

SCARA robot **IXA**

IXA



New additions: Arm length 180mm type



Dust/Splash-proof Specification



Fastest in the industry!

Introducing the new SCARA Robot IXA!

Industry Top

1 Fastest cycle time - **0.26s**

Standard cycle time

High-speed type
(IXA-NSN) **0.26s**

0.12s
Faster

Standard type
(IXA-NNN) **0.38s**

Continuous cycle time (duty 100%)

High-speed type
(IXA-NSN) **0.45s**

0.10s
Faster

Standard type
(IXA-NNN) **0.55s**

Operational conditions

- ▶ 2kg transport
- ▶ Horizontal movement 300mm/
Vertical movement 25mm

Horizontal movement



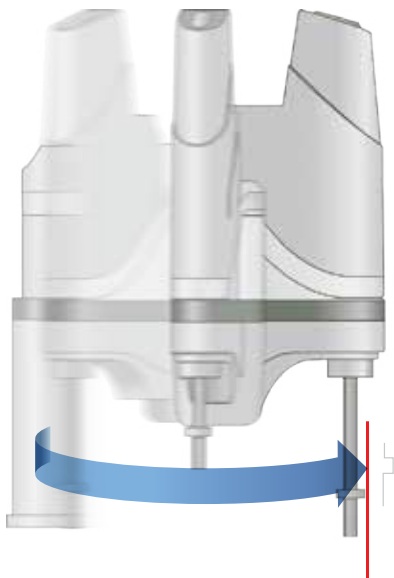
* The cycle times are measured under the operating conditions of an arch-motion shown above.

2 Achieves a lower price

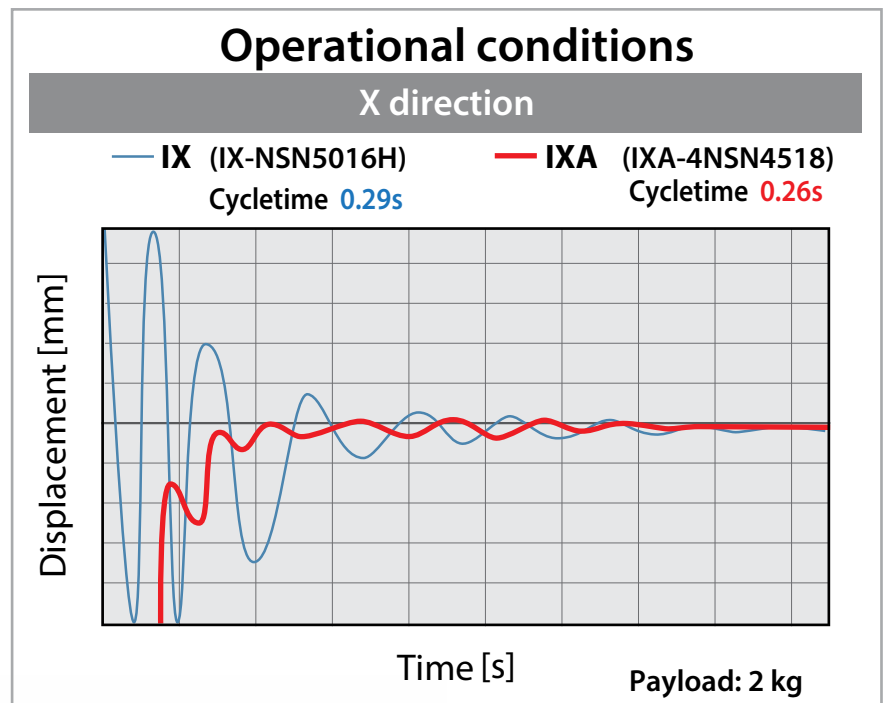
Our new SCARA robot is even more affordable than previous models. It offers even better performance and functionality.

3 Low vibration and accurate positioning

Higher rigidity and optimized control results in significantly less vibration at the time of stopping.



Stops on a dime!



4 Equipped with a battery-less absolute encoder as standard

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,
Moreover, there is no price increase.
No Going Back to Incremental.

5 Dust / Splash-proof specification suitable for environment

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



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

*IEC 60529 / JIS C 0920

Indication for the degree of protection

IP □ □

First digit

Protection against human bodies and solid particles.

Second digit

Protection against water ingress

6 Mechanical structure / features

Standard / High-speed type

Fully covered structure

The operating parts are covered for improved dust-proof rating.

Patent pending

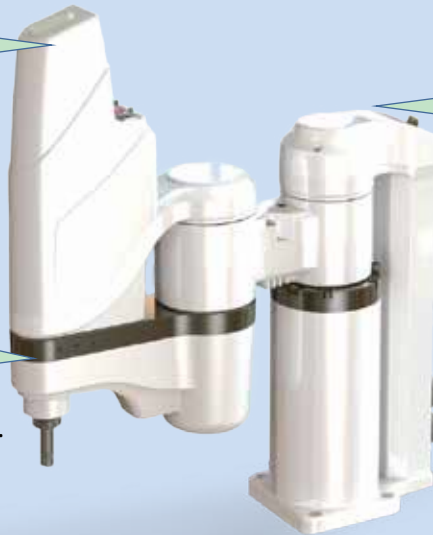
Double arm structure*

Less vibration thanks to higher rigidity. Shorter continuous cycle times thanks to better heat dissipation.

Patent pending

Built-in cables

Cables are built in for reduced height and effective use of space.



* Excluding arm length 180

Dust / Splash-proof specification

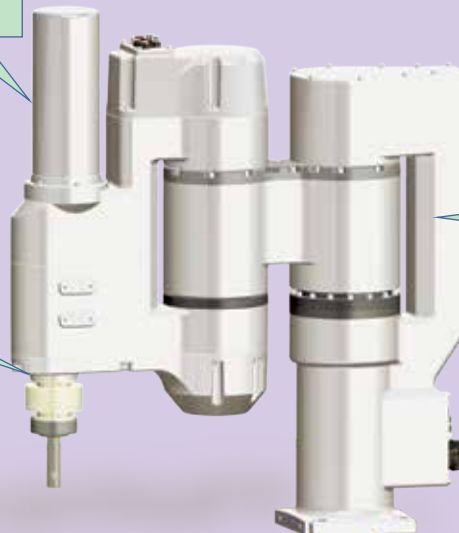
NEW!

Aluminum cover is used

When receiving direct water jet, the cover is not deformed, and water does not ingress inside. There is no swelling caused by coolant, either.

Double arm structure*

Built-in cables



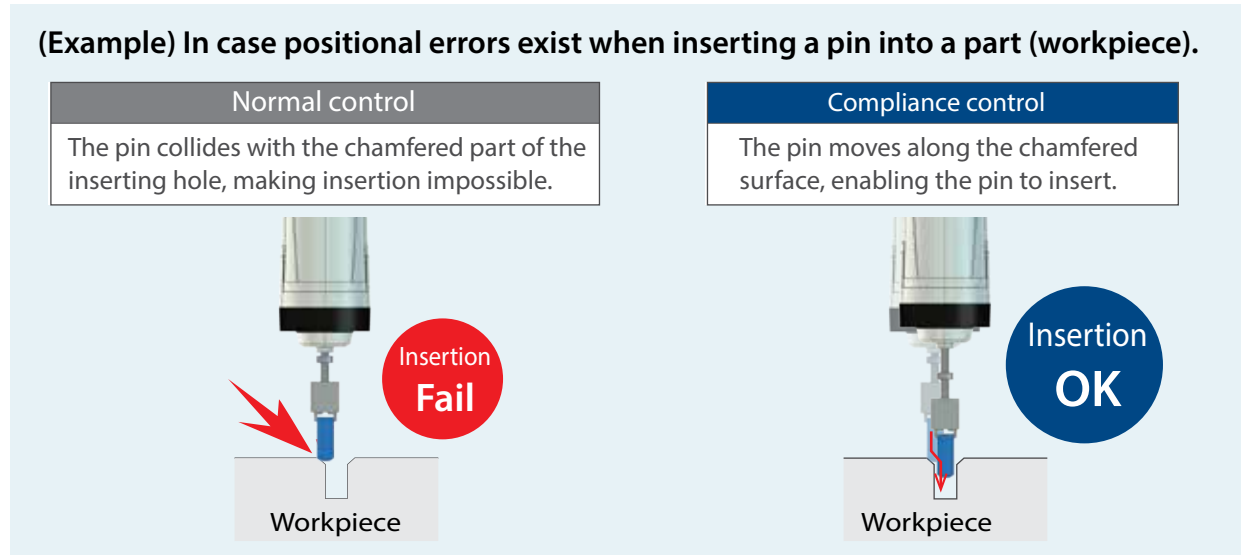
*: Excluding arm length 300

8 Control functions by controller

■ Compliance control

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

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



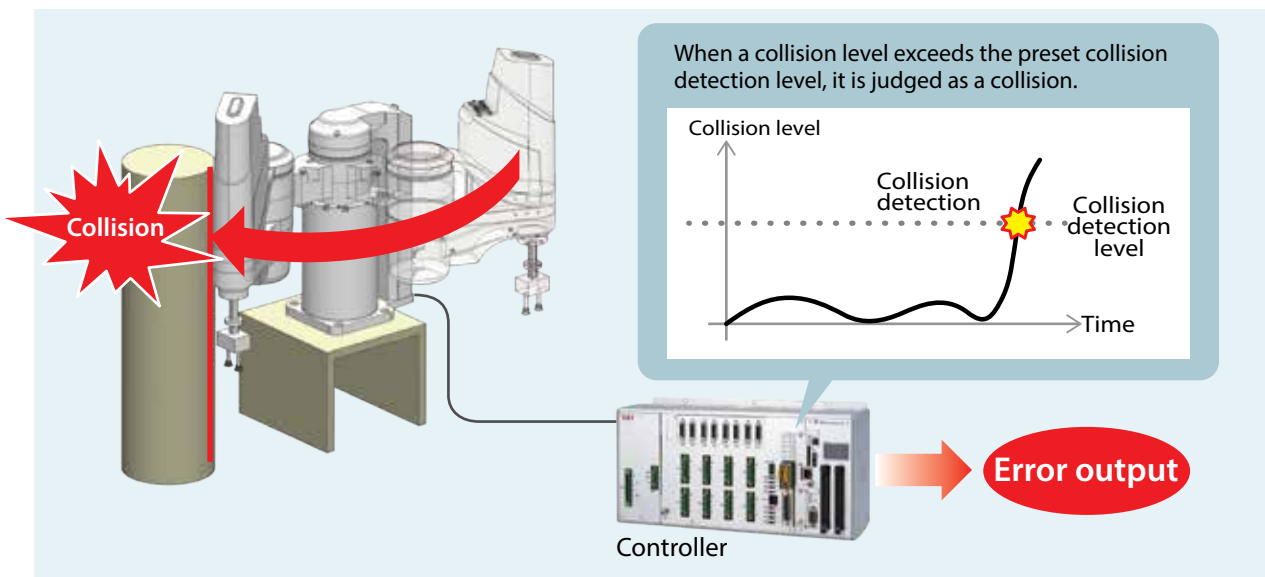
[Note]

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

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

■ Collision detection function

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



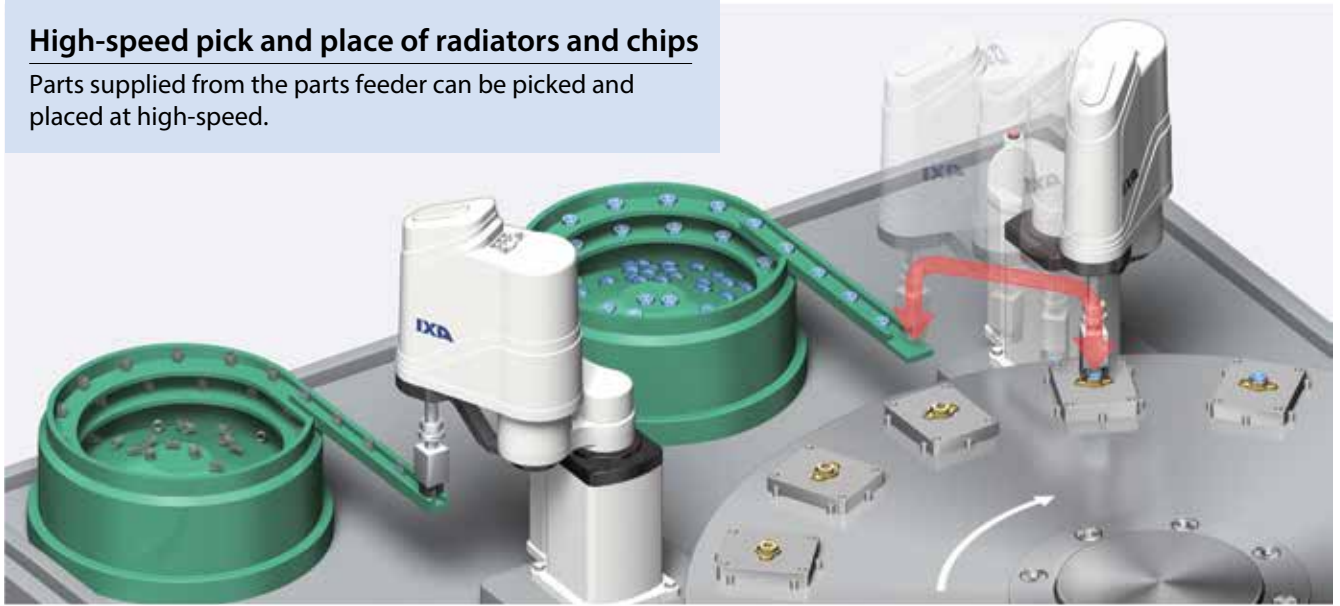
[Note]

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

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

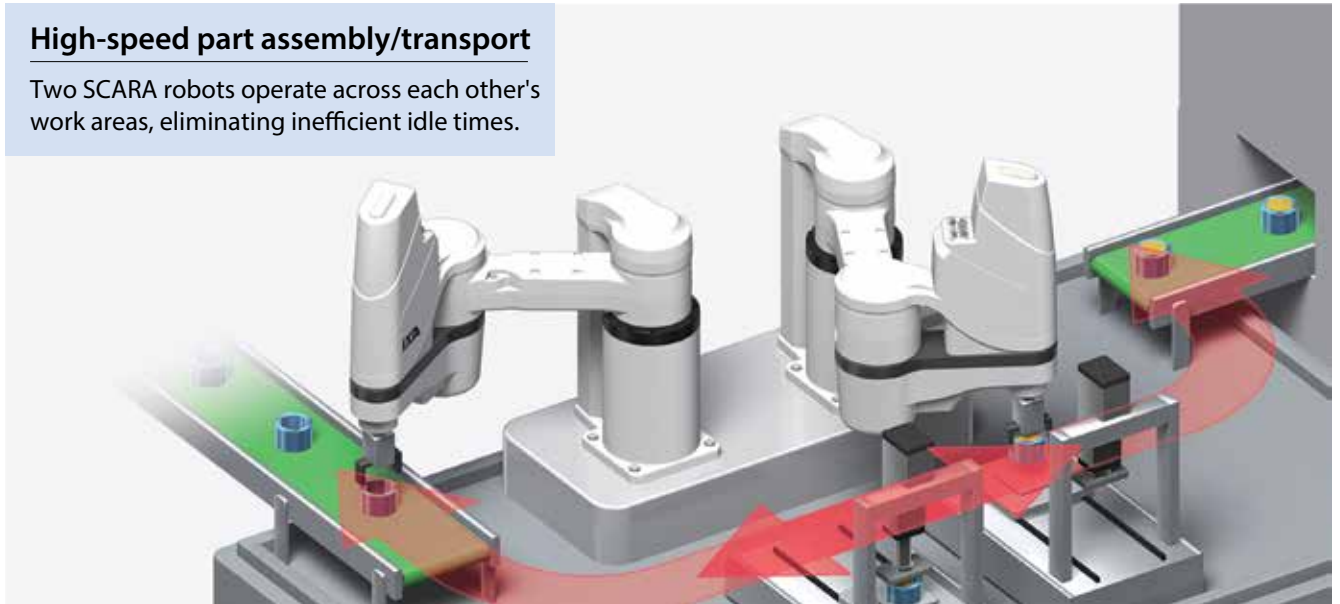
High-speed pick and place of radiators and chips

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



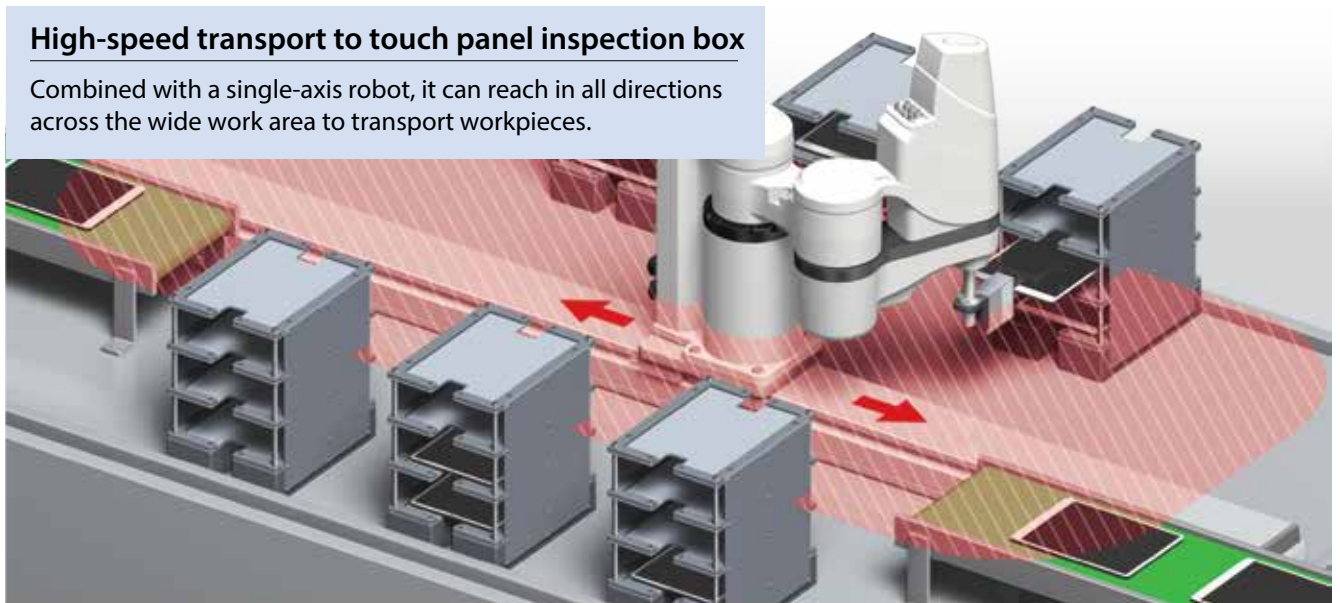
High-speed part assembly/transport

Two SCARA robots operate across each other's work areas, eliminating inefficient idle times.



High-speed transport to touch panel inspection box

Combined with a single-axis robot, it can reach in all directions across the wide work area to transport workpieces.



IXA

Series

□

Type

□

Cable Length

T2

Applicable Controllers

□

Options

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

T2	XSEL-RAX/SAX
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LED	Pilot lamp
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* Only the standard type arm lengths of 300/450/600 can be selected.

N	Nil
5L	5m
10L	10m
L	Specified length (1m increments), maximum length 15m

(Example)

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

Number of axes: 3

Arm length: 450mm

Cable length: 5m

Controller: XSEL-RAX/SAX

Option: Pilot lamp

Type: Standard

Vertical axis stroke: 180mm

Type	Model	Number of axes	Arm length(mm)		Vertical axis stroke(mm)	Standard cycle time (s)	Continuous cycle time (s)	Maximum payload(kg)	Reference page
			First arm	Second arm					
Standard type	NEW IXA-3NNN1805	3 axes	80	100	50	0.26	0.45	1	▶P9
	NEW IXA-4NNN1805	4 axes							▶P9
	IXA-3NNN3015	3 axes	120	180	150	0.38	0.55	3	▶P13
	IXA-4NNN3015	4 axes							▶P13
	IXA-3NNN4518	3 axes	200	250	180	0.38	0.55	3	▶P17
	IXA-4NNN4518	4 axes							▶P17
	IXA-3NNN4533	3 axes			330				▶P17
	IXA-4NNN4533	4 axes							▶P17
	IXA-3NNN6018	3 axes	350	250	180	0.38	0.55	6	▶P21
	IXA-4NNN6018	4 axes							▶P21
	IXA-3NNN6033	3 axes			330				▶P21
	IXA-4NNN6033	4 axes							▶P21
	High-speed type	IXA-3NSN3015	3 axes	120	180	150	0.26	0.45	8
IXA-4NSN3015		4 axes	▶P25						
IXA-3NSN4518		3 axes	200	250	180	0.26	0.45	10	▶P29
IXA-4NSN4518		4 axes							▶P29
IXA-3NSN4533		3 axes			330				▶P29
IXA-4NSN4533		4 axes							▶P29
IXA-3NSN6018		3 axes	350	250	180	0.26	0.45	12	▶P33
IXA-4NSN6018		4 axes							▶P33
IXA-3NSN6033		3 axes			330				▶P33
IXA-4NSN6033		4 axes							▶P33
NEW Dust / splash-proof specification, high-speed type	IXA-4NSW3015	4 axes	155	145	150	0.38	0.69	6	▶P37
	IXA-4NSW4518	4 axes	200	250	180	0.38	0.55	8	▶P41
	IXA-4NSW4533				330				▶P41
	IXA-4NSW6018	4 axes	350	250	180	0.38	0.57	10	▶P45
	IXA-4NSW6033				330				▶P45

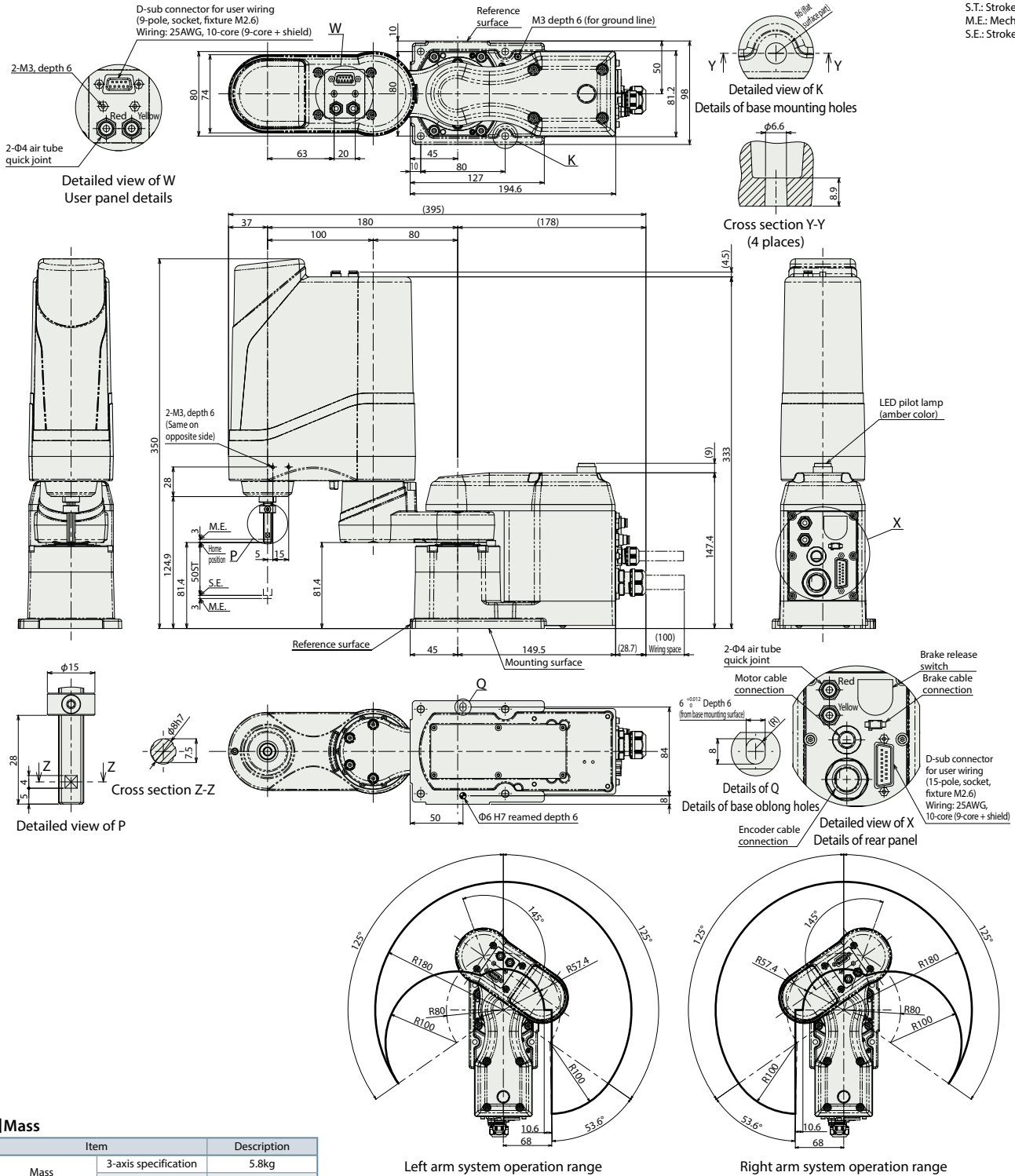
Dimensions

(Note) Refer to P51 (Note 9) for cable connections

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



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



Mass

Item	Description	Mass
3-axis specification	5.8kg	
4-axis specification	6.2kg	

Applicable controller

The actuator on this page can be operated by the controller indicated below.

Name	External view	Max. number of connectable axes	Power supply voltage	Control method														Max. number of positioning points	Reference page
				Positioner	Pulse train	Program	Network* option												
				DV	CC	CIE	PR	CN	ML	ML3	EC	EP	PRT	SSN	ECM				
XSEL-RAX/SAX		8	3-phase AC200V	—	—	●	●	●	—	●	—	—	—	—	—	—	36666 (Depending on the type)	54	

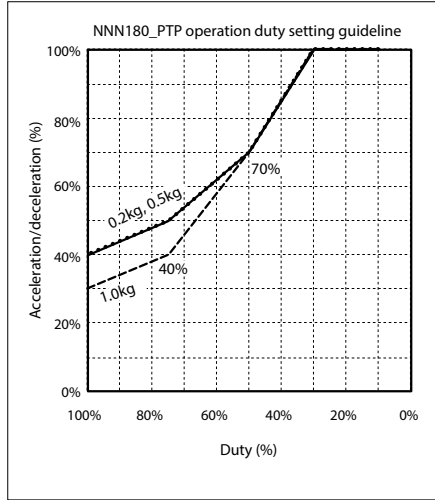
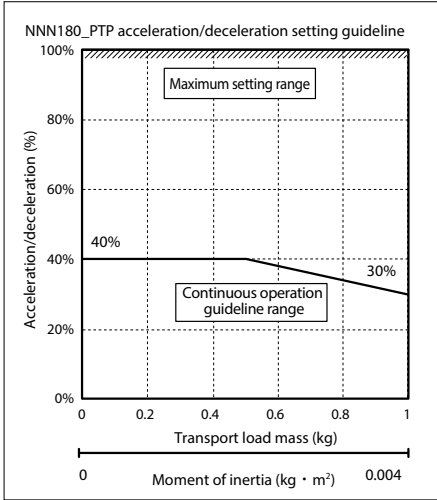
(Note) Up to one SCARA robot + one 4-axis robot can be controlled.

Acceleration/Deceleration Setting Guidelines

The SCARA Robot IXA cannot operate continuously at the maximum acceleration/deceleration or maximum speed specified in the catalog. To operate at the maximum acceleration/deceleration, set a stop time referring to the continuous operation duty guideline graph. If a continuous operation is required, do so within the continuous operation guideline range shown in the acceleration/deceleration setting guideline graph.

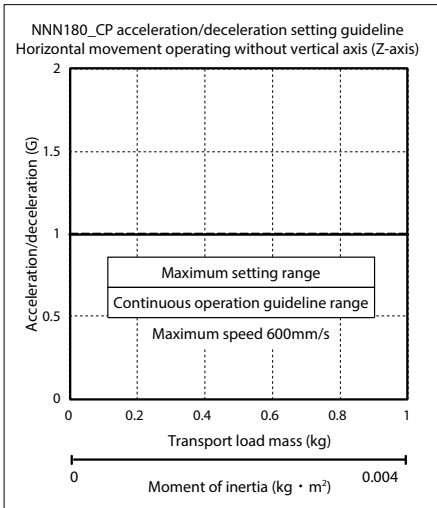
- 1) For a PTP operation, always use the WGHT command in the program to set the weight and moment of inertia. For the SCARA robot, the maximum acceleration/deceleration for each payload is set at 100%. When the payload differs, the operation time will also vary even at the same acceleration/deceleration or speed setting.
- 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 set a stop time by referring to the continuous operation duty guideline.
- 4) Duty (%) = (Operation time / (Operation time + Stop time)) × 100
- 5) When moving the robot horizontally at high speed, operate the vertical axis as close to the upward end as possible.
- 6) Set the moment of inertia and payload to the allowable value or lower.
- 7) The load mass represents the moment of inertia and weight at the center of rotation of the 4th axis.
- 8) Operate the robot at an 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 occur.
- 9) If the load moment of inertia is high, vibration may occur in the vertical axis, depending on the position of the vertical axis. In such a case, decrease the acceleration/deceleration for operation as required.

