

Cleanroom Specification SCARA Robot **IXA-4NSC**



Clean Room Specification

ISO Class 3 compliant

SCARA Robot

IXA

For assembling and handling applications in a clean environment!

Fastest in the industry!! * Clean room specification

Standard cycle time

(IXA-4NSC4518)

0.28s

Operational
conditions

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

Horizontal movement

Vertical
movement

Pick & Place of medical vials

To pick up vials from a part feeder and perform a high-speed transfer on the conveyor to the next process.

IXA

Series

Type

Cable Length

T2

Applicable Controllers

4NSC3015	4-axis/High-speed type/Clean room specification/ Arm length 300mm/Vertical axis 150mm
4NSC4518	4-axis/High-speed type/Clean room specification/ Arm length 450mm/Vertical axis 180mm
4NSC4533	4-axis/High-speed type/Clean room specification/ Arm length 450mm/Vertical axis 330mm
4NSC6018	4-axis/High-speed type/Clean room specification/ Arm length 600mm/Vertical axis 180mm
4NSC6033	4-axis/High-speed type/Clean room specification/ Arm length 600mm/Vertical axis 330mm

T2	XSEL-RAX/SAX
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N	Not used
5L	5m
10L	10m
<input type="checkbox"/> L	Specified length (1m increments), maximum length 15m

type	Model Specifica- tion Items	Number of axes	Arm length (mm)		Vertical stroke (mm)	Standard cycle time (s)	Continu- ous cycle time (s)	Maximum payload (kg)	Reference page
			First arm	Second arm					
High-speed type clean specification	IXA-4NSC3015	4 axes	120	180	150	0.27	0.48	6	► P3
	IXA-4NSC4518	4 axes	200	250	180	0.28	0.51	8	► P7
	IXA-4NSC4533				330				
	IXA-4NSC6018	4 axes	350	250	180	0.27	0.48	10	► P13
	IXA-4NSC6033				330				

IXA-4NSC3015

Clean

Battery-less
absoluteArm length
300
mm

Model Specification Items

IXA	4	NSC	30	15		T2									
Series	Number of axes		Type		Arm length		Vertical stroke			Cable Length		Applicable Controllers			
	4	4 axes	NSC	High-speed type clean room specification		30	300mm	15	150mm		N	Not used		T2	XSEL-RAX/SAX
											5L	5m			
											10L	10m			



CE RoHS 10



Models

Model
IXA-4NSC3015

Option

* Please check the Options reference pages to confirm each option.

Name	Model	Reference page
User cable	CB-IXA-USR <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> -CS	20
Flange	IX-FL-1	20

* (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"/>

POINT
Selection
Notes

- (1) Refer to P19 for Notes 1 - 8.
- (2) 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 a continuous operation, either lower the acceleration/deceleration values or set a stop time after acceleration/deceleration, referring to the duty ratio (guideline).
- (3) 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.
- (4) Refer to P20 for the cleanliness standard.

Main Specifications

Item		Description 4-axis specification
Maximum payload (kg) (Note 1)		6
Speed (Note 2)	Combined max. speed (mm/s)	6032
	1st arm (deg/s)	720
	2nd arm (deg/s)	720
	Vertical axis (deg/s)	1600
	Rotational axis (deg/s)	1600
Push force (N) (Note 3)		Upper limit 125 Lower limit 25
Clean room specification (Note 4)		Suction volume (NL/min) 50
Arm length (mm)		300
Individual arm length (mm)	1st arm	120
	2nd arm	180
Operation range of individual axes	1st arm (deg)	±126
	2nd arm (deg)	±128
	Vertical axis (mm)	150
	Rotational axis (deg)	±360

Item		Description 4-axis specification
Positioning repeatability (Note 5)	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 LED lamp (Note 6)		Amber color LED, small pilot lamp 1 pc. DC24V power supply required
Brake release switch (Note 7)		Brake release switch for preventing vertical axis from dropping
Tip axis	Allowable torque	3.2N·m
	Allowable load moment	9N·m
Cleanliness		Class 3 (ISO14644-1)
Ambient operational temperature and humidity		0-40°C, 20-85% RH or lower (non-condensing)
Degree of protection IP20		IP40
Vibration- and impact-resistance		No impact or vibration should be applied.
Noise (Note 8)		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		131,072 pulse/rev

Cycle time

Item	Time
Standard cycle time	0.27s
Continuous cycle time	0.48s

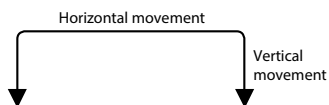
The standard/continuous cycle time represents the time required when an operation is performed with a cycle operation setting at maximum speed, under the following conditions. 0.2kg transport, vertical movement 25mm, horizontal movement 300mm (rough positioning arch motion)

[Standard cycle time]

The time required for maximum speed. This is a general guideline for high speed performance. Note that continuous operations are not possible at the maximum speed.

[Continuous cycle time]

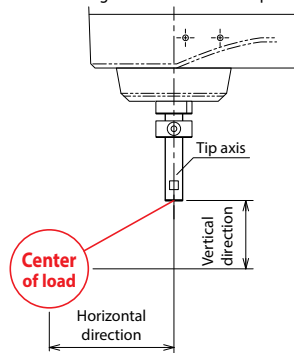
The cycle time for continuous operation.



Tip shaft allowable load inertia moment

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

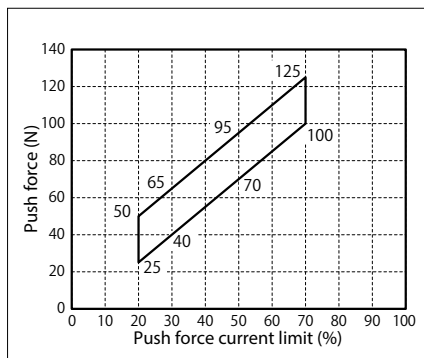
Allowable load inertia moment at the tip axis (rotational axis) of a SCARA robot. Make sure that the offset dimensions from the spline tip to the horizontal and vertical directions are within the guideline values listed below. A large load offset may cause abnormal noise, vibration, failure and shorter 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
150mm or less	100mm or less

Correlation between push force and current limit (guideline)

Push force of the tip of the vertical axis (Note 3)

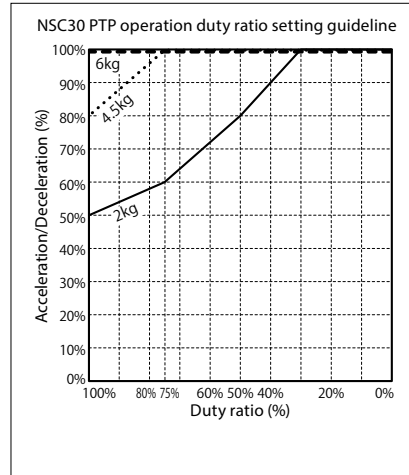
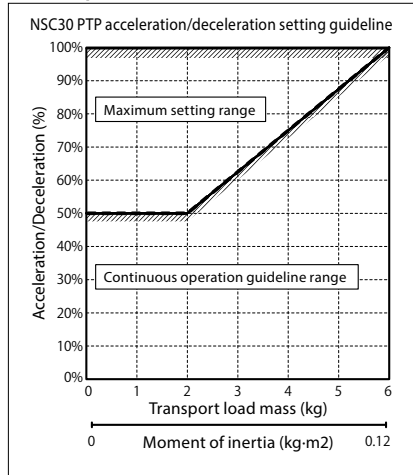


Acceleration/Deceleration Setting Guidelines

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 ratio guideline graph. If a continuous operation is required, do so within the continuous operation guideline range shown in the acceleration/deceleration setting guideline graph.

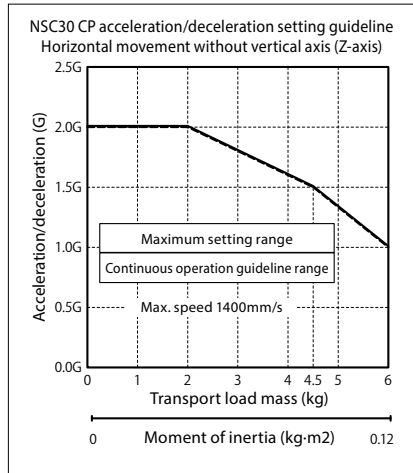
- 1) For a PTP operation, always use the WGHT command in the program to set the weight and moment of inertia. For the SCARA robot, the maximum acceleration/deceleration for each payload is set at 100%. When the payload differs, the operation time will also vary even at the same acceleration/deceleration 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 rate guideline.
- 4) Duty ratio (%) = (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

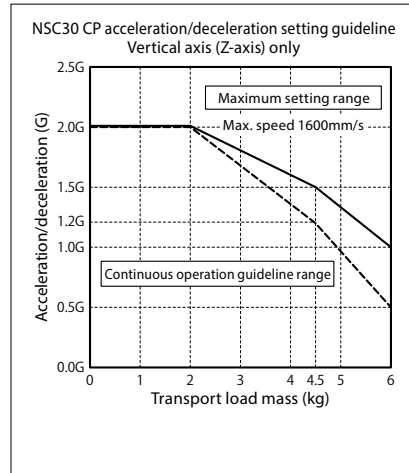


CP Operation

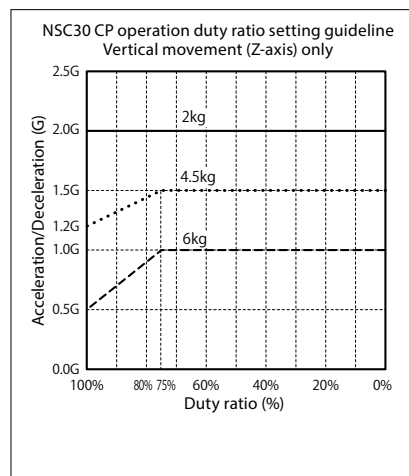
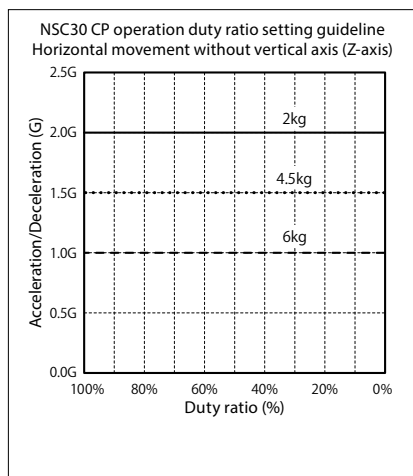
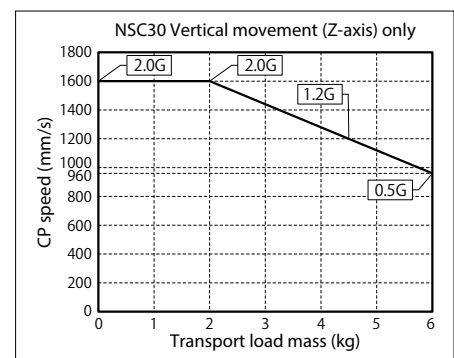
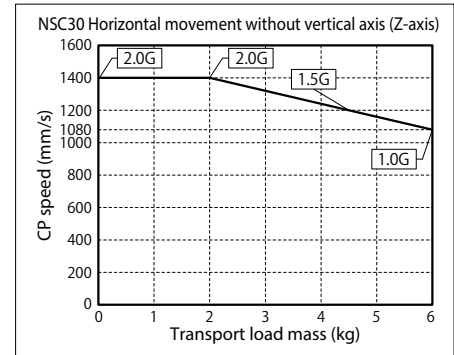
Horizontal



