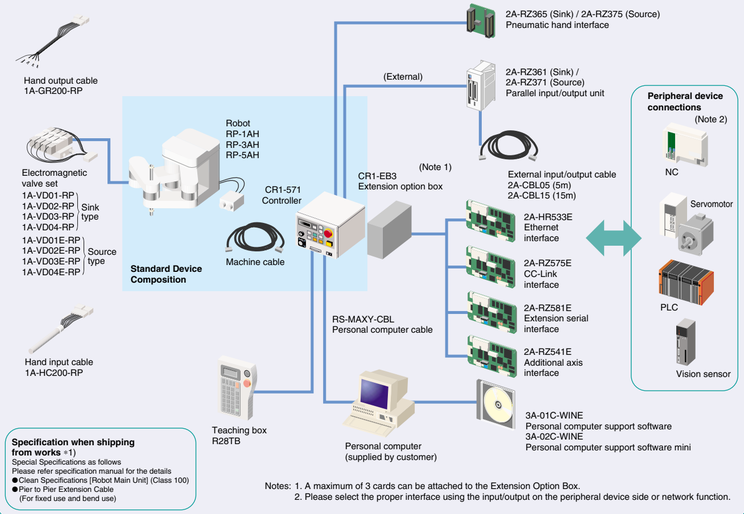
Proposing the 21st Century's Statue of Robot

System Configuration



Specification when shipping from works *1)
Special Specifications as follows
Please refer specification manual for the details
- Clean Specifications [Robot Main Unit] (Class 100)
- Pier to Pier Extension Cable
  (For fixed use and bend use)

Notes: 1. A maximum of 3 cards can be attached to the Extension Option Box.
2. Please select the proper interface using the input/output on the peripheral device side or network function.

*1) Pier structure will be changed when shipping. Please confirm delivery date and specifications since order made system.

Options

	Name	Model No.	Description/Specification	Remarks
Main body options	Electromagnetic valve set	1A-VD01-RP	1 set	Sink type
		1A-VD02-RP	2 sets	
		1A-VD03-RP	3 sets	
		1A-VD04-RP	4 sets	
		1A-VD01E-RP	1 set	Source type
		1A-VD02E-RP	2 sets	
		1A-VD03E-RP	3 sets	
		1A-VD04E-RP	4 sets	
	Hand output cable	1A-GR200-RP	Utilizing 1–4 set, 2m length	One side connector, one side cable across
	Hand input cable	1A-HC200-RP	Utilizing 1–4 set, 2m length	
Controller options	Teaching box	R28TB	IP65, cable length 7m	
	Pneumatic hand interface (sink type) / (source type)	2A-RZ365 / 2A-RZ375	Output: 8 points (sink) / (source)	
	Parallel Input/Output interface (sink type) / (source type)	2A-RZ361 / 2A-RZ371	Output: 32 points, Input: 32 points (sink) / (source)	
	External Input/Output cable	2A-CBL05	One terminal untreated, 5m length	
		2A-CBL15	One terminal untreated, 15m length	
	Ethernet interface	2A-HR533E	10base-T 10Mbps	*1: attached to extension option box
	CC-Link interface	2A-RZ575E	CC-Link intelligent device station (1 or 4 stations)	
	Extension serial interface	2A-RZ581E	RS-232C/422, 1 channel each	
	Additional axis interface	2A-RZ541E	for SSC NET (Max. 8 axes) *1	
	Extension option box	CR1-EB3	Option card extension unit, 3 slots	Note 1
	Personal computer support software (Windows®)	3A-01C-WINE	Windows® compatible support software with simulation function, CD-ROM	
	Personal computer support software mini (Windows®)	3A-02C-WINE	Simplified version of Windows® compatible support software, CD-ROM	
	Personal computer cable	RS-MAXY-CBL	for PC-AT (DOS/V) compatible systems, 3m length	
Maintenance	Backup battery	A6BAT	for internal mechanisms	
		ER6	for internal controller	

