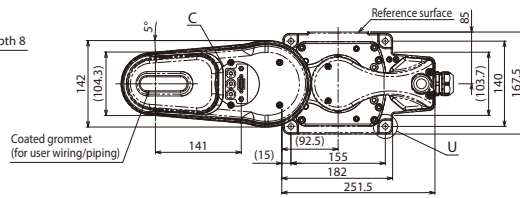
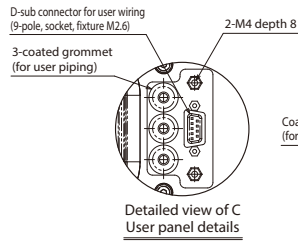
*1. An alarm indicator is equipped when the LED option is selected.

Dimensions

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

2D
CAD

3D
CAD



*1 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 200VAC	—	—	●	DeviceNet EtherCAT	41,250 (Depending on the type)	See P.24

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

 Battery-less
Absolute

 Arm Length:
450
mm

 Vertical Axis:
180/330
mm

Model Specification Items

IXA	-	☐	NNN	-	45	-	☐	-	T2	-	☐
Series	-	Number of Axes	Type	Arm Length	Vertical Axis Stroke	-	Cable Length	-	Applicable Controllers	-	Options
	-	3: 3-axis 4: 4-axis	Standard type	45 : 450mm	18 : 180mm 33 : 330mm	-	5L : 5m 10L : 10m ☐ L : Specified length (1m increments)	-	T2 : XSEL-RAX/SAX	-	Refer to Options table below.

* Does not include a controller.


POINT
Selection
Notes

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	6920mm/s	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 on 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 America for details.

① Cable Length

Type	Cable code	3-axis specification	4-axis specification
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

② Options

Name	Model name	Reference page
Indicator	LED	See P.6

Actuator Specifications

Item	Description
Encoder Type	Battery-less Absolute Encoder
User wiring	10-core (9-core + shield) AWG24
User piping	3 air tubes with φ6 outer diameter and φ4 inner diameter (maximum operating pressure 0.6MPa)
Alarm indicator *1 (Note 7)	1 small amber LED indicator (24 VDC supply required)
Brake release switch (Note 8)	Brake release switch for vertical axis fall prevention
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
Cable length	5L: 5m, 10L: 10m, () L: Specified length, maximum 15m

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

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

 Battery-less
Absolute

 Arm Length:
600
mm

 Vertical Axis:
180/330
mm

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		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	1-axis	1st arm	350	600	±137 degrees	±0.010mm	5934 mm/s (composite speed)	0.38	0.55	6	110.0	25.0	0.06	3.2
[IXA-3NNN6033-①-T2-②]		2nd arm	250	200	±140 degrees									
[4-axis specification] IXA-4NNN6018-①-T2-②	3-axis	Vertical axis	-	200	180mm [330mm]	±0.010mm	1600mm/s							
[IXA-4NNN6033-①-T2-②]	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 on 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 America for details.

① Cable Length

Type	Cable code	3-axis specification	4-axis specification
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

② Options

Name	Model name	Reference page
Indicator	LED	See P.6

Actuator 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 φ6 outer diameter and φ4 inner diameter (maximum operating pressure 0.6MPa)
Alarm indicator *1 (Note 7)	1 small amber LED indicator (24 VDC supply required)
Brake release switch (Note 8)	Brake release switch for vertical axis fall prevention
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
Cable length	5L: 5m, 10L: 10m, () L: Specified length, maximum 15m