Vertical



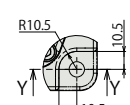
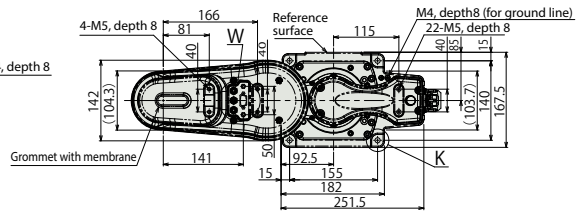
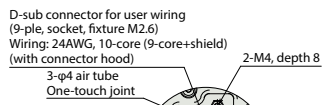
CP operation: Acceleration/deceleration Limitations



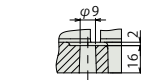
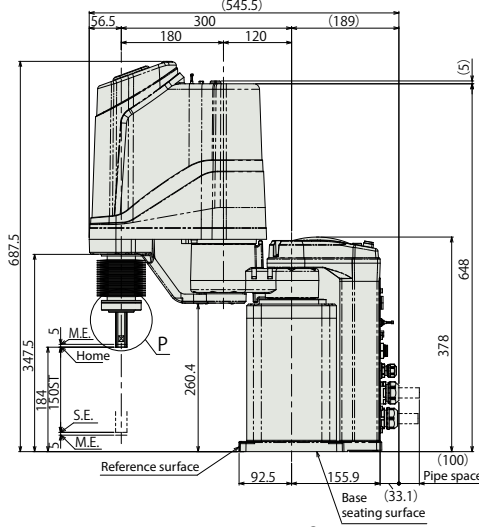
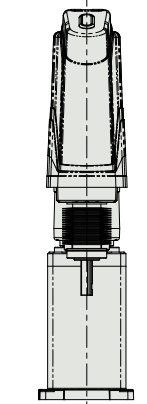
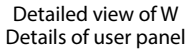
Dimensions

(Note) Refer to P19 (Note 9) for cable connections.

CAD drawings can be downloaded from our website.
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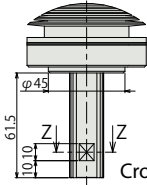
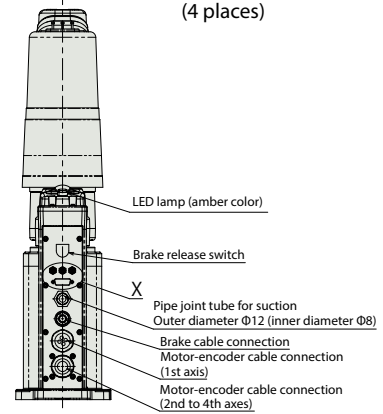


ST: Stroke
M.E.: Mechanical end
S.E.: Stroke end



Detail view of K
Details of base mounting holes

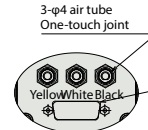
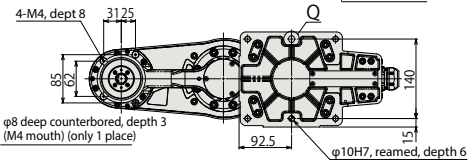
Cross section Y-Y
(4 places)



Cross



Cross section Z-Z $\phi 8$ deep counterbored, de
(M4 mouth) (only 1 place)



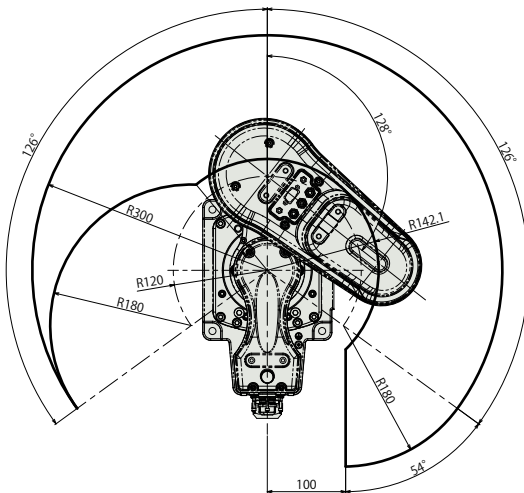
D-sub connector for user wiring
(15-pole, plug, fixture M2.6)
Wiring: 24AWG, 10-core (9-core+shield)
(with connector hood)

10^{+0.015}₀ Depth 6
(from base seating surface)

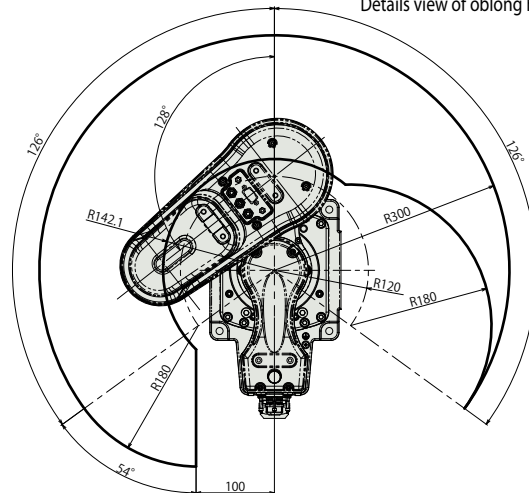
Details view of X
Details view of rear panel



Details view of Q
Details view of oblong hole



Left arm operation range




Right arm operation range

■ **Mass**

Item	Description
Mass	28.0kg

Applicable Controllers

Actuators in this page are operable by the following controllers. Select a type according to the application.

Name	External view	Number of max. connectable axes	Power source voltage	Control method														Max. positioning points	Reference page
				Positioner	Pulse-train	Program	Network *Select												
							DV	CC	CIE	PR	CN	ML	ML3	EC	EP	PRT	SSN		
XSEL-RAX4/SAX4(for IXA)		4	3-phase AC200V	—	—	●	●	●	●	—	—	—	●	●	—	—	—	36666 (depending on type)	Please contact IAI

IXA-4NSC4518

IXA-4NSC4533



Model Specification Items

IXA	4	NSC	45			T2
Series	Number of axes	Type	Arm length	Vertical stroke	Cable Length	Applicable Controllers
4	4 axes	NSC	High-speed type clean room specification	45 450mm	18 180mm 33 330mm	N Not used 5L 5m 10L 10m
						T2 XSEL-RAX/SAX



Models

Model
IXA-4NSC4518
IXA-4NSC4533

Option

* Please check the Options reference pages to confirm each option.

Name	Model	Reference page
User cable	CB-IXA-USR□□□-CS	20
Flange	IX-FL-1	20

* (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"/>



- (1) Refer to P19 for Notes 1 - 8.
- (2) 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 a continuous operation, either lower the acceleration/deceleration values or set a stop time after acceleration/deceleration, referring to the duty ratio (guideline).
- (3) 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.
- (4) Refer to P20 for the cleanliness standard.

Main Specifications

Item		Description
		4-axis specification
Maximum payload (kg) (Note 1)		6
Speed (Note 2)	Combined max. speed (mm/s)	6623
	1st arm (deg/s)	510
	2nd arm (deg/s)	800
	Vertical axis (deg/s)	1600
	Rotational axis (deg/s)	2000
Push force (N) (Note 3)		Upper limit 135 Lower limit 25
Clean room specification (Note 4)		Suction volume (NL/min) 50
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
		4-axis specification
Positioning repeatability (Note 5)	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 LED lamp (Note 6)		Amber color LED, small pilot lamp 1 pc. DC24V power supply required
Brake release switch (Note 7)		Brake release switch for preventing vertical axis from dropping
Tip axis	Allowable torque	3.2N·m
	Allowable load moment	8.3N·m
Cleanliness		Class 3 (ISO14644-1)
Ambient operational temperature and humidity		0-40°C, 20-85% RH or lower (non-condensing)
Degree of protection IP20		IP40
Vibration- and impact-resistance		No impact or vibration should be applied.
Noise (Note 8)		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		131,072 pulse/rev

Cycle time

Item	Time
Standard cycle time	0.28s
Continuous cycle time	0.51s

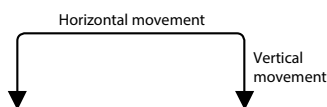
The standard/continuous cycle time represents the time required when an operation is performed with a cycle operation setting at maximum speed, under the following conditions. 0.2kg transport, vertical movement 25mm, horizontal movement 300mm (rough positioning arch motion)

[Standard cycle time]

The time required for maximum speed. This is a general guideline for high speed performance. Note that continuous operations are not possible at the maximum speed.

[Continuous cycle time]

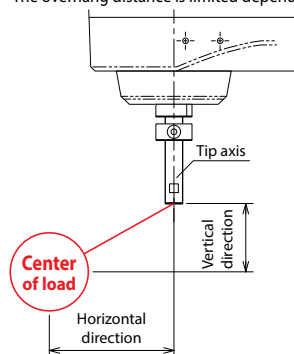
The cycle time for continuous operation.



Tip shaft allowable load inertia moment

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

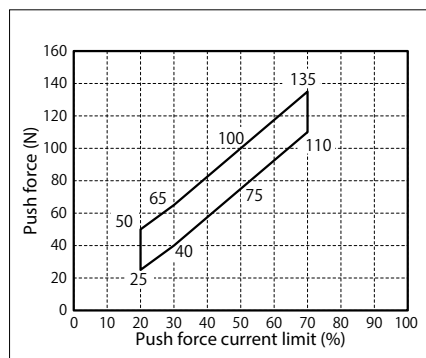
Allowable load inertia moment at the tip axis (rotational axis) of a SCARA robot. Make sure that the offset dimensions from the spline tip to the horizontal and vertical directions are within the guideline values listed below. A large load offset may cause abnormal noise, vibration, failure and shorter 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
180mm or less	100mm or less

Correlation between push force and current limit (guideline)

Push force of the tip of the vertical axis (Note 3)

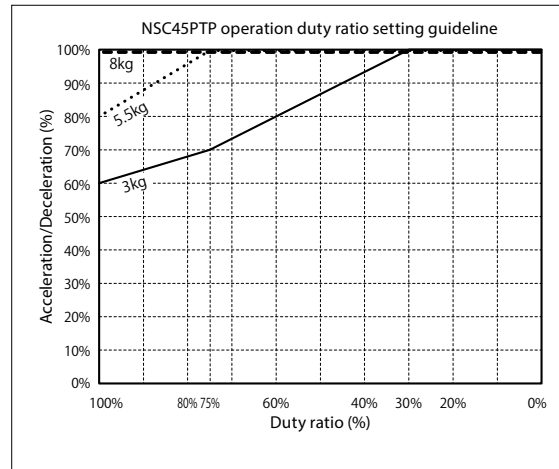
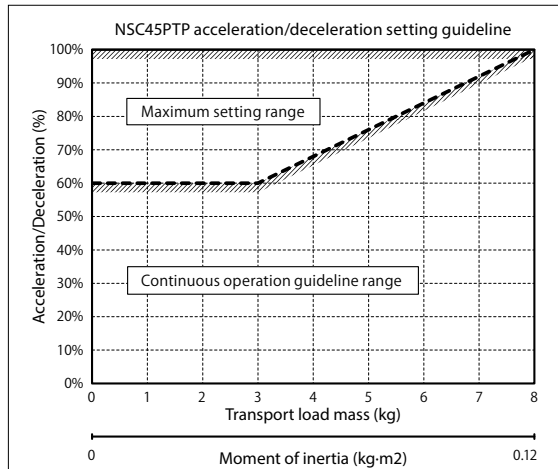


Acceleration/Deceleration Setting Guidelines

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 ratio guideline graph. If a continuous operation is required, do so within the continuous operation guideline range shown in the acceleration/deceleration setting guideline graph.

