

JANOME

JR4000 SERIES

Desktop Robot



New Flagship Model Desktop Robot Expands

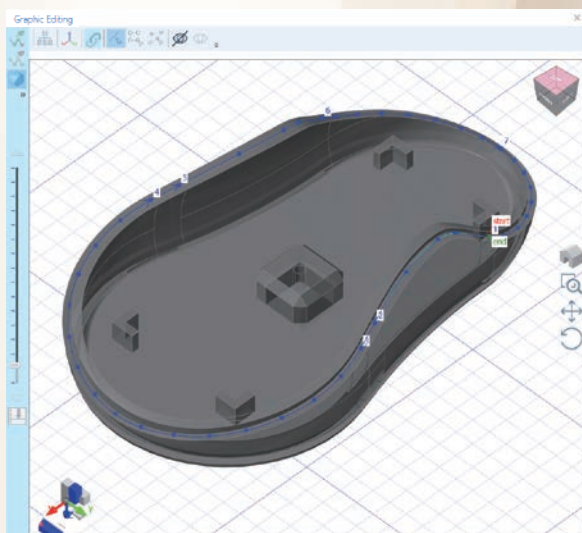
The JR4000 Series is a high performance desktop robot designed for even faster movement and greater user-friendliness. PC software "JR-C Points III" (optional), handles 3-dimensional CAD data. With new user interfaces and expanded offline teaching capabilities, the JR4000 Series is our most powerful robot to date.

Features

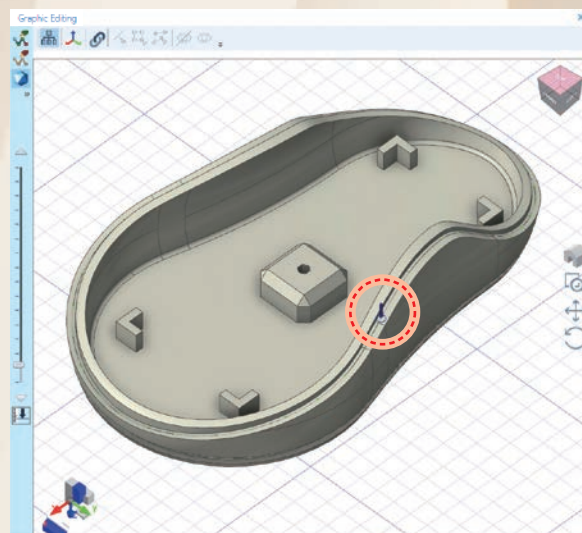
3D Teaching

A new point type, "Spline Curve Drive" is built into the system program, making it possible to handle difficult shapes with just a few points. Greatly reduces teaching time; refer to 3D data, make position adjustments and automatically generate movement paths for the robot and teaching is complete!

Recognize and Generate Teaching Points Automatically



The robot's current position is reflected in real time, making it easy to match up the teaching data with the robot's actual trajectory.



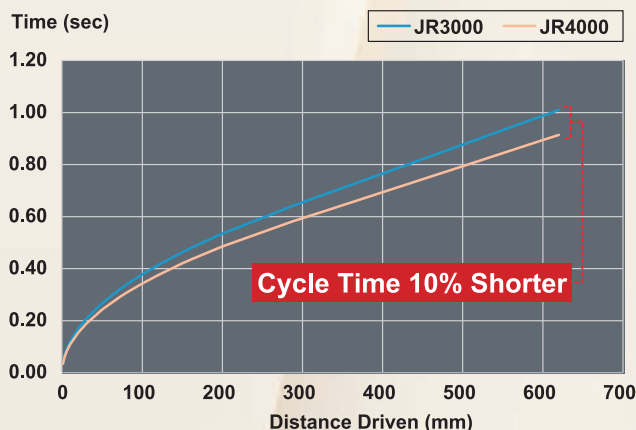
Increased Maximum Speed & Acceleration

Max. speed: 1000mm/sec, max. acceleration: 3400m/sec²
Industry-leading speed shortens cycle time.

