

# i4-350L/450L/550L

**Industry leading performance, flexibility, and ease of use to address a wide range of applications.**

- 5 kg payload, high inertia, and high duty ratings enable the i4L to tackle more challenging processes with ease.
- Compact built-in internal controller, out-of-the-box table or wall mounting, and options for rear or bottom cabling reduce the physical area required and enable a customized installation.
- High visibility multi-colored LED dome light provides an intuitive visual indication of status.
- Available in 350 mm, 450 mm, and 550 mm reaches to accommodate a wide variety of applications.
- Easily integrates with the full line of OMRON automation products as well as 3rd party automation platforms
- Integrated Control with EtherCAT connectivity or Standard Control with Ethernet connectivity including PROFINET.



## Ordering Information

### RS4-20□□□□□

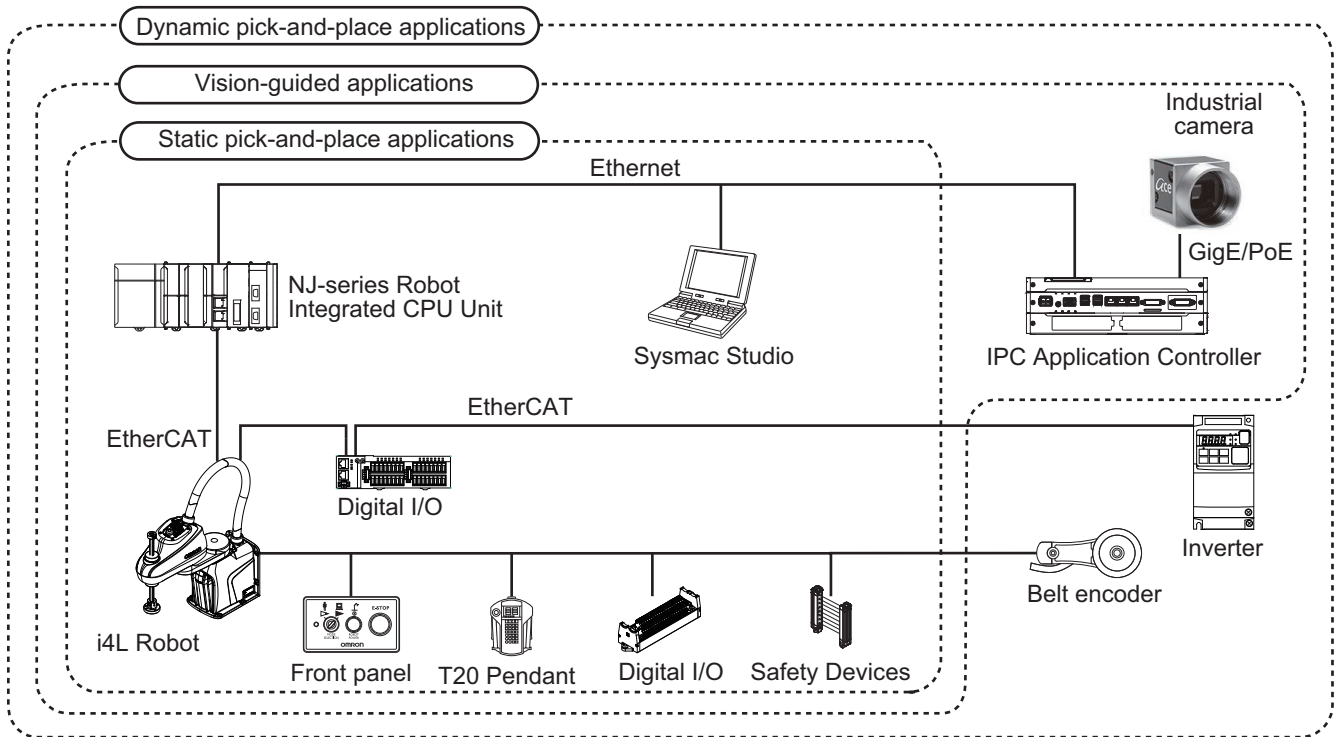
1 2 3 4 5

Item	Description	Details	Designation
1	Robot Type	SCARA	RS4-20
2	Control Type	Standard Control	5
		Integrated Control	6
3	Reach	350 mm	3
		450 mm	4
		550 mm	5
4	Interface Panel Orientation	Rear	0
		Bottom	1
5	Z-axis Quill Stroke Length	180 mm (standard)	2
		350 mm (i4 550L only)	4

