

IXA

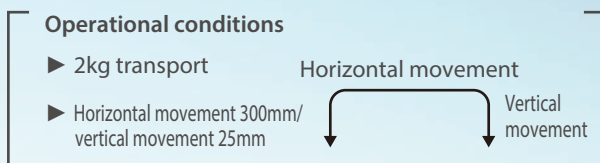


Fastest in the industry!

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**

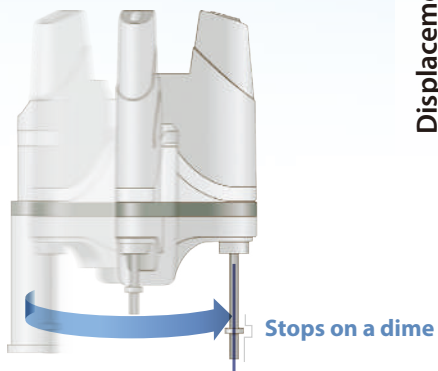
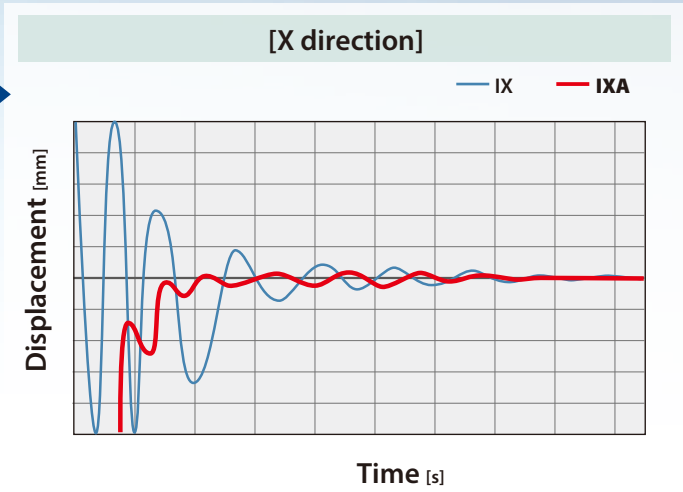
Our new SCARA robot is even more affordable than previous models. Plus, it offers even better performance and functionality.



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



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.



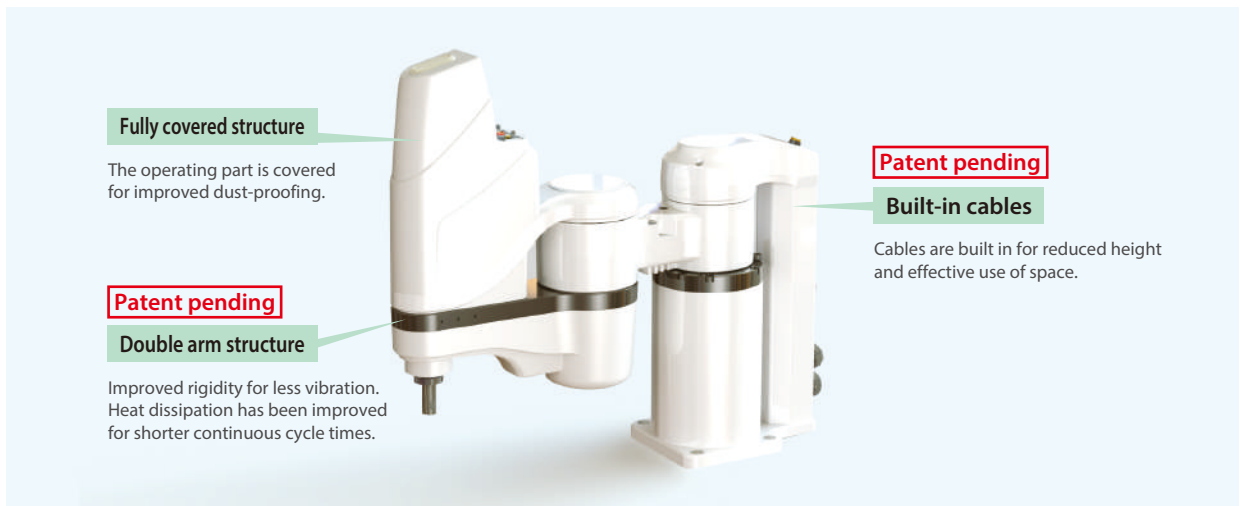
Battery-less Absolute Encoder

No Battery,

No Maintenance, No Homing,

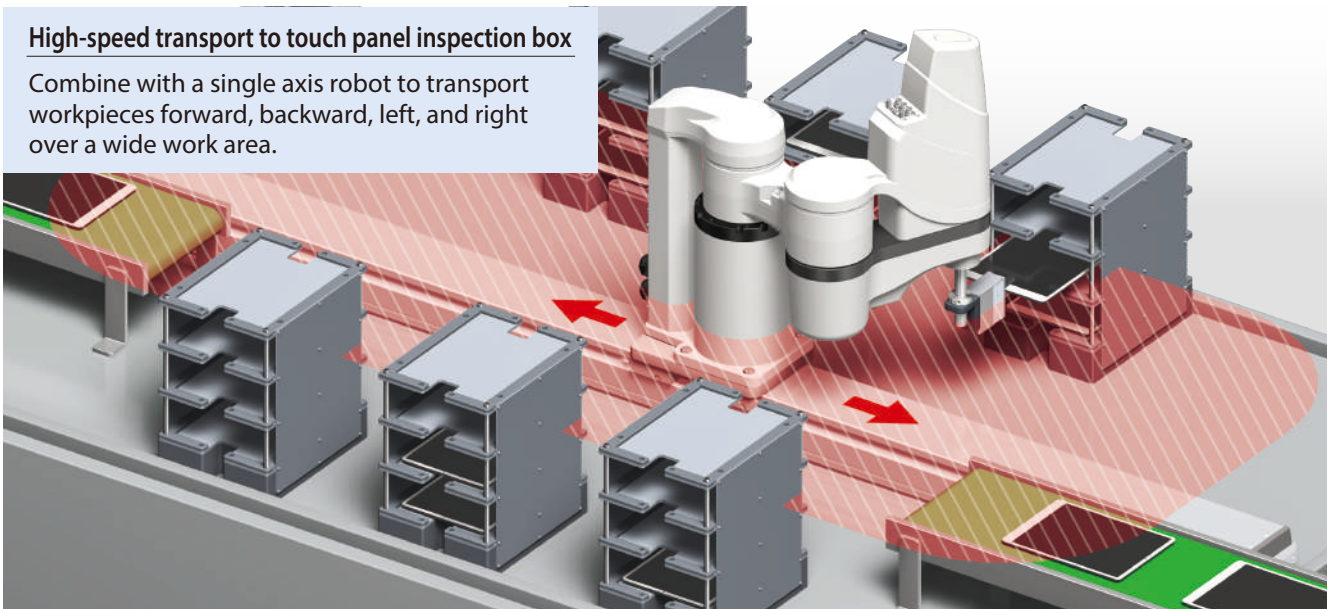
No Going Back to Incremental.

5 Mechanical structure/features



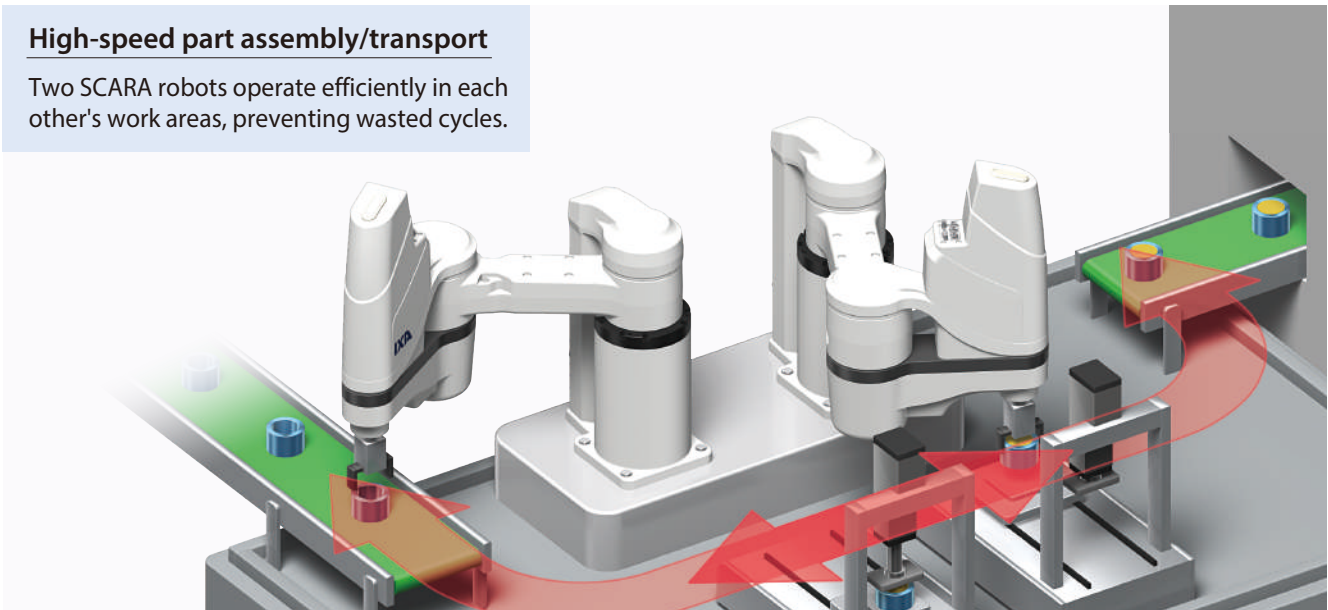
High-speed transport to touch panel inspection box