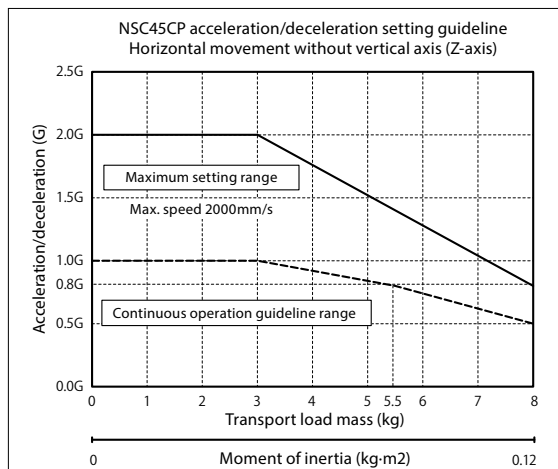
- 1) For a PTP operation, always use the WGHT command in the program to set the weight and moment of inertia. For the SCARA robot, the maximum acceleration/deceleration for each payload is set at 100%. When the payload differs, the operation time will also vary even at the same acceleration/deceleration 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 rate guideline.
- 4) Duty ratio (%) = (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

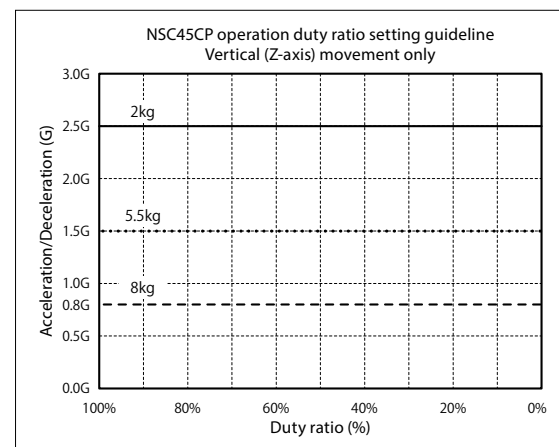
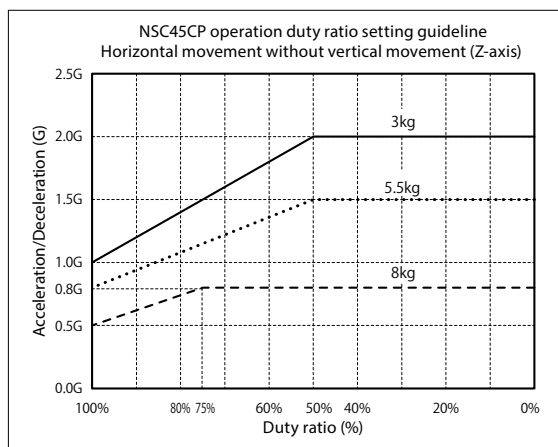
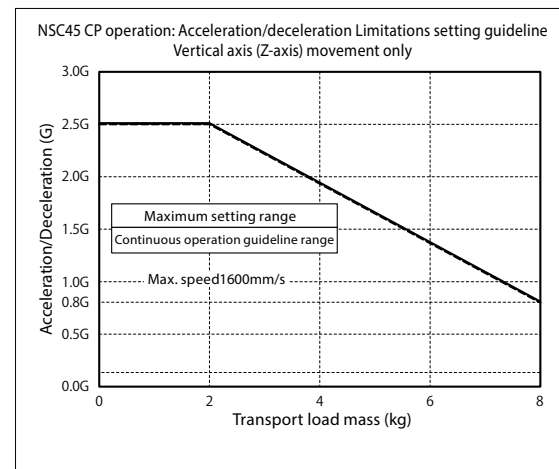


CP Operation

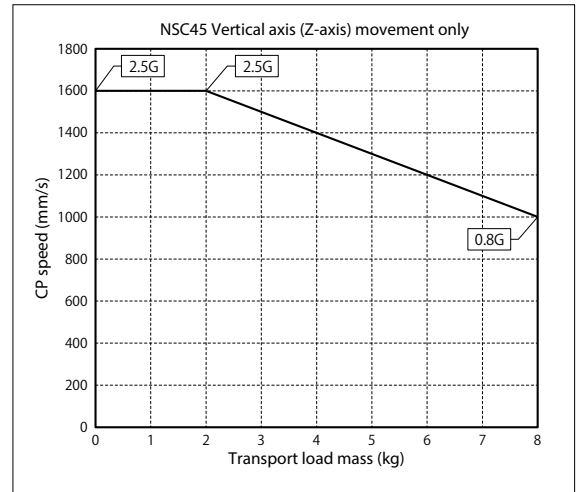
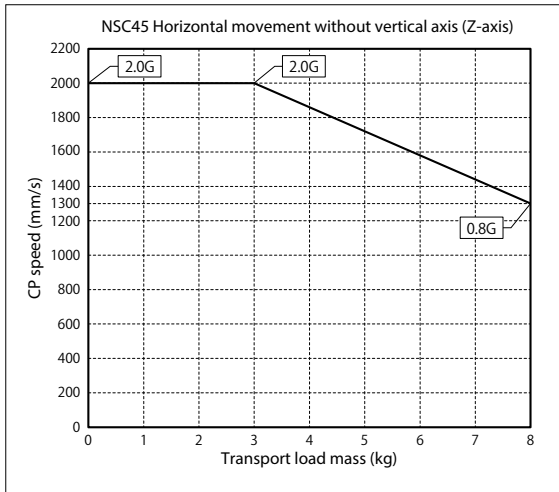
Horizontal



Vertical



■ CP Operation: Speed and Acceleration/deceleration limitations



Dimensions

IXA-4NSC4518

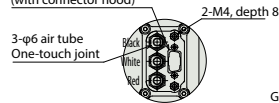
(Note) Refer to P19 (Note 9) for cable connections.

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

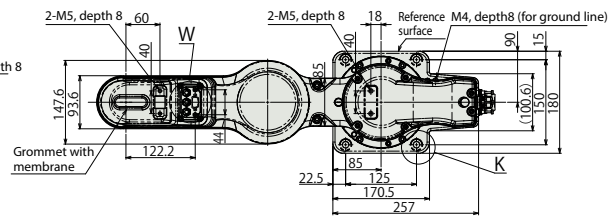
2D
CAD

3D
CAD

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

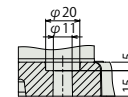


Detailed view of W
Details of user panel

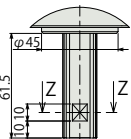
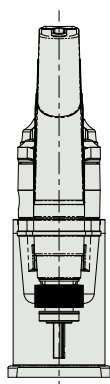
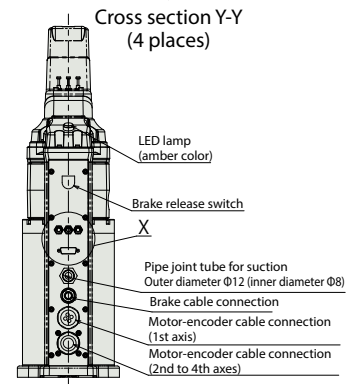


Detail view of K
Details of base mounting holes

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

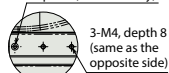


Cross section Y-Y
(4 places)

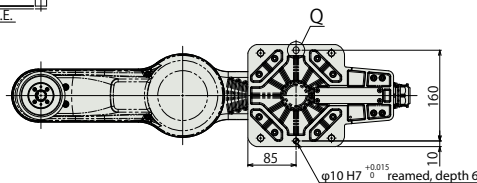


Detailed view of P
φ6 deep counterbored,
depth 1 (one side only)

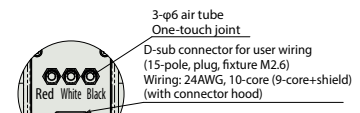
Cross section Z-Z



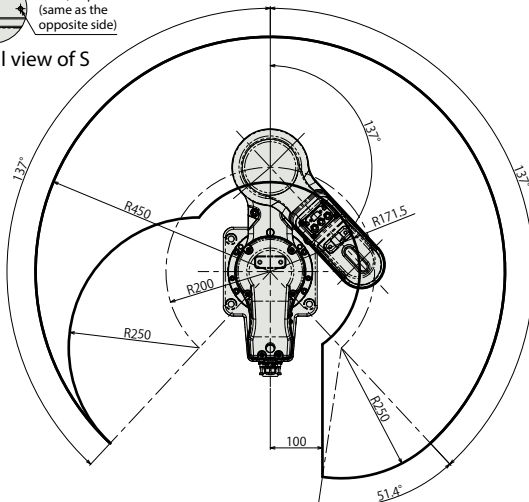
Detail view of S



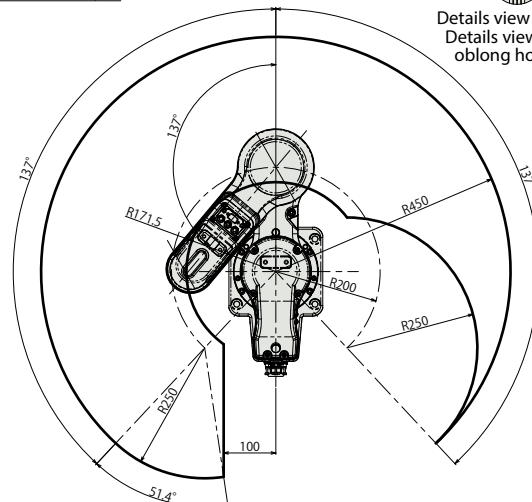
Details view of X
Details view of rear panel