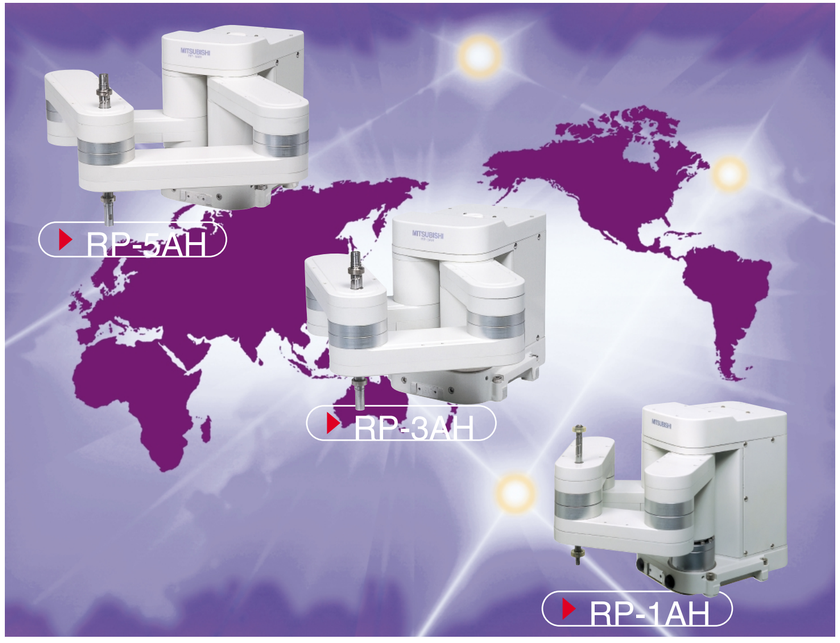
* Connect with only MR-J2 and MR-J2 super

Note 1: Required when +1 option is used.

• Windows® is a registered trademark of Microsoft Corporation.

MITSUBISHI
INDUSTRIAL ROBOTS

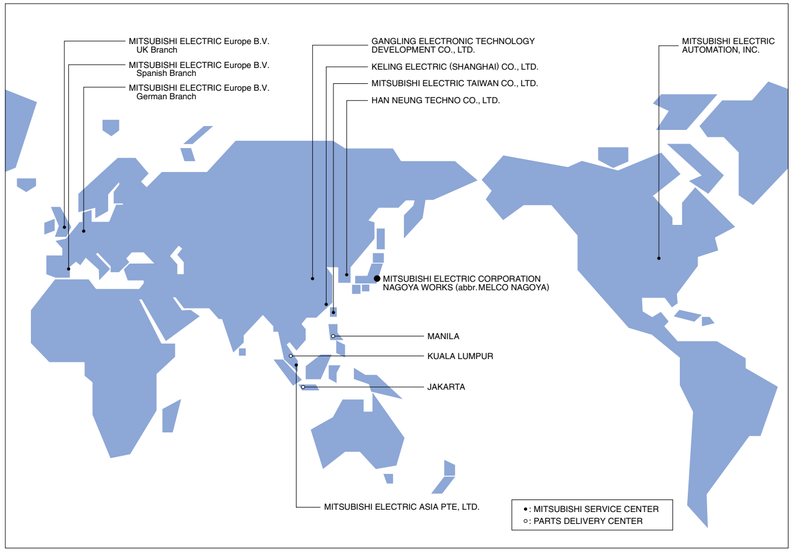
MELFA RP-1AH/3AH/5AH



Mitsubishi Electric Industrial Robots are manufactured at a factory certified for ISO14001 (standards for environmental management systems) and ISO9001 (standards for quality assurance management systems).

EC97J1113

OVERSEAS SERVICE NETWORK & GLOBAL SERVICE NETWORK



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⚠ Safety Warning
To ensure proper use of the products listed in this catalog, please be sure to read the instruction manual prior to use.