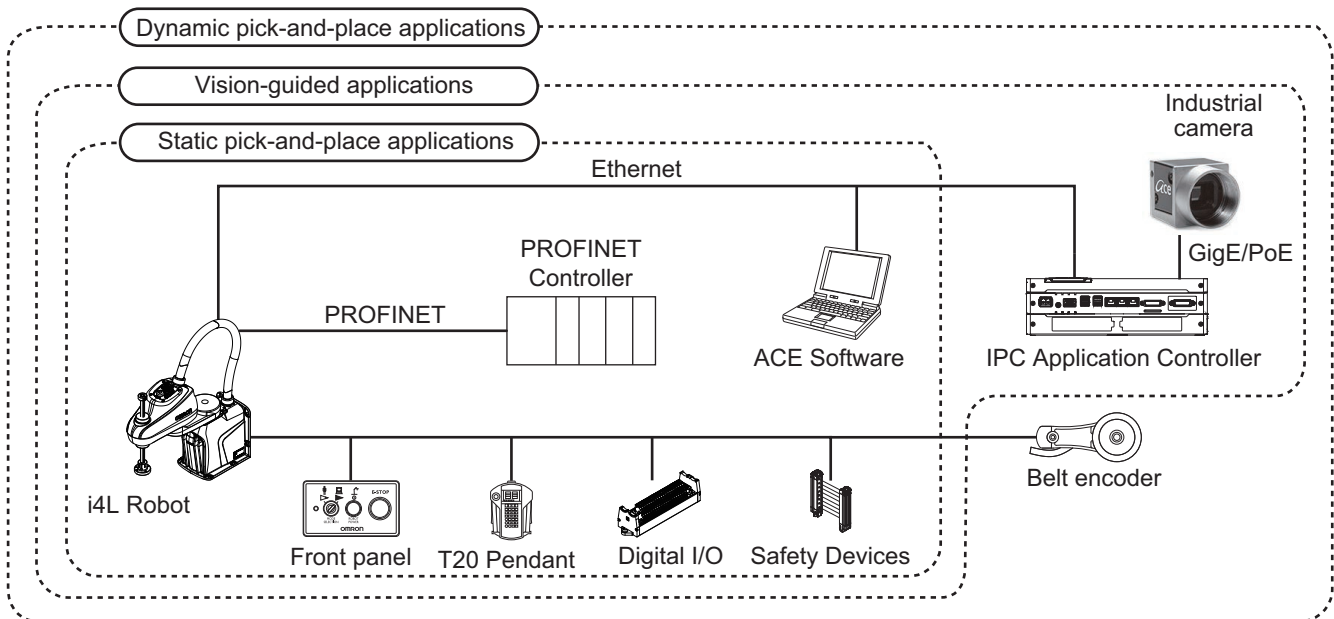
## System Configuration

Typical system configurations are shown below. Other equipment and connections are possible.

### Integrated Control



### Standard Control



## Specifications

Product		i4-350L	i4-450L	i4-550L	
Quill Length		180 mm	180 mm	180 mm	350 mm
Number of axes		4			
Reach		350mm	450 mm	550 mm	
Maximum Payload*1		5 kg			
Repeatability at 100% speed	XY	±0.01 mm			
	Joint 3	±0.01 mm			
	Joint 4	±0.01°			
Joint Range	Joint 1	±136°			
	Joint 2	±136°	±148°		
	Joint 3	180 mm <sup>2</sup>			350 mm <sup>3</sup>
	Joint 4	±360°			
Inertia Moment (Max.)	Joint 4	0.05 kg-m <sup>2</sup>			
Maximum push force - downward, no load*4	Joint 3	150 N			
Joint Speeds	Joint 1	456 deg/s			
	Joint 2	456 deg/s			
	Joint 3	800 mm/s			
	Joint 4	6000 deg/s			
Cycle times*5	Burst*6	0.54 s	0.48 s		
	Sustained	0.57 s			0.54 s
	Blended Burst	0.45 s	0.42 s	0.38 s	
Electrical Requirements	Control Power	24 VDC 5 A / 120 W			
	High Power	48 VDC 15 A / 720 W rated 20 A / 960 W max.			
Protection	IP20 / NEMA Type 1				
Mounting	Table, Wall				
Environmental Requirements	Ambient Temperature	5° to 40°C			
	Humidity Range	5% to 90% non-condensing			
Weight	15.1 kg	15.9 kg	16.4 kg	16.5 kg	
On-board I/O (Primary and Secondary Interface Panels)	17 Sinking (NPN) / Sourcing (PNP) Inputs, 12 Sourcing (PNP) Outputs				
PROFINET	PROFINET v2.4, class B, vendor specific I/O device profile, robot Firmware version 6.0C and above, robot controller revision B and above, ACE software version 4.7 and above				
Electrical pass-through ports	15 pin, D-sub, male				
Pneumatic pass-through ports	4 (6 mm) and 2 (4mm) push-type fittings, max. pressure 0.55 MPa				
Belt Encoder	2 line driver inputs (A, B, and Z)				
RS-232C serial communication ports	1 (troubleshooting information only)				
Programming Software	Sysmac Studio / ACE Version 4 <sup>7</sup>				
IPC Application Manager	Robot Vision Manager, PackManager				
Controller	NJ501-R Series (Integrated Control robots only)				

\*1 Payload includes any object(s) attached to a robot link or tool flange, including end-effectors, tooling, valves, grippers, and objects being handled by the robot.