*Not achievable with the 200mm stroke models.

Drive Time Comparison

Speed: 900 → 1,000 Acceleration: 2800 → 3,400



Multilingual Display

The teaching pendant is equipped with 11 different languages so that operators from as many countries as possible can easily program and operate the robot.

Display Language Examples

Thiết lập môi trường dạy
Điều chỉnh độ sáng
Đơn vị đo
Ngôn ngữ hiển thị
Chức năng đi
Chức năng JOG
Công cụ dạy
Thiết lập số hiệu công việc thủ công
Nhập phím
Ánh sáng hỗ trợ dạy
Lưu ở chế độ đang thay đổi
Hiện thị các tọa độ

Vietnamese

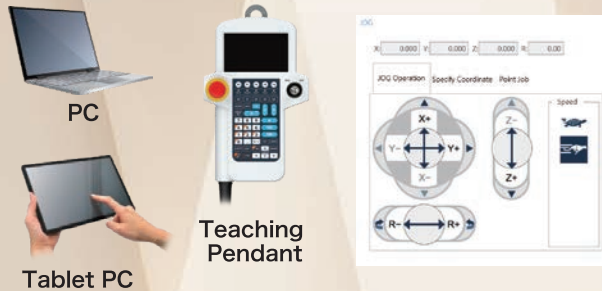
教学环境设定
对比度
显示长度单位切换
显示语言切换
G0 键移动
JOG 移动
教学时所用工具
手动作业编号设定
按键点声音
教学时背光灯
模式切换时保存
坐标显示

Chinese

Your Possibilities Even Further...

Tools for Teaching

Compatible for teaching with a PC, tablet PC or teaching pendant. User interface designed especially for touch panel operations.



*For safety, when using a tablet PC, use a Safety Commander®.
*Safety Commander® is a trademark and/or registered trademark of IDEC CORPORATION.

Quick Guide

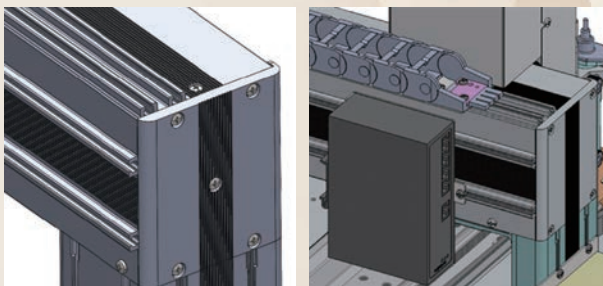
With the PC software "Quick Guide", select the setting item or function, and the relevant explanation appears on the display. There's no need to bring out an operation manual to confirm function content.

Item	Setting Value	Unit
PTP Speed		100.00 %
R-Axis Rotation Speed		100.00 %
R-Axis Rotation Acceleration		100.00 %
Arch Motion	Specify by the Z-Axis Movement Relative Distance	-
Z-Axis Movement Height		100.000 mm
Ascending Distance Only for Z-Axis		100.000 mm
Descending Distance Only for Z-Axis		100.000 mm

Specify the Z direction distance from the start or end point, whichever is higher, to the horizontal movement position.
Z=0

Device Attachment Grooves

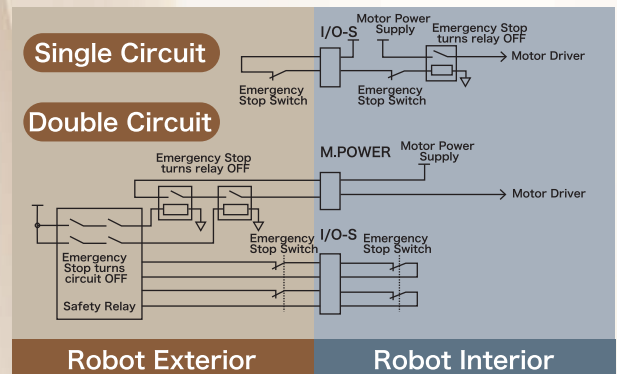
Dedicated grooves on the top and rear of the Y Axis arm for external device attachment cleanly consolidate wiring.



