

HORIZONTAL ARTICULATED ROBOT **IX**



IX VISUAL INDEX

[SCARA Series]

Standard Type

NNN

The standard type combines the best performance and user-friendliness in its class.

The selectable arm length (250 mm to 800 mm) provides the flexibility to accommodate a wide range of applications.



P11

| | | |
|-------------------|-------|-----|
| IX-NNN2515 | ..... | P11 |
| IX-NNN3515 | ..... | P12 |
| IX-NNN5020 (5030) | ..... | P13 |
| IX-NNN6020 (6030) | ..... | P14 |
| IX-NNN7020 (7040) | ..... | P15 |
| IX-NNN8020 (8040) | ..... | P16 |

High-Speed Type

NSN

The high-speed type offers enhanced performance in high-speed operation by combining a high-output motor with the standard body. It helps reduce cycle times.



P17

| | | |
|------------|-------|-----|
| IX-NSN5016 | ..... | P17 |
| IX-NSN6016 | ..... | P18 |

Dustproof/ Splash-proof Type

NNW

The dustproof/splash-proof type adopts a protective structure conforming to IP65. This robot can be used in environments subject to powder dust or water splashes.



P19

| | | |
|-------------------|-------|-----|
| IX-NNW2515 | ..... | P19 |
| IX-NNW3515 | ..... | P20 |
| IX-NNW5020 (5030) | ..... | P21 |
| IX-NNW6020 (6030) | ..... | P22 |
| IX-NNW7020(7040) | ..... | P23 |
| IX-NNW8020(8040) | ..... | P24 |

Wall-Mount Type

TNN

This robot is mounted on a wall for operation. The space below the robot can be utilized effectively, so you will have more freedom in designing your equipment.



P25

| | | |
|------------|-------|-----|
| IX-TNN3015 | ..... | P25 |
| IX-TNN3515 | ..... | P26 |

**Wall-Mount
Inverse Type****UNN**

This robot is the same as the wall-mounting type (TNN), but it is installed upside down. UNN is ideal for applications where the robot must handle loads located above it.

**P25**

| | | |
|------------|-------|-----|
| IX-UNN3015 | ..... | P25 |
| IX-UNN3515 | ..... | P26 |

Ceiling Mount Type**HNN**

This robot is mounted on a ceiling for operation. The space below the robot can be utilized effectively, so you will have more freedom in designing your equipment.

**P27**

| | | |
|------------------|-------|-----|
| IX-HNN5020 | ..... | P27 |
| IX-HNN6020 | ..... | P28 |
| IX-HNN7020(7040) | ..... | P29 |
| IX-HNN8020(8040) | ..... | P30 |

**Ceiling Mount Inverse Type
(Tabletop Mount)****INN**

This robot is the same as the ceiling mount type (HNN), but it is installed upside down. INN is ideal for applications where the robot must handle loads located above it.

**P27**

| | | |
|------------------|-------|-----|
| IX-INN5020 | ..... | P27 |
| IX-INN6020 | ..... | P28 |
| IX-INN7020(7040) | ..... | P29 |
| IX-INN8020(8040) | ..... | P30 |

Clean Room Type**NNC**

This robot generates minimal particles and is ideal for operation in a clean room environment. The air inside the robot can be vacuumed if conformance to cleanliness class 10 is required.

**P31**

| | | |
|-------------------|-------|-----|
| IX-NNC2515 | ..... | P31 |
| IX-NNC3515 | ..... | P32 |
| IX-NNC5020 (5030) | ..... | P33 |
| IX-NNC6020 (6030) | ..... | P34 |
| IX-NNC7020 (7040) | ..... | P35 |
| IX-NNC8020 (8040) | ..... | P36 |

New Horizontal Articulated Robot IX Series Achieves Class Top Performance and High Cost Performance

The IX Series achieved the best-in-class specification in every aspect—from high-speed performance and load capacity to positioning repeatability—after reviewing and redesigning all the components of the conventional IH Series robots. The IX Series also outdistances its rivals in user-friendliness, lineup and cost performance.

High-Performance

1. Highest Speed, Load Capacity and Accuracy in Its Class

Standard cycle time: 0.44 sec (*1)

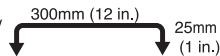
Positioning repeatability: ± 0.01 mm/ $\pm 0.005^\circ$ (*2)

Maximum load capacity: 20 kg (*3)

*1 The standard cycle time refers to the time required to cycle back and forth over a vertical distance of 25 mm and horizontal distance of 300 mm (rough positioning).

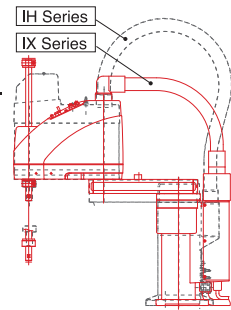
*2 If the arm length is 700/800, the repeatability becomes ± 0.015 mm/ $\pm 0.005^\circ$.

*3 Based on an arm length of 700/800.



2. Compact and Rigid

The IX Series is significantly smaller compared with the conventional IH Series robots.



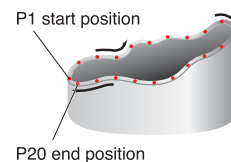
The IX Series achieved enhanced rigidity in a lightweight body by comprising arm 1 using aluminum extruded material. This helped reduce the inertial load.



3. Markedly Improved Tracing Accuracy and Interpolation Function

The IX Series offers a markedly improved tracing accuracy as a result of higher controller processing speed and rigid robot construction.

The robot can also perform three-dimensional arc/pass motions to allow for easy, accurate dispensing operation.



| Command | Operand 1 | Operand 2 |
|---------|-----------|-----------|
| PATH | P1 | P20 |

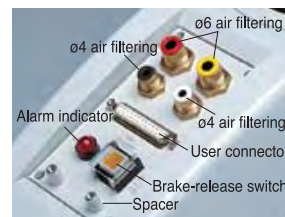
Path movement that consists of many points can be implemented with a single program line.

Easy

4. Greater Ease of Use

An easy-to-use D-sub/25-pin connector is provided on top of the robot for user wiring. The user can also connect two $\phi 4$ tubes and two $\phi 6$ tubes to meet various tubing needs.

The brake-release switch on the robot lets you release the brake even when the controller power is off (*1). The alarm indicator alerts you on each error generated in the robot (*2).



*1 24 VDC power must be supplied regardless of whether or not the brake-release switch is used.

*2 The alarm indicator must be wired by the user.

5. Easy Programming

The IX Series adopts Super SEL Language, a well-known command language used by IAI Cartesian robots.

With Super SEL, complex operations can be programmed easily. You can create desired programs right away without much knowledge of robot language.

3

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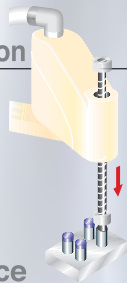
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Plus α

6. Z-Axis Push Motion Function

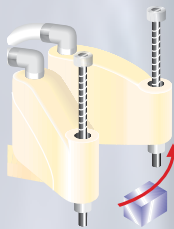
The Z-axis (vertical axis) can be pressed against the load, so you can use the robot to press-fit loads or control push force.



7. Simple Interference Check Zone Function

A maximum of 10 interference check zones can be set inside the robot's work envelope. When the load enters a check zone, the robot will inform you with a signal output. Use this function to conduct test operation at low speed.

* The load must remain inside a zone for at least 5 msec to ensure accurate detection.



8. Complete Absolute Operation

All models adopt a 17-bit serial absolute encoder, so accurate positioning can be performed without homing each time.

If a need arises, an absolute reset can be performed easily and accurately using a dedicated jig (refer to "Robot Options" on P. 8).












Variation

9. Widest Variations in the Industry

The IX Series provides the following six variations to choose from:

- Standard type
 - High-speed type
 - Clean room type
 - Dustproof/splash-proof type
 - Wall mount/inverse type
 - Ceiling mount/inverse type
- Select one that best suits your intended application.

Specifications

| Type | Image | Arm length (mm), maximum composite speed (mm/s) | | | | | | Standard cycle time (sec) | Load capacity (*1) | | Vertical axis stroke | | Model | Page |
|---------------------------------|---|---|-----------|-----------|-----------|-----------|--------------|---------------------------|--------------------|--------------|----------------------|---------------|------------------|------------|
| | | 250 mm | 350 mm | 500 mm | 600 mm | 700 mm | 800 mm | | Rated (kg) | Maximum (kg) | Standard (mm) | Optional (mm) | | |
| | | | | | | | | | | | | | | |
| Standard type NNN |  | 3142 mm/s | | | | | | 0.46 | 1 | 3 | 150 | - | IX-NNN2515 | P11 |
| | | | 3979 mm/s | | | | | 0.53 | 1 | 3 | 150 | - | IX-NNN3515 | P12 |
| |  | | | 6283 mm/s | | | | 0.44 | 2 | 10 | 200 | 300 | IX-NNN5020(5030) | P13 |
| | | | | | 7121 mm/s | | | 0.52 | 2 | 10 | 200 | 300 | IX-NNN6020(6030) | P14 |
| | | | | | | 6597 mm/s | | 0.50 | 5 | 20 | 200 | 400 | IX-NNN7020(7040) | P15 |
| | | | | | 7121 mm/s | 0.52 | 5 | 20 | 200 | 400 | IX-NNN8020(8040) | P16 | | |
| High-speed type NSN |  | | | 4712 mm/s | | | 0.29 to 0.30 | 1 | 3 | 160 | - | IX-NSN5016 | P17 | |
| | | | | | 5236 mm/s | | | 0.38 to 0.39 | 1 | 3 | 160 | - | IX-NSN6016 | P18 |
| Dustproof splash-proof type NNW |  | 3142 mm/s | | | | | | 0.51 | 1 | 3 | 150 | - | IX-NNW2515 | P19 |
| | | | 3979 mm/s | | | | | 0.59 | 1 | 3 | 150 | - | IX-NNW3515 | P20 |
| |  | | | 6283 mm/s | | | | 0.49 | 2 | 10 | 200 | 300 | IX-NNW5020(5030) | P21 |
| | | | | | 7121 mm/s | | | 0.55 | 2 | 10 | 200 | 300 | IX-NNW6020(6030) | P22 |
| | | | | | | 6597 mm/s | | 0.52 | 5 | 20 | 200 | 400 | IX-NNW7020(7040) | P23 |
| | | | | | 7121 mm/s | 0.52 | 5 | 20 | 200 | 400 | IX-NNW8020(8040) | P24 | | |
| Wall-mount type TNN |  | 3560 mm/s | | | | | | 0.49 | 1 | 3 | 150 | - | IX-TNN3015 | P25 |
| | | | 3979 mm/s | | | | | 0.53 | 1 | 3 | 150 | - | IX-TNN3515 | P26 |
| Wall-mount inverse type UNN |  | 3560 mm/s | | | | | | 0.49 | 1 | 3 | 150 | - | IX-UNN3015 | P25 |
| | | | 3979 mm/s | | | | | 0.53 | 1 | 3 | 150 | - | IX-UNN3515 | P26 |
| Ceiling-mount type HNN |  | | | 6283 mm/s | | | | 0.44 | 2 | 10 | 200 | - | IX-HNN5020 | P27 |
| | | | | | 7121 mm/s | | | 0.52 | 2 | 10 | 200 | - | IX-HNN6020 | P28 |
| | | | | | | 6597 mm/s | | 0.50 | 5 | 20 | 200 | 400 | IX-HNN7020(7040) | P29 |
| | | | | | | | 7121 mm/s | 0.52 | 5 | 20 | 200 | 400 | IX-HNN8020(8040) | P30 |
| Ceiling-mount inverse type INN |  | | | 6283 mm/s | | | | 0.44 | 2 | 10 | 200 | - | IX-INN5020 | P27 |
| | | | | | 7121 mm/s | | | 0.52 | 2 | 10 | 200 | - | IX-INN6020 | P28 |
| | | | | | | 6597 mm/s | | 0.50 | 5 | 20 | 200 | 400 | IX-INN7020(7040) | P29 |
| | | | | | | | 7121 mm/s | 0.52 | 5 | 20 | 200 | 400 | IX-INN8020(8040) | P30 |
| Clean room type NNC |  | 3142 mm/s | | | | | | 0.49 | 1 | 3 | 150 | - | IX-NNC2515 | P31 |
| | | | 3979 mm/s | | | | | 0.58 | 1 | 3 | 150 | - | IX-NNC3515 | P32 |
| |  | | | 6283 mm/s | | | | 0.47 | 2 | 10 | 200 | 300 | IX-NNC5020(5030) | P33 |
| | | | | | 7121 mm/s | | | 0.54 | 2 | 10 | 200 | 300 | IX-NNC6020(6030) | P34 |
| | | | | | | 6597 mm/s | | 0.52 | 5 | 20 | 200 | 400 | IX-NNC7020(7040) | P35 |
| | | | | | 7121 mm/s | 0.52 | 5 | 20 | 200 | 400 | IX-NNC8020(8040) | P36 | | |

(*1) The rated load capacity indicates the maximum load that can be carried at the maximum operating speed. The maximum load capacity indicates the maximum load that can be carried at a reduced acceleration rate.

IX Series Points to Note

<SCARA Type XI-NNN/NSN/NNW/TNN/UNN/HNN/INN/NNC>

(Note 1)
Positioning repeatability

“Positioning repeatability” refers to the positioning accuracy of repeated movements to a pre-stored position. This is not the same as “absolute positioning accuracy.”
The specified positioning repeatability is measured in an ambient temperature of 20°C constant.

(Note 2)
Maximum operating speed

The specified maximum operating speed represents the speed of PTP command operation. High-speed movement will be limited in CP command operation (interpolation operation).

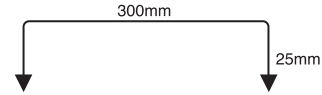
(Note 3)
Standard cycle time

“Standard cycle time” refers to the time required to cycle back and forth over a vertical distance of 25 mm and horizontal distance of 300 mm (rough positioning).

<Caution>

The specified cycle time is based on a 2-kg load (5-kg load if the arm length is 700/800) and the maximum operating speed.

The robot cannot operate continuously at the maximum speed.

**(Note 4)**
Axis 3 push force

“Axis 3 push force” represents the push force applied by the tip of the vertical axis. The value under “Push action” indicates the maximum push force to be applied when a programmed push command is executed. The value under “Maximum thrust” indicates the maximum thrust in a normal positioning operation. When a push action is performed during a normal positioning operation, a force corresponding to three times the maximum thrust may apply momentarily. When performing a push action, be sure to use a programmed push command.

(Note 5)
Axis 4 allowable inertial moment

“Axis 4 allowable inertial moment” indicates the allowable inertial moment of axis 4 (rotating axis) of the SCARA robot as calculated at the center of rotation.
The offset from the center of rotation of axis 4 to the tool gravity center must be within 40 mm.
If the tool gravity center is further away from the center of axis 4, the speed and/or acceleration rate must be reduced as necessary.

(Note 6)
Alarm indicator

The alarm indicator is located on top of arm 2 of the SCARA robot.
The alarm indicator can be wired in such a way that it will illuminate in a certain condition such as when the controller generates an error. To use the alarm indicator, the user must provide a circuit that responds to the controller's I/O output signal to supply 24 VDC to the applicable LED terminal in the user wiring.


(Note 7)
Brake-release switch

The brake-release switch is also located on top of the robot's arm 2 near the alarm indicator.
To release the brake, 24 VDC power must be supplied regardless of whether or not the brake-release switch is used. (Supply 24 VDC from a dedicated power supply separate from the 24 VDC power used for driving the I/Os.)

(Note 8)
Cable length

The motor and encoder cables of the SCARA robot are directly connected to the robot. The IX Series doesn't use a cable joint, so changing the cable length on the delivered robot will be difficult.
Select either 5 m (code 5L) or 10 m (10L) as the desired cable length when ordering. (The air tube length is 150 mm.)

(Note 9)
Protection grade (protective structure)

This grade indicates the level of actuator protection against water and solid foreign matters.
IP65  The actuator is protected against solid foreign matters to a degree where dust will not enter the actuator.
The actuator is protected against water intrusion to a degree where the actuator will not be negatively affected by water injected at a given angle.

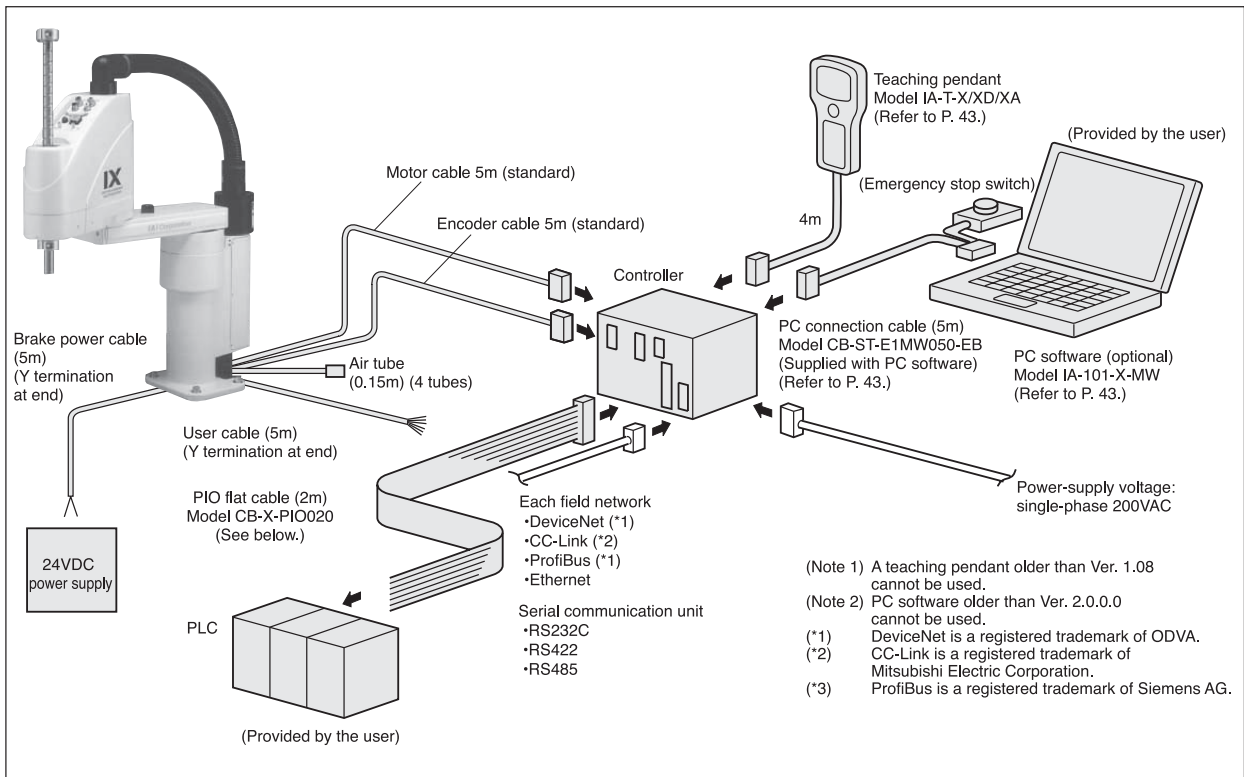
(Note 10)
Air purge pressure

To use the dustproof/splash-proof type in an IP65 environment, air must be supplied from the air inlet located at side (or back) of the robot base (to perform air purge). The air purge pressure must conform to the common specification applicable to all robot types. (Supplied air must be clean, dry air of atmospheric pressure with a dew-point temperature of -20°C or below.)

(Note 11)
Internal vacuuming

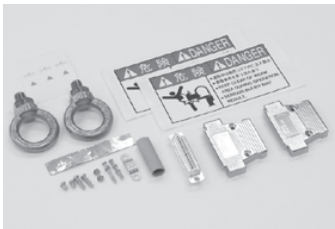
To use the clean type in an environment of cleanliness class 10, the air inside the robot must be vacuumed from the air suction outlet located at side (or back) of the robot base. The suction rate must conform to the common specification applicable to all robot types.

IX Series System Configuration Drawing



Robot Accessories

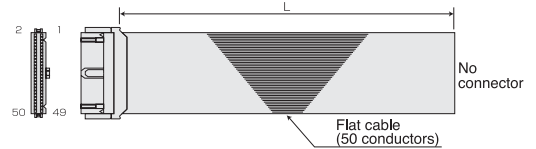
- Caution labels
- Positioning seals
- Eyebolts
- Service connectors



Controller Accessory

- PIO flat cable Model CB-X-PIO

※ Enter the desired cable length (L) of up to 10 m in ooo. Example) 080 = 8m



| No. | Color | Wire | No. | Color | Wire | No. | Color | Wire |
|-----|----------|------------|-----|----------|------------|-----|----------|------------|
| 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 | Flat cable | 27 | Purple 3 | Flat cable | 44 | Yellow 5 | Flat cable |
| 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 | | | | |

Robot Options

| Name | Model□ | Description□ | Page□□ |
|---------------------------------|-----------|--|--------|
| Absolute Data Storage Battery□□ | AB-3 | Battery for storing the encoder's absolute data□ | P8 |
| Absolute Reset Adjustment Jig | JG-1~3 | Jig needed to execute an absolute reset | |
| Flange | IX-FL-1~3 | Flange used to install to the tip of the Z-axis | |

Controller Options

| Name | Model□ | Description□ | Page□□ |
|--|-------------|--|--------|
| Teaching Pendant | IA-T-X | Allows for input and editing of position data, programs, parameters, etc., as well as manual operations, | P43 |
| Teaching Pendant (With Deadman Switch) | IA-T-XD | IA-T-X equipped with a deadman switch | |
| Teaching Pendant (ANSI) | IA-T-XA | CE/ANSI-compliant type | |
| PC Software (DOS/V) | IA-101-X-MW | Allows for input and editing of position data, programs, parameters, etc., | |
| PC Software (PC98) | IA-101-X-CW | as well as manual operations. | |

7

Robot Options

Absolute Data Backup Battery

This battery is used to store the encoder's absolute data. (Install the battery inside the rear cover of the SCARA robot.)

| Model | Remarks |
|-------|----------------------|
| AB-3 | Common to all models |

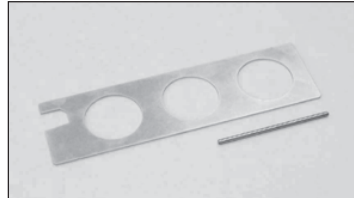


AB-3

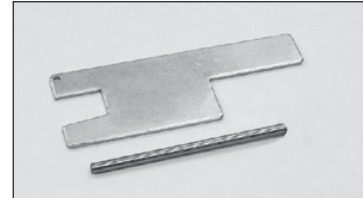
Absolute Reset Adjustment Jig

An appropriate adjustment jig is used to execute an absolute reset when the encoder's absolute data was lost.

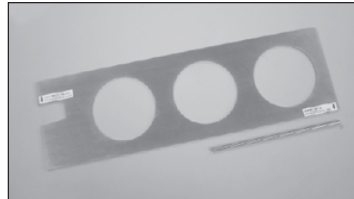
| Model | Remarks |
|-------|--------------------|
| JG-1 | Arm length 500/600 |
| JG-2 | Arm length 250/350 |
| JG-3 | Arm length 700/800 |



JG-1



JG-2

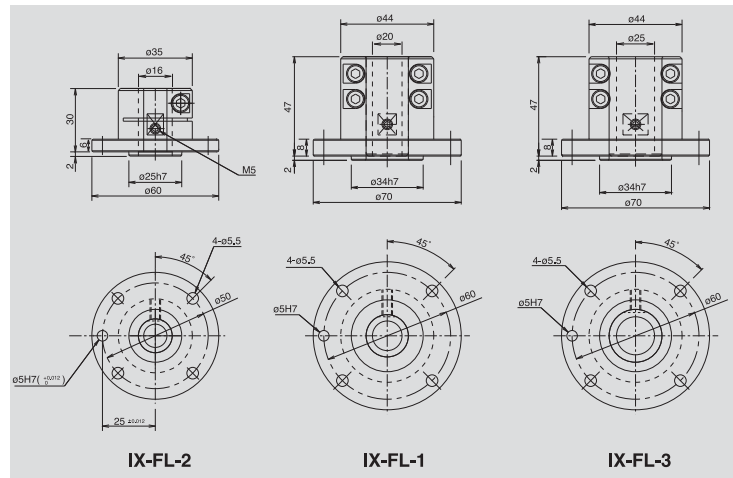


JG-3

Flange

Use an appropriate flange when mounting to the tip of the Z-axis arm.

| Model | Remarks |
|---------|--------------------|
| IX-FL-1 | Arm length 500/600 |
| IX-FL-2 | Arm length 250/350 |
| IX-FL-3 | Arm length 700/800 |



IX-FL-2

IX-FL-1

IX-FL-3

Unit Series Explanation of SCARA Robot Model Items

Refer to the opposite page for details on each model item (① through ⑧). The selection range for each item will vary depending on the robot type. For details, refer to the page corresponding to each model type.

| | | ① | ② | ③ | ④ | ⑤ | ⑥ | ⑦ | ⑧ |
|---|--|--------|--|--------------|-----------------|--|---------------|-----------------------|----------------------|
| | | Series | Model | Cable length | Controller type | Standard PIO | Expansion I/O | I/O flat cable length | Power-supply voltage |
| 1 | SCARA robot, standard type | IX | NNN2515 NNN3515 NNN5020 NNN5030 NNN6020 NNN6030 NNN7020 NNN7040 NNN8020 NNN8040 | — | — | — | — | — | — |
| 2 | SCARA robot, high-speed type | | NSN5016 NSN6016 | — | — | — | — | — | — |
| 3 | SCARA robot, dustproof/splash-proof type | | NNW2515 NNW3515 NNW5020 NNW5030 NNW6020 NNW6030 NNW7020 NNW7040 NNW8020 NNW8040 | — | — | — | — | — | — |
| 4 | SCARA robot, wall-mount type (inverse type) | | TNN3015 (UNN3015) TNN3515 (UNN3515) | — | — | — | — | — | — |
| 5 | SCARA robot, ceiling-mount type (inverse type) | | HNN5020 (INN5020) HNN6020 (INN6020) HNN7020 (INN7020) HNN7040 (INN7040) HNN8020 (INN8020) HNN8040 (INN8040) | — | — | — | — | — | — |
| 6 | SCARA robot, clean room type | | NNC2515 NNC3515 NNC5020 NNC5030 NNC6020 NNC6030 NNC7020 NNC7040 NNC8020 NNC8040 | — | — | — | — | — | — |
| | | | | 5L 10L | KX JX | N1 N3 P1 P3 DV CC PR ET | EEE, etc. | 2 3 5 0 | 2 |

Unlike other models, the SCARA robot is ordered as a combination of robot and controller.

Items ① through ③ specify the SCARA robot.

Items ④ through ⑧ specify the controller.

① Series

Indicate the name of each series.

③ Cable length

Indicate the length of the cable connecting the robot and the controller.

Select either 5L (5 m) or 10L (10 m).

Unlike a single-axis robot, the IX Series does not adopt a joint cable.

The cable comes out directly from the robot.

⑤ Standard PIO specification

Indicate the specification of the controller is standard I/O slot.

* N3 and P3 are dedicated options for the JX controller and cannot be specified for the KX controller.

N1 : [NPN standard PIO] An NPN PIO board with 32 input points and 16 output points is installed (standard).

N3 : [NPN multipoint PIO] An NPN multipoint PIO board with 48 input points and 48 output points is installed (dedicated option for the JX controller).

P1 : [PNP standard PIO] A PNP PIO board with 32 input points and 16 output points is installed.

P3 : [PNP multipoint PIO] A PNP multipoint PIO board with 48 input points and 48 output points is installed (dedicated option for the JX controller).

DV : [DeviceNet connection specification] A DeviceNet connection board with a maximum of 256 input points and 256 output points is installed.

CC : [CC-Link connection specification] A CC-Link connection board with a maximum of 256 input points and 256 output points is installed.

PR : [ProfiBus connection specification] A ProfiBus connection board with a maximum of 256 input points and 256 output points is installed.

ET : [Ethernet connection specification] An Ethernet connection board offering data communication capability is installed.

⑥ Expansion I/O specification

Indicate the specification of the controller's expansion slot.

An expansion board can be installed in slot 1, 2 or 3 of the KX controller, or in slot 1 of the JX controller.

Use a three-digit code (EEE) to specify the slot type. In the case of the JX controller having only one expansion slot, specify the slot using the first digit and leave "E" in the remaining two digits (□EE).

* C, N3, P3, SA, SB and SC are dedicated options for the KX controller and cannot be specified for the JX controller.

E : [Unused] Expansion board is not used.

C : [CC-Link connection specification] A CC-Link connection board with 16 input points and 16 output points is installed (dedicated option for the KX controller).

N1 : [NPN expansion PIO] An NPN PIO board with 32 input points and 16 output points is installed.

N2 : [NPN expansion PIO] An NPN PIO board with 16 input points and 32 output points is installed.

N3 : [NPN multipoint PIO] An NPN multipoint PIO board with 48 input points and 48 output points is installed (dedicated option for the KX controller).

P1 : [PNP expansion PIO] A PNP PIO board with 32 input points and 16 output points is installed.

P2 : [PNP expansion PIO] A PNP PIO board with 16 input points and 32 output points is installed.

P3 : [PNP expansion PIO] A PNP PIO board with 48 input points and 48 output points is installed (dedicated option for the KX controller).

SA : [Expansion SIO type A] An RS232C communication board is installed (dedicated option for the KX controller).

SB : [Expansion SIO type B] An RS422 communication board is installed (dedicated option for the KX controller).

SC : [Expansion SIO type C] An RS485 communication board is installed (dedicated option for the KX controller).

⑦ I/O flat cable length

Indicate the length of the cable used for transmitting signals between the controller and the PLC.

One cable is supplied with one I/O board installed in the standard slot or each expansion slot.

2: 2m

3: 3m

5: 5m

0: None (Specify this number if you have installed a network board instead of a standard I/O board.)

② Model

Indicate the model type (standard, high-speed, dustproof/splash-proof, wall-mount or ceiling-mount), arm length and Z-axis length.

NNN Standard type UNN Wall-mount type (inverse type)

NSN High-speed type HNN Ceiling-mount type

NNW Dustproof/splash-proof type INN Ceiling-mount type (inverse type)

TNN Wall-mount type

④ Controller type

Select a dedicated controller (KX or JX type) for the SCARA robot.

* Only the KX type may be specified if the arm length is 500 or longer.

⑧ Power-supply voltage

Indicate the main power-supply voltage for the controller. The power-supply voltage is fixed to single-phase 200 VAC for a SCARA controller.

IX-NNN2515

Small SCARA Robot Standard Type: Arm Length 250mm, Vertical (Z) Axis 150mm

Type / Standard type Arm length / 250mm Load capacity / 1kg rated/3kg maximum

Model items Series Model Cable length Controller type Standard I/O Expansion I/O I/O cable length Power-supply voltage
 (Example) IX - NNN2515 - 5L - KX - N1 - EEE - 2 - 2

* Refer to P. 10 for details on the model items.

* The above model code represents a combination of robot and controller.