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

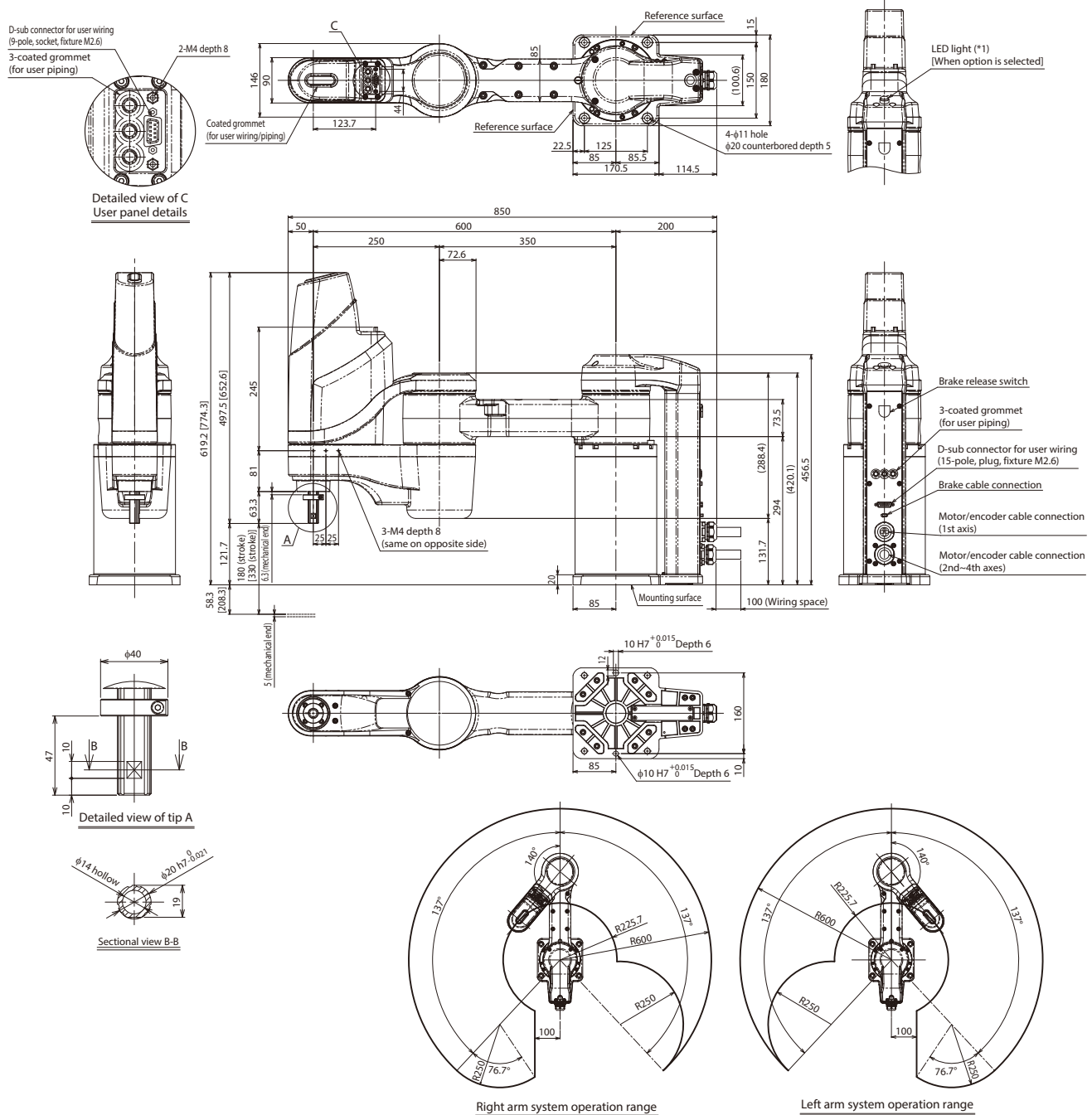
Dimensions

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

2D CAD

3D CAD

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



*1 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		7	Three-phase 200VAC	—	—	●	DeviceNet CC-Link EtherNet/IP EtherCAT	41,250 (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	NSN	30	15		T2
Series	3: 3-axis 4: 4-axis	Type High-speed type	Arm Length 30 : 300mm	Vertical Axis Stroke 15 : 150mm	Cable Length 5L : 5m 10L : 10m □ L : Specified length (1m increments)	Applicable Controllers T2 : XSEL-RAX/SAX

* Does not include a controller.


POINT
Selection Notes

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-3NSN3015-①-T2	1-axis 1st arm	120	600	±135 degrees	±0.010mm	6032 mm/s (composite 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-4NSN3015-①-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: ① Cable length

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

① Cable Length

Type	Cable code	3-axis specification	4-axis specification
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

Actuator 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 φ4 outer diameter and φ2.5 inner diameter (maximum operating pressure 0.6MPa)
Alarm indicator *1 (Note 7)	1 small amber LED indicator (24 VDC supply required)
Brake release switch (Note 8)	Brake release switch for vertical axis fall prevention
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
Cable length	5L: 5m, 10L: 10m, () L: Specified length, maximum 15m

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	-	Number of Axes	Type	Arm Length	Vertical Axis Stroke	-	Cable Length	-	Applicable Controllers
		3: 3-axis 4: 4-axis	High-speed type	45 : 450mm	18 : 180mm 33 : 330mm		5L : 5m 10L : 10m		T2 : XSEL-RAX/SAX

* Does not include a controller.


POINT
Selection
Notes

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-3NSN4518-①-T2 [IXA-3NSN4533 - ①-T2]	1-axis	1st arm	200	600	±137 degrees	±0.010mm	7583 mm/s (composite 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-4NSN4518-①-T2 [IXA-4NSN4533 - ①-T2]	3-axis	Vertical axis	-	200	180mm [330mm]	±0.010mm	1600mm/s	0.26	0.45	10	110.0	25.0	0.12	3.2
	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 on 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 America for details.

① Cable Length

Type	Cable code	3-axis specification	4-axis specification
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

Actuator Specifications

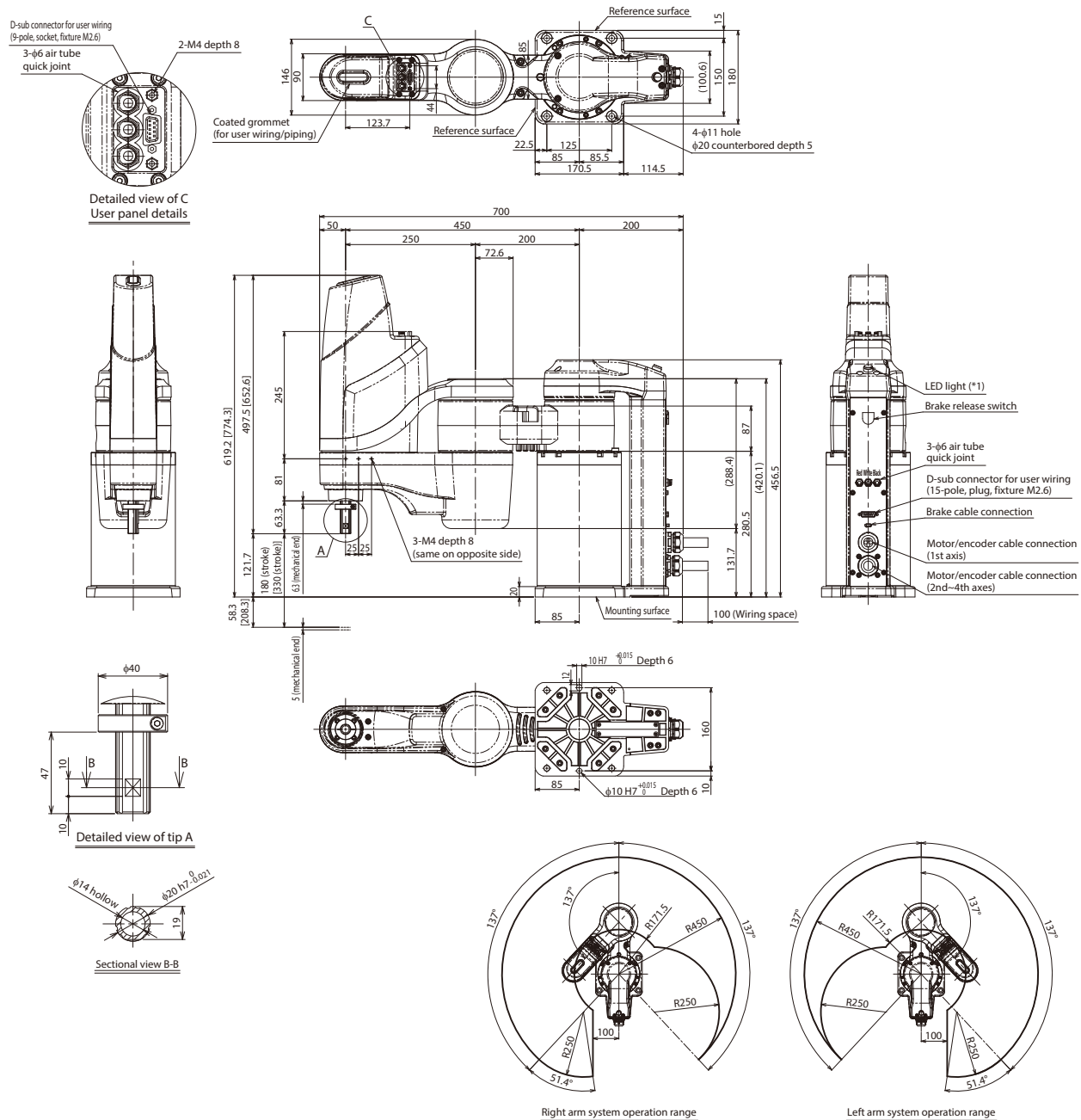
Item	Description
Encoder Type	Battery-less Absolute Encoder
User wiring	10-core (9-core + shield) AWG24 (rated 30V/max 1A)
User piping	3 air tubes with φ6 outer diameter and φ4 inner diameter (maximum operating pressure 0.6MPa)
Alarm indicator *1 (Note 7)	1 small amber LED indicator (24 VDC supply required)
Brake release switch (Note 8)	Brake release switch for vertical axis fall prevention
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
Cable length	5L: 5m, 10L: 10m, () L: Specified length, maximum 15m

