

# Parallel Robots iX4-650H/HS

EtherCAT (NJ501-R) version

## Four-axis parallel robot achieves high speed and high precision

- EtherCAT connectivity to the Omron NJ501-R controller and programming through the familiar IEC 61131-3 programming language or scripting (eV+).
- Four-axis arm evenly distributes the load on the robot
- Fast and high-precision conveyance and assembly
- Designed with a high payload to support multi-hand (multi-picking)
- Supports fast Pick & Place on a fast conveyor
- Meets the sanitary standards of the United States Department of Agriculture for prevention of product contamination
- Maximum working diameter 1,300 mm
- Working height 500 mm
- Maximum payload 15 kg
- Weight 117 kg



## Specifications

| Product name                                  |                                    |                    | iX4                                               |              |                      |
|-----------------------------------------------|------------------------------------|--------------------|---------------------------------------------------|--------------|----------------------|
|                                               |                                    |                    | 650                                               |              |                      |
|                                               |                                    |                    | H                                                 |              | HS                   |
|                                               |                                    |                    | Standard                                          | IP65/67      | Standard             |
| Part Number                                   |                                    |                    | RX4-216600[]                                      | RX4-216602[] | RX4-216601[]         |
| Number of axes                                |                                    |                    | 4                                                 |              |                      |
| Mounting                                      |                                    |                    | inverted                                          |              |                      |
| Working volume                                | X,Y axis (stroke)                  |                    | 1300 mm                                           |              |                      |
|                                               | Z axis (stroke)                    |                    | 500 mm                                            |              |                      |
|                                               | theta axis (rotation angle)        | 0° (fixed) (P30)   |                                                   |              |                      |
|                                               |                                    | ±46.25° (P31)      |                                                   |              |                      |
|                                               |                                    | ±92.5° (P32)       |                                                   |              |                      |
| ±185° (P34)                                   |                                    |                    |                                                   |              |                      |
| Maximum Payload                               |                                    |                    | 6 kg (P30: 15 kg)                                 |              | 3 kg (P30: 12 kg)    |
| Repeatability                                 |                                    |                    | ±0.10 mm                                          |              |                      |
| Cycle times, sustained, at 20°C ambient       | Payload 0.1 kg                     |                    | 0.30 s *1, 0.46 s *2                              |              | 0.39 s *1, 0.55 s *2 |
|                                               | Payload 1.0 kg                     |                    | 0.36 s *1, 0.47 s *2                              |              | 0.41 s *1, 0.58 s *2 |
|                                               | Payload 2.0 kg                     |                    | 0.37 s *1, 0.52 s *2                              |              | 0.42 s *1, 0.59 s *2 |
|                                               | Payload 4.0 kg                     |                    | 0.41 s *1, 0.58 s *2                              |              | -                    |
|                                               | Payload 6.0 kg                     |                    | 0.43 s *1, 0.61 s *2                              |              | -                    |
| Power Requirements                            |                                    |                    | 24 VDC: 6 A<br>200 to 240 VAC: 10 A, single-phase |              |                      |
| Protection                                    | Base                               | Topside of robot   | IP20                                              | IP65         | IP66                 |
|                                               |                                    | Underside of robot | IP65                                              | IP65         | IP66                 |
|                                               | Platform, Arms                     |                    | IP67                                              |              |                      |
| Environment Requirements                      | Ambient Temperature                |                    | 1 to 40°C                                         |              |                      |
|                                               | Humidity Range                     |                    | 5 to 90% (non-condensing)                         |              |                      |
| Weight                                        |                                    |                    | 117 kg                                            |              |                      |
| USDA-Accepted for meat and poultry processing |                                    |                    | ---                                               | ---          | Yes                  |
| Basic configuration                           | Controller                         |                    | iCS-ECAT                                          |              |                      |
|                                               | On-board I/O (Input/Output)        |                    | 12/8                                              |              |                      |
|                                               | Conveyor tracking input            |                    | 4                                                 |              |                      |
|                                               | RS-232C serial communications port |                    | 1                                                 |              |                      |
|                                               | Programming environment            |                    | Sysmac Studio 64-bit                              |              |                      |
|                                               | ACE Sight                          |                    | Yes                                               |              |                      |
|                                               | ePLC Connect                       |                    | No                                                |              |                      |
| Connectable controller                        |                                    |                    | No                                                |              |                      |
|                                               |                                    |                    | Omron NJ501-R Series                              |              |                      |

\*1. Adept cycle, in mm (25/305/25)

\*2. Extended cycle, in mm (25/700/25)