Details view of Q
Details view of oblong hole



Left arm operation range



Right arm operation range

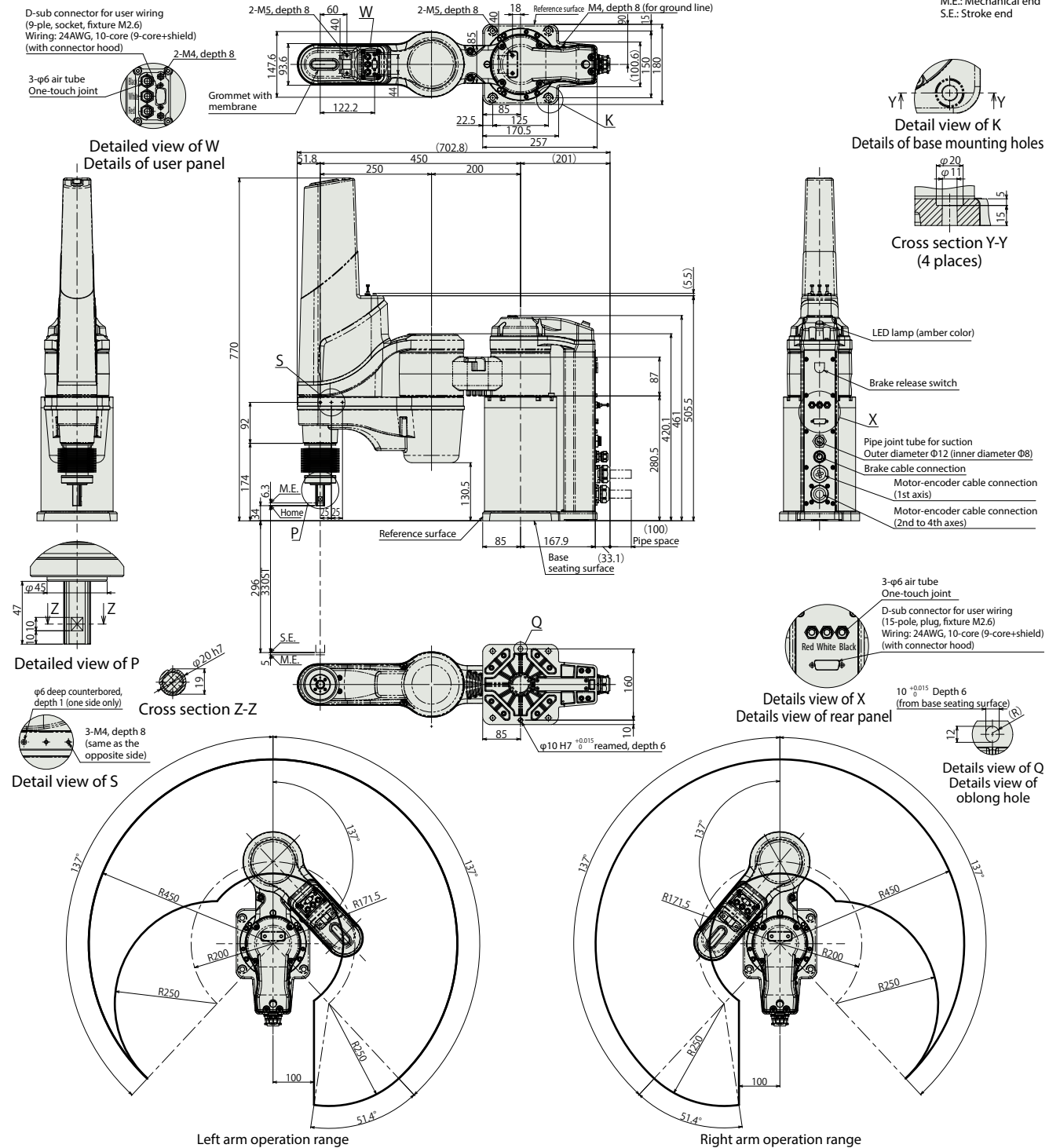
Mass

Item	Description
Mass	33.0kg

IXA-4NSC4533

(Note) Refer to P19 (Note 9) for cable connections.

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




Mass

Item	Description
Mass	33.5kg

Applicable Controllers

Actuators in this page are operable by the following controllers. Select a type according to the application.

Name	External view	Number of max. connectable axes	Power source voltage	Control method														Max. positioning points	Reference page
				Positioner	Pulse-train	Program	Network *Select												
							DV	CC	CIE	PR	CN	ML	ML3	EC	EP	PRT	SSN		
XSEL-RAX4/SAX4(for IXA)		4	3-phase AC200V	—	—	●	●	●	●	—	—	—	●	●	—	—	—	36666 (depending on type)	Please contact IAI

IXA-4NSC6018

IXA-4NSC6033



Model Specification Items

IXA	4	NSC	60			T2
Series	Number of axes	Type	Arm length	Vertical stroke	Cable Length	Applicable Controllers
4	4 axes	NSC	High-speed type clean room specification	60 600mm	18 180mm 33 330mm	T2 XSEL-RAX/SAX
					N Not used	
					5L 5m	
					10L 10m	
					<input type="checkbox"/> L Specified length (1m increments)	



Models

Model
IXA-4NSC6018
IXA-4NSC6033

Option

* Please check the Options reference pages to confirm each option.

Name	Model	Reference page
User cable	CB-IXA-USR <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> -CS	20
Flange	IX-FL-1	20

* (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"/>



- (1) Refer to P19 for Notes 1 - 8.
- (2) 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 a continuous operation, either lower the acceleration/deceleration values or set a stop time after acceleration/deceleration, referring to the duty ratio (guideline).
- (3) 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.
- (4) Refer to P20 for the cleanliness standard.

Main Specifications

Item		Description
		4-axis specification
Maximum payload (kg) (Note 1)		10
Speed (Note 2)	Combined max. speed (mm/s)	6414
	1st arm (deg/s)	300
	2nd arm (deg/s)	750
	Vertical axis (deg/s)	1600
	Rotational axis (deg/s)	2000
Push force (N) (Note 3)		Upper limit 135 Lower limit 25
Clean room specification (Note 4)		Suction volume (NL/min) 50
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
		4-axis specification
Positioning repeatability (Note 5)	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 Ø6, inner diameter Ø4, air tube 3 pcs.(max. usable pressure 0.6MPa)
Alarm LED lamp (Note 6)		Amber color LED, small pilot lamp 1 pc. DC24V power supply required
Brake release switch (Note 7)		Brake release switch for preventing vertical axis from dropping
Tip axis	Allowable torque	3.2N·m
	Allowable load moment	8.3N·m
Cleanliness		Class 3 (ISO14644-1)
Ambient operational temperature and humidity		0-40°C, 20-85% RH or lower (non-condensing)
Degree of protection IP20		IP40
Vibration- and impact-resistance		No impact or vibration should be applied.
Noise (Note 8)		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		131,072 pulse/rev

Cycle time

Item	Time
Standard cycle time	0.27s
Continuous cycle time	0.48s

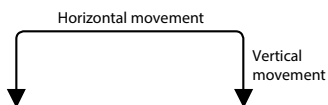
The standard/continuous cycle time represents the time required when an operation is performed with a cycle operation setting at maximum speed, under the following conditions. 0.2kg transport, vertical movement 25mm, horizontal movement 300mm (rough positioning arch motion)

[Standard cycle time]

The time required for maximum speed. This is a general guideline for high speed performance. Note that continuous operations are not possible at the maximum speed.

[Continuous cycle time]

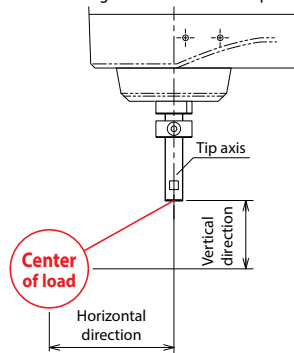
The cycle time for continuous operation.



Tip shaft allowable load inertia moment

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

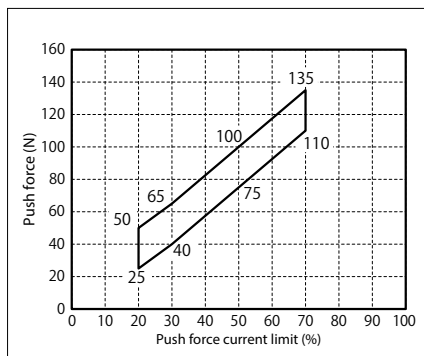
Allowable load inertia moment at the tip axis (rotational axis) of a SCARA robot. Make sure that the offset dimensions from the spline tip to the horizontal and vertical directions are within the guideline values listed below. A large load offset may cause abnormal noise, vibration, failure and shorter 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
180mm or less	100mm or less

Correlation between push force and current limit (guideline)

Push force of the tip of the vertical axis (Note 3)

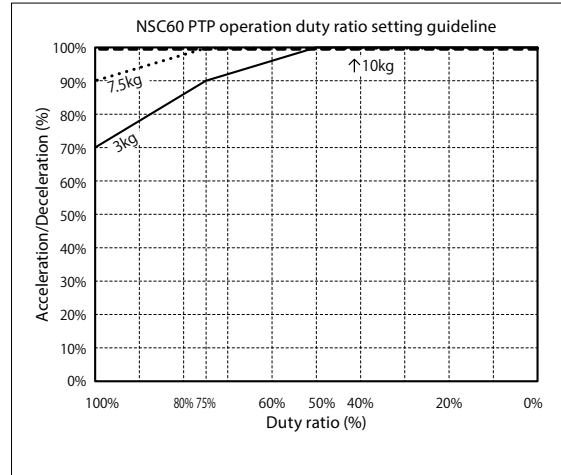
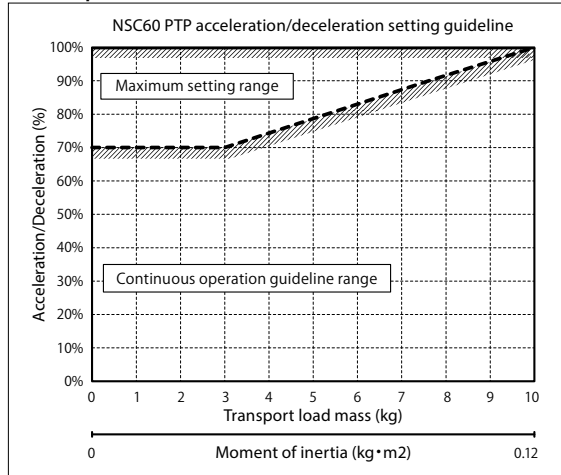


Acceleration/Deceleration Setting Guidelines

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 ratio guideline graph. If a continuous operation is required, do so within the continuous operation guideline range shown in the acceleration/deceleration setting guideline graph.