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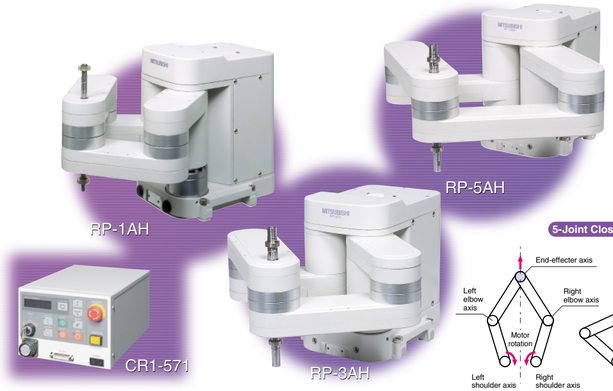
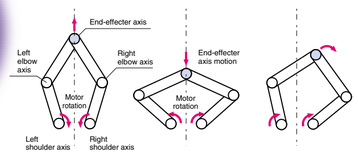
Specifications subject to change without notice.

Efficient Micro-assembly Robots Using New Robot with 5-Joint Closed Link Construction

RP Series Micro-assembly Robots−Smaller, Faster and More Accurate Developed in response to the need for high accuracy and high-density operations like that required by industries that utilize clean rooms. Series enhancements include a new smaller controller (fits on 8½×11 sheets of paper).



5-Joint Closed Link Mechanism



Closed Link Construction
Highly rigid mechanism enables very accurate high-speed operation.

Lightweight & Compact
The controller mechanism is the size of an 8½×11 sheet of paper and weighs approximately 12kg (RP-1AH).

High-Speed & High Accuracy
Cycle time is 0.28s and repeat position accuracy is ±5μm (RP-1AH).

Internal Equipment Expansion
The ability to add equipment internally offers additional space savings.

Basic Specifications

Main Body

Model			RP-1AH	RP-3AH	RP-5AH
Motion degrees-of-freedom			4		
Motor drive			AC servomotor (all-axis brake attached)		
Position detection			Absolute encoder		
Maximum load capacity (rated)*1		kg	1 (0.5)	3 (1)	5 (2)
Arm length		mm	100+140	140+200	200+260
Maximum radial reach		mm	236	335	453
Operating limits	W×D*2	mm	150×105 (A6 size)	210×148 (A5 size)	297×210 (A4 size)
	J3 vertical motion	mm	30	50	
	J4	Deg.	±200		
Maximum speed	J1	Deg./s	480	432	
	J2	Deg./s	480	432	
	J3 vertical motion	mm/s	800	960	
	J4	Deg./s	3000	1330	
Cycle time*3		s	0.28	0.33	0.38
Repeat position accuracy	X-Y surface	mm	±0.005	±0.008	±0.01
	J3 vertical motion	mm	±0.01		
	J4	Deg.	±0.02	±0.03	
Allowable wrist inertial moment		kg•m²	0.3×10⁻³	1.6×10⁻³	3.2×10⁻³
Temperature		°C	0–40		
Weight		kg	Approx. 12	Approx. 24	Approx. 25
Tool wiring*4			Input: 8 points Output: 8 points (for each base)		
Tool air piping			—		
Installation			Floor-standing		
Protective structure			IP30		

<Special Specifications> The following work environment safety specifications apply.

Cleaning	Class 100 (0.3μm)	RP-1AHC-SB	RP-3AHC-SB	RP-5AHC-SB
Note: Cleaning specifications is determined when an order is received, so please confirm the delivery term. Note: Regarding cleaning specifications, there is a difference between specifications and external dimensions.				

*1: Maximum load capacity is that when the constant of the adjustable speed is limited.
*2: This reference explains that the unit covers the area the size of an A4 sheet of paper.
*3: Cycle time is a reference value, and increases in accurate work occasionally.
*4: The pneumatic hand interface (option) is required when tool (hand) output is used.
*5: Generally, the pattern of electricity consumption during operation is: RP-1AH, approximately 0.5kW; RP-3AH/5AH, approximately 0.7kW.
*6: Default is set to 180–253 VAC at the time of shipping (CE specifications is set to 230 VAC±10% at the time of shipping).
*7: Dimensions listed exclude the Extension Option Box.