Dimensions

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



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



*1 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		4	Three-phase 200VAC	—	—	●	   	41,250 (Depending on the type)	See P.24

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	-	Number of Axes	Type	Arm Length	Vertical Axis Stroke	-	Cable Length	-	Applicable Controllers	
			3: 3-axis 4: 4-axis	High-speed type	60 : 600mm	18 : 180mm 33 : 330mm		5L : 5m 10L : 10m  L : Specified length (1m increments)		T2 : XSEL-RAX/SAX	
* Does not include a controller.											

* Does not include a controller.



POINT
Selection Notes

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-3NSN6018-①-T2 [IXA-3NSN6033-①-T2]	1-axis	1st arm	350	750	±137 degrees	±0.010mm	6414 mm/s (composite 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-4NSN6018-①-T2 [IXA-4NSN6033-①-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: ① Cable length

Note: • The SCARA robot cannot operate continuously at 100% speed/acceleration. Refer to the Reference Data on 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 America for details.

① Cable Length

Type	Cable code	3-axis specification	4-axis specification
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

Actuator 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 φ6 outer diameter and φ4 inner diameter (maximum operating pressure 0.6MPa)
Alarm indicator *1 (Note 7)	1 small amber LED indicator (24 VDC supply required)
Brake release switch (Note 8)	Brake release switch for vertical axis fall prevention
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
Cable Length	5L: 5m, 10L: 10m, () L: Specified length, maximum 15m

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 with a cycle operation setting at maximum speed, under 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 same parameter setting value is 20%.

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

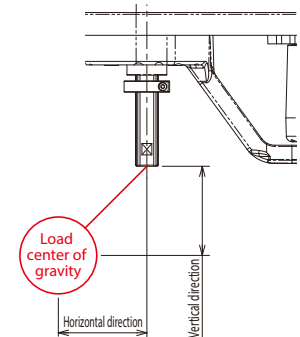
(Note 6) 4th axis allowable inertia moment

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-□NNN3515 IXA-□NSN3515	150mm or less	100mm or less
IXA-□NNN45□□ IXA-□NSN45□□	120mm or less	100mm or less
IXA-□NNN60□□ IXA-□NSN60□□	120mm or less	100mm or less
IXA-□NNN60□□ IXA-□NSN60□□	180mm or less	100mm 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.

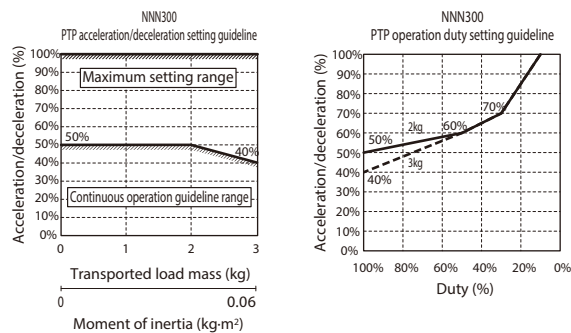
If continuous operation is required, do so under acceleration/deceleration settings within the continuous operation guideline range listed in the acceleration/deceleration setting guideline graph.

(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

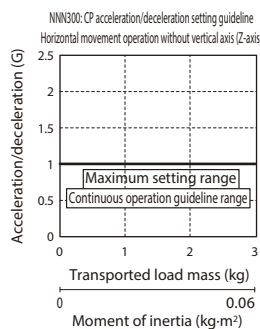
PTP operation / acceleration/deceleration setting guidelines



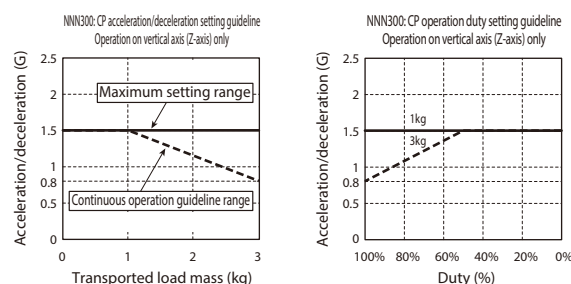
CP operation / acceleration/deceleration setting guidelines