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



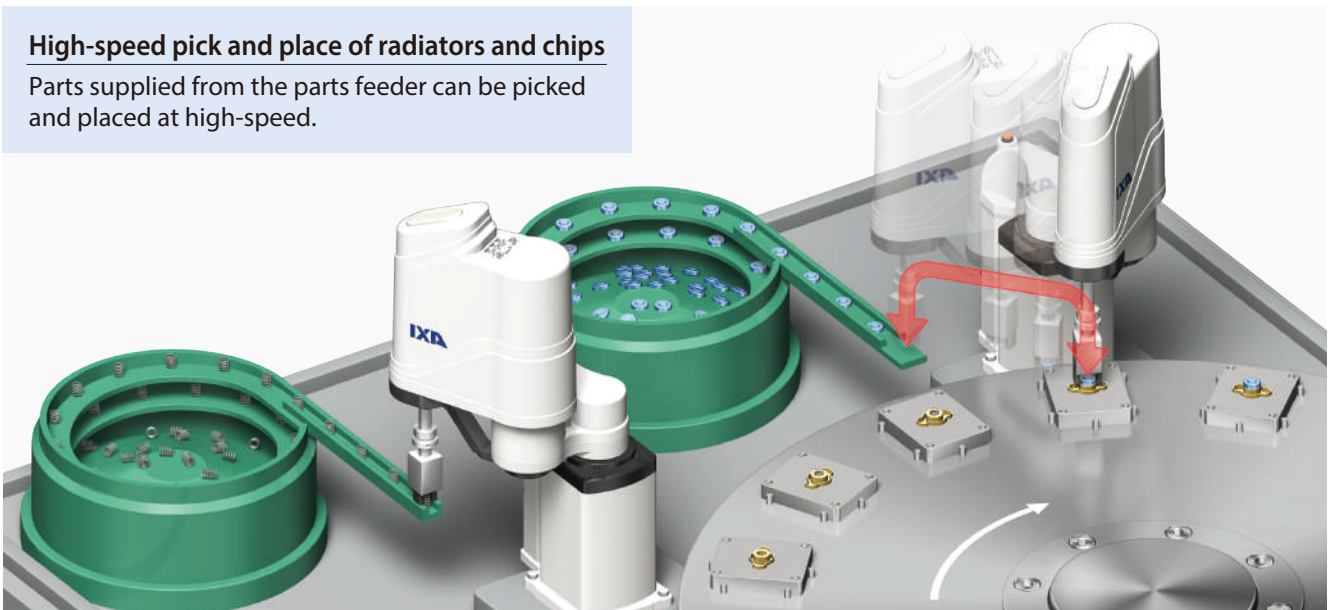
High-speed part assembly/transport

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							▶ P9
	IXA-3NNN4533	3-axis			330			▶ P9	
	IXA-4NNN4533	4-axis						▶ P9	
	IXA-3NNN6018	3-axis	350	250	180			6	▶ P11
	IXA-4NNN6018	4-axis							▶ P11
	IXA-3NNN6033	3-axis			330				▶ P11
	IXA-4NNN6033	4-axis							▶ P11
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							▶ P15
	IXA-3NSN4533	3-axis			330				▶ P15
	IXA-4NSN4533	4-axis							▶ P15
	IXA-3NSN6018	3-axis	350	250	180			12	▶ P17
	IXA-4NSN6018	4-axis							▶ P17
	IXA-3NSN6033	3-axis			330				▶ P17
	IXA-4NSN6033	4-axis							▶ P17

IXA
Series

□
Type

□
Cable Length

T2
Applicable Controllers

□
Options

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
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

T2	XSEL-RAX/SAX
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LED	indicator
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* Only available for standard type.

5L	5m
10L	10m
□L:	Specified length (1m increments), maximum length 15m

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
			45□□
			60□□
	High-speed type	NSN	3015
			45□□
			60□□
			IX-FL-1

(Example)

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

Number of axes: 3

Arm length:
450mm

Cable length: 5m

Controller:
XSEL-RAX/SAX

Option:
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	-	<input type="checkbox"/>	NNN	30	15	-	<input type="checkbox"/>	T2	-	<input type="checkbox"/>
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 <input type="checkbox"/> 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	
	1-axis	2-axis									Upper limit (Note 5)	Lower limit (Note 5)	Allowable inertia moment (kg·m ²) (Note 6)	Allowable torque (N·m)
[3-axis specification] IXA-3NNN3015-①-T2-②	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
	2-axis	2nd arm	180	200	±142 degrees									
[4-axis specification] IXA-4NNN3015-①-T2-②	3-axis	Vertical axis	-	100	150mm	±0.010mm	1400mm/s							
	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)	<input type="checkbox"/>	<input type="checkbox"/>
	10L(10m)	<input type="checkbox"/>	<input type="checkbox"/>
Specified length	1L(1m)~4L(4m)	<input type="checkbox"/>	<input type="checkbox"/>
	6L(6m)~9L(9m)	<input type="checkbox"/>	<input type="checkbox"/>
	11L(11m)	<input type="checkbox"/>	<input type="checkbox"/>
	12L(12m)	<input type="checkbox"/>	<input type="checkbox"/>
	13L(13m)	<input type="checkbox"/>	<input type="checkbox"/>
	14L(14m)	<input type="checkbox"/>	<input type="checkbox"/>
	15L(15m)	<input type="checkbox"/>	<input type="checkbox"/>

[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

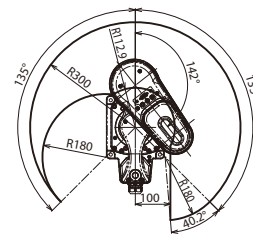
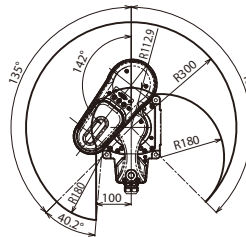
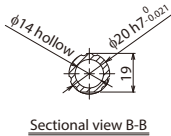
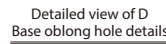
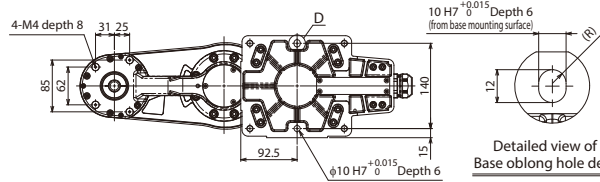
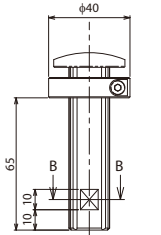
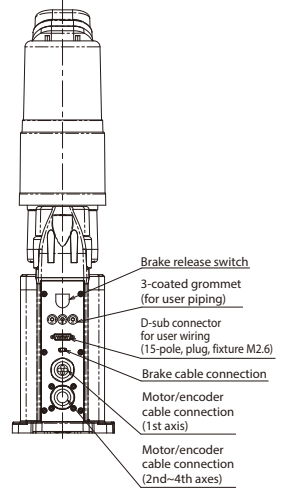
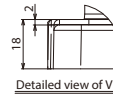
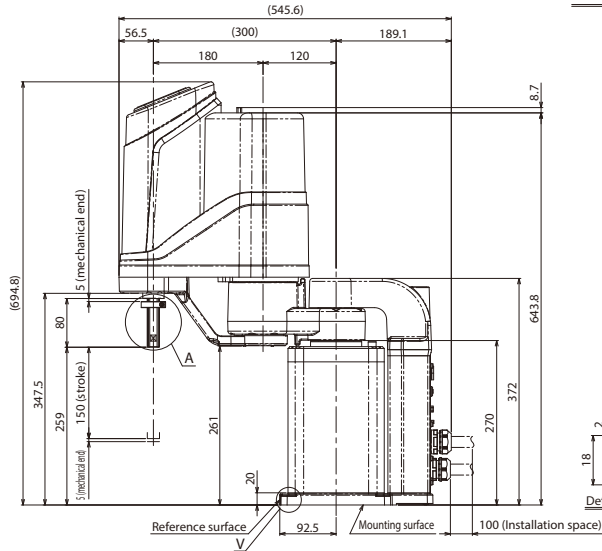
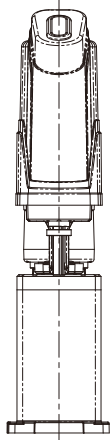
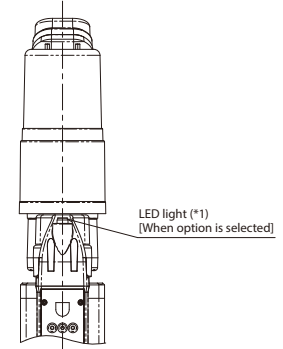
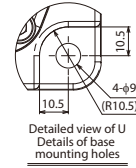
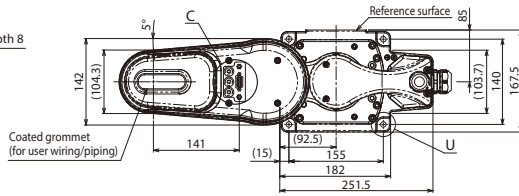
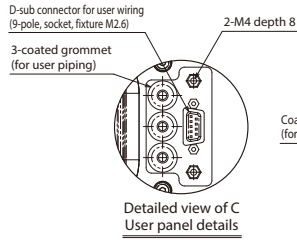
Actuator Specifications

