JR3000 SERIES
Desktop Robot
[JR3200 / JR3300 / JR3400 / JR3500 /JR3600]

Broaden your manufacturing potential with our

The JR3000 Series is a multifunctional robot designed with both cell production sites and automated inline installation in mind.
With a rich catalog of functions including Fieldbus compatibility, a built-in LAN port as standard equipment,
software that makes camera installation easy and the ability to control up to two external motors,
the JR3000 is ready to fill many different manufacturing roles.

Increased Structural Rigidity

We've made the robot even more rigid, which in turn makes it faster (maximum speed up to 900mm/s), more accurate, and able to operate non-stop for extended periods.
We've stabilized the tracking function at high speeds. When a camera is attached to the Z-mechanism, the oscillation when the robot comes to a stop is greatly reduced, thereby cutting the wait time by approximately 50% (compared to previous Janome models).

Fieldbus Compatibility, Ethernet (LAN) Included as Standard Equipment

Choose among "CC-Link", "DeviceNet" or "PROFIBUS" modules.
A LAN port is included as standard equipment, so you can control several robots from one PC!

Control up to 4 Axes and 2 External Motors

Program up to 2 pulse string input type devices, such as a stepping motor or pulse motor, the same as handling the robot axes from the teaching pendant. Set up a turntable to change the workpiece direction; install a conveyor and control it from the robot; the choice is yours.

Make settings in either JOG or MDI Modes.

JOG Mov't

Hidden Robot Cable

New for desktop robots, the Z-axis cable is built into the Y-axis housing; a compact design ideal for workspaces with height limitations.
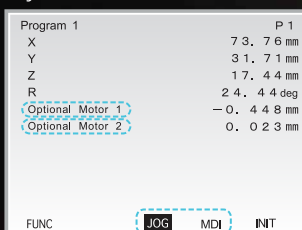
Easy Camera System Installation

To keep up with increasingly refined manufacturing methods, we've strengthened our camera functions. With functions such as automatic calibration, CCD camera adjustment function with a counter and more, we've enhanced the robot's camera functionality adding more ways to make use of a camera system.

Multilingual Display

We've equipped the teaching pendant with 10 different display languages so that operators from as many different countries as possible can easily program and operate the robot.

