

JR2000N Series

Desktop Robot



Desktop Robot JR2000N Series brought to you by JANOME, a name with extensive manufacturing experience behind it, since 1993.

In addition to the simple teaching system, JANOME has created a customizing function which allows the user to create their own original programs, and also offers a standard operation range of 510mm×510mm.

The JR2000N Series is at the top of its range.

High precision

● High Rigid Structure

A solid aluminum alloy die cast is employed on the base and an aluminum alloy extrusion with a high rigid section is employed on the column.

● Labyrinth Mechanism

A special labyrinth mechanism underneath the work table keeps foreign objects (e.g. screws, liquid or dust) out.



● Smooth Movement

Smooth movement is attained with the micro-step control system.

● Flexible Interface

- RS-232C port for PC connection
- RS-422 port for teaching pendant
- I/O (Output 16, Input 16)

User friendly

● Clear Wide Screen

Wide and easily viewable teaching pendant screen.
Language : English/German/Japanese, etc
Measurement : mm/inch

● Simple Teaching

Using the JR C-Points software, users can teach data easily. It also has commands to operate particular jobs. Users can also create their own original software.

● Enhanced Memory Capacity

Up to 255 programs (2.5 times that of the existing model) and 30,000 points (increased 5-fold) can be stored as teaching data.

● Simple Sequencer

The robot has a built-in simple sequencer which functions independently (it is not necessary to add more hardware in the case of simple PLC connection).



4-axis simultaneous control model

Create your own original programs with the customizing function.



Teaching Pendant
(Optional)

Work Position Input

Before inputting a work position, select JOG or MDI mode simply by pressing the button on the teaching pendant. **Clearly-displayed coordinate values** allow you to correct positions easily.

Program 1	P 1
X	0 mm
Y	3 5 0 mm
Z	0 mm
R	0deg
High	
FUNC	POS
	JOG
	MDI
	INIT

Work Position Setting Screen

Sequencer Function

A sequencer function which can be run independently from the robot function.

Sequencer 1	2/3
001	Id #genIn3
002	and #genIn5
003	out #genOut1
004	mps
005	Id #mv(1)
006	or #mv(2)
007	and #genIn2
008	out #genOut2
009	out #mv(3)
010	mrd
011	and #mv(3)
012	set #genOut3

Sequencer Command Setting Screen

Application Software Examples

●Screw Tightening Software

Register screw tightening conditions, such as **Thread Pitch**, **Screw Length**, and **Rotate Speed**, then enter the "screw tightening" position and the screw tightening condition number for the point. A screw tightening program is now complete. You can set different tightening condition numbers to each point so as to create different screw tightening conditions in a program.

Tightening Condition 1	1/2
Type	Full Tightening(With Pickup)
Thread Pitch	0.5mm
Rotate Speed	600rpm
Screw Length	8mm
Check Precision	Normal
Float Amount	0.5mm
Time After Tightening	0.2sec
Feeder ESC Signal	NO
Point of Feeding	
Screw Feed Time	0.5sec
Stop After Feeding	NO
Error Restart	Next Point

Tightening Condition Setting Screen

●Dispensing Software

Complete a dispensing program simply by **inputting work positions**, such as "Point Dispense", "Start of Line Dispense", "Line Passing", and "End of Line Dispense." You can set "Dispense Time" to each "Point Dispense" point. You can change **Dispense Conditions**, such as "Device Mode", "Signal Operation" type (for dispenser), "Wait Time" (from Dispense ON to start shifting), "Up Amount" and "Up Speed" (at end dispensing), simply by **setting and registering**.

Program 28	P16	1/2
Point Dispense		
Start of Line Dispense		
Passing of Line Dispense		
CP Arc Point		
End of Line Dispense		
Wait Start Point		
PTP Point		
CP Start Point		
CP Passing Point		
CP Stop Point		
CP End Point		
PTP Evasion Point		

Point Type Setting Screen

●Palletizing or Work Position Adjustment by Camera

By setting a "Pallet Number", you can repeat the same operation at different points. By setting a "Work Adjustment Number", you can easily adjust a position error between the standard position captured by the camera.

Program 1		
RX+23.2	RY+312.5	Z+25 R+12
Type	Point Dispense	
Dispense Time	1.3sec	
Pallet Routine Number	1	
Work Adjustment Number	5	
Condition Number		
Job before Moving		
Job while Moving		
Point Job Number		
PTP Condition Number		
Tool Number		
S.MARK	E.MARK	J.EXEC P.EXEC

Point Setting Screen

How to Create Application Software

You can create **original application software** for a variety of needs. For example, define a point type "Point Dispense" when creating the "Dispensing Application" software.