\*2 Bellows reduce the z-axis travel by 27 mm in the retracted position and 27 mm in the extended position.

\*3 Bellows reduce the z-axis travel by 53 mm in the retracted position and 53 mm in the extended position.

\*4 At a duty cycle of 1 seconds pushing and then 3 seconds not pushing.

\*5 Cycle time is defined as a continuous path with straight-line motion in which the robot tool moves up 25 mm, laterally 305 mm, down 25 mm, and then back along the same path (not achievable over all paths in the robot working envelope). Values listed are with no joint 4 rotation, at 20°C ambient with a 2.0 kg payload. Blended Burst cycle uses the same criteria with arc motion.

\*6 Burst cycle times may increase by up to 20% when bellows are present.

\*7 Use Sysmac Studio for Integrated Control robots. Use ACE Version 4.4.3.200 and above for Standard Control robots.

## i4L-Series

### Items Included With the Robot

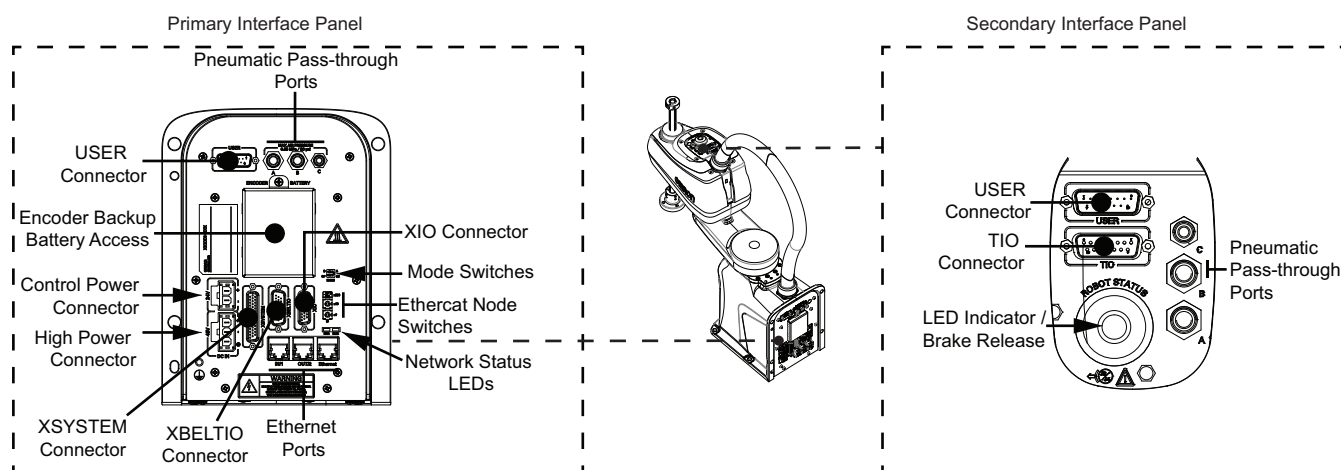
Item	Description
<b>Front Panel</b>	Remote mounted device for robot mode, power, indication, and emergency stop.
<b>XSYSTEM Cable</b>	1.8 m cable providing 3 connectors for XMCP, XFP, and XUSR signals.
<b>XMCP Connector Jumper</b>	Jumper for XMCP connector on XSYSTEM cable.
<b>XFP Connector Jumper</b>	Jumper for XFP connector on XSYSTEM cable.
<b>XUSR Connector Jumper</b>	Jumper for XUSR connector on XSYSTEM cable.
<b>Control Power Connector</b>	Control power connector and pins.
<b>High Power Connector</b>	High power connector and pins.
<b>Documentation Dongle</b>	USB memory stick containing user manuals (i4L, ACE, and V+), ACE Software, and Firm-ware (eV+ 2.6c11).
<b>Printed Documentation</b>	Fixed Robot Safety Guide, Declarations of Incorporation (MDOI), and Declaration of Conformance to KC Standards (UKCA).
<b>Labels</b>	CE, Light Color Status, UKCA, Robot Labels in French.
<b>Screws</b>	4 X M8x10 SHCS, 1 X grounding screw.