Controller

Model			CR1-571
Path control			PTP, CP
No. of control axes		axis	4 simultaneous (max.)
CPU			64 bit RISC/DSP
Main functions			Indirect interpolation, direct interpolation, 3-dimensional radii interpolation, palletizing, condition branching, subroutines, multi-tasking, optimum adjustable speed control, optimum override control, optimum route connection, etc.
Programming language			MELFA-BASIC IV
Position learning			Teaching method, MDI method
Memory capacity	Teaching position	Points	2,500
	No. of steps	Steps	5,000
	No. of programs	Points	88
External input	General I/O	Points	16/16 (max. when using options: 240/240)
	Exclusive input	Points	Allocated by general output (1"STOP" point is fixed)
	Hand I/O	Points	8/0 (when using options: 8/8)
	Emergency stop input	Points	1
	Door switch input	Points	1
Interface	RS232C	Ports	1 (for PC, vision sensor, etc. connection)
	RS422	Ports	1 (for teaching box only)
	Exclusive hand slot	Slots	1 (electric hand and pneumatic hand interfaces only)
	Extension slot	Slots	0 (when option is used: 3 [for extension options])
	Robot I/O link	Channels	1 (for connecting parallel I/O unit)
Temperature		°C	0–40
Humidity		%RH	45–85
Power supply	Input voltage limit	V	180–253/90–132VAC, 1 phase (207–253VAC, 1 phase at CE*6)
	Power capacity*5	kVA	0.7
Ground		Ω	less than 100 (D-type ground)
Configuration			Independent mounting, open configuration
Overall dimensions*7		mm	212(W)×290(D)×151(H)
Weight*7		kg	Approx. 8

Note: Specifications are subject to change without prior notification.

Features

Smallest Controller in the Industry Equipped with Powerful 64 bit CPU

- New redesigned controller requires a setup area the size of an 8½×11 sheet of paper and weighs only approximately 8kg.
- Controller can operate at 120 or 200VAC. (200VAC only for CE)
- Controller option compatibility guaranteed.

*1 The connector is different from that of the CR2-532 controller. If the controller is to be connected to the main body of a previous model, the main body of the robot must be modified.

New Options Simplify Operation Ease and Expandability

- Improved communication interfaces for CC-Link, Ethernet and serial extensions.

5-Joint Closed Link Configuration In Pursuit of the Ultimate in High-speed, High-accuracy Operation

- An original 5-joint closed link mechanism and 64bit CPU enables the robot to operate at high speeds and with maximum accuracy; equal to that of process-dedicated equipment.
- Cycle time of 0.28s*2 and repeat position accuracy of ±5μm achieved (RP-1AH).
- Multi-task function included for parallel processing of vision sensor and peripheral control communications.

*2 Cycle time is a reference value, and increases in accurate work occasionally.

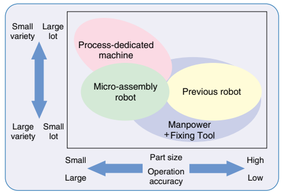
Compact Space-saving Design

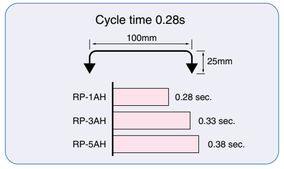
- Taking up a space the size of an 8½×11 sheet of paper and weighing only approximately 8kg, the controller smallest in the industry. Installation and transportation are simple and easy.
- Lining 3 RP-1AH units up side-by-side, the line is a space-saving 1.2m in length. Introduction of these robots into existing factory line space is no problem at all.
- The robot main body weighs about 12kg and requires an installation space equal to that taken up by a sheet of paper (RP-1AH), thus making it easy to incorporate these robots into your current facilities.