PTP Operation

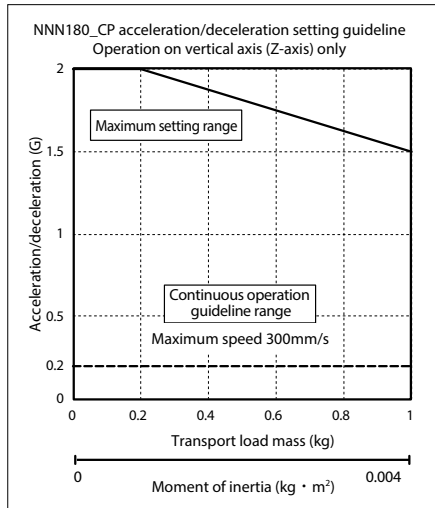


CP Operation

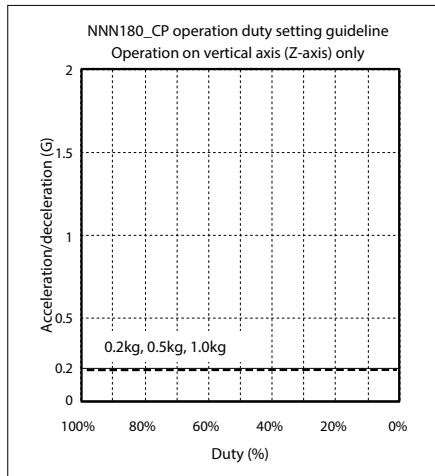
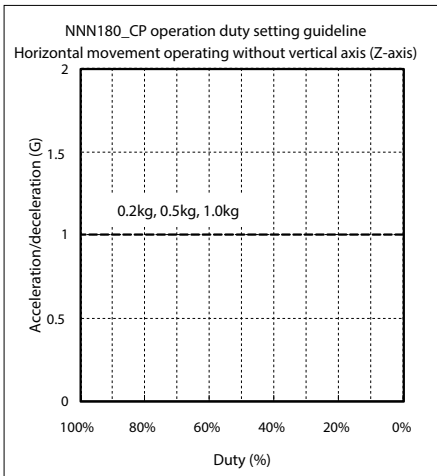
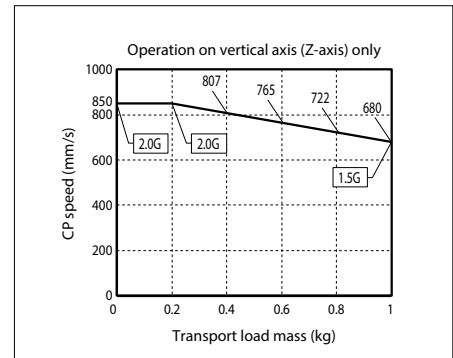
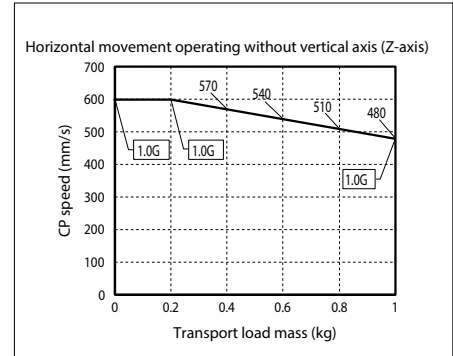
Horizontal



Vertical



CP operation: Acceleration/deceleration Limitations



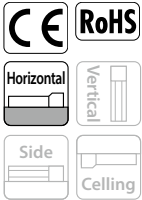
IXA-3NNN3015

IXA-4NNN3015

Battery-less Absolute Arm Length: **300 mm** Vertical Axis: **150 mm**

Model Specification Items

IXA	NNN		30		15		T2	
Series	Type		Arm length		Vertical stroke		Cable length	
3	Standard type		300mm		150mm		N Nil	
4	Standard type		300mm		150mm		5L 5m	
	Standard type		300mm		150mm		10L 10m	
	Standard type		300mm		150mm		<input type="checkbox"/> L Specified length (1m increments)	
	Standard type		300mm		150mm		Applicable controller	
	Standard type		300mm		150mm		T2 XSEL-RAX/SAX	
	Standard type		300mm		150mm		Option	
	Standard type		300mm		150mm		See below	



Main specifications

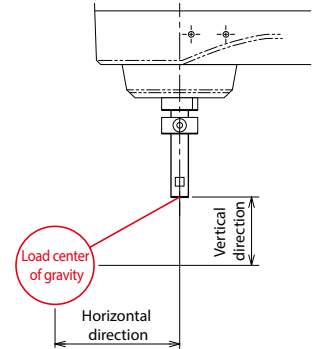
Item	Description		
	3-axis specification	4-axis specification	
Max. payload (kg) (Note 1)	3		
Speed (Note 2)	Combined max. speed (mm/s)	5529	
	Max. speed of individual axes	1st arm (deg/s)	660
		2nd arm (deg/s)	660
		Vertical axis (mm/s)	1400
		Rotational axis (deg/s)	— 1600
Push force (N) (Note 3)	Upper limit	60	
	Lower limit	10	
Arm length (mm)	300		
Individual arm length (mm)	1st arm	120	
	2nd arm	180	
Operation range of individual axes	1st arm (deg)	±135	
	2nd arm (deg)	±142	
	Vertical axis (mm)	150	
	Rotational axis (deg)	— ±360	

Item	Description	
	3-axis specification	4-axis specification
Positioning repeatability (Note 4)	Within horizontal surface	±0.01 mm
	Vertical axis	±0.01 mm
User wiring	Rotational axis	±0.005 degrees
	10-core (9-core + shield) AWG24 (rated 30V/Max. 1A)	
User piping	Outer diameter Φ4, inner diameter Φ2.5, air tube 3 pcs. (max. usable pressure 0.6MPa)	
Alarm lamp (Note 5)	Amber color LED, small pilot lamp 1 pc. (DC24V supply required)	
Brake release switch (Note 6)	Brake release switch for preventing vertical axis from dropping.	
Tip axis	Allowable torque	3.2 N·m 3.2 N·m
	Allowable load moment	4.5 N·m
Ambient operational temperature and humidity	0-40°C, 20-85% RH or lower (non-condensing)	
Degree of protection	IP20	
Vibration- and impact-resistance	No impact or vibration should be applied.	
Noise (Note 7)	80 dB or lower	
International standard	CE marking, RoHS	
Motor type	AC servo motor	
Motor wattage	1st arm	400W
	2nd arm	200W
	Vertical axis	100W
	Rotational axis	— 100W
Encoder type	Battery-less absolute	
Encoder pulse	16384 pulse/rev	

Tip shaft allowable load inertia moment

Number of axes	Tip shaft allowable load inertia moment
3-axis specification	0.06 kg · m ²
4-axis specification	

The 4th axis allowable inertia moment is the allowable inertial moment value for the center of rotation conversion of the 4th axis (rotational axis) of the SACRA robot. Make sure that the offset value from center of the rotation of the 4th axis to the tool center of gravity is within the guideline values listed below. If the tool center of gravity is far from the 4th axis center, it is necessary to reduced speed and acceleration/deceleration appropriately. The overhang distance is limited depending on the payload and operating condition.



Horizontal direction	Vertical direction
150mm or less	100mm or less

- POINT Selection Notes**
- Please refer to P51 for Notes 1 - 9.
 - The maximum set value for acceleration/deceleration varies depending on the weight of the object being transported, the travel distance, and the location. Operating continuously at the maximum set value could cause an overload error. For continuous operation, either lower the acceleration/deceleration values or refer to the duty (guideline) and set a stop time after acceleration/deceleration.
 - If the motor is replaced, absolute reset must be performed. An adjustment jig will be required to perform an absolute reset on the rotational axis (4th axis). Please refer to P53 for details.
 - A continuous operation cannot be performed for SCARA robots at 100% of speed and acceleration. Refer to the "Acceleration/Deceleration Setting Guidelines" for executable operating conditions.

Name	Model number	Reference page
LED pilot lamp	LED	53

Name	Model number	Reference page
Flange	IX-FL-1	53

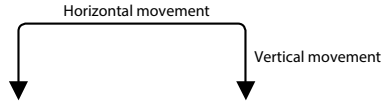
(Note) Please purchase separately.

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"/>
	11L(11m) ~ 12L(12m)	<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"/>

(Note) Total amount of the following cables:
 [3-axis spec.] Motor cables:3, Encoder cables: 3, Brake cable: 1
 [4-axis spec.] Motor cables:4, Encoder cables: 4, Brake cable: 1

Item	Time
Standard cycle time	0.38 seconds
Continuous cycle time	0.55 seconds

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. 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.



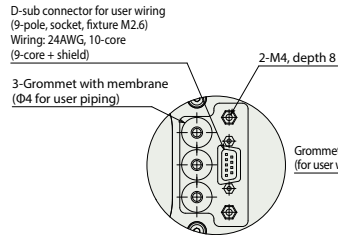
Dimensions

(Note) Refer to P51 (Note 9) for cable connections

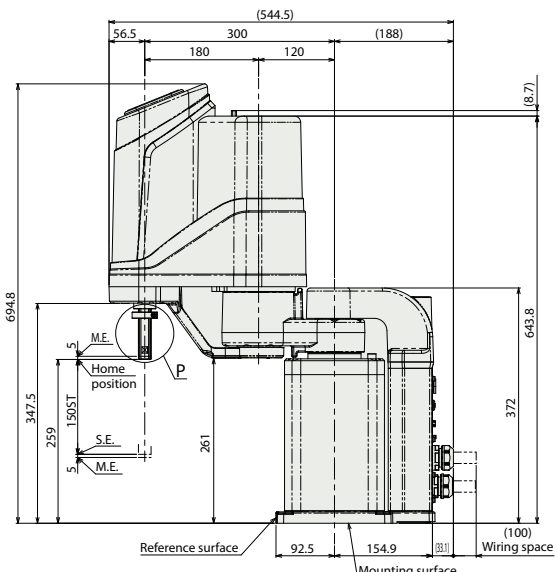
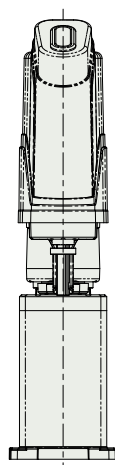
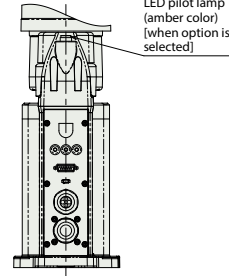
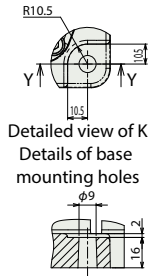
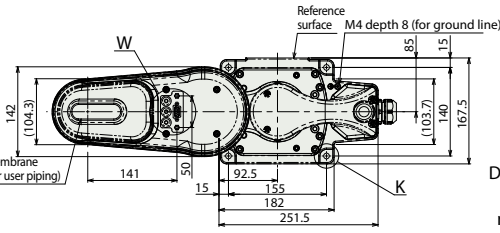
CAD drawings can be downloaded from our website.
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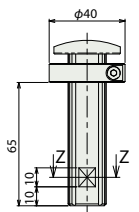
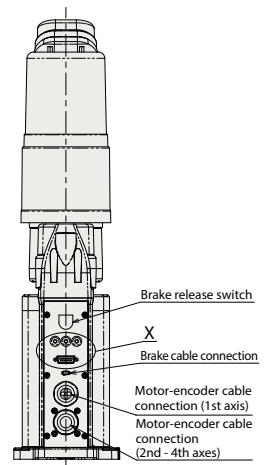
S.T.: Stroke
M.E.: Mechanical end
S.E.: Stroke end



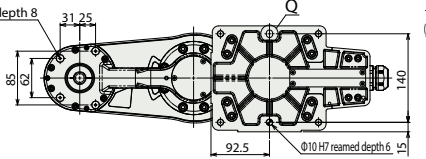
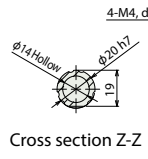
Detailed view of W
User panel details



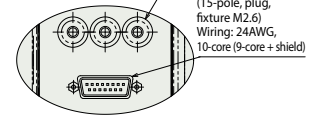
Cross section Y-Y (4 places)



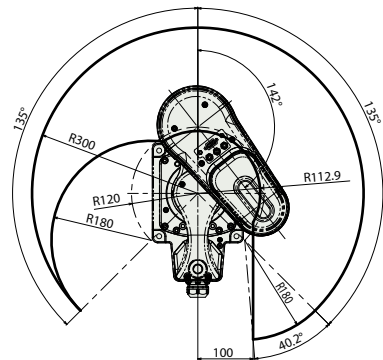
Detailed view of P



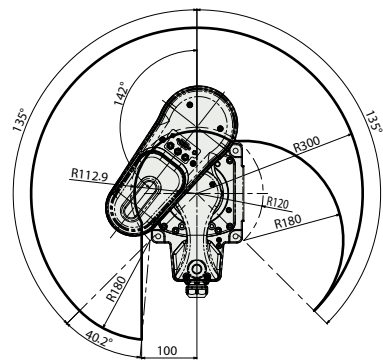
Detailed view of Q
Details of base oblong holes



Detailed view of X
Details of rear panel



Left arm system operation range



Right arm system operation range

Mass

Item	Description	Mass
Mass	3-axis specification	21kg
	4-axis specification	22kg

Applicable controller

The actuator on this page can be operated by the controller indicated below.

Name	External view	Max. number of connectable axes	Power supply voltage	Control method													Max. number of positioning points	Reference page		
				Positioner	Pulse train	Program	Network* option													
XSEL-RAX/SAX		8	3-phase AC200V	—	—	●	DV	CC	CIE	PR	CN	ML	ML3	EC	EP	PRT	SSN	ECM	36666 (Depending on the type)	54

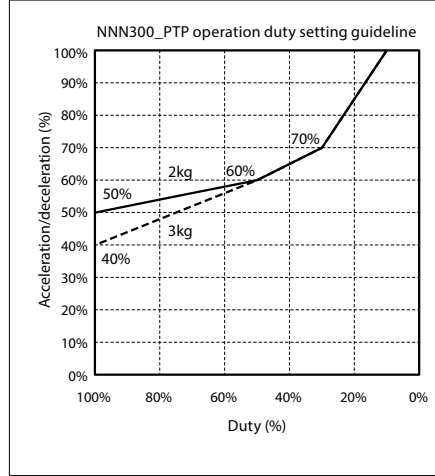
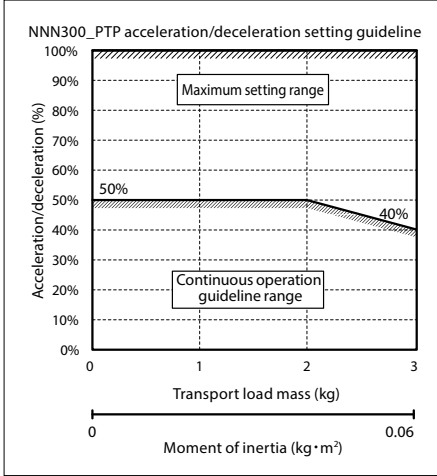
(Note) Up to one SCARA robot + one 4-axis robot can be controlled.

Acceleration/Deceleration Setting Guidelines

The SCARA Robot IXA cannot operate continuously at the maximum acceleration/deceleration or maximum speed specified in the catalog. To operate at the maximum acceleration/deceleration, set a stop time referring to the continuous operation duty guideline graph. If a continuous operation is required, do so within the continuous operation guideline range shown in the acceleration/deceleration setting guideline graph.

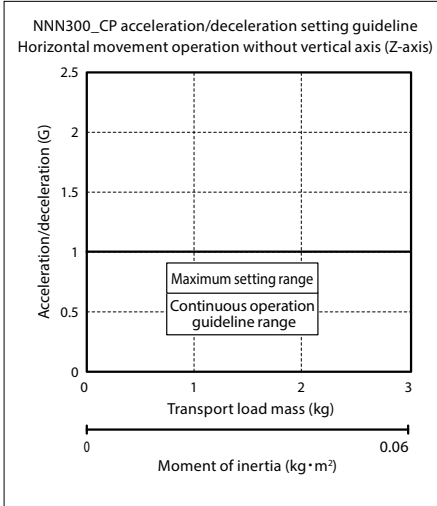
- 1) For a PTP operation, always use the WGHT command in the program to set the weight and moment of inertia. For the SCARA robot, the maximum acceleration/deceleration for each payload is set at 100%. When the payload differs, the operation time will also vary even at the same acceleration/deceleration or speed setting.
- 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 set a stop time by referring to the continuous operation duty guideline.
- 4) Duty (%) = (Operation time / (Operation time + Stop time)) × 100
- 5) When moving the robot horizontally at high speed, operate the vertical axis as close to the upward end as possible.
- 6) Set the moment of inertia and payload to the allowable value or lower.
- 7) The load mass represents the moment of inertia and weight at the center of rotation of the 4th axis.
- 8) Operate the robot at an 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 occur.
- 9) If the load moment of inertia is high, vibration may occur in the vertical axis, depending on the position of the vertical axis. In such a case, decrease the acceleration/deceleration for operation as required.

PTP Operation

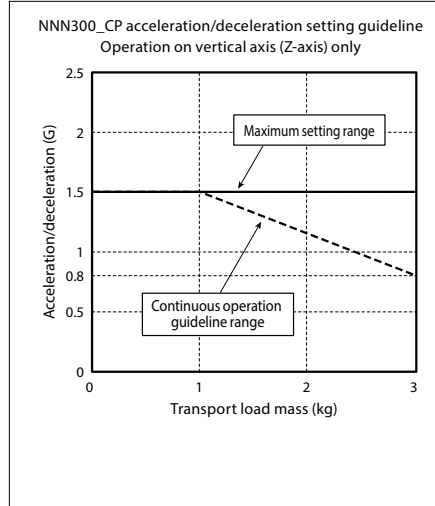


CP Operation

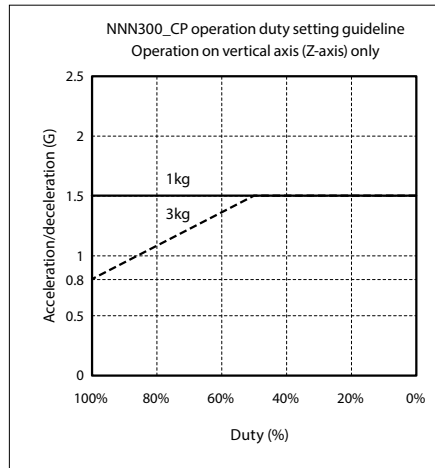
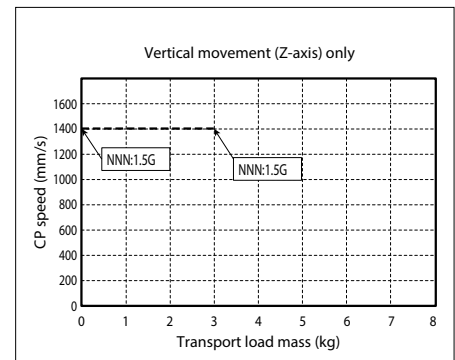
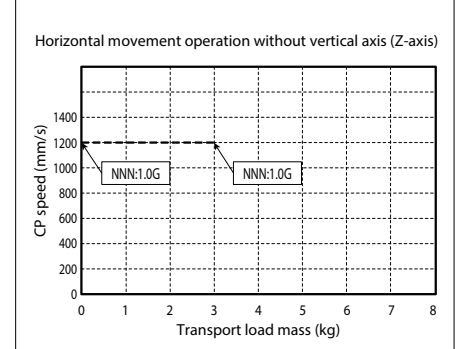
Horizontal



Vertical



CP operation: Acceleration/deceleration Limitations



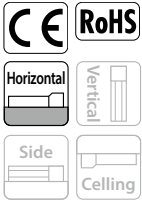
IXA-3NNN45

IXA-4NNN45

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 stroke		Cable length		Applicable controller	Option
		3 3 axes	NNN Standard type	45 450mm	18 180mm	33 330mm	N Nil	T2 XSEL-RAX/SAX	See below	
		4 4 axes					5L 5m			
							10L 10m			
							<input type="checkbox"/> L Specified length (1m increments)			



- POINT Selection Notes**
- (1) Please refer to P51 for Notes 1 - 9.
 - (2) The maximum set value for acceleration/deceleration varies depending on the weight of the object being transported, the travel distance, and the location. For continuous operation, either lower the acceleration/deceleration values or refer to the duty (guideline) and set a stop time after acceleration/deceleration.
 - (3) If the motor is replaced, absolute reset must be performed. An adjustment jig will be required to perform an absolute reset on the rotational axis (4th axis). Please refer to P53 for details.
 - (4) A continuous operation cannot be performed for SCARA robots at 100% of speed and acceleration. Refer to the "Acceleration/Deceleration Setting Guidelines" for executable operating conditions.

Option		
Name	Model number	Reference page
LED pilot lamp	LED	53

Option		
Name	Model number	Reference page
Flange	IX-FL-1	53

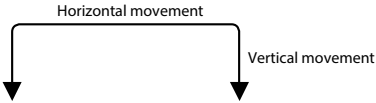
(Note) Please purchase separately.

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"/>
	1L(1m) ~ 4L(4m)	<input type="checkbox"/>	<input type="checkbox"/>
Specified length	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"/>

(Note) Total amount of the following cables:
 [3-axis spec.] Motor cables:3, Encoder cables: 3, Brake cable: 1
 [4-axis spec.] Motor cables:4, Encoder cables: 4, Brake cable: 1

Cycle time	
Item	Time
Standard cycle time	0.38 seconds
Continuous cycle time	0.55 seconds

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. 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.



Main specifications

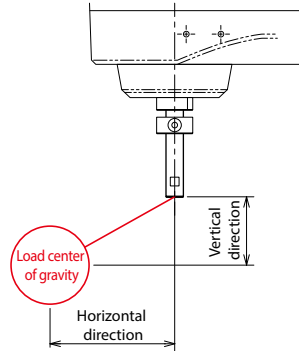
Item	Description		
	3-axis specification	4-axis specification	
Max. payload (kg) (Note 1)	3		
Speed (Note 2)	Combined max. speed (mm/s)	7453	
	Max. speed of individual axes	1st arm (deg/s)	610
		2nd arm (deg/s)	610
		Vertical axis (mm/s)	1200
		Rotational axis (deg/s)	— 2000
Push force (N) (Note 3)	Upper limit	55	
	Lower limit	10	
Arm length (mm)	450		
Individual arm length (mm)	1st arm	200	
	2nd arm	250	
Operation range of individual axes	1st arm (deg)	±137	
	2nd arm (deg)	±137	
	Vertical axis (mm)	180/330	
	Rotational axis (deg)	— ±360	

Item	Description	
	3-axis specification	4-axis specification
Positioning repeatability (Note 4)	Within horizontal surface	±0.01mm
	Vertical axis	±0.01mm
	Rotational axis	— ±0.005 degrees
User wiring	10-core (9-core + shield) AWG24 (rated 30V/Max. 1A)	
User piping	Outer diameter Φ6, inner diameter Φ4, air tube 3 pcs. (max. usable pressure 0.6MPa)	
Alarm lamp (Note 5)	Amber color LED, small pilot lamp 1 pc. (DC24V supply required)	
Brake release switch (Note 6)	Brake release switch for preventing vertical axis from dropping.	
Tip axis	Allowable torque	3.2 N·m 3.2 N·m
	Allowable load moment	8.3 N·m
Ambient operational temperature and humidity	0-40°C, 20-85% RH or lower (non-condensing)	
Degree of protection	IP20	
Vibration- and impact-resistance	No impact or vibration should be applied.	
Noise (Note 7)	80 dB or lower	
International standard	CE marking, RoHS	
Motor type	AC servo motor	
Motor wattage	1st arm	400W
	2nd arm	200W
	Vertical axis	100W
	Rotational axis	— 100W
Encoder type	Battery-less absolute	
Encoder pulse	16384 pulse/rev	

Tip shaft allowable load inertia moment

Number of axes	Tip shaft allowable load inertia moment
3-axis specification	0.05 kg · m ²
4-axis specification	

The 4th axis allowable inertia moment is the allowable inertial moment value for the center of rotation conversion of the 4th axis (rotational axis) of the SCARA robot. Make sure that the offset value from center of the rotation of the 4th axis to the tool center of gravity is within the guideline values listed below. If the tool center of gravity is far from the 4th axis center, it is necessary to reduced speed and acceleration/deceleration appropriately. The overhang distance is limited depending on the payload and operating condition.



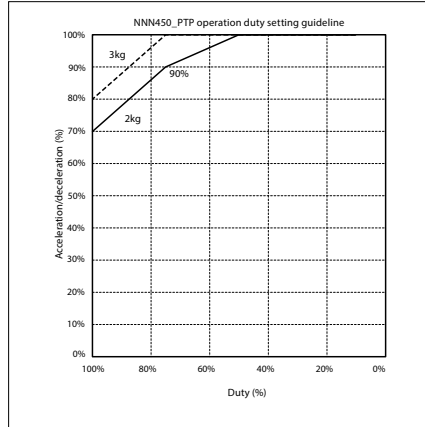
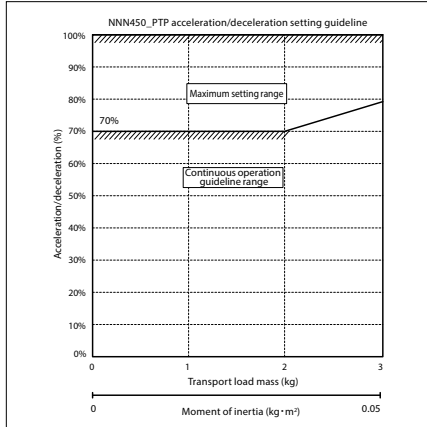
Horizontal direction	Vertical direction
120mm or less	100mm or less

Acceleration/Deceleration Setting Guidelines

The SCARA Robot IXA cannot operate continuously at the maximum acceleration/deceleration or maximum speed specified in the catalog. To operate at the maximum acceleration/deceleration, set a stop time referring to the continuous operation duty guideline graph. If a continuous operation is required, do so within the continuous operation guideline range shown in the acceleration/deceleration setting guideline graph.

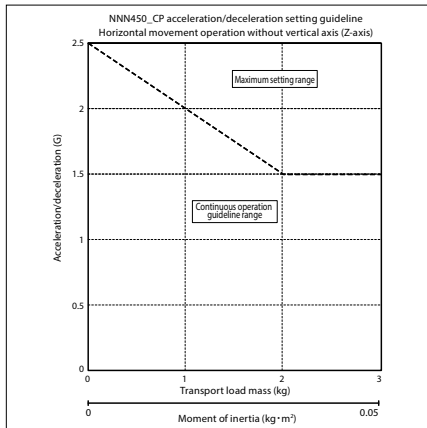
- 1) For a PTP operation, always use the WGHT command in the program to set the weight and moment of inertia. For the SCARA robot, the maximum acceleration/deceleration for each payload is set at 100%. When the payload differs, the operation time will also vary even at the same acceleration/deceleration or speed setting.
- 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 set a stop time by referring to the continuous operation duty guideline.
- 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 upward end as possible.
- 6) Set the moment of inertia and payload to the allowable value or lower.
- 7) The load mass represents the moment of inertia and weight at the center of rotation of the 4th axis.
- 8) Operate the robot at an 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 occur.
- 9) If the load moment of inertia is high, vibration may occur in the vertical axis, depending on the position of the vertical axis. In such a case, decrease the acceleration/deceleration for operation as required.

PTP Operation

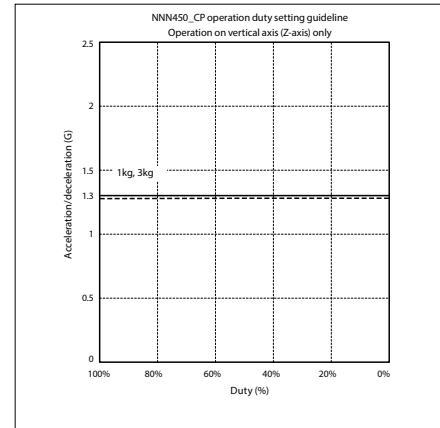
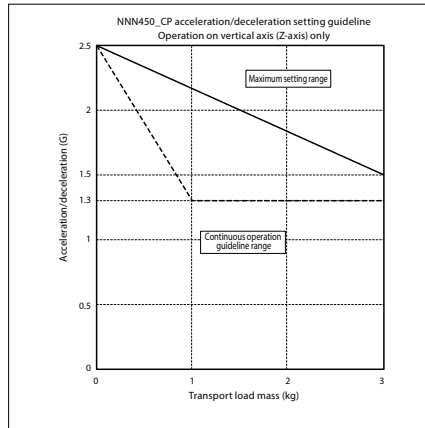


CP Operation

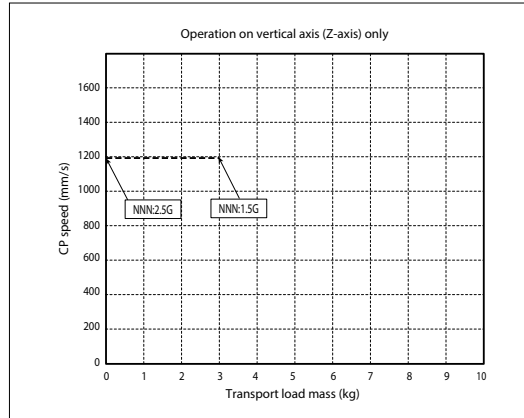
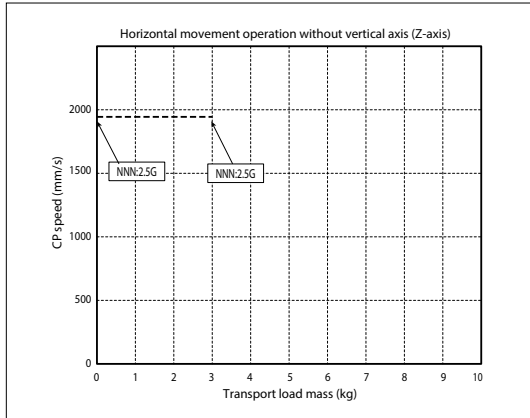
Horizontal



Vertical



CP operation: Acceleration/deceleration Limitations



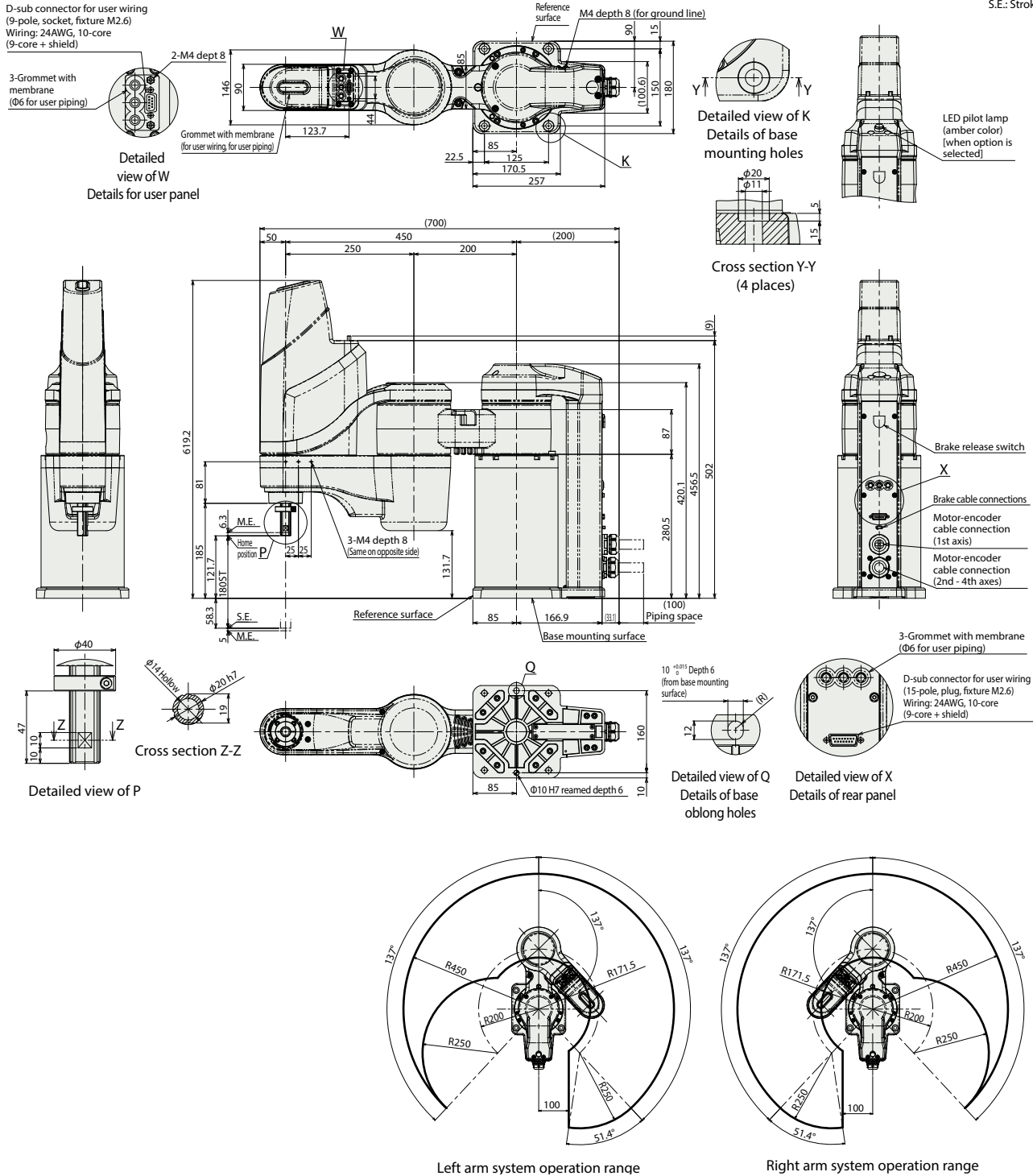
IXA-3NNN4518_4NNN4518

(Note) Refer to P51 (Note 9) for cable connections

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



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



Mass

Item	Description	Mass
Mass	3-axis specification	25.5kg
	4-axis specification	27.0kg

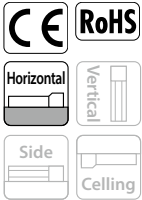
IXA-3NNN60

IXA-4NNN60

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 stroke	Cable length	Applicable controller	Option
	3 3 axes	NNN Standard type	60 600mm	18 180mm	N Nil	T2 XSEL-RAX/SAX	See below
	4 4 axes			33 330mm	5L 5m		
					10L 10m		
					<input type="checkbox"/> L Specified length (1m increments)		



- POINT Selection Notes**
- Please refer to P51 for Notes 1 - 9.
 - The maximum set value for acceleration/deceleration varies depending on the weight of the object being transported, the travel distance, and the location. For continuous operation, either lower the acceleration/deceleration values or refer to the duty (guideline) and set a stop time after acceleration/deceleration.
 - If the motor is replaced, absolute reset must be performed. An adjustment jig will be required to perform an absolute reset on the rotational axis (4th axis). Please refer to P53 for details.
 - A continuous operation cannot be performed for SCARA robots at 100% of speed and acceleration. Refer to the "Acceleration/Deceleration Setting Guidelines" for executable operating conditions.