### Options and Additional Items

Item	Description	Details	Part Number
<b>XSYSTEM Cable with jumpers</b>	Provides connections for a Front Panel, Teach Pendant, and other user-supplied devices.	1.8 m cable length.	13322-000
<b>High Power Connector</b>	3-position connector provides 48 VDC High Power to the internal servo amplifiers.	Includes connector, 4 pins, and ground screw	22009-000F
<b>Control Power Connector</b>	2-position connector provides 24 VDC Control Power.	Includes connector and 3 pins.	02708-000F
<b>Control Power Kit</b>	Provides 24 VDC Control Power to the robot.	Includes 24 VDC power supply (S8VK-G24024) and 5 m DC cable with pre-installed connector to robot.	23912-000
<b>High Power Kit</b>	Provides 48 VDC power to the robot.	Includes two 48 VDC power supplies (S8VK-G48048), redundancy unit, and DC cabling with pre-installed connector to robot (5 m).	23913-000
<b>XBELTIO Cable</b>	Provides connections to Belt Encoder, EXPIO, and RS-232 signals.	0.6 m cable length.	13463-000
<b>XIO Cable</b>	Connection to XIO termination block.	2 m cable length.	03695-000
<b>XIO Breakout Cable</b>	Provides a flying leads connection to digital I/O at the XIO connector on the robot.	5 m cable length.	04465-000
<b>XIO Termination Block and Cable</b>	Provides terminal block digital I/O connections at the XIO connector on the robot.	Includes a terminal block with a 2 m cable.	90356-40100
<b>IO Blox Kit</b>	Provides additional I/O (8 inputs and 8 outputs).	Includes an IO Blox unit with a 0.3 m cable.	90356-30200
<b>IO Blox Expansion Kit</b>	Provides IO Blox unit expansion.	Includes an IO Blox unit with a 0.3 m cable.	90356-30100
<b>IO Blox Extension Cable</b>	Connects two IO Blox units.	3 m cable length.	04679-030
	Connects an IO Blox unit and a robot.	3 m cable length.	04677-030
<b>Encoder Kit</b>	Includes all equipment to add an encoder to a robot.	Includes encoder, mounting bracket, and 5 m cable.	09742-001
<b>Encoder Extension Cable</b>	Replaces or extends the Encoder Kit cable.	5 m cable length.	09446-050
<b>Pneumatic Valve Kit</b>	Provides three robot-controlled pneumatic valves.	Includes valves (VQZ1121-5MO1-C4-Q), components, and hardware.	22872-000
<b>Belt Encoder Y-adapter Cable</b>	Provides two M12 connectors for the Belt Encoder signals/connector on the XSYSTEM cable.	3 m cable length.	09443-000
<b>Front Panel Kit</b>	Remote mounted device for robot mode, power, indication, and emergency stop.	Includes a Front Panel with a 3 m cable.	92546-10358
<b>Tool Flange (ISO)</b>	Replacement i4L tool flange.		19360-016F
<b>Camera Mounting Kit</b>	Used to mount a Basler or Sentech camera to the outer link.	Includes camera mount, adapter plate, and mounting hardware	22871-000

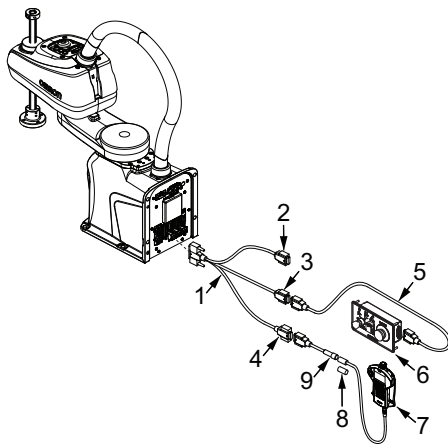
Item	Description	Details	Part Number
<b>T20 Pendant Kit</b>	Provides all required equipment for the T20 Pendant.	Includes the T20 Pendant, 3 m adapter cable, and an M23 jumper plug.	10046-010
<b>IPC Application Controller</b>	Used to execute PackManager and Robot Vision Manager applications.		AC1-152000
<b>NJ501-R Series Robotics Integrated Controller</b>	Machine controller with sequence, motion, and robotics functionality.	Refer to Cat. No. P140 for more information.	NJ501-Roo0
<b>Sysmac Studio</b>	Settings and creation of programs to control a robot with the Robot Integrated CPU Unit and IPC Application Controller.	A license for the Standard Edition (SYSMAC-SE201L) is required.	SYSMAC-SE200D-64
<b>3D Simulation</b>	Perform 3D simulation including robots and peripheral devices.		SYSMAC-SA401L-64
<b>PackManager</b>	Enables full functionality of the PackManager software.		20409-000
<b>Robot Vision Manager</b>	Enables the Robot Vision Manager functionality and inspection tools library.		20410-000
<b>PackManager + Robot Vision Manager</b>	Enables functionality of both PackManager and Robot Vision Manager		20433-000
<b>Bellows Installation Kit</b>	Two bellows and associated hardware for protecting the quill.	180 mm quill length.	22839-000
<b>Bellows Installation Kit</b>		350 mm quill length.	22868-000
<b>Replacement Bellows</b>	Upper and lower replacement bellows.	180 mm quill length.	22861-000F
<b>Replacement Bellows</b>		350 mm quill length.	22862-000F
<b>Encoder Backup Battery Pack</b>	Includes three 3.6 V batteries.		20269-000F

## Interface Panels



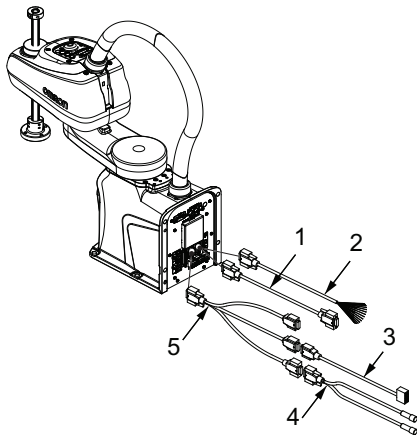
\*1 Communication ports provide EtherCAT interface for Integrated Control Robots and Ethernet interface for Standard Control Robots.