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



*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	-	-	•		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	-	<input type="checkbox"/>	NNN	45	-	<input type="checkbox"/>	-	T2	-	<input type="checkbox"/>
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 <input type="checkbox"/> : 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-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)	<input type="checkbox"/>	<input type="checkbox"/>
	10L(10m)	<input type="checkbox"/>	<input type="checkbox"/>
Specified length	1L(1m)~4L(4m)	<input type="checkbox"/>	<input type="checkbox"/>
	6L(6m)~9L(9m)	<input type="checkbox"/>	<input type="checkbox"/>
	11L(11m)	<input type="checkbox"/>	<input type="checkbox"/>
	12L(12m)	<input type="checkbox"/>	<input type="checkbox"/>
	13L(13m)	<input type="checkbox"/>	<input type="checkbox"/>
	14L(14m)	<input type="checkbox"/>	<input type="checkbox"/>
	15L(15m)	<input type="checkbox"/>	<input type="checkbox"/>

[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

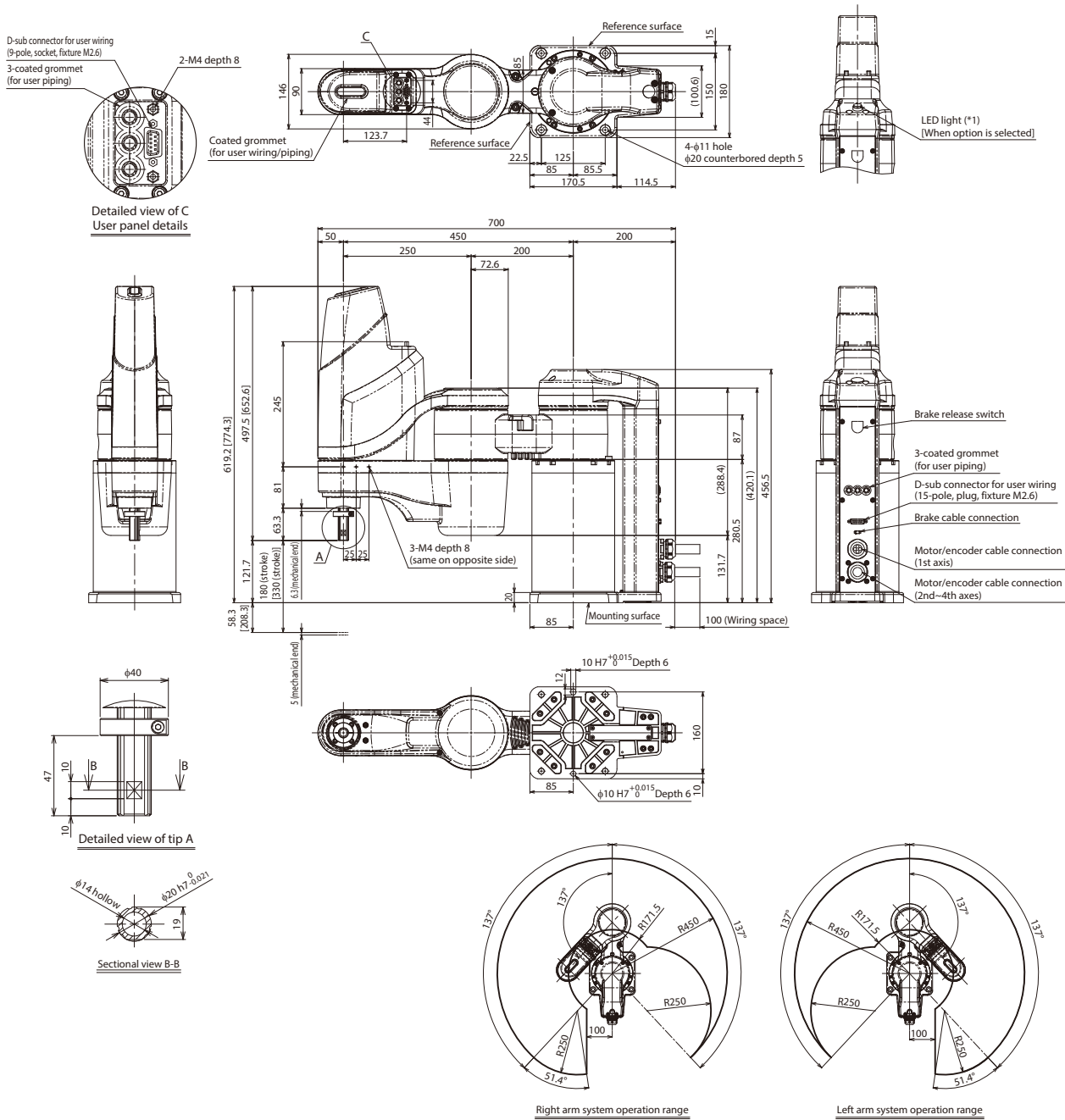
*1. An alarm indicator is equipped when the LED option is selected.

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		8	Three-phase 200VAC	-	-	•		41,250 (Depending on the type)	See P.24

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

Battery-less Absolute

Arm Length: 600 mm

Vertical Axis: 180/330 mm

Model Specification Items

Series	IXA	-	□	Type	NNN	60	-	□	-	□	-	T2	-	□
	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		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·m ²) (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	5934 mm/s (composite 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 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

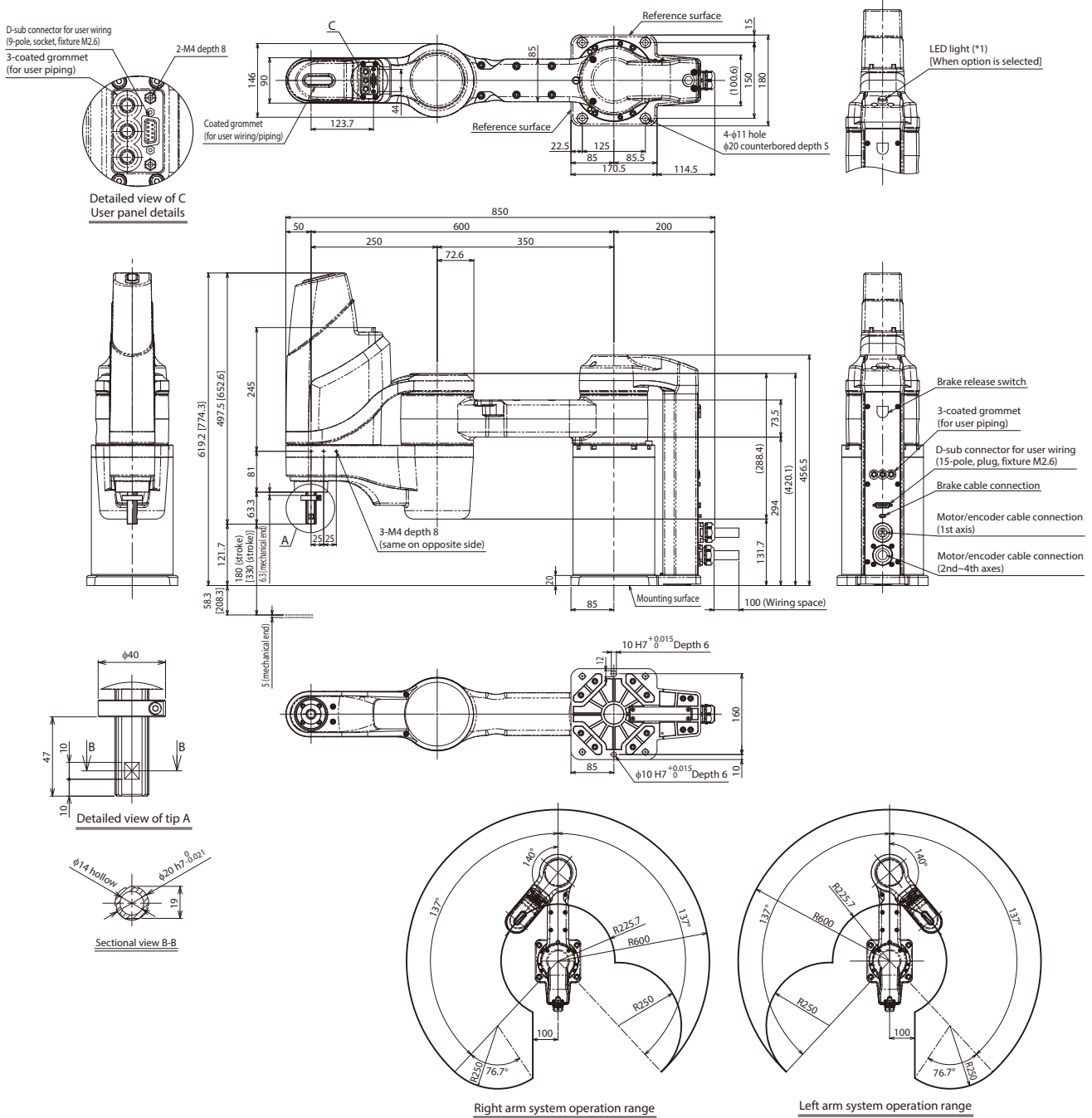
*1. An alarm indicator is equipped when the LED option is selected.