Option

Name	Model number	Reference page
LED pilot lamp	LED	53

Option

Name	Model number	Reference page
Flange	IX-FL-1	53

(Note) Please purchase separately.

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"/>
	1L(1m) ~ 4L(4m)	<input type="checkbox"/>	<input type="checkbox"/>
Specified length	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"/>

(Note) Total amount of the following cables:
 [3-axis spec.] Motor cables:3, Encoder cables: 3, Brake cable: 1
 [4-axis spec.] Motor cables:4, Encoder cables: 4, Brake cable: 1

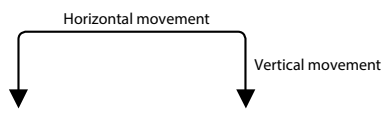
Cycle time

Item	Time
Standard cycle time	0.38 seconds
Continuous cycle time	0.55 seconds

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. 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.



Main specifications

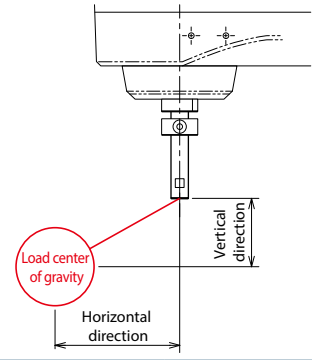
Item	Description		
	3-axis specification	4-axis specification	
Max. payload (kg) (Note 1)	6		
Speed (Note 2)	Combined max. speed (mm/s)	5934	
	Max. speed of individual axes	1st arm (deg/s)	400
		2nd arm (deg/s)	400
		Vertical axis (mm/s)	1600
		Rotational axis (deg/s)	— 2000
Push force (N) (Note 3)	Upper limit	110	
	Lower limit	25	
Arm length (mm)	600		
Individual arm length (mm)	1st arm	350	
	2nd arm	250	
Operation range of individual axes	1st arm (deg)	±137	
	2nd arm (deg)	±140	
	Vertical axis (mm)	180/330	
	Rotational axis (deg)	— ±360	

Item	Description	
	3-axis specification	4-axis specification
Positioning repeatability (Note 4)	Within horizontal surface	±0.01mm
	Vertical axis	±0.01mm
User wiring	Rotational axis	— ±0.005 degrees
	10-core (9-core + shield) AWG24 (rated 30V/Max. 1A)	
User piping	Outer diameter Φ6, inner diameter Φ4, air tube 3 pcs. (max. usable pressure 0.6MPa)	
Alarm lamp (Note 5)	Amber color LED, small pilot lamp 1 pc. (DC24V supply required)	
Brake release switch (Note 6)	Brake release switch for preventing vertical axis from dropping.	
Tip axis	Allowable torque	3.2 N·m 3.2 N·m
	Allowable load moment	8.3 N·m
Ambient operational temperature and humidity	0-40°C, 20-85% RH or lower (non-condensing)	
Degree of protection	IP20	
Vibration- and impact-resistance	No impact or vibration should be applied.	
Noise (Note 7)	80 dB or lower	
International standard	CE marking, RoHS	
Motor type	AC servo motor	
Motor wattage	1st arm	600W
	2nd arm	200W
	Vertical axis	200W
	Rotational axis	— 100W
Encoder type	Battery-less absolute	
Encoder pulse	16384 pulse/rev	

Tip shaft allowable load inertia moment

Number of axes	Tip shaft allowable load inertia moment
3-axis specification	0.06 kg · m ²
4-axis specification	

The 4th axis allowable inertia moment is the allowable inertial moment value for the center of rotation conversion of the 4th axis (rotational axis) of the SCARA robot. Make sure that the offset value from center of the rotation of the 4th axis to the tool center of gravity is within the guideline values listed below. If the tool center of gravity is far from the 4th axis center, it is necessary to reduced speed and acceleration/deceleration appropriately. The overhang distance is limited depending on the payload and operating condition.



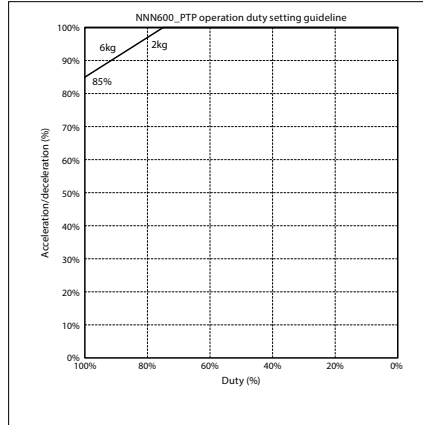
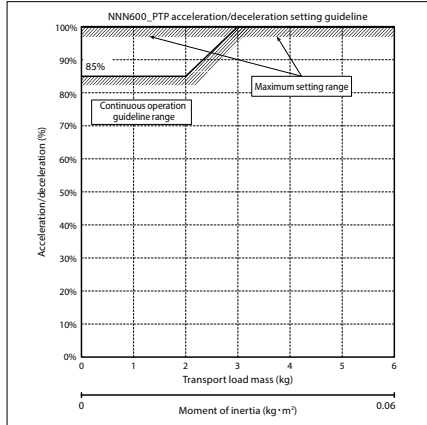
Horizontal direction	Vertical direction
120mm or less	100mm or less

Acceleration/Deceleration Setting Guidelines

The SCARA Robot IXA cannot operate continuously at the maximum acceleration/deceleration or maximum speed specified in the catalog. To operate at the maximum acceleration/deceleration, set a stop time referring to the continuous operation duty guideline graph. If a continuous operation is required, do so within the continuous operation guideline range shown in the acceleration/deceleration setting guideline graph.

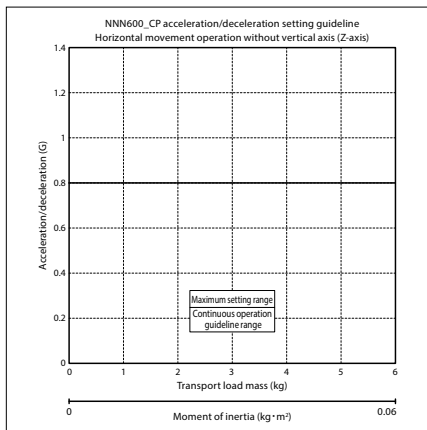
- 1) For a PTP operation, always use the WGHT command in the program to set the weight and moment of inertia. For the SCARA robot, the maximum acceleration/deceleration for each payload is set at 100%. When the payload differs, the operation time will also vary even at the same acceleration/deceleration or speed setting.
- 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 set a stop time by referring to the continuous operation duty guideline.
- 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 upward end as possible.
- 6) Set the moment of inertia and payload to the allowable value or lower.
- 7) The load mass represents the moment of inertia and weight at the center of rotation of the 4th axis.
- 8) Operate the robot at an 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 occur.
- 9) If the load moment of inertia is high, vibration may occur in the vertical axis, depending on the position of the vertical axis. In such a case, decrease the acceleration/deceleration for operation as required.

PTP Operation

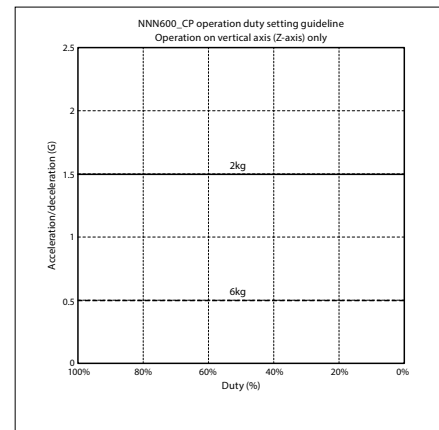
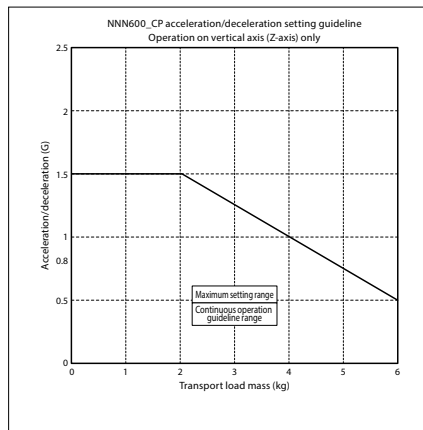


CP Operation

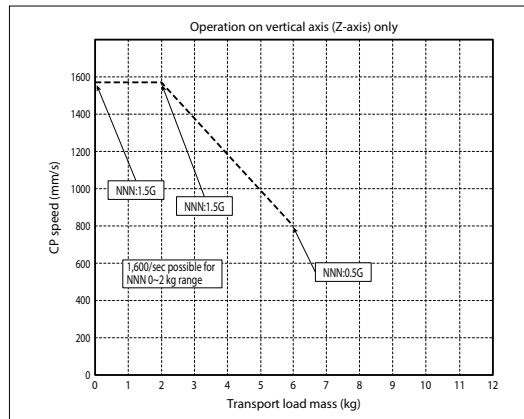
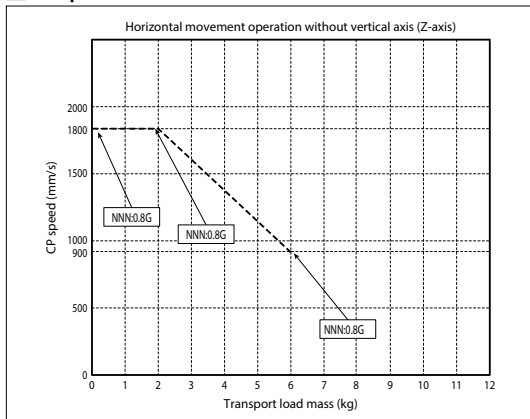
Horizontal



Vertical



CP operation: Acceleration/deceleration Limitations



IXA-3NNN6018_4NNN6018

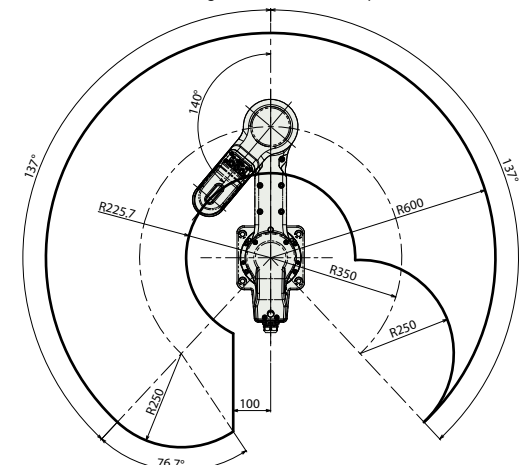
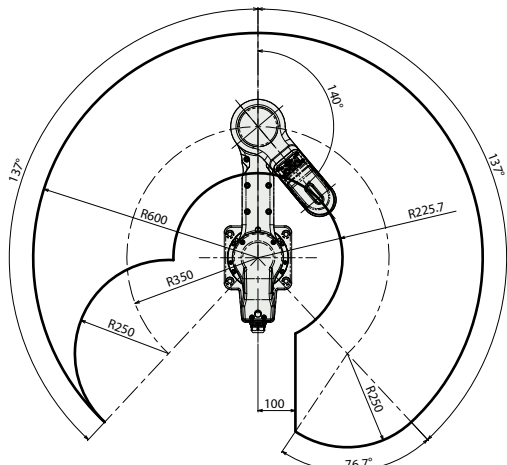
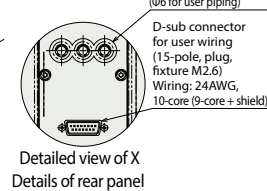
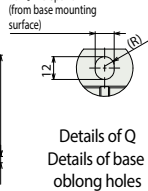
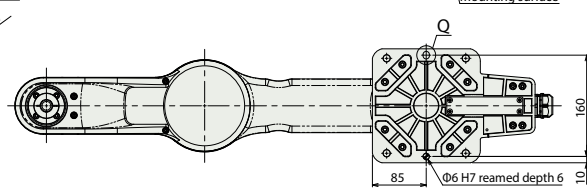
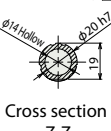
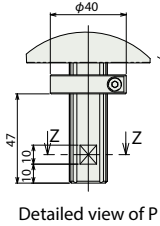
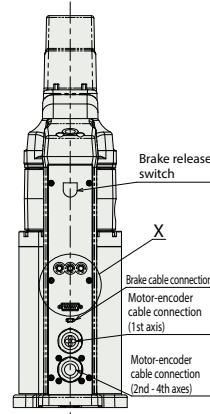
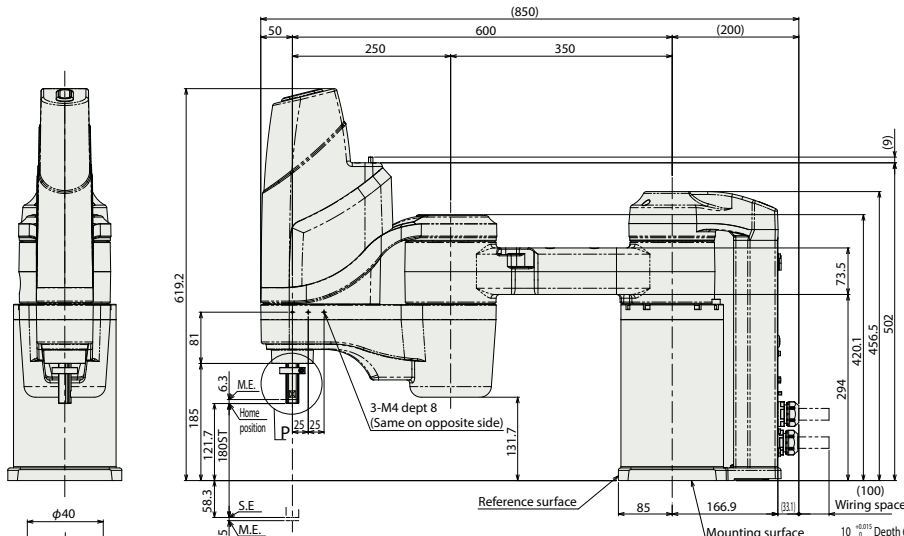
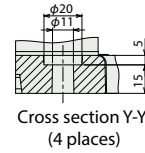
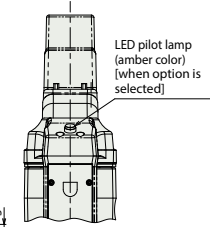
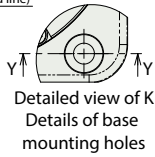
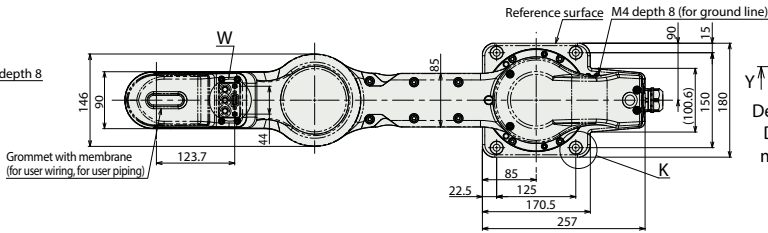
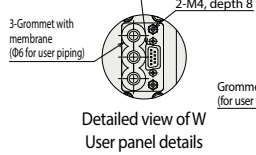
(Note) Refer to P51 (Note 9) for cable connections

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



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

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



Mass

Item	Description	
Mass	3-axis specification	30.5kg
	4-axis specification	32.0kg

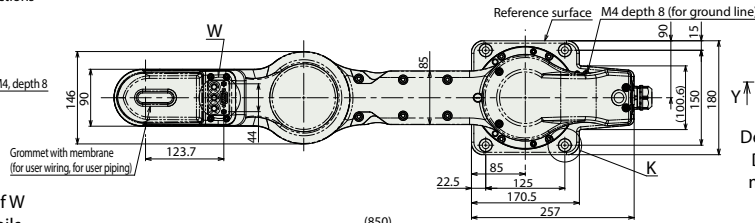
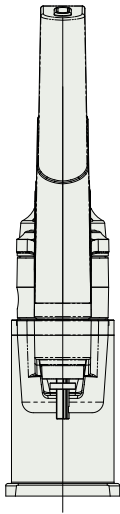
IXA-3NNN6033_4NNN6033

(Note) Refer to P51 (Note 9) for cable connections

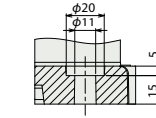
D-sub connector for user wiring
(9-pole, socket, fixture M2.6)
Wiring: 24AWG, 10-core
(9-core + shield)

3-Grommet with membrane
(Ø6 for user piping)

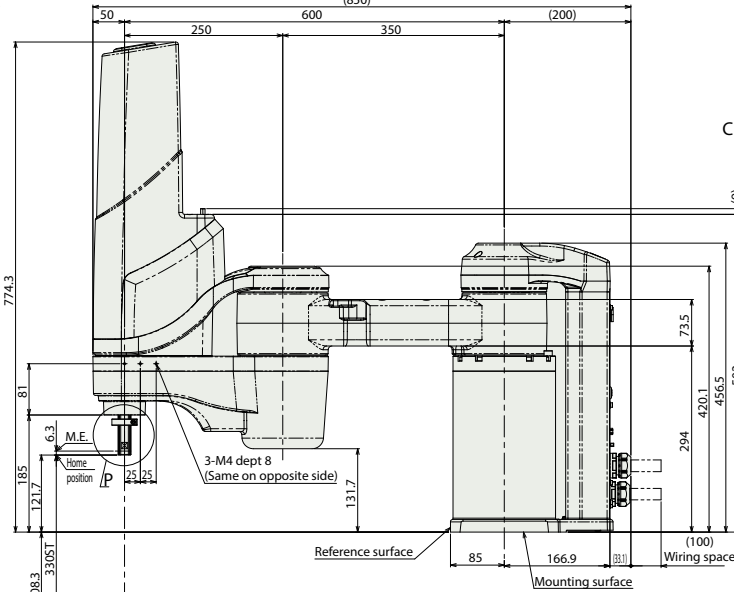
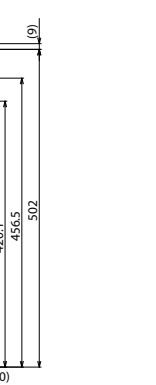
Detailed view of W
User panel details



Detailed view of K
Details of base mounting holes

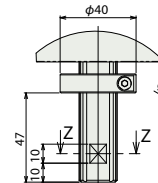
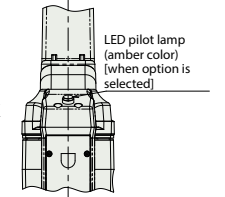


Cross section Y-Y
(4 places)



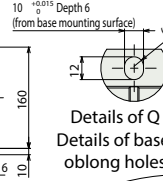
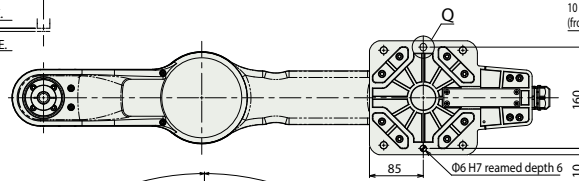
S.T: Stroke
M.E: Mechanical end
S.E: Stroke end

LED pilot lamp
(amber color)
(when option is selected)

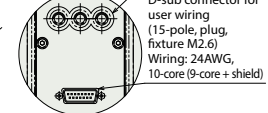


Detailed view of P

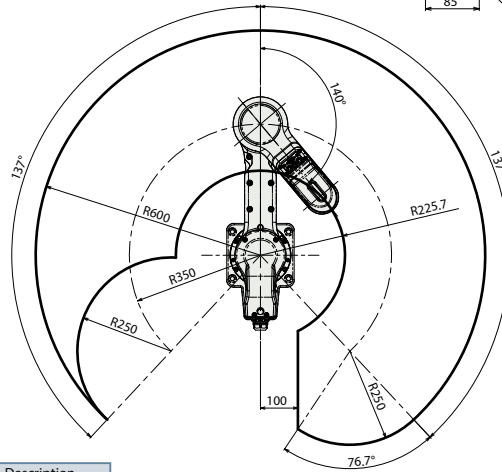
Cross section Z-Z



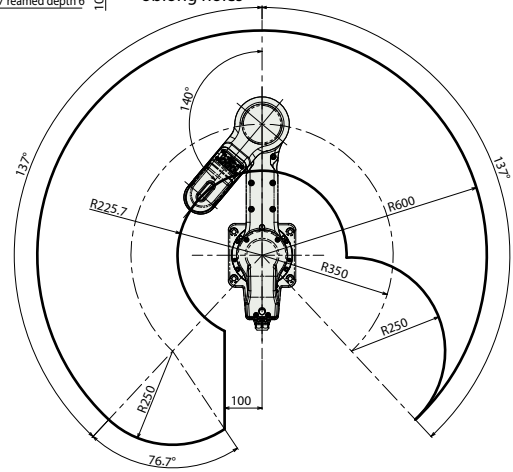
Details of Q
Details of base oblong holes



Detailed view of X
Details of rear panel



Left arm system operation range



Right arm system operation range

Mass

Item	Description	
Mass	3-axis specification	31.0kg
	4-axis specification	32.5kg

Applicable controller

The actuator on this page can be operated by the controller indicated below.

Name	External view	Max. number of connectable axes	Power supply voltage	Control method													Max. number of positioning points	Reference page			
				Positioner	Pulse train	Program	Network* option								EC	EP			PRT	SSN	ECM
XSEL-RAX/SAX		8	3-phase AC200V	—	—	●	●	●	—	●	—	—	—	—	●	●	—	—	—	36666 (Depending on the type)	54

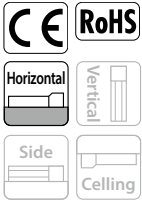
IXA-3NSN3015

IXA-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 stroke	-	Cable length	-	Applicable controller
	-	3 3 axes	NSN High-speed type	30 300mm	15 150mm	-	N Nil	-	T2 XSEL-RAX/SAX
	-	4 4 axes				-	5L 5m	-	
	-					-	10L 10m	-	
	-					-	<input type="checkbox"/> L Specified length (1m increments)	-	



- POINT Selection Notes**
- Please refer to P51 for Notes 1 - 9.
 - The maximum set value for acceleration/deceleration varies depending on the weight of the object being transported, the travel distance, and the location. For continuous operation, either lower the acceleration/deceleration values or refer to the duty (guideline) and set a stop time after acceleration/deceleration.
 - If the motor is replaced, absolute reset must be performed. An adjustment jig will be required to perform an absolute reset on the rotational axis (4th axis). Please refer to P53 for details.
 - A continuous operation cannot be performed for SCARA robots at 100% of speed and acceleration. Refer to the "Acceleration/Deceleration Setting Guidelines" for executable operating conditions.

Option		
Name	Model number	Reference page
Flange	IX-FL-1	65

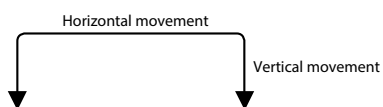
(Note) Please purchase separately.

Cable length			
Type	Cable code	3-axis specification	4-axis specification
Standard type	5L(5m)	<input type="radio"/>	<input type="radio"/>
	10L(10m)	<input type="radio"/>	<input type="radio"/>
Specified length	1L(1m) ~ 4L(4m)	<input type="radio"/>	<input type="radio"/>
	6L(6m) ~ 9L(9m)	<input type="radio"/>	<input type="radio"/>
	11L(11m)	<input type="radio"/>	<input type="radio"/>
	12L(12m)	<input type="radio"/>	<input type="radio"/>
	13L(13m)	<input type="radio"/>	<input type="radio"/>
	14L(14m)	<input type="radio"/>	<input type="radio"/>
	15L(15m)	<input type="radio"/>	<input type="radio"/>

(Note) Total amount of the following cables:
 [3-axis spec.] Motor cables:3, Encoder cables: 3, Brake cable: 1
 [4-axis spec.] Motor cables:4, Encoder cables: 4, Brake cable: 1

Cycle time	
Item	Time
Standard cycle time	0.26 seconds
Continuous cycle time	0.45 seconds

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. 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.



Main specifications

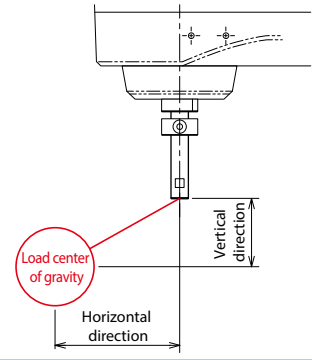
Item	Description		
	3-axis specification	4-axis specification	
Max. payload (kg) (Note 1)	8		
Speed (Note 2)	Combined max. speed (mm/s)	6032	
	Max. speed of individual axes	1st arm (deg/s)	720
		2nd arm (deg/s)	720
		Vertical axis (mm/s)	1600
		Rotational axis (deg/s)	— 1600
Push force (N) (Note 3)	Upper limit	100	
	Lower limit	25	
Arm length (mm)	300		
Individual arm length (mm)	1st arm	120	
	2nd arm	180	
Operation range of individual axes	1st arm (deg)	±135	
	2nd arm (deg)	±142	
	Vertical axis (mm)	150	
	Rotational axis (deg)	— ±360	

Item	Description	
	3-axis specification	4-axis specification
Positioning repeatability (Note 4)	Within horizontal surface	±0.01 mm
	Vertical axis	±0.01 mm
Rotational axis	—	±0.005 degrees
	User wiring	10-core (9-core + shield) AWG24 (rated 30V/Max. 1A)
User piping	Outer diameter Ø4, inner diameter Ø2.5, air tube 3 pcs. (max. usable pressure 0.6MPa)	
Alarm lamp (Note 5)	Amber color LED, small pilot lamp 1 pc. (DC24V supply required)	
Brake release switch (Note 6)	Brake release switch for preventing vertical axis from dropping.	
Tip axis	Allowable torque	3.2 N·m 3.2 N·m
	Allowable load moment	12 N·m
Ambient operational temperature and humidity	0-40°C, 20-85% RH or lower (non-condensing)	
Degree of protection	IP20	
Vibration- and impact-resistance	No impact or vibration should be applied.	
Noise (Note 7)	80 dB or lower	
International standard	CE marking, RoHS	
Motor type	AC servo motor	
Motor wattage	1st arm	600W
	2nd arm	400W
	Vertical axis	150W
	Rotational axis	— 100W
Encoder type	Battery-less absolute	
Encoder pulse	131072 pulse/rev	

Tip shaft allowable load inertia moment

Number of axes	Tip shaft allowable load inertia moment
3-axis specification	0.12 kg · m ²
4-axis specification	

The 4th axis allowable inertia moment is the allowable inertial moment value for the center of rotation conversion of the 4th axis (rotational axis) of the SCARA robot. Make sure that the offset value from center of the rotation of the 4th axis to the tool center of gravity is within the guideline values listed below. If the tool center of gravity is far from the 4th axis center, it is necessary to reduced speed and acceleration/deceleration appropriately. The overhang distance is limited depending on the payload and operating condition.