Choose the Safety Circuit

In addition to the conventional Safety Category 1, Performance Level PL=c circuit, it is possible to construct an external safety circuit (such as a relay to turn off the motor power supply) Safety Category 3, Performance Level PL=d with a redundant motor power supply turn OFF for dangerous work.

*Not available with the 200mm stroke models.



Expanded I/O-MT Function

We expanded the I/O-MT function for controlling up to 2 additional axes as auxiliary axes.

① Point Mode

Auxiliary axes work together with the X, Y, Z and R Axes.

Example 4 Axes Dispensing Robot expands to 6 axes

2 axes are added to change both the syringe angle and the workpiece angle to set the angles for dispensing on the outer edge surface of a hole cut into a tubular workpiece.

② Independent Mode

Auxiliary axes work independent of the X, Y, Z and R Axes.

Example Run the robot while running a conveyor

Run the robot axes for dispensing or screw tightening while running a conveyor separately thereby keeping the robot point coordinates and operation independent.

③ Encoder Input

Acquire external encoder values to monitor rotation amount and control a sensor.

Wide Variety of Model Variations

How to Read the Model Number

JR4	20	3	N	-	A	1	A
JR4000 Series	X, Y Axes Strokes	Number of Axes	Encoder*1		Operation Panel Specifications	Power Supply Specifications*2	CE Declaration
	20: 200×200mm 30: 300×320mm 40: 400×400mm 50: 510×510mm 60: 510×620mm	3: 3 Axes 4: 4 Axes	E: Included N: Not Included		A: Installed Switch B: Switchbox C: Custom Switch	0: 100-120/200-240V 50/60Hz (No Outlet) 1: 100-120V 50/60Hz (100V Outlet) 2: 200-240V 50/60Hz (200V Outlet)	A: Not Declared (for sale in Japan only) B: Declared (Power Supply Specification: 0 Only)

We offer a wide range of model variations and options, including: a model equipped with an encoder for detecting motor synchronization errors, to the JR4400 Double Column Type useful when there is a large load on the Z Axis, to an elevated column type for tall workpieces. Also, all model types have a CE-declared version (Power Supply Specification: 0)

Installation Options

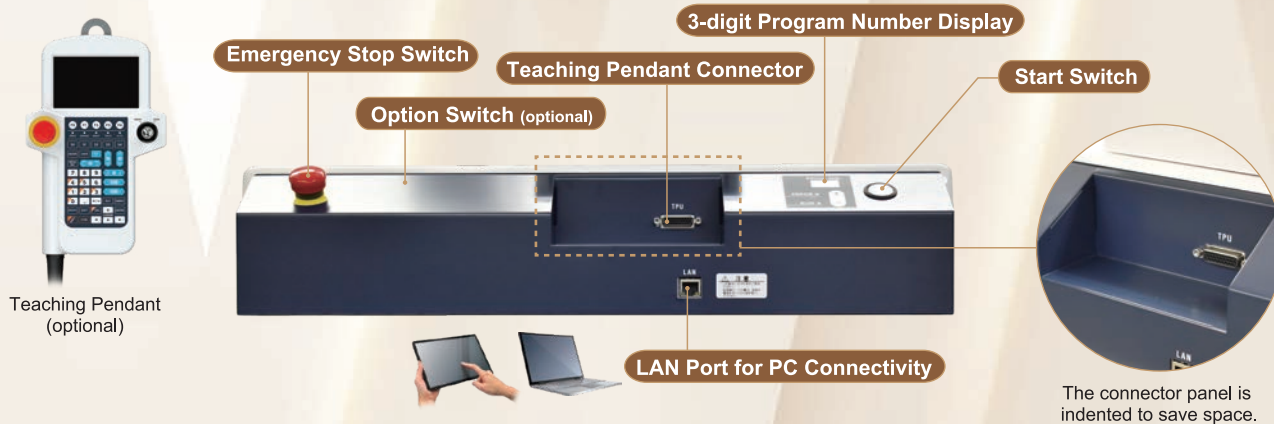
- I/O-SYS (16 Inputs/16 Outputs)
- I/O-1 (16 Inputs/14 Outputs)
- I/O-MT (control 2 external motors)
- I/O-S (for interlock connector)
- JR4400 Series Double Column Type
- COM1, 2, 3 (for external devices)
- Outlet (select 100V or 200V)
- LAN port on rear of robot
- Fieldbus (select CC-Link, PROFINET or EtherNet)
- ENC-IN (for external encoder value input)
- I/O Internal Power Supply (DC24V Rating 2.1A)
- Elevated Column Type (Open Height Variation)
- Encoder for Motor Synchronization Error Detection
- Customized Switch Model
- Optional Switch (for Dispensing Model Needle Purging Switch Function)