Point Type Definition	pointDispense
Protect Mode	Public
Base Type	PTP Point
Point Type Title	
Job before Moving	
Job while Moving	
Point Job	
Job while CP Moving	
Additional Function Number	
Point Setting Variables	
Definition	

Point Type Definition Setting Screen

Register the contents of the "point dispense" operation in the point type definition. (e.g. Start the dispenser (set #genOut1), wait for a dispense time (delay Dispense Time* 100), and then stop the dispenser (reset #genOut1).)

Point Job	2/3
013	
014	Id DispenserSignalType==1
015	then
016	waitCondTime 500
017	Id #genIn1
018	timeUp
019	reset #genOut1
020	jump L1
021	endWait
022	endif
023	delay DispenseTime*1000
024	reset #genOut1

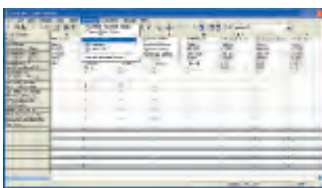
Point Job Setting Screen

Register "Common Setting Variables Definition" in the point type definition so as to set the "Dispense Time" to each point. The process is completed simply by **entering necessary items**, such as "Variable Type", "Variable Caption", and "Input Unit." Set "Enumeration Type" or "Numeric Type" as the "Variable Type." If you select the "Enumeration Type", you can select a value from the "Selection Item" list and set it. Furthermore, you can set "Variable Caption", as well as variable names (identifiers), as a **title display**.

Point Setting Variables Definition	
variable Type	
Variable Caption	
Input Unit	
Decimal Figure	
Default Value	
Maximum Value	
Minimum Value	

Point Setting Variables Definition Setting Screen

PC Software "JR C-Points" (Optional)



The JR C-Points is an enhanced version of the PC software for desktop robots, JR Points. Tried and tested **simple programming methods for various applications remain**. Furthermore, **additional and enhanced compile function (robot language) and customizing functions are available**.

The main screen is the plural point data setting screen. You can create a program simply by entering necessary items, such as the **point type**, **work position**, **line speed**, **pallet number**, and **work adjustment numbers**.

You can select the **horizontal display** or **vertical display** for point alignments.

Coordinate data edited by **spreadsheets** such as Microsoft Excel can be downloaded easily by using the **Copy & Paste function**. You can also convert drawings into coordinate values and download them onto a PC using **CAD data (DXF file)**.



You can enter and edit **point job** easily by selecting a desired command from the **job command list**.

Using the **compile function**, you can also read the point job data from **text files**. As well as **local variables**, **global variables**, and **keep variables**, you can use **setting variables** to set values as teaching parameters. As one of the robotic features, various **special commands**, such as "waitCondTime" command to wait for an input signal (timeouts are available until receiving the input signal), are available.

A broad interface makes it easy to use many applications.

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Robot Applications



Dispensing

- Simultaneous control of X, Y, Z and R axes
- Adhesion, potting, sealing; use with various materials
- Instantaneous adhesive, silicon, epoxy resin, flux for soldering

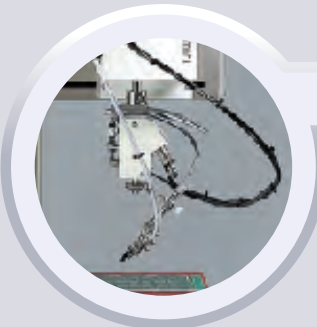
Screw Fastening

KX Servo Driver (High precision torque control)

- Used for applications requiring precise tightening. Input exact conditions for torque, speed, degree, rotational direction and time.

Electric Driver

- Used for standard applications requiring mechanical torque adjustment. It performs loose-tightening tolerance checking and failure alert.



Soldering

- Simultaneous control of X, Y, Z and R axes
- Point, line or arc soldering
- Quick change soldering tip
- Ideal for circuit boards, lead wires, QFP, piezoelectric parts



CCD Camera & Height Sensor

- The CCD camera and height sensor integrate to supply high-speed precise inspection and accurate detection for pick & place, dispensing, and soldering applications.
- Provides easy teaching and automatic transfer function for off-positioned work pieces on the fixture.



Board Cutting

- PC board cutting without stress and cracks is achieved.
- A twin-head router is also available.

Other Optional Extras

Operation Box...With the start switch, program change switch, and emergency stop switch
I/O Cable



Enhanced lineup with an operation range
between 200mm×200mm and 510mm×510mm.