Horizontal direction	Vertical direction
150mm or less	100mm or less

Dimensions

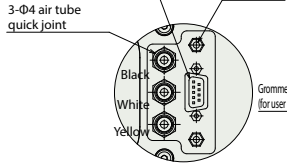
CAD drawings can be downloaded from our website.
www.intelligentactuator.com



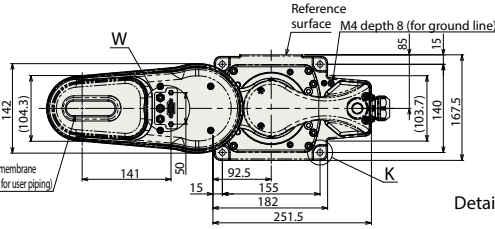
(Note) Refer to P51 (Note 9) for cable connections

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

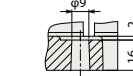
D-sub connector for user wiring
(9-pole, socket, fixture M2.6)
Wiring: 24AWG, 10-core
(9-core + shield)



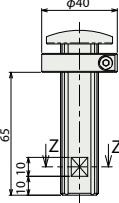
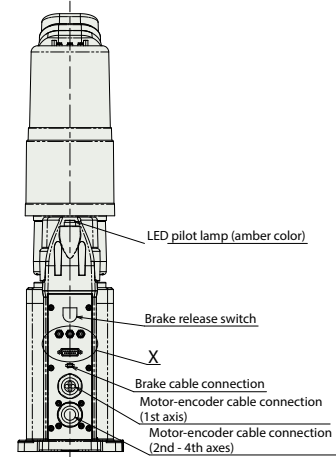
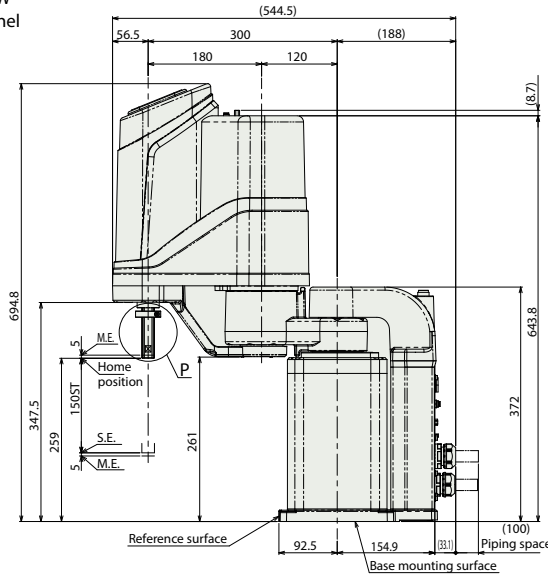
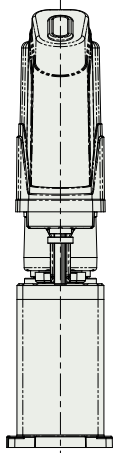
Detailed view of W
Details for user panel



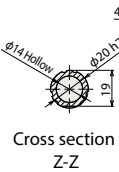
Detailed view of K
Details of base mounting holes



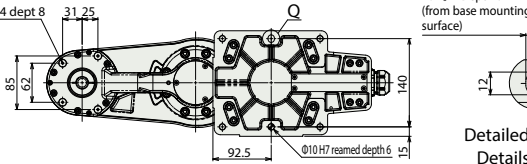
Cross section Y-Y
(4 places)



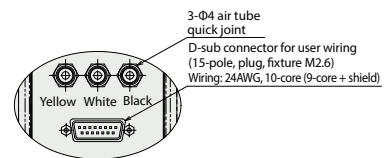
Detailed view of P



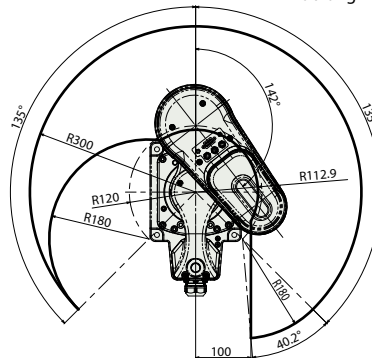
Cross section Z-Z



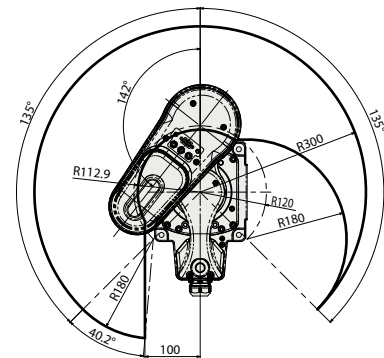
Detailed view of Q
Details of base oblong holes



Detailed view of X
Details of rear panel



Left arm system operation range



Right arm system operation range

Mass

Item	Description	Mass
3-axis specification	26.5kg	
4-axis specification	27.5kg	

Applicable controller

The actuator on this page can be operated by the controller indicated below.

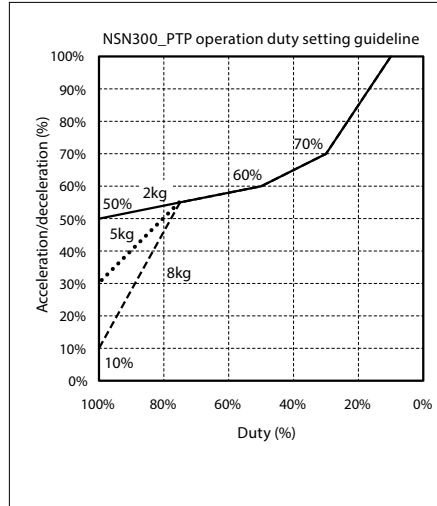
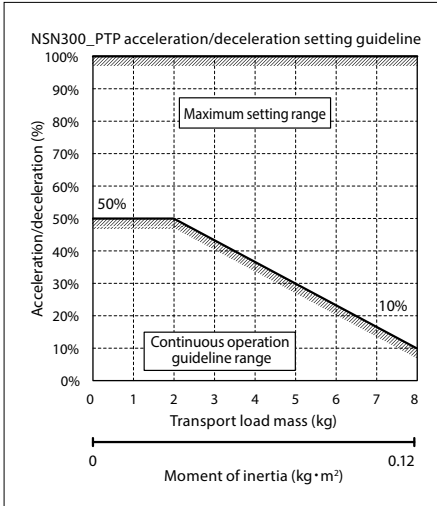
Name	External view	Max. number of connectable axes	Power supply voltage	Control method													Max. number of positioning points	Reference page		
				Positioner	Pulse train	Program	Network* option													
				DV	CC	CIE	PR	CN	ML	ML3	EC	EP	PRT	SSN	ECM					
XSEL-RAX3/SAX3 (for IXA)		3	3-phase AC200V	—	—	●	●	●	—	●	—	—	—	●	●	—	—	—	41250 (Depending on the type)	54
XSEL-RAX4/SAX4 (for IX and IXA)		4		—	—	●	●	—	●	—	—	—	—	—	●	●	—	—	—	36666 (Depending on the type)

Acceleration/Deceleration Setting Guidelines

The SCARA Robot IXA cannot operate continuously at the maximum acceleration/deceleration or maximum speed specified in the catalog. To operate at the maximum acceleration/deceleration, set a stop time referring to the continuous operation duty guideline graph. If a continuous operation is required, do so within the continuous operation guideline range shown in the acceleration/deceleration setting guideline graph.

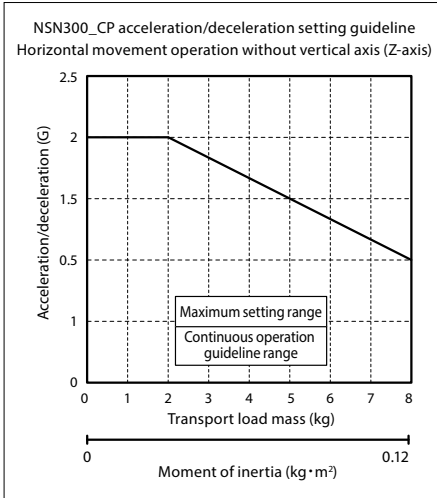
- 1) For a PTP operation, always use the WGHT command in the program to set the weight and moment of inertia. For the SCARA robot, the maximum acceleration/deceleration for each payload is set at 100%. When the payload differs, the operation time will also vary even at the same acceleration/deceleration or speed setting.
- 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 set a stop time by referring to the continuous operation duty guideline.
- 4) Duty (%) = (Operation time / (Operation time + Stop time)) × 100
- 5) When moving the robot horizontally at high speed, operate the vertical axis as close to the upward end as possible.
- 6) Set the moment of inertia and payload to the allowable value or lower.
- 7) The load mass represents the moment of inertia and weight at the center of rotation of the 4th axis.
- 8) Operate the robot at an 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 occur.
- 9) If the load moment of inertia is high, vibration may occur in the vertical axis, depending on the position of the vertical axis. In such a case, decrease the acceleration/deceleration for operation as required.

PTP Operation

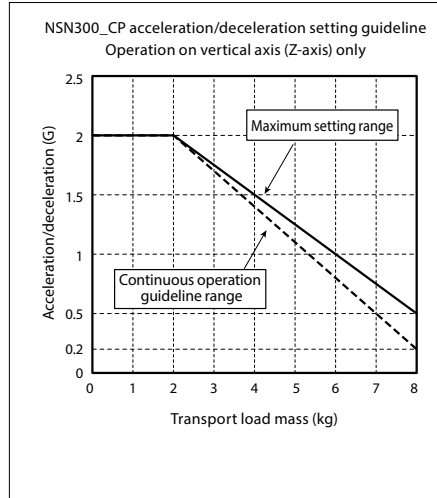


CP Operation

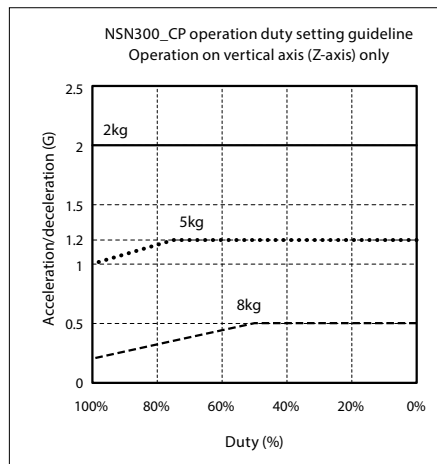
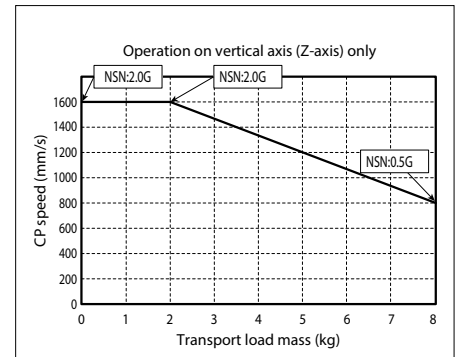
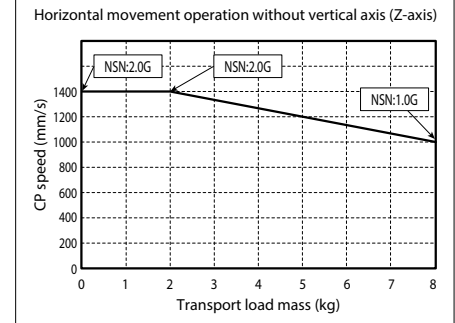
Horizontal



Vertical



CP operation: Acceleration/deceleration Limitations



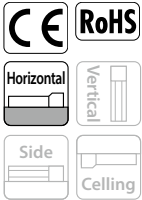
IXA-3NSN45

IXA-4NSN45

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

IXA	-		NSN	45		-		-	T2
Series	-	Number of axes	Type	Arm length	Vertical stroke	-	Cable length	-	Applicable controller
		3 3 axes	NSN High-speed type	45 450mm	18 180mm		N Nil		T2 XSEL-RAX/SAX
		4 4 axes			33 330mm		5L 5m		
							10L 10m		
							<input type="checkbox"/> L Specified length (1m increments)		



Main specifications

Item	Description		
	3-axis specification	4-axis specification	
Max. payload (kg) (Note 1)	10		
Speed (Note 2)	Combined max. speed (mm/s)	8282	
	Max. speed of individual axes	1st arm (deg/s)	610
		2nd arm (deg/s)	800
		Vertical axis (mm/s)	1600
		Rotational axis (deg/s)	— 2000
Push force (N) (Note 3)	Upper limit	110	
	Lower limit	25	
Arm length (mm)	450		
Individual arm length (mm)	1st arm	200	
	2nd arm	250	
Operation range of individual axes	1st arm (deg)	±137	
	2nd arm (deg)	±137	
	Vertical axis (mm)	180/330	
	Rotational axis (deg)	— ±360	

- POINT Selection Notes**
- Please refer to P51 for Notes 1 - 9.
 - The maximum set value for acceleration/deceleration varies depending on the weight of the object being transported, the travel distance, and the location. For continuous operation, either lower the acceleration/deceleration values or refer to the duty (guideline) and set a stop time after acceleration/deceleration.
 - If the motor is replaced, absolute reset must be performed. An adjustment jig will be required to perform an absolute reset on the rotational axis (4th axis). Please refer to P53 for details.
 - A continuous operation cannot be performed for SCARA robots at 100% of speed and acceleration. Refer to the "Acceleration/Deceleration Setting Guidelines" for executable operating conditions.

Item	Description	
	3-axis specification	4-axis specification
Positioning repeatability (Note 4)	Within horizontal surface	±0.01 mm
	Vertical axis	±0.01 mm
Rotational axis	—	±0.005 degrees
	User wiring	10-core (9-core + shield) AWG24 (rated 30V/Max. 1A)
User piping	Outer diameter Ø6, inner diameter Ø4, air tube 3 pcs. (max. usable pressure 0.6MPa)	
Alarm lamp (Note 5)	Amber color LED, small pilot lamp 1 pc. (DC24V supply required)	
Brake release switch (Note 6)	Brake release switch for preventing vertical axis from dropping.	
Tip axis	Allowable torque	3.2 N·m 3.2 N·m
	Allowable load moment	8.3 N·m
Ambient operational temperature and humidity	0-40°C, 20-85% RH or lower (non-condensing)	
Degree of protection	IP20	
Vibration- and impact-resistance	No impact or vibration should be applied.	
Noise (Note 7)	80 dB or lower	
International standard	CE marking, RoHS	
Motor type	AC servo motor	
Motor wattage	1st arm	600W
	2nd arm	400W
	Vertical axis	200W
	Rotational axis	— 100W
Encoder type	Battery-less absolute	
Encoder pulse	131072 pulse/rev	

Option		
Name	Model number	Reference page
Flange	IX-FL-1	53

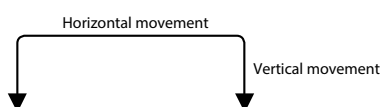
(Note) Please purchase separately.

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"/>
	1L(1m) ~ 4L(4m)	<input type="checkbox"/>	<input type="checkbox"/>
Specified length	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"/>

(Note) Total amount of the following cables:
 [3-axis spec.] Motor cables:3, Encoder cables: 3, Brake cable: 1
 [4-axis spec.] Motor cables:4, Encoder cables: 4, Brake cable: 1

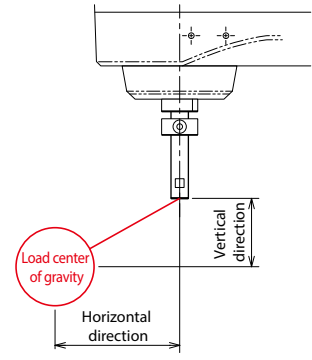
Cycle time	
Item	Time
Standard cycle time	0.26 seconds
Continuous cycle time	0.45 seconds

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. 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.



Tip shaft allowable load inertia moment	
Number of axes	Tip shaft allowable load inertia moment
3-axis specification	0.12 kg · m ²
4-axis specification	

The 4th axis allowable inertia moment is the allowable inertial moment value for the center of rotation conversion of the 4th axis (rotational axis) of the SCARA robot. Make sure that the offset value from center of the rotation of the 4th axis to the tool center of gravity is within the guideline values listed below. If the tool center of gravity is far from the 4th axis center, it is necessary to reduced speed and acceleration/deceleration appropriately. The overhang distance is limited depending on the payload and operating condition.



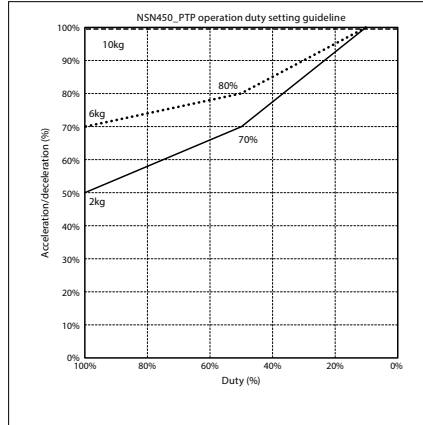
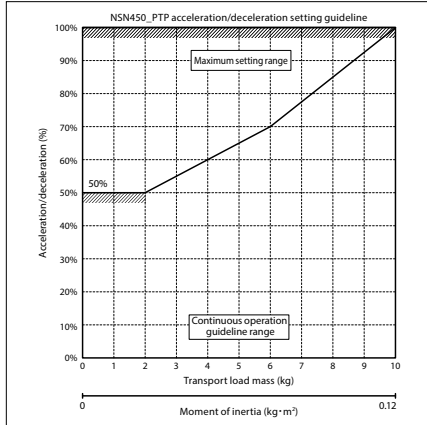
Horizontal direction	Vertical direction
180mm or less	100mm or less

Acceleration/Deceleration Setting Guidelines

The SCARA Robot IXA cannot operate continuously at the maximum acceleration/deceleration or maximum speed specified in the catalog. To operate at the maximum acceleration/deceleration, set a stop time referring to the continuous operation duty guideline graph. If a continuous operation is required, do so within the continuous operation guideline range shown in the acceleration/deceleration setting guideline graph.

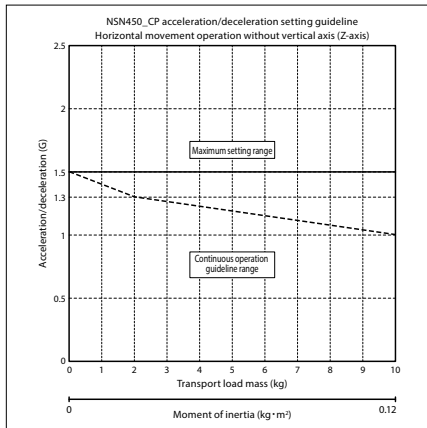
- 1) For a PTP operation, always use the WGHT command in the program to set the weight and moment of inertia. For the SCARA robot, the maximum acceleration/deceleration for each payload is set at 100%. When the payload differs, the operation time will also vary even at the same acceleration/deceleration or speed setting.
- 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 set a stop time by referring to the continuous operation duty guideline.
- 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 upward end as possible.
- 6) Set the moment of inertia and payload to the allowable value or lower.
- 7) The load mass represents the moment of inertia and weight at the center of rotation of the 4th axis.
- 8) Operate the robot at an 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 occur.
- 9) If the load moment of inertia is high, vibration may occur in the vertical axis, depending on the position of the vertical axis. In such a case, decrease the acceleration/deceleration for operation as required.

PTP Operation

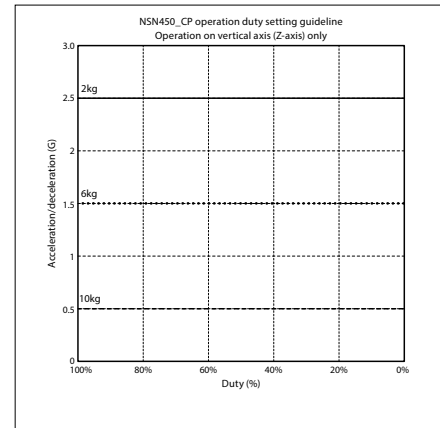
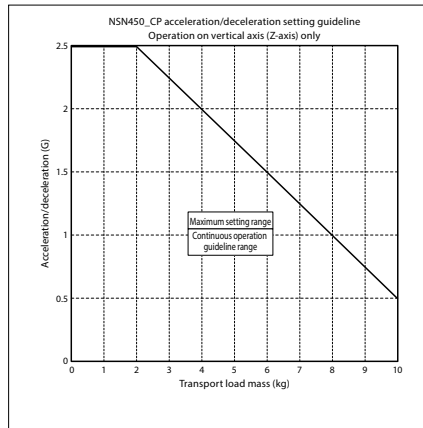


CP Operation

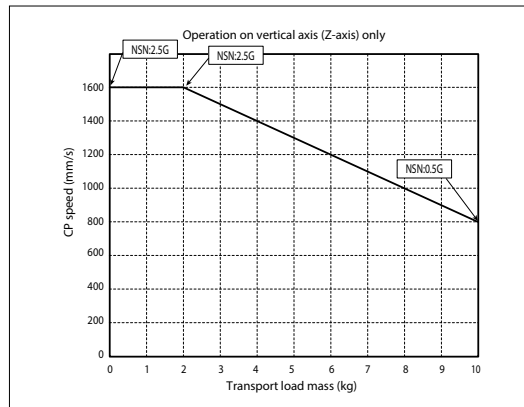
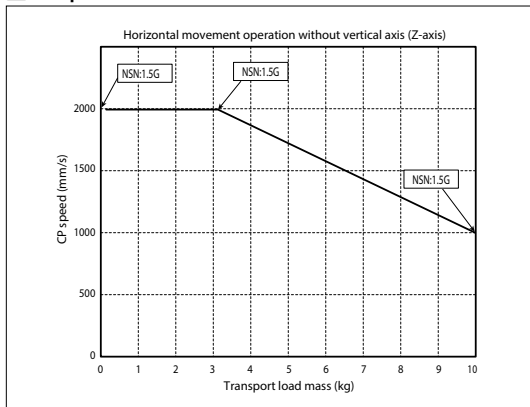
Horizontal



Vertical



CP operation: Acceleration/deceleration Limitations

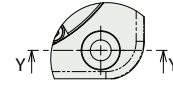
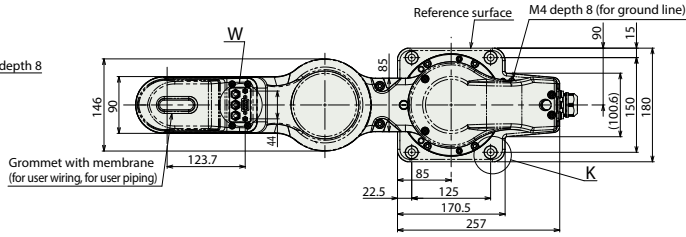
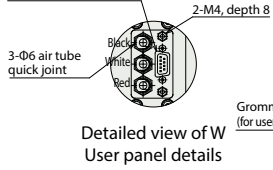


IXA-3NSN4518_4NSN4518

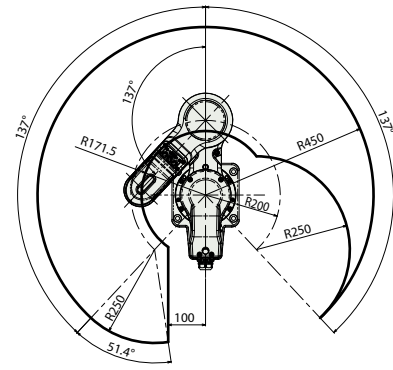
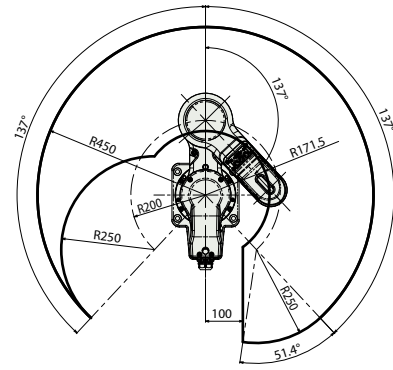
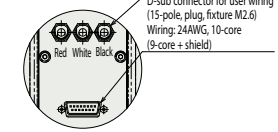
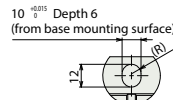
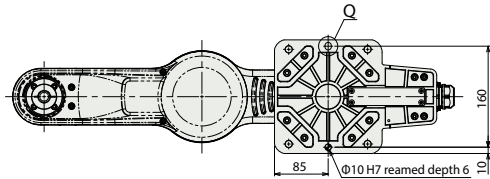
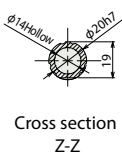
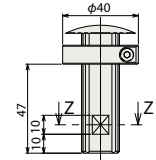
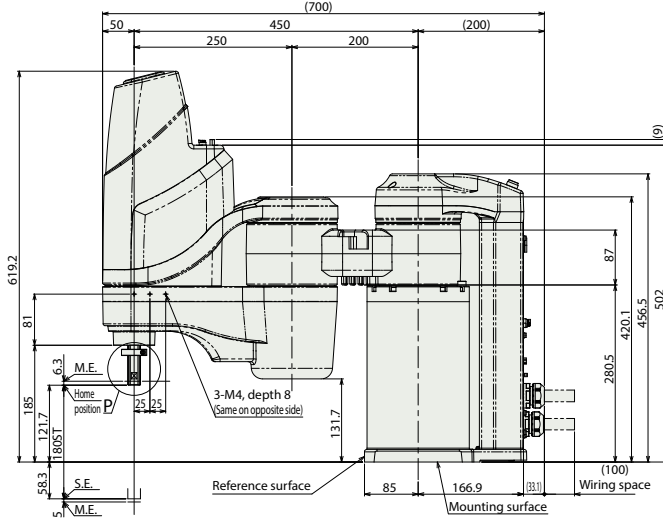
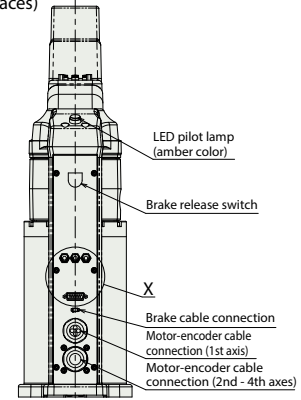
(Note) Refer to P51 (Note 9) for cable connections

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

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



Cross section Y-Y
(4 places)



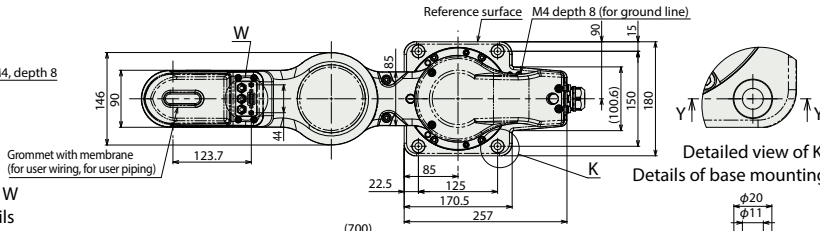
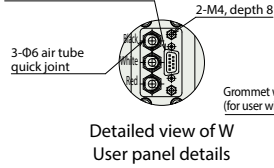
Mass

Item	Description	Mass
Mass	3-axis specification	31.0kg
	4-axis specification	32.5kg

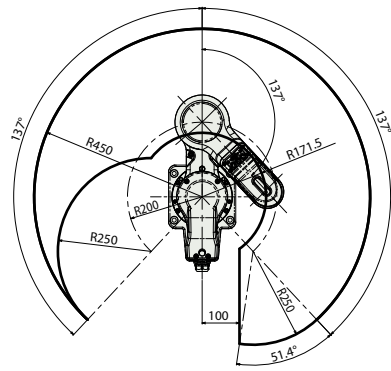
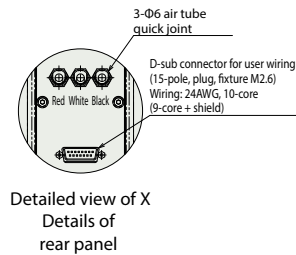
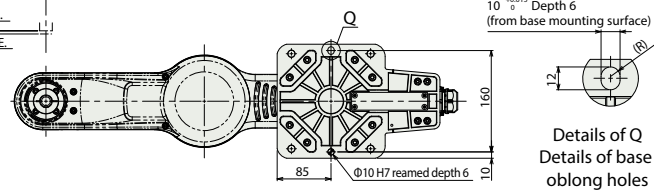
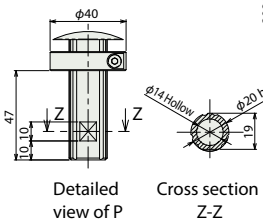
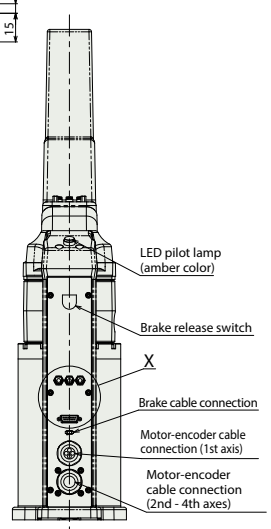
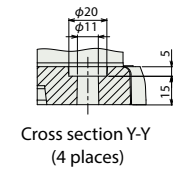
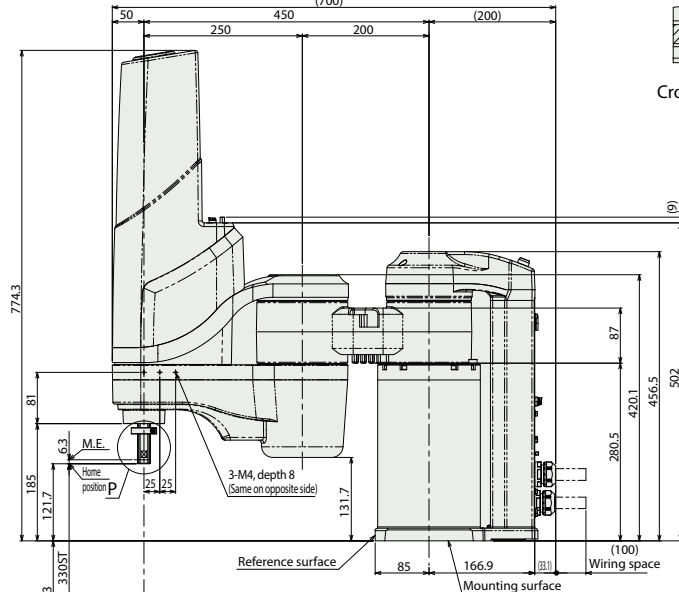
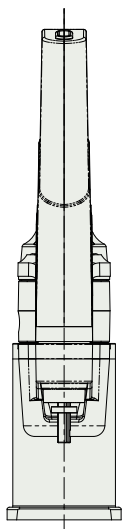
IXA-3NSN4533_4NSN4533

(Note) Refer to P51 (Note 9) for cable connections

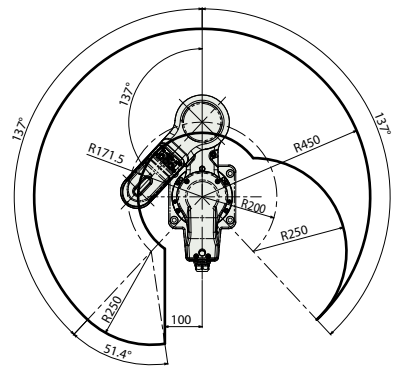
D-sub connector for user wiring
(9-pole, socket, fixture M2.6)
Wiring: 24AWG,
10-core (9-core + shield)



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



Left arm system operation range



Right arm system operation range

Mass

Item	Description
Mass	3-axis specification 31.5kg
	4-axis specification 33.0kg

Applicable controller

The actuator on this page can be operated by the controller indicated below.