Display Language Examples

German   Chinese

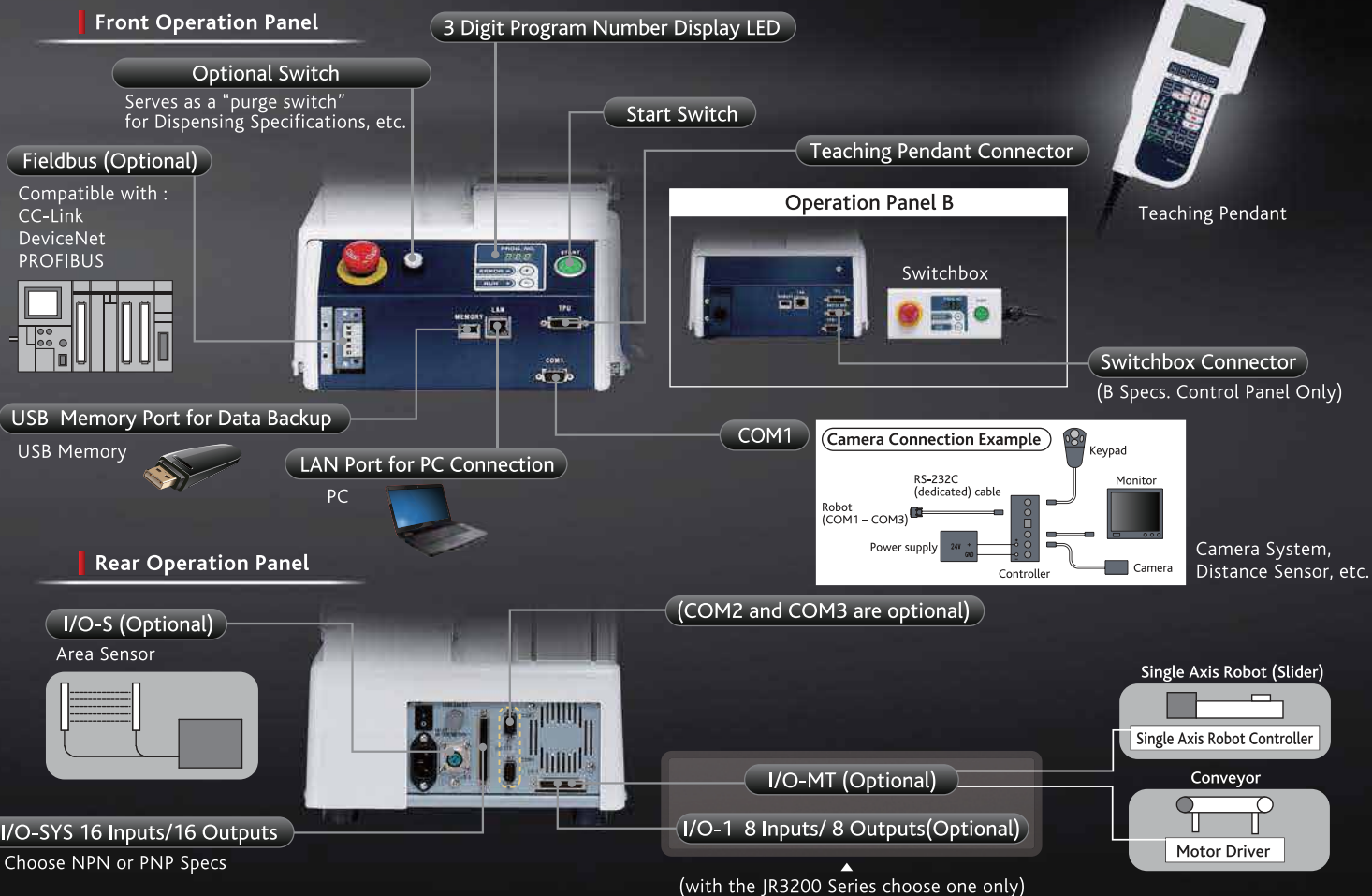# flagship desktop robot.

Wide Variety of Model Variations

JR3　　　20　　　3　　　E　-　　A　　　　　C

JR3000 Series	X, Y Axes Stroke	No. of Axes	Encoder	Operation Panel Specifications	Power Supply Specifications
	20 : 200×200mm 30 : 300×320mm 40 : 400×400mm 50 : 510×510mm 60 : 510×620mm	2 3 4	E:Included N:Not　Included	A:Installed Switch　Specifications B:Switchbox	C:90-125V/180-240V〜　50/60Hz　（No Outlet) 　180-240V〜 50/60H\Hz　（200V Outlet) 　(mainly EU, Korea) J:90-125V　50/60Hz 　(mainly Japan)

An encoder-equipped version which detects motor "step-outs" ; a twin column type for the JR3400, useful for jobs that place a great load on the Z-axis; an elevated type with an extended Y-axis column for handling tall workpieces; we offer several optional variations to meet customer requirements. Also, CE compliant types are available for all models.

● **Available Options at Time of Order**
・Fieldbus Add-on (choose CC-Link, DeviceNet or PROFIBUS)
・I/O-MT Add-on (for up to 2 external motors)
・3400 Series Double Column Type
・Elevated Column Type (open height)
・Optional Switch (Purging Switch Function for Dispensing Specs.)
・I/O-1 Add-on (8 Inputs/8 Outputs)
・Internal I/O Power Supply Add-on (DC24V　Rating 2.1A)
・I/O-S Add-on (for Interlock connector)
・COM2, COM3 Add-on (for external devices)
・Ejector (air suction for screw tightening)

Part Names and Explanations

JR3200 Reference Diagram

Front Operation Panel

Optional Switch
Serves as a "purge switch" for Dispensing Specifications, etc.

3 Digit Program Number Display LED

Start Switch

Fieldbus (Optional)
Compatible with :
CC-Link
DeviceNet
PROFIBUS

Teaching Pendant Connector

Operation Panel B

Switchbox

Teaching Pendant

USB Memory Port for Data Backup
USB Memory

LAN Port for PC Connection
PC

COM1

Switchbox Connector
(B Specs. Control Panel Only)

Camera Connection Example
KeyPad
RS-232C (dedicated) cable
Monitor
Robot (COM1 – COM3)
Power supply
Controller
Camera

Camera System, Distance Sensor, etc.