Standard Cables and Connections



Item	Description	Function	Part Number
1	XSYSTEM Cable	Main interface cable.	13322-000
2	XUSR Connector	User-supplied safety devices.	
3	XFP Connector	Front Panel connections.	
4	XMCP Connector	T20 Pendant.	92546-10358
5	Front Panel Extension Cable		
6	Front Panel	High-power, mode, and E-stop.	
7	T20 Pendant		10046-010
8	T20 Pendant Jumper Plug	Used when T20 Pendant is not connected.	
9	T20 Pendant Adapter Cable		

Optional Cables and Connections



Item	Description	Function	Part Number
1	XIO Cable	Connection to XIO termination block.	03695-000
2	XIO Breakout Cable	I/O flying leads.	04465-000
3	EXPIO to IO Blox Cable	IO Blox connections.	04677-030
4	Belt Encoder Y-adapter Cable	Direct encoder connections.	09443-000
5	XBELTIO Adapter Cable	Encoder, force, and RS-232 signal interface cable.	13463-000

Mounting Options

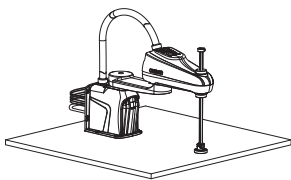
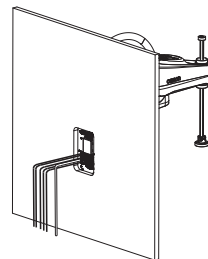
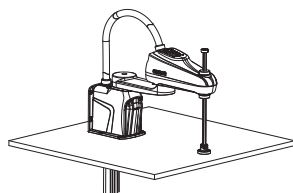
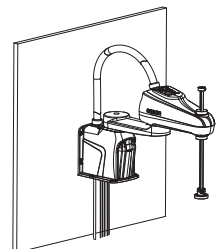


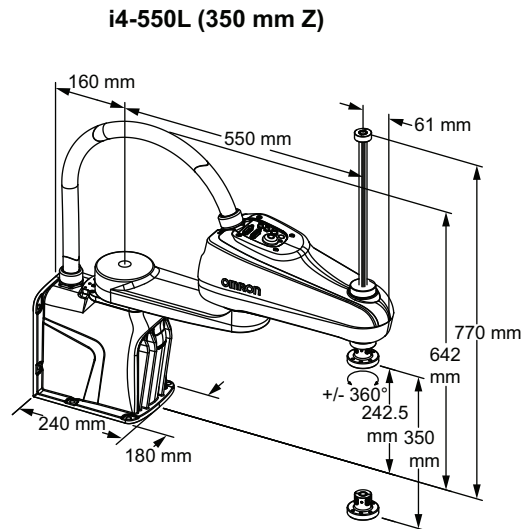
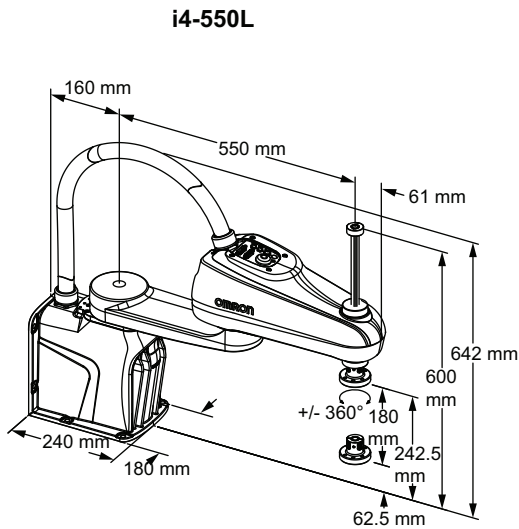
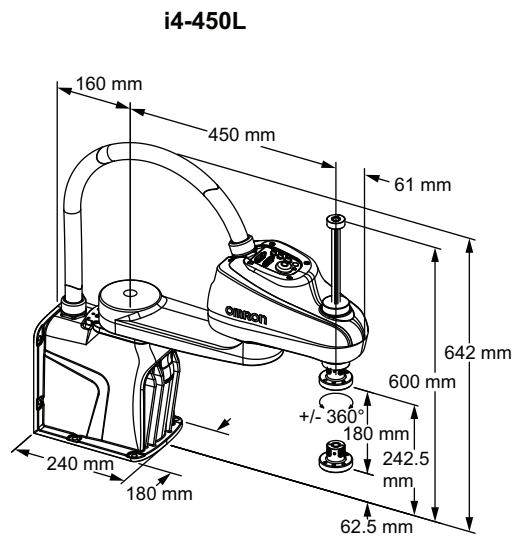
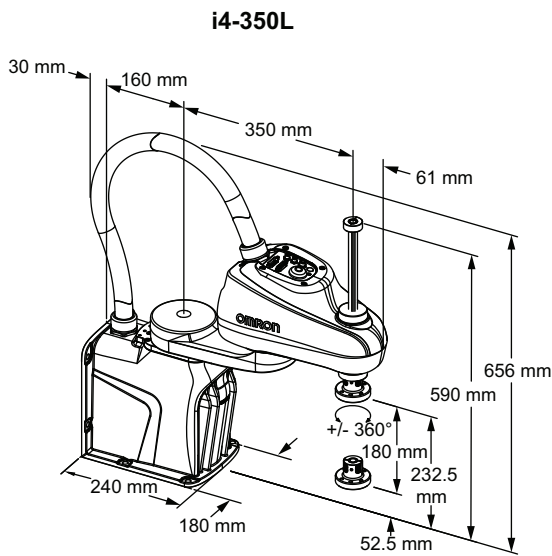
Table Mount