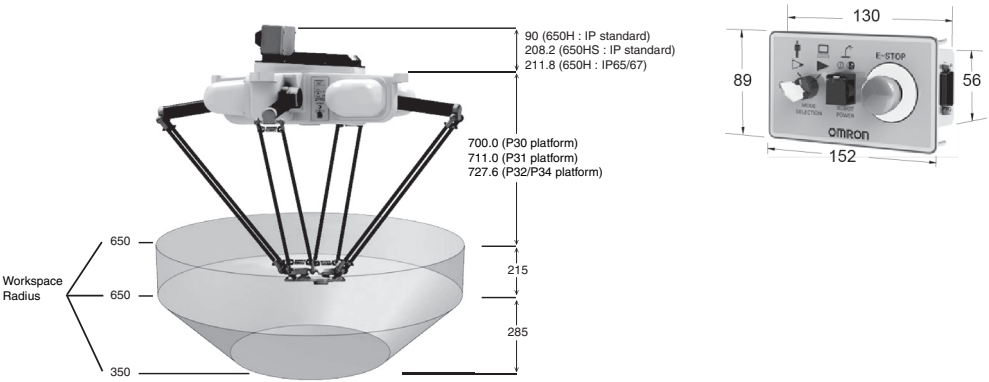
# Dimensions

(Unit: mm)

## iX4-650H/HS

**Note:** The figure shows the HS type.

### Front panel



Four choices of platform offer different ranges of rotation.

|                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
|-----------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Appearance      |  |  |  |  |
| Type            | P30                                                                               | P31                                                                               | P32                                                                                | P34                                                                                 |
| Rotation angle  | No rotation                                                                       | $\pm 46.25^\circ$                                                                 | $\pm 92.5^\circ$                                                                   | $\pm 185^\circ$                                                                     |
| Maximum Payload | H: 15 kg, HS: 12 kg                                                               | H: 6 kg, HS: 3 kg                                                                 | H: 6 kg, HS: 3 kg                                                                  | H: 6 kg, HS: 3 kg                                                                   |

**Note:** The platform appearances of the H type are shown above. The platform of the HS type is made of stainless steel.

## Robot Parts Code and Bundled Accessories

| Type                | iX4                                                                                                                                                                   |               |             |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------|
| IP                  | Standard (H)                                                                                                                                                          | Standard (HS) | IP65/67     |
| iX4 P30             | RX4-2166000                                                                                                                                                           | RX4-2166010   | RX4-2166020 |
| iX4 P31             | RX4-2166001                                                                                                                                                           | RX4-2166011   | RX4-2166021 |
| iX4 P32             | RX4-2166002                                                                                                                                                           | RX4-2166012   | RX4-2166022 |
| iX4 P34             | RX4-2166004                                                                                                                                                           | RX4-2166014   | RX4-2166024 |
| Overview            | To be used in conjunction with NJ501-R Series controller, which can connect up to 8 robots via EtherCAT                                                               |               |             |
| Bundled Accessories | <ul style="list-style-type: none"><li>XSYSTEM cable with jumpers and Ethernet Management port, 1.8 m/6 ft (13323-100)</li><li>Front panel kit (92546-10358)</li></ul> |               |             |

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- EtherCAT connectivity to the Omron NJ501-R controller and programming through the familiar IEC 61131-3 programming language or scripting (eV+).
- Four-axis arm evenly distributes the load on the robot
- Fast and high-precision conveyance and assembly
- Designed with a high payload to support multi-hand (multi-picking)
- Supports fast Pick & Place on a fast conveyor
- Meets the sanitary standards of the United States Department of Agriculture for prevention of product contamination
- Maximum working diameter 1,600 mm
- Working height 500 mm
- Maximum payload 10 kg
- Weight 117 kg