Rear Operation Panel

I/O-S (Optional)
Area Sensor

(COM2 and COM3 are optional)

Single Axis Robot (Slider)
Single Axis Robot Controller

I/O-MT (Optional)

Conveyor
Motor Driver

I/O-SYS 16 Inputs/16 Outputs
Choose NPN or PNP Specs

I/O-1 8 Inputs/ 8 Outputs(Optional)

▲
(with the JR3200 Series choose one only)

Software

System software for everyone, from first-time users to veteran operators.

The JR3000 features specialized software for each application that even a new programmer can use. Take advantage of a variety of proven command strings for easy robot teaching.

CCD Camera Adjustment with Counter

Acquire up to 3,000 adjustment values when making camera position adjustments for the robot. After taking a series of camera shots, the robot can perform jobs while making a series of adjustments thereby shortening the cycle time.

Photographs   Jobs
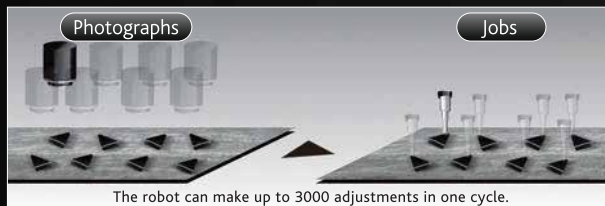
The robot can make up to 3000 adjustments in one cycle.

Common Settings for All Programs

You can make common settings for items which often use the same settings in multiple programs, such as "tool settings", etc. This is useful for shortening teaching time and revising parameters.

```
Program  1                        Individual  Settings
Program  Name                                 TEST01
Individual  Job  on  Start  of  Cycle              0
Cycle  Mode                      1  Cycle  Playback
Position  Data  Type                        Absolute
Work  Home                                 Individual
PTP  Condition                             Individual
CP  Condition                                 Common
Tool  Data                                    Common
Move  Area  Limit                          Individual
Valid/Invalid  Settings  of  Move  Axis    Common
```

Error History

The time and date an error occurs is now displayed. Knowing when an error occurs is helpful for cause determination and analysis.

```
                      Error  History              2/2
15/  7  2014    11:35:32             Error No.082
15/  7  2014    12:20:45             Error No.007
16/  7  2014    09:14:20             Error No.103

           Error Description
15/  7  2014    12:20:45             Error No.007

              Error No.007
        Position  is  out  of  range
```

Automatic Calibration

Camera calibrates automatically when a new camera system is added.

```
                  Calibration
                          Simple    Settings
                     Camera    Facing    Down
Start  Auto  Calibration
Reference  Coefficient
Calibration   Position
```

Simple PLC Function

A simple PLC which operates independently from the robot's functions is already built-in, so you do not need to purchase a separate PLC to handle simple interfacing with external devices.

```
PLC  1                                         1/3
001  ld  #genIn3
002  and  #genIn5
003  out  #genOut1
004  mps
005  ld  #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
```

Customizing Function

Register command strings that you often use and then when you need to teach a program it's easy! You can even create your our own software.

```
             Point  Type  Definition
                            PointDispense
Protect  Mode                        No  Limit
Base  Type                         PTP  Point
Point  Type  Caption
Job  before  Moving
Job  while  Moving
Job  after  Moving
Job  while  CP  Moving
Additional  Function  Number
Point  setting  Variables  Definition
Condition  Number  Input                     NO
```

4 Axes Needle Adjuster Function

We offer devices to adjust the needle tip position for both 3 and 4 Axes types (for Dispensing Specifications).

PC Software "JR C-Points II" (Optional)

"JR C-Points II" is application software which allows you to create, edit and save teaching and customizing data all on your PC. Now it's even more user-friendly with a "Point Graphic Editing Function" which allows you to create and edit path data as a graphic drawing.
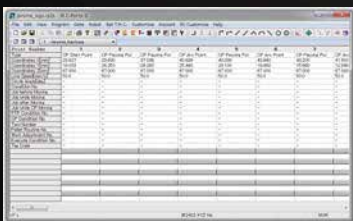
Set points and create and edit point commands more smoothly through numerical MDI (manual data input); even copy and paste coordinate data in the manner of spreadsheet software. Select the icons for the functions you often use from the toolbar.