Dimensions

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



* 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	-	-	•		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	- 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	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	
	1-axis	2-axis									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							
	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)	○	○

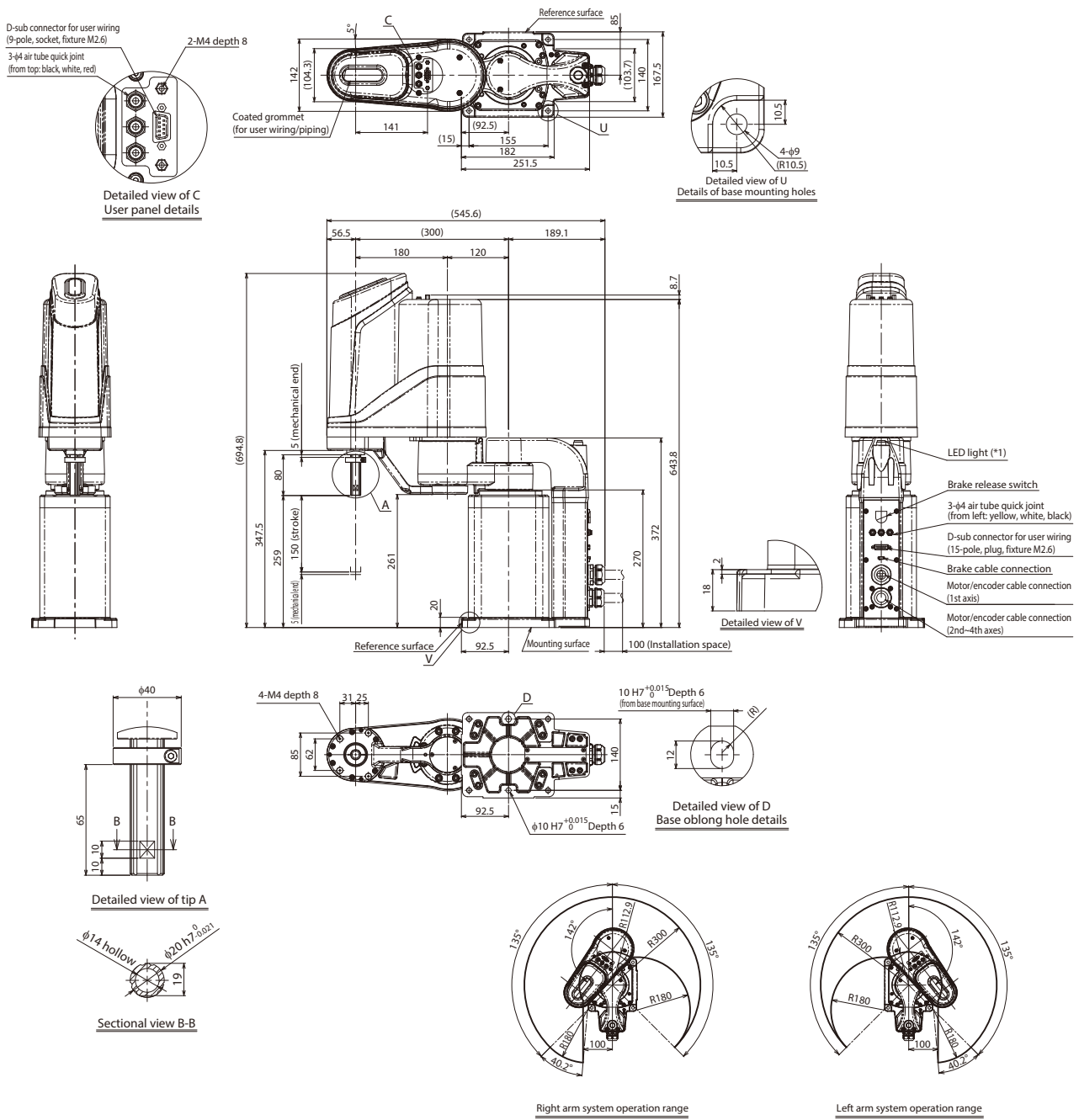
[3-axis specification] - Motor cables: 3 - Encoder cables: 3 - Brake cable: 1
 [4-axis specification] - Motor cables: 4 - Encoder cables: 4 - Brake cable: 1

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

Dimensions

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



*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-3NSN4518/4NSN4518 3NSN4533/4NSN4533

High-Speed Type

Battery-less Absolute

Arm Length: 450 mm

Vertical Axis: 180/330 mm

Model Specification Items

IXA	-	<input type="checkbox"/>	NSN	45	-	<input type="checkbox"/>	-	<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	45 : 450mm	18 : 180mm 33 : 330mm	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-3NSN4518- <input type="checkbox"/> -T2 [IXA-3NSN4533- <input type="checkbox"/> -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- <input type="checkbox"/> -T2 [IXA-4NSN4533- <input type="checkbox"/> -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 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)	<input type="checkbox"/>	<input type="checkbox"/>
	10L(10m)	<input type="checkbox"/>	<input type="checkbox"/>
Specified length	1L(1m)~4L(4m)	<input type="checkbox"/>	<input type="checkbox"/>
	6L(6m)~9L(9m)	<input type="checkbox"/>	<input type="checkbox"/>
	11L(11m)	<input type="checkbox"/>	<input type="checkbox"/>
	12L(12m)	<input type="checkbox"/>	<input type="checkbox"/>
	13L(13m)	<input type="checkbox"/>	<input type="checkbox"/>
	14L(14m)	<input type="checkbox"/>	<input type="checkbox"/>
	15L(15m)	<input type="checkbox"/>	<input type="checkbox"/>