Model/Specifications

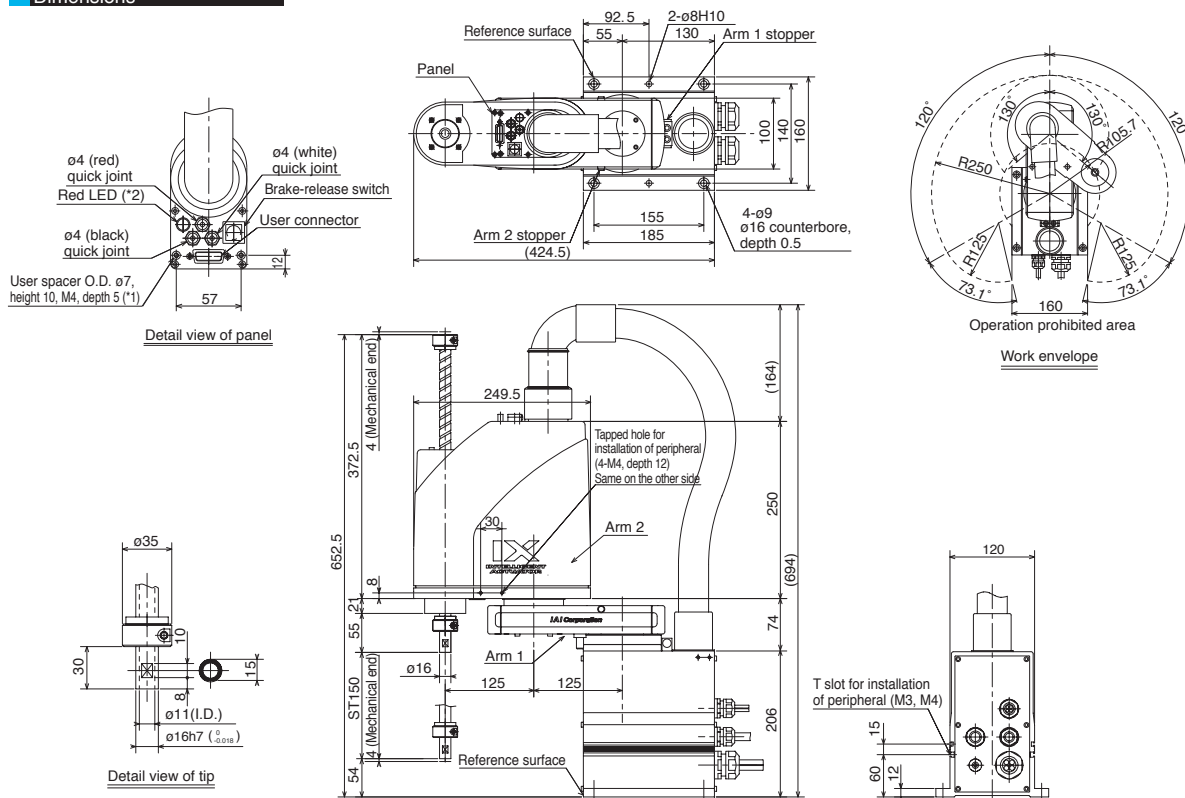
| Model | Axis configuration | Arm length (mm) | Motor capacity (W) | Work envelope | Positioning repeatability (mm) (Note 1) | Maximum operating speed (Note 2) | Standard cycle time (sec) (Note 3) | Load capacity (kg) | | Axis 3 push force (N) | | Axis 4 allowable load | |
|-------------------------|----------------------|-----------------|--------------------|---------------|---|----------------------------------|------------------------------------|--------------------|---------|-----------------------|-------------------------|---|------------------------|
| | | | | | | | | Rated | Maximum | Push action (Note 4) | Maximum thrust (Note 4) | Allowable inertial moment (kg-m ²) (Note 5) | Allowable torque (N-m) |
| IX-NNN2515-5L-□-□-□-□-2 | Axis 1 Arm 1 | 125 | 200 | ±120° | ±0.010 | 3142mm/s (Composite speed) | 0.46 | 1 | 3 | 65.3 | 90.9 | 0.015 | 1.9 |
| | Axis 2 Arm 2 | 125 | 100 | ±130° | | 1106mm/s | | | | | | | |
| | Axis 3 Vertical axis | - | 100 | 150mm | ±0.010 | 1600°/s | | | | | | | |
| | Axis 4 Rotating axis | - | 50 | ±360° | ±0.005 | | | | | | | | |

* In the above model code, specify the desired controller in □. For details, refer to "Explanation of SCARA Robot Model Items" (P. 10).

Common Specifications

| | | | |
|-------------------------------|--|------------------------------|---|
| Encode type | Absolute | Ambient temperature/humidity | Temperature: 0-40°C, humidity: 20-85%RH or below (non-condensing) |
| User wiring | 15-conductor AWG26 D-sub/15-pin connector with shield (socket) | Robot weight | 17.1kg |
| User tubing | Air tube (O.D. ø4, I.D. ø2.5) x 3 (Normal working pressure 0.8MPa) | Cable length (Note 8) | 5L: 5m (standard), 10L: 10m (optional) |
| Alarm indicator (Note 6) | Red, small LED indicator x 1 (24 VDC must be supplied.) | | |
| Brake-release switch (Note 7) | Brake-release switch to prevent the vertical axis from dropping (24 VDC must be supplied.) | | |

Dimensions



*1: The external force applied to each spacer must not exceed 30 N in the axial direction or 2 N-m in the rotating direction.

*2: To use the LED, the user must provide a circuit that takes signals from the controller's I/O output and supplies 24 VDC to the applicable LED terminal in the user connector.

Cables/tubes

• Motor/encoder cable 5m/10m • User cable 5m/10m
 • Brake power cable 5m/10m • Air tube (3 pcs) 0.15m

Applicable Controller Specifications

| Applicable controller | Features | Maximum I/O points (inputs/outputs) | Serial communication unit | Power-supply voltage | Page |
|-----------------------|---|-------------------------------------|---------------------------|----------------------|------|
| XSEL-KX | General-purpose type offering excellent expandability | 176/160 points | Can be installed. | AC200V | P37 |
| XSEL-JX | Compact, space-saving type | 80/64 points | Cannot be installed. | | P37 |



Refer to P. 6 for the explanations of (Note 1) to (Note 8).

11

IX-NNN3515

Small SCARA Robot Standard Type: Arm Length 350mm, Vertical (Z) Axis 150mm



Type / Standard type Arm length / 350mm Load capacity / 1kg rated/3kg maximum

Model items Series Model Cable length Controller type Standard I/O Expansion I/O I/O cable length Power-supply voltage
 (Example) IX - NNN3515 - 5L - KX - N1 - EEE - 2 - 2

* Refer to P. 10 for details on the model items.

* The above model code represents a combination of robot and controller.

Model/Specifications

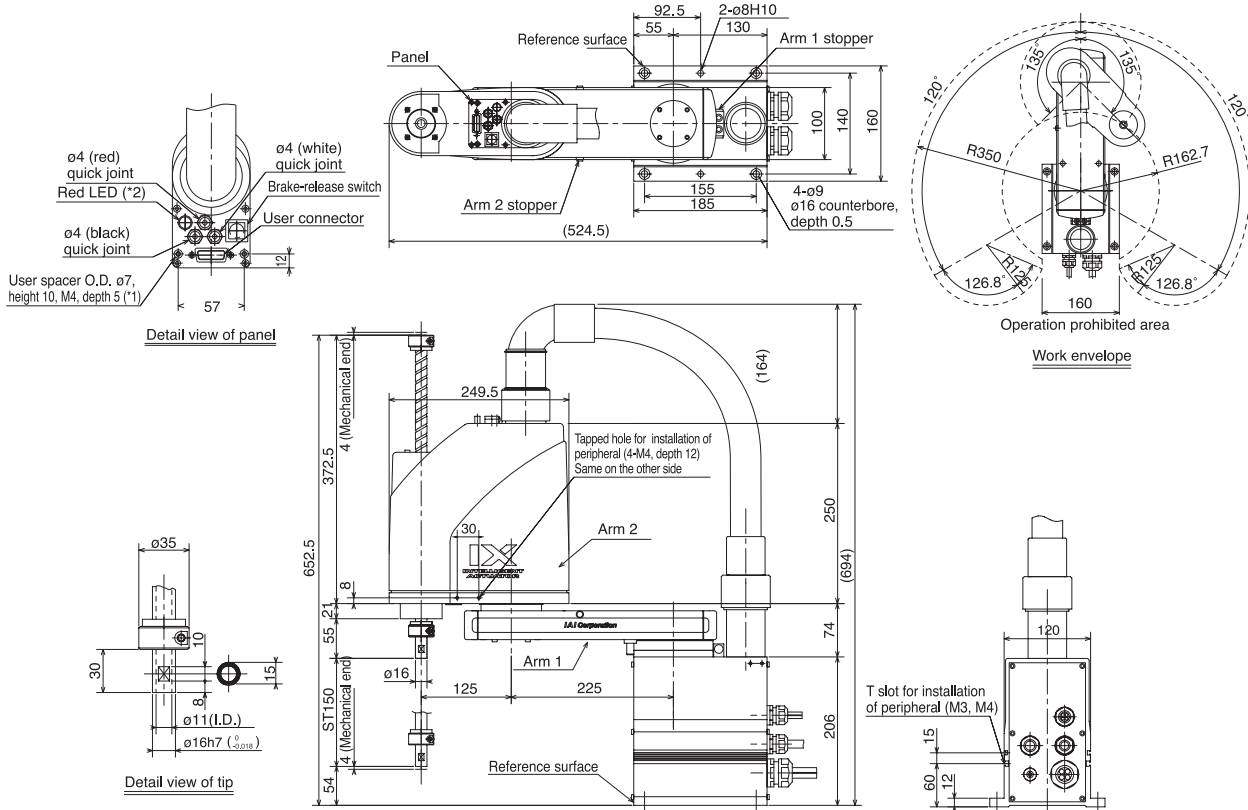
| Model | Axis configuration | | Arm length (mm) | Motor capacity (W) | Work envelope | Positioning repeatability (mm) (Note 1) | Maximum operating speed (Note 2) | Standard cycle time (sec) (Note 3) | Load capacity (kg) | | Axis 3 push force (N) | | Axis 4 allowable load | |
|-------------------------|--------------------|---------------|-----------------|--------------------|---------------|---|----------------------------------|------------------------------------|--------------------|---------|-----------------------|-------------------------|---|------------------------|
| | Axis 1 | Axis 2 | | | | | | | Rated | Maximum | Push action (Note 4) | Maximum thrust (Note 4) | Allowable inertial moment (kg·m ²) (Note 5) | Allowable torque (N·m) |
| IX-NNN3515-5L-□-□-□-□-2 | Axis 1 | Arm 1 | 225 | 200 | ±120° | ±0.010 | 3979mm/s (Composite speed) | 0.53 | 1 | 3 | 65.3 | 90.9 | 0.015 | 1.9 |
| | Axis 2 | Arm 2 | 125 | 100 | ±135° | | 1106mm/s | | | | | | | |
| | Axis 3 | Vertical axis | - | 100 | 150mm | ±0.010 | 1600°/s | | | | | | | |
| | Axis 4 | Rotating axis | - | 50 | ±360° | ±0.005 | | | | | | | | |

* In the above model code, specify the desired controller in □. For details, refer to "Explanation of SCARA Robot Model Items" (P. 10).

Common Specifications

| | | | |
|-------------------------------|--|------------------------------|---|
| Encode type | Absolute | Ambient temperature/humidity | Temperature: 0-40°C, humidity: 20-85%RH or below (non-condensing) |
| User wiring | 15-conductor AWG26 D-sub/15-pin connector with shield (socket) | Robot weight | 18.2kg |
| User tubing | Air tube (O.D. ø4, I.D. ø2.5) x 3 (Normal working pressure 0.8MPa) | Cable length (Note 8) | 5L: 5m (standard), 10L: 10m (optional) |
| Alarm indicator (Note 6) | Red, small LED indicator x 1 (24 VDC must be supplied.) | | |
| Brake-release switch (Note 7) | Brake-release switch to prevent the vertical axis from dropping (24 VDC must be supplied.) | | |

Dimensions



- *1: The external force applied to each spacer must not exceed 30 N in the axial direction or 2 N·m in the rotating direction.
- *2: To use the LED, the user must provide a circuit that takes signals from the controller's I/O output and supplies 24 VDC to the applicable LED terminal in the user connector.

- Cables/tubes
- Motor/encoder cable 5m/10m
 - User cable 5m/10m
 - Brake power cable 5m/10m
 - Air tube (3 pcs) 0.15m

Applicable Controller Specifications

| Applicable controller | Features | Maximum I/O points (inputs/outputs) | Serial communication unit | Power-supply voltage | Page |
|-----------------------|---|-------------------------------------|---------------------------|----------------------|------|
| XSEL-KX | General-purpose type offering excellent expandability | 176/160 points | Can be installed. | AC200V | P37 |
| XSEL-JX | Compact, space-saving type | 80/64 points | Cannot be installed. | | P37 |

Refer to P. 6 for the explanations of (Note 1) to (Note 8).

Caution

IX-NNN50

IX Medium SCARA Robot Standard Type:
Arm Length 500mm, Vertical (Z) Axis 200mm (300mm)

Type / Standard type Arm length / 500mm Load capacity / 2kg rated/10kg maximum

Model items Series Model Cable length Controller type Standard I/O Expansion I/O I/O cable length Power-supply voltage
(Example) IX - NNN5020 - 5L - KX - N1 - EEE - 2 - 2

* Refer to P. 10 for details on the model items.

* The above model code represents a combination of robot and controller.



Model/Specifications

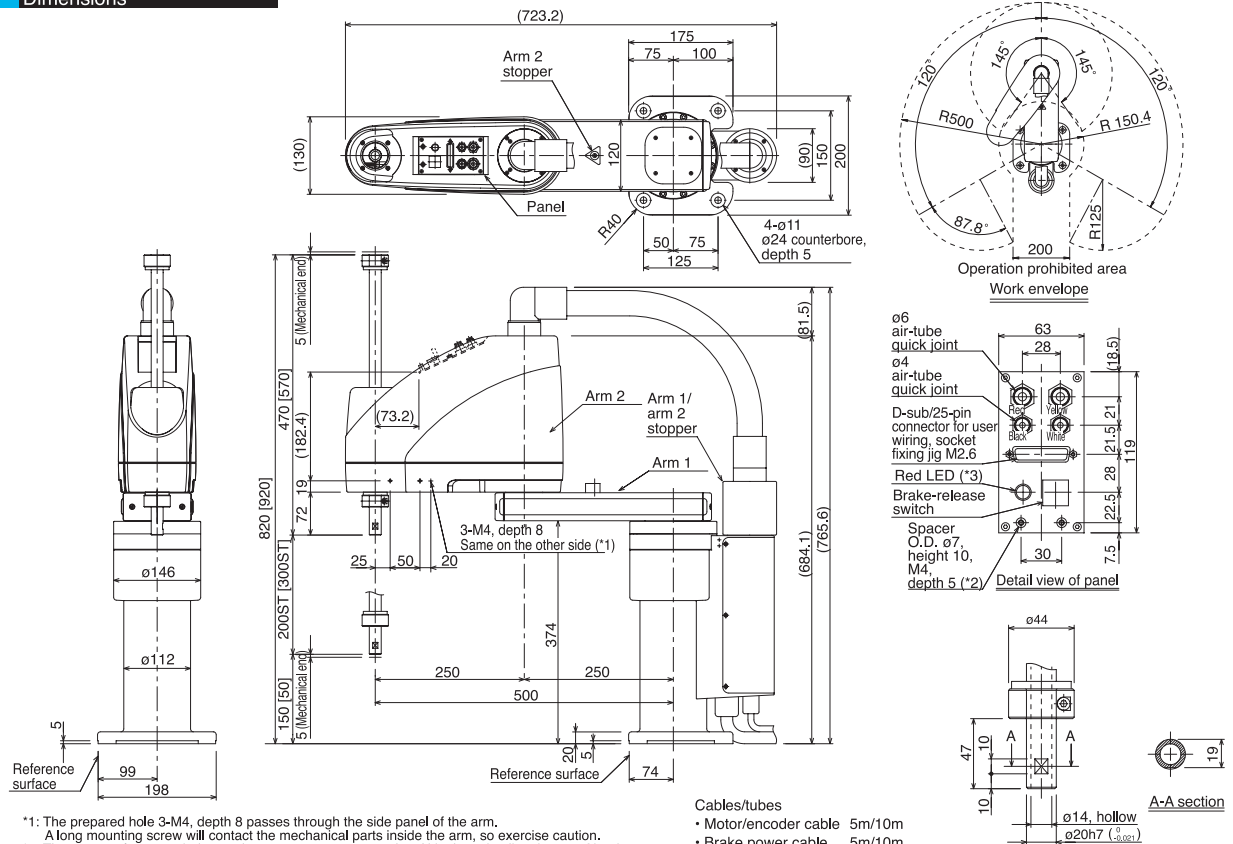
| Model | Axis configuration | | Arm length (mm) | Motor capacity (W) | Work envelope | Positioning repeatability (mm) (Note 1) | Maximum operating speed (mm/s) (Note 2) | Standard cycle time (sec) (Note 3) | Load capacity (kg) | | Axis 3 push force (N) | | Axis 4 allowable load | |
|--|--------------------|---------------|-----------------|--------------------|---------------|---|---|------------------------------------|--------------------|---------|-----------------------|-------------------------|---|------------------------|
| | Axis 1 | Axis 2 | | | | | | | Rated | Maximum | Push action (Note 4) | Maximum thrust (Note 4) | Allowable inertial moment (kg·m ²) (Note 5) | Allowable torque (N·m) |
| IX-NNN5020-5L-KX-□-□-□-2 [IX-NNN5030-5L-KX-□-□-□-2] | Axis 1 | Arm 1 | 250 | 400 | ±120° | ±0.010 | 6283mm/s (Composite speed) | 0.44 | 2 | 10 | 108 | 152 | 0.06 | 3.3 |
| | Axis 2 | Arm 2 | 250 | 200 | ±145° | | | | | | | | | |
| | Axis 3 | Vertical axis | - | 200 | 200mm [300mm] | ±0.010 | 1393mm/s | | | | | | | |
| | Axis 4 | Rotating axis | - | 100 | ±360° | ±0.005 | 1200°/s | | | | | | | |

* In the above model code, specify the desired controller in □. For details, refer to "Explanation of SCARA Robot Model Items" (P. 10).

Common Specifications

| | | | |
|-------------------------------|--|------------------------------|---|
| Encode type | Absolute | Ambient temperature/humidity | Temperature: 0~40°C, humidity: 20~85%RH or below (non-condensing) |
| User wiring | 25-conductor AWG26 D-sub/25-pin connector with shield (socket) | Robot weight | 29.5kg |
| User tubing | Air tube (O.D. ø6, I.D. ø4) x 2 (Normal working pressure 0.8MPa) Air tube (O.D. ø4, I.D. ø2.5) x 2 (Normal working pressure 0.8MPa) | Cable length (Note 8) | 5L: 5m (standard), 10L: 10m (optional) |
| Alarm indicator (Note 6) | Red, small LED indicator x 1 (24 VDC must be supplied.) | | |
| Brake-release switch (Note 7) | Brake-release switch to prevent the vertical axis from dropping (24 VDC must be supplied.) | | |

Dimensions



Applicable Controller Specifications

| Applicable controller | Features | Maximum I/O points (inputs/outputs) | Serial communication unit | Power-supply voltage | Page |
|-----------------------|---|-------------------------------------|---------------------------|----------------------|------|
| XSEL-KX | General-purpose type offering excellent expandability | 176/160 points | Can be installed. | AC200V | P37 |



Refer to P. 6 for the explanations of (Note 1) to (Note 8).

13

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IX-NNN60

IX Medium SCARA Robot Standard Type:
Arm Length 600mm, Vertical (Z) Axis 200mm (300mm)

Type Standard type

Arm length 600mm

Load capacity 2kg rated/10kg maximum



Model items Series Model Cable length Controller type Standard I/O Expansion I/O I/O cable length Power-supply voltage

(Example) IX - NNN6020 - 5L - KX - N1 - EEE - 2 - 2

* Refer to P. 10 for details on the model items.

* The above model code represents a combination of robot and controller.

Model/Specifications

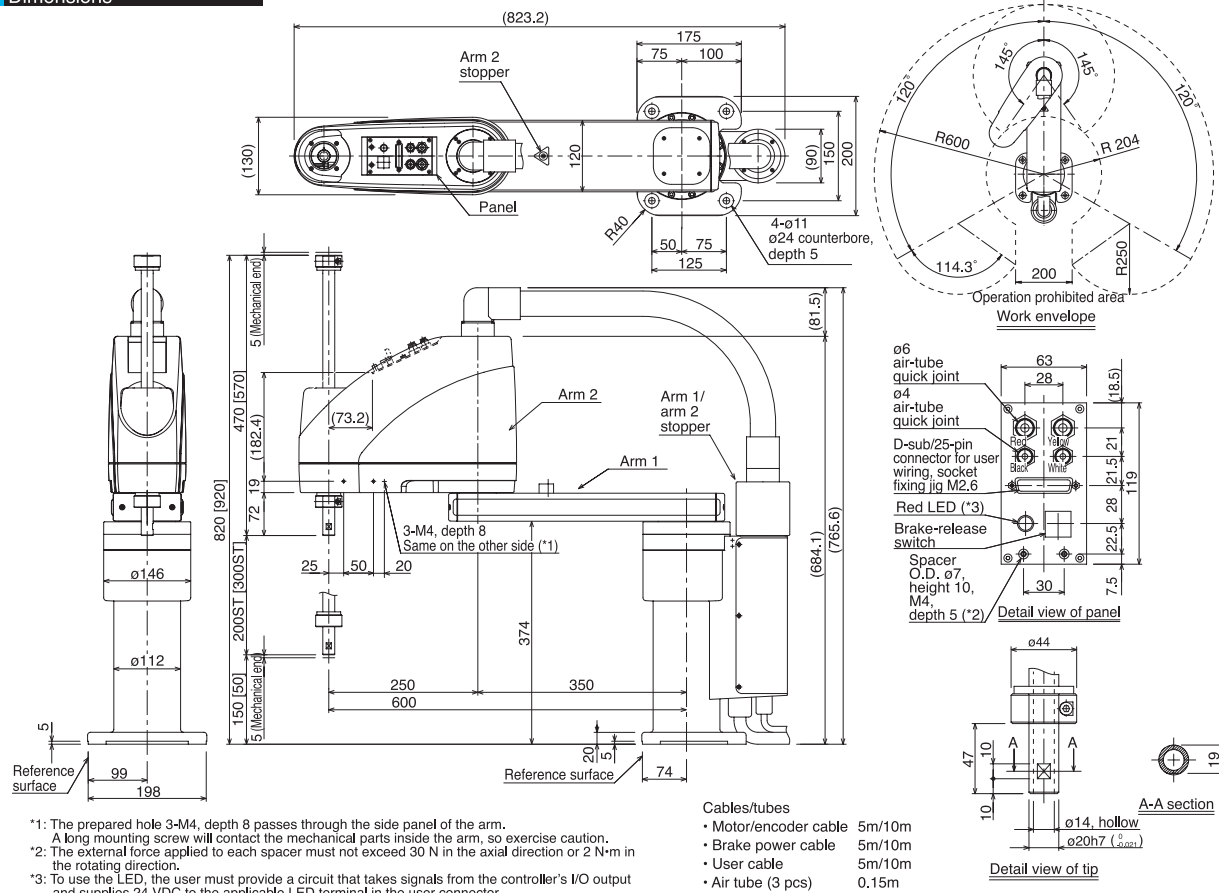
| Model | Axis configuration | Arm length (mm) | Motor capacity (W) | Work envelope | Positioning repeatability (mm) (Note 1) | Maximum operating speed (Note 2) | Standard cycle time (sec) (Note 3) | Load capacity (kg) | | Axis 3 push force (N) | | Axis 4 allowable load | |
|--|----------------------|-----------------|--------------------|------------------|---|----------------------------------|------------------------------------|--------------------|---------|-----------------------|-------------------------|---|------------------------|
| | | | | | | | | Rated | Maximum | Push action (Note 4) | Maximum thrust (Note 4) | Allowable inertial moment (kg·m ²) (Note 5) | Allowable torque (N·m) |
| IX-NNN6020-5L-KX-□-□-□-2 [IX-NNN6030-5L-KX-□-□-□-2] | Axis 1 Arm 1 | 350 | 400 | ±120° | ±0.010 | 7121mm/s (Composite speed) | 0.52 | 2 | 10 | 108 | 152 | 0.06 | 3.3 |
| | Axis 2 Arm 2 | 250 | 200 | ±145° | | | | | | | | | |
| | Axis 3 Vertical axis | - | 200 | 200mm [300mm] | ±0.010 | 1393mm/s | | | | | | | |
| | Axis 4 Rotating axis | - | 100 | ±360° | ±0.005 | 1200°/s | | | | | | | |

* In the above model code, specify the desired controller in □. For details, refer to "Explanation of SCARA Robot Model Items" (P. 10).

Common Specifications

| | | | |
|-------------------------------|--|------------------------------|---|
| Encode type | Absolute | Ambient temperature/humidity | Temperature: 0~40°C, humidity: 20~85%RH or below (non-condensing) |
| User wiring | 25-conductor AWG26 D-sub/25-pin connector with shield (socket) | Robot weight | 30.5kg |
| User tubing | Air tube (O.D. ø6, I.D. ø4) x 2 (Normal working pressure 0.8MPa) Air tube (O.D. ø4, I.D. ø2.5) x 2 (Normal working pressure 0.8MPa) | Cable length (Note 8) | 5L: 5m (standard), 10L: 10m (optional) |
| Alarm indicator (Note 6) | Red, small LED indicator x 1 (24 VDC must be supplied.) | | |
| Brake-release switch (Note 7) | Brake-release switch to prevent the vertical axis from dropping (24 VDC must be supplied.) | | |

Dimensions



Applicable Controller Specifications

| Applicable controller | Features | Maximum I/O points (inputs/outputs) | Serial communication unit | Power-supply voltage | Page |
|-----------------------|---|-------------------------------------|---------------------------|----------------------|------|
| XSEL-KX | General-purpose type offering excellent expandability | 176/160 points | Can be installed. | AC200V | P37 |



Refer to P. 6 for the explanations of (Note 1) to (Note 8).

IX-NNN70

IX Large SCARA Robot Standard Type:
Arm Length 700mm, Vertical (Z) Axis 200mm (400mm)



Type / Standard type Arm length / 700mm Load capacity / 5kg rated/20kg maximum

Model items Series Model Cable length Controller type Standard I/O Expansion I/O I/O cable length Power-supply voltage
(Example) IX - NNN7020 - 5L - KX - N1 - EEE - 2 - 2

* Refer to P. 10 for details on the model items.

* The above model code represents a combination of robot and controller.

Model/Specifications

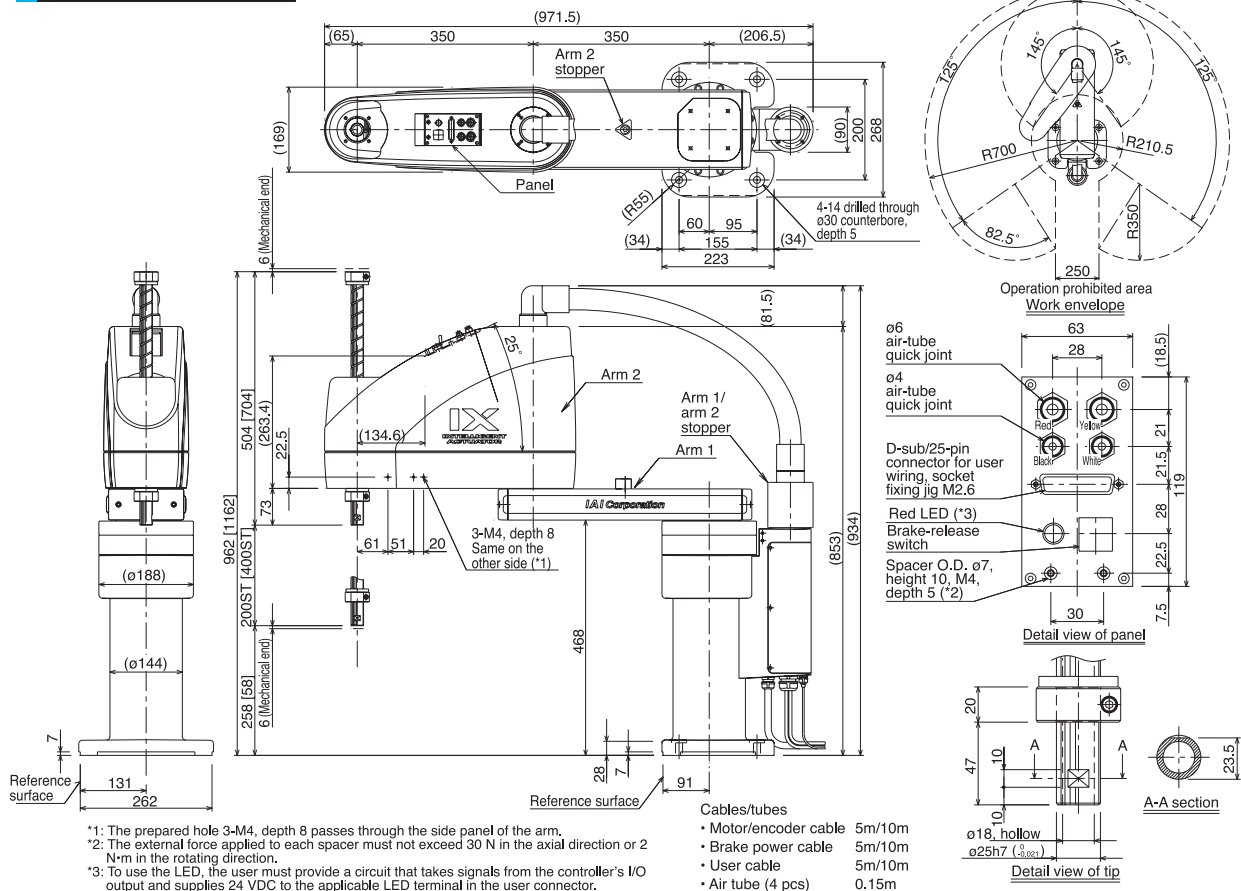
| Model | Axis configuration | Arm length (mm) | Motor capacity (W) | Work envelope | Positioning repeatability (mm) (Note 1) | Maximum operating speed (Note 2) | Standard cycle time (sec) (Note 3) | Load capacity (kg) | | Axis 3 push force (N) | | Axis 4 allowable load | |
|--|----------------------|-----------------|--------------------|------------------|---|----------------------------------|------------------------------------|--------------------|---------|-----------------------|-------------------------|---|------------------------|
| | | | | | | | | Rated | Maximum | Push action (Note 4) | Maximum thrust (Note 4) | Allowable inertial moment (kg·m ²) (Note 5) | Allowable torque (N·m) |
| IX-NNN7020-5L-KX-□-□-□-2 [IX-NNN7040-5L-KX-□-□-□-2] | Axis 1 Arm 1 | 350 | 750 | ±125° | ±0.015 | 6597mm/s (Composite speed) | 0.50 | 5 | 20 | 188 | 265 | 0.1 | 6.7 |
| | Axis 2 Arm 2 | 350 | 400 | ±145° | | | | | | | | | |
| | Axis 3 Vertical axis | - | 400 | 200mm [400mm] | ±0.010 | 1583mm/s | | | | | | | |
| | Axis 4 Rotating axis | - | 200 | ±360° | ±0.005 | 1200°/s | | | | | | | |

* In the above model code, specify the desired controller in □. For details, refer to "Explanation of SCARA Robot Model Items" (P. 10).

Common Specifications

| | | | |
|-------------------------------|--|------------------------------|---|
| Encode type | Absolute | Ambient temperature/humidity | Temperature: 0~40°C, humidity: 20~85%RH or below (non-condensing) |
| User wiring | 25-conductor AWG26 D-sub/25-pin connector with shield (socket) | Robot weight | 58kg |
| User tubing | Air tube (O.D. ø6, I.D. ø4) x 2 (Normal working pressure 0.8MPa) Air tube (O.D. ø4, I.D. ø2.5) x 2 (Normal working pressure 0.8MPa) | Cable length (Note 8) | 5L: 5m (standard), 10L: 10m (optional) |
| Alarm indicator (Note 6) | Red, small LED indicator x 1 (24 VDC must be supplied.) | | |
| Brake-release switch (Note 7) | Brake-release switch to prevent the vertical axis from dropping (24 VDC must be supplied.) | | |

Dimensions



Applicable Controller Specifications

| Applicable controller | Features | Maximum I/O points (inputs/outputs) | Serial communication unit | Power-supply voltage | Page |
|-----------------------|---|-------------------------------------|---------------------------|----------------------|------|
| XSEL-KX | General-purpose type offering excellent expandability | 176/160 points | Can be installed. | AC200V | P37 |

Caution Refer to P. 6 for the explanations of (Note 1) to (Note 8).

IX-NNN80

IX Medium SCARA Robot Standard Type:
Arm Length 800mm, Vertical (Z) Axis 200mm (400mm)



Type / Standard type Arm length / 800mm Load capacity / 5kg rated/20kg maximum

Model items Series Model Cable length Controller type Standard I/O Expansion I/O I/O cable length Power-supply voltage
(Example) IX - NNN8020 - 5L - KX - N1 - EEE - 2 - 2

* Refer to P. 10 for details on the model items.

* The above model code represents a combination of robot and controller.