## Specifications

| Product name                                  |                                    |                    | iX4                                                                        |              |                      |
|-----------------------------------------------|------------------------------------|--------------------|----------------------------------------------------------------------------|--------------|----------------------|
|                                               |                                    |                    | 800                                                                        |              |                      |
|                                               |                                    |                    | H                                                                          |              | HS                   |
|                                               |                                    |                    | Standard                                                                   | IP65/67      | Standard             |
| Part Number                                   |                                    |                    | RX4-216630[]                                                               | RX4-216632[] | RX4-216631[]         |
| Number of axes                                |                                    |                    | 4                                                                          |              |                      |
| Mounting                                      |                                    |                    | inverted                                                                   |              |                      |
| Working volume                                | X,Y axis (stroke)                  |                    | 1600 mm                                                                    |              |                      |
|                                               | Z axis (stroke)                    |                    | 500 mm                                                                     |              |                      |
|                                               | theta axis (rotation angle)        | 0° (fixed) (P30)   |                                                                            |              |                      |
|                                               |                                    | ±46.25° (P31)      |                                                                            |              |                      |
|                                               |                                    | ±92.5° (P32)       |                                                                            |              |                      |
|                                               |                                    | ±185° (P34)        |                                                                            |              |                      |
| Maximum Payload                               |                                    |                    | 4 kg (P30:10 kg)                                                           |              | 1 kg (P30: 7 kg)     |
| Repeatability                                 |                                    |                    | ±0.10 mm                                                                   |              |                      |
| Cycle times, sustained (at 20°C ambient)      | Payload 0.1 kg                     |                    | 0.33 s *1, 0.48 s *2                                                       |              | -                    |
|                                               | Payload 1.0 kg                     |                    | 0.38 s *1, 0.50 s *2                                                       |              | 0.45 s *1, 0.62 s *2 |
|                                               | Payload 2.0 kg                     |                    | 0.40 s *1, 0.55 s *2                                                       |              | -                    |
|                                               | Payload 4.0 kg                     |                    | 0.45 s *1, 0.62 s *2                                                       |              | -                    |
| Power Requirements                            |                                    |                    | 24 VDC: 11 A (eAIB, SmartController)<br>200 to 240 VAC: 10 A, single-phase |              |                      |
| Protection                                    | Base                               | Topside of robot   | IP20                                                                       | IP65         | IP66                 |
|                                               |                                    | Underside of robot | IP65                                                                       | IP65         | IP66                 |
|                                               | Platform, Arms                     |                    | IP67                                                                       |              |                      |
| Environment Requirements                      | Ambient Temperature                |                    | 1 to 40°C                                                                  |              |                      |
|                                               | Humidity Range                     |                    | 5 to 90% (non-condensing)                                                  |              |                      |
| USDA-Accepted for meat and poultry processing |                                    |                    | ---                                                                        | ---          | Yes                  |
| Weight                                        |                                    |                    | 117 kg                                                                     |              |                      |
| Basic configuration                           | Controller                         |                    | iCS-ECAT                                                                   |              |                      |
|                                               | On-board I/O (Input/Output)        |                    | 12/8                                                                       |              |                      |
|                                               | Conveyor tracking input            |                    | 4                                                                          |              |                      |
|                                               | RS-232C serial communications port |                    | 1                                                                          |              |                      |
|                                               | Programming environment            |                    | Sysmac Studio 64-bit                                                       |              |                      |
|                                               | ACE Sight                          |                    | Yes                                                                        |              |                      |
|                                               | ePLC Connect                       |                    | No                                                                         |              |                      |
| Connectable controller                        |                                    |                    | No                                                                         |              |                      |
| Connectable controller                        |                                    |                    | Omron NJ501-R Series                                                       |              |                      |

\*1. Adept cycle, in mm (25/305/25)

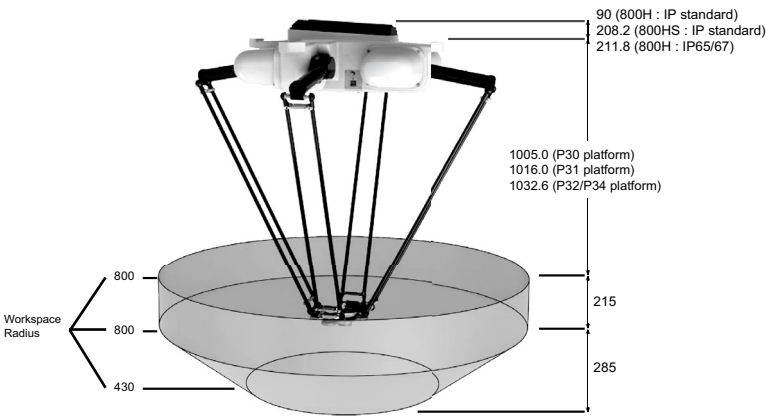
\*2. Extended cycle, in mm (25/700/25)

Dimensions

(Unit: mm)

ix4-800H/HS

Note: The figure shows the H type.



Front panel



Four choices of platform offer different ranges of rotation.

|                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
|-----------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Appearance      |  |  |  |  |
| Type            | P30                                                                               | P31                                                                               | P32                                                                                | P34                                                                                 |
| Rotation angle  | No rotation                                                                       | $\pm 46.25^\circ$                                                                 | $\pm 92.5^\circ$                                                                   | $\pm 185^\circ$                                                                     |
| Maximum Payload | H: 10 kg, HS: 7 kg                                                                | H: 4 kg, HS: 1 kg                                                                 | H: 4 kg, HS: 1 kg                                                                  | H: 4 kg, HS: 1 kg                                                                   |

Note: The platform appearances of the H type are shown above. The platform of the HS type is made of stainless steel.

Robot Parts Code and Bundled Accessories

| Type                | ix4                                                                                                                                                                   |               |             |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------|
| IP                  | Standard (H)                                                                                                                                                          | Standard (HS) | IP65/67     |
| ix4 P30             | RX4-2166300                                                                                                                                                           | RX4-2166310   | RX4-2166320 |
| ix4 P31             | RX4-2166301                                                                                                                                                           | RX4-2166311   | RX4-2166321 |
| ix4 P32             | RX4-2166302                                                                                                                                                           | RX4-2166312   | RX4-2166322 |
| ix4 P34             | RX4-2166304                                                                                                                                                           | RX4-2166314   | RX4-2166324 |
| Overview            | To be used in conjunction with NJ501-R Series controller, which can connect up to 8 robots via EtherCAT                                                               |               |             |
| Bundled Accessories | <ul style="list-style-type: none"><li>XSYSTEM cable with jumpers and Ethernet Management port, 1.8 m/6 ft (13323-100)</li><li>Front panel kit (92546-10358)</li></ul> |               |             |

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