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

● Horizontal

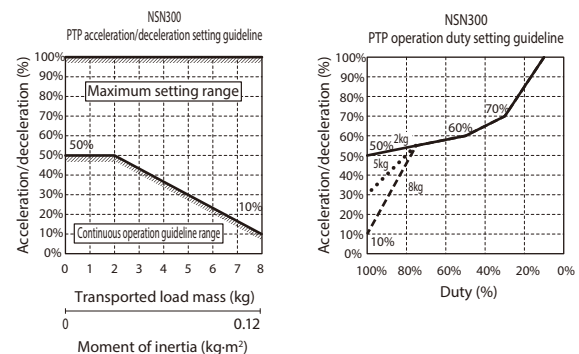


● Vertical



● For high-speed type: arm length 300

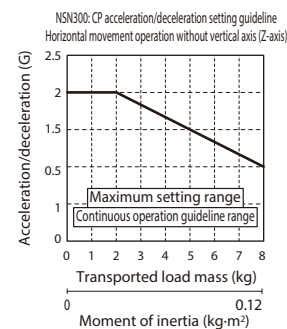
PTP operation / acceleration/deceleration setting guidelines



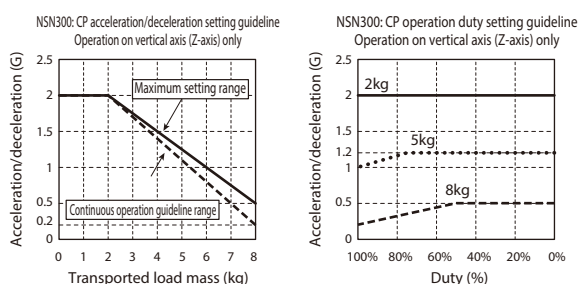
CP operation / acceleration/deceleration setting guidelines

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

● Horizontal



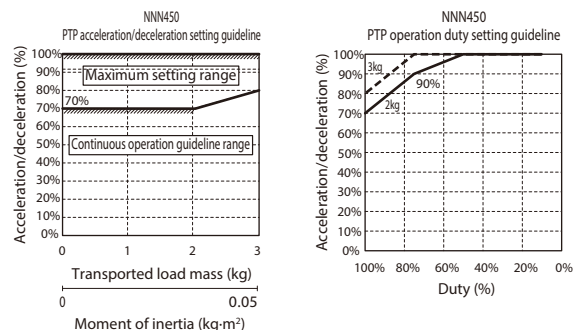
● Vertical



SCARA Robot IXA Acceleration/Deceleration Setting Guidelines

● For standard type: arm length 450

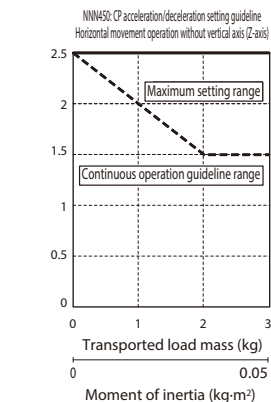
PTP operation / acceleration/deceleration setting guidelines



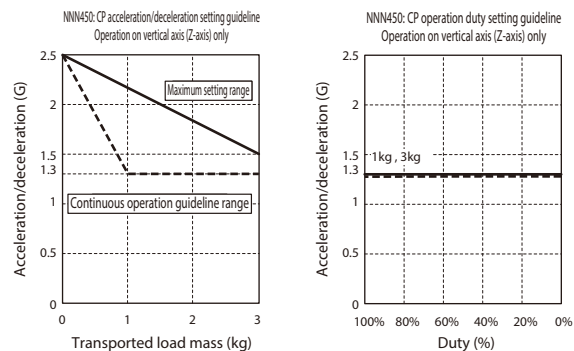
CP operation / acceleration/deceleration setting guidelines

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

● Horizontal

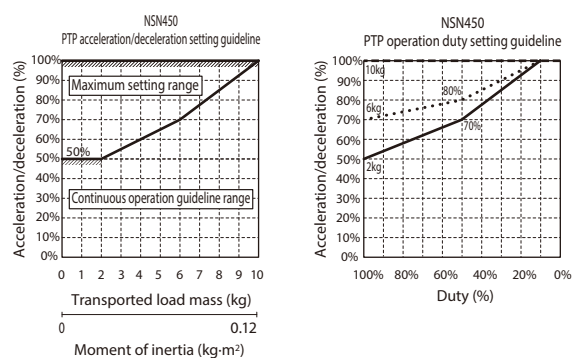


● Vertical



● For high-speed type: arm length 450

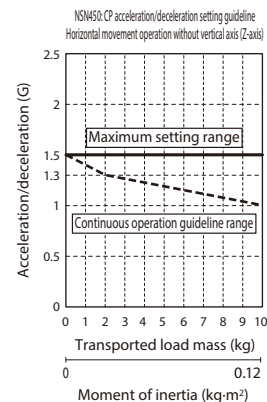
PTP operation / acceleration/deceleration setting guidelines



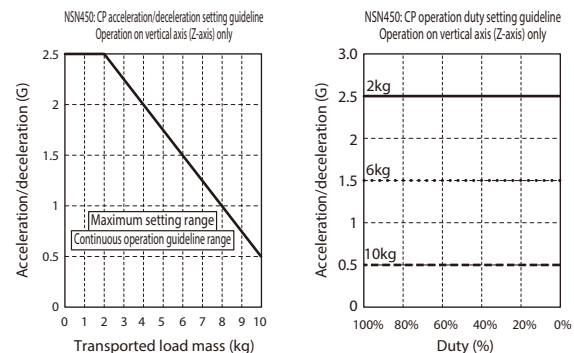
CP operation / acceleration/deceleration setting guidelines

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

● Horizontal

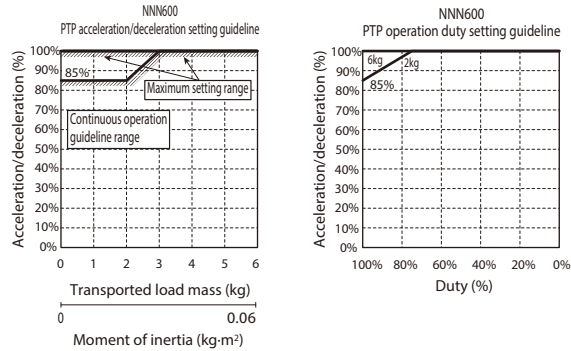


● Vertical



● For standard type: arm length 600

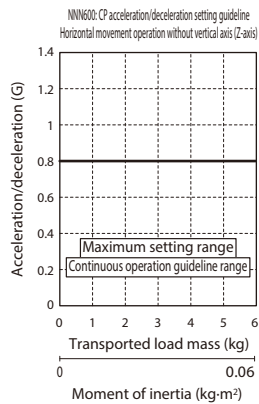
PTP operation / acceleration/deceleration setting guidelines