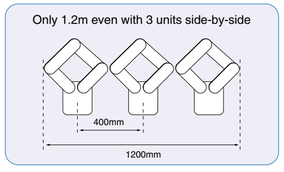
Effective Lineup for Diversified Needs

- The RP Series of robots is available in type models, from the small RP-1AH to the RP-5AH, which operates at a maximum weight load of 5kg.
- Compliant with cleaning inspection ratings Class 100/0.3μm. (special specifications*3)

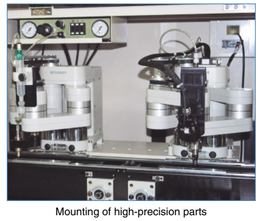
*3 Please confirm delivery terms.

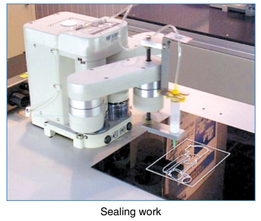


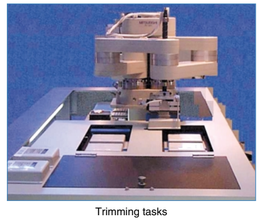




Main Applications


Mounting of high-precision parts


Sealing work


Trimming tasks

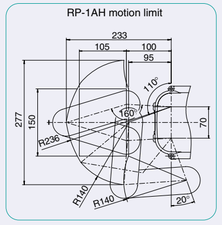
Tracking tasks in food processing

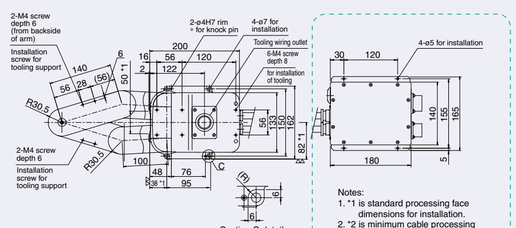
Tracking tasks in OA parts processing

Visual parts feeding system

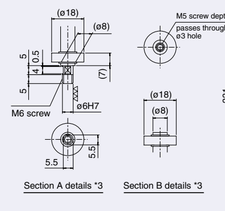
Robot Main Body External Dimensions

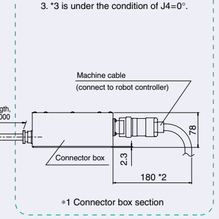
RP-1AH



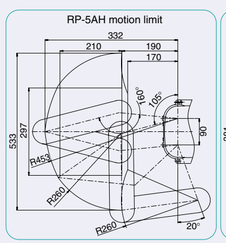


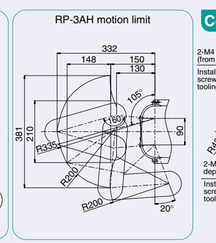
Notes:
1. *1 is standard processing face dimensions for installation.
2. *2 is minimum cable processing dimensions.
3. *3 is under the condition of J4=0°.



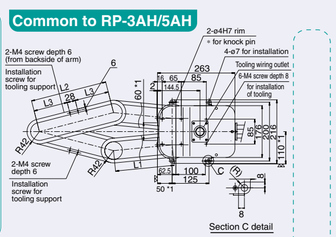


*1 Connector box section

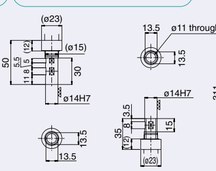


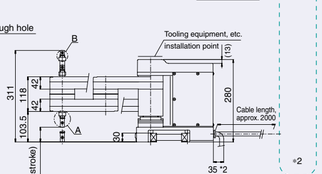


Common to RP-3AH/5AH



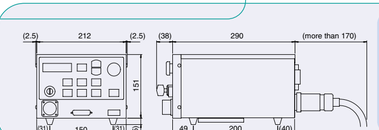
Models	Dimensions		
	L1	L2	L3
RP-3AH	140	200	86
RP-5AH	200	260	116

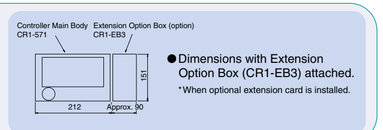




Note: Dimensions of the *2 connector box are the same as those for the *1 connector box.

Controller External Dimensions





● Dimensions with Extension Option Box (CR1-EB3) attached.
*When optional extension card is installed.