

# i4-650H/750H/850H

**High performance robot for assembly, material handling, and precision machining.**

- EtherCAT connectivity to the Omron NJ501-R controller and programming through the familiar IEC 61131-3 programming language or scripting (V+).
- Easy to service with high visibility, multi-colored light ring and LCD display to show the robot status.
- Reach Options of 650 mm, 750 mm, 850 mm with 210 mm or 410 mm z-axis stroke.
- IP65 and Food Grade models available.

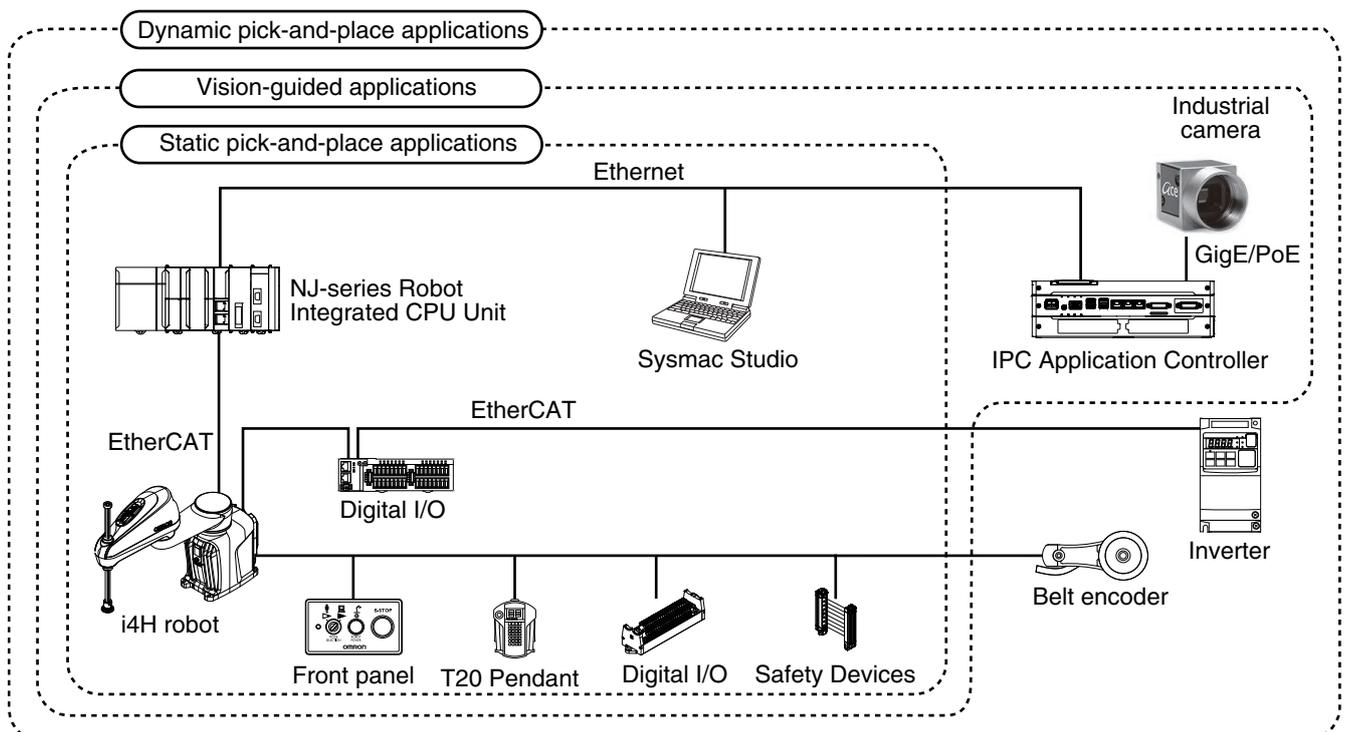


## Ordering Information

RS4-206 □□□□  
1 2 3 4 5

Item	Description	Details	Designation
1	i4H-series	---	RS4-206
2	Reach	650 mm	6
		750 mm	7
		850 mm	8
3	Mount Configuration	Standard	5
		Inverted	7
4	Features/Rating	IP20 (standard)	0
		IP65 and Food Grade lubrication	4
		Food Grade lubrication	5
5	Z-axis Quill Stroke Length	210 mm	2 (IP20 and IP65 rating) or 3
		410 mm	4 (IP20 and IP65 rating) or 5