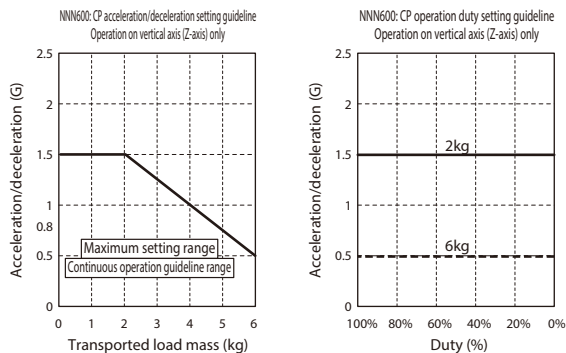
CP operation / acceleration/deceleration setting guidelines

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

● Horizontal

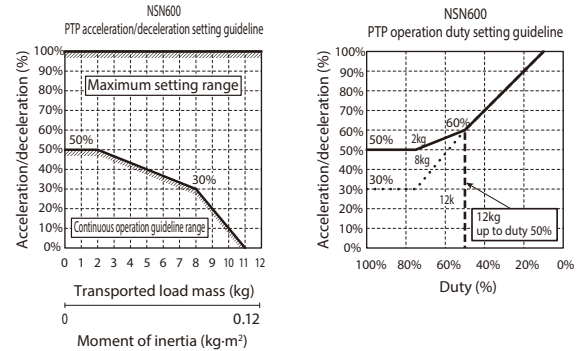


● Vertical



● For high-speed type: arm length 600

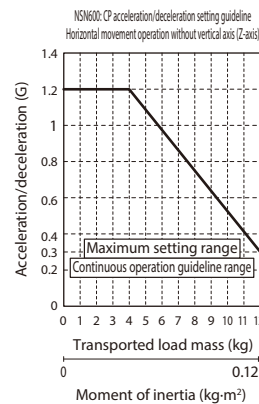
PTP operation / acceleration/deceleration setting guidelines



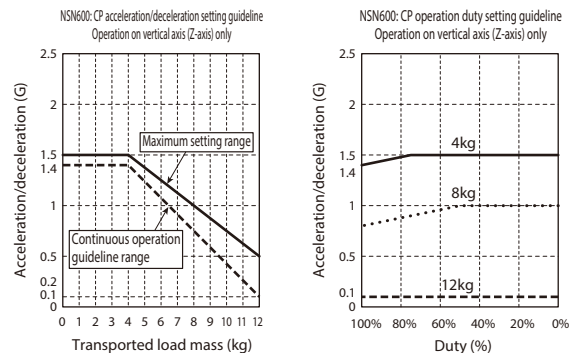
CP operation / acceleration/deceleration setting guidelines

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

● Horizontal



● Vertical

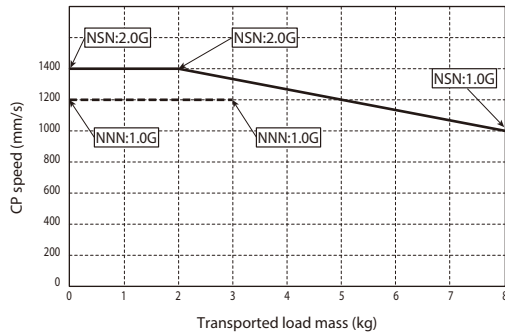


SCARA Robot IXA Acceleration/Deceleration Setting Guidelines

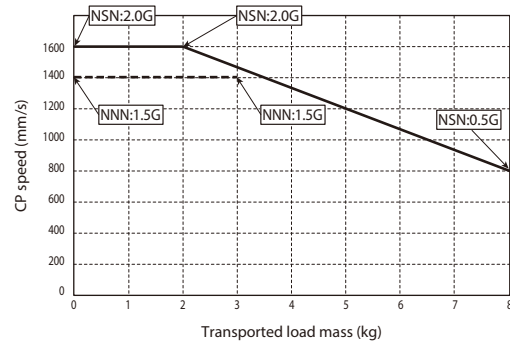
CP Operation: Acceleration/Deceleration Limitations