Model/Specifications

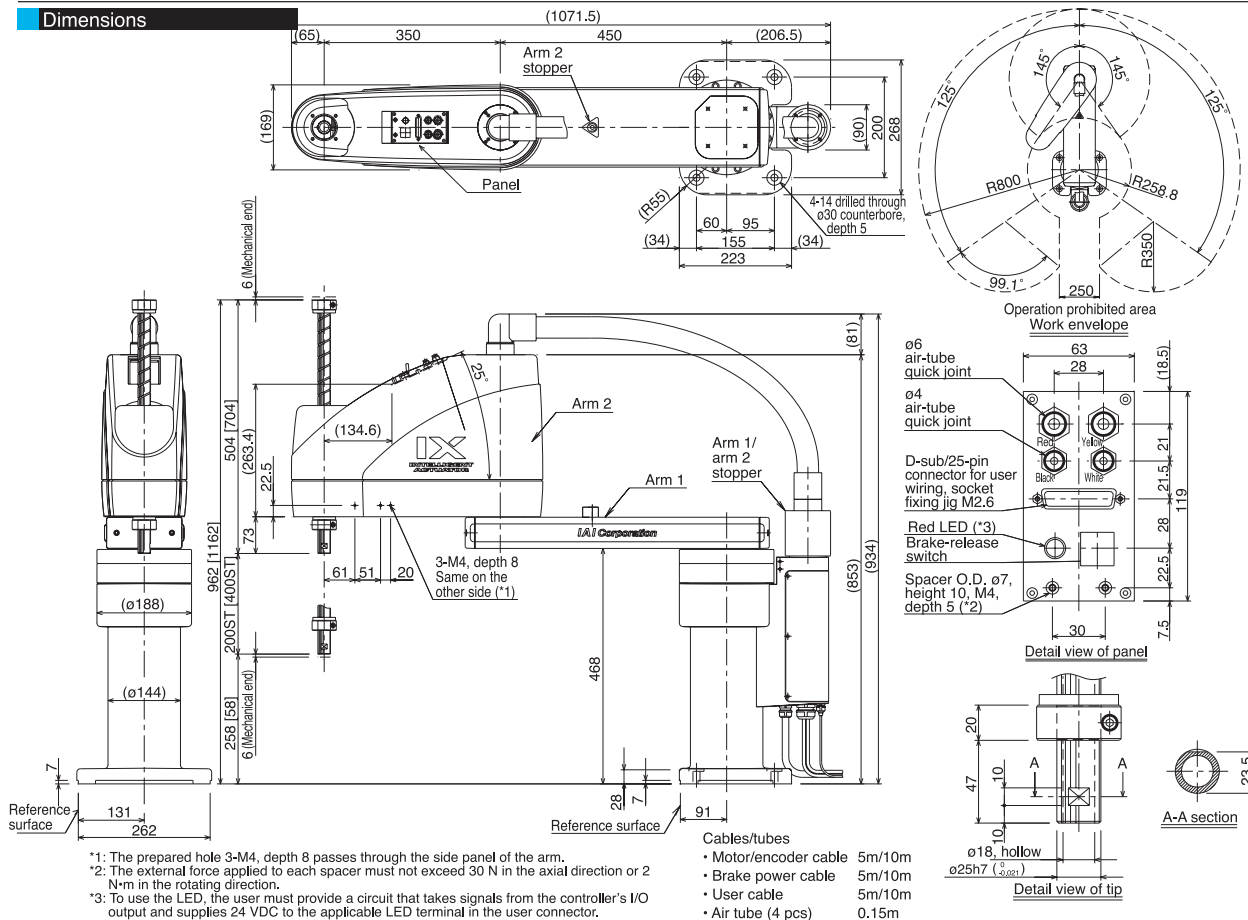
| Model | Axis configuration | Arm length (mm) | Motor capacity (W) | Work envelope | Positioning repeatability (mm) (Note 1) | Maximum operating speed (m/s) (Note 2) | Standard cycle time (sec) (Note 3) | Load capacity (kg) | | Axis 3 push force (N) | | Axis 4 allowable load | | |
|--|--------------------|-----------------|--------------------|---------------|---|--|------------------------------------|--------------------|---------|-----------------------|-------------------------|---|------------------------|----------|
| | | | | | | | | Rated | Maximum | Push action (Note 4) | Maximum thrust (Note 4) | Allowable inertial moment (kg·m ²) (Note 5) | Allowable torque (N·m) | |
| IX-NNN8020-5L-KX-□-□-□-2 [IX-NNN8040-5L-KX-□-□-□-2] | Axis 1 | Arm 1 | 450 | 750 | ±125° | 7121mm/s (Composite speed) | 0.52 | 5 | 20 | 188 | 265 | 0.1 | 6.7 | |
| | Axis 2 | Arm 2 | 350 | 400 | ±145° | | | | | | | | | ±0.015 |
| | Axis 3 | Vertical axis | - | 400 | 200mm [400mm] | ±0.010 | | | | | | | | 1583mm/s |
| | Axis 4 | Rotating axis | - | 200 | ±360° | ±0.005 | | | | | | | | 1200°/s |

* In the above model code, specify the desired controller in □. For details, refer to "Explanation of SCARA Robot Model Items" (P. 10).

Common Specifications

| | | | |
|-------------------------------|--|------------------------------|---|
| Encode type | Absolute | Ambient temperature/humidity | Temperature: 0~40°C, humidity: 20~85%RH or below (non-condensing) |
| User wiring | 25-conductor AWG26 D-sub/25-pin connector with shield (socket) | Robot weight | 60kg |
| User tubing | Air tube (O.D. ø6, I.D. ø4) x 2 (Normal working pressure 0.8MPa) Air tube (O.D. ø4, I.D. ø2.5) x 2 (Normal working pressure 0.8MPa) | Cable length (Note 8) | 5L: 5m (standard), 10L: 10m (optional) |
| Alarm indicator (Note 6) | Red, small LED indicator x 1 (24 VDC must be supplied.) | | |
| Brake-release switch (Note 7) | Brake-release switch to prevent the vertical axis from dropping (24 VDC must be supplied.) | | |

Dimensions



Applicable Controller Specifications

| Applicable controller | Features | Maximum I/O points (inputs/outputs) | Serial communication unit | Power-supply voltage | Page |
|-----------------------|---|-------------------------------------|---------------------------|----------------------|------|
| XSEL-KX | General-purpose type offering excellent expandability | 176/160 points | Can be installed. | AC200V | P37 |

Caution Refer to P. 6 for the explanations of (Note 1) to (Note 8).

IX-NSN5016

IX Medium SCARA Robot High-speed Type:
Arm Length 500mm, Vertical (Z) Axis 160mm

Type / High-speed type Arm length / 500mm Load capacity / 1kg rated/3kg maximum

| Model items | Series | Model | Cable length | Controller type | Standard I/O | Expansion I/O | I/O cable length | Power-supply voltage |
|-------------|--------|----------|--------------|-----------------|--------------|---------------|------------------|----------------------|
| (Example) | IX | -NSN5016 | - 5L | - KX | - N1 | - EEE | - 2 | - 2 |

* Refer to P. 10 for details on the model items.

* The above model code represents a combination of robot and controller.

Model/Specifications

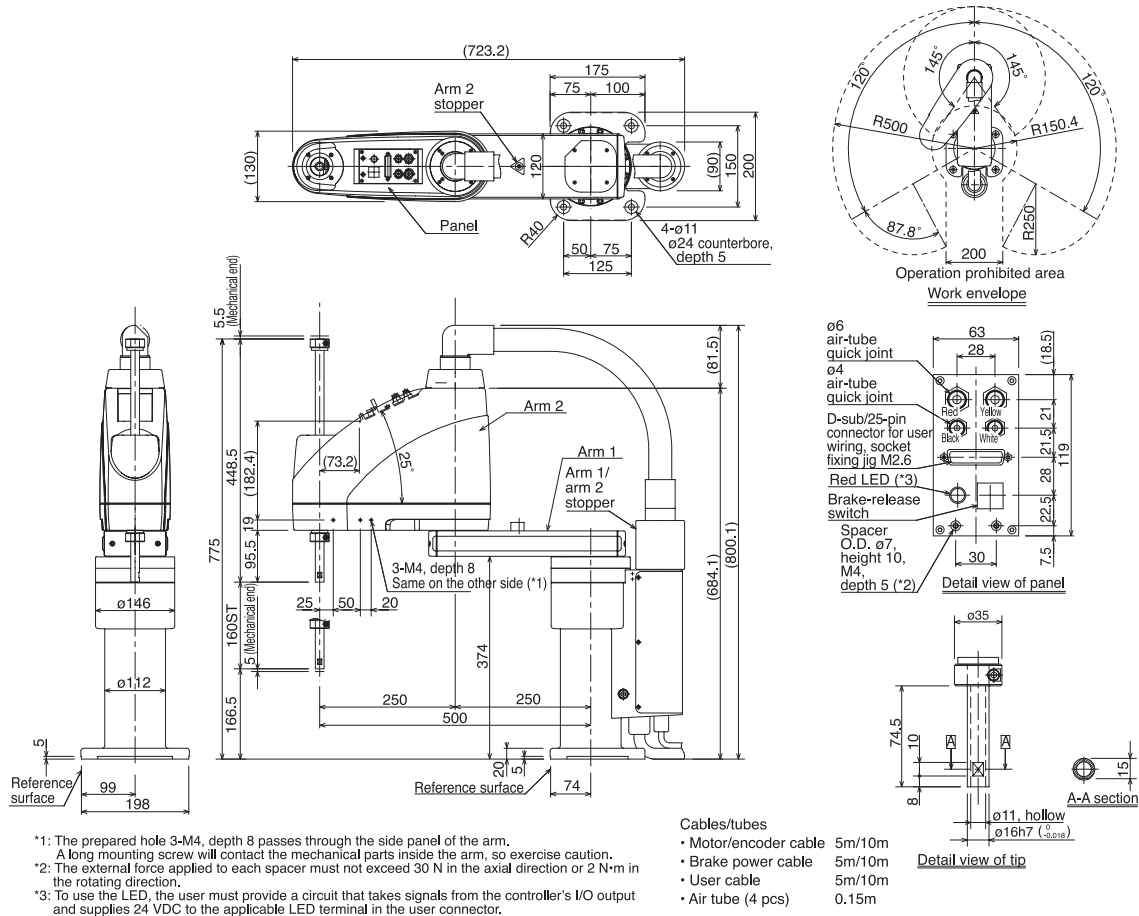
| Model | Axis configuration | | Arm length (mm) | Motor capacity (W) | Work envelope | Positioning repeatability (mm) (Note 1) | Maximum operating speed (Note 2) | Standard cycle time (sec) (Note 3) | Load capacity (kg) | | Axis 3 push force (N) | | Axis 4 allowable load | | | |
|----------------------------|--------------------|---------------|-----------------|--------------------|---------------|---|----------------------------------|------------------------------------|--------------------|---------|-----------------------|-------------------------|---|------------------------|--------|----------|
| | Axis 1 | Axis 2 | | | | | | | Rated | Maximum | Push action (Note 4) | Maximum thrust (Note 4) | Allowable inertial moment (kg-m ²) (Note 5) | Allowable torque (N-m) | | |
| IX-NSN5016-5L-KX-□-□-□-□-2 | Axis 1 | Arm 1 | 250 | 750 | ±120° | ±0.010 | 4712mm/s (Composite speed) | 0.29 to 0.30 | 1 | 3 | 135 | 190 | 0.015 | 2.2 | | |
| | Axis 2 | Arm 2 | 250 | 600 | ±145° | | | | | | | | | | | |
| | Axis 3 | Vertical axis | - | 200 | 160mm | | | | | | | | | | ±0.010 | 1085mm/s |
| | Axis 4 | Rotating axis | - | 100 | ±360° | | | | | | | | | | ±0.010 | 1800°/s |

* In the above model code, specify the desired controller in □. For details, refer to "Explanation of SCARA Robot Model Items" (P. 10).

Common Specifications

| | | | |
|-------------------------------|--|------------------------------|---|
| Encode type | Absolute | Ambient temperature/humidity | Temperature: 0~40°C, humidity: 20~85%RH or below (non-condensing) |
| User wiring | 25-conductor AWG26 D-sub/25-pin connector with shield (socket) | Robot weight | 32kg |
| User tubing | Air tube (O.D. ø6, I.D. ø4) x 2 (Normal working pressure 0.8MPa) Air tube (O.D. ø4, I.D. ø2.5) x 2 (Normal working pressure 0.8MPa) | Cable length (Note 8) | 5L: 5m (standard), 10L: 10m (optional) |
| Alarm indicator (Note 6) | Red, small LED indicator x 1 (24 VDC must be supplied.) | | |
| Brake-release switch (Note 7) | Brake-release switch to prevent the vertical axis from dropping (24 VDC must be supplied.) | | |

Dimensions



Applicable Controller Specifications

| Applicable controller | Features | Maximum I/O points (inputs/outputs) | Serial communication unit | Power-supply voltage | Page |
|-----------------------|---|-------------------------------------|---------------------------|----------------------|------|
| XSEL-KX | General-purpose type offering excellent expandability | 176/160 points | Can be installed. | AC200V | P37 |



Refer to P. 6 for the explanations of (Note 1) to (Note 8).

17

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IX-NSN6016

IX Medium SCARA Robot High-speed Type:
Arm Length 600mm, Vertical (Z) Axis 160mm

Type High-speed type

Arm length 600mm

Load capacity 1kg rated/3kg maximum



Model items Series Model Cable length Controller type Standard I/O Expansion I/O I/O cable length Power-supply voltage

(Example) IX - NSN6016 - 5L - KX - N1 - EEE - 2 - 2

* Refer to P. 10 for details on the model items.

* The above model code represents a combination of robot and controller.

Model/Specifications

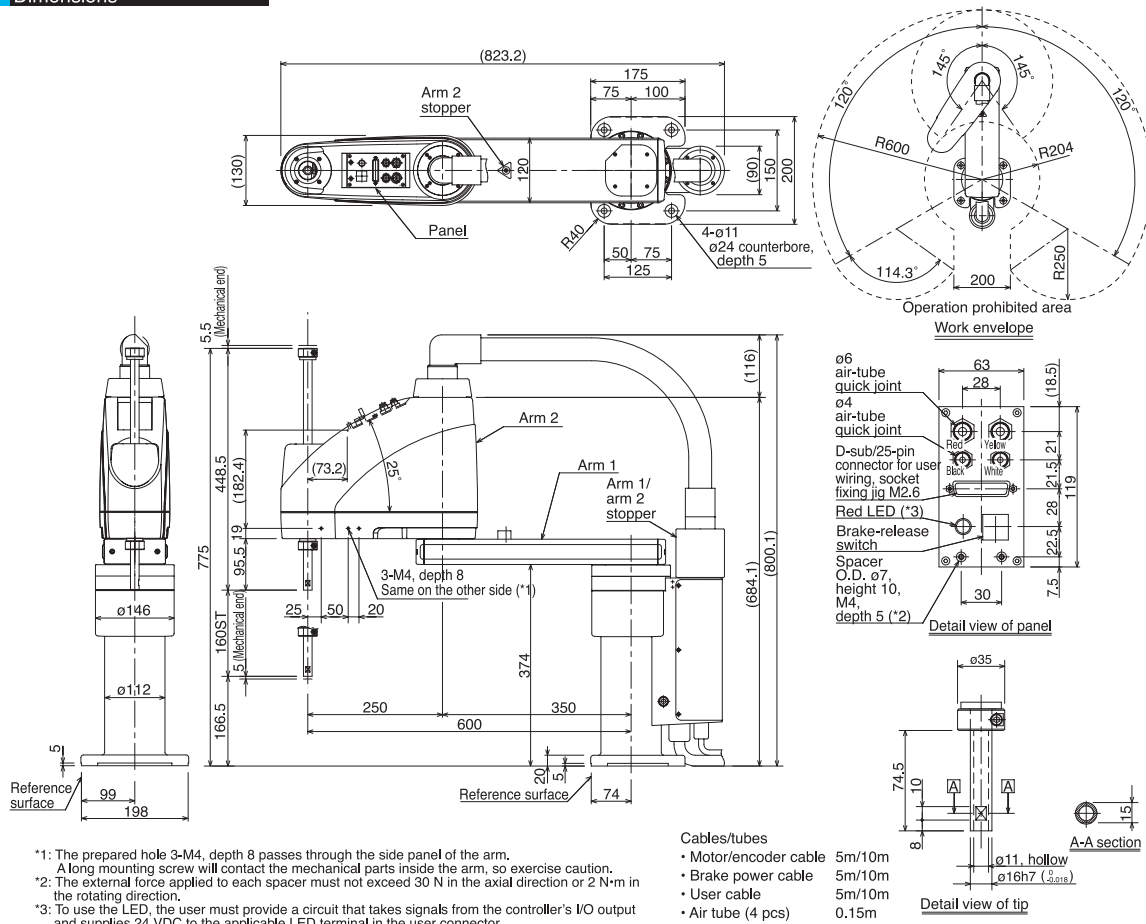
| Model | Axis configuration | | Arm length (mm) | Motor capacity (W) | Work envelope | Positioning repeatability (mm) (Note 1) | Maximum operating speed (Note 2) | Standard cycle time (sec) (Note 3) | Load capacity (kg) | | Axis 3 push force (N) | | Axis 4 allowable load | | | |
|--------------------------|--------------------|---------------|-----------------|--------------------|---------------|---|----------------------------------|------------------------------------|--------------------|---------|-----------------------|-------------------------|---|------------------------|--------|----------|
| | Axis 1 | Axis 2 | | | | | | | Rated | Maximum | Push action (Note 4) | Maximum thrust (Note 4) | Allowable inertial moment (kg·m ²) (Note 5) | Allowable torque (N·m) | | |
| IX-NSN6016-5L-KX-□-□-□-2 | Axis 1 | Arm 1 | 350 | 750 | ±120° | ±0.010 | 5236mm/s (Composite speed) | 0.38 to 0.39 | 1 | 3 | 135 | 190 | 0.015 | 2.2 | | |
| | Axis 2 | Arm 2 | 250 | 600 | ±145° | | | | | | | | | | | |
| | Axis 3 | Vertical axis | - | 200 | 160mm | | | | | | | | | | ±0.010 | 1085mm/s |
| | Axis 4 | Rotating axis | - | 100 | ±360° | | | | | | | | | | ±0.010 | 1800°/s |

* In the above model code, specify the desired controller in □. For details, refer to "Explanation of SCARA Robot Model Items" (P. 10).

Common Specifications

| | | | |
|-------------------------------|--|------------------------------|---|
| Encode type | Absolute | Ambient temperature/humidity | Temperature: 0~40°C, humidity: 20~85%RH or below (non-condensing) |
| User wiring | 25-conductor AWG26 D-sub/25-pin connector with shield (socket) | Robot weight | 33kg |
| User tubing | Air tube (O.D. ø6, I.D. ø4) x 2 (Normal working pressure 0.8MPa) Air tube (O.D. ø4, I.D. ø2.5) x 2 (Normal working pressure 0.8MPa) | Cable length (Note 8) | 5L: 5m (standard), 10L: 10m (optional) |
| Alarm indicator (Note 6) | Red, small LED indicator x 1 (24 VDC must be supplied.) | | |
| Brake-release switch (Note 7) | Brake-release switch to prevent the vertical axis from dropping (24 VDC must be supplied.) | | |

Dimensions



Applicable Controller Specifications

| Applicable controller | Features | Maximum I/O points (inputs/outputs) | Serial communication unit | Power-supply voltage | Page |
|-----------------------|---|-------------------------------------|---------------------------|----------------------|------|
| XSEL-KX | General-purpose type offering excellent expandability | 176/160 points | Can be installed. | AC200V | P37 |



Refer to P. 6 for the explanations of (Note 1) to (Note 8).

IX-NNW2515

Small SCARA Robot Dustproof/splash-proof type:
Arm Length 250mm, Vertical (Z) Axis 150mm



| | | | | | |
|------|-----------------------------|------------|-------|---------------|-----------------------|
| Type | Dustproof/splash-proof type | Arm length | 250mm | Load capacity | 1kg rated/3kg maximum |
|------|-----------------------------|------------|-------|---------------|-----------------------|

| | | | | | | | | |
|-------------|--------|----------|--------------|-----------------|--------------|---------------|------------------|----------------------|
| Model items | Series | Model | Cable length | Controller type | Standard I/O | Expansion I/O | I/O cable length | Power-supply voltage |
| (Example) | IX | -NNW2515 | - 5L | - KX | - N1 | - EEE | - 2 | - 2 |

* Refer to P. 10 for details on the model items.

* The above model code represents a combination of robot and controller.

Model/Specifications

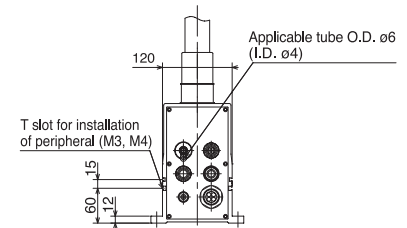
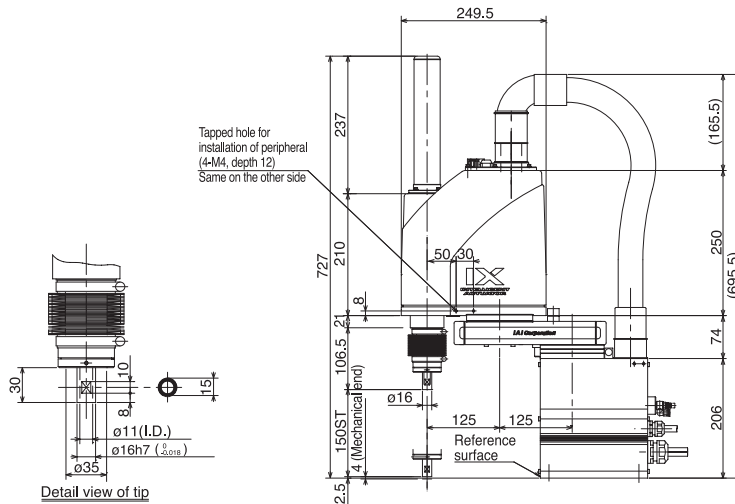
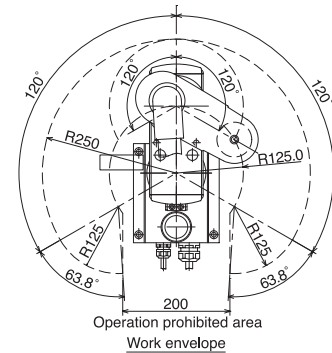
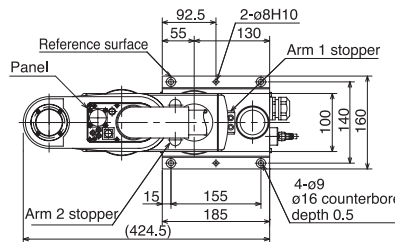
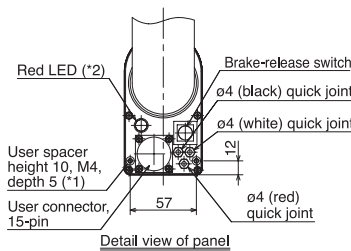
| Model | Axis configuration | | Arm length (mm) | Motor capacity (W) | Work envelope | Positioning repeatability (mm) (Note 1) | Maximum operating speed (Note 2) | Standard cycle time (sec) (Note 3) | Load capacity (kg) | | Axis 3 push force (N) | | Axis 4 allowable load | | | |
|-------------------------|--------------------|---------------|-----------------|--------------------|---------------|---|----------------------------------|------------------------------------|--------------------|---------|-----------------------|-------------------------|---|------------------------|--------|----------|
| | Axis 1 | Axis 2 | | | | | | | Rated | Maximum | Push action (Note 4) | Maximum thrust (Note 4) | Allowable inertial moment (kg·m ²) (Note 5) | Allowable torque (N·m) | | |
| IX-NNW2515-5L-□-□-□-□-2 | Axis 1 | Arm 1 | 125 | 200 | ±120° | ±0.010 | 3142mm/s (Composite speed) | 0.51 | 1 | 3 | 65.3 | 90.9 | 0.015 | 1.9 | | |
| | Axis 2 | Arm 2 | 125 | 100 | ±120° | | | | | | | | | | | |
| | Axis 3 | Vertical axis | - | 100 | 150mm | | | | | | | | | | ±0.010 | 1106mm/s |
| | Axis 4 | Rotating axis | - | 50 | ±360° | | | | | | | | | | ±0.005 | 1600°/s |

* In the above model code, specify the desired controller in □. For details, refer to "Explanation of SCARA Robot Model Items" (P. 10).

Common Specifications

| | | | |
|-------------------------------|--|------------------------------|---|
| Encode type | Absolute | Ambient temperature/humidity | Temperature: 0~40°C, humidity: 20~85%RH or below (non-condensing) |
| User wiring | 15-conductor AWG26 waterproof connector with shield | Robot weight | 21kg |
| User tubing | Air tube (O.D. ø4, I.D. ø2.5) x 3 (Normal working pressure 0.8MPa) | Cable length (Note 8) | 5L: 5m (standard), 10L: 10m (optional) |
| Alarm indicator (Note 6) | Red, small LED indicator x 1 (24 VDC must be supplied.) | Protection grade (Note 9) | IP65 or equivalent□ |
| Brake-release switch (Note 7) | Brake-release switch to prevent the vertical axis from dropping (24 VDC must be supplied.) | Air purge pressure (Note 10) | 0.3MPa or above (0.6MPa maximum) (Clean, dry air) |

Dimensions



*1: The external force applied to each spacer must not exceed 30 N in the axial direction or 2 N·m in the rotating direction.
*2: To use the LED, the user must provide a circuit that takes signals from the controller's I/O output and supplies 24 VDC to the applicable LED terminal in the user connector.

Applicable Controller Specifications

| Applicable controller | Features | Maximum I/O points (inputs/outputs) | Serial communication unit | Power-supply voltage | Page |
|-----------------------|---|-------------------------------------|---------------------------|----------------------|------|
| XSEL-KX | General-purpose type offering excellent expandability | 176/160 points | Can be installed. | AC200V | P37 |
| XSEL-JX | Compact, space-saving type | 80/64 points | Cannot be installed. | | P37 |



Refer to P. 6 for the explanations of (Note 1) to (Note 8).

- Cables/tubes
- Motor/encoder cable 5m/10m
 - Brake power cable 5m/10m
 - User cable 5m/10m
 - Air tube (4 pcs) 0.15m

IX-NNW3515

Small SCARA Robot Dustproof/splash-proof type:
Arm Length 350mm, Vertical (Z) Axis 150mm



Type Dustproof/splash-proof type Arm length 350mm Load capacity 1kg rated/3kg maximum

Model items Series Model Cable length Controller type Standard I/O Expansion I/O I/O cable length Power-supply voltage
(Example) IX - NNW3515 - 5L - KX - N1 - EEE - 2 - 2

* Refer to P. 10 for details on the model items.

* The above model code represents a combination of robot and controller.

Model/Specifications

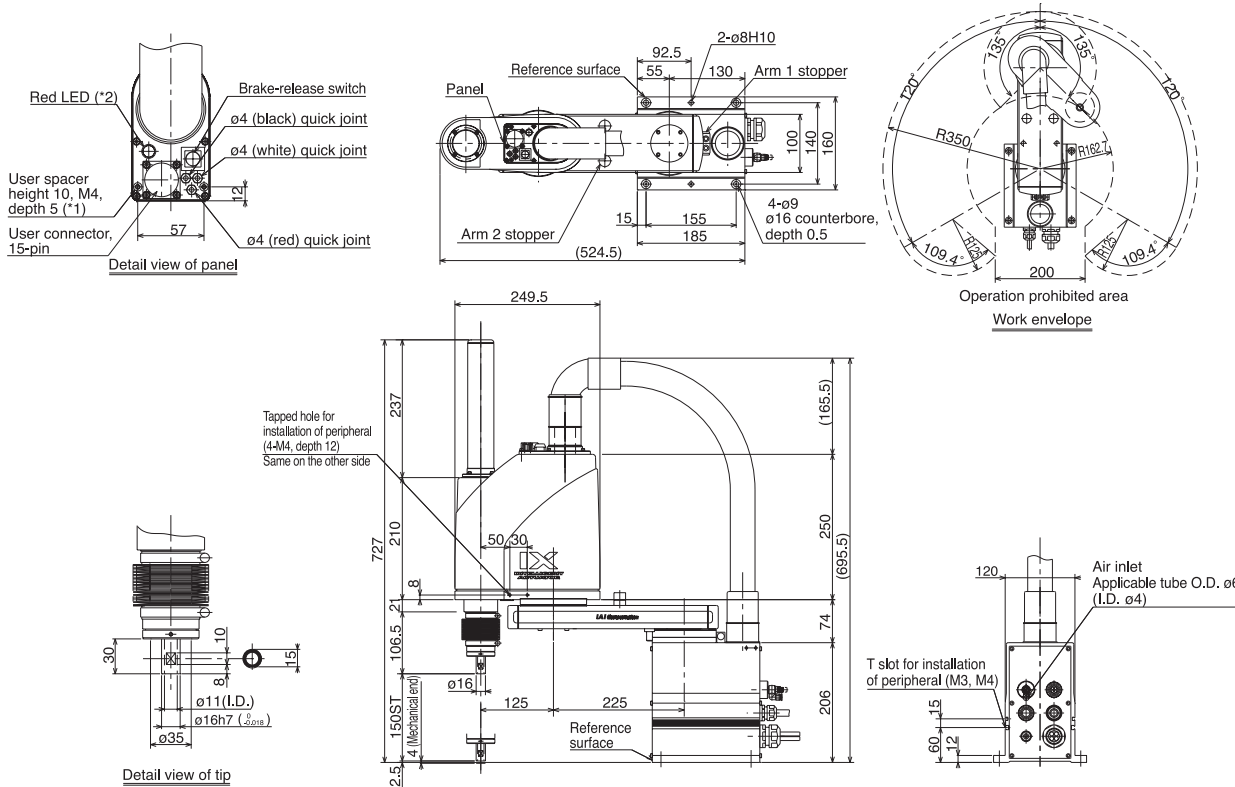
| Model | Axis configuration | | Arm length (mm) | Motor capacity (W) | Work envelope | Positioning repeatability (mm) (Note 1) | Maximum operating speed (Note 2) | Standard cycle time (sec) (Note 3) | Load capacity (kg) | | Axis 3 push force (N) | | Axis 4 allowable load | |
|-------------------------|--------------------|---------------|-----------------|--------------------|---------------|---|----------------------------------|------------------------------------|--------------------|---------|-----------------------|-------------------------|---|------------------------|
| | Axis 1 | Axis 2 | | | | | | | Rated | Maximum | Push action (Note 4) | Maximum thrust (Note 4) | Allowable inertial moment (kg·m ²) (Note 5) | Allowable torque (N·m) |
| IX-NNW3515-5L-□-□-□-□-2 | Axis 1 | Arm 1 | 225 | 200 | ±120° | ±0.010 | 3979mm/s (Composite speed) | 0.59 | 1 | 3 | 65.3 | 90.9 | 0.015 | 1.9 |
| | Axis 2 | Arm 2 | 125 | 100 | ±135° | | 1106mm/s | | | | | | | |
| | Axis 3 | Vertical axis | - | 100 | 150mm | ±0.010 | 1600°/s | | | | | | | |
| | Axis 4 | Rotating axis | - | 50 | ±360° | ±0.005 | | | | | | | | |

* In the above model code, specify the desired controller in □. For details, refer to "Explanation of SCARA Robot Model Items" (P. 10).

Common Specifications

| | | | |
|-------------------------------|--|------------------------------|---|
| Encode type | Absolute | Ambient temperature/humidity | Temperature: 0~40°C, humidity: 20~85%RH or below (non-condensing) |
| User wiring | 15-conductor AWG26 waterproof connector with shield | Robot weight | 22kg |
| User tubing | Air tube (O.D. ø4, I.D. ø2.5) x 3 (Normal working pressure 0.8MPa) | Cable length (Note 8) | 5L: 5m (standard), 10L: 10m (optional) |
| Alarm indicator (Note 6) | Red, small LED indicator x 1 (24 VDC must be supplied.) | Protection grade (Note 9) | IP65 or equivalent |
| Brake-release switch (Note 7) | Brake-release switch to prevent the vertical axis from dropping (24 VDC must be supplied.) | Air purge pressure (Note 10) | 0.3MPa or above (0.6MPa maximum) (Clean, dry air) |

Dimensions



*1: The external force applied to each spacer must not exceed 30 N in the axial direction or 2 N·m in the rotating direction.
*2: To use the LED, the user must provide a circuit that takes signals from the controller's I/O output and supplies 24 VDC to the applicable LED terminal in the user connector.

Applicable Controller Specifications

| Applicable controller | Features | Maximum I/O points (inputs/outputs) | Serial communication unit | Power-supply voltage | Page |
|-----------------------|---|-------------------------------------|---------------------------|----------------------|------|
| XSEL-KX | General-purpose type offering excellent expandability | 176/160 points | Can be installed. | AC200V | P37 |
| XSEL-JX | Compact, space-saving type | 80/64 points | Cannot be installed. | | P37 |

Caution Refer to P. 6 for the explanations of (Note 1) to (Note 8).

IX-NNW50

IX Medium SCARA Robot Dustproof/splash-proof type:
Arm Length 500mm, Vertical (Z) Axis 200mm (300mm)

Type Dustproof/splash-proof type Arm length 500mm Load capacity 2kg rated/10kg maximum

| Model items | Series | Model | Cable length | Controller type | Standard I/O | Expansion I/O | I/O cable length | Power-supply voltage |
|-------------|--------|---------|--------------|-----------------|--------------|---------------|------------------|----------------------|
| (Example) | IX | NNW5020 | 5L | KX | N1 | EEE | 2 | 2 |



* Refer to P. 10 for details on the model items.

* The above model code represents a combination of robot and controller.