Convert teaching data created for the JR2000N Series on JR C-Points software for use with the JR3000.

» Point Graphic Editing Function Screen

Create path data based upon DXF, Gerber or .JPEG background image data. Check and edit teaching data program paths. Optimize your programming potential by using several different functions to create even better teaching data.

Point Order Sorting Function (shorter tact times)	Corner Angle Rounding Function
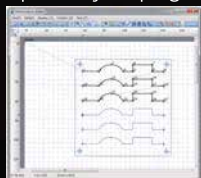
Set points based on DXF data for accurate positioning.
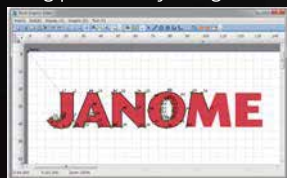
Refer to .JPEG images when teaching.
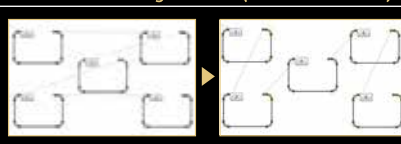
Moving distance between points is great, so sorting from "left to right"
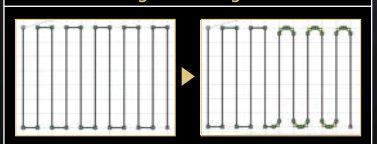
Click on a connecting point to designate a radius

Application Examples

The JR3000 is a versatile robot usable for a variety of manufacturing processes, 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. Here are some examples of applications where the JR3000 can work for you.

Dispensing Robot

Easy

Using our dedicated dispening application software, all you need to do is select the positions where you want the needle tip to go and dispense.

Convenient

The JR3000 is the ideal dispensing robot, fully equipped with helpful functions such as a fill-in dispensing function and a fragment prevention function as well as needle adjustment functions for 3 and 4 Axes types. Add an optional "Purging Switch", which runs the dispenser for as long as you press it.

| Rectangle | Circle | Zigzag |

Fill-in Dispensing Function


```
            Select  Point  Type          1/3
 Point  Dispense
 Start  of  Line  Dispense
 Line  Passing
 CP  Arc  Point
 End  of  Line  Dispense
 Wait  Start  Point
 Start  of  Circle  Dispense
 Center  of  Circle  Dispense
 Zigzag  Start  Point
 Rectangular  Spiral  Start  Point
 Hollow  Rectangle  Start  Point
 Rectangle  End  Point
```

Dispensing Software Point Type Selection Screen

4 Axes Needle Adjuster

Screw-tightening Robot

Easy

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

Convenient

In addition to full tightening, the robot can also tighten loosely and loosen screws. Includes functions to detect screw stop and screw float errors. Other convenient functions include a program suspension function when the screw feeder becomes empty.
(The screwdriver must also be adapted when loosening screws.)


```
 Screw  Tightening  Condition  1
 Type              Full  Tightening(With  Pickup)
 Thread  Pitch                       0. 2 5mm
 Rotate  Speed                       6 5 0 rpm
 Screw  Length                           8 mm
 Check Precision                       Normal
 Float Amount                        0. 5 mm
 Time  after  tighten                0. 2 sec
 Draw  Amount                          0 mm
 Screw  Amount                         0 mm
 Feeder
 Stop  After  Feeding                     NO
 Error Retry                             YES
```

Screw-tightening Conditions Screen

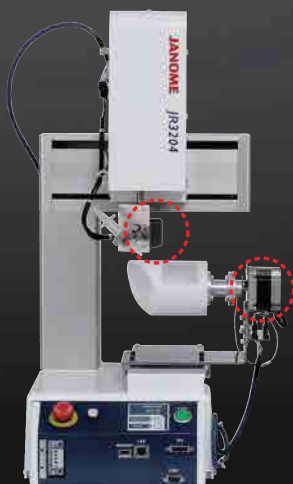Tightens screws as small as M1.0.