## System configuration



# i4H-Series

## Specifications

Product		i4-650H		i4-750H		i4-850H	
Quill Length		210 mm	410 mm	210 mm	410 mm	210 mm	410 mm
Number of axes		4					
Reach		650 mm		750 mm		850 mm	
Maximum Payload <sup>*1</sup>		15 kg					
Repeatability at 100% speed	XY	±0.015 mm					
	Joint 3	±0.01 mm					
	Joint 4	±0.005°					
Joint Range	Joint 1	±152°					
	Joint 2	±140°					
	Joint 3	210 mm (Standard Quill), 410 mm (Long Quill)					
	Joint 4	±360°					
Inertia Moment (Max.)	Joint 4	0.5 kg·m <sup>2</sup>					
Maximum push force - downward, no load <sup>*2</sup>	Joint 3	588 N					
Joint Speeds	Joint 1	450 deg/s					
	Joint 2	720 deg/s					
	Joint 3	1583 mm/s					
	Joint 4	2400 deg/s					
Cycle times <sup>*3,*4</sup>	Burst <sup>*4</sup>	0.41 s		0.39 s		0.39 s	
	Sustained	0.45 s		0.46 s		0.50 s	
	Blended Burst <sup>*4</sup>	0.32 s		0.31 s		0.31 s	
Power Requirements	DC	24 VDC ±10%, 8 A max.					
	AC	200 to 240 VAC, 50/60 Hz, Single Phase, 12.0 A max.					
Protection	IP20, Standard Model	IP20 / NEMA Type 1					
	IP20, Food Grade Model	IP20 / NEMA Type 1, Food Grade Lubrication NSF H1, ISO 21469 certified					
	IP65 Model	IP65 / NEMA Type 4, Food Grade Lubrication NSF H1, ISO 21469 certified					
Mounting		Table, Inverted, Wall					
Environment Requirements	Ambient Temperature	0° to 40°C					
	Humidity Range	5% to 90% non-condensing					
Weight	Standard and Inverted	50.4 kg	50.8 kg	50.9 kg	51.3 kg	51.6 kg	52.0 kg
	Standard and Inverted IP65	52.9 kg	53.3 kg	53.4 kg	53.8 kg	54.1 kg	54.5 kg
On-board I/O	Inputs	12 sinking/sourcing inputs, 0 to 30 VDC					
	Outputs	8 sourcing outputs, 24 VDC ±10%, 0.7 A per output 1.5 A max. @ 25°C for all circuits					
End-of-Arm EtherCAT port		1 (4 pin, M12 female)					
Electrical pass-through ports		2 (19 pin, M23 male)					
Pneumatic pass-through ports		4 (6 mm, push-type fittings) max. pressure 0.55 MPa					
Conveyor tracking inputs		2					
RS-232C serial communication ports		1					
Programming Software		Sysmac Studio 64-bit					
Robot Vision Manager		Yes					
PackManager		Yes					
Required Controller		OMRON NJ501-R Series					

\*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 At a duty cycle of 3 seconds pushing and then 2 seconds not pushing.

\*3 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.

\*4 Burst and Blended Burst cycle times may increase by up to 15% when using IP65-rated robots.