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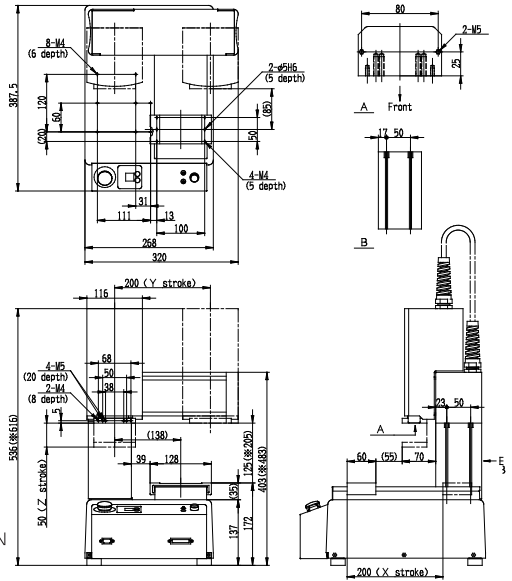
JR2200N mini Series

Low-cost cell production



External
Dimensions
for the
JR2203N

※The standard open
height for the JR2204N
is 205 mm.



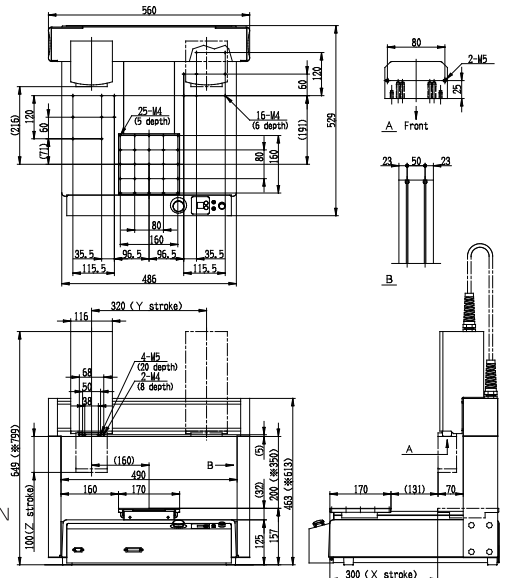
JR2300N Series

With an operation range of 300×320mm,
2 screw feeders can now be installed.



External
Dimensions
for the
JR2303N

※The standard open
height for the JR2304N
(4 axes application)
is 350 mm.



JR2400N Series / JR2500N Series★

The wide operation range 400×400 mm allows
large workpieces to be easily moved.

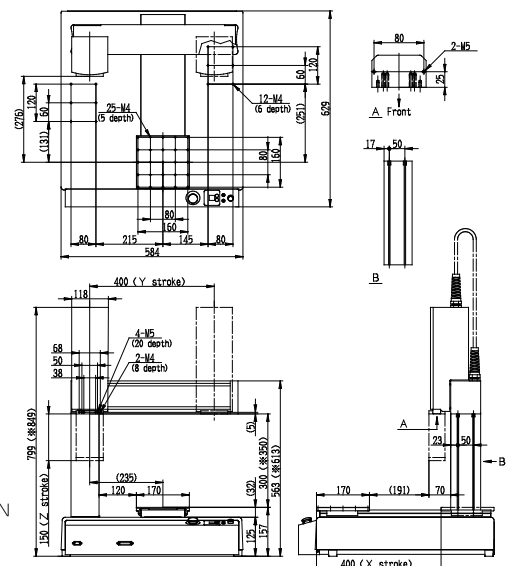


This photograph is of
the JR2400N series.

External
Dimensions
for the
JR2403N

★Please contact us
for the external
dimensions of
the JR2500N.

※The standard open
height for the JR2404N
(4 axes application)
is 350 mm.