*1 Motor Synchronization Error Detection Function

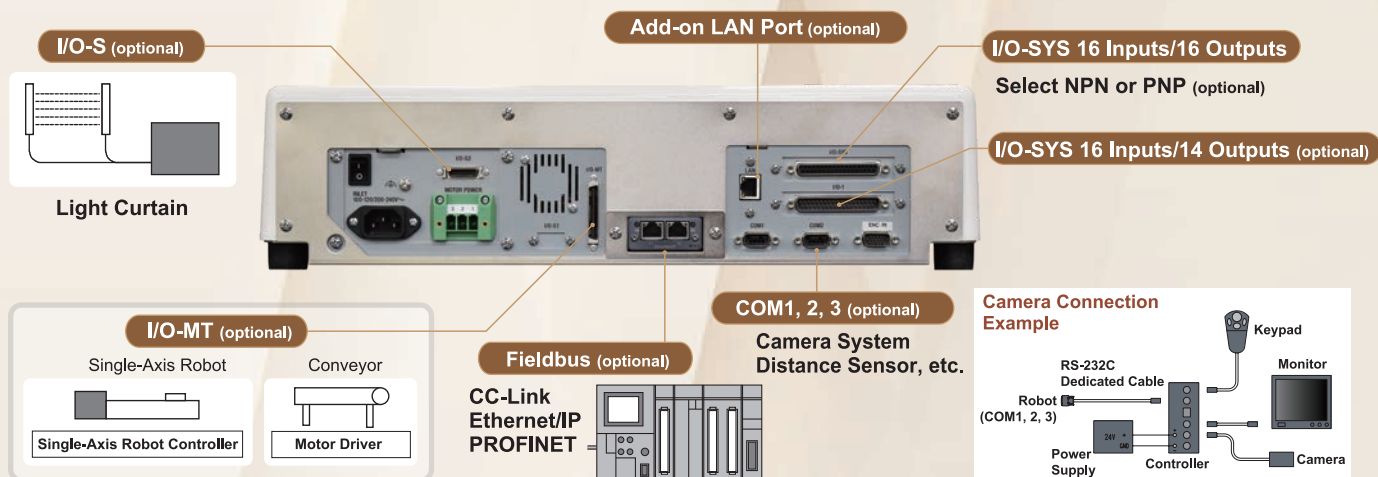
*2 The JR4200 CE Declared, with I/O-S2 added type has no outlet.

Part Names and Explanations (Example: JR4300 Type)

Operation Panel Front



Operation Panel Rear



Application Examples

The versatile JR4000 Series Desktop Robot is useful for a variety of manufacturing applications, including dispensing, screw-tightening, soldering, PC board depaneling, pick-and-place, testing and more. Use the I/O-MT function to control up to 2 external motors and/or a camera system to take advantage of the position correction function and further broaden the robot's usefulness.