[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

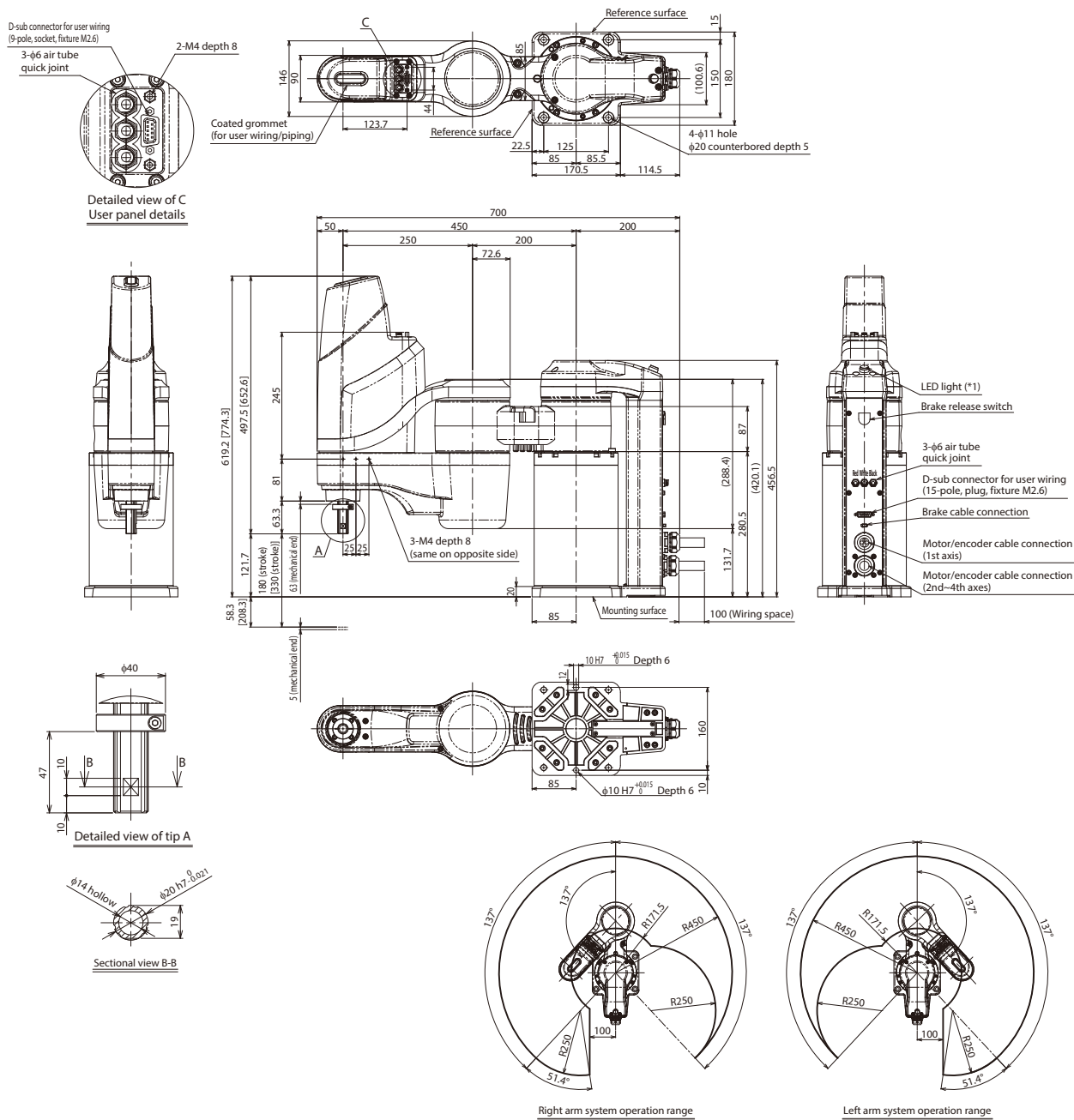
Item	Description
Encoder Type	Battery-less Absolute Encoder
User wiring	10-core (9-core + shield) AWG24 (rated 30V/max 1A)
User piping	3 air tubes with φ6 outer diameter and φ4 inner diameter (maximum operating pressure 0.6MPa)
Alarm indicator *1 (Note 7)	1 small amber LED indicator (24 VDC supply required)
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	-	<input type="checkbox"/>	NSN	60	-	<input type="checkbox"/>	-	<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	60 : 600mm	18 : 180mm 33 : 330mm	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-3NSN6018- <input type="checkbox"/> -T2 [IXA-3NSN6033- <input type="checkbox"/> -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- <input type="checkbox"/> -T2 [IXA-4NSN6033- <input type="checkbox"/> -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 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)	<input type="checkbox"/>	<input type="checkbox"/>
	10L(10m)	<input type="checkbox"/>	<input type="checkbox"/>
Specified length	1L(1m)~4L(4m)	<input type="checkbox"/>	<input type="checkbox"/>
	6L(6m)~9L(9m)	<input type="checkbox"/>	<input type="checkbox"/>
	11L(11m)	<input type="checkbox"/>	<input type="checkbox"/>
	12L(12m)	<input type="checkbox"/>	<input type="checkbox"/>
	13L(13m)	<input type="checkbox"/>	<input type="checkbox"/>
	14L(14m)	<input type="checkbox"/>	<input type="checkbox"/>
	15L(15m)	<input type="checkbox"/>	<input type="checkbox"/>

[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

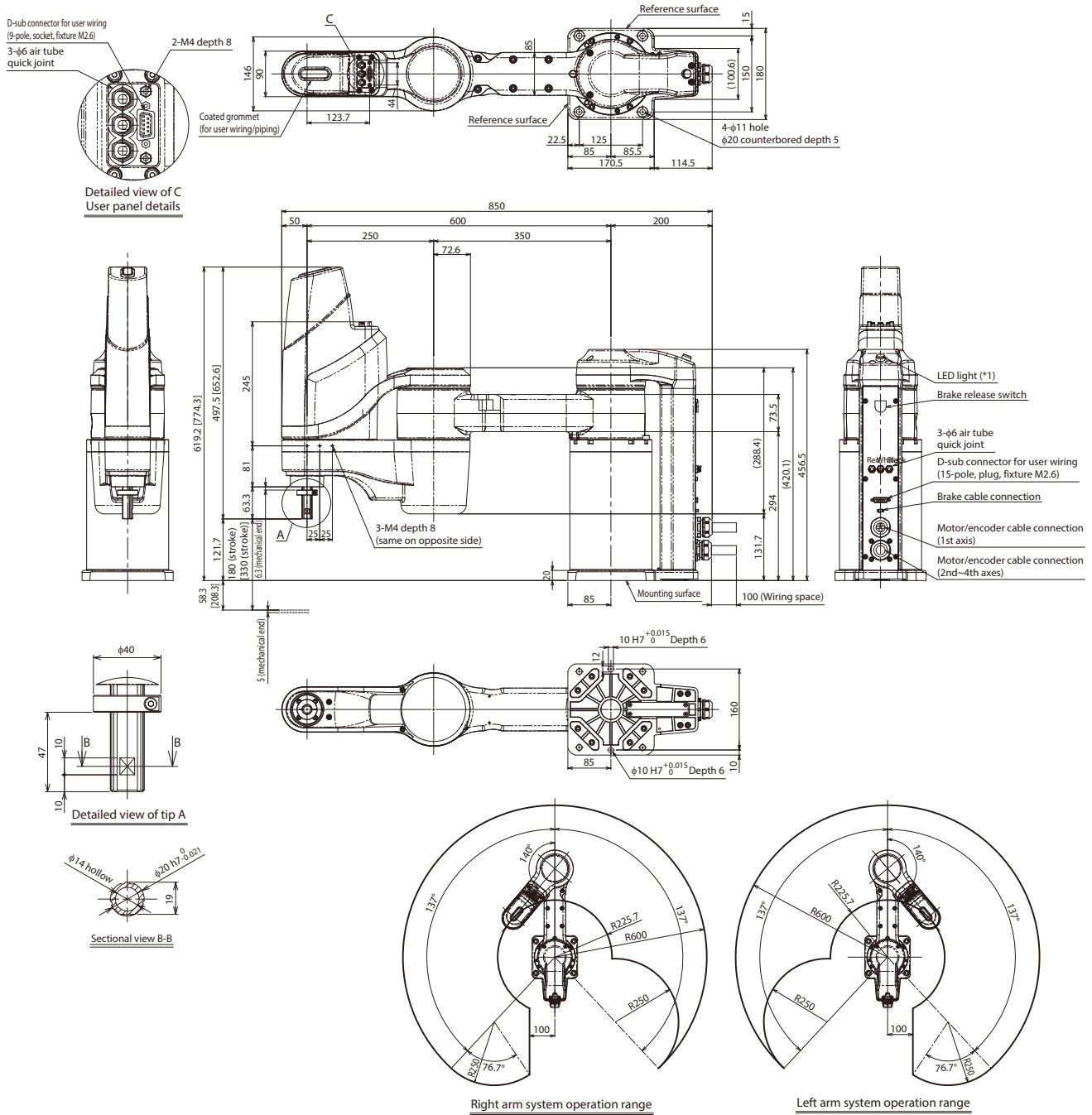
Item	Description
Encoder Type	Battery-less Absolute Encoder
User wiring	10-core (9-core + shield) AWG24 (rated 30V/max 1A)
User piping	3 air tubes with φ6 outer diameter and φ4 inner diameter (maximum operating pressure 0.6MPa)
Alarm indicator *1 (Note 7)	1 small amber LED indicator (24 VDC supply required)
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

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

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.

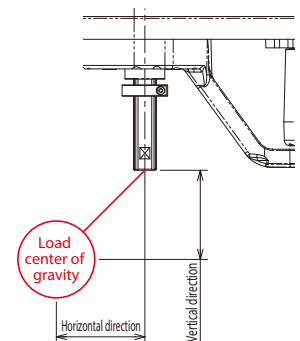
(Note 5) 3rd axis push force control range

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 180mm or less	100mm or less
IXA-□NNN60□□ IXA-□NSN60□□	120mm or less 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.

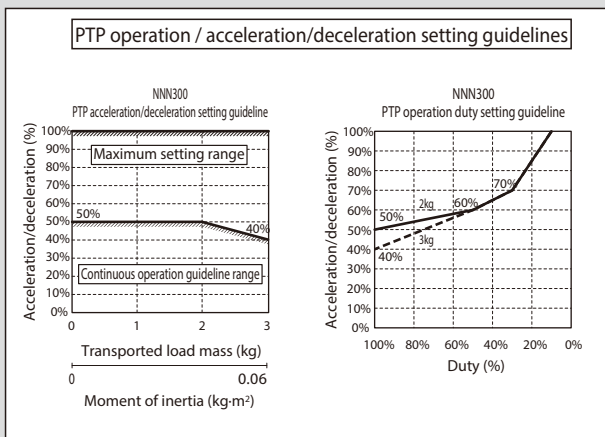
To operate under the maximum acceleration/deceleration, refer to the continuous operation duty guideline graph and set a stop time.

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.

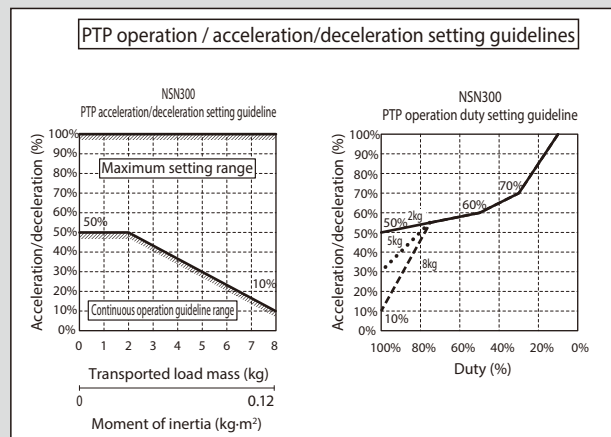
(Notes)

- 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) Duty (%) = (Operation time / (Operation time + Stop time)) x 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.