● For arm length 300

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

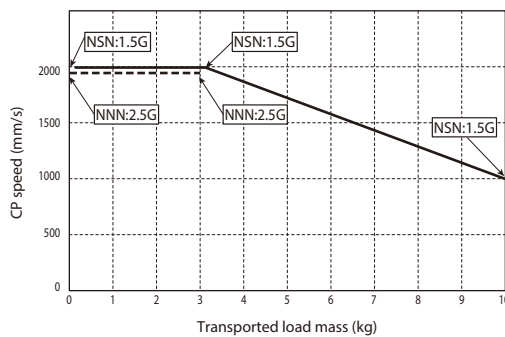


Operation on vertical axis (Z-axis) only

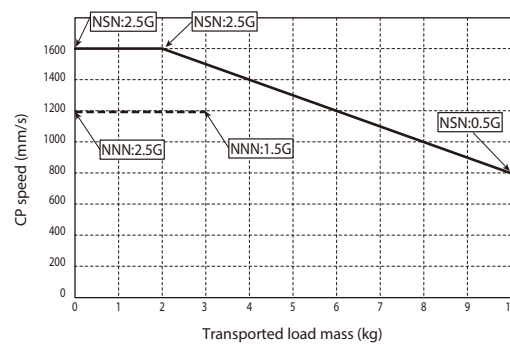


● For arm length 450

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

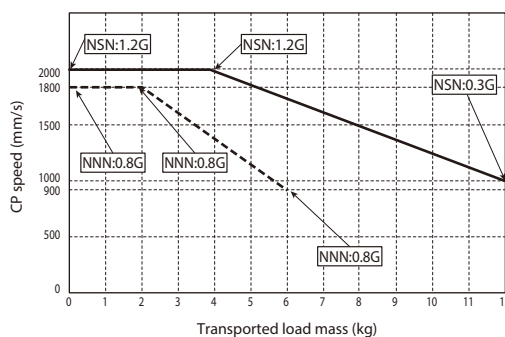


Operation on vertical axis (Z-axis) only

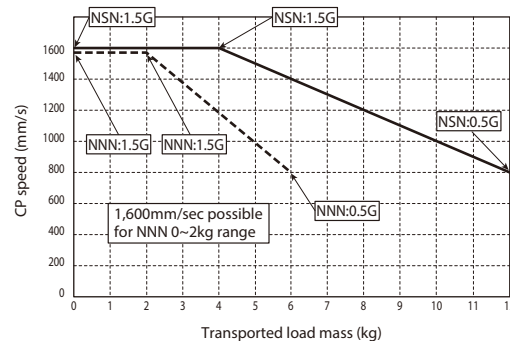


● For arm length 600

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



Operation on vertical axis (Z-axis) only



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 41,250 positions, (4-axis specification) Maximum 36,666 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		20,000	
Total number of connectable W		Three-phase 2,400W	
Motor input power supply voltage		Three-phase 200/230 VAC $\pm 10\%$	
Control power supply voltage		Single phase 200V/230VAC $\pm 10\%$	
Safety category (*1)		B	Safety category 4 compatible
Overseas standard		CE	
ROBO Cylinder 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 specification SCARA									
RAX4	3-axis specification SCARA + 1-axis/4-axis specification SCARA									
RAX5	3-axis specification SCARA + 2-axis/4-axis specification SCARA + 1-axis									
RAX6	3-axis specification SCARA + 3-axis/4-axis specification SCARA + 2-axis									
RAX7	3-axis specification SCARA + 4-axis/4-axis specification SCARA + 3-axis									
RAX8	4-axis specification SCARA + 4-axis									
SAX3	3-axis specification SCARA Safety category specification									
SAX4	3-axis specification SCARA + 1-axis/4-axis specification SCARA Safety category specification									
SAX5	3-axis specification SCARA + 2-axis/4-axis specification SCARA + 1-axis Safety category specification									
SAX6	3-axis specification SCARA + 3-axis/4-axis specification SCARA + 2-axis Safety category specification									
SAX7	3-axis specification SCARA + 4-axis/4-axis specification SCARA + 3-axis Safety category specification									
SAX8	4-axis specification SCARA + 4-axis Safety category specification									

* 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.

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

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	DS 30W	200S	Linear 200W
30R	RS 30W	300	300W
60	60W	400	400W
100	100W	600	600W
100S	Linear 100W	750	750W

0	No cable
2	2m (Standard)
3	3m
5	5m
3	Three-phase 200V

(Example) 12: 12 W servo motor supported

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 / 100S/200S Target Actuators>

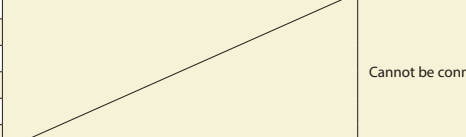
- Controller motor type [30D]: 30W actuator other than RS
- Controller motor type [30R]: RS
- Controller motor type [100S/200S]: LSAS

Non-Connectable Actuators (Additional Axes)

Linear servo actuators (other than LSAS Series), 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

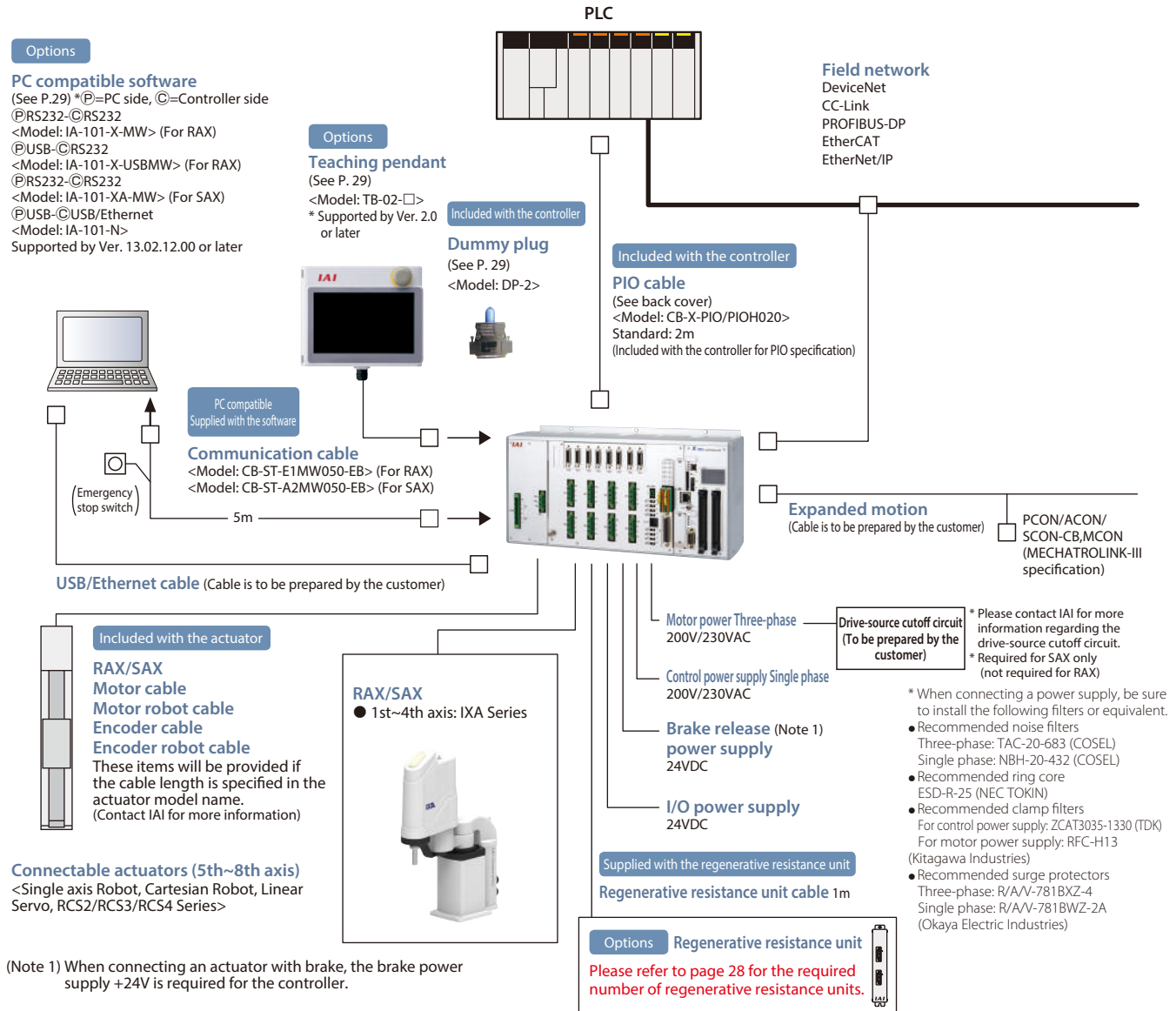
For SCARA controllers, there is a limit to the total motor wattage of the additional axis actuator motor that can be connected besides SCARA robots. Make sure that it does not exceed the "total wattage and max. number of connectable axes" in the following table.