Name	External view	Max. number of connectable axes	Power supply voltage	Positioner	Pulse train	Program	Control method											Max. number of positioning points	Reference page	
							Network* option													
							DV	CC	CIE	PR	CN	ML	ML3	EC	EP	PRT	SSN	ECM		
XSEL-RAX3/SAX3 (for IXA)		3	3-phase AC200V	—	—	●	●	●	—	●	—	—	—	●	●	—	—	—	41250 (Depending on the type)	54
XSEL-RAX4/SAX4 (for IX and IXA)		4		—	—	●	●	●	—	●	—	—	—	—	●	●	—	—	—	36666 (Depending on the type)

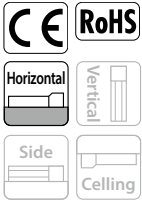
IXA-3NSN60

IXA-4NSN60

High-Speed Type	Battery-less Absolute	Arm Length: 600mm	Vertical Axis: 180/330mm
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Model Specification Items

IXA	-		NSN		60		-		-	T2
Series	-	Number of axes	Type	Arm length	Vertical stroke	Cable length	-	Applicable controller		
	-	3 3 axes	NSN High-speed type	60 600mm	18 180mm	N Nil	-	T2	XSEL-RAX/SAX	
	-	4 4 axes			33 330mm	5L 5m	-			
	-					10L 10m	-			
	-					<input type="checkbox"/> L Specified length (1m increments)	-			



Main specifications

Item	Description		
	3-axis specification	4-axis specification	
Max. payload (kg) (Note 1)	12		
Speed (Note 2)	Combined max. speed (mm/s)	6414	
	Max. speed of individual axes	1st arm (deg/s)	300
		2nd arm (deg/s)	750
		Vertical axis (mm/s)	1600
		Rotational axis (deg/s)	— 2000
Push force (N) (Note 3)	Upper limit	110	
	Lower limit	25	
Arm length (mm)	600		
Individual arm length (mm)	1st arm	350	
	2nd arm	250	
Operation range of individual axes	1st arm (deg)	±137	
	2nd arm (deg)	±140	
	Vertical axis (mm)	180/330	
	Rotational axis (deg)	— ±360	

- POINT Selection Notes**
- Please refer to P51 for Notes 1 - 9.
 - The maximum set value for acceleration/deceleration varies depending on the weight of the object being transported, the travel distance, and the location. For continuous operation, either lower the acceleration/deceleration values or refer to the duty (guideline) and set a stop time after acceleration/deceleration.
 - If the motor is replaced, absolute reset must be performed. An adjustment jig will be required to perform an absolute reset on the rotational axis (4th axis). Please refer to P53 for details.
 - A continuous operation cannot be performed for SCARA robots at 100% of speed and acceleration. Refer to the "Acceleration/Deceleration Setting Guidelines" for executable operating conditions.

Option

Name	Model number	Reference page
Flange	IX-FL-1	53

(Note) Please purchase separately.

Cable length

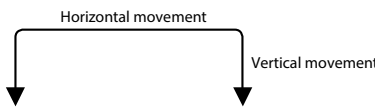
Type	Cable code	3-axis specification	4-axis specification
Standard type	5L(5m)	<input type="checkbox"/>	<input type="checkbox"/>
	10L(10m)	<input type="checkbox"/>	<input type="checkbox"/>
Specified length	1L(1m) ~ 4L(4m)	<input type="checkbox"/>	<input type="checkbox"/>
	6L(6m) ~ 9L(9m)	<input type="checkbox"/>	<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"/>

(Note) Total amount of the following cables:
 [3-axis spec.] Motor cables:3, Encoder cables: 3, Brake cable: 1
 [4-axis spec.] Motor cables:4, Encoder cables: 4, Brake cable: 1

Cycle time

Item	Time
Standard cycle time	0.26 seconds
Continuous cycle time	0.45 seconds

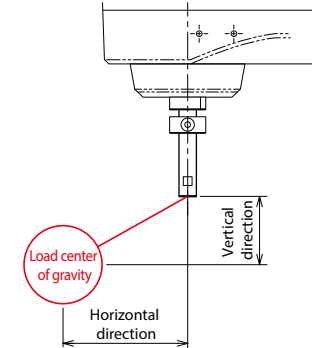
The standard/continuous cycle time represents the time required when an operation is performed with a cycle operation setting at maximum speed, under the following conditions.
 2kg transport, vertical movement 25mm, horizontal movement 300mm (rough positioning arch motion)
 [Standard cycle time]
 The time required for maximum speed. 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.



Tip shaft allowable load inertia moment

Number of axes	Tip shaft allowable load inertia moment
3-axis specification	0.12 kg · m ²
4-axis specification	

The 4th axis allowable inertia moment is the allowable inertial moment value for the center of rotation conversion of the 4th axis (rotational axis) of the SCARA robot. Make sure that the offset value from center of the rotation of the 4th axis to the tool center of gravity is within the guideline values listed below. If the tool center of gravity is far from the 4th axis center, it is necessary to reduced speed and acceleration/deceleration appropriately. The overhang distance is limited depending on the payload and operating condition.



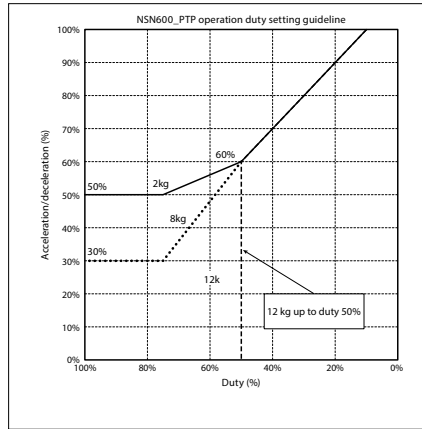
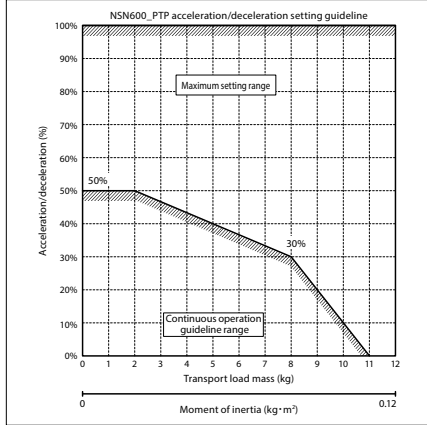
Horizontal direction	Vertical direction
180mm or less	100mm or less

Acceleration/Deceleration Setting Guidelines

The SCARA Robot IXA cannot operate continuously at the maximum acceleration/deceleration or maximum speed specified in the catalog. To operate at the maximum acceleration/deceleration, set a stop time referring to the continuous operation duty guideline graph. If a continuous operation is required, do so within the continuous operation guideline range shown in the acceleration/deceleration setting guideline graph.

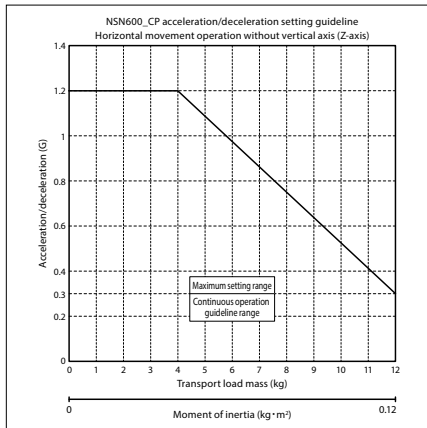
- 1) For a PTP operation, always use the WGHT command in the program to set the weight and moment of inertia. For the SCARA robot, the maximum acceleration/deceleration for each payload is set at 100%. When the payload differs, the operation time will also vary even at the same acceleration/deceleration or speed setting.
- 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 set a stop time by referring to the continuous operation duty guideline.
- 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 upward end as possible.
- 6) Set the moment of inertia and payload to the allowable value or lower.
- 7) The load mass represents the moment of inertia and weight at the center of rotation of the 4th axis.
- 8) Operate the robot at an 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 occur.
- 9) If the load moment of inertia is high, vibration may occur in the vertical axis, depending on the position of the vertical axis. In such a case, decrease the acceleration/deceleration for operation as required.

PTP Operation

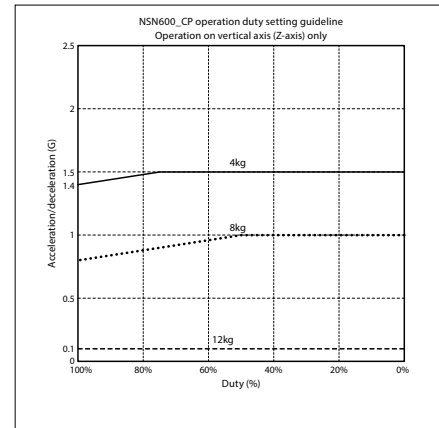
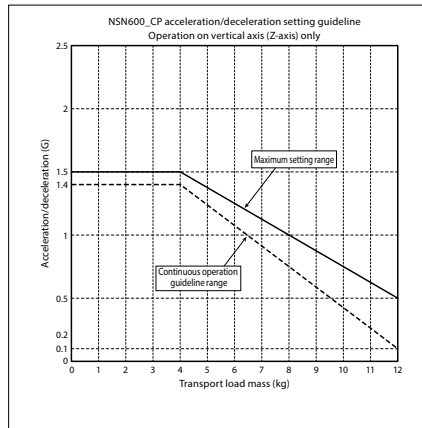


CP Operation

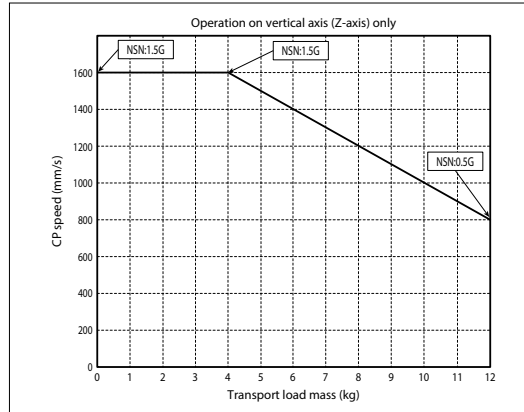
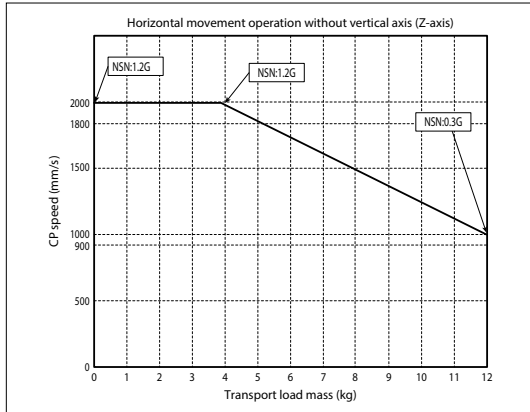
Horizontal



Vertical



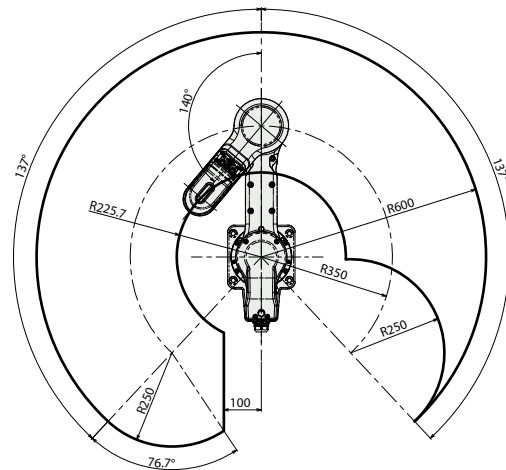
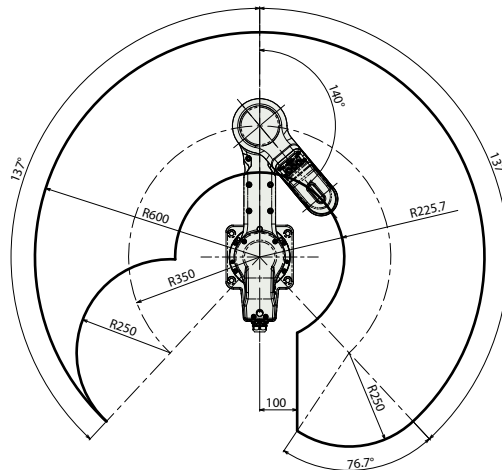
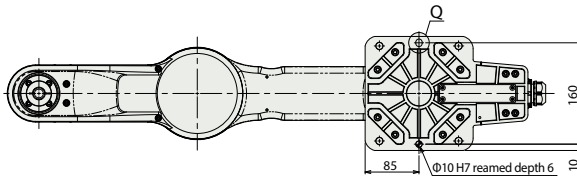
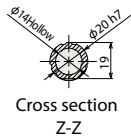
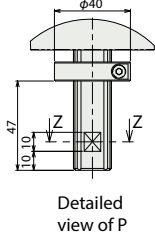
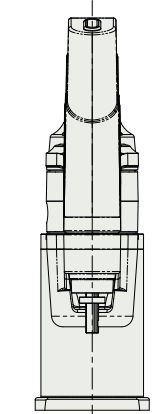
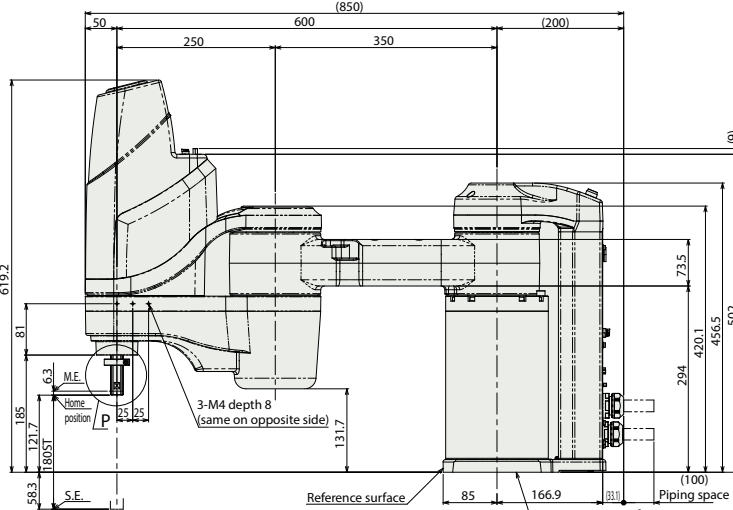
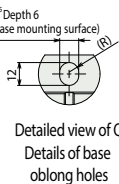
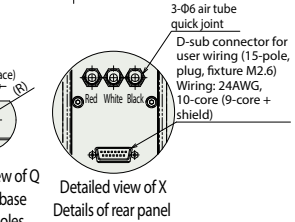
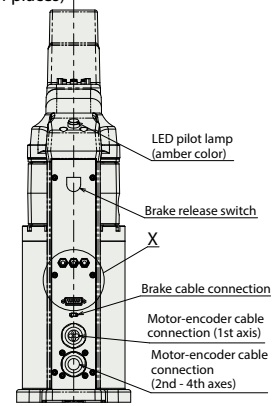
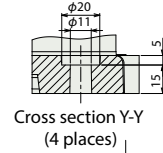
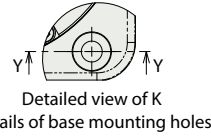
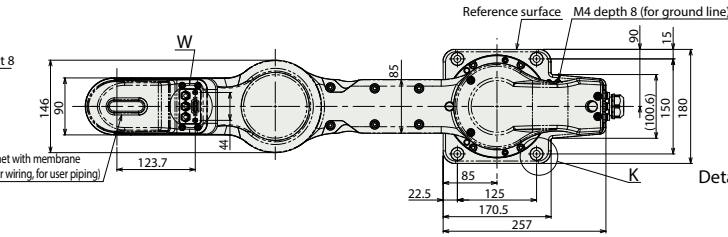
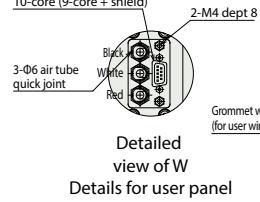
CP operation: Acceleration/deceleration Limitations



IXA-3NSN6018_4NSN6018

(Note) Refer to P51 (Note 9) for cable connections

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



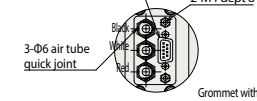
Mass

Item	Description	Mass
3-axis specification	31.5kg	
4-axis specification	33.0kg	

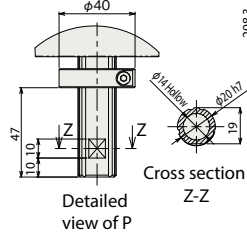
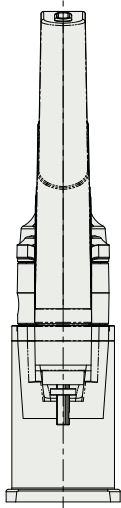
IXA-3NSN6033_4NSN6033

(Note) Refer to P51 (Note 9) for cable connections

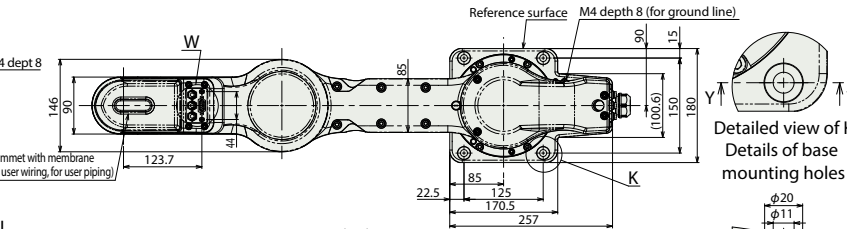
D-sub connector for user wiring
(9-pole, socket, fixture M2.6)
Wiring: 24AWG,
10-core (9-core + shield)



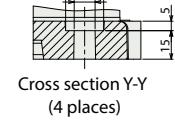
Detailed view of W
Details for user panel



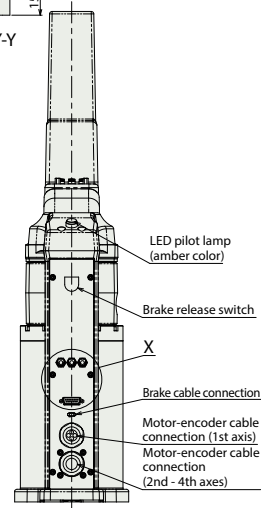
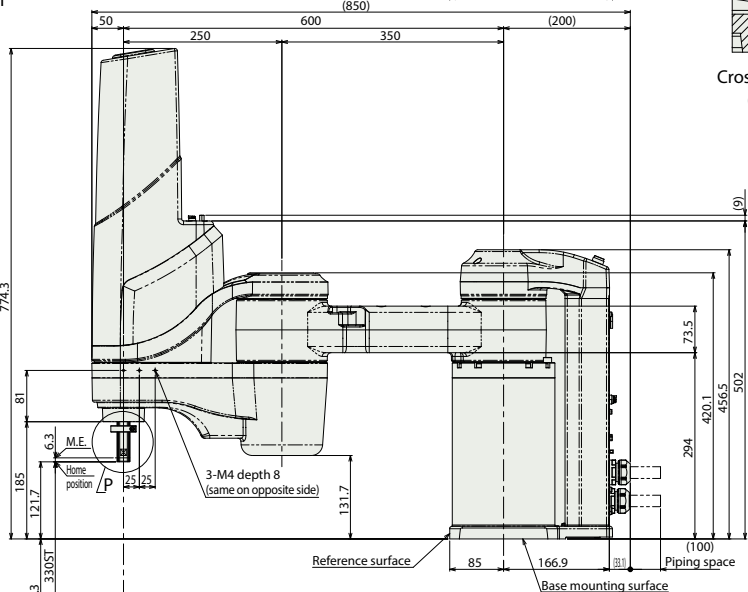
Detailed view of P
Cross section Z-Z



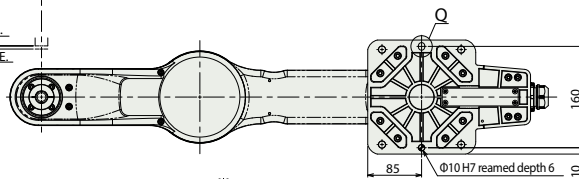
Detailed view of K
Details of base mounting holes



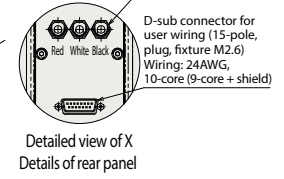
Cross section Y-Y
(4 places)



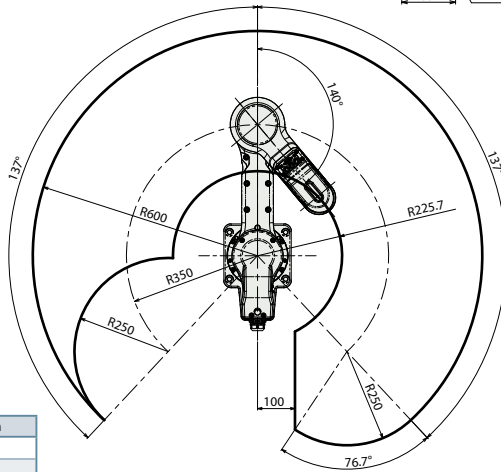
LED pilot lamp
(amber color)
Brake release switch
X
Brake cable connection
Motor-encoder cable connection (1st axis)
Motor-encoder cable connection (2nd - 4th axes)



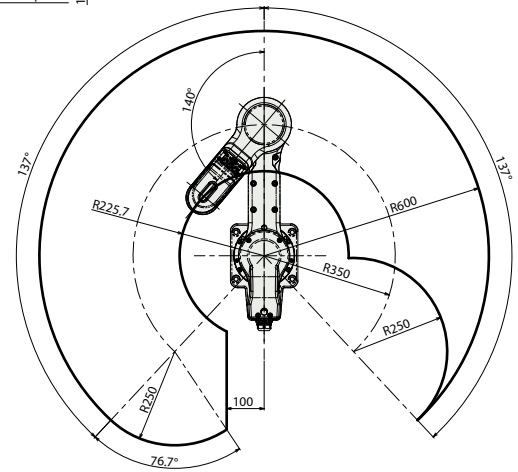
Detailed view of Q
Details of base oblong holes



Detailed view of X
Details of rear panel



Left arm system operation range



Right arm system operation range

Mass

Item	Description
Mass	3-axis specification 32.0kg
	4-axis specification 33.5kg

Applicable controller

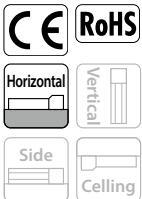
The actuator on this page can be operated by the controllers indicated below.

Name	External view	Max. number of connectable axes	Power supply voltage	Positioner	Pulse train	Program	Control method											Max. number of positioning points	Reference page
							DV	CC	CIE	PR	CN	ML	ML3	EC	EP	PRT	SSN		
XSEL-RAX3/SAX3 (for IXA)		3	3-phase AC200V	—	—	●	●	●	—	●	—	—	●	●	—	—	—	41250 (Depending on the type)	54
XSEL-RAX4/SAX4 (for IX and IXA)		4		●	●	—	●	—	—	—	—	—	●	●	—	—	—	36666 (Depending on the type)	54

IXA-4NSW3015

Dust/Splash-proof	Battery-less Absolute	Arm Length: 300 mm	Vertical Axis: 150 mm
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Model Specification Items		IXA - 4		NSW		30		15		T2	
Series	Number of axes	Type	Arm length	Vertical stroke	Cable length		Applicable controller				
4	4 axes	NSW Dust- and splash-proof specification, high-speed type	30 300mm	15 150mm	N Nil	T2 XSEL-RAX/SAX					
					5L 5m						
					10L 10m						
					<input type="checkbox"/> L Specified length (1m increments)						



- POINT Selection Notes**
- Please refer to P51 for Notes 1 - 9.
 - The maximum set value for acceleration/deceleration varies depending on the weight of the object being transported, the travel distance, and the location. For continuous operation, either lower the acceleration/deceleration values or refer to the duty (guideline) and set a stop time after acceleration/deceleration.
 - If the motor is replaced, absolute reset must be performed. An adjustment jig will be required to perform an absolute reset on the rotational axis (4th axis). Please refer to P53 for details.
 - A continuous operation cannot be performed for SCARA robots at 100% of speed and acceleration. Refer to the "Acceleration/Deceleration Setting Guidelines" for executable operating conditions.

Option		
Name	Model number	Reference page
Flange	IX-FL-1	53
Metal cap for user wiring	IXA-MC-1	53

(Note) Please purchase separately.

Cable length			
Type	Cable code	4-axis specification	
Standard type	5L(5m)	<input type="radio"/>	<input type="radio"/>
	10L(10m)	<input type="radio"/>	<input type="radio"/>
Specified length	1L(1m) ~ 4L(4m)	<input type="radio"/>	<input type="radio"/>
	6L(6m) ~ 9L(9m)	<input type="radio"/>	<input type="radio"/>
	11L(11m)	<input type="radio"/>	<input type="radio"/>
	12L(12m)	<input type="radio"/>	<input type="radio"/>
	13L(13m)	<input type="radio"/>	<input type="radio"/>
	14L(14m)	<input type="radio"/>	<input type="radio"/>
	15L(15m)	<input type="radio"/>	<input type="radio"/>

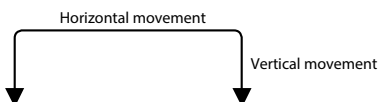
(Note) Total amount of the following cables:
Motor cables:4, Encoder cables: 4, Brake cable: 1

Cycle time		
Item	Time	
Standard cycle time	0.38 seconds	
Continuous cycle time	0.69 seconds	

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. 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.

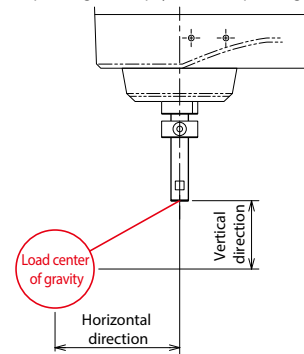


Main specifications			
Item		Description	
		4-axis specification	
Max. payload (kg) (Note 1)	6		
Speed (Note 2)	Combined max. speed (mm/s)	5126	
	Max. speed of individual axes	1st arm (deg/s)	690
		2nd arm (deg/s)	690
		Vertical axis (mm/s)	1500
		Rotational axis (deg/s)	1600
Push force (N) (Note 3)	Upper limit	98	
	Lower limit	23	
Arm length (mm)	300		
Individual arm length (mm)	1st arm	155	
	2nd arm	145	
Operation range of individual axes	1st arm (deg)	±121	
	2nd arm (deg)	±125	
	Vertical axis (mm)	150	
	Rotational axis (deg)	±360	

Item		Description	
		4-axis specification	
Positioning repeatability (Note 4)	Within horizontal surface	±0.01mm	
	Vertical axis	±0.01mm	
	Rotational axis	±0.005 degrees	
User wiring	10-core (9-core + shield) AWG24 (rated 30V/Max. 1A)		
User piping	Outer diameter Φ4, inner diameter Φ2.5, air tube 3 pcs. (max. usable pressure 0.6MPa)		
Alarm lamp (Note 5)	Nil		
Brake release switch (Note 6)	Brake release switch for preventing vertical axis from dropping.		
Tip axis	Allowable torque	4.5 N · m	
	Allowable load moment	7.1 N · m	
Material of main parts	Refer to P61		
Ambient operational temperature and humidity	0-40°C, 20-85% RH or lower (non-condensing)		
Degree of protection	IP65 (except for bellows)		
Air purge pressure (Note 8)	35kPa		
Vibration- and impact-resistance	No impact or vibration should be applied.		
Noise (Note 7)	80 dB or lower		
International standard	CE marking, RoHS		
Motor type	AC servo motor		
Motor wattage	1st arm	600	
	2nd arm	400	
	Vertical axis	200	
	Rotational axis	100	
Encoder type	Battery-less absolute		
Encoder pulse	16384 pulse/rev		

Tip shaft allowable load inertia moment	
Number of axes	Tip shaft allowable load inertia moment
4-axis specification	0.12 kg · m ²

Make sure that the offset dimensions from the spline tip to the horizontal and vertical directions are within the guideline values listed below. A large load offset may cause abnormal noise, vibration, failure and shorter life time. Adjust the speed, acceleration/deceleration or center of gravity. The overhang distance is limited depending on the payload and operating condition.