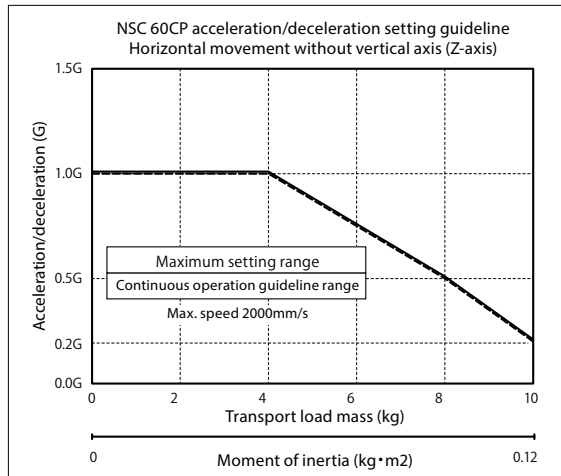
- 1) For a PTP operation, always use the WGHT command in the program to set the weight and moment of inertia. For the SCARA robot, the maximum acceleration/deceleration for each payload is set at 100%. When the payload differs, the operation time will also vary even at the same acceleration/deceleration 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 rate guideline.
- 4) Duty ratio (%) = (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

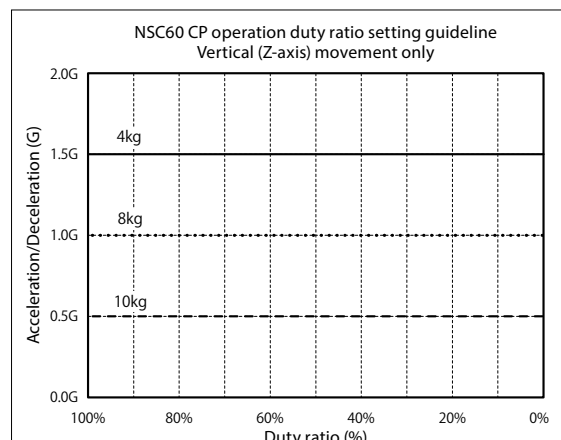
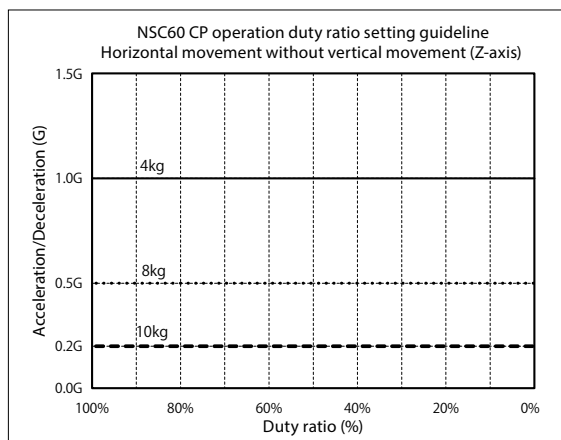
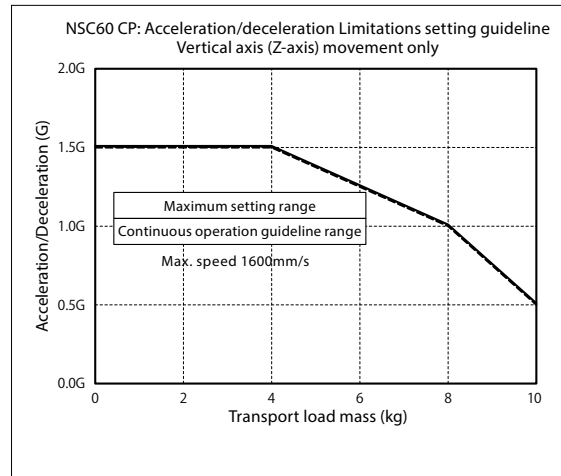


CP Operation

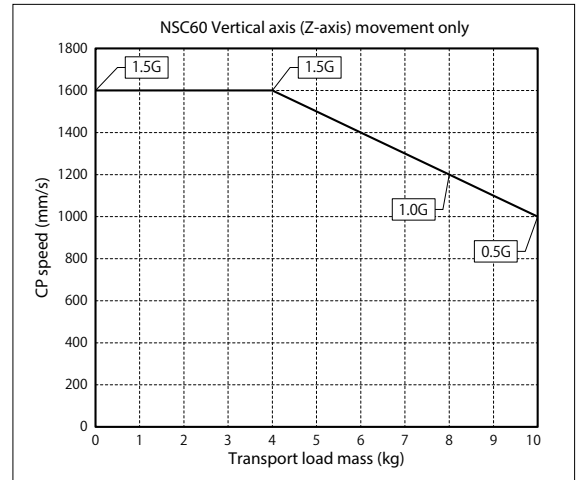
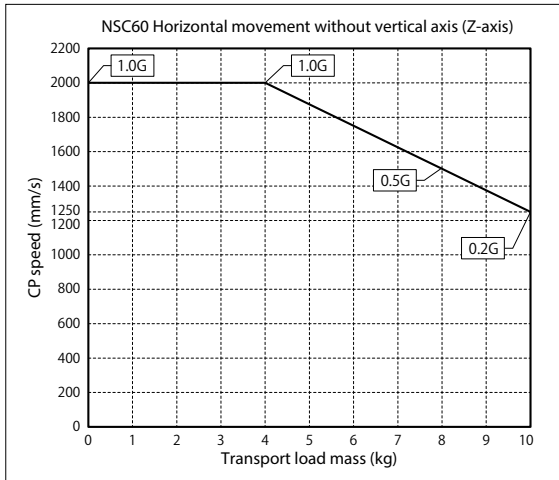
Horizontal



Vertical



■ CP Operation: Speed and Acceleration/deceleration limitations



Dimensions

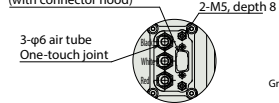
IXA-4NSC6018

(Note) Refer to P19 (Note 9) for cable connections.

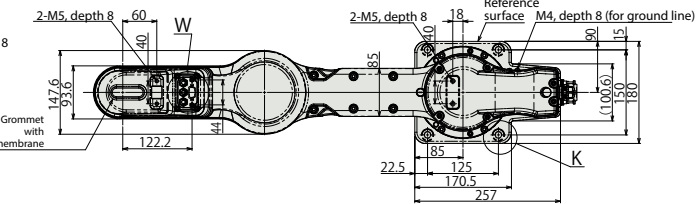
CAD drawings can be downloaded from our website.
www.intelligentactuator.com



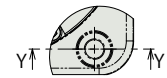
D-sub connector for user wiring
 (9-pole, socket, fixture M2.6)
 Wiring: 24AWG, 10-core (9-core+shield)
 (with connector hood)



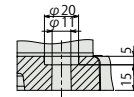
Detailed view of W
 Details of user panel



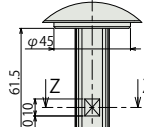
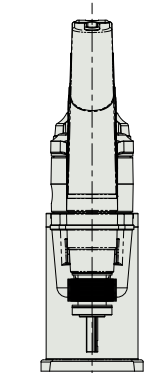
ST: Stroke
 M.E.: Mechanical end
 S.E.: Stroke end



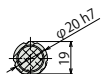
Detail view of K
 Details of base mounting holes



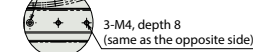
Cross section Y-Y
 (4 places)



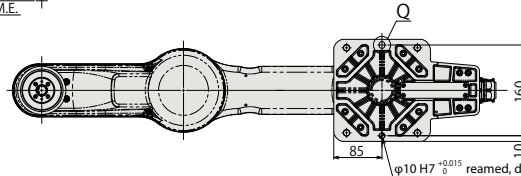
Detailed view of P
 φ6 deep counterbored,
 depth 1
 (one side only)



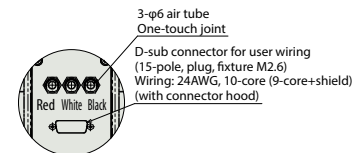
Cross section Z-Z



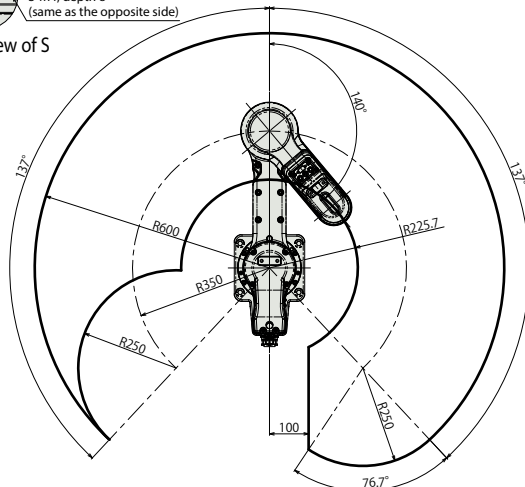
Detail view of S



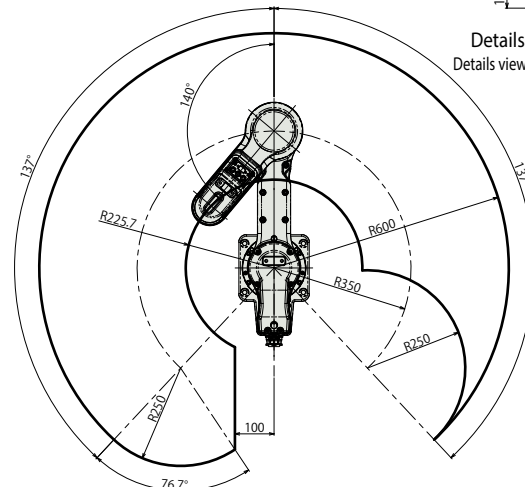
Details view of X
 Details of rear panel



Details view of Q
 Details of oblong hole



Left arm operation range



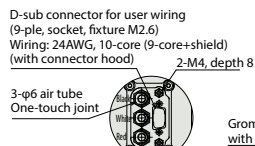
Right arm operation range

Mass

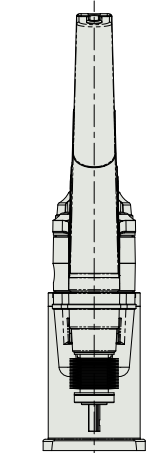
Item	Description
Mass	33.5kg

IXA-4NSC6033

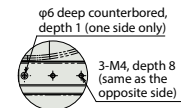
(Note) Refer to P19 (Note 9) for cable connections.