Model/Specifications

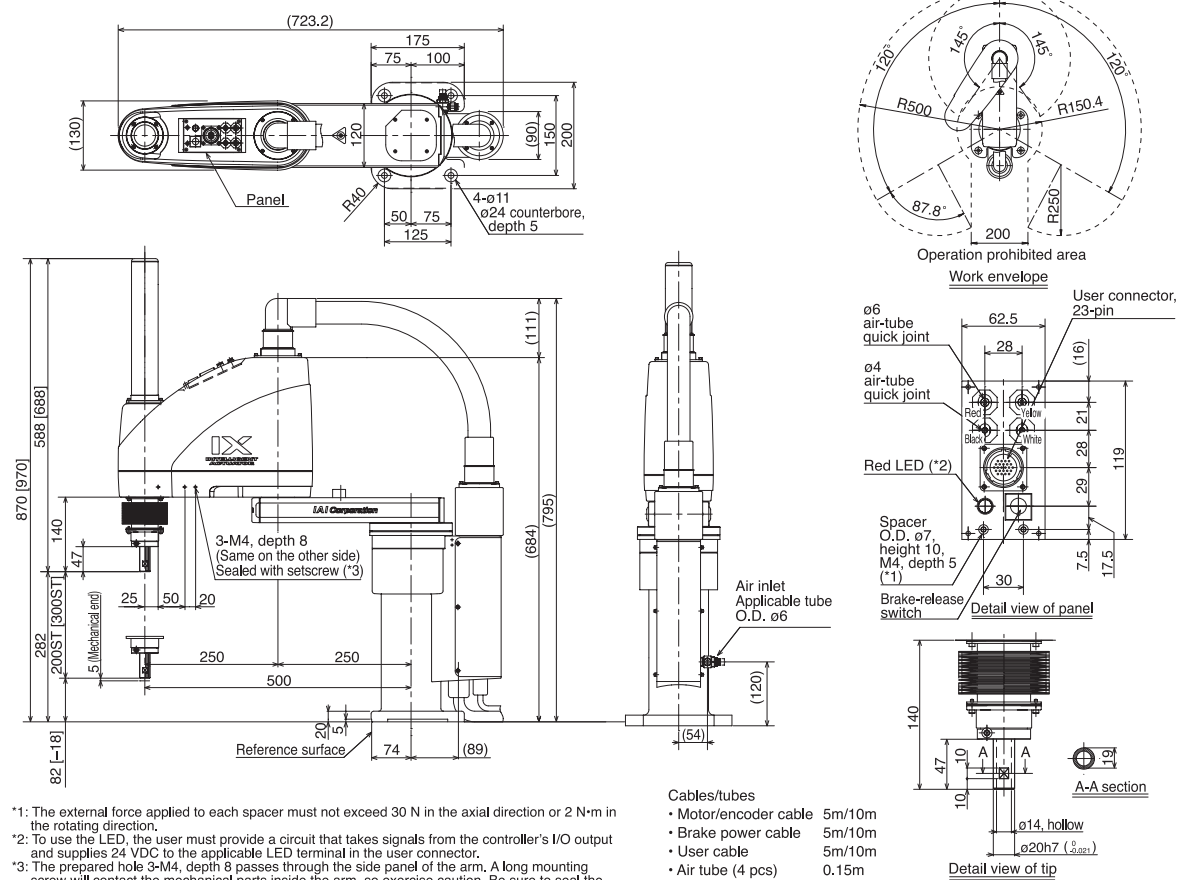
| Model | Axis configuration | Arm length (mm) | Motor capacity (W) | Work envelope | Positioning repeatability (mm) (Note 1) | Maximum operating speed (Note 2) | Standard cycle time (sec) (Note 3) | Load capacity (kg) | | Axis 3 push force (N) | | Axis 4 allowable load | |
|--|----------------------|-----------------|--------------------|------------------|---|----------------------------------|------------------------------------|--------------------|---------|-----------------------|-------------------------|---|------------------------|
| | | | | | | | | Rated | Maximum | Push action (Note 4) | Maximum thrust (Note 4) | Allowable inertial moment (kg·m ²) (Note 5) | Allowable torque (N·m) |
| IX-NNW5020-5L-KX-□-□-□-2 [IX-NNW5030-5L-KX-□-□-□-2] | Axis 1 Arm 1 | 250 | 400 | ±120° | ±0.010 | 6283mm/s (Composite speed) | 0.49 | 2 | 10 | 108 | 152 | 0.06 | 3.3 |
| | Axis 2 Arm 2 | 250 | 200 | ±145° | | | | | | | | | |
| | Axis 3 Vertical axis | - | 200 | 200mm [300mm] | ±0.010 | 1393mm/s | | | | | | | |
| | Axis 4 Rotating axis | - | 100 | ±360° | ±0.005 | 1200°/s | | | | | | | |

* In the above model code, specify the desired controller in □. For details, refer to "Explanation of SCARA Robot Model Items" (P. 10).

Common Specifications

| | | | |
|-------------------------------|--|------------------------------|---|
| Encode type | Absolute | Ambient temperature/humidity | Temperature: 0~40°C, humidity: 20~85%RH or below (non-condensing) |
| User wiring | 23-conductor AWG26 waterproof connector with shield | Robot weight | 32.5kg |
| User tubing | Air tube (O.D. ø6, I.D. ø4) x 2 (Normal working pressure 0.8MPa) Air tube (O.D. ø4, I.D. ø2.5) x 2 (Normal working pressure 0.8MPa) | Cable length (Note 8) | 5L: 5m (standard), 10L: 10m (optional) |
| Alarm indicator (Note 6) | Red, small LED indicator x 1 (24 VDC must be supplied.) | Protection grade (Note 9) | IP65 or equivalent |
| Brake-release switch (Note 7) | Brake-release switch to prevent the vertical axis from dropping (24 VDC must be supplied.) | Air purge pressure (Note 10) | 0.3MPa or above (0.6MPa maximum) (Clean, dry air) |

Dimensions



Applicable Controller Specifications

| Applicable controller | Features | Maximum I/O points (inputs/outputs) | Serial communication unit | Power-supply voltage | Page |
|-----------------------|---|-------------------------------------|---------------------------|----------------------|------|
| XSEL-KX | General-purpose type offering excellent expandability | 176/160 points | Can be installed. | AC200V | P37 |



Refer to P. 6 for the explanations of (Note 1) to (Note 10).

21

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IX-NNW60

IX Medium SCARA Robot Dustproof/splash-proof type:
Arm Length 600mm, Vertical (Z) Axis 200mm (300mm)

Type Dustproof/splash-proof type

Arm length 600mm

Load capacity 2kg rated/10kg maximum



Model items Series Model Cable length Controller type Standard I/O Expansion I/O I/O cable length Power-supply voltage

(Example) IX - NNW6020 - 5L - KX - N1 - EEE - 2 - 2

* Refer to P. 10 for details on the model items.

* The above model code represents a combination of robot and controller.

Model/Specifications

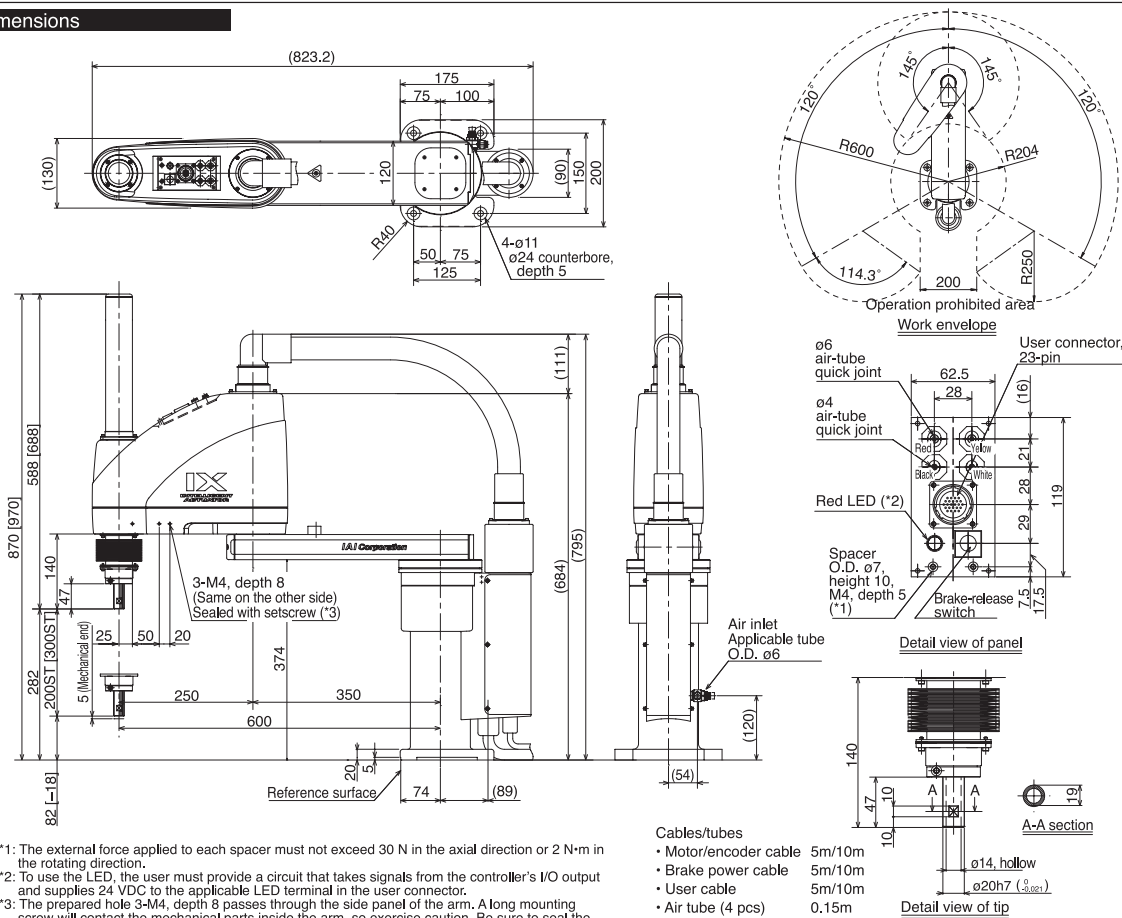
| Model | Axis configuration | Arm length (mm) | Motor capacity (W) | Work envelope | Positioning repeatability (mm) (Note 1) | Maximum operating speed (Note 2) | Standard cycle time (sec) (Note 3) | Load capacity (kg) | | Axis 3 push force (N) | | Axis 4 allowable load | |
|--|----------------------|-----------------|--------------------|------------------|---|----------------------------------|------------------------------------|--------------------|---------|-----------------------|-------------------------|---|------------------------|
| | | | | | | | | Rated | Maximum | Push action (Note 4) | Maximum thrust (Note 4) | Allowable inertial moment (kg·m ²) (Note 5) | Allowable torque (N·m) |
| IX-NNW6020-5L-KX-□-□-□-2 [IX-NNW6030-5L-KX-□-□-□-2] | Axis 1 Arm 1 | 350 | 400 | ±120° | ±0.010 | 7121mm/s (Composite speed) | 0.55 | 2 | 10 | 108 | 152 | 0.06 | 3.3 |
| | Axis 2 Arm 2 | 250 | 200 | ±145° | | | | | | | | | |
| | Axis 3 Vertical axis | - | 200 | 200mm [300mm] | ±0.010 | 1393mm/s | | | | | | | |
| | Axis 4 Rotating axis | - | 100 | ±360° | ±0.005 | 1200°/s | | | | | | | |

* In the above model code, specify the desired controller in □. For details, refer to "Explanation of SCARA Robot Model Items" (P. 10).

Common Specifications

| | | | |
|-------------------------------|--|------------------------------|---|
| Encode type | Absolute | Ambient temperature/humidity | Temperature: 0-40°C, humidity: 20-85%RH or below (non-condensing) |
| User wiring | 23-conductor AWG26 waterproof connector with shield | Robot weight | 34.5kg |
| User tubing | Air tube (O.D. ø6, I.D. ø4) x 2 (Normal working pressure 0.8MPa) Air tube (O.D. ø4, I.D. ø2.5) x 2 (Normal working pressure 0.8MPa) | Cable length (Note 8) | 5L: 5m (standard), 10L: 10m (optional) |
| Alarm indicator (Note 6) | Red, small LED indicator x 1 (24 VDC must be supplied.) | Protection grade (Note 9) | IP65 or equivalent |
| Brake-release switch (Note 7) | Brake-release switch to prevent the vertical axis from dropping (24 VDC must be supplied.) | Air purge pressure (Note 10) | 0.3MPa or above (0.6MPa maximum) (Clean, dry air) |

Dimensions



Applicable Controller Specifications

| Applicable controller | Features | Maximum I/O points (inputs/outputs) | Serial communication unit | Power-supply voltage | Page |
|-----------------------|---|-------------------------------------|---------------------------|----------------------|------|
| XSEL-KX | General-purpose type offering excellent expandability | 176/160 points | Can be installed. | AC200V | P37 |



Refer to P. 6 for the explanations of (Note 1) to (Note 10).

IX-NNW70

IX Large SCARA Robot Dustproof/splash-proof type:
Arm Length 700mm, Vertical (Z) Axis 200mm (400mm)

| | | |
|----------------------------------|------------------|--------------------------------------|
| Type Dustproof/splash-proof type | Arm length 700mm | Load capacity 5kg rated/20kg maximum |
|----------------------------------|------------------|--------------------------------------|

Model items
Series
Model
Cable length
Controller type
Standard I/O
Expansion I/O
I/O cable length
Power-supply voltage

(Example) IX - NNW7020 - 5L - KX - N - EEE - 2 - 2



* Refer to P. 10 for details on the model items. * The above model code represents a combination of robot and controller.

Model/Specifications

| Model | Axis configuration | Arm length (mm) | Motor capacity (W) | Work envelope | Positioning repeatability (mm) (Note 1) | Maximum operating speed (Note 2) | Standard cycle time (sec) (Note 3) | Load capacity (kg) | | Axis 3 push force (N) | | Axis 4 allowable load | |
|--|----------------------|-----------------|--------------------|---------------|---|----------------------------------|------------------------------------|--------------------|---------|-----------------------|-------------------------|---|------------------------|
| | | | | | | | | Rated | Maximum | Push action (Note 4) | Maximum thrust (Note 4) | Allowable inertial moment (kg-m ²) (Note 5) | Allowable torque (N-m) |
| IX-NNW7020-5L-KX-□-□-□-2 [IX-NNW7040-5L-KX-□-□-□-2] | Axis 1 Arm 1 | 350 | 750 | ±125° | ±0.015 (XY) | 6597mm/s (Composite speed) | 0.52 | 5 | 20 | 188 | 265 | 0.1 | 6.7 |
| | Axis 2 Arm 2 | 350 | 400 | ±145° | | | | | | | | | |
| | Axis 3 Vertical axis | - | 400 | 200mm [400mm] | ±0.010 | 1583mm/s | | | | | | | |
| | Axis 4 Rotating axis | - | 200 | ±360° | ±0.005 | 1200°/s | | | | | | | |

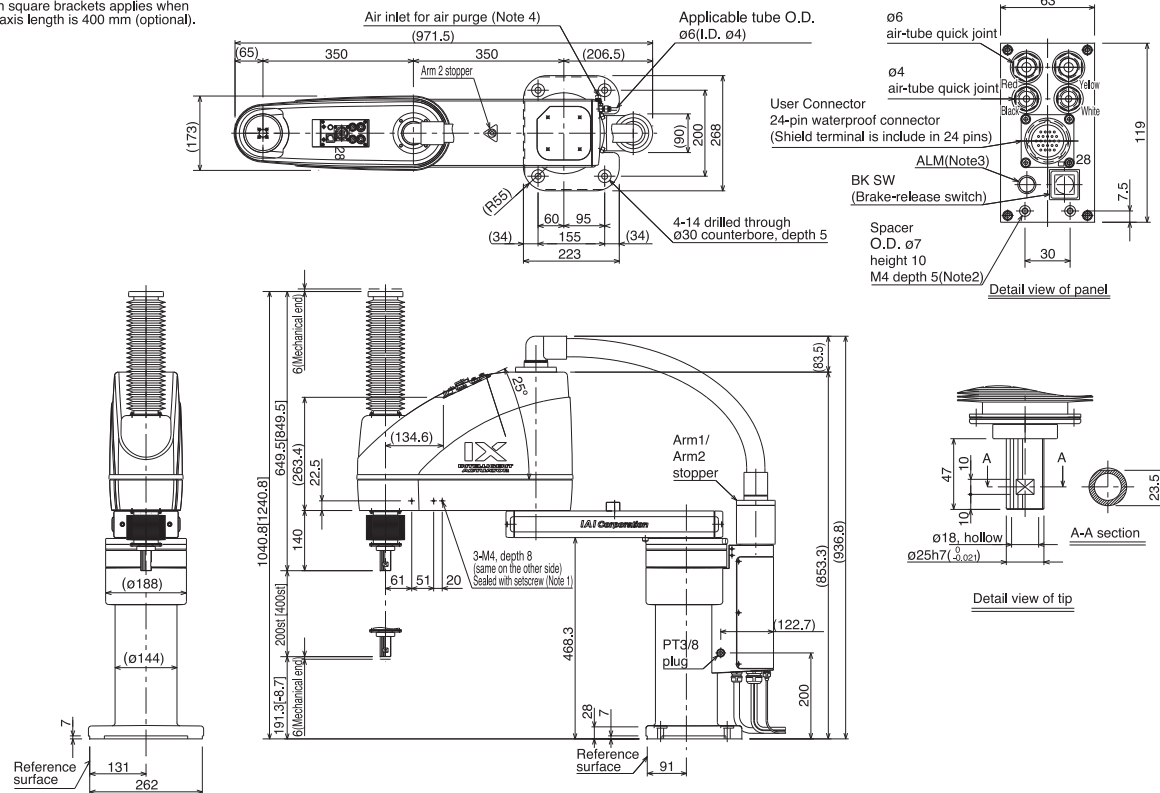
* In the above model code, specify the desired controller in □. For details, refer to "Explanation of SCARA Robot Model Items" (P. 10).

Common Specifications

| | | | |
|-------------------------------|--|------------------------------|---|
| Encode type | Absolute | Ambient temperature/humidity | Temperature: 0~40°C, humidity: 20~85%RH or below (non-condensing) |
| User wiring | 23-conductor AWG26 waterproof connector with shield | Robot weight | 60kg |
| User tubing | Air tube (O.D. ø6, I.D. ø4) x 2 (Normal working pressure 0.8MPa) Air tube (O.D. ø4, I.D. ø2.5) x 2 (Normal working pressure 0.8MPa) | Cable length (Note 8) | 5L: 5m (standard), 10L: 10m (optional) |
| Alarm indicator (Note 6) | Red, small LED indicator x 1 (24 VDC must be supplied.) | Protection grade (Note 9) | IP65 or equivalent |
| Brake-release switch (Note 7) | Brake-release switch to prevent the vertical axis from dropping (24 VDC must be supplied.) | Air purge pressure (Note 10) | 0.3MPa or above (0.6MPa maximum) (Clean, dry air) |

Dimensions

* The value in square brackets applies when the vertical axis length is 400 mm (optional).



- Note 1: The prepared hole 3-M4, depth 8 connects to the other side of the arm.
- Note 2: The external force applied to each spacer must not exceed 30 N in the axial direction or 2 Nm in the rotating direction.
- Note 3: To use the LED, the user must provide a circuit that takes signals from the controller's I/O output and supplies 24 VDC to the applicable LED terminal in the user connector.
- Note 4: The air inlet can be installed in the reverse direction (by disconnecting the PT3/8 plug and swapping it with the joint).

Applicable Controller Specifications

| Applicable controller | Features | Maximum I/O points (inputs/outputs) | Serial communication unit | Power-supply voltage | Page |
|-----------------------|---|-------------------------------------|---------------------------|----------------------|------|
| XSEL-KX | General-purpose type offering excellent expandability | Up to 192 points | Can be installed. | AC200V | P37 |

Refer to P. 6 for the explanations of (Note 1) to (Note 10).

IX-NNW80

IX Large SCARA Robot Dustproof/splash-proof type:
Arm Length 800mm, Vertical (Z) Axis 200mm (400mm)



Type: Dustproof/splash-proof type Arm length: 800mm Load capacity: 5kg rated/20kg maximum

Model items: Series Model Cable length Controller type Standard I/O Expansion I/O I/O cable length Power-supply voltage
(Example) IX - NNW8020 - 5L - KX - N - EEE - 2 - 2

* Refer to P. 10 for details on the model items.

* The above model code represents a combination of robot and controller.

Model/Specifications

| Model | Axis configuration | Arm length (mm) | Motor capacity (W) | Work envelope | Positioning repeatability (mm) (Note 1) | Maximum operating speed (Note 2) | Standard cycle time (sec) (Note 3) | Load capacity (kg) | | Axis 3 push force (N) | | Axis 4 allowable load | |
|--|----------------------|-----------------|--------------------|---------------|---|----------------------------------|------------------------------------|--------------------|---------|-----------------------|-------------------------|---|------------------------|
| | | | | | | | | Rated | Maximum | Push action (Note 4) | Maximum thrust (Note 4) | Allowable inertial moment (kg·m ²) (Note 5) | Allowable torque (N·m) |
| IX-NNW8020-5L-KX-□-□-□-2 [IX-NNW8040-5L-KX-□-□-□-2] | Axis 1 Arm 1 | 450 | 750 | ±125° | ±0.015 (XY) | 7121mm/s (Composite speed) | 0.52 | 5 | 20 | 188 | 265 | 0.1 | 6.7 |
| | Axis 2 Arm 2 | 350 | 400 | ±145° | | | | | | | | | |
| | Axis 3 Vertical axis | - | 400 | 200mm [400mm] | ±0.010 | 1583mm/s | | | | | | | |
| | Axis 4 Rotating axis | - | 200 | ±360° | ±0.005 | 1200°/s | | | | | | | |

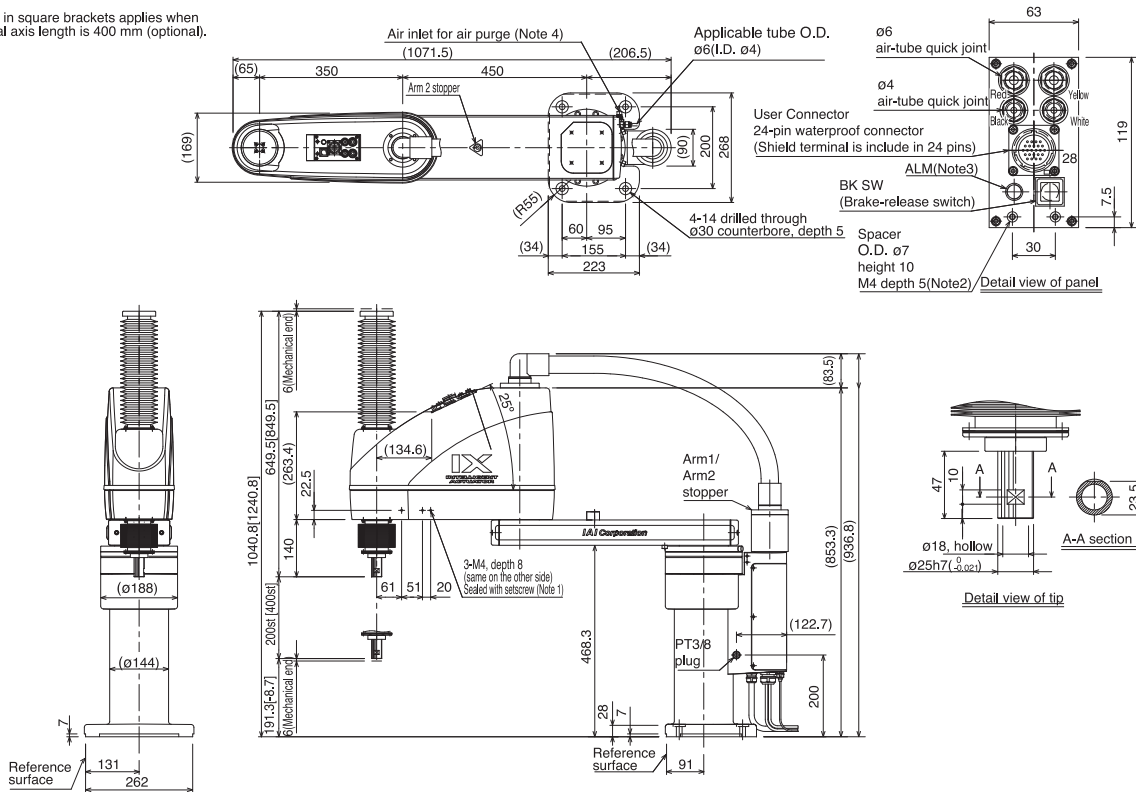
* In the above model code, specify the desired controller in □. For details, refer to "Explanation of SCARA Robot Model Items" (P. 10).

Common Specifications

| | | | |
|-------------------------------|--|------------------------------|---|
| Encode type | Absolute | Ambient temperature/humidity | Temperature: 0-40°C, humidity: 20-85%RH or below (non-condensing) |
| User wiring | 23-conductor AWG26 waterproof connector with shield | Robot weight | 62kg |
| User tubing | Air tube (O.D. ø6, I.D. ø4) x 2 (Normal working pressure 0.8MPa) Air tube (O.D. ø4, I.D. ø2.5) x 2 (Normal working pressure 0.8MPa) | Cable length (Note 8) | 5L: 5m (standard), 10L: 10m (optional) |
| Alarm indicator (Note 6) | Red, small LED indicator x 1 (24 VDC must be supplied.) | Protection grade (Note 9) | IP65 or equivalent |
| Brake-release switch (Note 7) | Brake-release switch to prevent the vertical axis from dropping (24 VDC must be supplied.) | Air purge pressure (Note 10) | 0.3MPa or above (0.6MPa maximum) (Clean, dry air) |

Dimensions

* The value in square brackets applies when the vertical axis length is 400 mm (optional).



- Note 1: The prepared hole 3-M4, depth 8 connects to the other side of the arm.
- Note 2: The external force applied to each spacer must not exceed 30 N in the axial direction or 2 Nm in the rotating direction.
- Note 3: To use the LED, the user must provide a circuit that takes signals from the controller's I/O output and supplies 24 VDC to the applicable LED terminal in the user connector.
- Note 4: The air inlet can be installed in the reverse direction (by disconnecting the PT3/8 plug and swapping it with the joint).

Applicable Controller Specifications

| Applicable controller | Features | Maximum I/O points (inputs/outputs) | Serial communication unit | Power-supply voltage | Page |
|-----------------------|---|-------------------------------------|---------------------------|----------------------|------|
| XSEL-KX | General-purpose type offering excellent expandability | Up to 192 points | Can be installed. | AC200V | P37 |

Caution Refer to P. 6 for the explanations of (Note 1) to (Note 10).

IX-TNN3015 Small SCARA Robot Wall-Mount Type: Arm Length 300mm, Vertical (Z) Axis 150mm

IX-UNN3015 Small SCARA Robot Inverse Type: Arm Length 300mm, Vertical (Z) Axis 150mm

Type Wall-mount/inverse type Arm length 300mm Load capacity 1kg rated/3kg maximum

Model items Series Model Cable length Controller type Standard I/O Expansion I/O I/O cable length Power-supply voltage
 (Example) IX - TNN3015 - 5L - IX - N1 - EEE - 2 - 2



* Refer to P. 10 for details on the model items. * The above model code represents a combination of robot and controller.

Model/Specifications

| Model | Axis configuration | | Arm length (mm) | Motor capacity (W) | Work envelope | Positioning repeatability (mm) (Note 1) | Maximum operating speed (Note 2) | Standard cycle time (sec) (Note 3) | Load capacity (kg) | | Axis 3 push force (N) | | Axis 4 allowable load | |
|-------------------------|--------------------|---------------|-----------------|--------------------|---------------|---|----------------------------------|------------------------------------|--------------------|---------|-----------------------|-------------------------|---|------------------------|
| | Axis 1 | Axis 2 | | | | | | | Rated | Maximum | Push action (Note 4) | Maximum thrust (Note 4) | Allowable inertial moment (kg·m ²) (Note 5) | Allowable torque (N·m) |
| IX-TNN3015-5L-□-□-□-□-2 | Axis 1 | Arm 1 | 175 | 200 | ±120° | ±0.010 | 3560mm/s (Composite speed) | 0.49 | 1 | 3 | 65.3 | 90.9 | 0.015 | 1.9 |
| IX-UNN3015-5L-□-□-□-□-2 | Axis 2 | Arm 2 | 125 | 100 | ±130° | | | | | | | | | |
| | Axis 3 | Vertical axis | - | 100 | 150mm | ±0.010 | 1106mm/s | | | | | | | |
| | Axis 4 | Rotating axis | - | 50 | ±360° | ±0.005 | 1600°/s | | | | | | | |

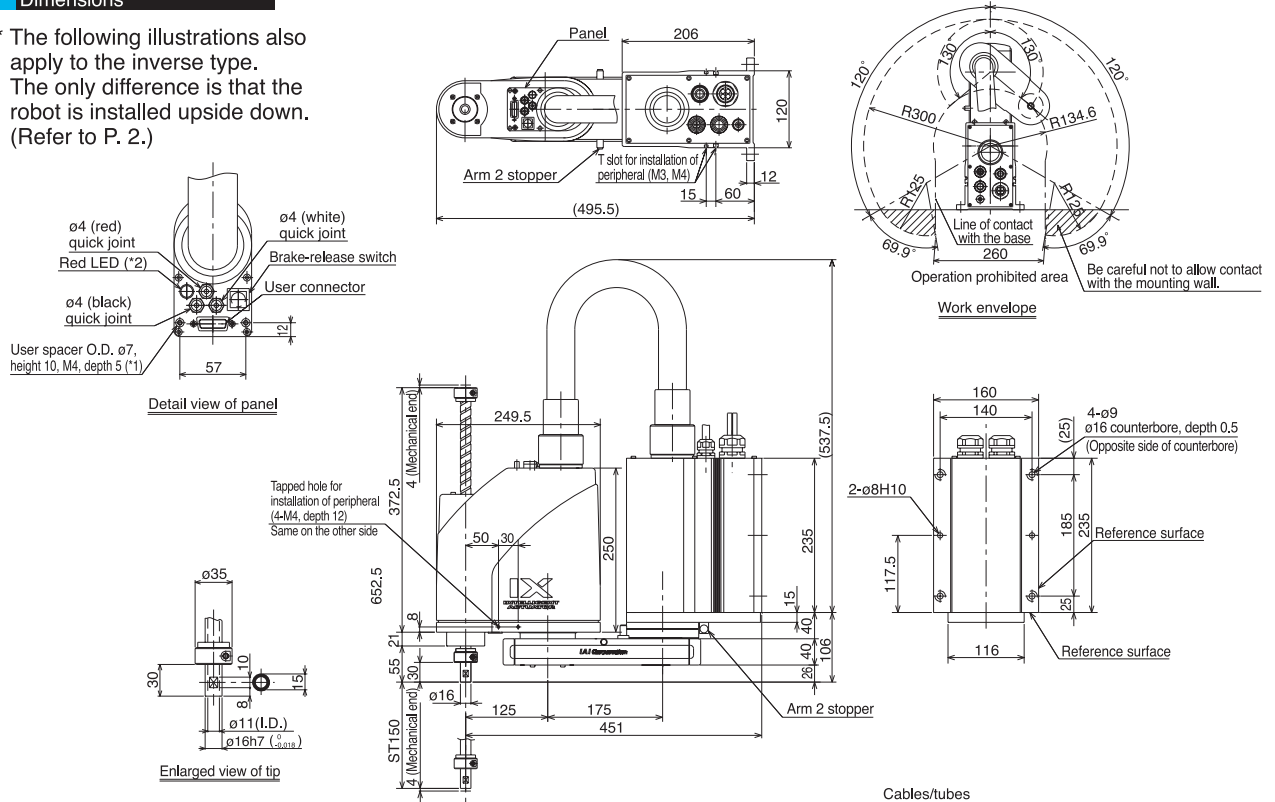
* In the above model code, specify the desired controller in □. For details, refer to "Explanation of SCARA Robot Model Items" (P. 10).

Common Specifications

| | | | |
|-------------------------------|--|------------------------------|---|
| Encode type | Absolute | Ambient temperature/humidity | Temperature: 0~40°C, humidity: 20~85%RH or below (non-condensing) |
| User wiring | 15-conductor AWG26 D-sub/15-pin connector with shield (socket) | Robot weight | 20.8kg |
| User tubing | Air tube (O.D. ø4, I.D. ø2.5) x 3 (Normal working pressure 0.8MPa) | Cable length (Note 8) | 5L: 5m (standard), 10L: 10m (optional) |
| Alarm indicator (Note 6) | Red, small LED indicator x 1 (24 VDC must be supplied.) | | |
| Brake-release switch (Note 7) | Brake-release switch to prevent the vertical axis from dropping (24 VDC must be supplied.) | | |

Dimensions

* The following illustrations also apply to the inverse type. The only difference is that the robot is installed upside down. (Refer to P. 2.)