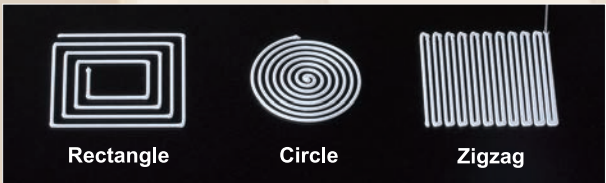
Dispensing Robot

Easy

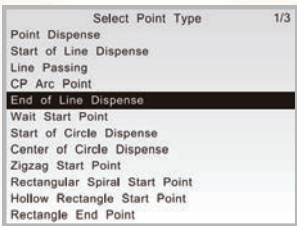
With our dedicated dispensing application software, just select the positions to where you want the needle tip to go and dispense.

Convenient

The ideal dispensing robot, the JR4000 is fully equipped with helpful functions such as a fill-in dispensing function and a fragment prevention function as well as needle adjustment functions for both 3 and 4 Axes types.



Fill-in Dispensing Function



Dispensing Software Point Type Selection Screen

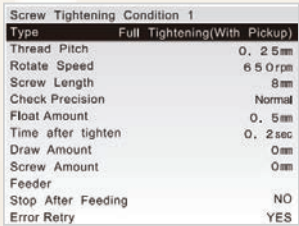
Screw-tightening Robot

Easy

With our dedicated screw tightening application software, after setting screw tightening conditions such as screw length, pitch and number of driver rotations, all you need to do to teach the robot is to set the tightening positions.

Convenient

In addition to full tightening, the robot can also tighten a screw then move the screwdriver in reverse to leave it loose in the screw hole, or unscrew screws.



Screw-tightening Conditions Screen

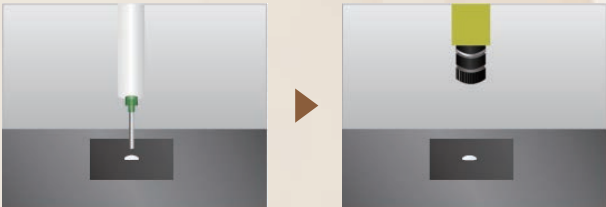
Camera System

AS200 Position Adjustment Camera

Make adjustments for displaced workpieces while operating the robot. Easily make both robot and camera settings with only our PC software "JR C-Points III", without needing any additional specialized camera software.



Auto Calibration



Position Adjustment with Camera



External Dimension Diagrams

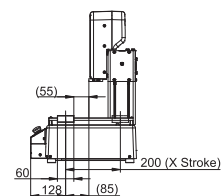
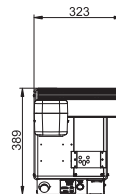
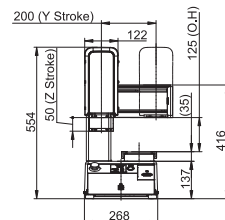
JR4200



JR4203N-AJ



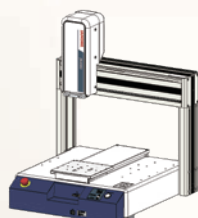
JR4204E-BJ



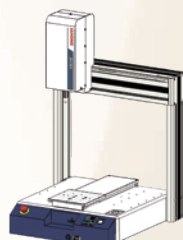
●Diagram: JR4203 (3 Axes) Type

*The standard open height for the JR4204 (4 Axes) Type is 205mm.