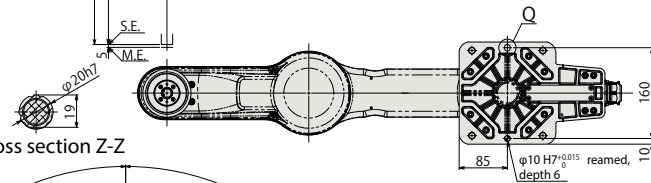
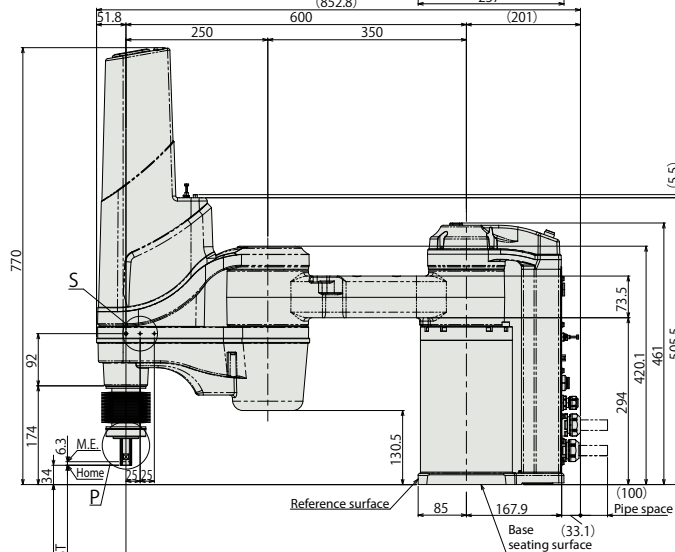
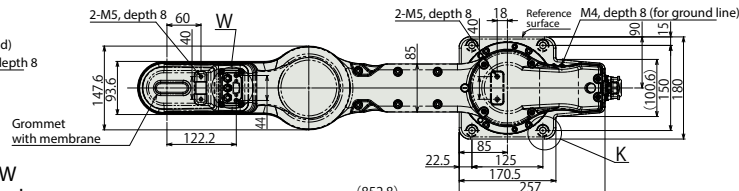
Detailed view of W
Details of user panel



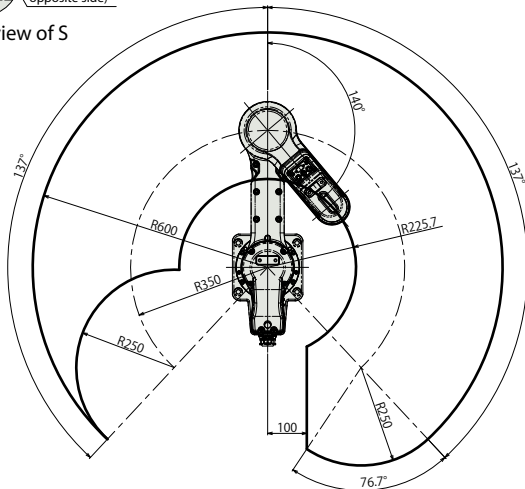
Detailed view of P



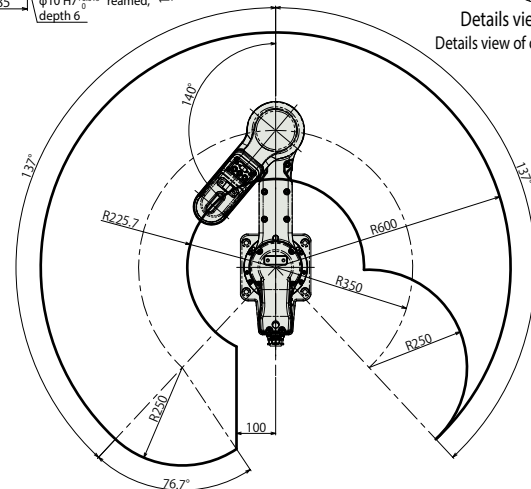
Detail view of S



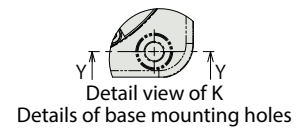
Cross section Z-Z



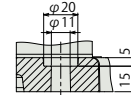
Left arm operation range



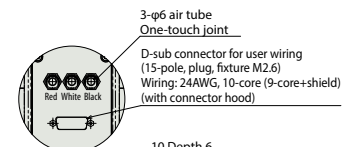
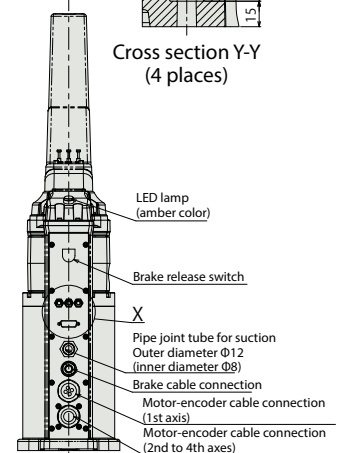
Right arm operation range



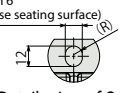
Detail view of K
Details of base mounting holes



Cross section Y-Y
(4 places)



Details view of X (from
Details view of rear panel




Details view of Q
Details view of oblong hole

■ **Mass**

Item	Description
Mass	34.0kg

Applicable Controllers

Actuators in this page are operable by the following controllers. Select a type according to the application.

Name	External view	Number of max. connectable axes	Power source voltage	Control method														Max. positioning points	Reference page
				Positioner	Pulse-train	Program	Network *Select												
							DV	CC	CIE	PR	CN	ML	ML3	EC	EP	PRT	SSN	ECM	
XSEL-RAX4/SAX4(for IXA)		4	3-phase AC200V	—	—	●	●	●	●	—	—	—	●	●	—	—	—	36666 (depending on type)	Please contact IAI

Precautions

Precautions

(Note 1) Payload

The payload is the maximum weight that can be carried.
The optimal acceleration automatically sets 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) Vertical axis push force control range

The vertical 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. Continuous push operation is not possible.
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 20%.
Allow some tolerance on the actual push force.

(Note 4) Air suction volume into the main body

To comply with Clean Class 3, it is required to suck air inside the main body from the air suction opening. Use a piping to satisfy the suction volume required by the specification. The negative pressure inside the robot varies depending on the motion patterns, speed and acceleration/deceleration. Make sure to keep 3 to 10kPa when the vertical axis is not operating. Even when the vertical axis is operation, keep negative pressure.

(Note 5) 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 an 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 6) LED alarm pilot lamp

The LED alarm lamp is installed on the cover of the first axis (J1).
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 7) Brake release switch

The alarm lamp is installed on the rear surface of the first 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 8) Noise

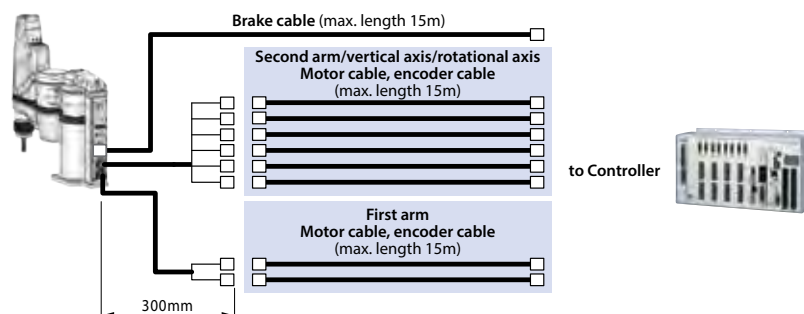
This is the value measured when all axes are operating at maximum speed.
Noise may change depending on operating conditions and the surrounding reverberation environment. (JIS B 6195)

Operating range

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

(Note 9) Cable

The motor cable, encoder cable and brake cable are connected as shown below.



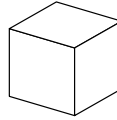
Cleanliness Standard for Clean Room Specification

Cleanliness is an indicator of the degree of cleanliness in a cleanroom and expressed in "the number of airborne particles in a specified volume of air." IAI's IXA clean room specification applies ISO 14644-1.

<ISO Cleanliness Standard>

Compliant to the following cleanliness.

Cleanliness classISO14644-1	Particles
	0.1μm
	Maximum concentration (particles/m ³)
Class 3	1000



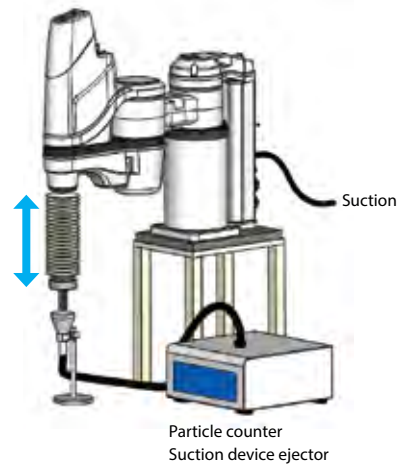
Regulates the number of particles in the specific size per specified space (1m³)

<Test method for cleanliness>

We have measured the number of airborne particles under the following conditions, and confirmed that the number of particles meet Clean Class 3.

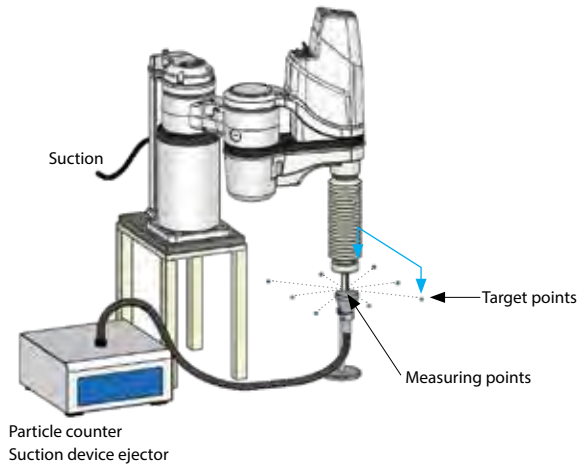
① Vertical movement

Repeated movement of the vertical axis only



② Palletizing movement

Moving to target points based on the particle measurement point



Options

User cable

The user cable is used to connect to the D-sub connector for user wiring located on the rear panel.

Single unit model **CB-IXA-USR□□□-CS**

*Indicate the cable length (L) in □□□, max. length 15m. (e.g.) 050=5m.

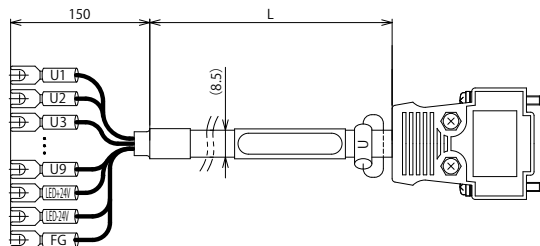
Flange

Used when an object is attached at the vertical axis arm tip.

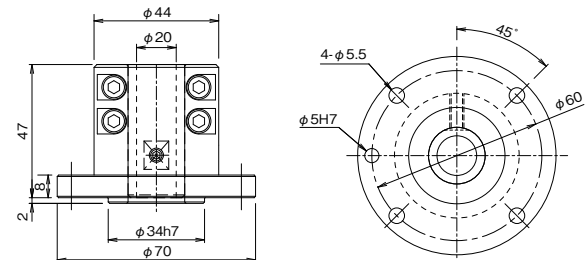
Single unit model **IX-FL-1**

(Single unit mass 0.21kg / material aluminum)

[Controller side]



[Actuator side]



Tube code	Color	Signal	Pin No.	Pin No.	Signal	Signal	Tube code
U1	Blue	U1	1	1	U1	3	U
U2	White	U2	2	2	U2	5	
U3	Yellow	U3	3	3	U3	4	
U4	White	U4	4	4	U4	10	
U5	Green	U5	5	5	U5	9	
U6	White	U6	6	6	U6	15	
U7	Red	U7	7	7	U7	1	
U8	White	U8	8	8	U8	6	
U9	Purple	U9	9	9	U9	11	
—	—	—	10~13	10~13	—	16	
LED+24V	Blue	LED+24V	14	14	LED+24V	21	
LED-24V	Brown	LED-24V	15	15	LED-24V	7	
FG	Black	FG	—	—	—	—	

Single wire Soldered Braided Sheath

Braided shield is clamped to the hood.