## 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.	13323-100 <sup>*1</sup>
<b>Cable Seal Kit, Standard</b>	Cable Seal for all cable connections at the Primary Interface Panel.	All components for replacing or installing a cable seal included.	08765-000 <sup>*2</sup>
<b>Cable Seal Kit, Inverted</b>			08765-200 <sup>*2</sup>
<b>High Power Connector</b>	Used to supply 200 to 240 VAC power for the internal servo amplifiers.	Includes connector, pins, and retaining clip.	22822-100 <sup>*1</sup>
<b>Control Power Connector</b>	Used to supply 24 VDC control power.	Includes connector and pins.	22822-200 <sup>*1</sup>
<b>XBELTIO Cable</b>	Provides connections to Belt Encoder, EXPIO, and RS-232 signals.	0.6 m cable length.	13463-000
<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 1.8 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>	Extends the length between two IO Blox units.	3 m cable length.	04679-030
<b>IO Blox Extension Cable</b>	Extends the length between 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>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>Electrical Pass-through Ports Cable</b>	Provides flying leads for USER ports on the Primary and Secondary Interface Panels.	1.7 m cable length.	18823-100
<b>Front Panel Kit</b>	Front Panel with extension cable for connection to the XFP connector on the XSYSTEM cable.	Includes a Front Panel with a 3 m cable.	92546-10358 <sup>*1</sup>
<b>eCobra Mount Adapter</b>	Adapts i4H robot mounting holes to the eCobra mounting hole pattern.		21636-000
<b>eCobra Tool Flange</b>	eCobra tool flange compatible with the i4H robot.		19106-100F
<b>Tool Flange</b>	Replacement tool flange for i4H robot.		19106-000F <sup>*1</sup>
<b>Camera Mounting Bracket</b>	Used to mount a camera to the outer link.		18908-000
<b>Camera Mounting Adapter</b>	Provides Basler and Sentech camera mounting for the Camera Mounting Bracket.		22295-000
<b>T20 Pendant Kit</b>	Provides all required equipment for the T20 Pendant.	Includes the T20 Pendant, 3 m adapter cable, and a jumper plug.	10046-010
<b>IPC Application Controller</b>	Used to execute PackManager and Robot Vision Manager applications.	Refer to catalog P072 for more information.	AC1-152000
<b>Wall Mount Bracket</b>	Enables mounting the robot to a vertical surface.	Not compatible with IP65-rated robots.	20089-000
<b>NJ501-R Series Robotics Integrated Controller</b>	Machine controller with sequence, motion, and robotics functionality.	Refer to catalog P072 for more information.	NJ501-R□□□
<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.	210 mm quill length.	19464-003F <sup>*2</sup>
<b>Bellows Installation Kit</b>		410 mm quill length.	19464-004F <sup>*2</sup>
<b>Bellows Replacement Kit</b>	Upper and lower replacement bellows.	210 mm quill length.	19464-103F
<b>Bellows Replacement Kit</b>		410 mm quill length.	19464-104F

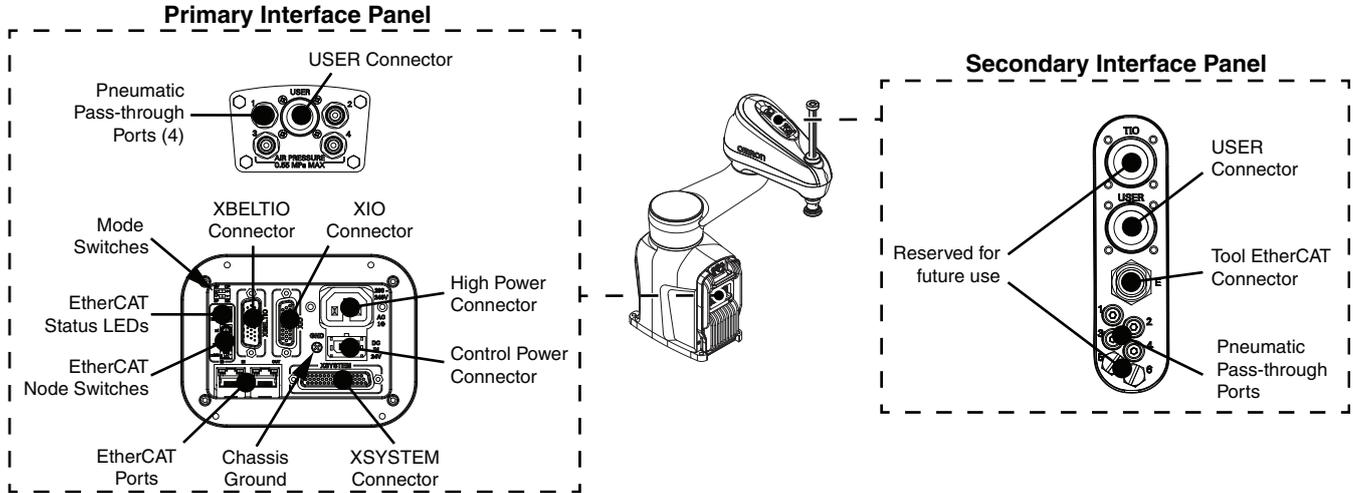
# i4H-Series

Item	Description	Details	Part Number
Encoder Backup Battery Pack	Includes two 3.6 V batteries.		19238-000F*1

\*1 Supplied with all robots.