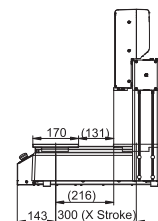
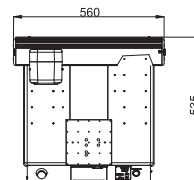
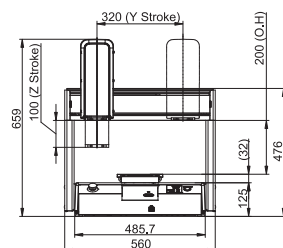
JR4300



JR4303N-AJ



JR4304N-BJ



●Diagram: JR4303 (3 Axes) Type

*The standard open height for the JR4304 (4 Axes) Type is 350mm.

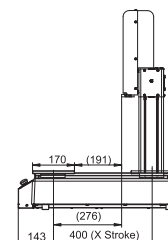
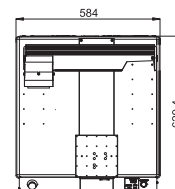
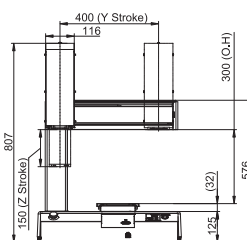
JR4400



JR4403N-AJ



JR4404E-AJ
Double Column Type



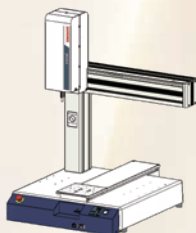
●Diagram: JR4403 (3 Axes) Type

*The standard open height for the JR4404 (4 Axes) Type is 350mm.

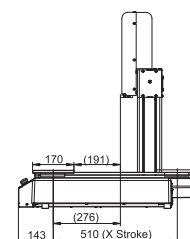
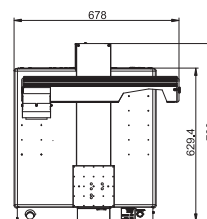
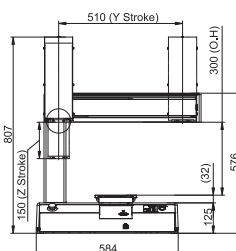
JR4500



JR4503N-AJ



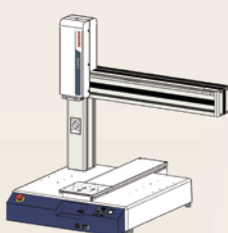
JR4504N-AJ



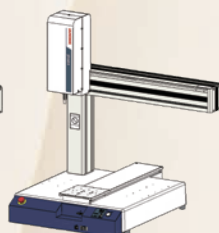
●Diagram: JR4503 (3 Axes) Type

*The standard open height for the JR4504 (4 Axes) Type is 350mm.

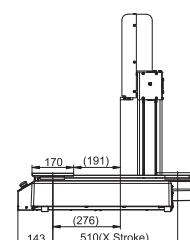
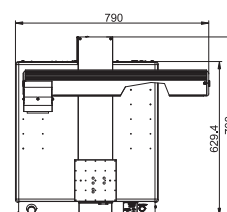
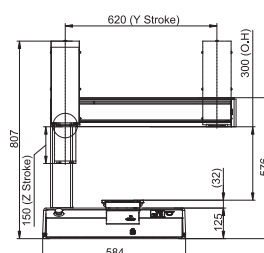
JR4600



JR4603N-AJ



JR4604N-AJ



●Diagram: JR4603 (3 Axes) Type

*The standard open height for the JR4604 (4 Axes) Type is 350mm.