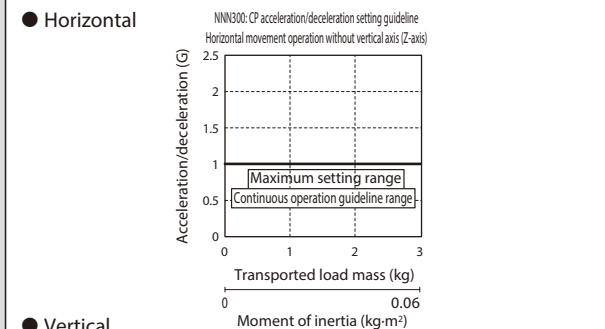
● For standard type: arm length 300



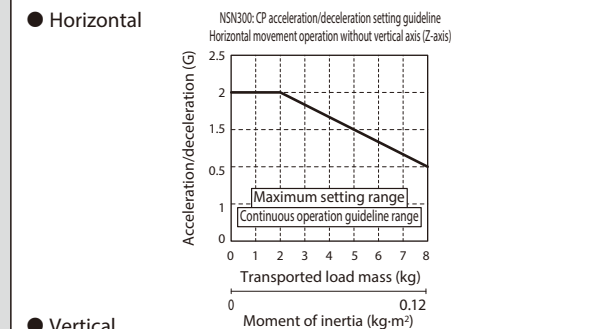
● For high-speed type: arm length 300



CP operation / acceleration/deceleration setting guidelines
 Refer to "Acceleration/Deceleration Limitations" (P.23) for information on the maximum speed.

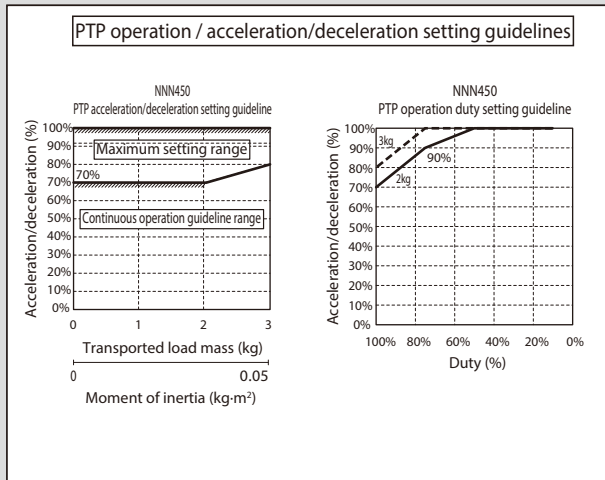


CP operation / acceleration/deceleration setting guidelines
 Refer to "Acceleration/Deceleration Limitations" (P.23) for information on the maximum speed.

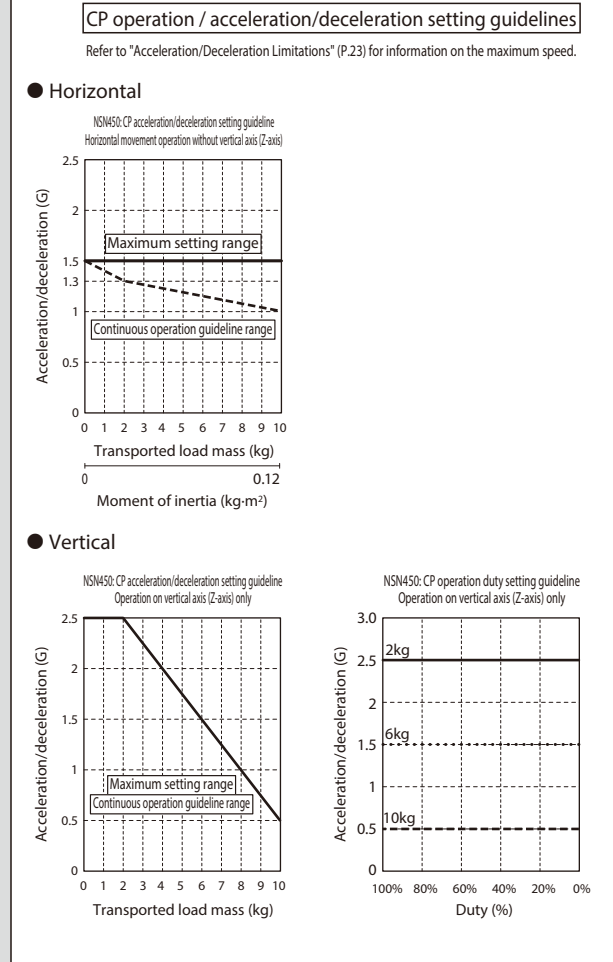
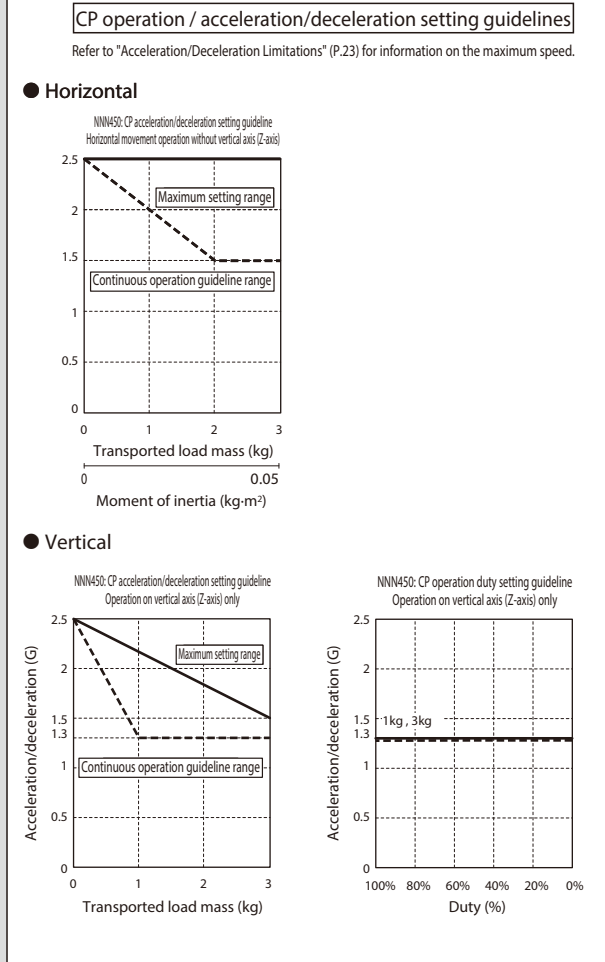
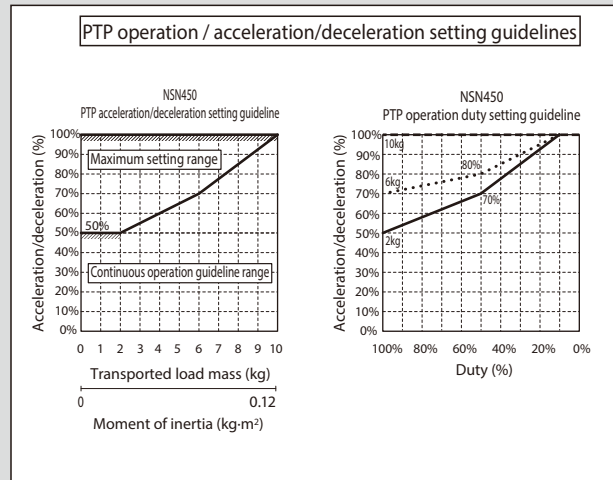


SCARA Robot IXA Acceleration/Deceleration Setting Guidelines

● For standard type: arm length 450

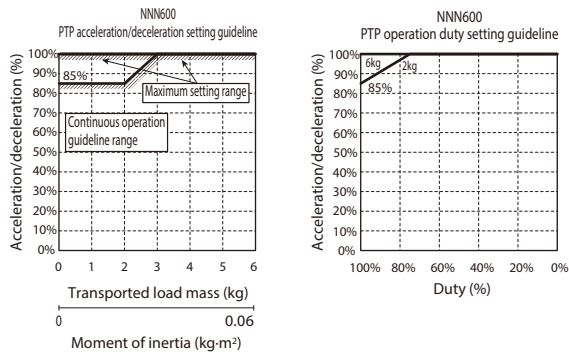


● For high-speed type: arm length 450



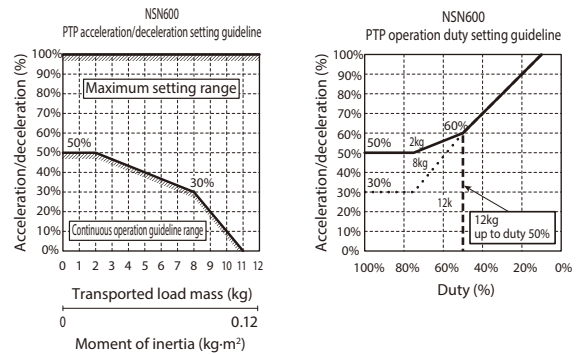
● For standard type: arm length 600

PTP operation / acceleration/deceleration setting guidelines



● For high-speed type: arm length 600

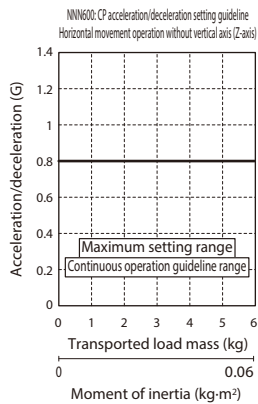
PTP operation / acceleration/deceleration setting guidelines