\*2 Supplied with IP65 rated robots.

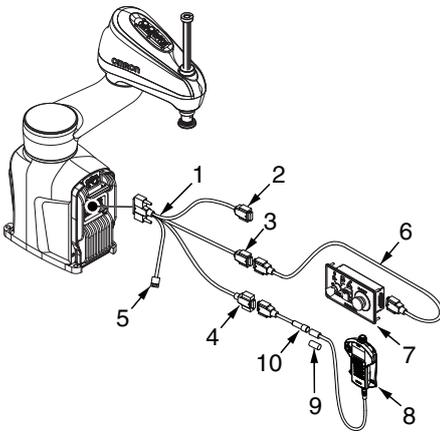
## Interface Panels



## Cables and Connections

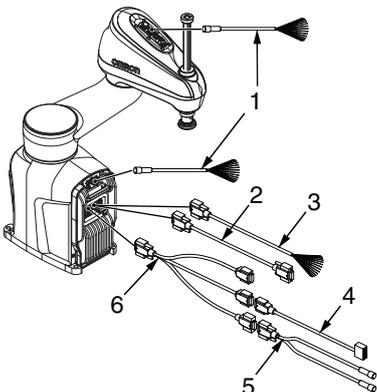
Refer to Options and Accessories for more information.

### Standard Cables and Connections



Item	Description	Function	Part Number
1	XSYSTEM Cable	Main interface cable.	13322-100
2	XUSR Connector	User-supplied safety devices.	
3	XFP Connector	Front Panel connections.	
4	Ethernet Connector	Service mode connection.	
5	XMCP Connector	T20 Pendant.	
6	Front Panel Extension Cable		92546-10358
7	Front Panel	High-power, mode, and E-stop.	
8	T20 Pendant		10046-010
9	T20 Pendant Jumper Plug	Used when T20 Pendant is not connected.	
10	T20 Pendant Adapter Cable		

### Optional Cables and Connections



Item	Description	Function	Part Number
1	USER Connector Cables	Pass-through electrical signals.	18823-100
2	XIO Termination Block Cable	Connection to I/O termination block.	03695-000
3	XIO Breakout Cable	I/O flying leads.	04465-000
4	EXPIO to IO Blox Cable	IO Blox connections.	04677-030
5	Belt Encoder Y-adapter Cable	Direct encoder connections.	09443-000
6	XBELTIO Adapter Cable	Encoder, force, and RS-232 signal interface cable.	13463-000