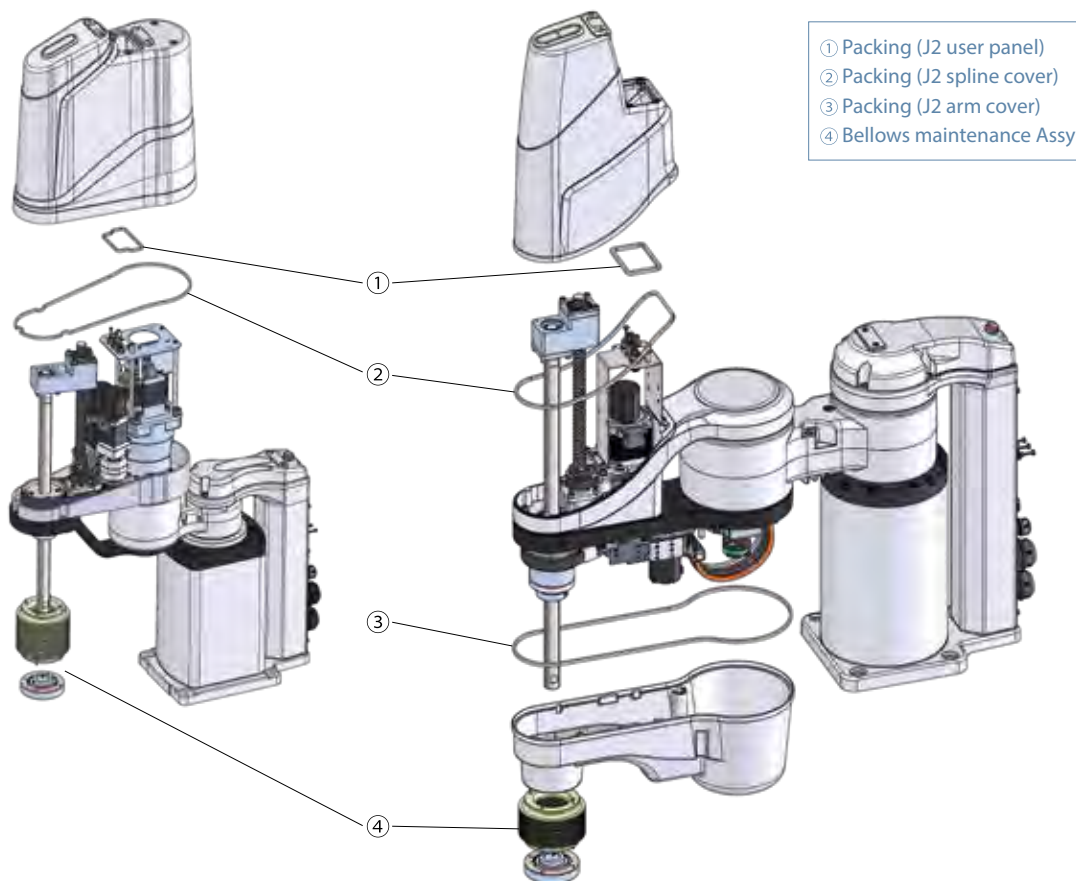
Maintenance parts

Maintenance

Maintenance parts schematic drawing

IXA-4NSC3015

IXA-4NSC45 ☐ ☐
IXA-4NSC60 ☐ ☐



- ① Packing (J2 user panel)
- ② Packing (J2 spline cover)
- ③ Packing (J2 arm cover)
- ④ Bellows maintenance Assy

Maintenance part list

No.	Part name	Actuator model	Model code	Remarks
①	Packing (J2 user panel)	IXA-4NSC3015	IXAC-PK1-30-2	
		IXA-4NSC45 <input type="checkbox"/> <input type="checkbox"/> IXA-4NSC60 <input type="checkbox"/> <input type="checkbox"/>	IXAC-PK1-4560-2	
②	Packing (J2 spline cover)	IXA-4NSC3015	IXAC-PK2-30-2	
		IXA-4NSC45 <input type="checkbox"/> <input type="checkbox"/> IXA-4NSC60 <input type="checkbox"/> <input type="checkbox"/>	IXAC-PK2-4560-2	
③	Packing (J2 arm cover)	IXA-4NSC45 <input type="checkbox"/> <input type="checkbox"/> IXA-4NSC60 <input type="checkbox"/> <input type="checkbox"/>	IXAC-PK3-4560-2	
④	Bellows maintenance Assy	IXA-4NSC3015	IXAC-JBA-304560-180	
		IXA-4NSC4518 IXA-4NSC6018	IXAC-JBA-304560-180	for the vertical stroke of 180mm
		IXA-4NSC4533 IXA-4NSC6033	IXAC-JBA-304560-330	for the vertical stroke of 330mm

X-SEL

Program controller for SCARA robots



Model

XSEL Series - **Type** - **SCARA robot type** - **Network dedicated slots (Slot 1) (Slot 2)** - **I/O slots (Slot 1) (Slot 2)** - **I/O cable length** - **Power source voltage** **3**

4NSC3015	IXA-4NSC3015	E	Not used	E	Not used	0	No cable	3-phase AC200V
4NSC4518	IXA-4NSC4518	EP	EtherNet/IP	N1	In 32/Out 16 (NPN)	2	2m (standard)	
4NSC4533	IXA-4NSC4533	EC	EtherCAT	N2	In 16/Out 32 (NPN)	3	3m	
4NSC6018	IXA-4NSC6018			N3	In 48/Out 48 (NPN)	5	5m	
4NSC6033	IXA-4NSC6033			P1	In 32/Out 16 (PNP)			
RAX4	4-axis specification SCARA			CC	CC-Link			
SAX4	4-axis specification Safety category compliant type			CIE	CC-Link IE Field			
				PR	PROFIBUS-DP			

(*) EP and CIE cannot be used simultaneously.

(*) Network dedicated slots 1 and 2 are for specific network boards. Specify the right symbol from available ones.

(*) Network dedicated slots and I/O slots can be used together.

Limitations on the connection of additional axes

Additional axes cannot be connected to clean room specification SCARA robots.

System configuration

XSEL-RAX/SAX Type

Option

PC compatible teaching software

(See P25) *P=PC side, C=Controller

P RS232-C RS232

<Model: IA-101-X-MW> (for RAX)

P RS232-C RS232

<Model: IA-101-X-USBMW> (for SAX)

P USB-C USB/Ethernet

<Model: IA-101-N>

Option Teaching pendant

(See P24)

<Model: TB-02-□>

Supplied with the controller
Supplied with the controller
(See P24)

Supplied with the controller
PIO cable
(See P27)
<Model: CB-X-PIO/PIOH020>
Standard 2m
(Supplied with the PIO specification controller)

Field network

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

Extended motion
(Cable is supplied by the customer)

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

USB/Ethernet cable (Cable is supplied by the customer)

IXA Series



Supplied with the regenerative resistance unit

Regenerative resistance unit cable 1m

Option Regenerative resistance unit
Refer to P.24 for the guideline of the required number of regenerative resistances.

Motor power supply 3-phase
AC200V/230V

Control power supply Single phase
AC200V/230V

Brake release power
DC24V

Power for I/O
DC24V

Drive power shutoff circuit
(to be supplied by the customer)

* When connecting the power, make sure to mount the following filters or equivalent:

- Noise filter recommended models
3-phase TAC-20-683 (maker: COSEL)
Single-phase NBH-20-432 (maker: COSEL)
- Ring core recommended model
ESD-R-25 (maker: NEC Tokin)
- Clamp filter recommended models
Control power: ZCAT3035-1330 (maker TDK)
Motor power RFC-H3 (maker: Kitagawa)
- Surge protector recommended models
3-phase RAV-781BXZ-4
Single-phase RAV-781BWZ-2A (maker: Okaya Electric)

Table of Specifications

Controller type	RAX type	SAX type
Compatible motor output	12W ~ 1000W	
Number of control axes	1 to 4 axes: SCARA robot	
Maximum connected axes output	3-phase 2400W	
Control power input	Single-phase AC200/230V $\pm 10\%$	
Power supply frequency	50/60Hz	
Insulation resistance	10M Ω or more (Between power terminal and input/output terminal at DC500V, and between all external terminals and case)	
Withstand voltage	1500VAC (One min)	
Power capacity (max)	for 2400W: 5094VA	
Position detection method	Battery-less absolute	
Safety circuit configuration	Duplication not possible	Duplication allowed
Drive power cut-off method	Internal 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)	
Number of multi-tasking programs	16 programs	
Number of positions	4 axes: 36,666	
Data memory device	Flash ROM + Non-volatile RAM (FRAM): System battery (button battery) not required	
Data input method	Touch panel teaching pendant or PC compatible teaching software.	
Standard I/O	I/O 48-point PIO board (NPN/PNP), I/O 96-point PIO (NPN/PNP), 2 boards attachable	
Expansion I/O	None	
Serial communications function	Teaching port (D-sub 25-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, CC-Link IE Field (EtherNet/IP and CC-Link IE cannot be installed simultaneously)	
Clock function	Retention time: about 10 days, Charging time: about 100 hours	
Regenerating resistance	Built-in 1 k Ω /20W regenerative resistance (Can be expanded by external regenerative resistance unit connection)	
Protective function	Motor overcurrent, overload, motor driver temperature check, overload check, encoder open-circuit check, soft limit over, system malfunction, absolute battery error, etc.	
Ambient operating temperature, humidity and ambience	0 to 40°C, 85%RH or lower (non-condensing, no freezing). Free from corrosive gas and excessive dust.	

* For the power supply capacity, refer to the operation manual, or contact IAI.

External view

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

2D
CAD

Type	Controller specification	External view
RAX	3-phase specification	
SAX		

Maintenance parts (supplied with controllers)

The following parts come with the controller.
When ordering parts due to loss, use the model code below.

System I/O connector

Description Plug for emergency stop input and safety circuit input/output.

Model **FMC1.5/9-ST-3.5**



(Note) Two units are used for a controller.

AC power plug connector

Description Plug for power source connection

Model **GMSTB2.5/6-STF-7.62**



Brake power input connector

Description Power connection plug for brake release.

Model **FMC1.5/2-ST-3.5-RF**



Dummy plug

Description Plug connected to RS-232C port to cut off the enable circuit.

Model **DP-2**



Option

Regenerating resistance unit

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

Description

This unit converts the regenerative current that generates when motor slows down into heat.

The controller has a built-in regenerative resistor, the capacity of which may be insufficient when load to the vertical axis is too high.

Guideline for installation

Model		The number of required regenerative resistance units
NSC	3015	3 units
	45□□	
	60□□	4 units

Specification

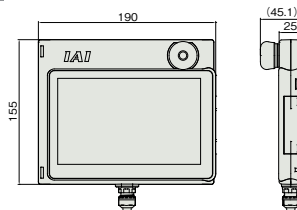
Model	RESU-1	RESUD-1
Main unit mass	About 0.4kg	
Built-in regenerative resistor	235Ω 80W	
Mounting method	Screw mounting	DIN rail mounting
Supplied cable	CB-ST-REU010	

Touch panel teaching pendant

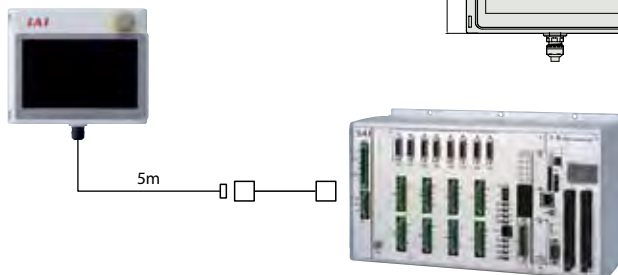
Feature A teaching device with functions such as position input, trial operation and monitoring.