Sample Uses for the I/O-MT

4 Axes Dispensing Robot Used as a 6 Axis Unit

Axes are added to allow for changes to the dispenser syringe and workpiece angles. Here the robot dispenses along the edge of a hole cut through a tube-shaped piece.
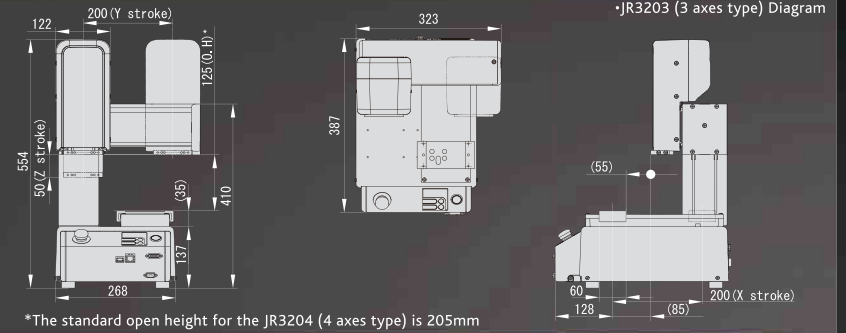

Dispensing on a Turntable

A 4 axes dispensing robot dispenses on multiple workpieces set on a rotating turntable.
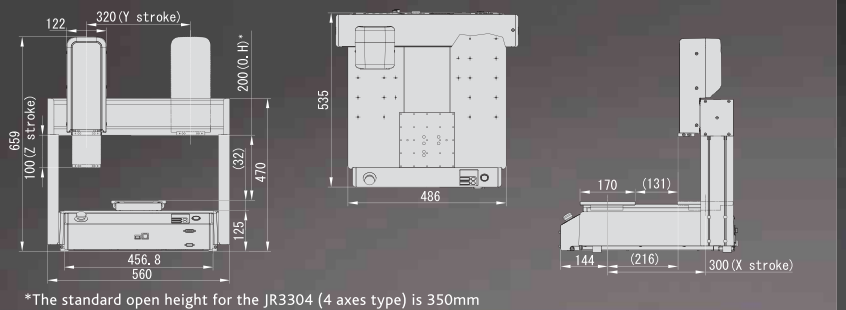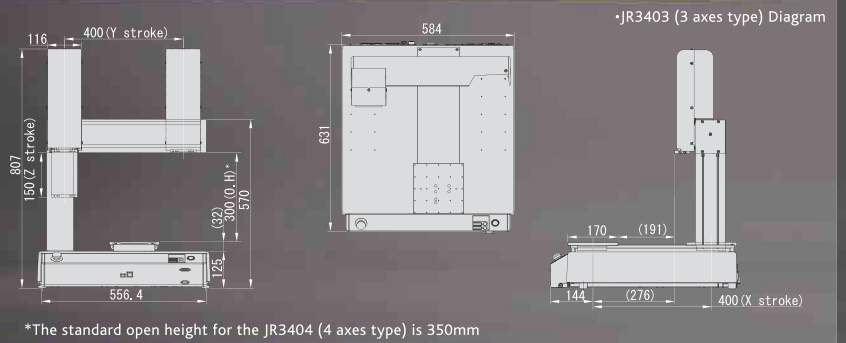
JR3200

JR3203N-AC
JR3204E-BC

•JR3203 (3 axes type) Diagram

122 | 200 (Y stroke)
554
50 (Z stroke)
125 (O. H)*
323
387
(35)
410
137
268
(55)
60
128
(85)
200 (X stroke)

*The standard open height for the JR3204 (4 axes type) is 205mm

JR3300

JR3303N-AC
JR3304N-BC

•JR3303 (3 axes type) Diagram

122 | 320 (Y stroke)
659
100 (Z stroke)
200 (O. H)*
535
486
(32)
470
(25)
456.8
560
170 | (131)
144 | (216)
300 (X stroke)

*The standard open height for the JR3304 (4 axes type) is 350mm

JR3400

JR3403N-AC
JR3404E-AC Double Column Type

•JR3403 (3 axes type) Diagram

116 | 400 (Y stroke)
807
150 (Z stroke)
584
631
(32) | 300 (O. H)*
570
(25)
556.4
170 | (191)
144 | (276)
400 (X stroke)