# Mounting Options

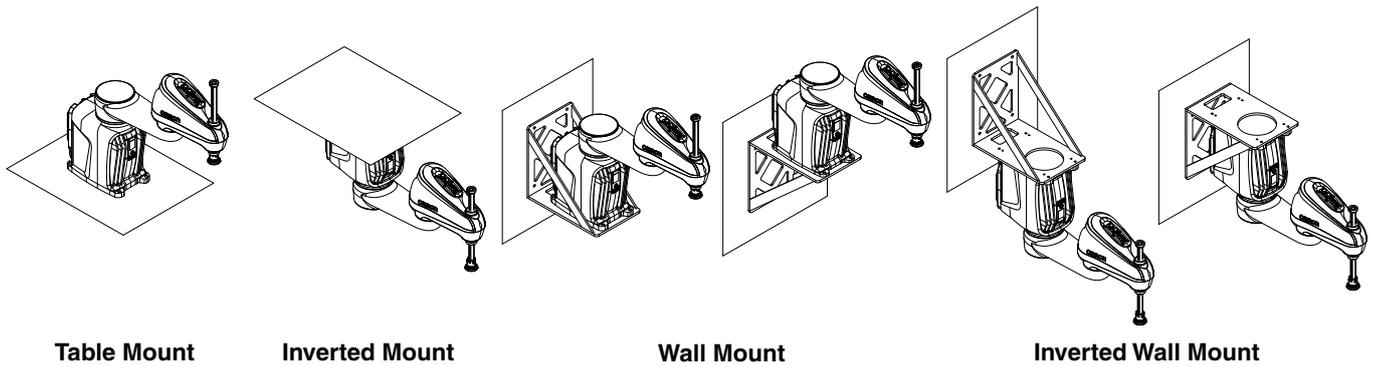


Table Mount

Inverted Mount

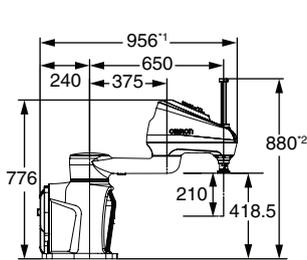
Wall Mount

Inverted Wall Mount

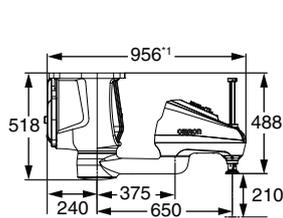
# Robot Dimensions

(Unit: mm)