CP operation / acceleration/deceleration setting guidelines

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

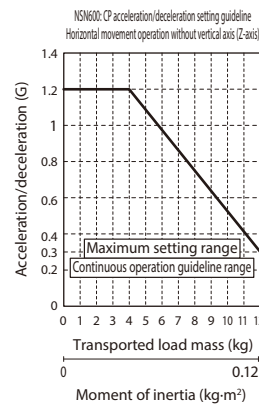
● Horizontal



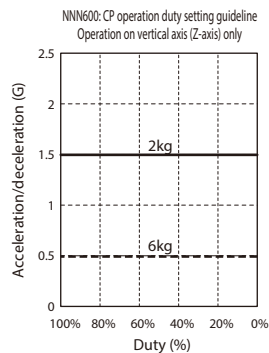
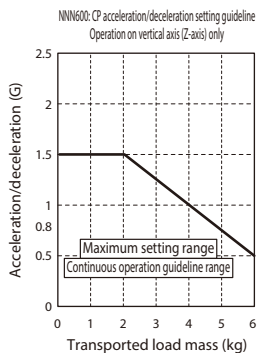
CP operation / acceleration/deceleration setting guidelines

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

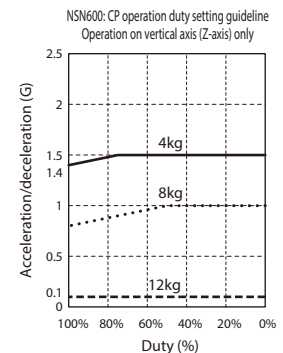
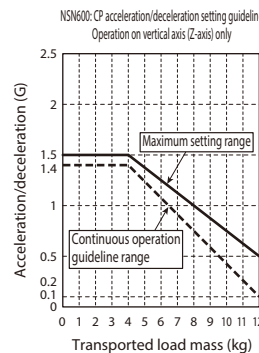
● Horizontal



● Vertical



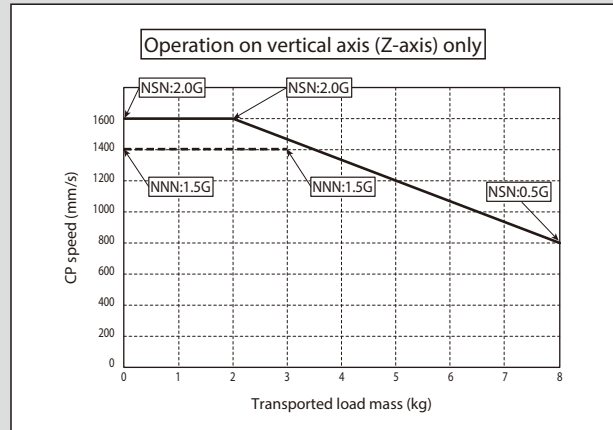
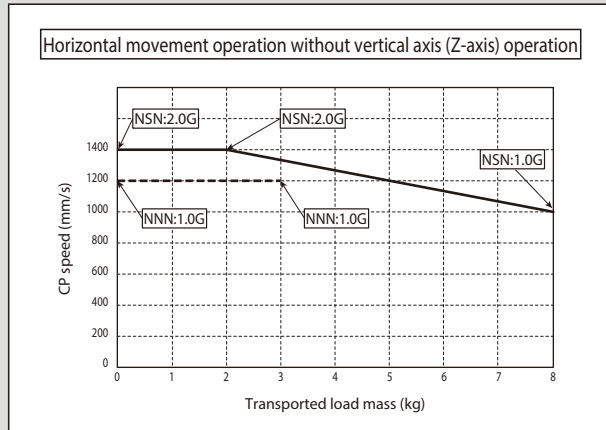
● Vertical



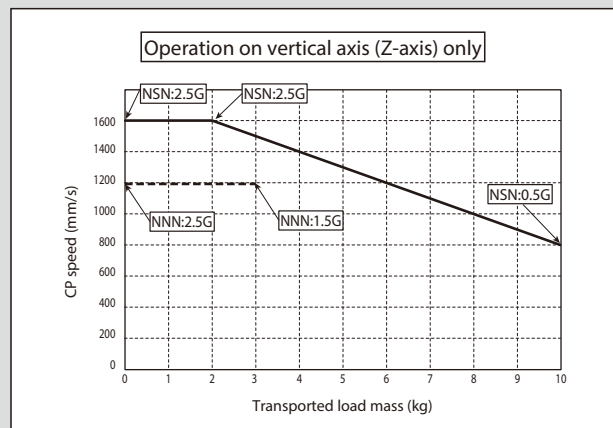
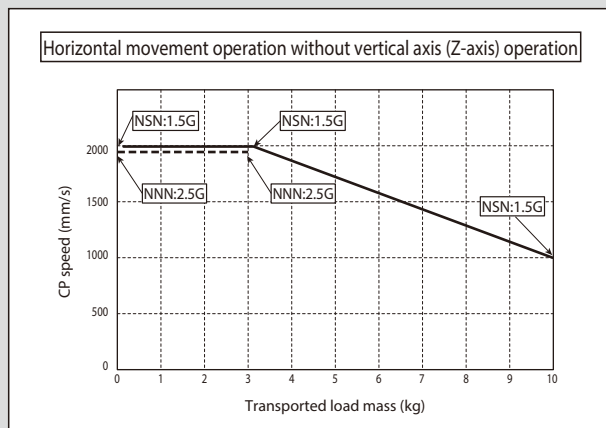
SCARA Robot IXA Acceleration/Deceleration Setting Guidelines

CP Operation: Acceleration/Deceleration Limitations

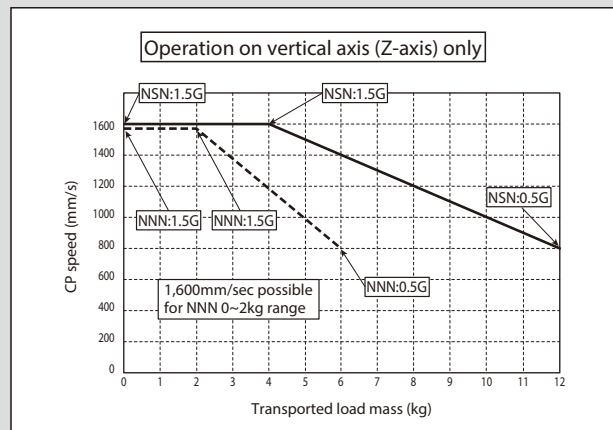
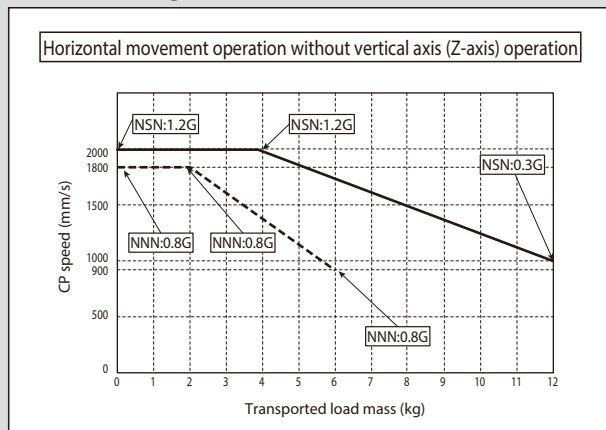
● For arm length 300



● For arm length 450



● For arm length 600




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 ±10%	
Control power supply voltage	Single phase 200V/230VAC ±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.