Specifications

Model ^{*1}		3-Axis Type (synchronous control)				4-Axis Type (synchronous control)			
		JR2203N	JR2303N	JR2403N	JR2503N	JR2204N	JR2304N	JR2404N	JR2504N
Operation Range	X- and Y- Axes	200×200mm	300×320mm	400×400mm	510×510mm	200×200mm	300×320mm	400×400mm	510×510mm
	Z-Axis	50mm	100mm	150mm	150mm	50mm	100mm	150mm	150mm
	R-Axis	-	-	-	-	±360°	±360°	±360°	±360°
Portable Weight	Workpiece	7kg	11kg	11kg	11kg	7kg	11kg	11kg	11kg
	Tool	3.5kg	6kg	6kg	6kg	3.5kg	6kg	6kg	6kg
Maximum Speed (PTP) ^{*2} (: setting range)	X- and Y- Axes	700mm/sec (7 - 700mm/sec)	800mm/sec (8 - 800mm/sec)	800mm/sec (8 - 800mm/sec)	800mm/sec (8 - 800mm/sec)	700mm/sec (7 - 700mm/sec)	800mm/sec (8 - 800mm/sec)	800mm/sec (8 - 800mm/sec)	800mm/sec (8 - 800mm/sec)
	Z-Axis	250mm/sec (2.5 - 250mm/sec)	320mm/sec (3.2 - 320mm/sec)	320mm/sec (3.2 - 320mm/sec)	320mm/sec (3.2 - 320mm/sec)	250mm/sec (2.5 - 250mm/sec)	320mm/sec (3.2 - 320mm/sec)	320mm/sec (3.2 - 320mm/sec)	320mm/sec (3.2 - 320mm/sec)
	R-Axis	-	-	-	-	600°/sec (6 - 600°/sec)	800°/sec (8 - 800°/sec)	800°/sec (8 - 800°/sec)	800°/sec (8 - 800°/sec)
Maximum Speed (CP) ^{*2} (: setting range)	XYZ combined speed	500mm/sec (0.1 - 500mm/sec)	800mm/sec (0.1 - 800mm/sec)	800mm/sec (0.1 - 800mm/sec)	800mm/sec (0.1 - 800mm/sec)	500mm/sec (0.1 - 500mm/sec)	800mm/sec (0.1 - 800mm/sec)	800mm/sec (0.1 - 800mm/sec)	800mm/sec (0.1 - 800mm/sec)
Acceptable Moment of Inertia		-	-	-	-	65kg·cm ²	90kg·cm ²	90kg·cm ²	90kg·cm ²
Resolution	X- and Y- Axes	0.005mm	0.005mm	0.005mm	0.005mm	0.005mm	0.005mm	0.005mm	0.005mm
	Z-Axis	0.0025mm	0.0025mm	0.0025mm	0.0025mm	0.0025mm	0.0025mm	0.0025mm	0.0025mm
	R-Axis	-	-	-	-	0.009°	0.009°	0.009°	0.009°
Repeatability ^{*3}	X- and Y- Axes	±0.006mm	±0.007mm	±0.007mm	±0.008mm	±0.01mm	±0.01mm	±0.01mm	±0.01mm
	Z-Axis	±0.006mm	±0.007mm	±0.007mm	±0.008mm	±0.01mm	±0.01mm	±0.01mm	±0.01mm
	R-Axis	-	-	-	-	±0.008°	±0.008°	±0.008°	±0.008°
Dimensions (W×D×H) (Not including protrusion parts)		320×387×540mm	560×528×650mm	584×628×800mm	676×731×800mm	320×387×655mm	560×528×840mm	584×628×890mm	676×731×890mm
Body Weight		18kg	35kg	42kg	43kg	18kg	35kg	42kg	43kg
Drive Method		5-phase stepping motor							
Control Method		PTP (Point to Point) control, CP (Continuous Path) control							
Interpolating Function		3-dimensional line and arc interpolation							
Teaching Method		Remote teaching (JOG) / Manual data input (MDI)							
Teaching System		JANOME original software JR C-Points: A simple and broad-use teaching system <ul style="list-style-type: none"> ● Simple: Easy teaching just by registering positions and parameters. Optional system programs are available for basic operations and various applications. ● Broad-use: User-oriented programming such as I/O control etc. by point job teaching. 							
Teaching Pattern		<ul style="list-style-type: none"> ● Direct teaching using a teaching pendant (optional) ● Off-line teaching using JR C-Points (PC software) via a PC (optional) 							
Screen Display	Unit of Measure	mm, inch							
	Display Language	Japanese, English, French, Spanish, Italian, German, Korean, Chinese (Simplified characters only)							
Program Capacity		255 programs							
Data Capacity ^{*4}		Maximum 30,000 points							
External Interface		RS422 1ch (for a teaching pendant) RS232C 1ch (for a PC: COM1) RS232C 2ch (for external devices: COM2, COM3) (optional)							
External Input/Output		I/O-SYS IN: 16/OUT: 16 I/O-1 IN: 8/OUT: 8 (4-relay contact) (optional)							
Simple PLC Function		100 programs (1,000 steps/1 program)							
Power Source		AC90 - 132V / AC180 - 250V (single-phase)							
Power Consumption		200W							
Working Ambient Temperature		0 - 40°C							
Relative Humidity		20 - 90% (Non condensing)							

(Note)

*1 A 2-axis type is also available. (Please contact us for specifications.) (cf.) Maximum portable weight (tool/workpiece): JR2202N (6.5kg/7kg), JR2302N/JR2402N/JR2502N (10kg/11kg)

*2 Maximum speed may vary depending on conditions. Maximum speed cannot be achieved under the maximum portable weight setting.

*3 Repeatability was measured at a constant temperature, so absolute precision is not guaranteed.

*4 The point data capacity will be reduced if the additional function data setting/point job data/sequencer data increases, due to the shared data storage area.

(Standard Accessories)

- Power cable
- Operation manual (CD-ROM)

(Optional devices)

- Teaching pendant
- Switch box (CE specifications only)
- I/O SYS cable and I/O-1 cable
- Special software (JR C-Points) complies with Windows® 2000 / XP.

- Models with CE specifications are also available.
- Specifications may be modified without prior notice to improve product quality.

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