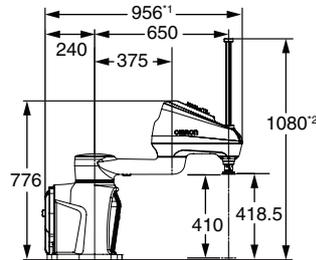
**i4-650H Standard**



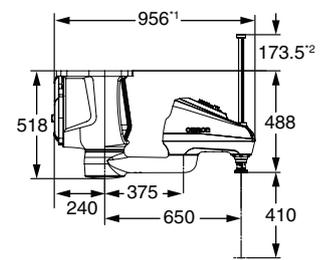
**i4-650H Inverted**



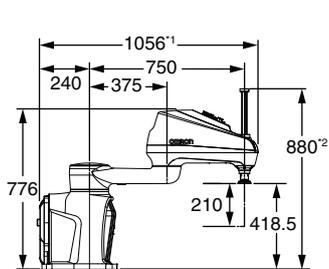
**i4-650H Standard, Long Quill**



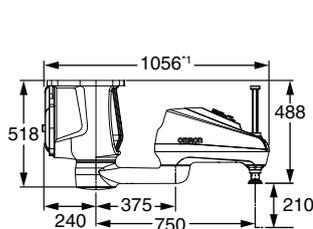
**i4-650H Inverted, Long Quill**



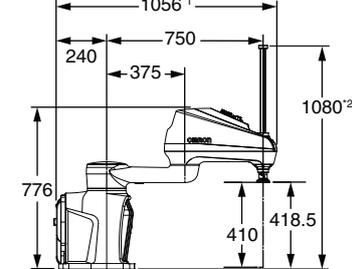
**i4-750H Standard**



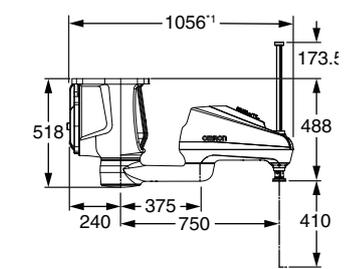
**i4-750H Inverted**



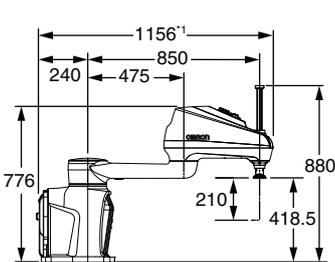
**i4-750H Standard, Long Quill**



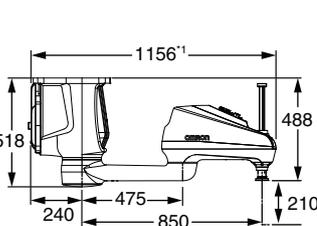
**i4-750H Inverted, Long Quill**



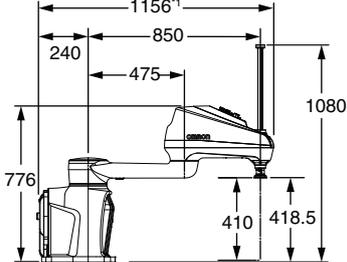
**i4-850H Standard**



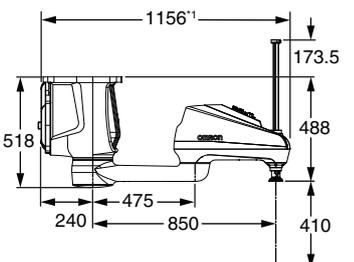
**i4-850H Inverted**



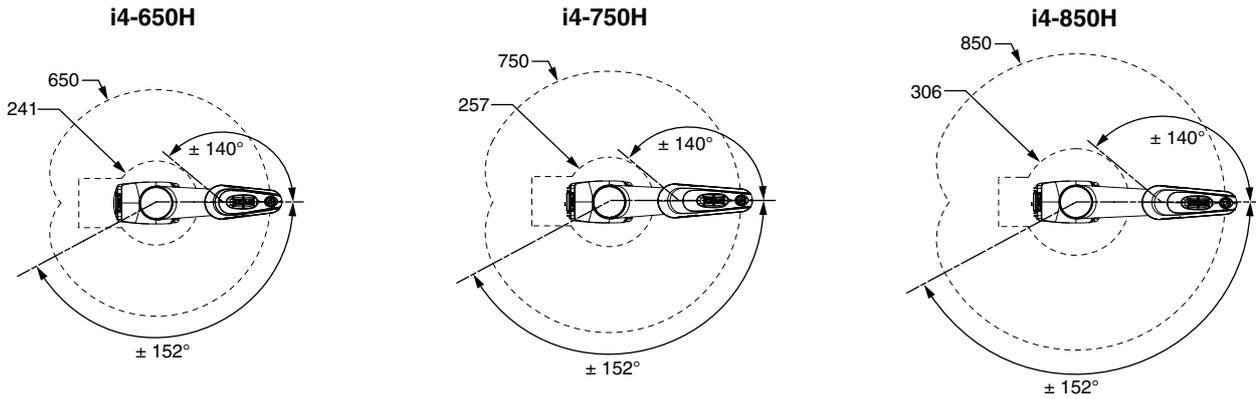
**i4-850H Standard, Long Quill**



**i4-850H Inverted, Long Quill**



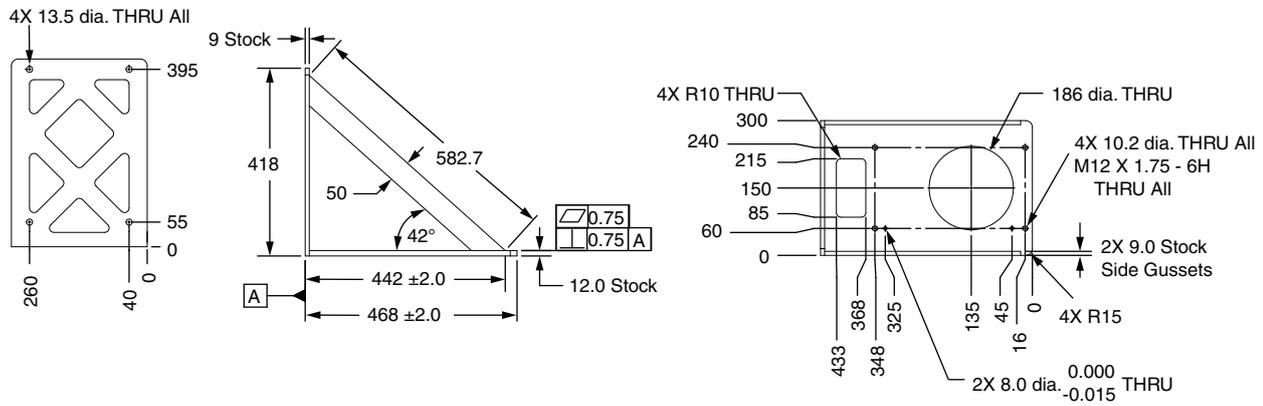
\*1 The overall length increases by 150 mm if a cable seal box is installed.  
 \*2 The overall height of the robot increases by 47 mm if bellows are installed.  
 Note: The base of the robot is 240 mm wide.