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

* Additional axes cannot be connected to the 4th axis for the standard type SCARA robot 3-axis specification (3NNN3015/3NNN45□□).

System Configuration

■ XSEL-RAX/SAX Type

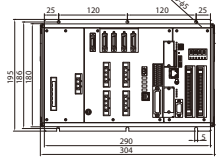
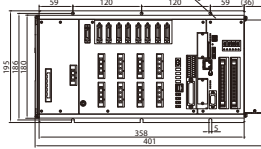
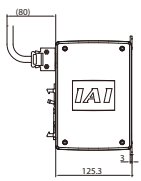
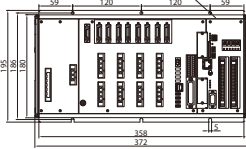
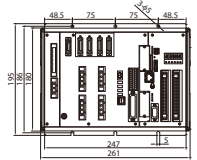
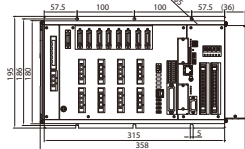
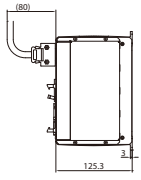
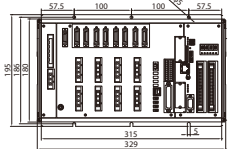


Specifications Table

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 200/230VAC $\pm 10\%$	
Power frequency	50/60Hz	
Insulation resistance	10M Ω 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	1 mm/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	20,000 steps (total)	
No. of multi-tasking programs	16 programs	
Number of positions	Varies by the number of controlled axes 3-axis: 41,250, 4-axis: 36,666, 5-axis: 33,000, 6-axis: 30,000, 7-axis: 27,500, 8-axis: 25,384	
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) 1ch 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 1k Ω /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 IAI.

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 more than 1 connected single actuator, the external dimensions will be that of the absolute specification.

* For high-speed type and standard type products (IXA-4NNN60□□ or additional axes connected), these are the external dimensions for 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

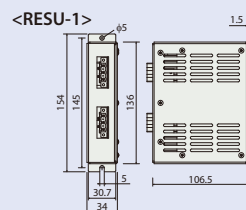
Unit that converts the regenerative current generated during motor deceleration to heat. Although the controller is equipped with a regenerative resistor inside, an additional external regenerative resistance unit may be necessary if the load in the vertical axis is large and the capacity is insufficient.

<When connecting a single axis robot>

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

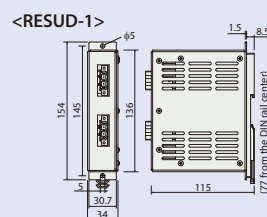
Horizontal specification

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□□	
	60□□	

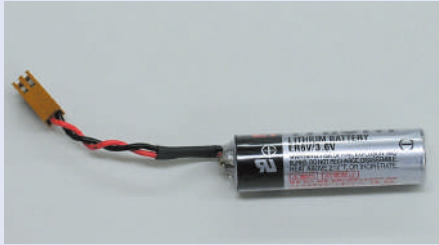
* The required number is for a single SCARA robot. When connecting a single axis robot as an additional axis, be sure to add regenerative resistors for the single axis robot.

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** * Additional axes for absolute specification only

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.

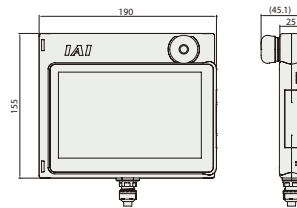


Touch Panel Teaching Pendant

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)

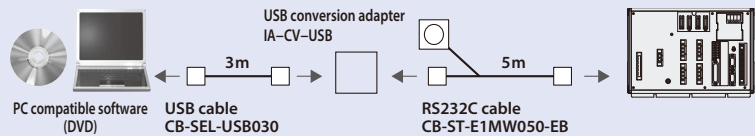
USB Compliant PC Software (For XSEL-RAX)

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 (DVD-ROM), compatible Windows: 7/8/8.1/10

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



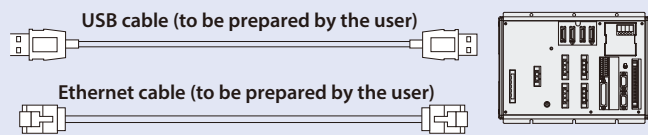
PC Compatible Software

Model **IA-101-N**

Features It only comes with the PC compatible software (DVD-ROM). 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 (DVD-ROM), compatible 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 Compatible Software (For XSEL-RAX)

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

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

Model **IA-101-XA-MW**

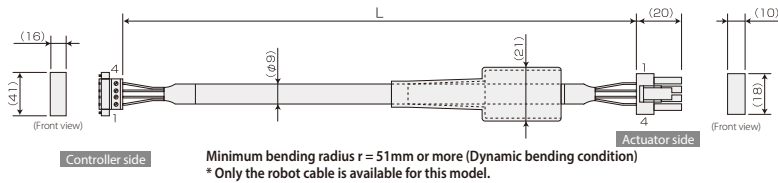
Maintenance Parts

When placing an order for the replacement cable, please use the model name shown below. (* Contact IAI for additional axis connection cables.)