Horizontal direction	Vertical direction
120mm or less	100mm or less

Dimensions

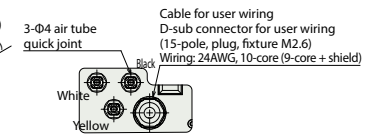
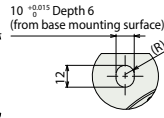
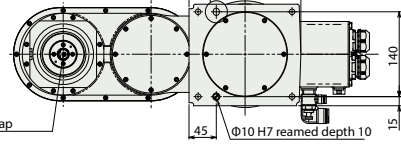
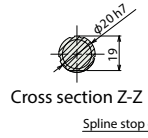
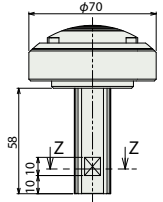
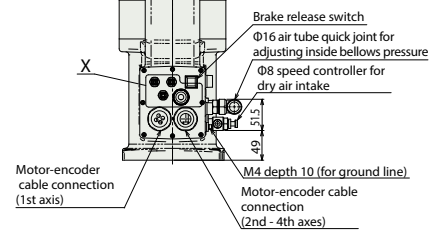
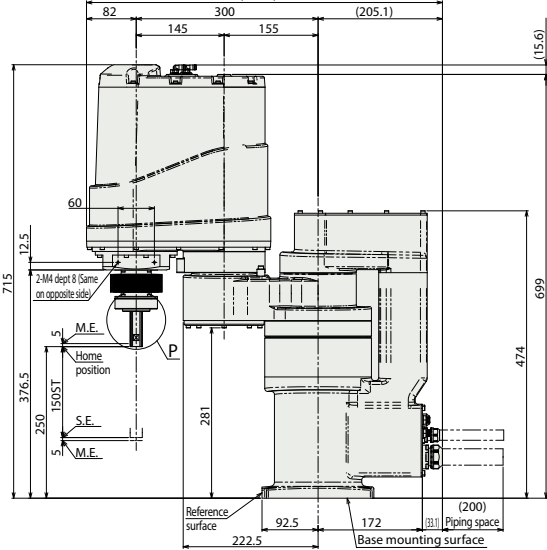
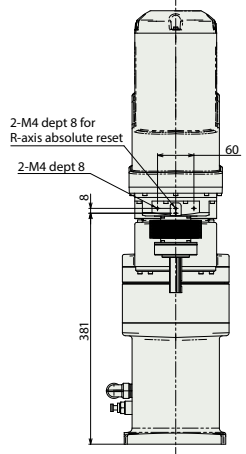
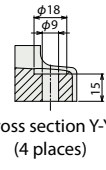
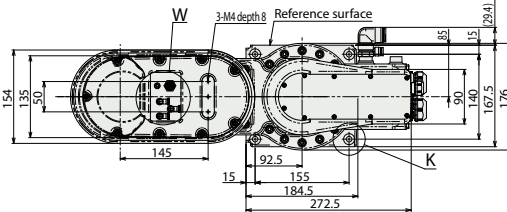
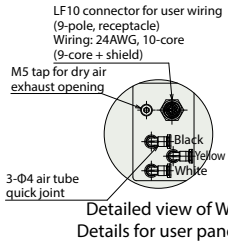
IXA-4NSW3015

(Note) Refer to P51 (Note 9) for cable connections

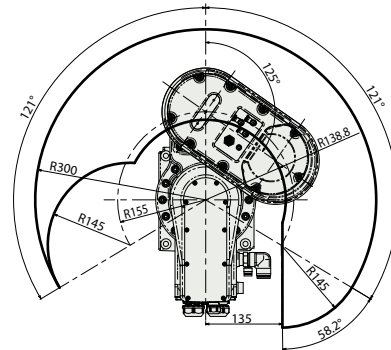
CAD drawings can be downloaded from our website.
www.intelligentactuator.com



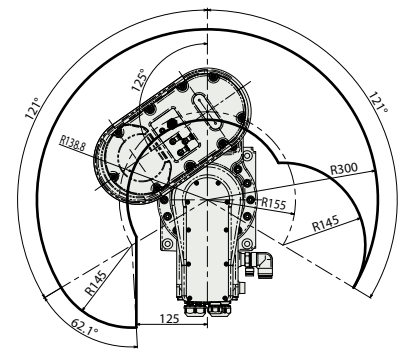
S.T.: Stroke
M.E.: Mechanical end
S.E.: Stroke end



Detailed view of Q Details of base oblong holes Detailed view of X Details of rear panel



Left arm system operation range



Right arm system operation range

Mass

Item	Description
Mass	4-axis specification 48.0kg

Applicable controller

The actuator on this page can be operated by the controller indicated below.

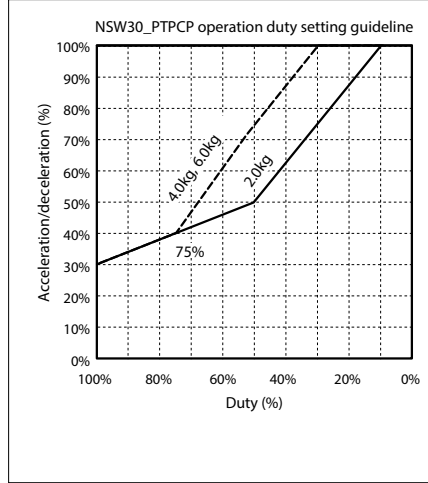
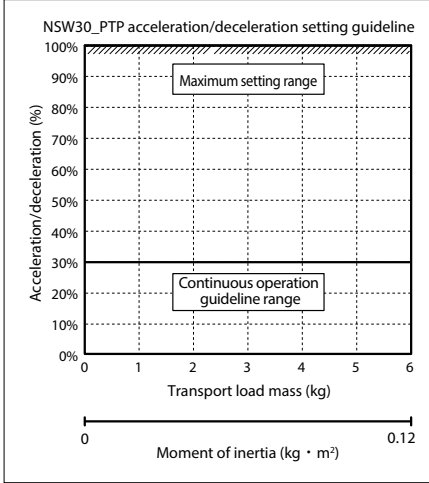
Name	External view	Max. number of connectable axes	Power supply voltage	Control method													Max. number of positioning points	Reference page
				Positioner	Pulse train	Program	Network* option											
				DV	CC	CIE	PR	CN	ML	ML3	EC	EP	PRT	SSN	ECM			
XSEL-RAX4/SAX4 (for IX and IXA)		4	3-phase AC200V	—	—	●	●	●	—	—	—	—	●	●	—	—	36666 (Depending on the type)	54

Acceleration/Deceleration Setting Guidelines

The SCARA Robot IXA cannot operate continuously at the maximum acceleration/deceleration or maximum speed specified in the catalog. To operate at the maximum acceleration/deceleration, set a stop time referring to the continuous operation duty guideline graph. If a continuous operation is required, do so within the continuous operation guideline range shown in the acceleration/deceleration setting guideline graph.

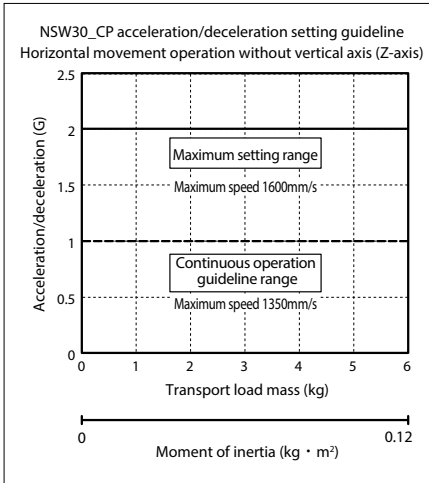
- 1) For a PTP operation, always use the WGHT command in the program to set the weight and moment of inertia. For the SCARA robot, the maximum acceleration/deceleration for each payload is set at 100%. When the payload differs, the operation time will also vary even at the same acceleration/deceleration or speed setting.
- 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 set a stop time by referring to the continuous operation duty guideline.
- 4) Duty (%) = (Operation time / (Operation time + Stop time)) × 100
- 5) When moving the robot horizontally at high speed, operate the vertical axis as close to the upward end as possible.
- 6) Set the moment of inertia and payload to the allowable value or lower.
- 7) The load mass represents the moment of inertia and weight at the center of rotation of the 4th axis.
- 8) Operate the robot at an 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 occur.
- 9) If the load moment of inertia is high, vibration may occur in the vertical axis, depending on the position of the vertical axis. In such a case, decrease the acceleration/deceleration for operation as required.

PTP Operation

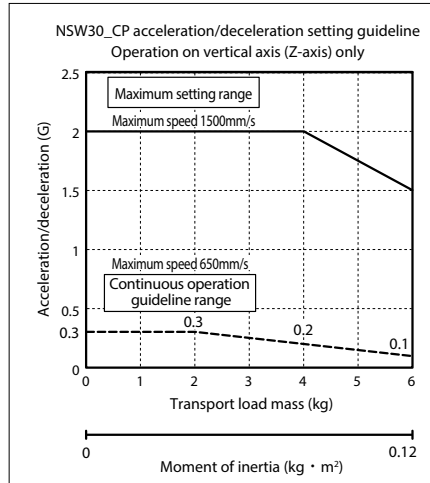


CP Operation

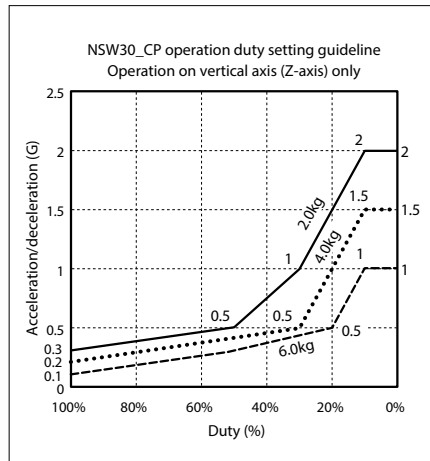
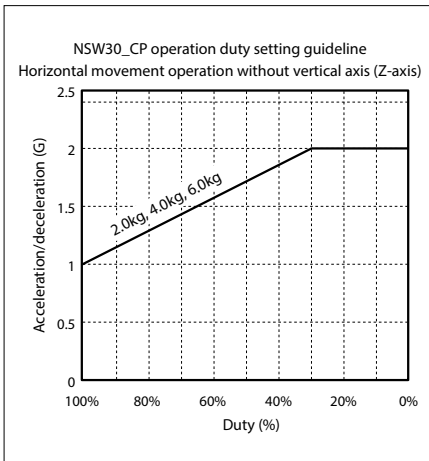
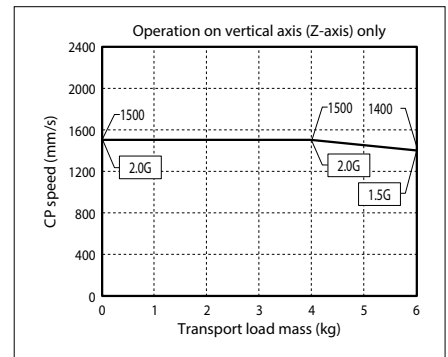
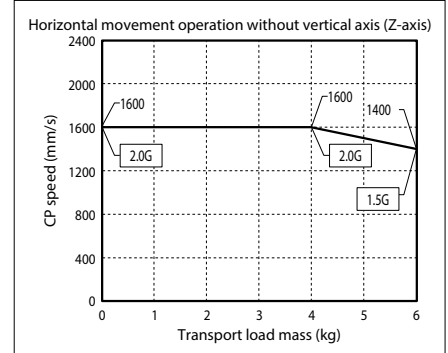
Horizontal



Vertical



CP operation: Acceleration/deceleration Limitations



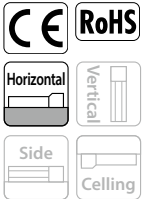
IXA-4NSW4518

IXA-4NSW4533

Dust/Splash-proof	Battery-less Absolute	Arm Length: 450 mm	Vertical Axis: 180/330 mm
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Model Specification Items

IXA	-	4	NSW	45		-		-	T2
Series	-	Number of axes	Type	Arm length	Vertical stroke	-	Cable length	-	Applicable controller
	-	4 4 axes	NSW Dust- and splash-proof specification, high-speed type	45 450mm	18 180mm 33 330mm	-	N Nil 5L 5m 10L 10m <input type="checkbox"/> L Specified length (1m increments)	-	T2 XSEL-RAX/SAX



Main specifications

Item	Description	4-axis specification
Max. payload (kg) (Note 1)		8
Speed (Note 2)	Combined max. speed (mm/s)	6981
Max. speed of individual axes	1st arm (deg/s)	500
	2nd arm (deg/s)	700
	Vertical axis (mm/s)	1600
	Rotational axis (deg/s)	2000
Push force (N) (Note 3)	Upper limit	110
	Lower limit	25
Arm length (mm)		450
Individual arm length (mm)	1st arm	200
	2nd arm	250
Operation range of individual axes	1st arm (deg)	±137
	2nd arm (deg)	±133
	Vertical axis (mm)	180/330
	Rotational axis (deg)	±360

- POINT Selection Notes**
- Please refer to P51 for Notes 1 - 9.
 - The maximum set value for acceleration/deceleration varies depending on the weight of the object being transported, the travel distance, and the location. Operating continuously at the maximum set value could cause an overload error. For continuous operation, either lower the acceleration/deceleration values or refer to the duty (guideline) and set a stop time after acceleration/deceleration.
 - Do not directly splash jet on the bellows. Connect a Φ16 air tube at the bellows intake/exhaust joint to release its tip into clean air.
 - A continuous operation cannot be performed for SCARA robots at 100% of speed and acceleration. Refer to the "Acceleration/Deceleration Setting Guidelines" for executable operating conditions.

Item	Description	4-axis specification
Positioning repeatability (Note 4)	Within horizontal surface	±0.01mm
User wiring	Vertical axis	±0.01mm
	Rotational axis	±0.005 degrees
User piping	10-core (9-core + shield) AWG24 (rated 30V/Max. 1A)	
Alarm lamp (Note 5)	Outer diameter Φ6, inner diameter Φ4, air tube 3 pcs. (max. usable pressure 0.6MPa)	
Brake release switch (Note 6)	Nil	
Tip axis	Allowable torque	3.2 N·m
	Allowable load moment	9.6 N·m
Material of main parts	Refer to P61	
Ambient operational temperature and humidity	0-40°C, 20-85% RH or lower (non-condensing)	
Degree of protection	IP65 (except for bellows)	
Air purge pressure (Note 8)	35kPa	
Vibration- and impact-resistance	No impact or vibration should be applied.	
Noise (Note 7)	80 dB or lower	
International standard	CE marking, RoHS	
Motor type	AC servo motor	
Motor wattage	1st arm	600W
	2nd arm	400W
	Vertical axis	200W
	Rotational axis	100W
Encoder type	Battery-less absolute	
Encoder pulse	16384 pulse/rev	

Option

Name	Model number	Reference page
Flange	IX-FL-1	53
Metal cap for user wiring	IXA-MC-1	53

(Note) Please purchase separately.

Cable length

Type	Cable code	4-axis specification
Standard type	5L(5m)	<input type="radio"/>
	10L(10m)	<input type="radio"/>
Specified length	1L(1m) ~ 4L(4m)	<input type="radio"/>
	6L(6m) ~ 9L(9m)	<input type="radio"/>
	11L(11m)	<input type="radio"/>
	12L(12m)	<input type="radio"/>
	13L(13m)	<input type="radio"/>
	14L(14m)	<input type="radio"/>
	15L(15m)	<input type="radio"/>

(Note) Total amount of the following cables:
Motor cables:4, Encoder cables: 4, Brake cable: 1

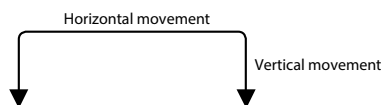
Cycle time

Item	Time
Standard cycle time	0.38 seconds
Continuous cycle time	0.55 seconds

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. This is a general guideline for high speed performance. Note that continuous operation is not possible under maximum speed operation.

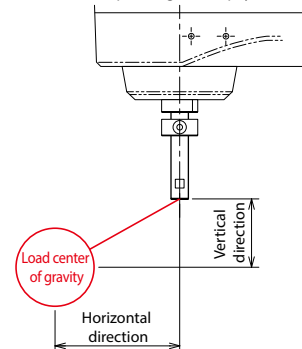
[Continuous cycle time]
The cycle time for continuous operation.



Tip shaft allowable load inertia moment

Number of axes	Tip shaft allowable load inertia moment
4-axis specification	0.12 kg · m ²

Make sure that the offset value from the spline tip to the horizontal and vertical direction dimensions is within the guideline values listed below. A large load offset may cause abnormal noise, vibration, failure and shorter life time. Adjust the speed, acceleration/deceleration or center of gravity. The overhang distance is limited depending on the payload and operating condition.



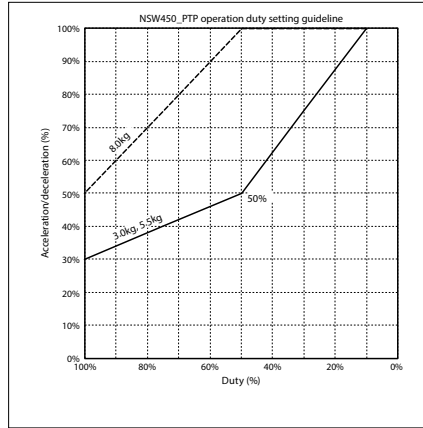
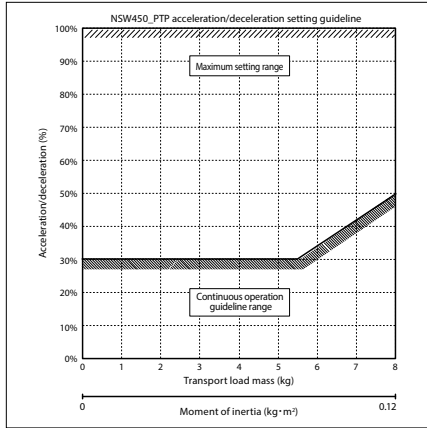
Horizontal direction	Vertical direction
120mm or less	100mm or less

Acceleration/Deceleration Setting Guidelines

The SCARA Robot IXA cannot operate continuously at the maximum acceleration/deceleration or maximum speed specified in the catalog. To operate at the maximum acceleration/deceleration, set a stop time referring to the continuous operation duty guideline graph. If a continuous operation is required, do so within the continuous operation guideline range shown in the acceleration/deceleration setting guideline graph.

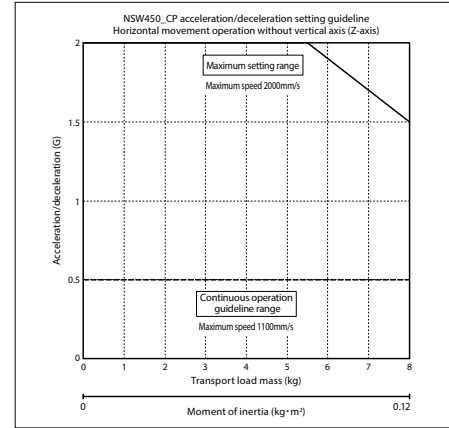
- 1) For a PTP operation, always use the WGH command in the program to set the weight and moment of inertia. For the SCARA robot, the maximum acceleration/deceleration for each payload is set at 100%. When the payload differs, the operation time will also vary even at the same acceleration/deceleration or speed setting.
- 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 set a stop time by referring to the continuous operation duty guideline.
- 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 upward end as possible.
- 6) Set the moment of inertia and payload to the allowable value or lower.
- 7) The load mass represents the moment of inertia and weight at the center of rotation of the 4th axis.
- 8) Operate the robot at an 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 occur.
- 9) If the load moment of inertia is high, vibration may occur in the vertical axis, depending on the position of the vertical axis. In such a case, decrease the acceleration/deceleration for operation as required.

PTP Operation

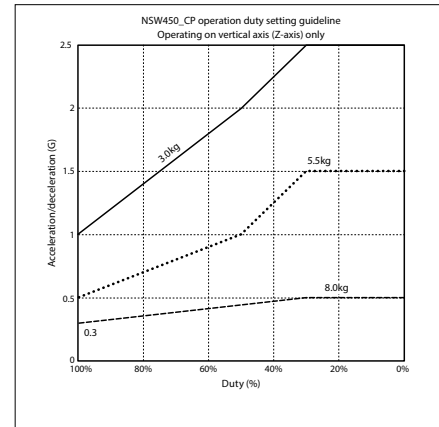
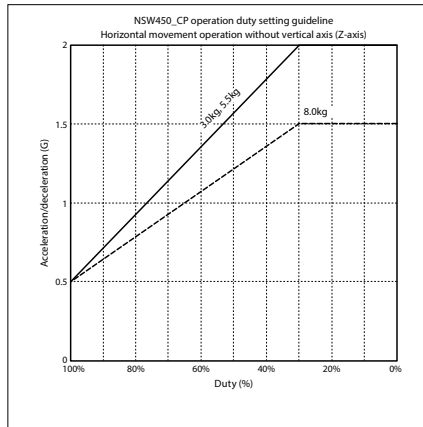
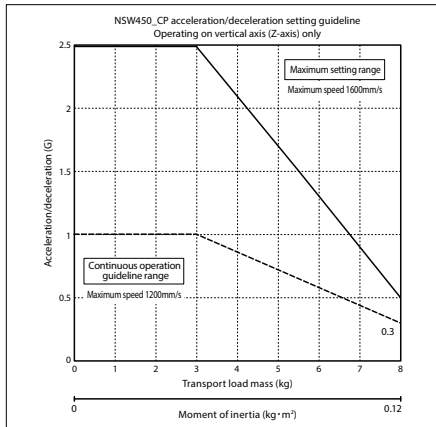


CP Operation

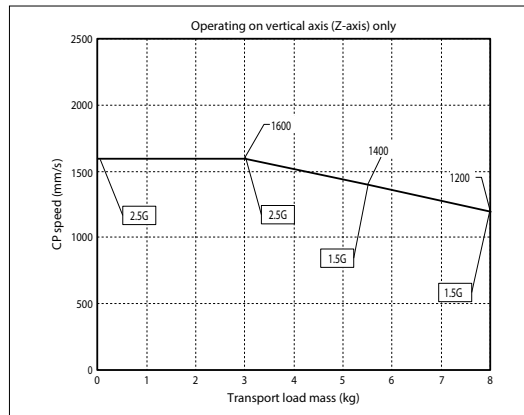
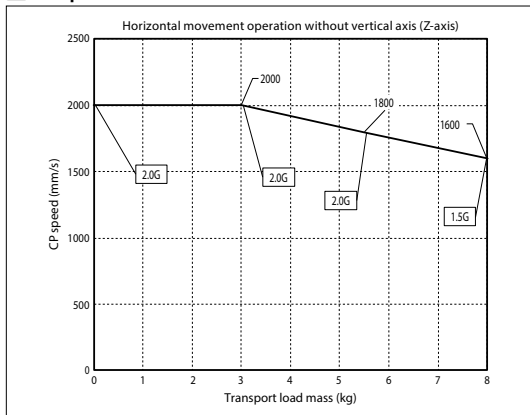
Horizontal



Vertical



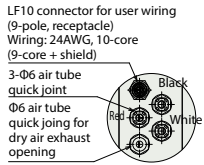
CP operation: Acceleration/deceleration Limitations



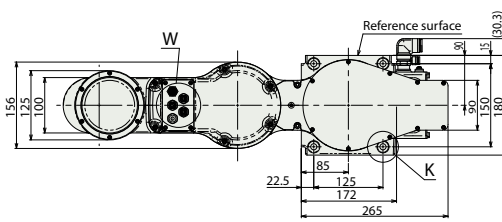
IXA-4NSW4518

(Note) Refer to P51 (Note 9) for cable connections

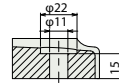
S.T.: Stroke
M.E.: Mechanical end
S.E.: Stroke end



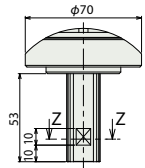
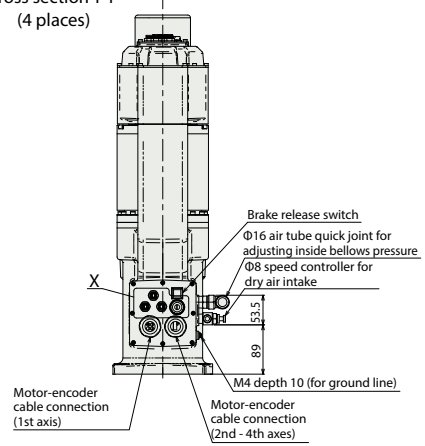
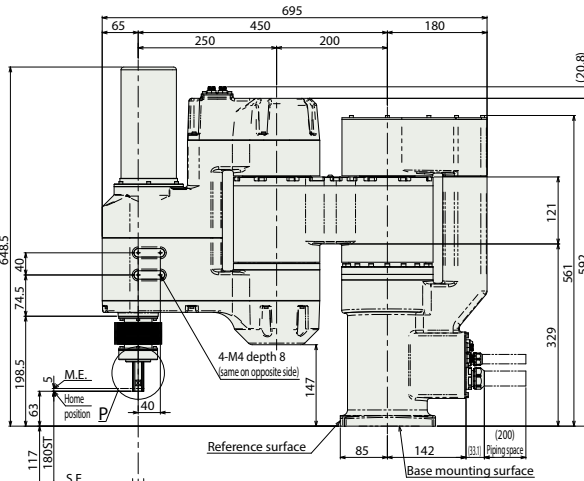
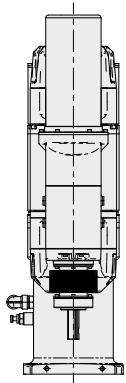
Detailed view of W
Details for user panel



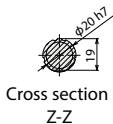
Detailed view of K
Details of base mounting holes



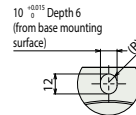
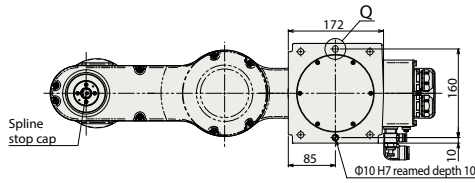
Cross section Y-Y
(4 places)



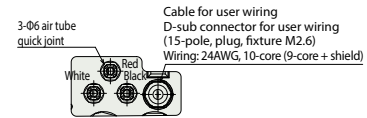
Detailed view of P



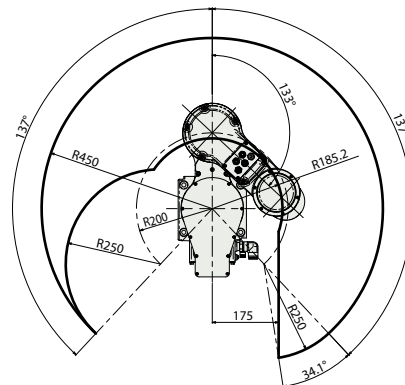
Cross section Z-Z



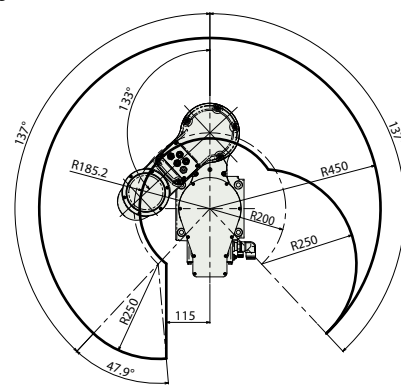
Detailed view of Q
Details of base oblong holes



Detailed view of X
Details of rear panel



Left arm system operation range



Right arm system operation range

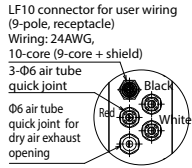
Mass

Item	Description
Mass	4-axis specification 52.0kg

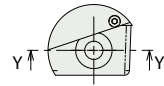
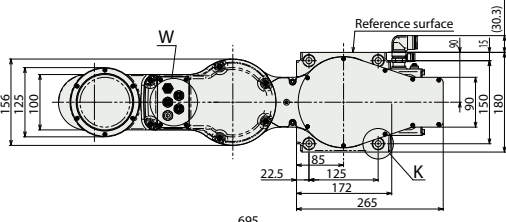
IXA-4NSW4533

(Note) Refer to P51 (Note 9) for cable connections

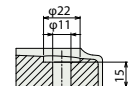
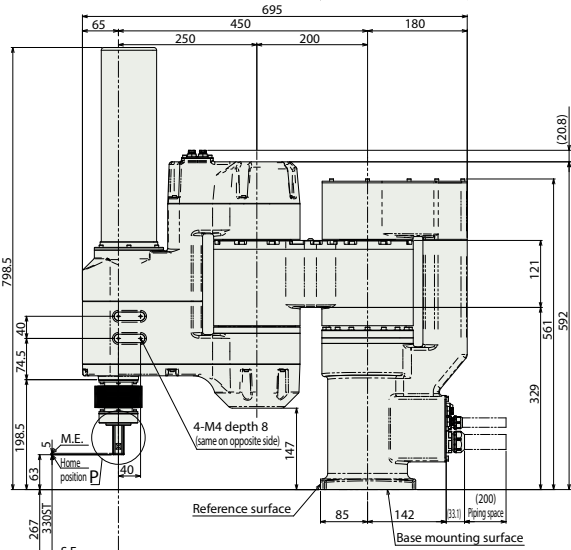
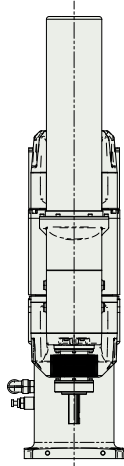
S.T.: Stroke
M.E.: Mechanical end
S.E.: Stroke end



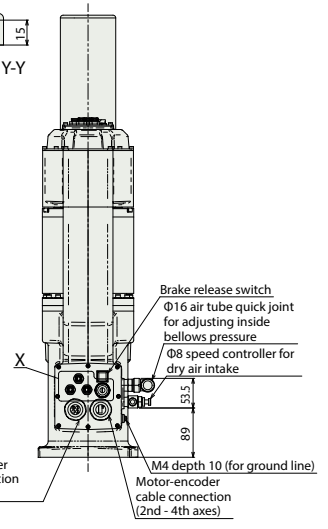
Detailed view of W
Details for user panel



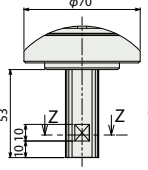
Detailed view of K
Details of base mounting holes



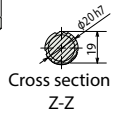
Cross section Y-Y
(4 places)



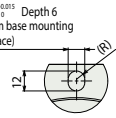
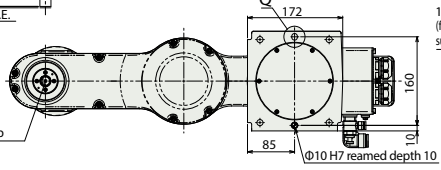
- Brake release switch
- Φ16 air tube quick joint for adjusting inside bellows pressure
- Φ8 speed controller for dry air intake
- M4 depth 10 (for ground line)
- Motor-encoder cable connection (2nd - 4th axes)
- Motor-encoder cable connection (1st axis)



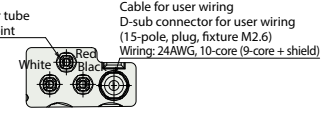
Detailed view of P



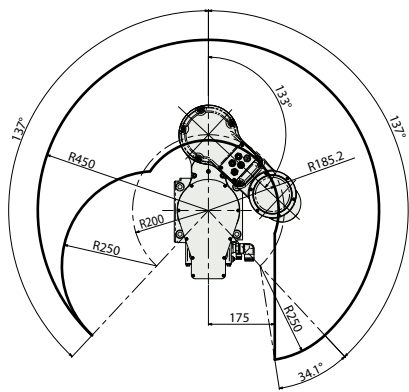
Cross section Z-Z



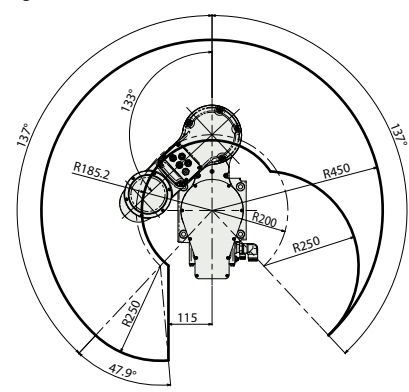
Detailed view of Q
Details of base oblong holes



Detailed view of X
Details of rear panel



Left arm system operation range



Right arm system operation range

Mass

Item	Description
Mass	4-axis specification 53.0kg

Applicable controller

The actuator on this page can be operated by the controller indicated below.