Wall Mount

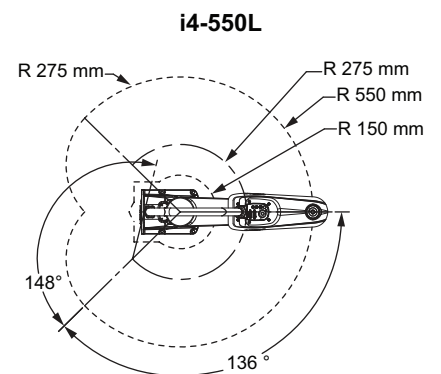
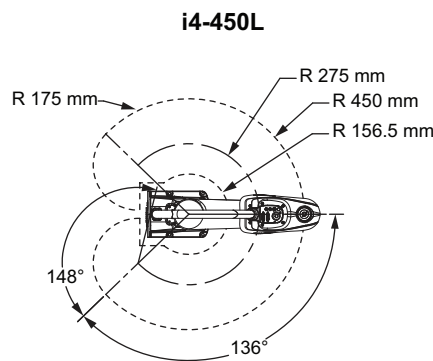
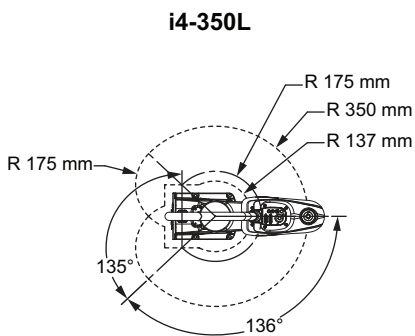


# Robot Dimensions



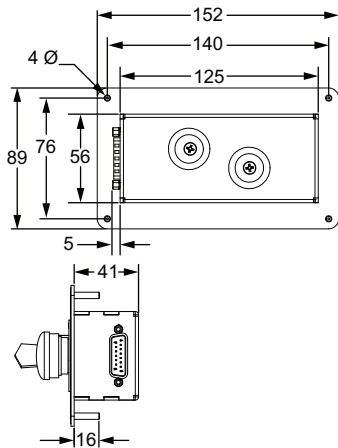
Note: There must be at least 183 mm of clearance from the Primary Interface Panel connectors to provide adequate space for cables.

# Arm Reach Dimensions

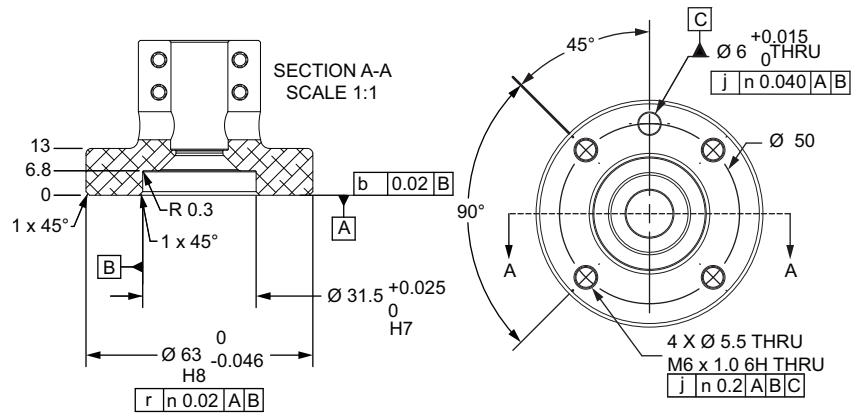


Note: Reach restrictions behind the robot may vary based on robot configuration, type, and cable configuration.