*1: The external force applied to each spacer must not exceed 30 N in the axial direction or 2 N·m in the rotating direction.

*2: To use the LED, the user must provide a circuit that takes signals from the controller's I/O output and supplies 24 VDC to the applicable LED terminal in the user connector.

- Cables/tubes
- Motor/encoder cable 5m/10m
- Brake power cable 5m/10m
- User cable 5m/10m
- Air tube (3 pcs) 0.15m

Applicable Controller Specifications

| Applicable controller | Features | Maximum I/O points (inputs/outputs) | Serial communication unit | Power-supply voltage | Page |
|-----------------------|---|-------------------------------------|---------------------------|----------------------|------|
| XSEL-KX | General-purpose type offering excellent expandability | 176/160 points | Can be installed. | AC200V | P37 |
| XSEL-JX | Compact, space-saving type | 80/64 points | Cannot be installed. | | P37 |



Refer to P. 6 for the explanations of (Note 1) to (Note 8).

IX-TNN3515

Small SCARA Robot Wall-Mount Type: Arm Length 350mm, Vertical (Z) Axis 150mm

IX-UNN3515

Small SCARA Robot Inverse Type: Arm Length 350mm, Vertical (Z) Axis 150mm

Type / Wall-mount/inverse type Arm length / 350mm Load capacity / 1kg rated/3kg maximum



Model items Series Model Cable length Controller type Standard I/O Expansion I/O I/O cable length Power-supply voltage
 (Example) IX - TNN3515 - 5L - KX - N1 - EEE - 2 - 2

* Refer to P. 10 for details on the model items.

* The above model code represents a combination of robot and controller.

Model/Specifications

| Model | Axis configuration | Arm length (mm) | Motor capacity (W) | Work envelope | Positioning repeatability (mm) (Note 1) | Maximum operating speed (Note 2) | Standard cycle time (sec) (Note 3) | Load capacity (kg) | | Axis 3 push force (N) | | Axis 4 allowable load | | | |
|--|--------------------|-----------------|--------------------|---------------|---|----------------------------------|------------------------------------|--------------------|---------|-----------------------|-------------------------|---|------------------------|--------|----------|
| | | | | | | | | Rated | Maximum | Push action (Note 4) | Maximum thrust (Note 4) | Allowable inertial moment (kg·m ²) (Note 5) | Allowable torque (N·m) | | |
| IX-TNN3515-5L-□-□-□-□-2 IX-UNN3515-5L-□-□-□-□-2 | Axis 1 | Arm 1 | 225 | 200 | ±120° | 3979mm/s (Composite speed) | 0.53 | 1 | 3 | 65.3 | 90.9 | 0.015 | 1.9 | | |
| | Axis 2 | Arm 2 | 125 | 100 | ±135° | | | | | | | | | ±0.010 | |
| | Axis 3 | Vertical axis | - | 100 | 150mm | | | | | | | | | ±0.010 | 1106mm/s |
| | Axis 4 | Rotating axis | - | 50 | ±360° | | | | | | | | | ±0.005 | 1600°/s |

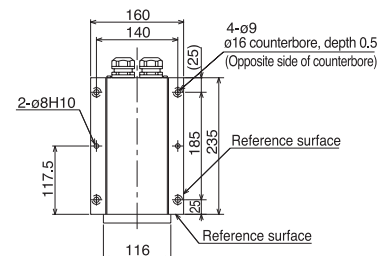
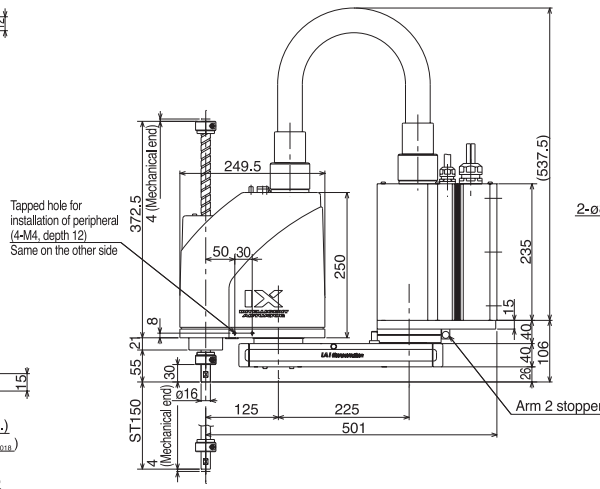
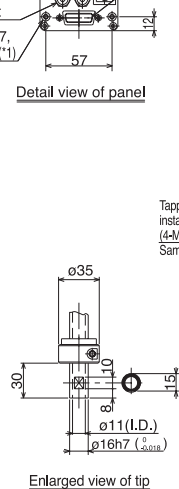
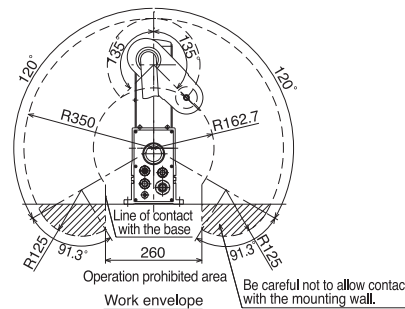
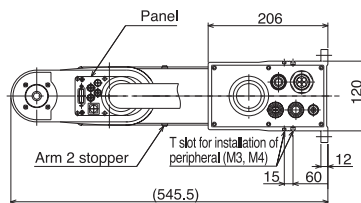
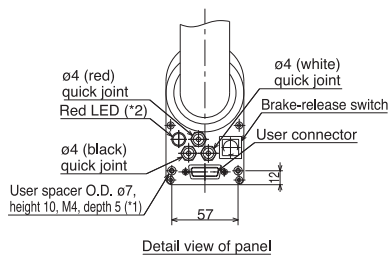
* In the above model code, specify the desired controller in □. For details, refer to "Explanation of SCARA Robot Model Items" (P. 10).

Common Specifications

| | | | |
|-------------------------------|--|------------------------------|---|
| Encode type | Absolute | Ambient temperature/humidity | Temperature: 0~40°C, humidity: 20~85%RH or below (non-condensing) |
| User wiring | 15-conductor AWG26 D-sub/15-pin connector with shield (socket) | Robot weight | 21.9kg |
| User tubing | Air tube (O.D. ø4, I.D. ø2.5) x 3 (Normal working pressure 0.8MPa) | Cable length (Note 8) | 5L: 5m (standard), 10L: 10m (optional) |
| Alarm indicator (Note 6) | Red, small LED indicator x 1 (24 VDC must be supplied.) | | |
| Brake-release switch (Note 7) | Brake-release switch to prevent the vertical axis from dropping (24 VDC must be supplied.) | | |

Dimensions

* The following illustrations also apply to the inverse type. The only difference is that the robot is installed upside down. (Refer to P. 2.)



*1: The external force applied to each spacer must not exceed 30 N in the axial direction or 2 N·m in the rotating direction.
 *2: To use the LED, the user must provide a circuit that takes signals from the controller's I/O output and supplies 24 VDC to the applicable LED terminal in the user connector.

- Cables/tubes
- Motor/encoder cable 5m/10m
 - Brake power cable 5m/10m
 - User cable 5m/10m
 - Air tube (3 pcs) 0.15m

Applicable Controller Specifications

| Applicable controller | Features | Maximum I/O points (inputs/outputs) | Serial communication unit | Power-supply voltage | Page |
|-----------------------|---|-------------------------------------|---------------------------|----------------------|------|
| XSEL-KX | General-purpose type offering excellent expandability | 176/160 points | Can be installed. | AC200V | P37 |
| XSEL-JX | Compact, space-saving type | 80/64 points | Cannot be installed. | | P37 |



Refer to P. 6 for the explanations of (Note 1) to (Note 8).

IX-HNN5020IX Medium SCARA Robot Ceiling-Mount Type:
Arm Length 500mm, Vertical (Z) Axis 200mm**IX-INN5020**IX Medium SCARA Robot Inverse Type:
Arm Length 500mm, Vertical (Z) Axis 200mm

Type / Ceiling-mount/Inverse Arm length / 500mm Load capacity / 2kg rated/10kg maximum

| Model items | Series | Model | Cable length | Controller type | Standard I/O | Expansion I/O | I/O cable length | Power-supply voltage |
|-------------|--------|----------|--------------|-----------------|--------------|---------------|------------------|----------------------|
| (Example) | IX | -HNN5020 | -5L | -KX | -N1 | -EEE | -2 | -2 |

* Refer to P. 10 for details on the model items.

* The above model code represents a combination of robot and controller.

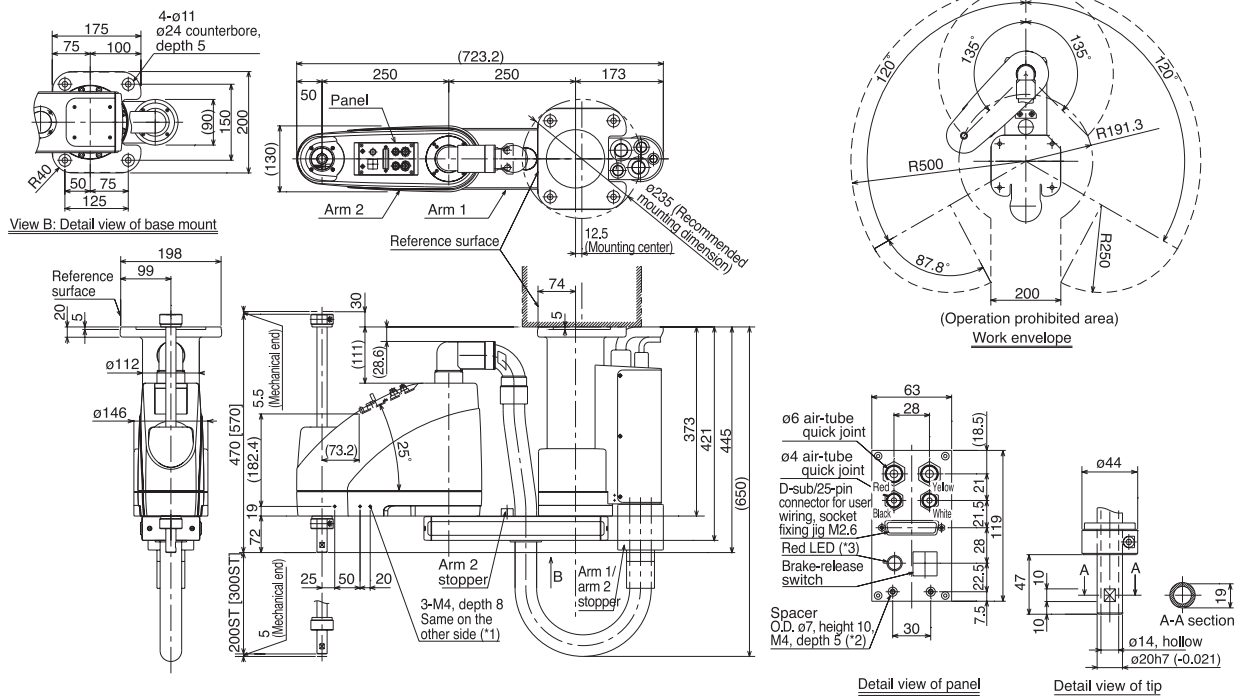
**Model/Specifications**

| Model | Axis configuration | | Arm length (mm) | Motor capacity (W) | Work envelope | Positioning repeatability (mm) (Note 1) | Maximum operating speed (Note 2) | Standard cycle time (sec) (Note 3) | Load capacity (kg) | | Axis 3 push force (N) | | Axis 4 allowable load | |
|-------------------------|--------------------|---------------|-----------------|--------------------|---------------|---|----------------------------------|------------------------------------|--------------------|---------|-----------------------|-------------------------|---|------------------------|
| | Axis 1 | Axis 2 | | | | | | | Rated | Maximum | Push action (Note 4) | Maximum thrust (Note 4) | Allowable inertial moment (kg·m ²) (Note 5) | Allowable torque (N·m) |
| IX-HNN5020-5L-□-□-□-□-2 | Axis 1 | Arm 1 | 250 | 400 | ±120° | ±0.010 | 6283mm/s (Composite speed) | 0.44 | 2 | 10 | 108 | 152 | 0.06 | 3.3 |
| IX-INN5020-5L-□-□-□-□-2 | Axis 2 | Arm 2 | 250 | 200 | ±135° | | | | | | | | | |
| | Axis 3 | Vertical axis | - | 200 | 200mm | ±0.010 | 1393mm/s | | | | | | | |
| | Axis 4 | Rotating axis | - | 100 | ±360° | ±0.005 | 1200°/s | | | | | | | |

* In the above model code, specify the desired controller in □. For details, refer to "Explanation of SCARA Robot Model Items" (P. 10).

Common Specifications

| | | | |
|-------------------------------|--|------------------------------|---|
| Encode type | Absolute | Ambient temperature/humidity | Temperature: 0~40°C, humidity: 20~85%RH or below (non-condensing) |
| User wiring | 25-conductor AWG26 D-sub/25-pin connector with shield (socket) | Robot weight | 30.5kg |
| User tubing | Air tube (O.D. ø6, I.D. ø4) x 2 (Normal working pressure 0.8MPa) Air tube (O.D. ø4, I.D. ø2.5) x 2 (Normal working pressure 0.8MPa) | Cable length (Note 8) | 5L: 5m (standard), 10L: 10m (optional) |
| Alarm indicator (Note 6) | Red, small LED indicator x 1 (24 VDC must be supplied.) | | |
| Brake-release switch (Note 7) | Brake-release switch to prevent the vertical axis from dropping (24 VDC must be supplied.) | | |

Dimensions* The following illustrations also apply to the inverse type.
The only difference is that the robot is installed upside down. (Refer to P. 2.)

- *1: The prepared hole 3-M4, depth 8 passes through the side panel of the arm. A long mounting screw will contact the mechanical parts inside the arm, so exercise caution.
- *2: The external force applied to each spacer must not exceed 30 N in the axial direction or 2 N·m in the rotating direction.
- *3: To use the LED, the user must provide a circuit that takes signals from the controller's I/O output and supplies 24 VDC to the applicable LED terminal in the user connector.

Applicable Controller Specifications

| Applicable controller | Features | Maximum I/O points (inputs/outputs) | Serial communication unit | Power-supply voltage | Page |
|-----------------------|---|-------------------------------------|---------------------------|----------------------|------|
| XSEL-KX | General-purpose type offering excellent expandability | 176/160 points | Can be installed. | AC200V | P37 |



Refer to P. 6 for the explanations of (Note 1) to (Note 8).

27

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IX-HNN6020

IX Medium SCARA Robot Ceiling-Mount Type:
Arm Length 600mm, Vertical (Z) Axis 200mm

IX-INN6020

IX Medium SCARA Robot Inverse Type:
Arm Length 600mm, Vertical (Z) Axis 200mm



| | | | | | |
|------|-----------------------|------------|-------|---------------|------------------------|
| Type | Ceiling-mount/Inverse | Arm length | 600mm | Load capacity | 2kg rated/10kg maximum |
|------|-----------------------|------------|-------|---------------|------------------------|

| | | | | | | | | |
|-------------|--------|----------|--------------|-----------------|--------------|---------------|------------------|----------------------|
| Model items | Series | Model | Cable length | Controller type | Standard I/O | Expansion I/O | I/O cable length | Power-supply voltage |
| (Example) | IX | -HNN6020 | -5L | -KX | -N1 | -EEE | -2 | -2 |

* Refer to P. 10 for details on the model items.

* The above model code represents a combination of robot and controller.

Model/Specifications

| Model | Axis configuration | | Arm length (mm) | Motor capacity (W) | Work envelope | Positioning repeatability (mm) (Note 1) | Maximum operating speed (Note 2) | Standard cycle time (sec) (Note 3) | Load capacity (kg) | | Axis 3 push force (N) | | Axis 4 allowable load | |
|--|--------------------|---------------|-----------------|--------------------|---------------|---|----------------------------------|------------------------------------|--------------------|---------|-----------------------|-------------------------|---|------------------------|
| | Axis 1 | Axis 2 | | | | | | | Rated | Maximum | Push action (Note 4) | Maximum thrust (Note 4) | Allowable inertial moment (kg·m ²) (Note 5) | Allowable torque (N·m) |
| IX-HNN6020-5L-□-□-□-□-2 IX-INN6020-5L-□-□-□-□-2 | Axis 1 | Arm 1 | 350 | 400 | ±120° | ±0.010 | 7121mm/s (Composite speed) | 0.52 | 2 | 10 | 108 | 152 | 0.06 | 3.3 |
| | Axis 2 | Arm 2 | 250 | 200 | ±145° | | 1393mm/s | | | | | | | |
| | Axis 3 | Vertical axis | - | 200 | 200mm | ±0.010 | 1200°/s | | | | | | | |
| | Axis 4 | Rotating axis | - | 100 | ±360° | ±0.005 | | | | | | | | |

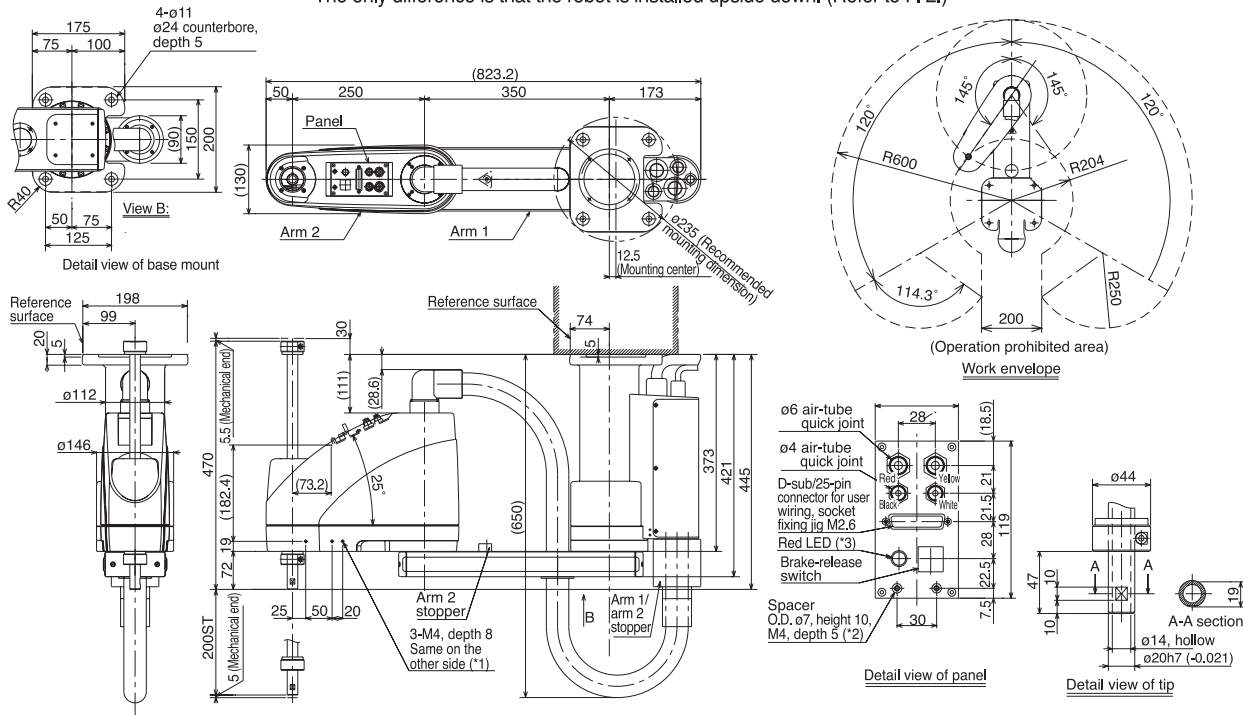
* In the above model code, specify the desired controller in □. For details, refer to "Explanation of SCARA Robot Model Items" (P. 10).

Common Specifications

| | | | |
|-------------------------------|--|------------------------------|---|
| Encode type | Absolute | Ambient temperature/humidity | Temperature: 0~40°C, humidity: 20~85%RH or below (non-condensing) |
| User wiring | 25-conductor AWG26 D-sub/25-pin connector with shield (socket) | Robot weight | 31.5kg |
| User tubing | Air tube (O.D. ø6, I.D. ø4) x 2 (Normal working pressure 0.8MPa) Air tube (O.D. ø4, I.D. ø2.5) x 2 (Normal working pressure 0.8MPa) | Cable length (Note 8) | 5L: 5m (standard), 10L: 10m (optional) |
| Alarm indicator (Note 6) | Red, small LED indicator x 1 (24 VDC must be supplied.) | | |
| Brake-release switch (Note 7) | Brake-release switch to prevent the vertical axis from dropping (24 VDC must be supplied.) | | |

Dimensions

* The following illustrations also apply to the inverse type.
The only difference is that the robot is installed upside down. (Refer to P. 2.)



*1: The prepared hole 3-M4, depth 8 passes through the side panel of the arm. A long mounting screw will contact the mechanical parts inside the arm, so exercise caution.
*2: The external force applied to each spacer must not exceed 30 N in the axial direction or 2 N·m in the rotating direction.
*3: To use the LED, the user must provide a circuit that takes signals from the controller's I/O output and supplies 24 VDC to the applicable LED terminal in the user connector.

- Cables/tubes
- Motor/encoder cable 5m/10m
- Brake power cable 5m/10m
- User cable 5m/10m
- Air tube (4 pcs) 0.15m

Applicable Controller Specifications

| Applicable controller | Features | Maximum I/O points (inputs/outputs) | Serial communication unit | Power-supply voltage | Page |
|-----------------------|---|-------------------------------------|---------------------------|----------------------|------|
| XSEL-KX | General-purpose type offering excellent expandability | 176/160 points | Can be installed. | AC200V | P37 |

Caution Refer to P. 6 for the explanations of (Note 1) to (Note 8).

IX-HNN70 Large SCARA Robot Ceiling-Mount Type: Arm Length 700mm, Vertical (Z) Axis 200mm (400mm)

IX-INN70 Large SCARA Robot Inverse Type: Arm Length 700mm, Vertical (Z) Axis 200mm (400mm)

Type Ceiling-mount/inverse type Arm length 700mm Load capacity 5kg rated/20kg maximum

Model items Series Model Cable length Controller type Standard I/O Expansion I/O I/O cable length Power-supply voltage
 (Example) IX -HNN7020 - 5L - KX - N - EEE - 2 - 2



* Refer to P. 10 for details on the model items. * The above model code represents a combination of robot and controller.

Model/Specifications

| Model | Axis configuration | Arm length (mm) | Motor capacity (W) | Work envelope | Positioning repeatability (mm) (Note 1) | Maximum operating speed (Note 2) | Standard cycle time (sec) (Note 3) | Load capacity (kg) | | Axis 3 push force (N) | | Axis 4 allowable load | | |
|--|--------------------|-----------------|--------------------|---------------|---|----------------------------------|------------------------------------|--------------------|---------|-----------------------|-------------------------|---|------------------------|-----|
| | | | | | | | | Rated | Maximum | Push action (Note 4) | Maximum thrust (Note 4) | Allowable inertial moment (kg·m ²) (Note 5) | Allowable torque (N·m) | |
| IX-HNN7020-5L-KX-□-□-□-2 [IX-HNN7040-5L-KX-□-□-□-2] IX-INN7020-5L-KX-□-□-□-2 [IX-INN7040-5L-KX-□-□-□-2] | Axis 1 | Arm 1 | 350 | 750 | ±125* | ±0.015 (XY) | 6597mm/s (Composite speed) | 0.50 | 5 | 20 | 188 | 265 | 0.1 | 6.7 |
| | Axis 2 | Arm 2 | 350 | 400 | ±145* | | | | | | | | | |
| | Axis 3 | Vertical axis | - | 400 | 200mm [400mm] | ±0.010 | 1583mm/s | | | | | | | |
| | Axis 4 | Rotating axis | - | 100 | ±360* | ±0.005 | 1200*/s | | | | | | | |

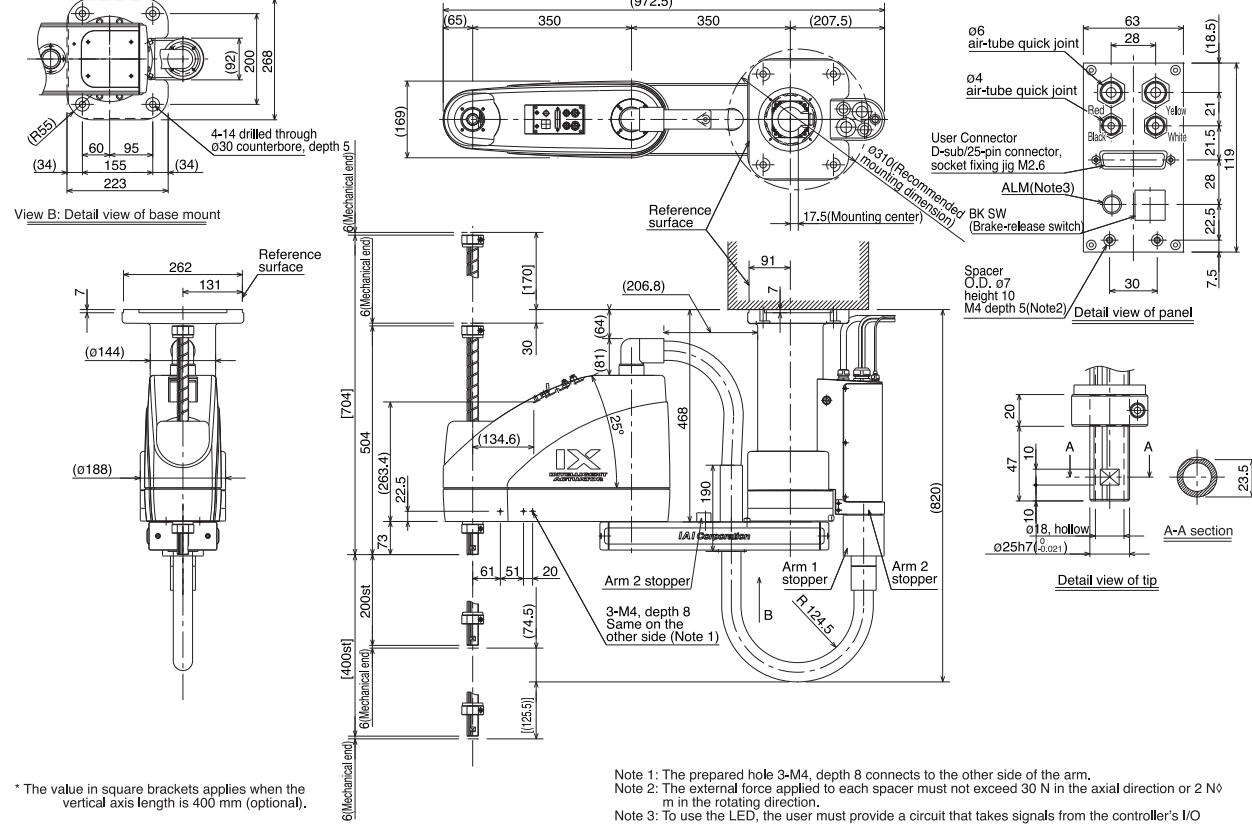
* In the above model code, specify the desired controller in □. For details, refer to "Explanation of SCARA Robot Model Items" (P. 10).

Common Specifications

| | | | |
|-------------------------------|--|------------------------------|---|
| Encode type | Absolute | Ambient temperature/humidity | Temperature: 0-40°C, humidity: 20-85%RH or below (non-condensing) |
| User wiring | 25-conductor AWG26 D-sub/25-pin connector with shield (socket) | Robot weight | 58kg |
| User tubing | Air tube (O.D. ø6, I.D. ø4) x 2 (Normal working pressure 0.8MPa) Air tube (O.D. ø4, I.D. ø2.5) x 2 (Normal working pressure 0.8MPa) | Cable length (Note 8) | 5L: 5m (standard), 10L: 10m (optional) |
| Alarm indicator (Note 6) | Red, small LED indicator x 1 (24 VDC must be supplied.) | | |
| Brake-release switch (Note 7) | Brake-release switch to prevent the vertical axis from dropping (24 VDC must be supplied.) | | |

Dimensions

* The following illustrations also apply to the inverse type. The only difference is that the robot is installed upside down. (Refer to P. 2.)



* The value in square brackets applies when the vertical axis length is 400 mm (optional).

- Note 1: The prepared hole 3-M4, depth 8 connects to the other side of the arm.
- Note 2: The external force applied to each spacer must not exceed 30 N in the axial direction or 2 N in the rotating direction.
- Note 3: To use the LED, the user must provide a circuit that takes signals from the controller's I/O output and supplies 24 VDC to the applicable LED terminal in the user connector.

Applicable Controller Specifications

| Applicable controller | Features | Maximum I/O points (inputs/outputs) | Serial communication unit | Power-supply voltage | Page |
|-----------------------|---|-------------------------------------|---------------------------|----------------------|------|
| XSEL-KX | General-purpose type offering excellent expandability | Up to 192 points | Can be installed. | AC200V | P37 |

Caution Refer to P. 6 for the explanations of (Note 1) to (Note 8).

| | | |
|--|---|--|
| IX-HNN80 | Large SCARA Robot Ceiling-Mount Type: Arm Length 800mm, Vertical (Z) Axis 200mm (400mm) | |
| IX-INN80 | Large SCARA Robot Inverse Type: Arm Length 800mm, Vertical (Z) Axis 200mm (400mm) | |
| Type / Ceiling-mount/inverse type | Arm length / 800mm | Load capacity / 5kg rated/20kg maximum |
| Model items Series Model Cable length Controller type Standard I/O Expansion I/O I/O cable length Power-supply voltage (Example) IX - HNN8020 - 5L - KX - N - EEE - 2 - 2 | | |



* Refer to P. 10 for details on the model items.

* The above model code represents a combination of robot and controller.

Model/Specifications

| Model | Axis configuration | Arm length (mm) | Motor capacity (W) | Work envelope | Positioning repeatability (mm) (Note 1) | Maximum operating speed (Note 2) | Standard cycle time (sec) (Note 3) | Load capacity (kg) | | Axis 3 push force (N) | | Axis 4 allowable load | |
|--|--|----------------------|--------------------------|--|---|---|------------------------------------|--------------------|---------|-----------------------|-------------------------|---|------------------------|
| | | | | | | | | Rated | Maximum | Push action (Note 4) | Maximum thrust (Note 4) | Allowable inertial moment (kg·m ²) (Note 5) | Allowable torque (N·m) |
| IX-HNN8020-5L-KX-□-□-□-2 [IX-HNN8040-5L-KX-□-□-□-2] IX-INN8020-5L-KX-□-□-□-2 [IX-INN8040-5L-KX-□-□-□-2] | Axis 1 Arm 1 Axis 2 Arm 2 Axis 3 Vertical axis Axis 4 Rotating axis | 450 350 - - | 750 400 400 100 | ±125° ±145° 200mm [400mm] ±360° | ±0.015 (XY) ±0.010 ±0.005 | 7121mm/s (Composite speed) 1583mm/s 1200°/s | 0.52 | 5 | 20 | 188 | 265 | 0.1 | 6.7 |

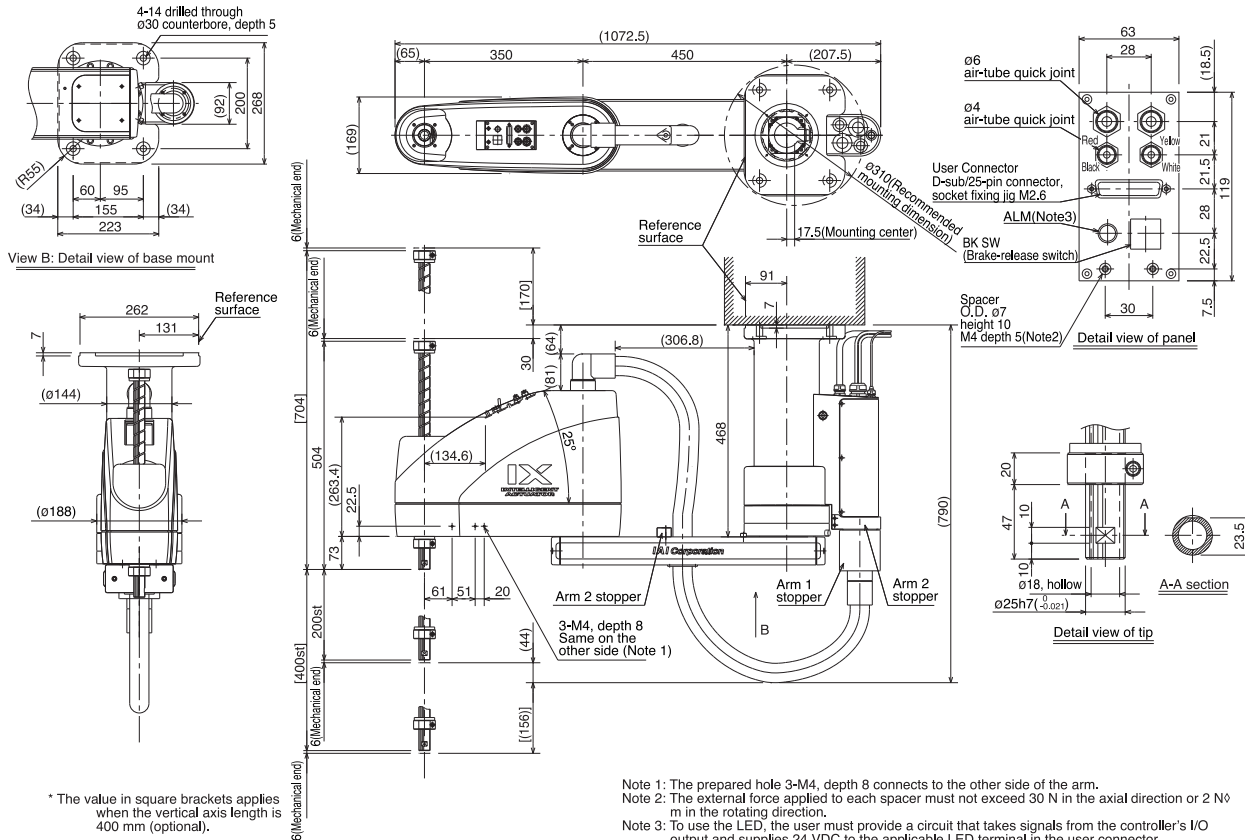
* In the above model code, specify the desired controller in □. For details, refer to "Explanation of SCARA Robot Model Items" (P. 10).