Model **TB-02-□**
TB-02D-□ Deadman switch specification

External dimensions



Configuration



Specification

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

PC compatible teaching software

■ For XSEL-RAX/SAX (Software only)

Model **IA-101-N**

* Please purchase through your distributor and a download link will be sent to your valid email address.

Features

This product is PC compatible teaching software (Download) only. When connecting controller and PC both with a USB or Ethernet cable, purchase only the software. Prepare a cable that meet the following specifications.

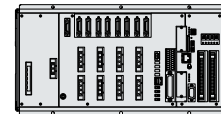
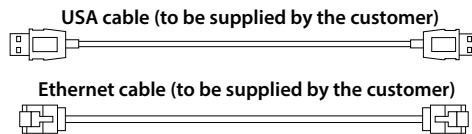
Description

Software (Downloadable), Compatible Windows versions: 7/10

Precautions

When operating an actuator with a USB connection, make sure to connect an emergency stop switch at the system I/O connector. When an emergency stop switch cannot be connected, use the "IA-101-X-USBMW" with an emergency stop switch (Refer to the General Catalog 2021).

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



■ for XSEL-RAX (software + connecting cable)

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

* Please purchase through your distributor and a download link will be sent to your valid email address.

Features

Start up supporting software with functions such as program input, position teaching, trial operation and monitoring. Thanks to full of functions for adjustments, it contributes to shortening the start up time.

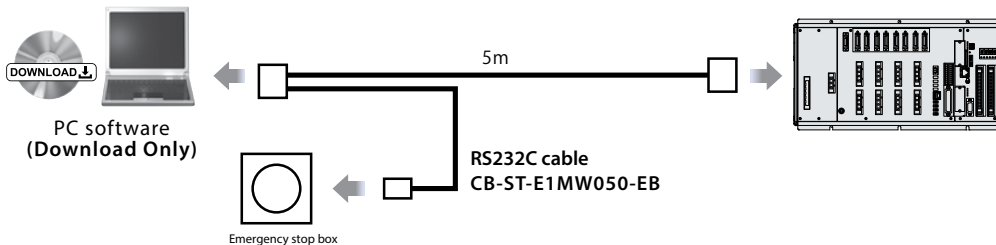
Description

Software (Downloadable), Compatible Windows versions: 7/10

(Supplied item) PC connection cable 5m + Emergency stop box (Model: CB-ST-E1MW050-EB)

Precautions

- * When using safety category 4 compliant controller, use IA-101-XA-MW.
- * Cannot be used for XSEL-SAX types.
- * When ordering a PC connection cable for maintenance purpose, model code for cable only is CB-ST-A2MW050 and for a set with the emergency stop box is CB-ST-A2MW050-EB.



Compatible Windows: 7/10



■ for XSEL-RAX (software + connecting cable) * Safety category 4 compliant

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

* Please purchase through your distributor and a download link will be sent to your valid email address.

Features

A start up supporting software with functions such as program input, position teaching, trial operation and monitoring. With upgraded functions for debugging, it shortens start up time. The PC connection cable is Safety category 4 compliant with a duplex circuit for emergency stop.

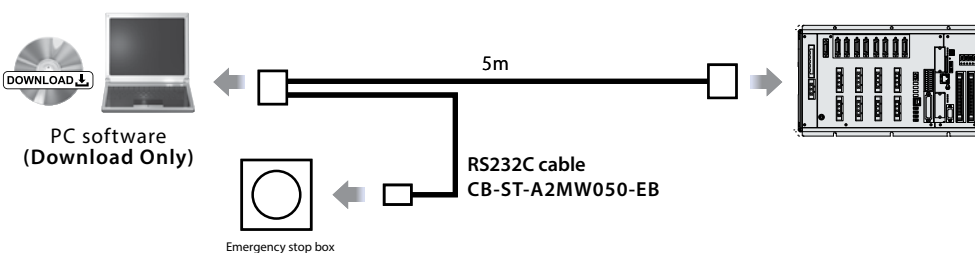
Description

Software (Downloadable), Compatible Windows versions: 7/10

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

Precautions

Note that the model number for cable only is CB-ST-A2MW050, and that comes with a 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.



Compatible Windows: 7/10



Maintenance parts (cables)

When ordering a cable for replacement, specify the model code below.

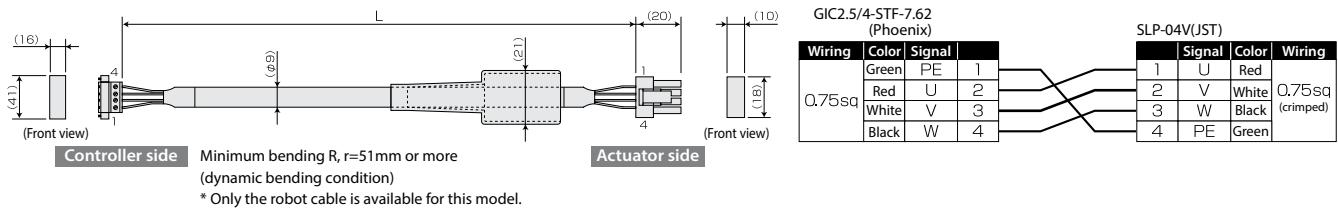
■ Table of compatible cables

Model code		Motor robot cable	Encoder robot cable	Brake cable
IXA	4NSC3015	CB-X-MA□□□	CB-X1-PA□□□	CB-IXA-BK□□□-3
	4NSC45□□			
	4NSC60□□			

Model code		PIO flat cable
XSEL-RAX/SAX		CB-X-PIO□□□
		Flat cable for multi-point PIO
		CB-X-PIOH□□□

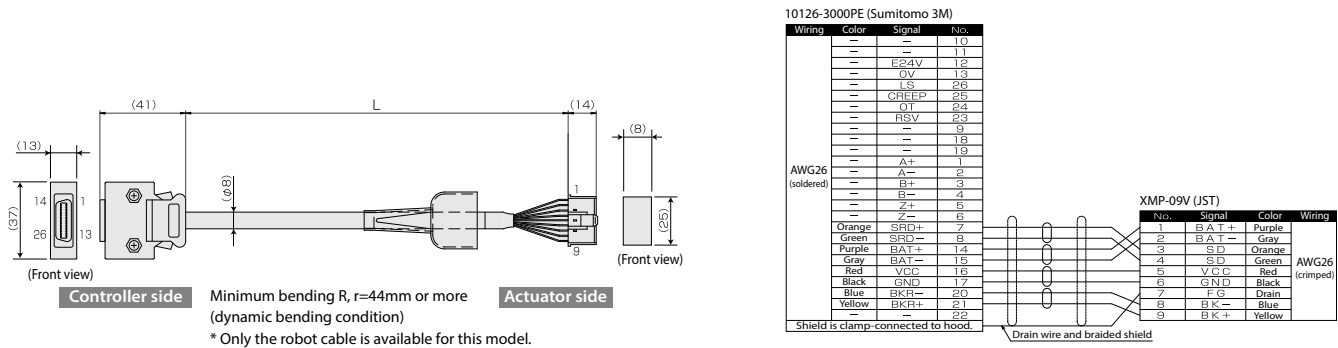
Model CB-X-MA □□□

* Indicate the cable length (L) in □□□, max. length 15m. (e.g.) 050=5m.



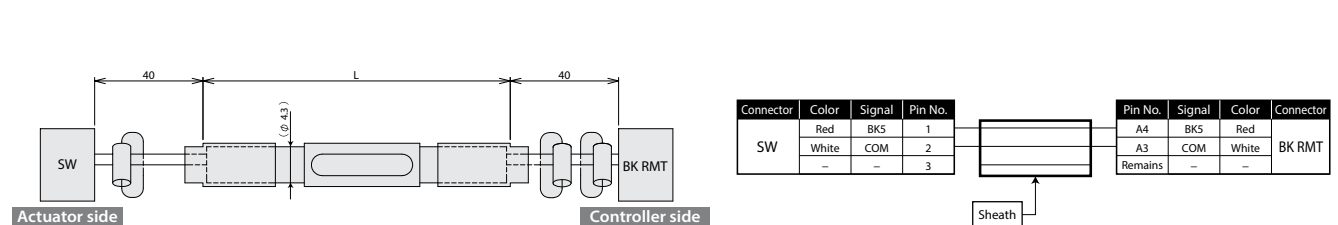
Model CB-X1-PA □□□

* Indicate the cable length (L) in □□□, max. length 15m. (e.g.) 050=5m.



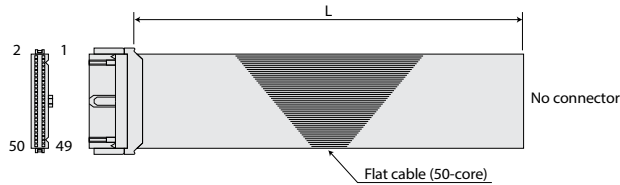
Model CB-IXA-BK □□□ -3

* Indicate the cable length (L) in □□□, max. length 15m. (e.g.) 050=5m.



Model **CB-X-PIO** ☐☐☐

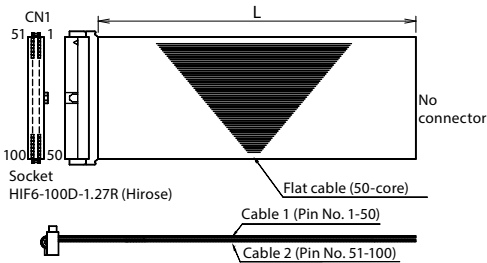
* Indicate the cable length (L) in ☐☐☐, max. length 10m. (e.g.) 080=8m.



Pin No.	Color	Wiring	Pin No.	Color	Wiring	Pin No.	Color	Wiring
1	Brown	1	18	Gray	2	35	Green	4
2	Red	1	19	White	2	36	Blue	4
3	Orange	1	20	Black	2	37	Purple	4
4	Yellow	1	21	Brown	3	38	Gray	4
5	Green	1	22	Red	3	39	White	4
6	Blue	1	23	Orange	3	40	Black	4
7	Purple	1	24	Yellow	3	41	Brown	5
8	Gray	1	25	Green	3	42	Red	5
9	White	1	26	Blue	3	43	Orange	5
10	Black	1	27	Purple	3	44	Yellow	5
11	Brown	2	28	Gray	3	45	Green	5
12	Red	2	29	White	3	46	Blue	5
13	Orange	2	30	Black	3	47	Purple	5
14	Yellow	2	31	Brown	4	48	Gray	5
15	Green	2	32	Red	4	49	White	5
16	Blue	2	33	Orange	4	50	Black	5
17	Purple	2	34	Yellow	4			

Model **CB-X-PIOH** ☐☐☐

* Indicate the cable length (L) in ☐☐☐, max. length 10m. (e.g.) 080=8m.



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

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

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