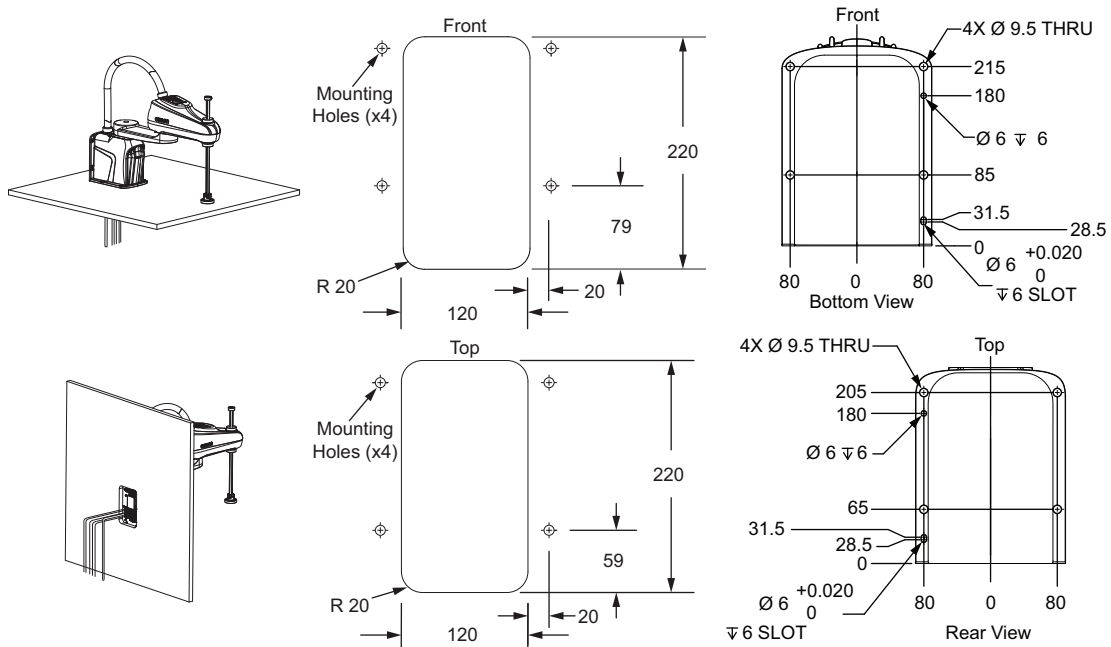
**Front Panel**



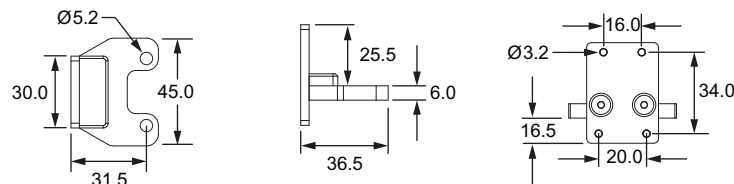
**Tool Flange**



**Mounting Flange/Cable Exit Cutout**



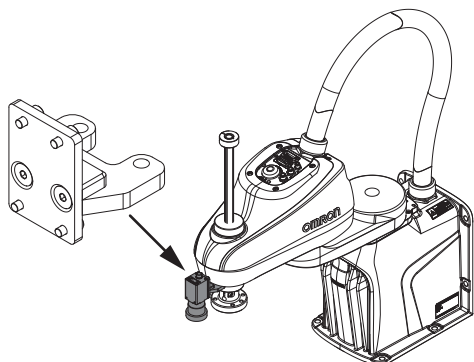
**Camera Mounting Bracket**



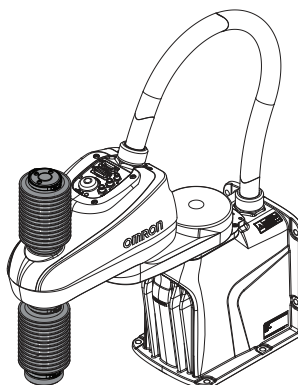


## Other Information

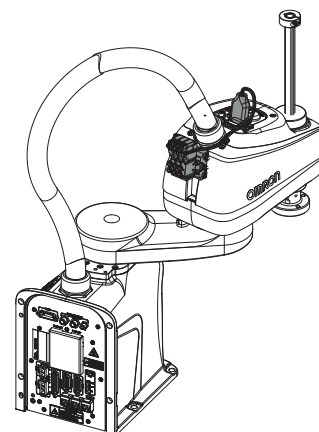
Camera Bracket



Bellows



Pneumatic Valve Kit



## Related Manuals

Catalog Number	Manual Title
I590	Robot Safety Guide
I601	T20 Pendant User's Manual
I658	i4L Robots User's Manual
I659	i4L Robots with EtherCAT User's Manual
I632	IPC Application Controller User's Manual
I633	Automated Control Environment (ACE) Version 4 User's Manual
I671	V+ User's Manual
I672	V+ Keyword Reference Manual
I685	PROFINET Fieldbus Industrial Robot Configuration User's Guide
O037	NJ-series Robot Integrated CPU Unit User's Manual
O049	Machine Automation Controller NJ-series Robot Integrated System Startup Guide
W504	Sysmac Studio Version 1 Operation Manual
W595	Sysmac Studio Robot Integrated System Building Function with Robot Integrated CPU Unit Operation Manual
W618	Sysmac Studio 3D Simulation Function Operation Manual
W621	Sysmac Studio Robot Integrated System Building Function with IPC Application Controller Operation Manual

# Terms and Conditions Agreement

## **Read and understand this catalog.**

Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments.