Common Specifications

| | | | |
|-------------------------------|--|------------------------------|---|
| Encode type | Absolute | Ambient temperature/humidity | Temperature: 0~40°C, humidity: 20~85%RH or below (non-condensing) |
| User wiring | 25-conductor AWG26 D-sub/25-pin connector with shield (socket) | Robot weight | 58kg |
| User tubing | Air tube (O.D. ø6, I.D. ø4) x 2 (Normal working pressure 0.8MPa) Air tube (O.D. ø4, I.D. ø2.5) x 2 (Normal working pressure 0.8MPa) | Cable length (Note 8) | 5L: 5m (standard), 10L: 10m (optional) |
| Alarm indicator (Note 6) | Red, small LED indicator x 1 (24 VDC must be supplied.) | | |
| Brake-release switch (Note 7) | Brake-release switch to prevent the vertical axis from dropping (24 VDC must be supplied.) | | |

Dimensions

* The following illustrations also apply to the inverse type. The only difference is that the robot is installed upside down. (Refer to P. 2.)



* The value in square brackets applies when the vertical axis length is 400 mm (optional).

Applicable Controller Specifications

| Applicable controller | Features | Maximum I/O points (inputs/outputs) | Serial communication unit | Power-supply voltage | Page |
|-----------------------|---|-------------------------------------|---------------------------|----------------------|------|
| XSEL-KX | General-purpose type offering excellent expandability | Up to 192 points | Can be installed. | AC200V | P37 |

Caution Refer to P. 6 for the explanations of (Note 1) to (Note 8).

IX-NNC2515

Small SCARA Robot Clean Room type:
Arm Length 250mm, Vertical (Z) Axis 150mm



| | | | | | |
|------|-----------------|------------|-------|---------------|-----------------------|
| Type | Clean Room type | Arm length | 250mm | Load capacity | 1kg rated/3kg maximum |
|------|-----------------|------------|-------|---------------|-----------------------|

| | | | | | | | | |
|-------------|--------|----------|--------------|-----------------|--------------|---------------|------------------|----------------------|
| Model items | Series | Model | Cable length | Controller type | Standard I/O | Expansion I/O | I/O cable length | Power-supply voltage |
| (Example) | IX | -NNC2515 | - 5L | - KX | - N1 | - EEE | - 2 | - 2 |

* Refer to P. 10 for details on the model items.

* The above model code represents a combination of robot and controller.

Model/Specifications

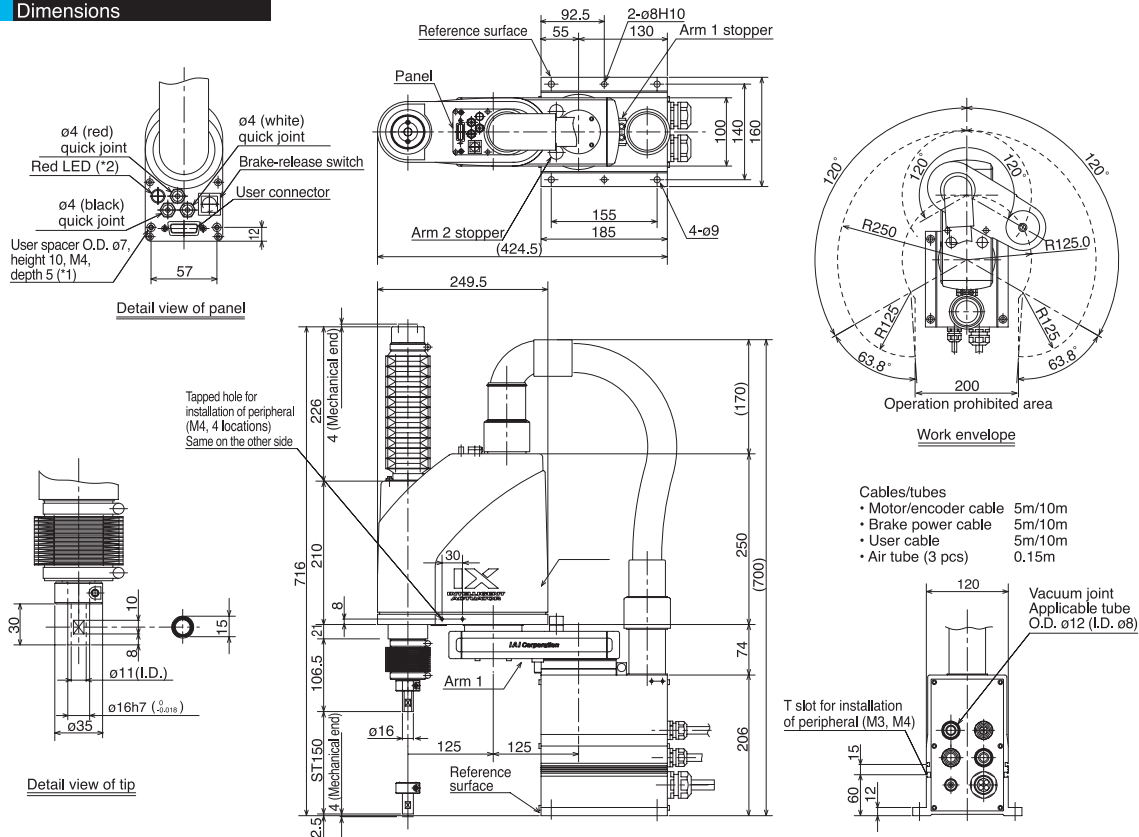
| Model | Axis configuration | Arm length (mm) | Motor capacity (W) | Work envelope | Positioning repeatability (mm) (Note 1) | Maximum operating speed (Note 2) | Standard cycle time (sec) (Note 3) | Load capacity (kg) | | Axis 3 push force (N) | | Axis 4 allowable load | |
|-------------------------|----------------------|-----------------|--------------------|---------------|---|----------------------------------|------------------------------------|--------------------|---------|-----------------------|-------------------------|---|------------------------|
| | | | | | | | | Rated | Maximum | Push action (Note 4) | Maximum thrust (Note 4) | Allowable inertial moment (kg·m ²) (Note 5) | Allowable torque (N·m) |
| IX-NNC2515-5L-□-□-□-□-2 | Axis 1 Arm 1 | 125 | 200 | ±120° | ±0.010 | 3142mm/s (Composite speed) | 0.49 | 1 | 3 | 65.3 | 90.9 | 0.015 | 1.9 |
| | Axis 2 Arm 2 | 125 | 100 | ±120° | | | | | | | | | |
| | Axis 3 Vertical axis | - | 100 | 150mm | ±0.010 | 1106mm/s | | | | | | | |
| | Axis 4 Rotating axis | - | 50 | ±360° | ±0.005 | 1600°/s | | | | | | | |

* In the above model code, specify the desired controller in □. For details, refer to "Explanation of SCARA Robot Model Items" (P. 10).

Common Specifications

| | | | |
|-------------------------------|--|------------------------------|---|
| Encode type | Absolute | Vacuum joint | Applicable tube O.D. ø12 |
| User wiring | 15-conductor AWG26 D-sub/15-pin connector with shield (socket) | Suction rate (Note 11) | 60N/min |
| User tubing | Air tube (O.D. ø4, I.D. ø2.5) x 3 (Normal working pressure 0.8MPa) | Cleanliness class | Conforming to class 10 (0.1µm) |
| Alarm indicator (Note 6) | Red, small LED indicator x 1 (24 VDC must be supplied.) | Ambient temperature/humidity | Temperature: 0-40°C, humidity: 20-85%RH or below (non-condensing) |
| Brake-release switch (Note 7) | Brake-release switch to prevent the vertical axis from dropping (24 VDC must be supplied.) | Robot weight | 19kg |
| | | Cable length (Note 8) | 5L: 5m (standard), 10L: 10m (optional) |

Dimensions



*1: The external force applied to each spacer must not exceed 30 N in the axial direction or 2 N·m in the rotating direction.

*2: To use the LED, the user must provide a circuit that takes signals from the controller's I/O output and supplies 24 VDC to the applicable LED terminal in the user connector.

Applicable Controller Specifications

| Applicable controller | Features | Maximum I/O points (inputs/outputs) | Serial communication unit | Power-supply voltage | Page |
|-----------------------|---|-------------------------------------|---------------------------|----------------------|------|
| XSEL-KX | General-purpose type offering excellent expandability | 176/160 points | Can be installed. | AC200V | P37 |
| XSEL-JX | Compact, space-saving type | 80/64 points | Cannot be installed. | | P37 |



Refer to P. 6 for the explanations of (Note 1) to (Note 11).

31

IX-NNC3515

Small SCARA Robot Clean Room type:
Arm Length 350mm, Vertical (Z) Axis 150mm



| | | | | | |
|------|-----------------|------------|-------|---------------|-----------------------|
| Type | Clean Room type | Arm length | 350mm | Load capacity | 1kg rated/3kg maximum |
|------|-----------------|------------|-------|---------------|-----------------------|

| | | | | | | | | |
|-------------|--------|----------|--------------|-----------------|--------------|---------------|------------------|----------------------|
| Model items | Series | Model | Cable length | Controller type | Standard I/O | Expansion I/O | I/O cable length | Power-supply voltage |
| (Example) | IX | -NNC3515 | -5L | -KX | -N1 | -EEE | -2 | -2 |

* Refer to P. 10 for details on the model items.

* The above model code represents a combination of robot and controller.

Model/Specifications

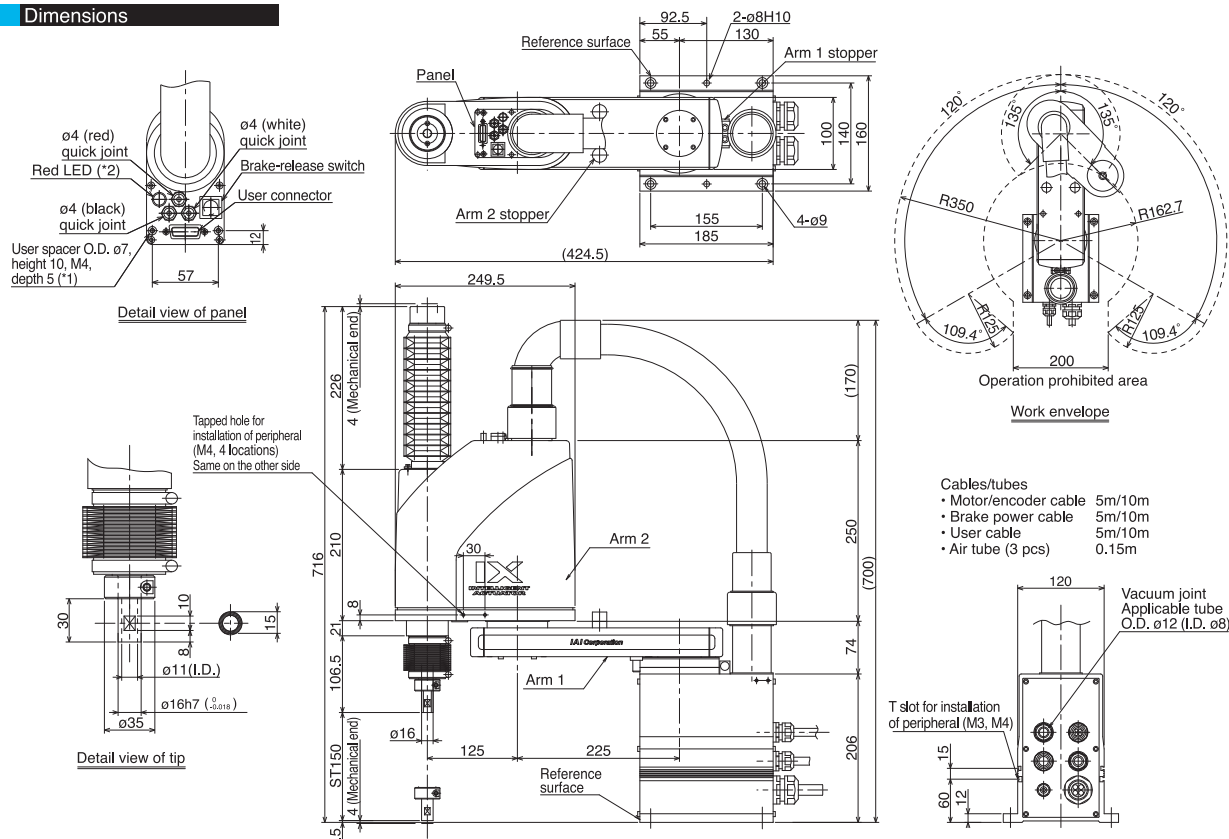
| Model | Axis configuration | Arm length (mm) | Motor capacity (W) | Work envelope | Positioning repeatability (mm) (Note 1) | Maximum operating speed (Note 2) | Standard cycle time (sec) (Note 3) | Load capacity (kg) | | Axis 3 push force (N) | | Axis 4 allowable load | |
|-------------------------|----------------------|-----------------|--------------------|---------------|---|----------------------------------|------------------------------------|--------------------|---------|-----------------------|-------------------------|---|------------------------|
| | | | | | | | | Rated | Maximum | Push action (Note 4) | Maximum thrust (Note 4) | Allowable inertial moment (kg·m ²) (Note 5) | Allowable torque (N·m) |
| IX-NNC3515-5L-□-□-□-□-2 | Axis 1 Arm 1 | 225 | 200 | ±120° | ±0.010 | 3979mm/s (Composite speed) | 0.58 | 1 | 3 | 65.3 | 90.9 | 0.015 | 1.9 |
| | Axis 2 Arm 2 | 125 | 100 | ±135° | | 1106mm/s | | | | | | | |
| | Axis 3 Vertical axis | - | 100 | 150mm | ±0.010 | 1600°/s | | | | | | | |
| | Axis 4 Rotating axis | - | 50 | ±360° | ±0.005 | | | | | | | | |

* In the above model code, specify the desired controller in □. For details, refer to "Explanation of SCARA Robot Model Items" (P. 10).

Common Specifications

| | | | |
|-------------------------------|--|------------------------------|---|
| Encode type | Absolute | Vacuum joint | Applicable tube O.D. ø12 |
| User wiring | 15-conductor AWG26 D-sub/15-pin connector with shield (socket) | Suction rate (Note 11) | 60Nl/min |
| User tubing | Air tube (O.D. ø4, I.D. ø2.5) x 3 (Normal working pressure 0.8MPa) | Cleanliness class | Conforming to class 10 (0.1µm) |
| Alarm indicator (Note 6) | Red, small LED indicator x 1 (24 VDC must be supplied.) | Ambient temperature/humidity | Temperature: 0~40°C, humidity: 20~85%RH or below (non-condensing) |
| Brake-release switch (Note 7) | Brake-release switch to prevent the vertical axis from dropping (24 VDC must be supplied.) | Robot weight | 20kg |
| | | Cable length (Note 8) | 5L: 5m (standard), 10L: 10m (optional) |

Dimensions



*1: The external force applied to each spacer must not exceed 30 N in the axial direction or 2 N·m in the rotating direction.

*2: To use the LED, the user must provide a circuit that takes signals from the controller's I/O output and supplies 24 VDC to the applicable LED terminal in the user connector.

Applicable Controller Specifications

| Applicable controller | Features | Maximum I/O points (inputs/outputs) | Serial communication unit | Power-supply voltage | Page |
|-----------------------|---|-------------------------------------|---------------------------|----------------------|------|
| XSEL-KX | General-purpose type offering excellent expandability | 176/160 points | Can be installed. | AC200V | P37 |
| XSEL-JX | Compact, space-saving type | 80/64 points | Cannot be installed. | | P37 |

Caution Refer to P. 6 for the explanations of (Note 1) to (Note 11).

IX-NNC50

IX Medium SCARA Robot Clean Room Type:
Arm Length 500mm, Vertical (Z) Axis 200mm (300mm)

Type Clean Room type Arm length 500mm Load capacity 2kg rated/10kg maximum

Model items Series Model Cable length Controller type Standard I/O Expansion I/O I/O cable length Power-supply voltage

(Example) IX - NNC5020 - 5L - KX - N1 - EEE - 2 - 2



* Refer to P. 10 for details on the model items.

* The above model code represents a combination of robot and controller.

Model/Specifications

| Model | Axis configuration | Arm length (mm) | Motor capacity (W) | Work envelope | Positioning repeatability (mm) (Note 1) | Maximum operating speed (Note 2) | Standard cycle time (sec) (Note 3) | Load capacity (kg) | | Axis 3 push force (N) | | Axis 4 allowable load | |
|--|----------------------|-----------------|--------------------|------------------|---|----------------------------------|------------------------------------|--------------------|---------|-----------------------|-------------------------|---|------------------------|
| | | | | | | | | Rated | Maximum | Push action (Note 4) | Maximum thrust (Note 4) | Allowable inertial moment (kg·m ²) (Note 5) | Allowable torque (N·m) |
| IX-NNC5020-5L-KX-□-□-□-2 [IX-NNC5030-5L-KX-□-□-□-2] | Axis 1 Arm 1 | 250 | 400 | ±120° | ±0.010 | 6283mm/s (Composite speed) | 0.47 | 2 | 10 | 108 | 152 | 0.06 | 3.3 |
| | Axis 2 Arm 2 | 250 | 200 | ±145° | | 1393mm/s | | | | | | | |
| | Axis 3 Vertical axis | - | 200 | 200mm [300mm] | ±0.010 | 1200°/s | | | | | | | |
| | Axis 4 Rotating axis | - | 100 | ±360° | ±0.005 | | | | | | | | |

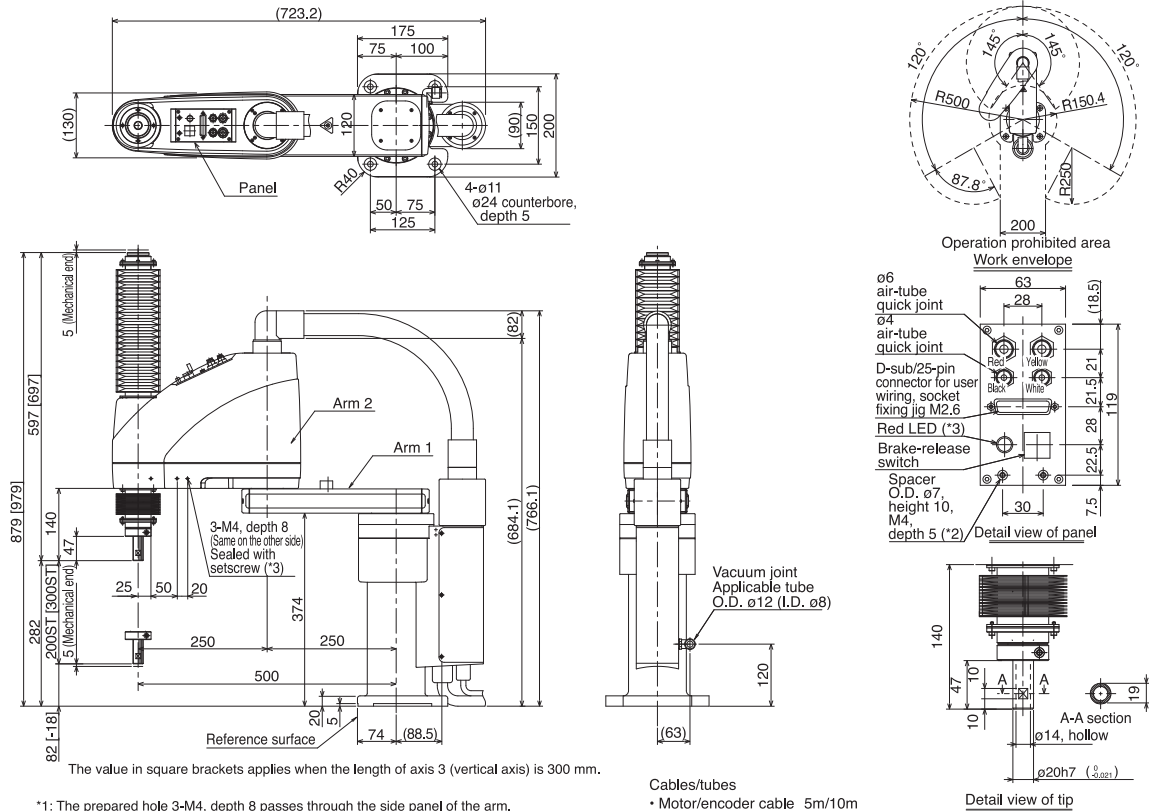
* In the above model code, specify the desired controller in □. For details, refer to "Explanation of SCARA Robot Model Items" (P. 10).

* The value in square brackets applies when the vertical axis length is 300 mm. Other specifications apply commonly to both the vertical axis lengths of 200 mm and 300 mm.

Common Specifications

| | | | |
|-------------------------------|--|------------------------------|---|
| Encode type | Absolute | Vacuum joint | Applicable tube O.D. ø12 |
| User wiring | 25-conductor AWG26 D-sub/25-pin connector with shield (socket) | Suction rate (Note 11) | 60N/min |
| User tubing | Air tube (O.D. ø6, I.D. ø4) x 2 (Normal working pressure 0.8MPa) Air tube (O.D. ø4, I.D. ø2.5) x 2 (Normal working pressure 0.8MPa) | Cleanliness class | Conforming to class 10 (0.1µm) |
| Alarm indicator (Note 6) | Red, small LED indicator x 1 (24 VDC must be supplied.) | Ambient temperature/humidity | Temperature: 0~40°C, humidity: 20~85%RH or below (non-condensing) |
| Brake-release switch (Note 7) | Brake-release switch to prevent the vertical axis from dropping (24 VDC must be supplied.) | Robot weight | 31.5kg |
| | | Cable length (Note 8) | 5L: 5m (standard), 10L: 10m (optional) |

Dimensions



Applicable Controller Specifications

| Applicable controller | Features | Maximum I/O points (inputs/outputs) | Serial communication unit | Power-supply voltage | Page |
|-----------------------|---|-------------------------------------|---------------------------|----------------------|------|
| XSEL-KX | General-purpose type offering excellent expandability | 176/160 points | Can be installed. | AC200V | P37 |



Refer to P. 6 for the explanations of (Note 1) to (Note 11).

33

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IX-NNC60

IX Medium SCARA Robot Clean Room Type:
Arm Length 600mm, Vertical (Z) Axis 200mm (300mm)



Type Clean Room type Arm length 600mm Load capacity 2kg rated/10kg maximum

Model items Series Model Cable length Controller type Standard I/O Expansion I/O I/O cable length Power-supply voltage
(Example) IX - NNC6020 - 5L - KX - N1 - EEE - 2 - 2

* Refer to P. 10 for details on the model items.

* The above model code represents a combination of robot and controller.

Model/Specifications

| Model | Axis configuration | Arm length (mm) | Motor capacity (W) | Work envelope | Positioning repeatability (mm) (Note 1) | Maximum operating speed (Note 2) | Standard cycle time (sec) (Note 3) | Load capacity (kg) | | Axis 3 push force (N) | | Axis 4 allowable load | |
|--|----------------------|-----------------|--------------------|---------------|---|----------------------------------|------------------------------------|--------------------|---------|-----------------------|-------------------------|---|------------------------|
| | | | | | | | | Rated | Maximum | Push action (Note 4) | Maximum thrust (Note 4) | Allowable inertial moment (kg·m ²) (Note 5) | Allowable torque (N·m) |
| IX-NNC6020-5L-KX-□-□-□-2 [IX-NNN6030-5L-KX-□-□-□-2] | Axis 1 Arm 1 | 350 | 400 | ±120° | ±0.010 | 7121mm/s (Composite speed) | 0.54 | 2 | 10 | 108 | 152 | 0.06 | 3.3 |
| | Axis 2 Arm 2 | 250 | 200 | ±145° | | | | | | | | | |
| | Axis 3 Vertical axis | - | 200 | 200mm [300mm] | ±0.010 | 1393mm/s | | | | | | | |
| | Axis 4 Rotating axis | - | 100 | ±360° | ±0.005 | 1200°/s | | | | | | | |

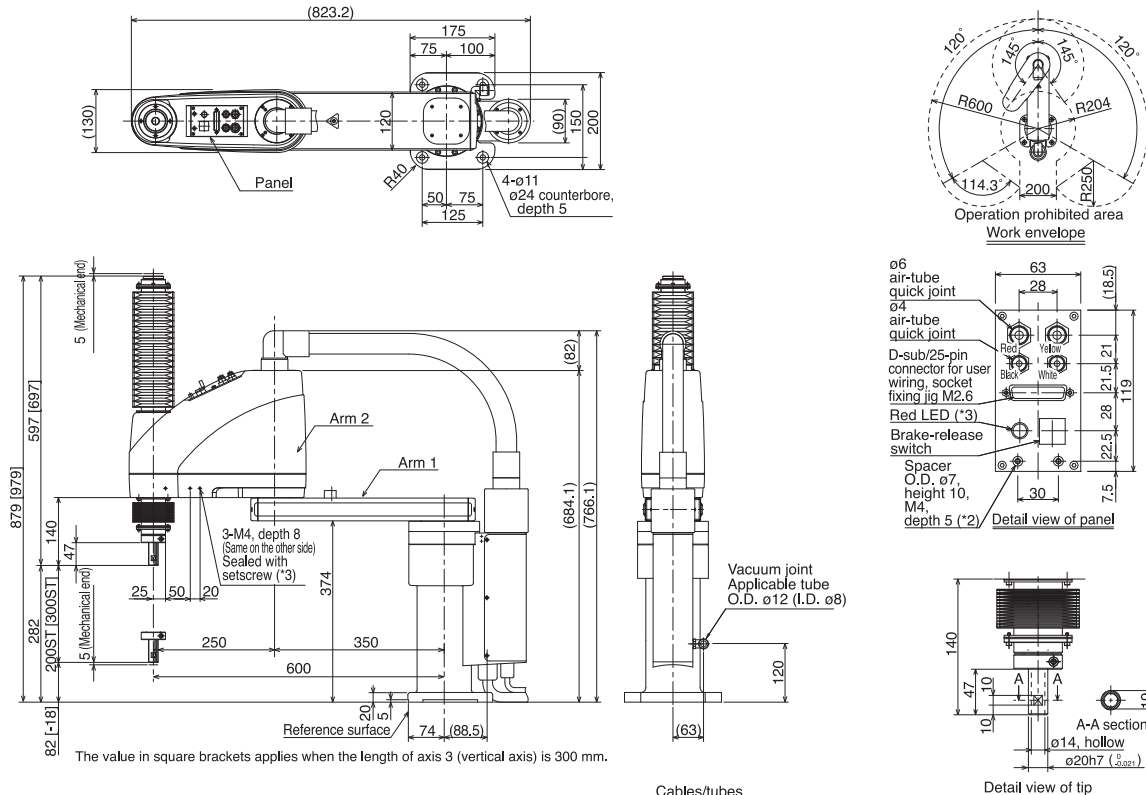
* In the above model code, specify the desired controller in □. For details, refer to "Explanation of SCARA Robot Model Items" (P. 10).

* The value in square brackets applies when the vertical axis length is 300 mm. Other specifications apply commonly to both the vertical axis lengths of 200 mm and 300 mm.

Common Specifications

| | | | |
|-------------------------------|--|------------------------------|---|
| Encode type | Absolute | Vacuum joint | Applicable tube O.D. ø12 |
| User wiring | 25-conductor AWG26 D-sub/25-pin connector with shield (socket) | Suction rate (Note 11) | 60Nl/min |
| User tubing | Air tube (O.D. ø6, I.D. ø4) x 2 (Normal working pressure 0.8MPa) Air tube (O.D. ø4, I.D. ø2.5) x 2 (Normal working pressure 0.8MPa) | Cleanliness class | Conforming to class 10 (0.1µm) |
| Alarm indicator (Note 6) | Red, small LED indicator x 1 (24 VDC must be supplied.) | Ambient temperature/humidity | Temperature: 0~40°C, humidity: 20~85%RH or below (non-condensing) |
| Brake-release switch (Note 7) | Brake-release switch to prevent the vertical axis from dropping (24 VDC must be supplied.) | Robot weight | 32.5kg |
| | | Cable length (Note 8) | 5L: 5m (standard), 10L: 10m (optional) |

Dimensions



- *1: The prepared hole 3-M4, depth 8 passes through the side panel of the arm.
*2: The external force applied to each spacer must not exceed 30 N in the axial direction or 2 N·m in the rotating direction.
*3: To use the LED, the user must provide a circuit that takes signals from the controller's I/O output and supplies 24 VDC to the applicable LED terminal in the user connector.

- Cables/tubes
- Motor/encoder cable 5m/10m
 - Brake power cable 5m/10m
 - User cable 5m/10m
 - Air tube (4 pcs) 0.15m

Applicable Controller Specifications

| Applicable controller | Features | Maximum I/O points (inputs/outputs) | Serial communication unit | Power-supply voltage | Page |
|-----------------------|---|-------------------------------------|---------------------------|----------------------|------|
| XSEL-KX | General-purpose type offering excellent expandability | 176/160 points | Can be installed. | AC200V | P37 |



Refer to P. 6 for the explanations of (Note 1) to (Note 11).

IX-NNC70



IX Large SCARA Robot Clean Room Type:
Arm Length 700mm, Vertical (Z) Axis 200mm (400mm)



Type Clean Room type Arm length 700mm Load capacity 5kg rated/20kg maximum

Model items Series Model Cable length Controller type Standard I/O Expansion I/O I/O cable length Power-supply voltage
(Example) IX - NNC7020 - 5L - KX - N - EEE - 2 - 2

* In the above model code, specify the desired controller in o. For details, refer to the explanation on controller (P. 10).