Name	External view	Max. number of connectable axes	Power supply voltage	Control method														Max. number of positioning points	Reference page			
				Positioner	Pulse train	Program	Network* option															
							DV	CC	CIE	PR	CN	ML	ML3	EC	EP	PRT	SSN			ECM		
XSEL-RAx4/SAX4 (for IX and IXA)		4	3-phase AC200V	—	—	●	●	●	—	●	—	—	—	—	—	●	●	—	—	—	36666 (Depending on the type)	54

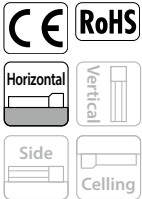
IXA-4NSW6018

IXA-4NSW6033

Dust/Splash-proof	Battery-less Absolute	Arm Length: 600 mm	Vertical Axis: 180/330 mm
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Model Specification Items

IXA	-	4		NSW		60				-				-			T2
Series	-	Number of axes		Type		Arm length		Vertical stroke		-	Cable length			-	Applicable controller		
	-	4 axes		NSW	Dust- and splash-proof specification, high-speed type	60	600mm	18 33	180mm 330mm	-	N Nil 5L 5m 10L 10m			-	T2	XSEL-RAX/SAX	
											<input type="checkbox"/> L Specified length (1m increments)						



Main specifications

Item	Description	4-axis specification	
Max. payload (kg) (Note 1)		10	
Combined max. speed (mm/s)		6039	
Speed (Note 2)	Max. speed of individual axes	1st arm (deg/s)	285
		2nd arm (deg/s)	700
		Vertical axis (mm/s)	1600
		Rotational axis (deg/s)	2000
Push force (N) (Note 3)	Upper limit	110	
	Lower limit	25	
Arm length (mm)		600	
Individual arm length (mm)	1st arm	350	
	2nd arm	250	
Operation range of individual axes	1st arm (deg)	±137	
	2nd arm (deg)	±133	
	Vertical axis (mm)	180/330	
	Rotational axis (deg)	±360	

POINT Selection Notes

- Please refer to P51 for Notes 1 - 9.
- The maximum set value for acceleration/deceleration varies depending on the weight of the object being transported, the travel distance, and the location. Operating continuously at the maximum set value could cause an overload error. For continuous operation, either lower the acceleration/deceleration values or refer to the duty (guideline) and set a stop time after acceleration/deceleration.
- Do not directly splash jet on the bellows. Connect a Φ16 air tube at the bellows intake/exhaust joint to release its tip into clean air.
- A continuous operation cannot be performed for SCARA robots at 100% of speed and acceleration. Refer to the "Acceleration/Deceleration Setting Guidelines" for executable operating conditions.

Item	Description	
Positioning repeatability (Note 4)	Within horizontal surface ±0.01mm Vertical axis ±0.01mm Rotational axis ±0.005 degrees	
User wiring	10-core (9-core + shield) AWG24 (rated 30V/Max. 1A)	
User piping	Outer diameter Φ6, inner diameter Φ4, air tube 3 pcs. (max. usable pressure 0.6MPa)	
Alarm lamp (Note 5)	Nil	
Brake release switch (Note 6)	Brake release switch for preventing vertical axis from dropping.	
Tip axis	Allowable torque	3.2 N·m
	Allowable load moment	9.6 N·m
Material of main parts	Refer to P61	
Ambient operational temperature and humidity	0-40°C, 20-85% RH or lower (non-condensing)	
Degree of protection	IP65 (except for bellows)	
Air purge pressure (Note 8)	35kPa	
Vibration- and impact-resistance	No impact or vibration should be applied.	
Noise (Note 7)	80 dB or lower	
International standard	CE marking, RoHS	
Motor type	AC servo motor	
Motor wattage	1st arm	750W
	2nd arm	400W
	Vertical axis	200W
	Rotational axis	100W
Encoder type	Battery-less absolute	
Encoder pulse	16384 pulse/rev	

Option

Name	Model number	Reference page
Flange	IX-FL-1	53
Metal cap for user wiring	IXA-MC-1	53

(Note) Please purchase separately.

Cable length

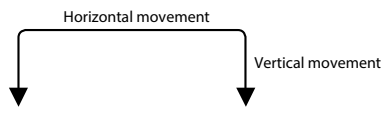
Type	Cable code	4-axis specification
Standard type	5L(5m)	<input type="radio"/>
	10L(10m)	<input type="radio"/>
Specified length	1L(1m) ~ 4L(4m)	<input type="radio"/>
	6L(6m) ~ 9L(9m)	<input type="radio"/>
	11L(11m)	<input type="radio"/>
	12L(12m)	<input type="radio"/>
	13L(13m)	<input type="radio"/>
	14L(14m)	<input type="radio"/>
	15L(15m)	<input type="radio"/>

(Note) Total amount of the following cables:
Motor cables:4, Encoder cables: 4, Brake cable: 1

Cycle time

Item	Time
Standard cycle time	0.38 seconds
Continuous cycle time	0.57 seconds

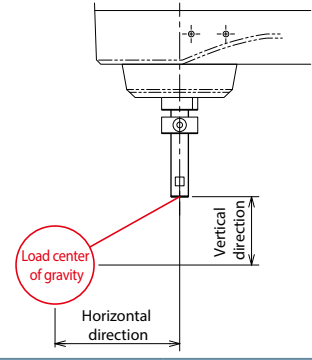
The standard/continuous cycle time represents the time required when an operation is performed with a cycle operation setting at maximum speed, under the following conditions.
2kg transport, vertical movement 25mm, horizontal movement 300mm (rough positioning arch motion)
[Standard cycle time]
The time required for maximum speed. 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.



Tip shaft allowable load inertia moment

Number of axes	Tip shaft allowable load inertia moment
4-axis specification	0.12 kg · m ²

Make sure that the offset value from the spline tip to the horizontal and vertical direction dimensions is within the guideline values listed below. A large load offset may cause abnormal noise, vibration, failure and shorter life time. Adjust the speed, acceleration/deceleration or center of gravity. The overhang distance is limited depending on the payload and operating condition.



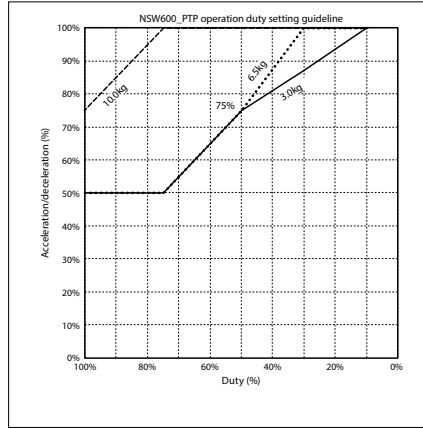
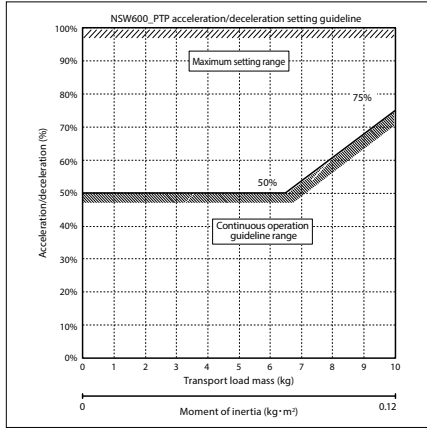
Horizontal direction	Vertical direction
120mm or less	100mm or less

Acceleration/Deceleration Setting Guidelines

The SCARA Robot IXA cannot operate continuously at the maximum acceleration/deceleration or maximum speed specified in the catalog. To operate at the maximum acceleration/deceleration, set a stop time referring to the continuous operation duty guideline graph. If a continuous operation is required, do so within the continuous operation guideline range shown in the acceleration/deceleration setting guideline graph.

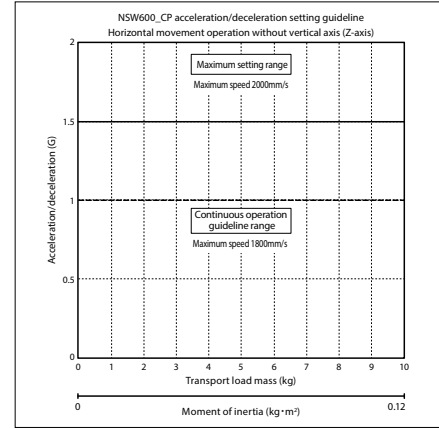
- 1) For a PTP operation, always use the WGHT command in the program to set the weight and moment of inertia. For the SCARA robot, the maximum acceleration/deceleration for each payload is set at 100%. When the payload differs, the operation time will also vary even at the same acceleration/deceleration or speed setting.
- 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 set a stop time by referring to the continuous operation duty guideline.
- 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 upward end as possible.
- 6) Set the moment of inertia and payload to the allowable value or lower.
- 7) The load mass represents the moment of inertia and weight at the center of rotation of the 4th axis.
- 8) Operate the robot at an 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 occur.
- 9) If the load moment of inertia is high, vibration may occur in the vertical axis, depending on the position of the vertical axis. In such a case, decrease the acceleration/deceleration for operation as required.

PTP Operation

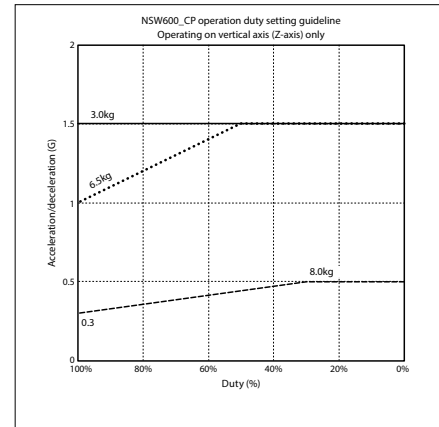
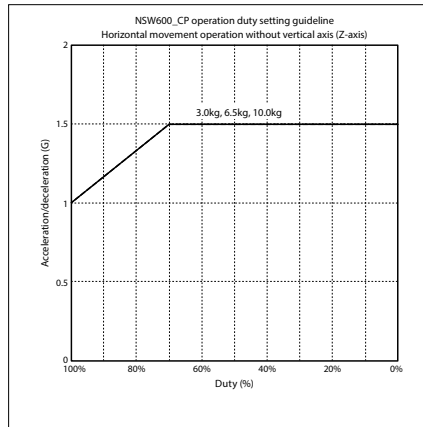
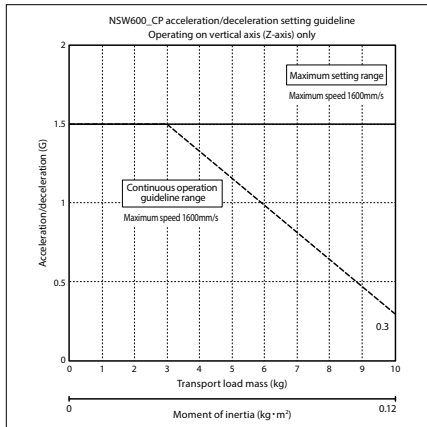


CP Operation

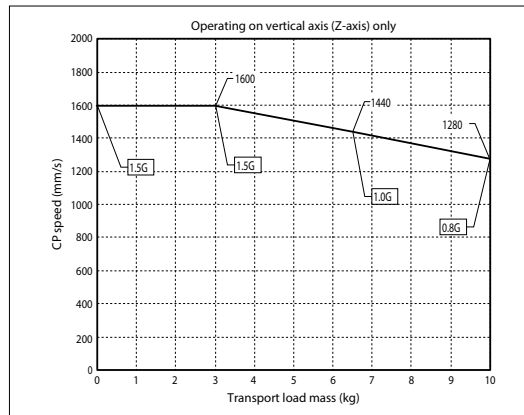
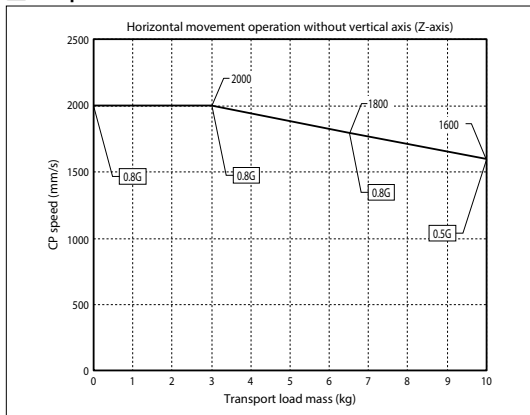
Horizontal



Vertical



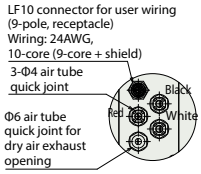
CP operation: Acceleration/deceleration Limitations



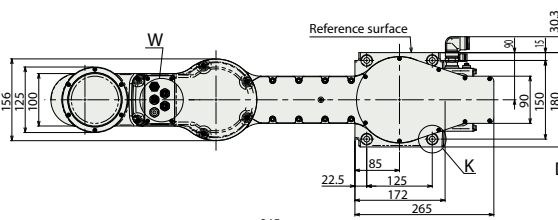
IXA-4NSW6018

(Note) Refer to P51 (Note 9) for cable connections

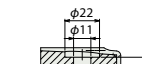
S.T: Stroke
M.E.: Mechanical end
S.E.: Stroke end



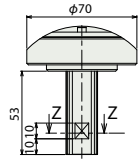
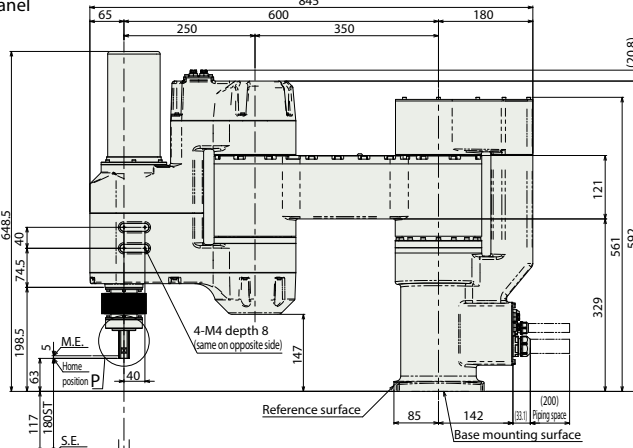
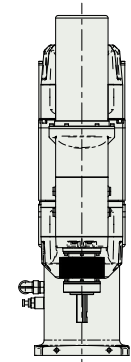
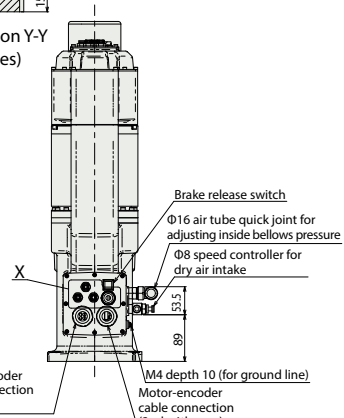
Detailed view of W
Details for user panel



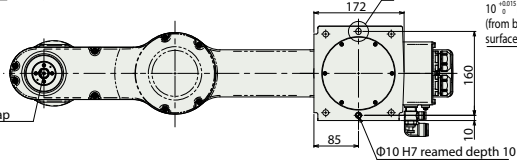
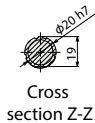
Detailed view of K
Details of base mounting holes



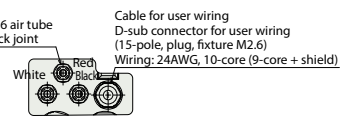
Cross section Y-Y
(4 places)



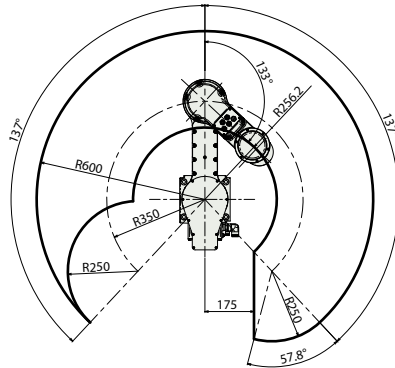
Detailed
view of P



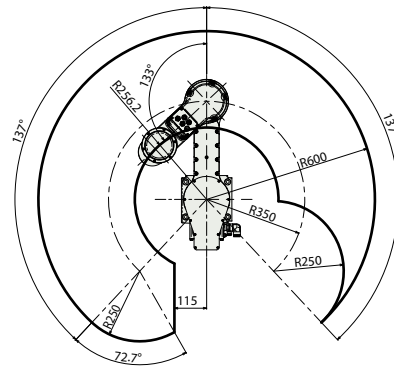
Detailed view of Q
Details of base
oblong holes



Detailed view of X
Details of rear panel



Left arm system operation range



Right arm system operation range

Mass

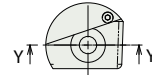
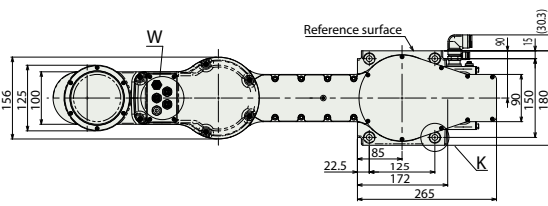
Item	Description
Mass	4-axis specification 53.0kg

IXA-4NSW6033

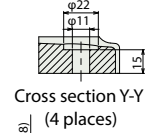
(Note) Refer to P51 (Note 9) for cable connections

- LF10 connector for user wiring (9-pole, receptacle)
- Wiring: 24AWG, 10-core (9-core + shield)
- 3-Ø6 air tube quick joint
- Ø6 air tube quick joint for dry air exhaust opening

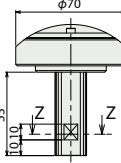
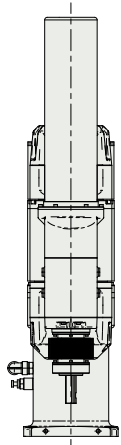
Detailed view of W
Details for user panel



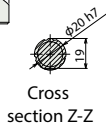
Detailed view of K
Details of base mounting holes



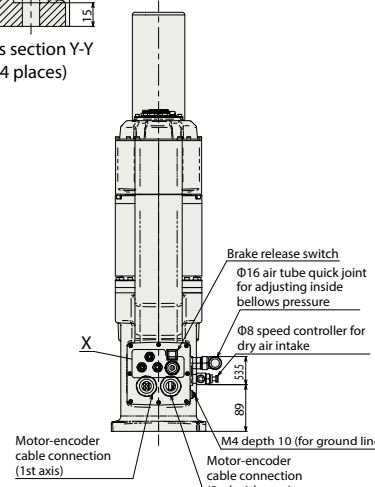
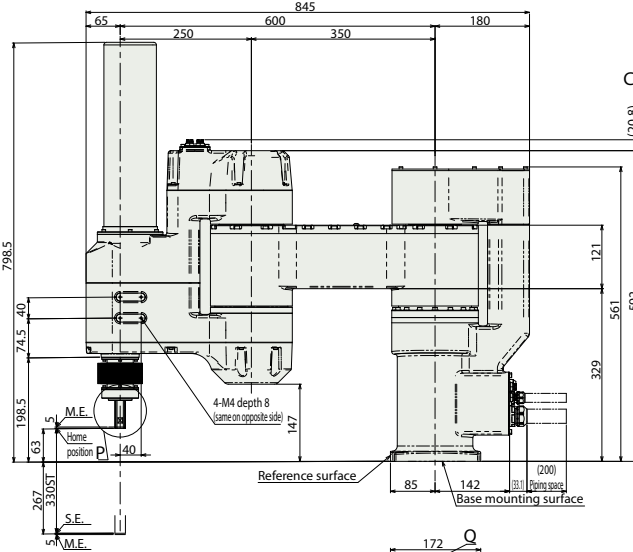
Cross section Y-Y
(4 places)



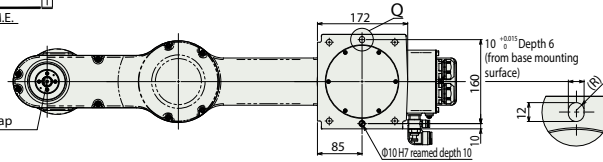
Detailed view of P



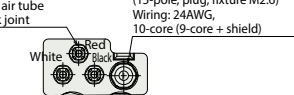
Cross section Z-Z



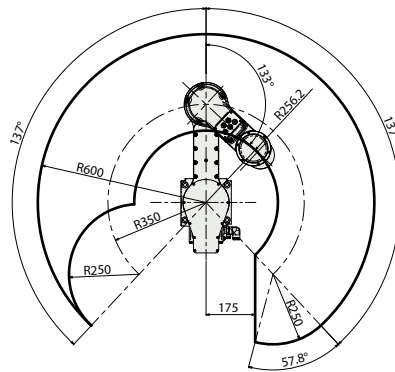
Detailed view of X
Details of rear panel



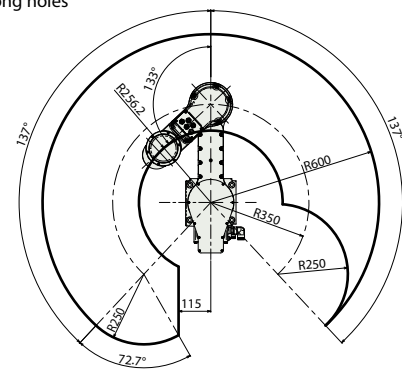
Detailed view of Q
Details of base oblong holes



Detailed view of X
Details of rear panel



Left arm system operation range



Right arm system operation range

Mass

Item	Description
Mass	4-axis specification 54.0kg

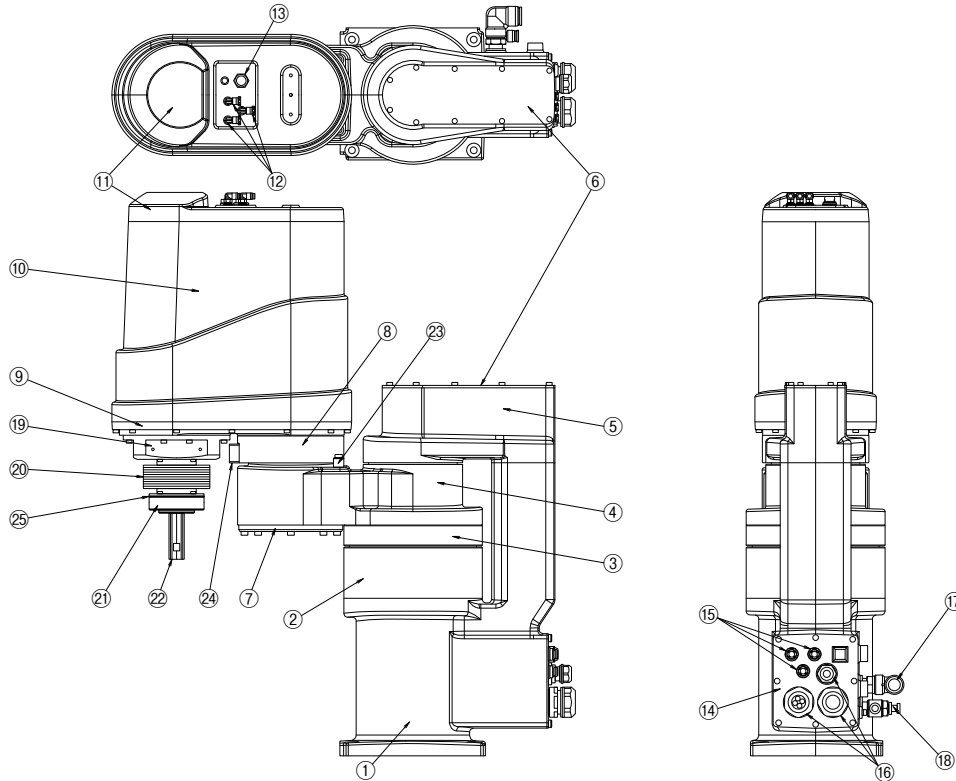
Applicable controller

The actuator on this page can be operated by the controller indicated below.

Name	External view	Max. number of connectable axes	Power supply voltage	Control method													Max. number of positioning points	Reference page			
				Positioner	Pulse train	Program	Network* option														
				DV	CC	CIE	PR	CN	ML	ML3	EC	EP	PRT	SSN	ECM						
XSEL-RAx4/SAX4 (for IX and IXA)		4	3-phase AC200V	—	—	●	●	●	—	●	—	—	—	—	●	●	—	—	—	36666 (Depending on the type)	54

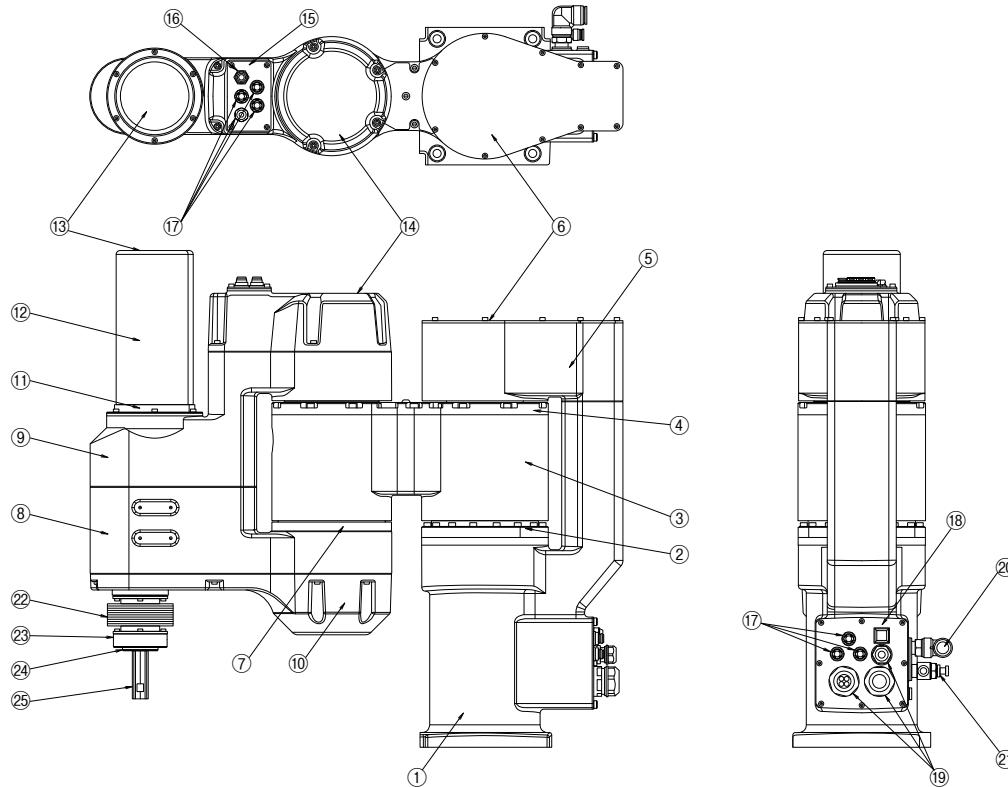
IXA Dust- and splash-proof main materials

IXA-4NSW3015



No.	Name	Material	Surface treatment
①	J1 Base	Aluminum casting	Design surface coating
②	J1 Base flange	Aluminum	Design surface coating
③	J1 Flange cover	Carbon steel	Low temperature black chrome plating
④	J1 Arm	Aluminum casting	Design surface coating
⑤	J1 Joint bracket	Aluminum casting	Design surface coating
⑥	J1 JB cover	Stainless steel	Design surface coating
⑦	J2 Under cover	Aluminum	White alumite
⑧	J2 OS housing	Aluminum	Black alumite
⑨	J2 Main arm	Aluminum casting	Design surface coating
⑩	J2 Arm cover	Aluminum casting	Design surface coating
⑪	J2 Spline cover	Aluminum casting	Design surface coating
⑫	Quick joint elbow	Resin (PBT, POM), Nickel plated brass	
⑬	Round metal connector	Zinc nickel plated, Rubber (CR)	
⑭	External wiring panel	Stainless steel	
⑮	Quick joint, Partition union pea	Resin (PBT, POM), Rubber (NBR), Nickel plated brass	
⑯	Cable ground	Resin (nylon 66), Rubber (NBR)	
	Cable sheath	Vinyl chloride (PVC)	
⑰	Quick joint elbow	Resin (PBT, POM), Nickel plated brass	
⑱	Speed controller	Resin (PBT, POM), Nickel plated brass	
⑲	Bellows flange	Aluminum	Black alumite
⑳	Bellows	Urethan	
㉑	Bearing case B	Aluminum	White alumite
㉒	Ball screw spline	High carbon chromium bearing steel	Low temperature black chrome plating
㉓	Stopper ring	Stainless steel	
㉔	Movable stopper	Carbon steel	Low temperature black chrome plating
㉕	Plate A (bellows)	Stainless steel	
	Exterior bolt and screw	Stainless steel	
	External gasket (O-ring, packing)	Rubber (NBR)	
	Exterior oil seal	Rubber (FKM)	

IXA-4NSW45□□/4NSW60□□



No.	Name	Material	Surface treatment
①	J1 Base	Aluminum casting	Design surface coating
②	J1 Base flange	Aluminum	Black alumite
③	J1 Arm L / L-600	Aluminum casting	Design surface coating
④	J1 Arm U / U-600	Aluminum	Design surface coating
⑤	J1 Joint bracket	Aluminum casting	Design surface coating
⑥	J1 JB cover	Stainless steel	Design surface coating
⑦	J2 Intermediate flange	Aluminum	Black alumite
⑧	J2 Main frame	Aluminum casting	Design surface coating
⑨	J2 Joint bracket	Aluminum casting	Design surface coating
⑩	J2 Cover L	Aluminum casting	Design surface coating
⑪	J2 ZR DC flange	Aluminum	Design surface coating
⑫	ZR Dust cover	Aluminum extruded round pipe	Design surface coating
⑬	ZR DC cap	Aluminum	Design surface coating
⑭	J2 Cover U	Aluminum casting	Design surface coating
⑮	J2 U ser panel	Stainless steel	Design surface coating
⑯	Round metal connector	Zinc nickel plated, Rubber (CR)	
⑰	Quick joint, Partition union pea	Resin (PBT, POM), Rubber (NBR), Nickel plated brass	
⑱	External wiring panel	Stainless steel	Design surface coating
⑲	Cable ground	Resin (nylon 66), Rubber (NBR)	
⑲	Cable sheath	Vinyl chloride (PVC)	
⑳	Quick joint elbow	Resin (PBT, POM), Nickel plated brass	
㉑	Speed controller	Resin (PBT, POM), Nickel plated brass	
㉒	Bellows	Urethan	
㉓	Bearing case B	Aluminum	White alumite
㉔	Set color	Aluminum	White alumite
㉕	Ball spline	High carbon chromium bearing steel	Low temperature black chrome plating
	Exterior bolt and screw	Stainless steel	
	Gaskets (O-ring, packing)	Rubber (NBR)	
	Oil seal	Rubber (FKM)	

Exterior components

Precautions

(Note 1) 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 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) 3rd axis push force control range

Max speed for push mode is 10mm/s. Push force is the force during push mode with limited speed of max 10mm/s or less.
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 is 70%.
The lower limit is the push force when the parameter setting value is 30% for □NNN1805 and 4NSW3015, and 20% for other types.