## **Warranties.**

- (a) Exclusive Warranty. Omron's exclusive warranty is that the Products will be free from defects in materials and workmanship for a period of twelve months from the date of sale by Omron (or such other period expressed in writing by Omron). Omron disclaims all other warranties, express or implied.
- (b) Limitations. OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE PRODUCTS. BUYER ACKNOWLEDGES THAT IT ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE.

Omron further disclaims all warranties and responsibility of any type for claims or expenses based on infringement by the Products or otherwise of any intellectual property right. (c) Buyer Remedy. Omron's sole obligation hereunder shall be, at Omron's election, to (i) replace (in the form originally shipped with Buyer responsible for labor charges for removal or replacement thereof) the non-complying Product, (ii) repair the non-complying Product, or (iii) repay or credit Buyer an amount equal to the purchase price of the non-complying Product; provided that in no event shall Omron be responsible for warranty, repair, indemnity or any other claims or expenses regarding the Products unless Omron's analysis confirms that the Products were properly handled, stored, installed and maintained and not subject to contamination, abuse, misuse or inappropriate modification. Return of any Products by Buyer must be approved in writing by Omron before shipment. Omron Companies shall not be liable for the suitability or unsuitability or the results from the use of Products in combination with any electrical or electronic components, circuits, system assemblies or any other materials or substances or environments. Any advice, recommendations or information given orally or in writing, are not to be construed as an amendment or addition to the above warranty.

See <http://www.omron.com/global/> or contact your Omron representative for published information.

## **Limitation on Liability; Etc.**

OMRON COMPANIES SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, NEGLIGENCE OR STRICT LIABILITY.

Further, in no event shall liability of Omron Companies exceed the individual price of the Product on which liability is asserted.

## **Suitability of Use.**

Omron Companies shall not be responsible for conformity with any standards, codes or regulations which apply to the combination of the Product in the Buyer's application or use of the Product. At Buyer's request, Omron will provide applicable third party certification documents identifying ratings and limitations of use which apply to the Product. This information by itself is not sufficient for a complete determination of the suitability of the Product in combination with the end product, machine, system, or other application or use. Buyer shall be solely responsible for determining appropriateness of the particular Product with respect to Buyer's application, product or system. Buyer shall take application responsibility in all cases.

NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY OR IN LARGE QUANTITIES WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCT(S) IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

## **Programmable Products.**

Omron Companies shall not be responsible for the user's programming of a programmable Product, or any consequence thereof.

## **Performance Data.**

Data presented in Omron Company websites, catalogs and other materials is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of Omron's test conditions, and the user must correlate it to actual application requirements. Actual performance is subject to the Omron's Warranty and Limitations of Liability.

## **Change in Specifications.**

Product specifications and accessories may be changed at any time based on improvements and other reasons. It is our practice to change part numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the Product may be changed without any notice. When in doubt, special part numbers may be assigned to fix or establish key specifications for your application. Please consult with your Omron's representative at any time to confirm actual specifications of purchased Product.

## **Errors and Omissions.**

Information presented by Omron Companies has been checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical or proofreading errors or omissions.



**Note: Do not use this document to operate the Unit.**

**OMRON Corporation Industrial Automation Company**

**Kyoto, JAPAN**

**Contact : [www.ia.omron.com](http://www.ia.omron.com)**

**Regional Headquarters**

**OMRON EUROPE B.V.**  
Wegalaan 67-69, 2132 JD Hoofddorp  
The Netherlands  
Tel: (31) 2356-81-300 Fax: (31) 2356-81-388

**OMRON ASIA PACIFIC PTE. LTD.**  
438B Alexandra Road, #08-01/02 Alexandra  
Technopark, Singapore 119968  
Tel: (65) 6835-3011 Fax: (65) 6835-2711

**OMRON ELECTRONICS LLC**  
2895 Greenspoint Parkway, Suite 200  
Hoffman Estates, IL 60169 U.S.A.  
Tel: (1) 847-843-7900 Fax: (1) 847-843-7787

**OMRON ROBOTICS AND SAFETY TECHNOLOGIES, INC.**  
4225 Hacienda Dr., Pleasanton, CA 94588 U.S.A.  
Tel: (1) 925-245-3400/Fax: (1) 925-960-0590

**OMRON (CHINA) CO., LTD.**  
Room 2211, Bank of China Tower, 200 Yin Cheng Zhong Road,  
PuDong New Area, Shanghai, 200120, China  
Tel: (86) 21-5037-2222 Fax: (86) 21-5037-2200

**Authorized Distributor:**

©OMRON Corporation 2023 All Rights Reserved.  
In the interest of product improvement,  
specifications are subject to change without notice.

**Cat. No. I874-E-02** 0623 (0422)

**23490-101B**