Model/Specifications

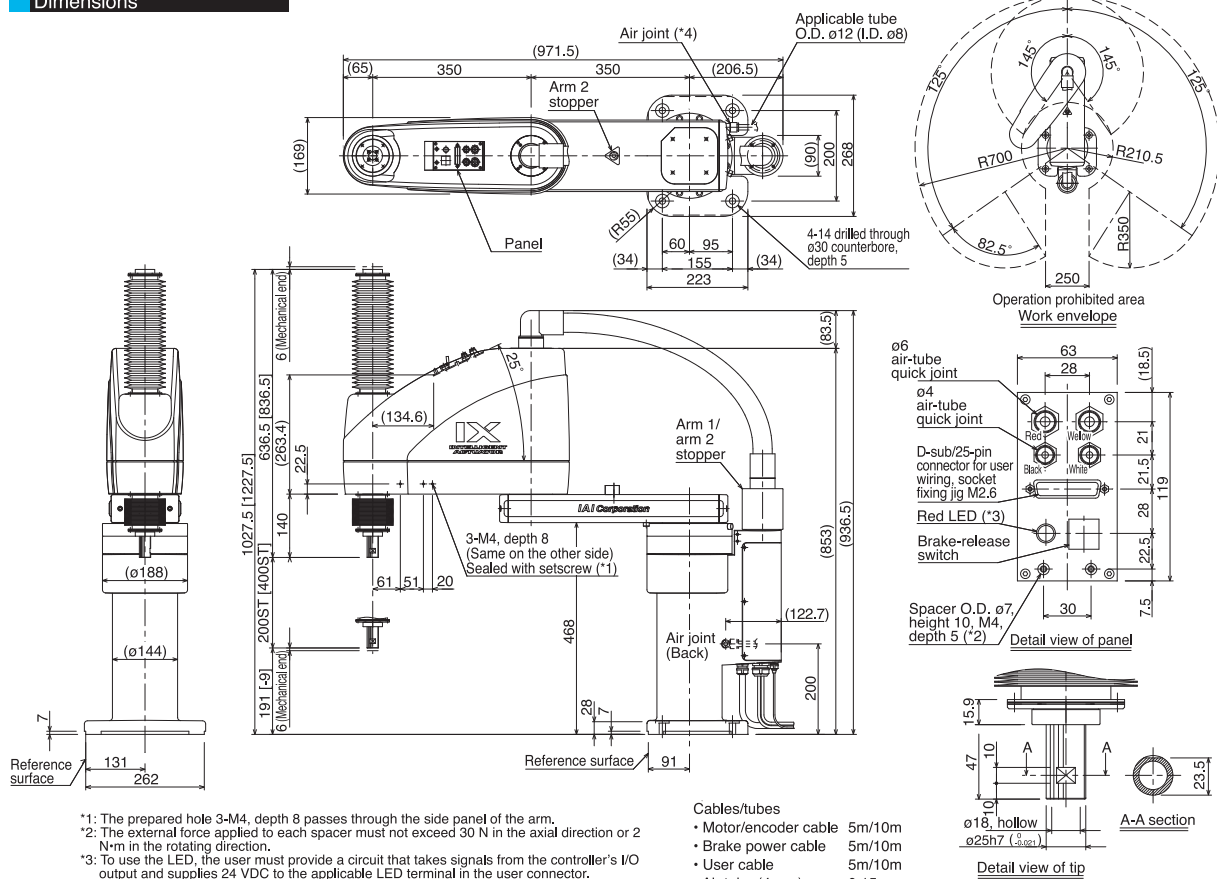
| Model | Axis configuration | | Arm length (mm) | Motor capacity (W) | Work envelope | Positioning repeatability (mm) (Note 1) | Maximum operating speed (Note 2) | Standard cycle time (sec) (Note 3) | Load capacity (kg) | | Axis 3 push force (N) | | Axis 4 allowable load | |
|--|--------------------|---------------|-----------------|--------------------|------------------|---|----------------------------------|------------------------------------|--------------------|---------|-----------------------|-------------------------|---|------------------------|
| | Axis 1 | Arm 1 | | | | | | | Rated | Maximum | Push action (Note 4) | Maximum thrust (Note 4) | Allowable inertial moment (kg·m ²) (Note 5) | Allowable torque (N·m) |
| IX-NNC7020-5L-KX-□-□-□-2 [IX-NNC7040-5L-KX-□-□-□-2] | Axis 1 | Arm 1 | 350 | 750 | ±125° | ±0.015 | 6597mm/s (Composite speed) | 0.52 | 5 | 20 | 188 | 265 | 0.1 | 6.7 |
| | Axis 2 | Arm 2 | 350 | 400 | ±145° | | | | | | | | | |
| | Axis 3 | Vertical axis | - | 400 | 200mm [400mm] | ±0.010 | 1583mm/s | | | | | | | |
| | Axis 4 | Rotating axis | - | 200 | ±360° | ±0.005 | 1200°/s | | | | | | | |

* In the above model code, specify the desired controller in □. For details, refer to "Explanation of SCARA Robot Model Items" (P. 10).

Common Specifications

| | | | |
|-------------------------------|--|------------------------------|---|
| Encode type | Absolute | Vacuum joint | Applicable tube O.D. ø12 |
| User wiring | 25-conductor AWG26 D-sub/25-pin connector with shield (socket) | Suction rate (Note 11) | 80N/min |
| User tubing | Air tube (O.D. ø6, I.D. ø4) x 2 (Normal working pressure 0.8MPa) Air tube (O.D. ø4, I.D. ø2.5) x 2 (Normal working pressure 0.8MPa) | Cleanliness class | Conforming to class 10 (0.1µm) |
| Alarm indicator (Note 6) | Red, small LED indicator x 1 (24 VDC must be supplied.) | Ambient temperature/humidity | Temperature: 0-40°C, humidity: 20-85%RH or below (non-condensing) |
| Brake-release switch (Note 7) | Brake-release switch to prevent the vertical axis from dropping (24 VDC must be supplied.) | Robot weight | 60kg |
| | | Cable length (Note 8) | 5L: 5m (standard), 10L: 10m (optional) |

Dimensions



Applicable Controller Specifications

| Applicable controller | Features | Maximum I/O points (inputs/outputs) | Serial communication unit | Power-supply voltage | Page |
|-----------------------|---|-------------------------------------|---------------------------|----------------------|------|
| XSEL-KX | General-purpose type offering excellent expandability | 176/160 points | Can be installed. | AC200V | P37 |



Caution

Refer to P. 6 for the explanations of (Note 1) to (Note 11).

* Refer to P. 6 for other points to note.

35

IX-NNC80

IX Medium SCARA Robot Clean Room Type:
Arm Length 800mm, Vertical (Z) Axis 200mm (400mm)



Type Clean Room type Arm length 800mm Load capacity 5kg rated/20kg maximum

Model items Series Model Cable length Controller type Standard I/O Expansion I/O I/O cable length Power-supply voltage
(Example) IX - NNN8020 - 5L - KX - N - EEE - 2 - 2

* Refer to P. 10 for details on the model items.

* The above model code represents a combination of robot and controller.

Model/Specifications

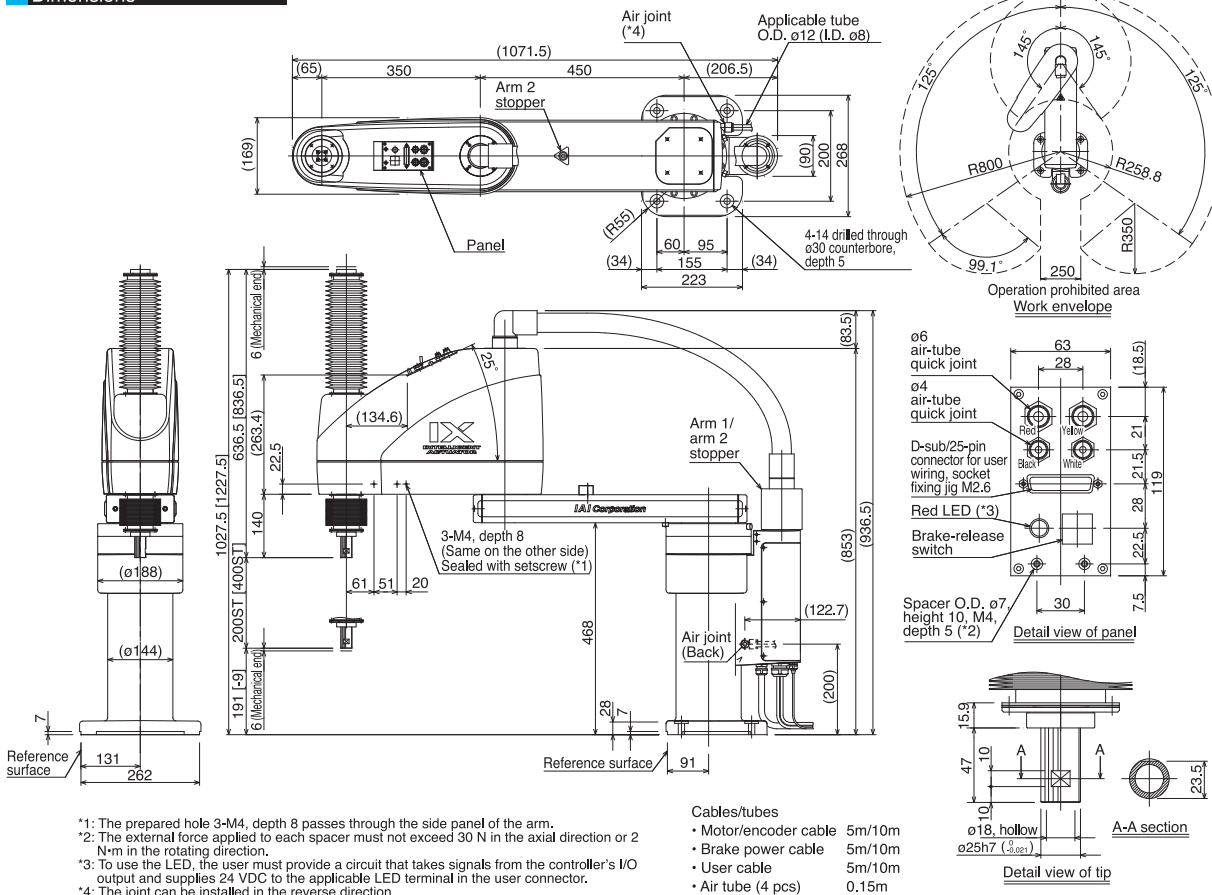
| Model | Axis configuration | Arm length (mm) | Motor capacity (W) | Work envelope | Positioning repeatability (mm) (Note 1) | Maximum operating speed (mm/s) (Note 2) | Standard cycle time (sec) (Note 3) | Load capacity (kg) | | Axis 3 push force (N) | | Axis 4 allowable load | |
|--|----------------------|-----------------|--------------------|------------------|---|---|------------------------------------|--------------------|---------|-----------------------|-------------------------|---|------------------------|
| | | | | | | | | Rated | Maximum | Push action (Note 4) | Maximum thrust (Note 4) | Allowable inertial moment (kg·m ²) (Note 5) | Allowable torque (N·m) |
| IX-NNC8020-5L-KX-□-□-□-2 [IX-NNC8040-5L-KX-□-□-□-2] | Axis 1 Arm 1 | 450 | 750 | ±125° | ±0.015 | 7121mm/s (Composite speed) | 0.52 | 5 | 20 | 188 | 265 | 0.1 | 6.7 |
| | Axis 2 Arm 2 | 350 | 400 | ±145° | | | | | | | | | |
| | Axis 3 Vertical axis | - | 400 | 200mm [400mm] | ±0.010 | 1583mm/s | | | | | | | |
| | Axis 4 Rotating axis | - | 200 | ±360° | ±0.005 | 1200°/s | | | | | | | |

* In the above model code, specify the desired controller in □. For details, refer to "Explanation of SCARA Robot Model Items" (P. 10).

Common Specifications

| | | | |
|-------------------------------|--|------------------------------|---|
| Encode type | Absolute | Vacuum joint | Applicable tube O.D. ø12 |
| User wiring | 25-conductor AWG26 D-sub/25-pin connector with shield (socket) | Suction rate (Note 11) | 80N/min |
| User tubing | Air tube (O.D. ø6, I.D. ø4) x 2 (Normal working pressure 0.8MPa) Air tube (O.D. ø4, I.D. ø2.5) x 2 (Normal working pressure 0.8MPa) | Cleanliness class | Conforming to class 10 (0.1µm) |
| Alarm indicator (Note 6) | Red, small LED indicator x 1 (24 VDC must be supplied.) | Ambient temperature/humidity | Temperature: 0-40°C, humidity: 20-85%RH or below (non-condensing) |
| Brake-release switch (Note 7) | Brake-release switch to prevent the vertical axis from dropping (24 VDC must be supplied.) | Robot weight | 62kg |
| | | Cable length (Note 8) | 5L: 5m (standard), 10L: 10m (optional) |

Dimensions



Applicable Controller Specifications

| Applicable controller | Features | Maximum I/O points (inputs/outputs) | Serial communication unit | Power-supply voltage | Page |
|-----------------------|---|-------------------------------------|---------------------------|----------------------|------|
| XSEL-KX | General-purpose type offering excellent expandability | 176/160 points | Can be installed. | AC200V | P37 |



Refer to P. 6 for the explanations of (Note 1) to (Note 11).

* Refer to P. 6 for other points to note.

XSEL-JX/KX Dedicated IX Controller

| | |
|------------------------------|--------------------------|
| Operating mode | Program operation |
| Number of storable programs | 64 programs (6000 steps) |
| Number of storable positions | 3000 positions |
| Power-supply voltage | |



1 Features

The JX/KX controller is a high-performance X-SEL controller customized exclusively for use with the IX Series. It combines the useful functions of the X-SEL controller with the dedicated IX Series commands to achieve a substantial improvement in utility.

1 Super SEL Language

The JX/KX controller adopts Super SEL Language, the same language used for our single-axis/Cartesian robots. Therefore, you can create programs just as easily as you do for your existing IAI controllers. If you are new to an IAI controller, the simple language structure will let you learn the necessary programming steps in no time.

2 Network Ready

The JX/KX controller supports DeviceNet (*1), CC-Link (*2), ProfiBus (*3), and Ethernet.

*1 DeviceNet is a registered trademark of ODVA.

*2 CC-Link is a registered trademark of Mitsubishi Electric Corporation.

*3 ProfiBus is a registered trademark of Siemens AG.

3 Multitasking

A maximum of 16 programs can be run at the same time, so you can transmit signals during operation or control a peripheral simultaneously.

4 Compact

The JX/KX controller is significantly smaller than the conventional M-SEL-IH controller.

2 Model

XSEL - KX - NNN5020 - N1 - EEE - 2 - 2

| ① Series | ② Controller type | ③ IX robot model | ④ Standard I/O specification | | | | ⑤ Expansion I/O specification (Note 1) | | | | ⑥ I/O flat cable length (Note 2) | ⑦ Power-supply voltage |
|----------|--|--|---|---|---|---|--|-----------|--------|--------|----------------------------------|------------------------|
| | | | Slot 1 | Slot 2 | Slot 3 | Slot 4 | Slot 1 | Slot 2 | Slot 3 | Slot 4 | | |
| XSEL | JX (compact type) KX (general-purpose type) KT (global specifications) | NNN2515~8040 (Standard Type) NSN5016~6016 (High-Speed Type) NNW2515~8040 (Dustproof/Splash-proof Type) TNN3015~3515 (Wall-Mount Type) UNN3015~3515 (Wall-Mount Inverse Type) HNN5020~8040 (Ceiling Mount Type) INN5020~8040 (Ceiling Mount Inverse Type) NNC2515~8040 (Clean Room Type) | N1 [32 input/16 output] NPN board N3 (Note 3) [48 input/48 output] NPN board P1 [32 input/16 output] PNP board P3 (Note 3) [48 input/48 output] PNP board DV [DeviceNet 256/256 board] CC [CC-Link 256/256 board] PR [ProfiBus 256/256 board] ET [Ethernet data communication board] | E (not used) C (Note 4) [CC-Link connection 16/16 board] N1 [Expansion I/O NPN32/16] P1 [Expansion I/O PNP16/32] N3 (Note 4) [Multipoint I/O PNP48/48] P1 [Expansion I/O PNP32/16] CC [Expansion I/O PNP16/32] P3 (Note 4) [Multipoint I/O PNP48/48] SA (Note 4) [Expansion SIO type A] SB (Note 4) [Expansion SIO type B] SC (Note 4) [Expansion SIO type C] | E (not used) C (Note 4) [CC-Link connection 16/16 board] N1 [Expansion I/O NPN32/16] P1 [Expansion I/O PNP16/32] N3 (Note 4) [Multipoint I/O PNP48/48] P1 [Expansion I/O PNP32/16] CC [Expansion I/O PNP16/32] P3 (Note 4) [Multipoint I/O PNP48/48] SA (Note 4) [Expansion SIO type A] SB (Note 4) [Expansion SIO type B] SC (Note 4) [Expansion SIO type C] | E (not used) C (Note 4) [CC-Link connection 16/16 board] N1 [Expansion I/O NPN32/16] P1 [Expansion I/O PNP16/32] N3 (Note 4) [Multipoint I/O PNP48/48] P1 [Expansion I/O PNP32/16] CC [Expansion I/O PNP16/32] P3 (Note 4) [Multipoint I/O PNP48/48] SA (Note 4) [Expansion SIO type A] SB (Note 4) [Expansion SIO type B] SC (Note 4) [Expansion SIO type C] | 2 : 2m 3 : 3m 5 : 5m 0 : None | 2 : 200-V | | | | |

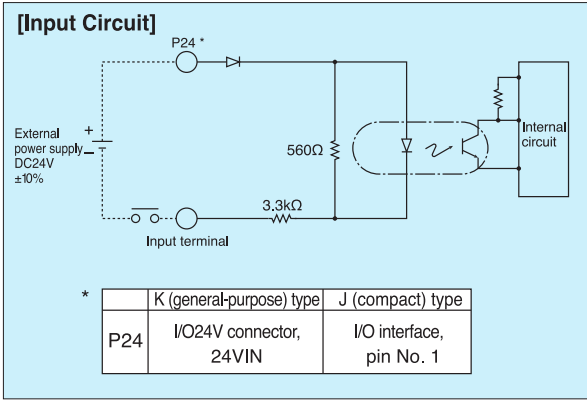
(Note 1) Use a three-digit code (EEE) to specify the expansion slot type. In the case of the JX controller having only one expansion slot, specify the slot (slot 2) using the leftmost digit and leave IEI in the remaining two digits (e.g., N1EE).
 (Note 2) An I/O flat cable is supplied with each standard I/O board, expansion I/O board (50-conductor type) or multipoint I/O board (100-conductor type). The standard cable for standard/expansion I/O board is 2 m long, but you can also specify 3 m or 5 m. A cable of any length up to 10 m can be fabricated, but a length other than 2, 3 or 5 m will require a special order. If you require a length other than 2, 3 or 5 m, select i0 (None) and place a separate order by specifying the I/O cable model. If you have selected a board other than standard, expansion or multipoint I/O board, select i0 for the I/O flat cable length.
 (Note 3) This is a dedicated option for the JX controller. Use an expansion N3/P3 board for the KX controller.
 (Note 4) This is a dedicated option for the KX controller. C, N3, P3, SA, SB and SC cannot be specified for the JX controller.

37

3 I/O Wiring Diagrams

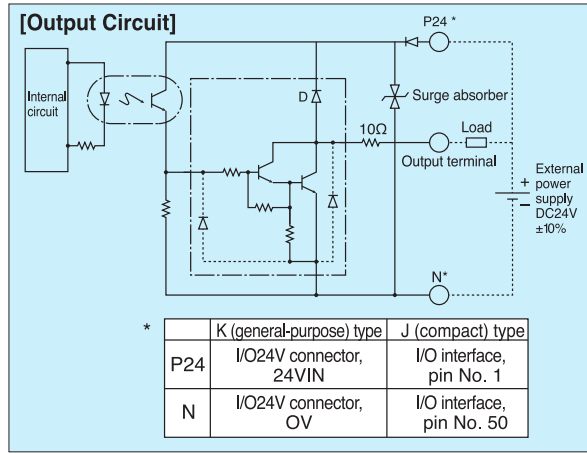
Input Part External input specifications (NPN specification)

| Item | Specification |
|--------------------|--|
| Input power supply | 24VDC ±10% |
| Input current | 7mA/ circuit |
| On/off voltage | On voltage -- 16 VDC minimum, Off voltage -- 5 VDC maximum |
| Insulation method | Photocoupler insulation |
| External devices | (1) No-voltage contact (with a minimum load of approx. 5VDC/1mA) (2) Photoelectric/proximity sensor (NPN type) (3) Sequencer transistor output (open-collector type) (4) Sequencer contact output (with a minimum load of approx. 5VDC/1mA) |



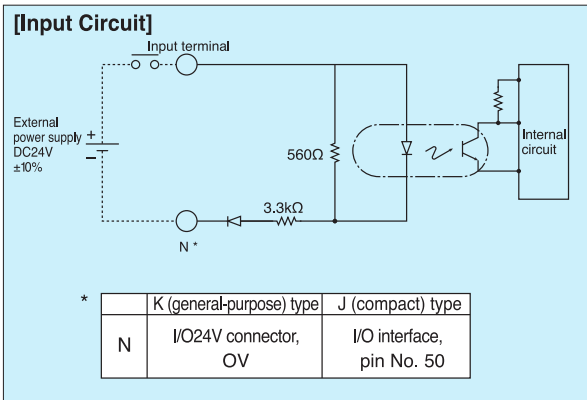
Output Part External output specifications (NPN specification)

| Item | Specification |
|----------------------|---|
| Load voltage | 24VDC |
| Maximum load current | 100mA/point, 400mA peak (total current) |
| Leak current | 0.1mA/point maximum |
| Insulation method | Photocoupler insulation |
| External devices | (1) Miniature relay, (2) Sequencer input unit |



Input Part External input specifications (PNP specification)

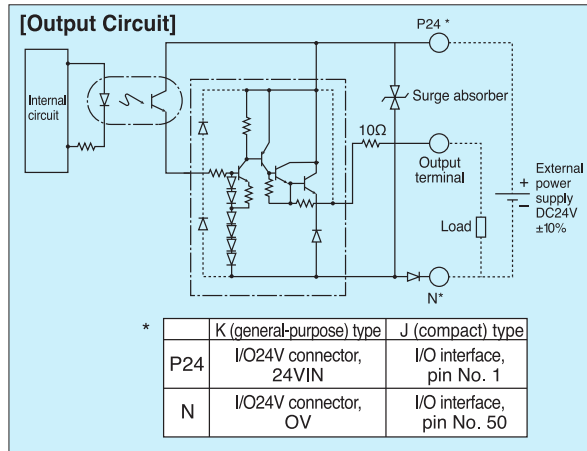
| Item | Specification |
|--------------------|--|
| Input power supply | 24VDC ±10% |
| Input current | 7mA/ circuit |
| On/off voltage | On voltage --- 8 VDC maximum, Off voltage --- 19 VDC minimum |
| Insulation method | Photocoupler insulation |
| External devices | (1) No-voltage contact (with a minimum load of approx. 5VDC/1mA) (2) Photoelectric/proximity sensor (PNP type) (3) Sequencer transistor output (open-collector type) (4) Sequencer contact output (with a minimum load of approx. 5VDC/1mA) |



Output Part External output specifications (PNP specification)

| Item | Specification |
|----------------------|---|
| Load voltage | 24VDC |
| Maximum load current | 100mA/point, 400mA/8ports |
| Leak current | 0.1mA/point maximum |
| Insulation method | Photocoupler insulation |
| External devices | (1) Miniature relay, (2) Sequencer input unit |

Note) The maximum total load current for every eight ports from output port No. 300 is limited to 400 mA. (The total maximum load current for output port No. 300 + n to No. 300 + n + 7 becomes 400 mA, where n is 0 or a multiple of 8.)



4 I/O Signals

Standard I/O Signals

| Pin No. | Category | Port No. | Standard setting |
|---------|----------|-----------------------|------------------------------------|
| 1 | | | NC |
| 2 | | 000 | Program start |
| 3 | | 001 | General-purpose input |
| 4 | | 002 | General-purpose input |
| 5 | | 003 | General-purpose input |
| 6 | | 004 | General-purpose input |
| 7 | | 005 | General-purpose input |
| 8 | | 006 | General-purpose input |
| 9 | | 007 | Program specification (PRG No. 1) |
| 10 | | 008 | Program specification (PRG No. 2) |
| 11 | | 009 | Program specification (PRG No. 4) |
| 12 | | 010 | Program specification (PRG No. 8) |
| 13 | | 011 | Program specification (PRG No. 10) |
| 14 | | 012 | Program specification (PRG No. 20) |
| 15 | | 013 | Program specification (PRG No. 40) |
| 16 | | 014 | General-purpose input |
| 17 | Input | 015 | General-purpose input |
| 18 | | 016 | General-purpose input |
| 19 | | 017 | General-purpose input |
| 20 | | 018 | General-purpose input |
| 21 | | 019 | General-purpose input |
| 22 | | 020 | General-purpose input |
| 23 | | 021 | General-purpose input |
| 24 | | 022 | General-purpose input |
| 25 | | 023 | General-purpose input |
| 26 | | 024 | General-purpose input |
| 27 | 025 | General-purpose input | |
| 28 | 026 | General-purpose input | |
| 29 | 027 | General-purpose input | |
| 30 | 028 | General-purpose input | |
| 31 | 029 | General-purpose input | |
| 32 | 030 | General-purpose input | |
| 33 | 031 | General-purpose input | |
| 34 | | 300 | Alarm output |
| 35 | | 301 | Ready output |
| 36 | | 302 | Emergency stop output |
| 37 | | 303 | General-purpose output |
| 38 | | 304 | General-purpose output |
| 39 | | 305 | General-purpose output |
| 40 | | 306 | General-purpose output |
| 41 | Output | 307 | General-purpose output |
| 42 | | 308 | General-purpose output |
| 43 | | 309 | General-purpose output |
| 44 | | 310 | General-purpose output |
| 45 | | 311 | General-purpose output |
| 46 | | 312 | General-purpose output |
| 47 | | 313 | General-purpose output |
| 48 | | 314 | General-purpose output |
| 49 | | 315 | General-purpose output |
| 50 |  |  | — | NC |

Expansion I/O Signals (IA-103-X-32)

| Pin No. | Category | Port No. | Standard setting |
|---------|----------|-----------------------|------------------------|
| 1 | | | NC |
| 2 | | 032 | General-purpose input |
| 3 | | 033 | General-purpose input |
| 4 | | 034 | General-purpose input |
| 5 | | 035 | General-purpose input |
| 6 | | 036 | General-purpose input |
| 7 | | 037 | General-purpose input |
| 8 | | 038 | General-purpose input |
| 9 | | 039 | General-purpose input |
| 10 | | 040 | General-purpose input |
| 11 | | 041 | General-purpose input |
| 12 | | 042 | General-purpose input |
| 13 | | 043 | General-purpose input |
| 14 | | 044 | General-purpose input |
| 15 | | 045 | General-purpose input |
| 16 | | 046 | General-purpose input |
| 17 | Input | 047 | General-purpose input |
| 18 | | 048 | General-purpose input |
| 19 | | 049 | General-purpose input |
| 20 | | 050 | General-purpose input |
| 21 | | 051 | General-purpose input |
| 22 | | 052 | General-purpose input |
| 23 | | 053 | General-purpose input |
| 24 | | 054 | General-purpose input |
| 25 | | 055 | General-purpose input |
| 26 | | 056 | General-purpose input |
| 27 | 057 | General-purpose input | |
| 28 | 058 | General-purpose input | |
| 29 | 059 | General-purpose input | |
| 30 | 060 | General-purpose input | |
| 31 | 061 | General-purpose input | |
| 32 | 062 | General-purpose input | |
| 33 | 063 | General-purpose input | |
| 34 | | 316 | General-purpose output |
| 35 | | 317 | General-purpose output |
| 36 | | 318 | General-purpose output |
| 37 | | 319 | General-purpose output |
| 38 | | 320 | General-purpose output |
| 39 | | 321 | General-purpose output |
| 40 | | 322 | General-purpose output |
| 41 | Output | 323 | General-purpose output |
| 42 | | 324 | General-purpose output |
| 43 | | 325 | General-purpose output |
| 44 | | 326 | General-purpose output |
| 45 | | 327 | General-purpose output |
| 46 | | 328 | General-purpose output |
| 47 | | 329 | General-purpose output |
| 48 | | 330 | General-purpose output |
| 49 | | 331 | General-purpose output |
| 50 |  |  | — | NC |

Expansion I/O Signals (IA-103-X-16)

| Pin No. | Category | Port No. | Standard setting |
|---------|----------|-----------------------|------------------------|
| 1 | | | NC |
| 2 | | 032 | General-purpose input |
| 3 | | 033 | General-purpose input |
| 4 | | 034 | General-purpose input |
| 5 | | 035 | General-purpose input |
| 6 | | 036 | General-purpose input |
| 7 | | 037 | General-purpose input |
| 8 | | 038 | General-purpose input |
| 9 | | 039 | General-purpose input |
| 10 | | 040 | General-purpose input |
| 11 | | 041 | General-purpose input |
| 12 | | 042 | General-purpose input |
| 13 | | 043 | General-purpose input |
| 14 | | 044 | General-purpose input |
| 15 | | 045 | General-purpose input |
| 16 | | 046 | General-purpose input |
| 17 | Input | 047 | General-purpose input |
| 18 | | 048 | General-purpose input |
| 19 | | 049 | General-purpose input |
| 20 | | 050 | General-purpose input |
| 21 | | 051 | General-purpose input |
| 22 | | 052 | General-purpose input |
| 23 | | 053 | General-purpose input |
| 24 | | 054 | General-purpose input |
| 25 | | 055 | General-purpose input |
| 26 | | 056 | General-purpose input |
| 27 | 057 | General-purpose input | |
| 28 | 058 | General-purpose input | |
| 29 | 059 | General-purpose input | |
| 30 | 060 | General-purpose input | |
| 31 | 061 | General-purpose input | |
| 32 | 062 | General-purpose input | |
| 33 | 063 | General-purpose input | |
| 34 | | 316 | General-purpose output |
| 35 | | 317 | General-purpose output |
| 36 | | 318 | General-purpose output |
| 37 | | 319 | General-purpose output |
| 38 | | 320 | General-purpose output |
| 39 | | 321 | General-purpose output |
| 40 | | 322 | General-purpose output |
| 41 | Output | 323 | General-purpose output |
| 42 | | 324 | General-purpose output |
| 43 | | 325 | General-purpose output |
| 44 | | 326 | General-purpose output |
| 45 | | 327 | General-purpose output |
| 46 | | 328 | General-purpose output |
| 47 | | 329 | General-purpose output |
| 48 | | 330 | General-purpose output |
| 49 | | 331 | General-purpose output |
| 50 |  |  | — | NC |

Multipoint I/O Signals (JX type with board installed in standard slot)

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

Multipoint I/O Signals (KX type with board installed in expansion slot)

| Pin No. | Category | Color | Port No. | Standard setting | Pin No. | Category | Color | Port No. | Standard setting |
|---------|----------|----------|-----------------------|---|----------|----------|---|-------------------------|------------------|
| 1 | | Brown 1 | — | External 24VDC power supply for pin Nos. 2 to 25 and 51 to 74 | 51 | Brown 1 | 316 | General-purpose ioutput | |
| 2 | Input | Red 1 | 032 | General-purpose input | 52 | Red 1 | 317 | General-purpose output | |
| 3 | | Orange 1 | 033 | General-purpose input | 53 | Orange 1 | 318 | General-purpose output | |
| 4 | | Yellow 1 | 034 | General-purpose input | 54 | Yellow 1 | 319 | General-purpose output | |
| 5 | | Green 1 | 035 | General-purpose input | 55 | Green 1 | 320 | General-purpose output | |
| 6 | | Blue 1 | 036 | General-purpose input | 56 | Blue 1 | 321 | General-purpose output | |
| 7 | | Purple 1 | 037 | General-purpose input | 57 | Purple 1 | 322 | General-purpose output | |
| 8 | | Gray 1 | 038 | General-purpose input | 58 | Gray 1 | 323 | General-purpose output | |
| 9 | | White 1 | 039 | General-purpose input | 59 | White 1 | 324 | General-purpose output | |
| 10 | | Black 1 | 040 | General-purpose input | 60 | Black 1 | 325 | General-purpose output | |
| 11 | | Brown 2 | 041 | General-purpose input | 61 | Brown 2 | 326 | General-purpose output | |
| 12 | Red 2 | 042 | General-purpose input | 62 | Red 2 | 327 | General-purpose output | | |
| 13 | Orange 2 | 043 | General-purpose input | 63 | Orange 2 | 328 | General-purpose output | | |
| 14 | Yellow 2 | 044 | General-purpose input | 64 | Yellow 2 | 329 | General-purpose output | | |
| 15 | Green 2 | 045 | General-purpose input | 65 | Green 2 | 330 | General-purpose output | | |
| 16 | Blue 2 | 046 | General-purpose input | 66 | Blue 2 | 331 | General-purpose output | | |
| 17 | Purple 2 | 047 | General-purpose input | 67 | Purple 2 | 332 | General-purpose output | | |
| 18 | Gray 2 | 048 | General-purpose input | 68 | Gray 2 | 333 | General-purpose output | | |
| 19 | White 2 | 049 | General-purpose input | 69 | White 2 | 334 | General-purpose output | | |
| 20 | Black 3 | 050 | General-purpose input | 70 | Black 3 | 335 | General-purpose output | | |
| 21 | Brown 3 | 051 | General-purpose input | 71 | Brown 3 | 336 | General-purpose output | | |
| 22 | Red 3 | 052 | General-purpose input | 72 | Red 3 | 337 | General-purpose output | | |
| 23 | Orange 3 | 053 | General-purpose input | 73 | Orange 3 | 338 | General-purpose output | | |
| 24 | Yellow 3 | 054 | General-purpose input | 74 | Yellow 3 | 339 | General-purpose output | | |
| 25 | Green 3 | 055 | General-purpose input | 75 | Green 3 | — | External power supply for pin Nos. 2 to 25 and 51 to 74 | | |
| 26 | Blue 3 | — | Note) (CD24V) | 76 | Blue 3 | 340 | General-purpose output | | |
| 27 | Purple 3 | 056 | General-purpose input | 77 | Purple 3 | 341 | General-purpose output | | |
| 28 | Gray 3 | 057 | General-purpose input | 78 | Gray 3 | 342 | General-purpose output | | |
| 29 | White 3 | 058 | General-purpose input | 79 | White 3 | 343 | General-purpose output | | |
| 30 | Black 3 | 059 | General-purpose input | 80 | Black 3 | 344 | General-purpose output | | |
| 31 | Brown 4 | 060 | General-purpose input | 81 | Brown 4 | 345 | General-purpose output | | |
| 32 | Red 4 | 061 | General-purpose input | 82 | Red 4 | 346 | General-purpose output | | |
| 33 | Orange 4 | 062 | General-purpose input | 83 | Orange 4 | 347 | General-purpose output | | |
| 34 | Yellow 4 | 063 | General-purpose input | 84 | Yellow 4 | 348 | General-purpose output | | |
| 35 | Green 4 | 064 | General-purpose input | 85 | Green 4 | 349 | General-purpose output | | |
| 36 | Blue 4 | 065 | General-purpose input | 86 | Blue 4 | 350 | General-purpose output | | |
| 37 | Purple 4 | 066 | General-purpose input | 87 | Purple 4 | 351 | General-purpose output | | |
| 38 | Gray 4 | 067 | General-purpose input | 88 | Gray 4 | 352 | General-purpose output | | |
| 39 | White 4 | 068 | General-purpose input | 89 | White 4 | 353 | General-purpose output | | |
| 40 | Black 4 | 069 | General-purpose input | 90 | Black 4 | 354 | General-purpose output | | |
| 41 | Brown 5 | 070 | General-purpose input | 91 | Brown 5 | 355 | General-purpose output | | |
| 42 | Red 5 | 071 | General-purpose input | 92 | Red 5 | 356 | General-purpose output | | |
| 43 | Orange 5 | 072 | General-purpose input | 93 | Orange 5 | 357 | General-purpose output | | |
| 44 | Yellow 5 | 073 | General-purpose input | 94 | Yellow 5 | 358 | General-purpose output | | |
| 45 | Green 5 | 074 | General-purpose input | 95 | Green 5 | 359 | General-purpose output | | |
| 46 | Blue 5 | 075 | General-purpose input | 96 | Blue 5 | 360 | General-purpose output | | |
| 47 | Purple 5 | 076 | General-purpose input | 97 | Purple 5 | 361 | General-purpose output | | |
| 48 | Gray 5 | 077 | General-purpose input | 98 | Gray 5 | 362 | General-purpose output | | |
| 49 | White 5 | 078 | General-purpose input | 99 | White 5 | 363 | General-purpose output | | |
| 50 | Black 5 | 079 | General-purpose input | 100 | Black 5 | — | Note) (DV) | | |

Note) There is no need to supply power to pin No. 26 (24VDC) and pin No. 100 (OV), since they take power from the I/O24V power supply in the controller.