(Note 4) 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 (The value is for JIS B 8432 Ambient temperature 20°C constant).
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 5) Alarm pilot lamp

The alarm pilot lamp is installed on the 1st axis (J1) base upper part of the SCARA robot.
This is optional for the standard type NNN except for arm length of 180. (Option code LED)
It does not support dust- and splash-proof specification.
It is used to turn on the light when a controller error occurs.
To operate it, use an I/O output signal of the controller and build a circuit to apply 24VDC to the LED terminal in the user wiring.

(Note 6) Brake release switch

The brake release switch is installed on the rear of the 1st axis (J1) base.
24V DC power must be supplied to the controller to release the brake, regardless of whether the brake release switch is used or not.

(Note 7) 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. (JIS B 6195)

(Note 8) Air pressure

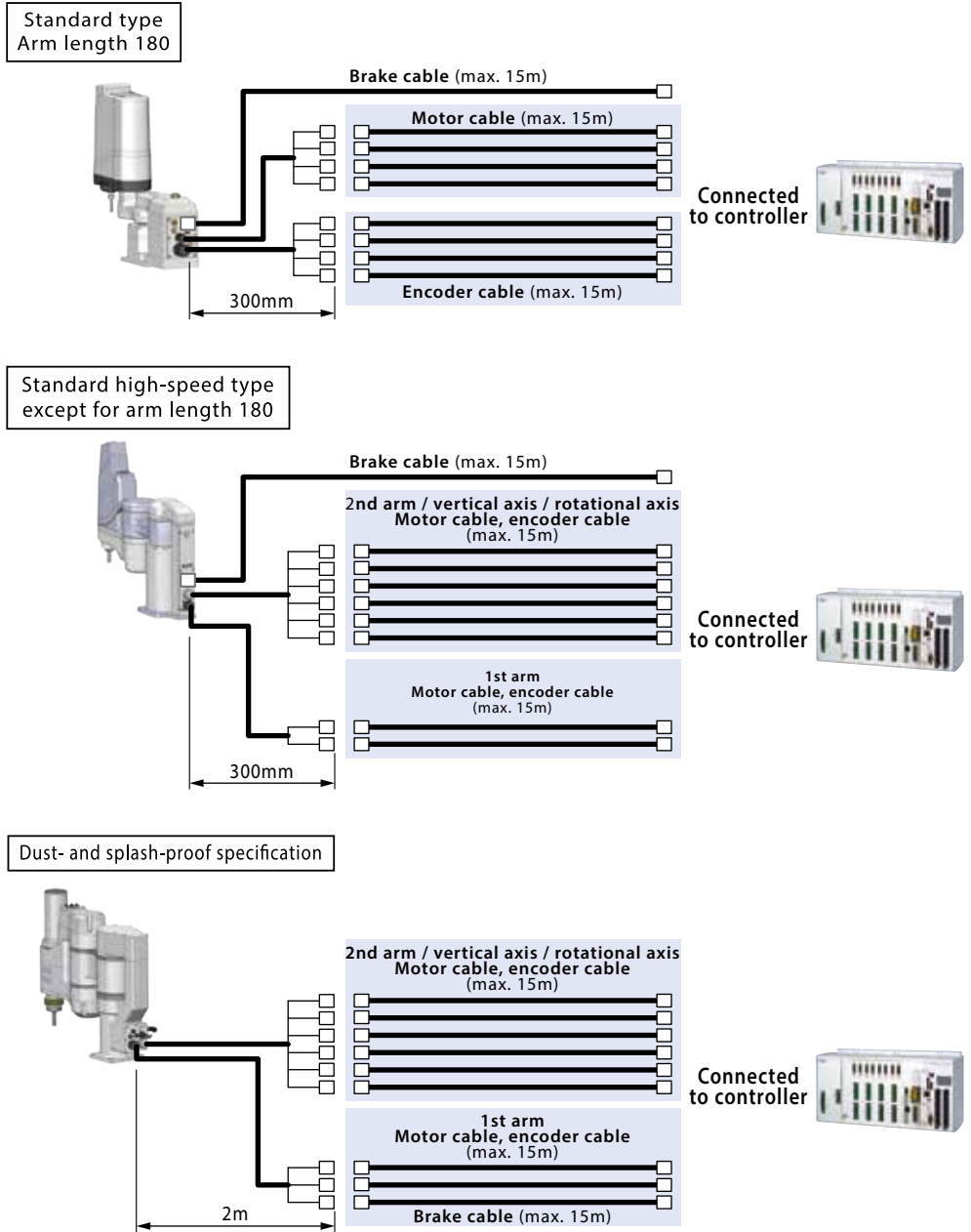
Depending on operating conditions of the Z-axis, the bellows may be damaged or twisted.
For prevention, use a speed controller and adjust its valve to supply air into the main body gradually.

Operation range

When switching the arm system, the arms extend once in a straight line. Beware of potential interference with the peripheral devices

(Note 9) Cables

Connections of the motor cables, encoder cables and brake cables are as shown below.



Options and Maintenance parts

Options

LED pilot lamp (standard type only)

Model LED

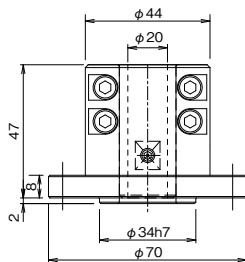
Description Installation of an LED that can be turned on and off as required.

Single unit options and maintenance parts

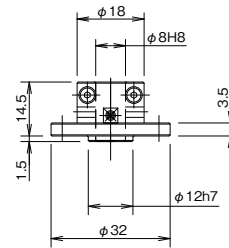
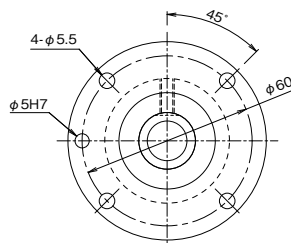
Series	Type	Type	Single unit option		Maintenance parts	
			Flange	Metal cap for user wiring	Absolute reset adjusting jig	
IXA	Standard type	NNN	1805	IX-FL-4	-	JG-IXA2
			3015			
			45□□			
			60□□			
	High speed type	NSN	3015	IX-FL-1	-	JG-IXA1
			45□□			
			60□□			
	Dust / splash-proof specification	NSW	3015	IXA-MC-1	-	-
			45□□			
60□□						

Flange

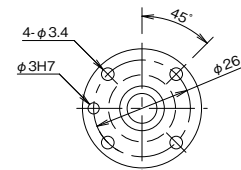
Used to attach an object at the vertical arm tip.



Single unit model number **IX-FL-1**



Single unit model number **IX-FL-4**



Metal cap for user wiring

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



Single unit model number **IXA-MC-1**

Absolute reset adjusting jig

An adjusting jig to perform absolute resetting when the encoder absolute data is lost.



Single unit model number **JG-IXA1**



Single unit model number **JG-IXA2**


X-SEL

SCARA Robot Program Controller



List of Models

Multi-axis program controller enabling SCARA robot to operate.

Type name	RAX	SAX
Connectable axes	SCARA 1 unit/ single-axis and cartesian	
External view		
Type	Standard specification	Safety category compliant
Max. number of controlled axes	8 axes	
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.69) 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 200V/230 VAC ±10%	
Control power supply voltage	Single phase 200V/230VAC ±10%	
Safety category (*1)	B	Safety category 4 compatible
International 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.58 for details.

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

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□, RCS3-RA13R (with load cell), RCS3-RA□R, DD/DDA (high resolution specification).

Limitations on Additional Axis Connection

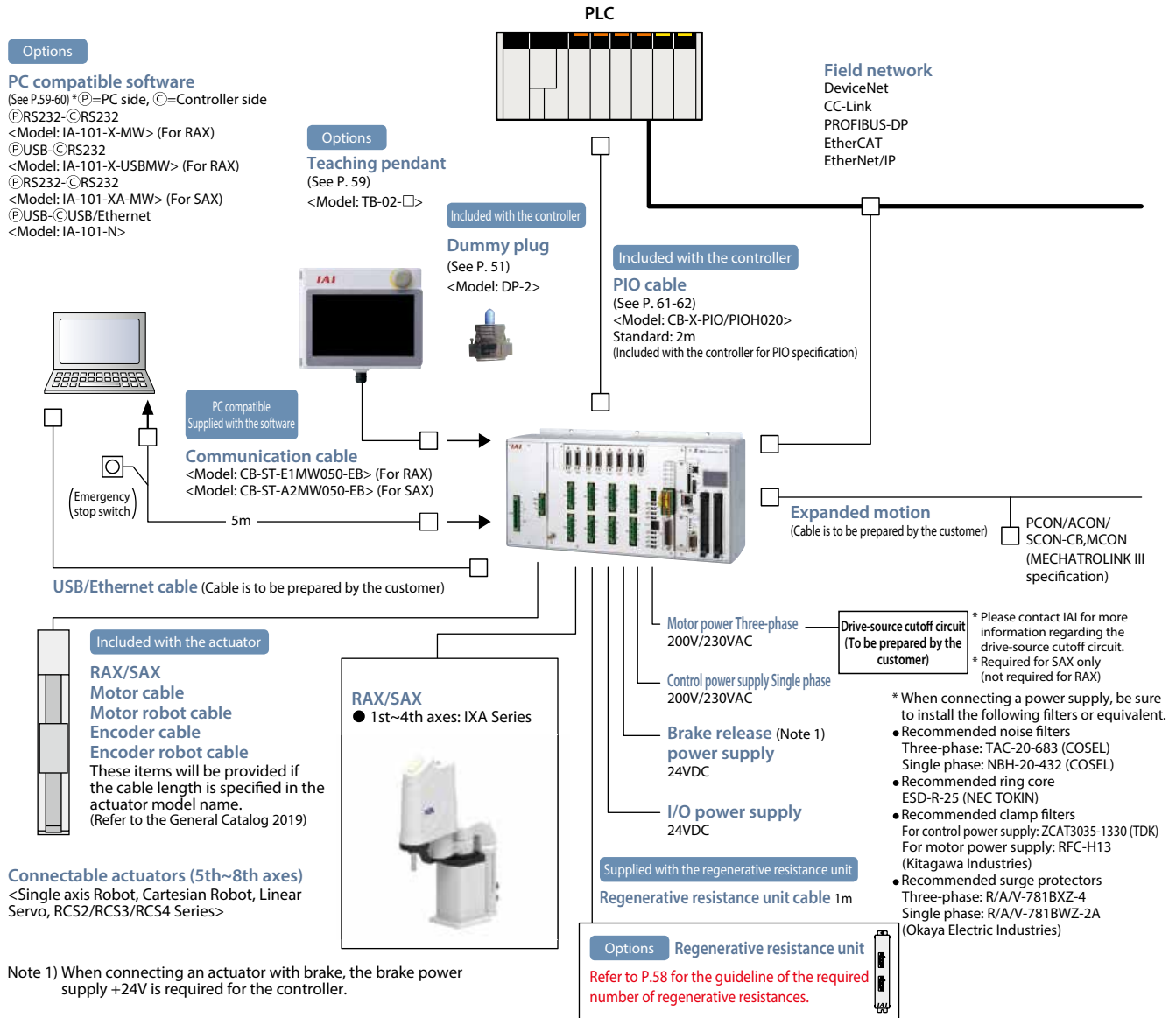
For SCARA controllers, there is a limit to the total motor wattage of the additional axis actuator motor that can be connected besides SCARA robots. Make sure that it does not exceed the "total wattage and max. number of connectable axes" in the following table.

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-3NNN1805	Cannot be connected	Total of 700W or less/4-axis (5th~8th axis)
	IXA-3NNN3015		
	IXA-3NNN45□□		
	IXA-3NNN60□□		
	IXA-4NNN1805		
	IXA-4NNN3015		
	IXA-4NNN45□□		
High-speed type	IXA-4NNN60□□	Total of 600W or less/3-axis (6th~8th axis)	
	IXA-3NSN3015		
	IXA-3NSN45□□		
	IXA-3NSN60□□		
	IXA-4NSN3015		
Dust / splash-proof specification High speed type	IXA-4NSN45□□	Cannot be connected	
	IXA-4NSN60□□		
	IXA-4NSW3015		
	IXA-4NSW45□□		
	IXA-4NSW60□□		

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

System Configuration

XSEL-RAX/SAX Type



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

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	1mm/s~ Upper limit depends on the actuator specification	
Acceleration/deceleration setting	0.01G~ Upper limit depends on the actuator specification	
Programming language	Super SEL language	
Number of programs	255 programs	
Number of program steps	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 resistance	Built-in 1kΩ/20W regenerative resistance (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.
 * *Note on purchase: The controller of the following IXA SCARA robots is of the 8-axis type.
 · High speed type (NSN) of 3- and 4-axis specifications · Standard type 4-axis specification IXA-4NNN60□□
 · Standard type (NNN) 3- and 4-axis specifications when additional axes are added. · Dust- and splash-proof specification (NSW)

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

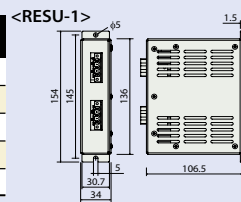
Unit that converts the regenerative current generated during motor deceleration to heat. Although the controller is equipped with a regenerative resistance inside, an additional external regenerative resistance unit may be necessary if the load in the vertical axis is large and the capacity is insufficient.

<When connecting a single axis robot>

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

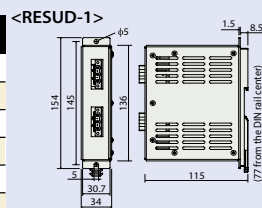
Horizontal specification

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



Vertical specification

Total motor wattage	Required number of regenerative resistance
~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	1085	Nil
	3015	2 pcs
	45□□	
NSN	60□□	3 pcs
	3015	
	45□□	4 pcs
NSW	60□□	
	3015	
	45□□	4 pcs

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

General Catalog 2019

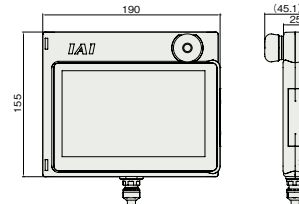
Configuration



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)

External dimensions



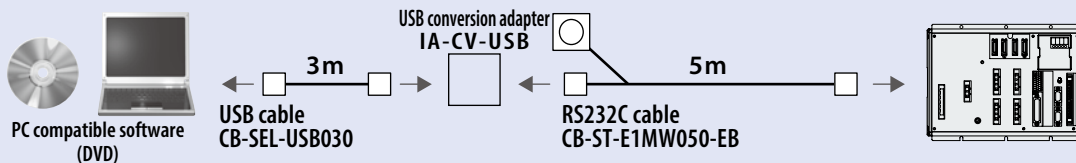
USB-compatible PC Software (For XSEL-RAX)

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



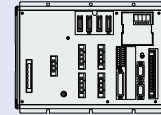
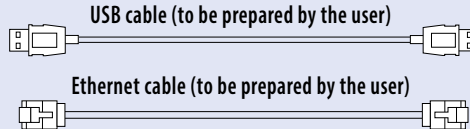
PC Compatible Software

Model IA-101-N

Features PC compatible teaching software only (DVD-ROM).
When connecting the controller and the PC using a USB or Ethernet cable, purchase only the software. A cable of the following specification 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 install a 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".

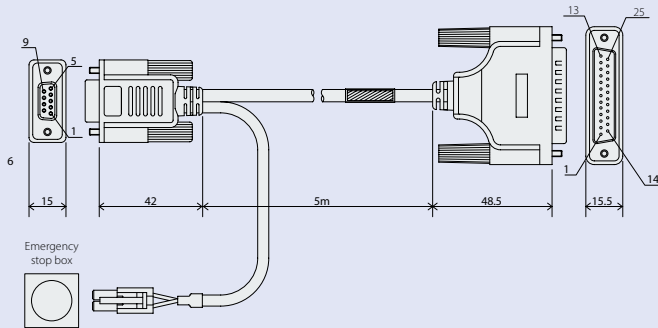
PC Compatible Software

Model IA-101-X-MW

Features Start up supporting software that has program/position input, test operation and monitoring functions.
Debugging functions are considerably improved, reducing start up time.

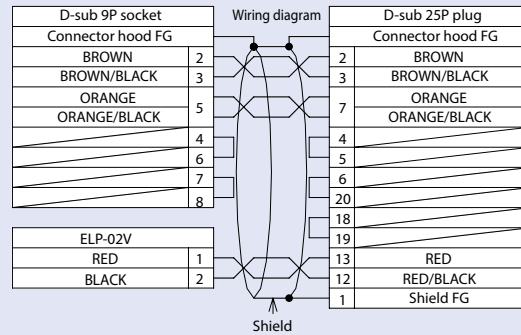
Description Software (CD-ROM), compatible Windows: 7/8/8.1/10

(Accessories) PC connection cable 5m + Emergency stop box (Model: CB-ST-E1 MW050-EB)



Notes

* When using a controller that is compliant with the Safety Category 4, use IA-101-XA-MW.
* This cannot be used for XSEL-SA/SAX/SAXD/Q/QX types.
* Note that the model number for cable only is CB-ST-E1MW050, and that comes with an emergency stop box as a set is CB-ST-E1MW050-EB.



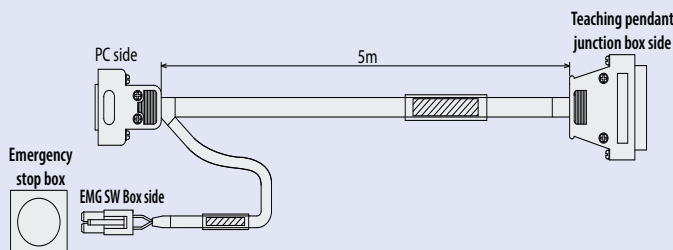
Safety category 4 compliant PC software (for XSEL-SAX only)

Model IA-101-XA-MW * dedicated to XSEL-SA / SAX / SAXD / Q / QX.

Features Start up supporting software that has program/position input, test operation and monitoring functions.
Debugging functions are considerably improved, reducing start up time.
The PC connection cable has a duplex circuit for emergency stop, which is compliant with the safety category 4.

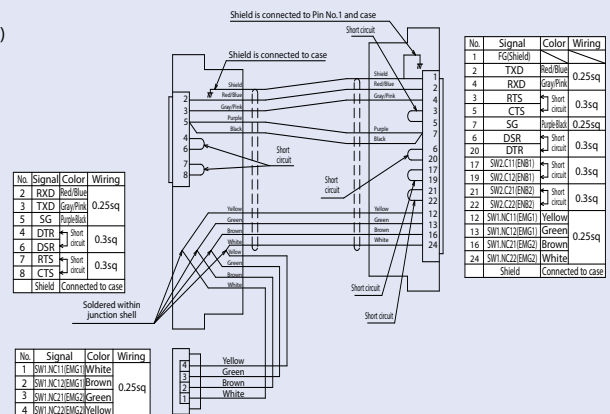
Description Software (CD-ROM), compatible Windows: 7/8/8.1/10

(Accessories) PC connection cable 5m + Emergency stop box (Model: CB-ST-A2MW050-EB)



Notes

* Note that the model number for cable only is CB-ST-A2MW050, and that comes with an emergency stop box as a set is CB-ST-A2MW050-EB.
When a teaching tool is not used, attach a dummy plug DP-2, that is supplied with the controller, on the teaching connector.



Maintenance parts

To purchase a replacement cable, use the model name listed below. (*Please contact IAI for more details.)

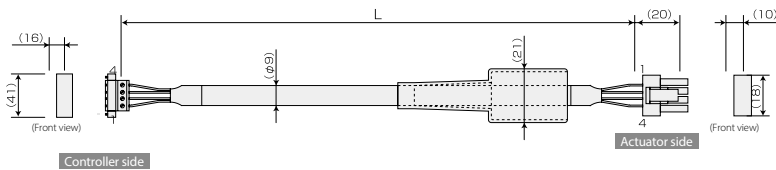
Table of applicable cables

Product model		Motor robot cable	Encoder robot cable	Brake cable
①	IXA	CB-X-MA□□□	CB-X1-PA□□□	CB-IXA-BK□□□-1
②				CB-IXA-BK□□□-2
③				CB-IXA-BK□□□-3
④				
⑤				
⑥				
⑦				

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

Model: **CB-X-MA** □ □ □

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

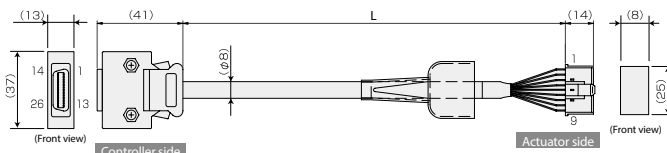


Wiring	Color	Signal	No.	Signal	Color	Wiring
0.75sq	Green	PE	1	1	U	Red
	Red	U	2	2	V	White
	White	V	3	3	W	Black (Crimped)
	Black	W	4	4	PE	Green

* Only the robot cable is available for this model.

Model: **CB-X1-PA** □ □ □

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



Minimum bending radius $r = 44\text{mm}$ or more (Dynamic bending condition)

* Only the robot cable is available for this model.

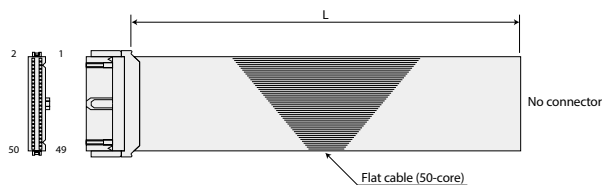
Wiring	Color	Signal	No.	No.	Signal	Color	Wiring
-	-	-	10	1	BAT+	Purple	AWG26 (Crimped)
-	-	-	11	2	BAT-	Gray	
-	-	E24V	12	3	SD	Orange	
-	-	OV	13	4	SD	Green	
-	-	LS	26	5	VCC	Red	
-	-	CREEP	25	6	GND	Black	
-	-	OT	24	7	FG	Drain	
-	-	RSV	23	8	BK	Blue	
-	-	-	9	9	BK+	Yellow	
-	-	-	18	-	-	-	
-	-	-	19	-	-	-	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

Shield is clamp connected to the hood

Ground wire and braided shield

Model: **CB-X-PIO** □ □ □

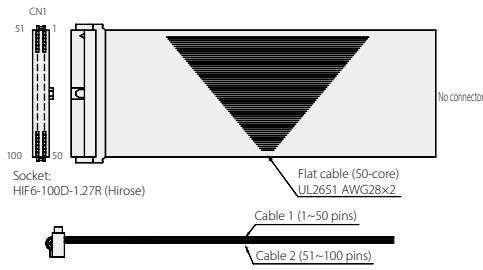
* Please indicate the cable length (L) in □ □ □, (e.g. 080 = 8m), maximum 10m



No.	Color	Wiring	No.	Color	Wiring	No.	Color	Wiring
1	Brown1	Flat cable (pressure-welded)	18	Gray2	Flat cable (pressure-welded)	35	Green4	Flat cable (pressure-welded)
2	Red1		19	White2		36	Blue4	
3	Orange1		20	Black2		37	Purple4	
4	Yellow1		21	Brown-3		38	Gray4	
5	Green1		22	Red3		39	White4	
6	Blue1		23	Orange3		40	Black4	
7	Purple1		24	Yellow3		41	Brown-5	
8	Gray1		25	Green3		42	Red5	
9	White1		26	Blue3		43	Orange5	
10	Black1		27	Purple3		44	Yellow5	
11	Brown-2		28	Gray3		45	Green5	
12	Red2		29	White3		46	Blue5	
13	Orange2		30	Black3		47	Purple5	
14	Yellow2		31	Brown-4		48	Gray5	
15	Green2		32	Red4		49	White5	
16	Blue2		33	Orange4		50	Black5	
17	Purple2		34	Yellow4				

Model: **CB-X-PIOH** □ □ □

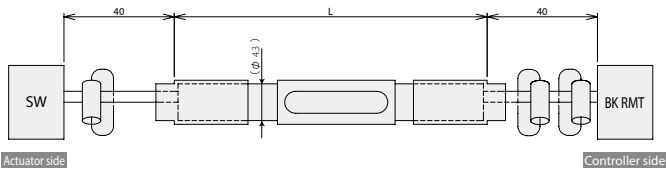
* Please indicate the cable length (L) in □ □ □, (e.g. 080 = 8m), maximum 10m



Cable 1					Cable 2						
Pin No.	Color	Port No.	Function	Pin No.	Color	Port No.	Function	Pin No.	Color	Port No.	Function
1	Brown-1	-	External power supply 24VDC for pin No.2-25,51-74	26	Blue-3	-	External power supply 24VDC for pin No.27-50,76-99	51	Brown-1	300	Alarm output
2	Red-1	000	Program start	27	Purple-3	024	General-purpose input	52	Red-1	301	Ready output
3	Orange-1	001	General-purpose input	28	Gray-3	025	General-purpose input	53	Orange-1	302	Emergency stop output
4	Yellow-1	002	General-purpose input	29	White-3	026	General-purpose input	54	Yellow-1	303	General-purpose output
5	Green-1	003	General-purpose input	30	Black-3	027	General-purpose input	55	Green-1	304	General-purpose output
6	Blue-1	004	General-purpose input	31	Brown-4	028	General-purpose input	56	Blue-1	305	General-purpose output
7	Purple-1	005	General-purpose input	32	Red-4	029	General-purpose input	57	Purple-1	306	General-purpose output
8	Gray-1	006	General-purpose input	33	Orange-4	030	General-purpose input	58	Gray-1	307	General-purpose output
9	White-1	007	Program designation (PRG.No.1)	34	Yellow-4	031	General-purpose input	59	White-1	308	General-purpose output
10	Black-1	008	Program designation (PRG.No.2)	35	Green-4	032	General-purpose input	60	Black-1	309	General-purpose output
11	Brown-2	009	Program designation (PRG.No.3)	36	Blue-4	033	General-purpose input	61	Brown-2	310	General-purpose output
12	Red-2	010	Program designation (PRG.No.4)	37	Purple-4	034	General-purpose input	62	Red-2	311	General-purpose output
13	Orange-2	011	Program designation (PRG.No.5)	38	Gray-4	035	General-purpose input	63	Orange-2	312	General-purpose output
14	Yellow-2	012	Program designation (PRG.No.6)	39	White-4	036	General-purpose input	64	Yellow-2	313	General-purpose output
15	Green-2	013	Program designation (PRG.No.7)	40	Black-4	037	General-purpose input	65	Green-2	314	General-purpose output
16	Blue-2	014	General-purpose input	41	Brown-5	038	General-purpose input	66	Blue-2	315	General-purpose output
17	Purple-2	015	General-purpose input	42	Red-5	039	General-purpose input	67	Purple-2	316	General-purpose output
18	Gray-2	016	General-purpose input	43	Orange-5	040	General-purpose input	68	Gray-2	317	General-purpose output
19	White-2	017	General-purpose input	44	Yellow-5	041	General-purpose input	69	White-2	318	General-purpose output
20	Black-2	018	General-purpose input	45	Green-5	042	General-purpose input	70	Black-2	319	General-purpose output
21	Brown-3	019	General-purpose input	46	Blue-5	043	General-purpose input	71	Brown-3	320	General-purpose output
22	Red-3	020	General-purpose input	47	Purple-5	044	General-purpose input	72	Red-3	321	General-purpose output
23	Orange-3	021	General-purpose input	48	Gray-5	045	General-purpose input	73	Orange-3	322	General-purpose output
24	Yellow-3	022	General-purpose input	49	White-5	046	General-purpose input	74	Yellow-3	323	General-purpose output
25	Green-3	023	General-purpose input	50	Black-5	047	General-purpose input	75	Green-3	-	External power supply 0V for pin No.2-25,51-74
								100	Black-5	-	External power supply 0V for pin No.27-50,76-99

Model: **CB-IXA-BK** □ □ □ -1

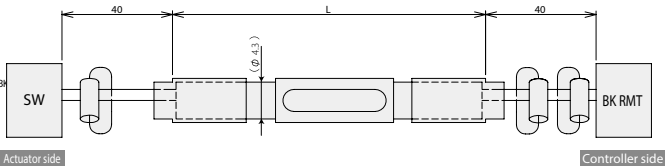
* Please indicate the cable length (L) in □ □ □, (e.g. 050 = 5m), maximum 15m



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

Model: **CB-IXA-BK** □ □ □ -2

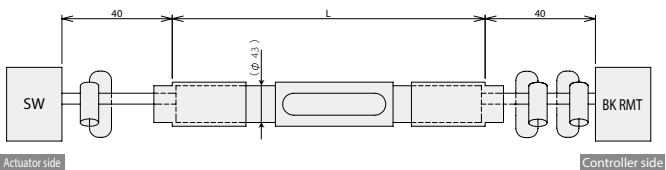
* Please indicate the cable length (L) in □ □ □, (e.g. 050 = 5m), maximum 15m



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

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	BK5	1	BK RMT	A4	BK5	Red
	White	COM	2		A3	COM	White
	-	-	3		Remaining	-	-

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