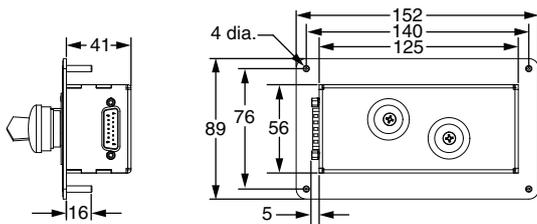
Note: Reach restrictions behind the robot may vary based on robot configuration and type.

Other Dimensions

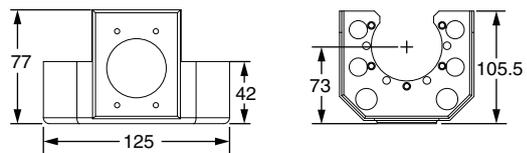
Wall Mount Bracket



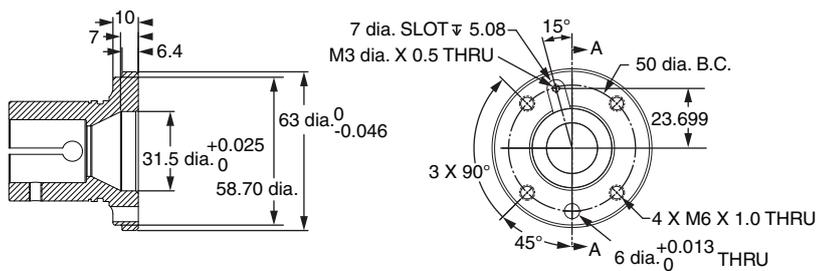
Front Panel



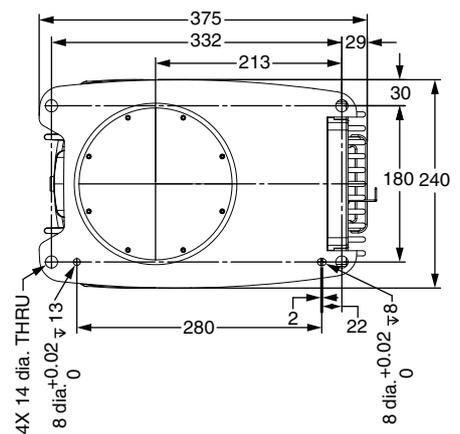
Camera Mounting Bracket



Tool Flange

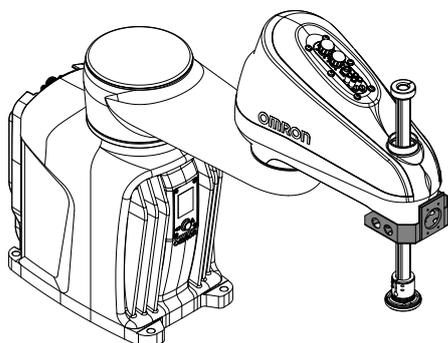


Robot Base

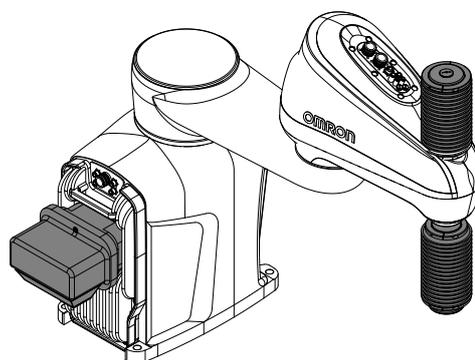


## Other Information

Camera Bracket



Cable Seal Kit and Bellows (IP65)



## Related Manuals

Catalog Number	Manual Title
I590	Robot Safety Guide
I601	T20 Pendant User's Manual
I661	i4H Robots with EtherCAT User's Manual
I632	IPC Application Controller User's Manual
I671	NeVp User's Manual
I672	NeVp Keyword Reference Manual
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



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