Main Specifications

3 Axes Models

Item		Model				
		3 Axes (Synchronous Control)				
Operating Range	X & Y Axes (mm)	JR4203	JR4303	JR4403	JR4503	JR4603
	Z Axis (mm)	200×200	300×320	400×400	510×510	510×620
Maximum Portable Mass	X Axis (Work)(kg)	50	100	150	150	150
	Y Axis (Tool)(kg)	7	15	15	15	15
Maximum Speed (PTP Drive)*1 () = Settable Range	X & Y Axes (mm/sec)	3.5	7	7	7	7
	Z Axis (mm/sec)	700 (7~700)	1000 (10~1000)	1000 (10~1000)	1000 (10~1000)	1000 (10~1000)
Maximum Speed (CP Drive)*1 () = Settable Range	X, Y, Z Axes Combined (mm/sec)	250 (2.5~250)	400 (4~400)	400 (4~400)	400 (4~400)	400 (4~400)
	X & Y Axes (mm)	600 (0.1~600)	850 (0.1~850)	850 (0.1~850)	850 (0.1~850)	850 (0.1~850)
Repeatability*2	X & Y Axes (mm)	±0.006	±0.007	±0.007	±0.008	X:±0.008 Y:±0.01
	Z Axis (mm)	±0.006	±0.007	±0.007	±0.008	±0.008
Open Height (mm)*3		125	200	300	300	300
External Dimensions W×D×H (mm) (excluding protrusions) () = Double Column Type		323×389×554	560×535×659	584×630×807 (615×630×807)	678×730×807	790×730×807
Robot Mass (kg) () = Double Column Type		20	36	42 (45)	45	46

4 Axes Models

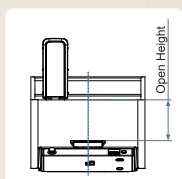
Item		Model				
		4 Axes (Synchronous Control)				
Operating Range	X & Y Axes (mm)	JR4204	JR4304	JR4404	JR4504	JR4604
	Z Axis (mm)	200×200	300×320	400×400	510×510	510×620
	R Axis (°)	50	100	150	150	150
Maximum Portable Mass	X Axis (Work)(kg)	±360	±360	±360	±360	±360
	Y Axis (Tool)(kg)	7	15	15	15	15
Maximum Speed (PTP Drive)*1 () = Settable Range	X & Y Axes (mm/sec)	3.5	7	7	7	7
	Z Axis (mm/sec)	700 (7~700)	1000 (10~1000)	1000 (10~1000)	1000 (10~1000)	1000 (10~1000)
	R Axis (°)	250 (2.5~250)	400 (4~400)	400 (4~400)	400 (4~400)	400 (4~400)
Maximum Speed (CP Drive)*1 () = Settable Range	X, Y, Z Axes Combined (mm/sec)	600(6~600)	900 (9~900)	900 (9~900)	900 (9~900)	900 (9~900)
	X, Y, Z Axes Combined (mm/sec)	600 (0.1~600)	850 (0.1~850)	850 (0.1~850)	850 (0.1~850)	850 (0.1~850)
R Axis Acceptable Moment of Inertia (kg·cm ²)		65	90	90	90	90
Repeatability*2	X & Y Axes (mm)	X:±0.006 Y:±0.01	X:±0.007 Y:±0.01	X:±0.007 Y:±0.01	X:±0.008 Y:±0.01	X:±0.008 Y:±0.01
	Z Axis (mm)	±0.01	±0.01	±0.01	±0.01	±0.01
	R Axis (°)	±0.008	±0.008	±0.008	±0.008	±0.008
Open Height (mm)*3		205	350	350	350	350
External Dimensions W×D×H (mm) (excluding protrusions) () = Double Column Type		323×389×676	560×535×844	584×630×894 (615×630×894)	678×730×894	790×730×894
Robot Mass (kg) () = Double Column Type		22	39	46 (49)	49	50

Notes

*1 Maximum speed can vary depending upon conditions. The robot cannot reach maximum speed when bearing the maximum portable mass.

*2 Repeatability was measured at a constant temperature and does not represent a guarantee of absolute precision.