*The standard open height for the JR3404 (4 axes type) is 350mm

JR3500

JR3503N-AC
JR3504N-AC

•JR3503 (3 axes type) Diagram

116 | 510 (Y stroke)
807
150 (Z stroke)
678
731
631
(32) | 300 (O. H)*
570
(25)
556.4
170 | (191)
144 | (276)
510 (X stroke)

*The standard open height for the JR3504 (4 axes type) is 350mm

JR3600

JR3603N-AC
JR3604N-AC

•JR3603 (3 axes type) Diagram

116 | 620 (Y stroke)
807
150 (Z stroke)
790
731
631
(32) | 300 (O. H)*
570
(25)
556.4
170 | (191)
144 | (276)
510 (X stroke)

*The standard open height for the JR3604 (4 axes type) is 350mm

You can download more details and dimensions for models not depicted here via our website : http://www.janomeie.com/

Main Specifications

3 Axes Specifications

Model*1		3 Axes (Synchronous Control)				
Item		JR3203	JR3303	JR3403	JR3503	JR3603
Operating Range	X & Y Axes	200×200mm	300×320mm	400×400mm	510×510mm	510×620mm
	Z Axis	50mm	100mm	150mm	150mm	150mm
Maximum Portable Load	X Axis (Workpiece)	7kg	15kg	15kg	15kg	15kg
	Y Axis (Tool)	3.5kg	7kg	7kg	7kg	7kg
Maximum Speed (PTP Drive)*2 [　]=Settable Speed Range	X & Y Axes	700mm/sec [7~700mm/sec]	900mm/sec [9~900mm/sec]	900mm/sec [9~900mm/sec]	900mm/sec [9~900mm/sec]	900mm/sec [9~900mm/sec]
	Z Axis	250mm/sec [2.5~250mm/sec]	400mm/sec [4~400mm/sec]	400mm/sec [4~400mm/sec]	400mm/sec [4~400mm/sec]	400mm/sec [4~400mm/sec]
Maximum Speed(CP Drive)*2 [　]=Settable Speed Range	X, Y, Z Combined	600mm/sec [0.1~600mm/sec]	850mm/sec [0.1~850mm/sec]	850mm/sec [0.1~850mm/sec]	850mm/sec [0.1~850mm/sec]	850mm/sec [0.1~850mm/sec]
Repeatability*3	X & Y Axes	±0.006mm	±0.007mm	±0.007mm	±0.008mm	X:±0.008mm Y:±0.01mm
	Z Axis	±0.006mm	±0.007mm	±0.007mm	±0.008mm	±0.008mm
External Dimensions W×D×H (Excluding Protrusions)*4		323×387×554mm	560×535×659mm	584×631×807mm	678×731×807mm	790×731×807mm
Robot Weight*4		20kg	35kg	42kg	44kg	45kg

4 Axes Specifications

Model*1		4 Axes (Synchronous Control)				
Item		JR3204	JR3304	JR3404	JR3504	JR3604
Operating Range	X & Y Axes	200×200mm	300×320mm	400×400mm	510×510mm	510×620mm
	Z Axis	50mm	100mm	150mm	150mm	150mm
	R Axis	±360°	±360°	±360°	±360°	±360°
Maximum Portable Load	X Axis (Workpiece)	7kg	15kg	15kg	15kg	15kg
	Y Axis (Tool)	3.5kg	7kg	7kg	7kg	7kg
Maximum Speed(PTP Drive)*2 [　]=Settable Speed Range	X & Y Axes	700mm/sec [7~700mm/sec]	900mm/sec [9~900mm/sec]	900mm/sec [9~900mm/sec]	900mm/sec [9~900mm/sec]	900mm/sec [9~900mm/sec]
	Z Axis	250mm/sec [2.5~250mm/sec]	400mm/sec [4~400mm/sec]	400mm/sec [4~400mm/sec]	400mm/sec [4~400mm/sec]	400mm/sec [4~400mm/sec]
	R Axis	600°/sec [6~600°/sec]	900°/sec [9~900°/sec]	900°/sec [9~900°/sec]	900°/sec [9~900°/sec]	900°/sec [9~900°/sec]
Maximum Speed(CP Drive)*2 [　]=Settable Speed Range	X, Y, Z Combined	600mm/sec [0.1~600mm/sec]	850mm/sec [0.1~850mm/sec]	850mm/sec [0.1~850mm/sec]	850mm/sec [0.1~850mm/sec]	850mm/sec [0.1~850mm/sec]
R Axis Acceptable Moment of Inertia		65kg・cm²	90kg・cm²	90kg・cm²	90kg・cm²	90kg・cm²
Repeatability*3	X & Y Axes	±0.01mm	±0.01mm	±0.01mm	±0.01mm	±0.01mm
	Z Axis	±0.01mm	±0.01mm	±0.01mm	±0.01mm	±0.01mm
	R Axis	±0.008°	±0.008°	±0.008°	±0.008°	±0.008°
External Dimensions W×D×H (Excluding Protrusions)*4		323×387×676mm	560×535×844mm	584×631×894mm	678×731×894mm	790×731×894mm
Robot Weight*4		22kg	38kg	46kg	47kg	48kg