Motor cable

Model: **CB-X-MA**□□□

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

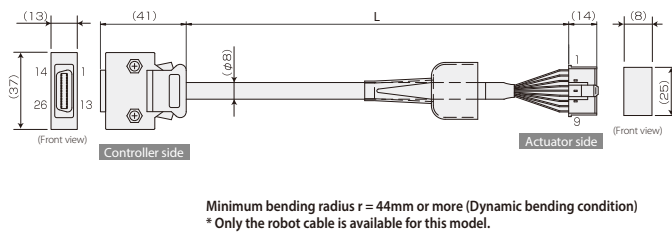


Wiring	Color	Signal	No.	Signal	Color	Wiring
0.75sq	Green	PE	1	1	U	Red
	Red	U	2	2	V	White
	White	V	3	3	W	Black
	Black	W	4	4	PE	Green

Encoder cable

Model: **CB-X1-PA**□□□

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

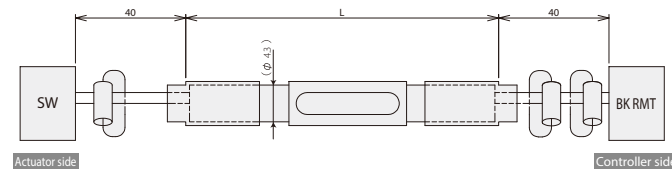


Wiring	Color	Signal	No.	No.	Signal	Color	Wiring
-	-	-	10	2	BAT+	Purple	
-	-	-	11	3	SD	Gray	
-	-	E24V	12	4	SD	Green	
-	-	OV	13	5	VCC	Red	
-	-	LS	26	6	GND	Black	
-	-	CREEP	25	7	Fs	Drain	
-	-	OT	24	8	BK	Blue	
-	-	RSV	23	9	BK+	Yellow	
-	-	-	9				
-	-	-	18				
-	-	-	19				
-	-	-	1				
-	-	A+	2				
-	-	A-	3				
-	-	B+	4				
-	-	B-	5				
-	-	Z+	6				
-	-	Z-	7				
-	-	SRD+	8				
-	-	SRD-	14				
-	-	BAT+	15				
-	-	BAT-	16				
-	-	VCC	17				
-	-	GND	20				
-	-	BKR	21				
-	-	BKR+	22				

Brake cable (IXA-□NNN30/□NNN45)

Model: **CB-IXA-BK**□□□-1

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

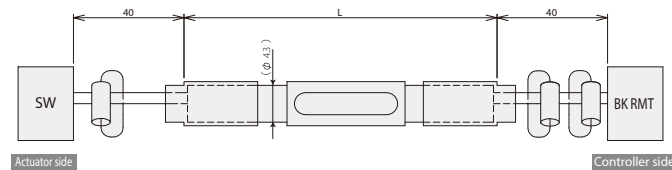


Connector	Identification	Signal	Pin No.	Pin No.	Signal	Identification	Connector
SW	Red	BK3	1	A2	BK3	Red	BK RMT
	White	COM	2	A3	COM	White	
	-	-	3	Remaining	-	-	

Brake cable (IXA-□NNN60)

Model: **CB-IXA-BK**□□□-2

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

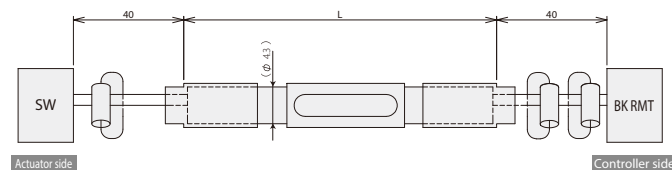


Connector	Identification	Signal	Pin No.	Pin No.	Signal	Identification	Connector
SW	Red	BK4	1	B2	BK4	Red	BK RMT
	White	COM	2	A3	COM	White	
	-	-	3	Remaining	-	-	

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

Model: **CB-IXA-BK**□□□-3

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

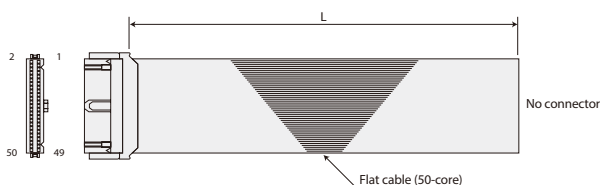


Connector	Identification	Signal	Pin No.	Pin No.	Signal	Identification	Connector
SW	Red	BKS	1	A4	BKS	Red	BK RMT
	White	COM	2	A3	COM	White	
	-	-	3	Remaining	-	-	

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	Flat cable	25	Green3	Flat cable	42	Red5	Flat cable
9	White1	(pressure-welded)	26	Blue3	(pressure-welded)	43	Orange5	(pressure-welded)
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

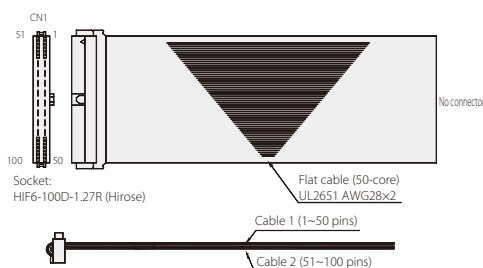


Table 1										Table 2									
Input	Pin No.	Color	Port No.	Function	Input	Pin No.	Color	Port No.	Function	Input	Pin No.	Color	Port No.	Function	Input	Pin No.	Color	Port No.	Function
	1	Brown	1	—	External power supply 24VDC for fan No.2-3,5-7-9	26	Blue	3	—	External power supply 24VDC for fan No.2-3,5-7-9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

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The information contained in this product brochure may change without prior notice due to product improvements.

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