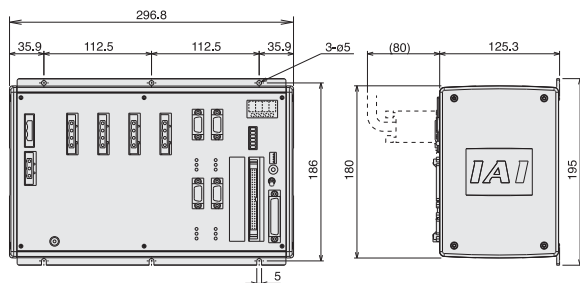
5 Specifications

| Item | Description | |
|------------------------------------|---|---|
| Controller series/type | JX | KX |
| Number of controlled axes | 4 axes | |
| Maximum connection axis output (W) | MAX450W | MAX1750W |
| Weight | 5.0kg | 7.0kg |
| Power-supply voltage | Single-phase 200 – 230VAC (factory setting) | |
| Operating voltage range | ±10% | |
| Power frequency | 50/60Hz | |
| Power capacity | MAX1750VA | MAX3050VA |
| Operating temperature range | 0° – 40°C | |
| Operating humidity range | 30% – 85% | |
| Storage temperature range | -10° – 65°C | |
| Axis control method | AC full-digital servo | |
| Position detection method | 17-bit incremental encoder (wire-saving type) | |
| Programming language | Super SEL Language | |
| Program steps | 6000 steps (total) | |
| Number of positions | 3000 positions (total) | |
| Number of programs | 64 programs | |
| Multitasking | 16 programs | |
| Storage device | Flash ROM + SRAM battery backup | |
| Data input method | Teaching pendant or PC software | |
| Standard inputs | 32 points (total of dedicated inputs + general-purpose inputs) | |
| Standard outputs | 16 points (total of dedicated outputs + general-purpose outputs) | |
| Expansion inputs/outputs | Expandable to a maximum of 144 input/output points in total using an expansion PIO board(s) | Expandable to a maximum of 336 input/output points in total using an expansion PIO board(s) |
| Serial communication | Not possible | Possible if an expansion SIO board is used (optional) |
| Other inputs/outputs | Emergency stop input, safety gate input, system ready output | |
| Protection functions | Motor overcurrent, overload, motor driver temperature check, overload check, encoder open-circuit detection, soft limit over, system error, battery error | |
| Accessory | I/O flat cable | |
| Options | Teaching pendant, PC software, expansion I/O board, expansion SIO board | |

6 External Dimensions

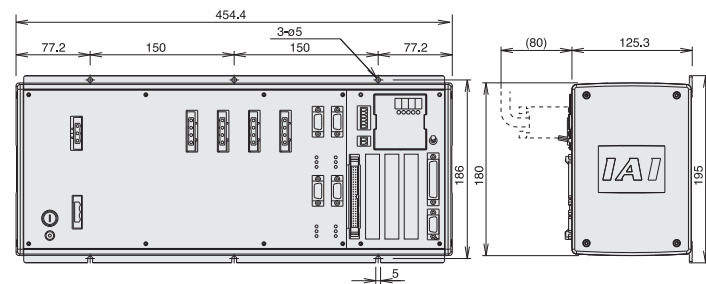
Controller

JX



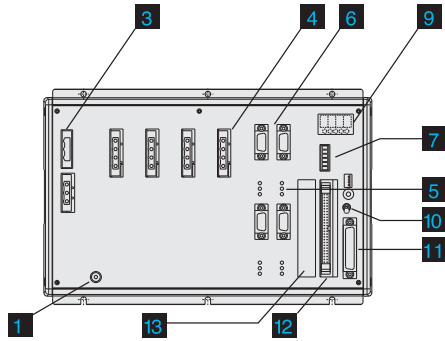
Controller

KX

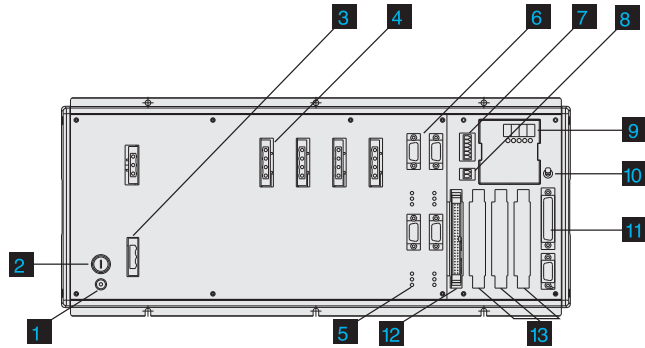


7 Name of Each Part

JX Type (Compact)



KX Type (General-purpose)



1 FG terminal

This terminal connects to FG of the enclosure. The enclosure is connected to PE in the AC input part via wiring inside the controller.

2 Fuse holder (KX type only)

It holds the half-cut fuse for overcurrent protection of the AC input part.

3 Main power input connector

A single-phase 200-VAC input connector (Supplied with a cable-end plug. Refer to the opposite page.)

4 Motor cable connector

It connects the actuator's motor power cable.

5 Axis driver status LEDs

These LEDs are used to monitor the status of the driver CPU controlling the motor drive.

The three LEDs specified below are available:

| Name | Color | Meaning when the LED is lit |
|----------|--------|---|
| ALM | Orange | An error is detected in the driver. |
| SVON | Green | The motor is driven with the servo turned on. |
| BATT ALM | Orange | The absolute battery voltage is low. |

6 Encoder cable connector

This 15-pin/D-sub connector connects the actuator's encoder cable.

7 System I/O connector

This connector connects two control inputs relating to controller operation and one system status output. (Supplied with a cable-end plug. Refer to the opposite page.)

| Name | | |
|------|---------------------------|--|
| EMG | Emergency stop input | Operation is enabled if this input is ON. If the input is turned OFF, an emergency stop will be actuated. |
| ENB | Safety gate input | Operation is enabled if this input is ON. If the input is turned OFF, the servo will turn off. |
| RDY | System ready relay output | The status of the controller is output. Cascade connection is supported. The system is ready if this output is shorted, and not ready if it is open. |

8 I/O24V power connector (KX type only)

13 14 This connector supplies insulated I/O power externally when DI/DOs are installed in any I/O slot (12 or 13). (Supplied with a cable-end plug. Refer to the opposite page.)

9 Panel window

This panel provides the four-digit, seven-segment LED display showing the system status, as well as five LED lamps.

10 Mode switch

This alternate switch with lock is used to specify the controller operation mode. To operate the switch, pull it forward and tilt. Tilt the switch upward to select the MANU (manual operation) mode or downward to select the AUTO (automatic operation) mode. Teaching operation can only be performed in the MANU mode. In the MANU mode, automatic operation using external I/Os is not permitted.

11 Teaching connector

This D-sub/25-pin connector is used to connect a teaching pendant or PC to input program positions.

12 Standard I/O slot (Slot 1)

A standard PIO board with 32 input points and 16 output points is installed in the standard specification.

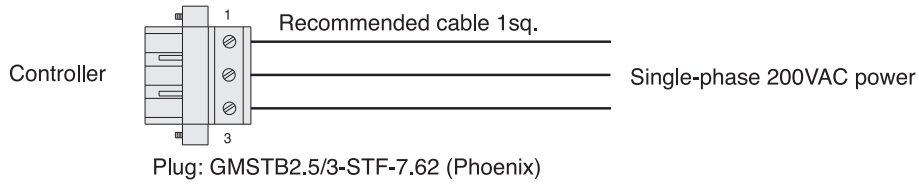
13 Expansion I/O slots (Slots 2, 3 and 4)

An expansion I/O board can be installed in any of these slots (optional).

PX/QX Type also available. Please contact your IAI America representative or refer to the PX/QX catalog.

Main Power Input Connector

This connector is used to connect 100/200 VAC power.
(The cable is provided by the user.)

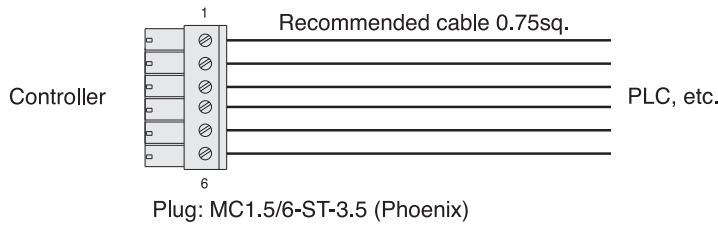


Wiring diagram

| Signal | No. |
|--------|-----|
| N | 1 |
| L | 2 |
| PE | 3 |

System I/O Connector

This connector is used to supply emergency stop, enable and system ready contacts from the controller to a PLC, etc.
(The cable is provided by the user.)

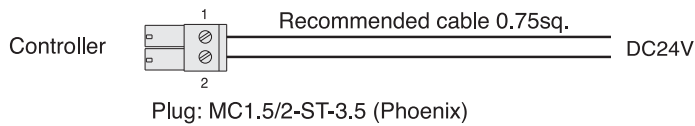


Wiring diagram

| Signal | No. |
|------------|-----|
| RDY- | 1 |
| RDY+ | 2 |
| ENBIN | 3 |
| ENB+24VOUT | 4 |
| EMGIN | 5 |
| EMG+24VOUT | 6 |

I/O24V Power Connector

This connector is used to supply 24V power when the controller's I/Os are used.
(The cable is provided by the user.)



Wiring diagram

| Signal | No. |
|--------|-----|
| 0V | 1 |
| 24VIN | 2 |

8 Options

Teaching Pendant

Model **SEL-T**

Model **SEL-TD**

Features **ANSI robot standard / Safety category compliant**

SEL-TD is equipped with a 3-position enable switch compatible with ANSI robot standard. In addition, the emergency stop switch is able to respond to safety category class 4 by making circuits redundant.

Improved environmental resistance (Protective structure IP54)

Due to IP54's protective structure, use in hostile environments is possible, where the likes of dust and the water spray are present.

Specifications

| Item | Specification |
|--------------------------|---------------|
| 3-position enable switch | No |
| ANSI Specification | Non-Compliant |
| Protective Structure | IP54 |
| Cable length | 5m |
| CE mark/UL Spec | Compliant |

Specifications

| Item | Specification |
|--------------------------|---------------|
| 3-position enable switch | Yes |
| ANSI Specification | Compliant |
| Protective Structure | IP54 |
| Cable length | 5m |
| CE mark/UL Spec | Compliant |

Dimensions

① LCD: 4 lines of 20 characters

② Emergency stop switch

③ Input key

④ Enable switch (SEL-TD limit)

⑤ Interface connector

⑥ cable (5m)

Ⓜ Connector converter cable
 A converter cable is required when connecting SEL-T / SEL-TD to ASEL & SSEL controller.
 (Cable length: 0.2 m)
 Model: CB-SEL-SJ002

PC Software (Windows type only)

Model **IA-101-X-MW**(WIN2000/V version)
IA-101-X-CW(PC98 version)

Note
 A product older than Ver. 2.0.0.0 cannot be used with a SCARA robot.

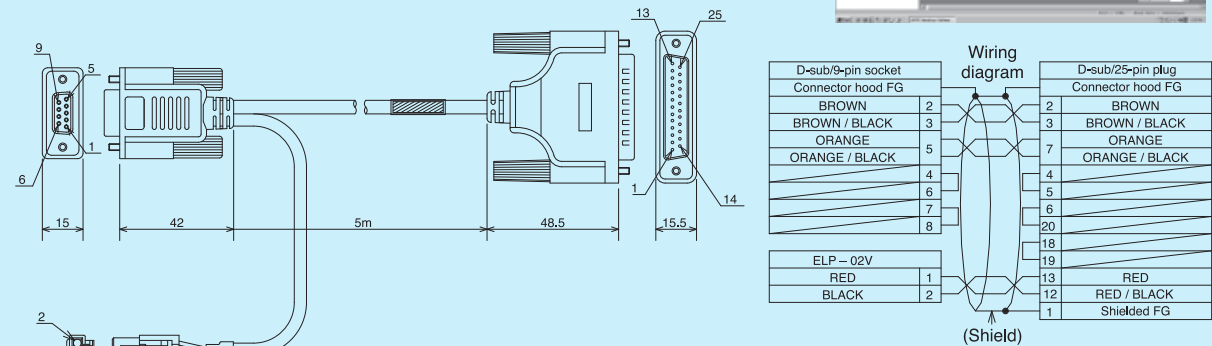
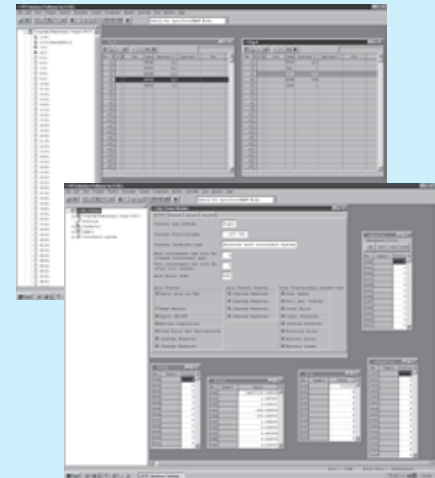
Features This startup assistance software provides functions for program/position input, test operation and monitoring. It significantly enhances the debugging functions to help reduce the startup time.

Description • Software (floppy disk)
 (The software runs on Windows 95, 98, NT, 2000 and ME.)
 • PC connection cable 5m + Emergency stop box (Model CB-ST-E1MW050-EB)

Dimensions

PC connection cable (Model CB-ST-E1MW050)

Note
 If you are ordering a PC connection cable separately for maintenance purpose, specify CB-ST-E1MW050. If you are ordering a PC cable and an emergency stop box as a set, specify CB-ST-E1MW050-EB.



Expansion PIO Board

Description

This optional board is used to add I/Os (inputs/outputs).
 With the general-purpose controller, a maximum of three expansion PIO boards can be installed in the expansion slots.
 (With the 3/4-axis type compact controller, one expansion PIO board can be installed in the expansion slot.)

| Description | Expansion I/O board model | Order model (controller model) | Expansion I/O board slot | Total I/Os (standard + expansion) |
|---|---------------------------|--------------------------------|--------------------------|-------------------------------------|
| 32 input points / 16 output points NPN specification | IA-103-X-32 | XSEL-JX-3 (4) -□-N1-N1EE-□-□ | Expansion slot 1 | 64 input points / 32 output points |
| | | XSEL-KX-□-□-□-□-□-□-□-□ | Expansion slot 1 | 64 input points / 32 output points |
| | | XSEL-KX-□-□-□-□-□-□-□-□ | Expansion slots 1, 2 | 96 input points / 48 output points |
| | | XSEL-KX-□-□-□-□-□-□-□-□ | Expansion slots 1, 2, 3 | 128 input points / 64 output points |
| 32 input points / 16 output points PNP specification | IA-103-X-32-P | XSEL-JX-3 (4) -□-□-□-□-□-□-□-□ | Expansion slot 1 | 64 input points / 32 output points |
| | | XSEL-KX-□-□-□-□-□-□-□-□ | Expansion slot 1 | 64 input points / 32 output points |
| | | XSEL-KX-□-□-□-□-□-□-□-□ | Expansion slots 1, 2 | 96 input points / 48 output points |
| | | XSEL-KX-□-□-□-□-□-□-□-□ | Expansion slots 1, 2, 3 | 128 input points / 64 output points |
| 16 input points / 32 output points NPN specification | IA-103-X-16 | XSEL-JX-3 (4) -□-□-□-□-□-□-□-□ | Expansion slot 1 | 48 input points / 48 output points |
| | | XSEL-KX-□-□-□-□-□-□-□-□ | Expansion slot 1 | 48 input points / 48 output points |
| | | XSEL-KX-□-□-□-□-□-□-□-□ | Expansion slots 1, 2 | 64 input points / 80 output points |
| | | XSEL-KX-□-□-□-□-□-□-□-□ | Expansion slots 1, 2, 3 | 80 input points / 112 output points |
| 16 input points / 32 output points PNP specification | IA-103-X-16-P | XSEL-JX-3 (4) -□-□-□-□-□-□-□-□ | Expansion slot 1 | 48 input points / 48 output points |
| | | XSEL-KX-□-□-□-□-□-□-□-□ | Expansion slot 1 | 48 input points / 48 output points |
| | | XSEL-KX-□-□-□-□-□-□-□-□ | Expansion slots 1, 2 | 64 input points / 80 output points |
| | | XSEL-KX-□-□-□-□-□-□-□-□ | Expansion slots 1, 2, 3 | 80 input points / 112 output points |

Expansion SIO Board (Used exclusively with the general-purpose controller)

Description

This board is used to establish serial communication with external devices.
 It has two channel ports and supports one of three communication formats using the supplied joint cable.

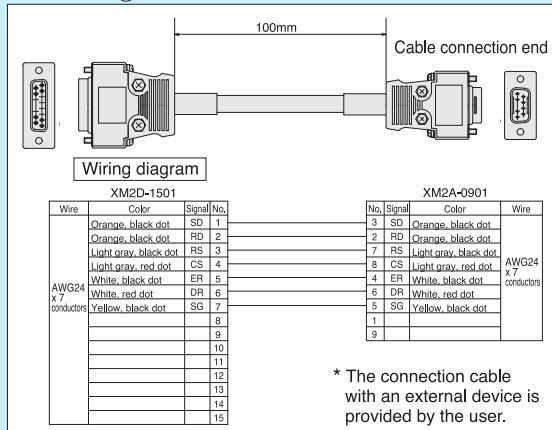
Specifications

IA-105-X-MW-A (SIO board + joint cable ① x 2)
 IA-105-X-MW-B (SIO board + joint cable ② x 1)
 IA-105-X-MW-C (SIO board + joint cable ② x 1)

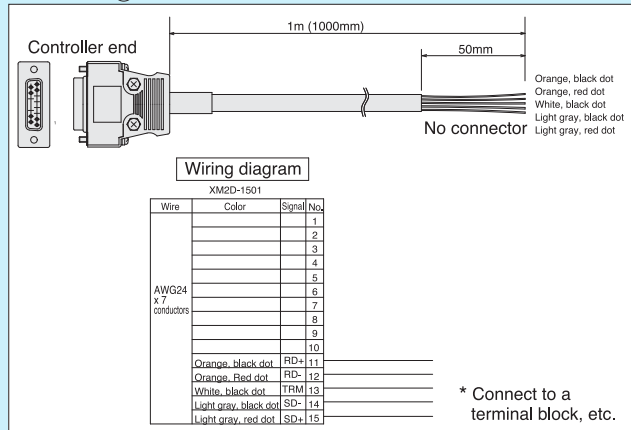
| Communication format | Expansion SIO board model | Order model (controller model) | Network board slot | Remarks |
|----------------------|---------------------------|--------------------------------|--------------------|--|
| RS232C | IA-105-X-MW-A | XSEL-KX-□-□-□-□-□-□-□-□ | Expansion slot 1 | A maximum of three boards can be installed (Note 1). |
| RS422 | IA-105-X-MW-B | XSEL-KX-□-□-□-□-□-□-□-□ | Expansion slot 1 | |
| RS485 | IA-105-X-MW-C | XSEL-KX-□-□-□-□-□-□-□-□ | Expansion slot 1 | |

(Note 1) The current capacity may not be enough depending on how many expansion boards are used in addition to the standard board.
 If you want to install three boards, consult IAI beforehand.

Joint cable ① Model: CB-ST-232J001



Joint cable ② Model: CB-ST-422J010



Network Board

Description

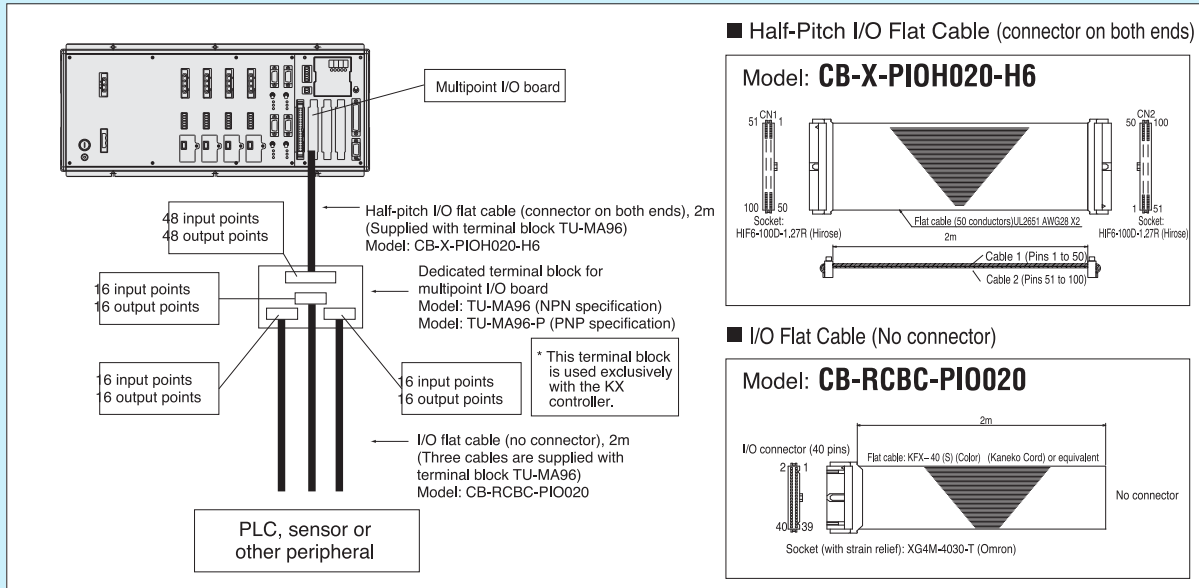
This communication board is used for connection to a field network.

| Description | Expansion I/O board model | Order model (controller model) | Expansion I/O board slot | Total I/Os (standard + expansion) |
|-------------|---------------------------|--------------------------------|--------------------------|--|
| DeviceNet | IA-NT-3206-DV | XSEL-JX-□-□-□-□-□-□-□-□ | Standard slot | 256 input points / 256 output points |
| | IA-NT-3204-DV | XSEL-KX-□-□-□-□-□-□-□-□ | Standard slot | 256 input points / 256 output points |
| CC-Link | IA-NT-3206-CC256 | XSEL-JX-□-□-□-□-□-□-□-□ | Standard slot | 256 input points / 256 output points |
| | IA-NT-3204-CC256 | XSEL-KX-□-□-□-□-□-□-□-□ | Standard slot | 256 input points / 256 output points |
| | IA-NT-3204-CC16 | XSEL-KX-□-□-□-□-□-□-□-□ | Standard slot 3 | 16 input points / 16 output points |
| | | XSEL-KX-□-□-□-□-□-□-□-□ | Standard slot 2, 3 | 16 input points x2 / 16 output points x2 |
| | | XSEL-KX-□-□-□-□-□-□-□-□ | Standard slot 1, 2, 3 | 16 input points x3 / 16 output points x3 |
| ProfiBus | IA-NT-3206-PB | XSEL-JX-□-□-□-□-□-□-□-□ | Standard slot | 256 input points / 256 output points |
| | IA-NT-3204-PB | XSEL-KX-□-□-□-□-□-□-□-□ | Standard slot | 256 input points / 256 output points |
| Ethernet | IA-NT-3206-ET | XSEL-JX-□-□-□-□-□-□-□-□ | Standard slot | Message communication |
| | IA-NT-3204-ET | XSEL-KX-□-□-□-□-□-□-□-□ | Standard slot | |

■ Multipoint I/O Board & Terminal Block

These board and terminal block are used in cases where the controller requires many PIO points.

System Configuration



Multipoint I/O Board

Description The half-pitch connector provides 48 input points and 48 output points with a single I/O board. The supplied half-pitch flat cable is difficult to connect due to its thin lead wires, so use a dedicated terminal block for connection to an external device.

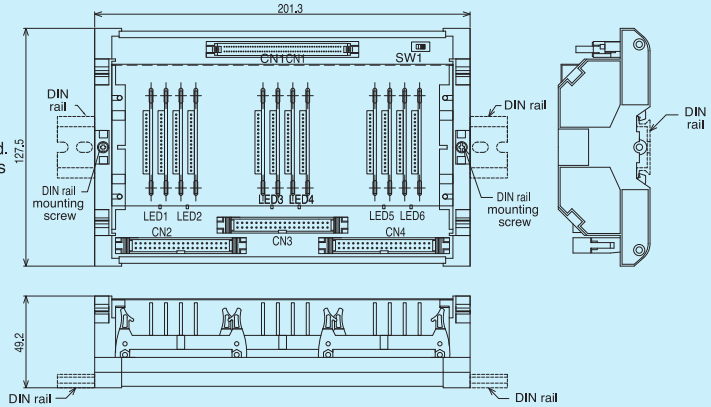
| Description | Multipoint I/O board model | Order model (controller model) | Multipoint I/O board slot | Total I/Os |
|--|----------------------------|--------------------------------|---------------------------|--------------------------------------|
| 48 input points / 48 output points (NPN specification) | IA-IO-3205-NP | XSEL-JX-□-□-□-□-□-□-□-□ | Standard slot | 48 input points / 48 output points |
| 48 input points / 48 output points (PNP specification) | IA-IO-3205-PN | XSEL-JX-□-□-□-□-□-□-□-□ | Standard slot | 48 input points / 48 output points |
| 48 input points / 48 output points (NPN specification) | IA-IO-3204-NP | XSEL-KX-□-□-□-□-□-□-□-□-2 | Expansion slots 1 | 80 input points / 64 output points |
| | | XSEL-KX-□-□-□-□-□-□-□-□-2 | Expansion slot 1,2 | 128 input points / 112 output points |
| | | XSEL-KX-□-□-□-□-□-□-□-□-2 | Expansion slots 1, 2, 3 | 176 input points / 160 output points |
| 48 input points / 48 output points (PNP specification) | IA-IO-3204-PN | XSEL-KX-□-□-□-□-□-□-□-□-2 | Expansion slot 1 | 80 input points / 64 output points |
| | | XSEL-KX-□-□-□-□-□-□-□-□-2 | Expansion slot 1, 2 | 128 input points / 112 output points |
| | | XSEL-KX-□-□-□-□-□-□-□-□-2 | Expansion slots 1, 2, 3 | 176 input points / 160 output points |

<Dedicated Terminal for Multipoint I/O Board>

Used exclusively with the KX controller

Model **TU-MA96** (NPN specification)
TU-MA96-P (PNP specification)

Description This terminal block is used to wire a multipoint I/O board. It not only simplifies the wiring task but also provides the following functions:
 1. The transistor buffer circuit ensures an output of 500 mA per point (0.8 A per eight points).
 2. The power circuit can be divided into six input systems (each consisting of eight inputs) and six output systems (each consisting of eight outputs).
 3. LEDs are provided for checking the power status of output signal circuit.
 Total six LEDs are provided, one for each of the six output systems (each consisting of eight outputs). Each LED will turn off when the corresponding power input is cut off or the applicable fuse on the board is blown.



Note If you are using this terminal block, be sure to connect a multipoint I/O board of NPN specification. The connection between the controller and terminal block must be an NPN connection. The connection between the terminal block and user controller will be PNP. (NPN is already selected in the terminal block, so a PNP board cannot be connected.) This terminal block is designed exclusively for use with the KX controller. (It cannot be used with the JX controller.)

45

Connector Assignments of Dedicated Terminal Block for Multipoint I/O Board

This connector is used to connect an external I/O device. Each connector accepts 16 DIs and 16 DOs.
External I/O Connector Specifications

| Item | | | | | |
|---------------------------|--|------------------------|--------------------------|--------------------------|--------------------------|
| Connector | XG4A-4031(OMRON) 40-pin MIL flat connector | | | | |
| DI | 48 points | | | | |
| DO | 48 points | | | | |
| Connected unit | External I/O device | | | | |
| Connector name | | CN2 connector | CN3 connector | CN4 connector | |
| Terminal-assigned inputs | 1 | Common | Common terminal (COM): | Common terminal (COM): | |
| | 2 | Common | For IN00 to IN07 | For IN16 to IN23 | |
| | 3 | General-purpose input | IN00 | IN16 | |
| | 4 | General-purpose input | IN01 | IN17 | |
| | 5 | General-purpose input | IN02 | IN18 | |
| | 6 | General-purpose input | IN03 | IN19 | |
| | 7 | General-purpose input | IN04 | IN20 | |
| | 8 | General-purpose input | IN05 | IN21 | |
| | 9 | General-purpose input | IN06 | IN22 | |
| | 10 | General-purpose input | IN07 | IN23 | |
| | 11 | General-purpose input | IN08 | IN24 | |
| | 12 | General-purpose input | IN09 | IN25 | |
| | 13 | General-purpose input | IN10 | IN26 | |
| | 14 | General-purpose input | IN11 | IN27 | |
| | 15 | General-purpose input | IN12 | IN28 | |
| | 16 | General-purpose input | IN13 | IN29 | |
| | 17 | General-purpose input | IN14 | IN30 | |
| | 18 | General-purpose input | IN15 | IN31 | |
| | 19 | Common | Common terminal (COM): | Common terminal (COM): | Common terminal (COM): |
| | 20 | Common | For IN08 to IN15 | For IN24 to IN31 | For IN40 to IN47 |
| Terminal-assigned outputs | 21 | +24V | External 24V power input | External 24V power input | |
| | 22 | OV | For OUT00 to OUT07 | For OUT16 to OUT23 | |
| | 23 | General-purpose output | OUT00 | OUT16 | |
| | 24 | General-purpose output | OUT01 | OUT17 | |
| | 25 | General-purpose output | OUT02 | OUT18 | |
| | 26 | General-purpose output | OUT03 | OUT19 | |
| | 27 | General-purpose output | OUT04 | OUT20 | |
| | 28 | General-purpose output | OUT05 | OUT21 | |
| | 29 | General-purpose output | OUT06 | OUT22 | |
| | 30 | General-purpose output | OUT07 | OUT23 | |
| | 31 | General-purpose output | OUT08 | OUT24 | |
| | 32 | General-purpose output | OUT09 | OUT25 | |
| | 33 | General-purpose output | OUT10 | OUT26 | |
| | 34 | General-purpose output | OUT11 | OUT27 | |
| | 35 | General-purpose output | OUT12 | OUT28 | |
| | 36 | General-purpose output | OUT13 | OUT29 | |
| | 37 | General-purpose output | OUT14 | OUT30 | |
| | 38 | General-purpose output | OUT15 | OUT31 | |
| | 39 | +24V | External 24V power input | External 24V power input | External 24V power input |
| | 40 | OV | For OUT08 to OUT15 | For OUT24 to OUT31 | For OUT40 to OUT47 |