System Configuration

■ XSEL-RAX/SAX Type

Options

PC compatible software

(See P.29) *Ⓟ=PC side, Ⓢ=Controller side

- ⓅRS232-ⓈRS232
<Model: IA-101-X-MW> (For RAX)
 - ⓅUSB-ⓈRS232
<Model: IA-101-X-USBMW> (For RAX)
 - ⓅRS232-ⓈRS232
<Model: IA-101-XA-MW> (For SAX)
 - ⓅUSB-ⓈUSB/Ethernet
<Model: IA-101-N>
- Supported by Ver. 13.02.12.00 or later

Options

Teaching pendant

(See P. 29)

<Model: TB-02-□>

* Supported by Ver. 2.0 or later

Included with the controller

Dummy plug

(See P. 29)

<Model: DP-2>

PLC



Field network

- DeviceNet
- CC-Link
- PROFIBUS-DP
- EtherCAT
- EtherNet/IP

Included with the controller

PIO cable

(See back cover)

<Model: CB-X-PIO/PIOH020>

Standard: 2m

(Included with the controller for PIO specification)



PC compatible
Supplied with the software

Communication cable

<Model: CB-ST-E1MW050-EB> (For RAX)

<Model: CB-ST-A2MW050-EB> (For SAX)

5m

USB/Ethernet cable (Cable is to be prepared by the customer)

Included with the actuator

RAX/SAX

Motor cable

Motor robot cable

Encoder cable

Encoder robot cable

These items will be provided if the cable length is specified in the actuator model name. (Contact IAI for more information)

RAX/SAX

● 1st~4th axis: IXA Series



Connectable actuators (5th~8th axis)

<Single axis Robot, Cartesian Robot, Linear Servo, RCS2/RCS3/RCS4 Series>

(Note 1) When connecting an actuator with brake, the brake power supply +24V is required for the controller.

Expanded motion

(Cable is to be prepared by the customer)

PCON/ACON/
SCON-CB,MCON
(MECHATROLINK-III
specification)

Motor power Three-phase
200V/230VAC

Drive-source cutoff circuit
(To be prepared by the customer)

* Please contact IAI for more information regarding the drive-source cutoff circuit.
* Required for SAX only (not required for RAX)

Control power supply Single phase
200V/230VAC

Brake release (Note 1)
power supply
24VDC

I/O power supply
24VDC

Supplied with the regenerative resistance unit

Regenerative resistance unit cable 1m

Options Regenerative resistance unit

Please refer to page 28 for the required number of regenerative resistance units.



* When connecting a power supply, be sure to install the following filters or equivalent.

- Recommended noise filters
Three-phase: TAC-20-683 (COSEL)
Single phase: NBH-20-432 (COSEL)
- Recommended ring core
ESD-R-25 (NEC TOKIN)
- Recommended clamp filters
For control power supply: ZCAT3035-1330 (TDK)
For motor power supply: RFC-H13 (Kitagawa Industries)
- Recommended surge protectors
Three-phase: R/AV-781BXZ-4
Single phase: R/AV-781BWZ-2A (Okaya Electric Industries)

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 ±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	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 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 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			
		5~8-axis specification			
SAX	Three-phase specification	4-axis 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

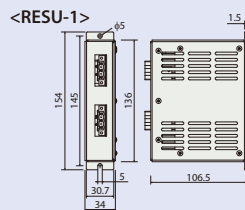
Unit that converts the regenerative current generated during motor deceleration to heat. Although the controller is equipped with a regenerative resistor inside, an additional external regenerative resistance unit may be necessary if the load in the vertical axis is large and the capacity is insufficient.

<When connecting a single axis robot>

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

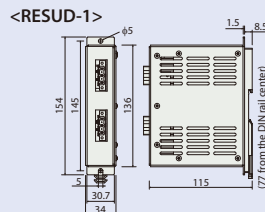
Horizontal specification

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□□	

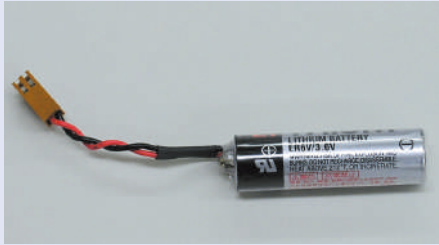
* The required number is for a single SCARA robot. When connecting a single axis robot as an additional axis, be sure to add regenerative resistors for the single axis robot.

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.

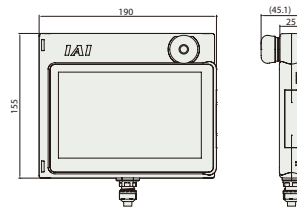


Touch Panel Teaching Pendant

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)

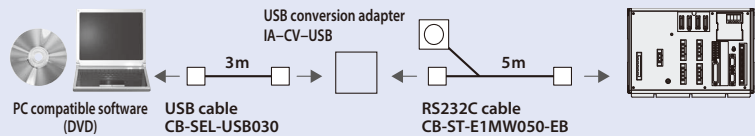
USB Compliant PC Software (For XSEL-RAX)

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



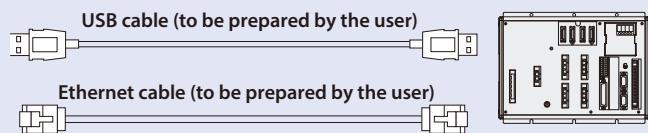
PC Compatible Software

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 PCSoftware (For XSEL-SAX only)

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

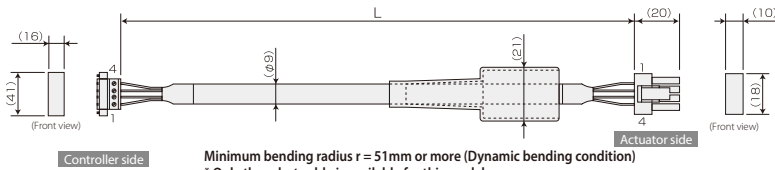
Maintenance Parts

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

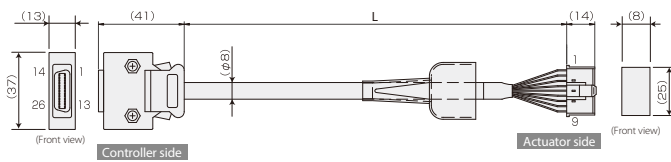


Wiring	Color	Signal	No.	Signal	Color	Wiring
0.75sq	Green	PE	1	1	U	Red
	Red	U	2	2	V	White
	White	V	3	3	W	Black (Crimped)
	Black	W	4	4	PE	Green

Encoder cable

Model: **CB-X1-PA** □ □ □

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



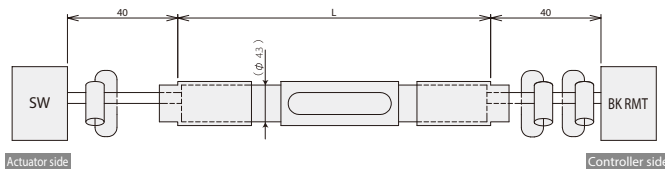
Wiring	Color	Signal	No.	No.	Signal	Color	Wiring
-	-	-	10	2	BAT+	Purple	0.75sq (Crimped)
-	-	-	11	3	SD	Green	
-	E24V	-	12	4	SD	Green	
-	OV	-	13	5	VCC	Red	
-	LS	-	26	6	GND	Black	
-	CREEP	-	25	7	Fsp	Drain	
-	OJ	-	24	8	BK	Blue	
-	RSV	-	23	9	BK+	Yellow	
-	-	-	9	-	-	-	
-	-	-	18	-	-	-	
-	-	-	23	-	-	-	
-	-	-	1	-	-	-	
-	A+	-	1	-	-	-	
-	A-	-	2	-	-	-	
-	B+	-	3	-	-	-	
-	B-	-	4	-	-	-	
-	Z+	-	5	-	-	-	
-	Z-	-	6	-	-	-	
-	SRD+	-	7	-	-	-	
-	SRD-	-	8	-	-	-	
-	BAT+	-	14	-	-	-	
-	BAT-	-	15	-	-	-	
-	VCC	-	16	-	-	-	
-	GND	-	17	-	-	-	
-	BKR	-	20	-	-	-	
-	BKR+	-	21	-	-	-	
-	-	-	22	-	-	-	

Shield is clamp connected to the hood. Ground wire and braided shield.

Brake cable (IXA-□NNN30/□NNN45)

Model: **CB-IXA-BK** □ □ □ -1

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



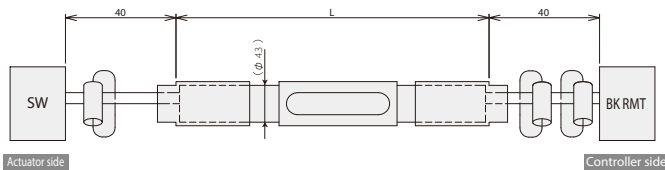
Connector	Identification	Signal	Pin No.	Pin No.	Signal	Identification	Connector
SW	Red	BK3	1	A2	BK3	Red	BK RMT
	White	COM	2	A3	COM	White	
	-	-	3	Remaining	-	-	

Sheath

Brake cable (IXA-□NNN60)

Model: **CB-IXA-BK** □ □ □ -2

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



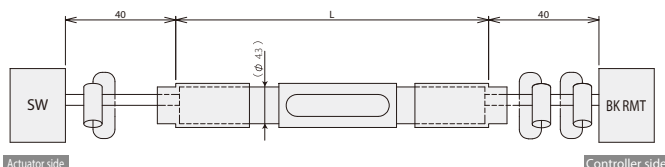
Connector	Identification	Signal	Pin No.	Pin No.	Signal	Identification	Connector
SW	Red	BK4	1	B2	BK4	Red	BK RMT
	White	COM	2	A3	COM	White	
	-	-	3	Remaining	-	-	

Sheath

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	-	-	

Sheath