<Notes>
*1 2 Axes Specifications also available. Please contact us.
*2 Maximum speed can vary depending upon conditions. The robot cannot reach maximum speed when bearing the maximum portable load.
*3 Repeatability was measured at a constant temperature and does not represent a guarantee of absolute precision.
*4 The external dimensions and robot weight differ for JR3400 Double Column Specifications. Please contact us for details.

JR3000 Series Common Specifications

Item		Specification Content
Drive Method		5 Phase Pulse Motor (optional encoder attachment)
Control Method		PTP(Point to Point) Control, CP(Continuous Path) Control
Interpolation		3-dimensional linear and arc interpolation
Teaching Method		Remote Teaching (JOG) / Manual Data Input (MDI)
Teaching System		Simple and versatile teaching using our original software •Easy: Point-based teaching (position and type) for all axis movement; direct movement by setting point strings. Dedicated point types for each application makes teaching specialized movements simple. •Versatile: Control tools and make workpiece operation settings by setting point jobs and various parameters.
Teaching Pattern		•Direct teaching using the optional teaching pendant •Offline teaching from a PC using our optional PC software "JR C-Points II". Compatible with CAD graphics (DXF, Gerber, JPEG)
Screen Display Options	Measurement Unit	mm, inch
	Languages	Japanese, English, French, Spanish, Italian, German, Korean, Simplified Chinese, Czech, Vietnamese
Program Capacity		999 Programs
Database Capacity*¹		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
	I/O-1*²	8 Inputs/ 8 Outputs (including 4 relay outputs)　(Optional)
	I/O-MT*²	Controls up to 2 external motors　(Optional)
	I/O-S	Interlock connector for an area sensor, etc. (Optional)
	Fieldbus	CC-Link/ DeviceNet/ PROFIBUS (Optional)
	COM1	RS232C (for external devices, COM commands)
	COM2・COM3	RS232C (for external devices)　(Optional)
	MEMORY	USB memory connector (save and readout teaching and customizing data, back up system software)
	LAN*³	Ethernet connector for PC (connect to JR C-Points II PC software, operate the robot using control commands)
Power Source		AC90~125V / AC180~240V (single phase)
Power Consumption		200W
Operating Environment	Temperature	0~40℃
	Relative Humidity	20~90% (non condensing)
	Elevation	up to 1,000m

<Notes>

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

*2 For the JR3200 series, choose only one optional add-on: I/O-1 or I/O-MT.

*3 Ethernet connection is 10BASE-T/100BASE-TX.

<Standard Accessories>

•Operation Manual (CD-ROM)

•Power Cord

•Switchbox (included as standard equipment for robots with B type specification operation panels)

<Options>

•Teaching Pendant (Standard/with Emergency Stop Switch)

•PC Software JR C-Points II (Windows®7/Windows®8 compatible) Switch among Japanese, English, German and Simplified Chinese display screens.

•Internal I/O Power Supply (DC24V Rating 2.1A for I/O-SYS and I/O-1)

•Optional Switch (Option with A Type Operation panel specs.)

•Needle Adjuster

•I/O-SYS Connector

•I/O-SYS Cable

•I/O-1 Cable

•I/O-MT Connector

•I/O-MT Cord (0.5m, 1m, 3m, 5m)

[Switchbox]

Standard Type

With Mode Changing Switch(optional)

With Optional Switch

• Before using your robot, read the operation manual and be sure 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 visit our website.