*3 Open Height



JR4000 Series Common Specifications

Item		Specification Content
Drive Method		5 Phase Pulse Motor (optional encoder attachment)
Control Method		PTP (Point to Point) Control, CP (Continuous Point) Control
Interpolation		3 Dimensional linear and arc interpolation, spline curve interpolation (cubic method)
Teaching Method		Remote Teaching (JOG) / Manual Data Input (MDI)
Applications		Standard / Dispensing / Screw Tightening
Teaching System		Easy and versatile teaching system with our original software ●Easy: Point-based teaching (position and type) for all axis movement; direct movement through setting point strings. Dedicated point types for each application makes teaching specialized movements simple. ●Versatile: Control tools and make workplace operation settings through setting point jobs and various parameters.
Teaching Pattern		●Direct teaching with the optional teaching pendant. ●Offline teaching from a PC or tablet PC with our optional PC software "JR C-Points III". Compatible with CAD graphics (DXF, STEP, IGES, DWG)
Screen Display Languages		Japanese, English
Program Capacity		999 Programs
Database Capacity**		Up to 32,000 points
Simple PLC Functions		Up to 100 programs, with up to 1,000 steps/program
External Input/Output	I/O-SYS	16 Inputs / 16 Outputs (optional)
	I/O-1	16 Inputs / 14 Outputs (including 2 relay outputs) (optional)
	I/O-MT	External motor connectors for controlling up to 2 additional axes (optional)
	I/O-S*2	Interlock device connector for an area sensor, etc. (optional) ① I/O-S1: Standard Safety Circuit ② I/O-S2: Redundant Safety Circuit
	Fieldbus*3	CC-Link / PROFINET / EtherNet/IP (optional)
	COM1	RS232C (for external devices, COM commands) (optional)
	COM2/COM3*4	RS232C (for external devices) (optional)
	LAN*5	Ethernet connector for PC (connect to JR C-Points III PC software, operate the robot using control commands) (rear port option available)
ENC-IN*4		For external encoder value input (optional)
Power Source (V)		AC100-120 / AC200-240 (single phase)
Power Consumption (W)		200
Operating Environment	Temperature (°C)	0-40
	Relative Humidity (%)	20-90 (non-condensing)

Notes

*1 Point data memory capacity reduces as additional function data settings/point job data/sequencer data are increases due to the shared data storage area.

*2 I/O-S2 is not available with the 200mm stroke models.

*3 Please contact us for details.

*4 It is possible to add either COM3 or ENC-IN, but not both.

*5 Ethernet connection is 10BASE/100BASE-T.

Standard Accessory

•Power Cord

Options

•PC Software JR C-Points III (Windows® 10 64bit, Windows® 11 Compatible); switch between English and Japanese display screens.

•I/O-SYS Connector

•I/O-SYS Cable (2m/3m/5m)

•I/O-SYS Terminal Block (0.5m/2m)

•I/O-1 Connector

•I/O-1 Cable (2m/3m/5m)

•I/O-1 Terminal Block (0.5m/2m)

•I/O-MT Connector

•I/O-MT Cable (0.5m/1m/3m/5m/10m)

•ENC-IN Connector

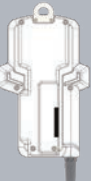
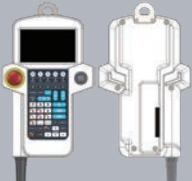
•Position Adjustment Camera AS200

•Needle Adjuster

•Cable Carrier (Standard, Dispensing Models only)

•Ejector (for air suction for Screw Tightening Model)

Teaching Pendant III (optional) (cord length 2m/3m/5m)

Standard	With Emergency Stop Switch	With Enable Switch	With Mode Changing Switch	With Emergency Stop Switch, Enable Switch & Mode Changing Switch
				

●Other switch combinations are also available: Emergency Stop & Enable, Emergency Stop & Mode Changing and Enable & Mode Changing.

Switchbox (optional) (cord length 2m/3m/5m)

	Standard	With Mode Changing Switch	With Optional Switch	With Optional Switch & Mode Changing Switch
Operation Panel B Type				

●Before using your robot, read the operation manual and always to use the robot correctly.

●Specifications may change without notice to improve product quality.

●If you have any questions, please contact us at the telephone number listed below, or through the contact page on our website.

C25-00(01.1)EN 2024.09-0000

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