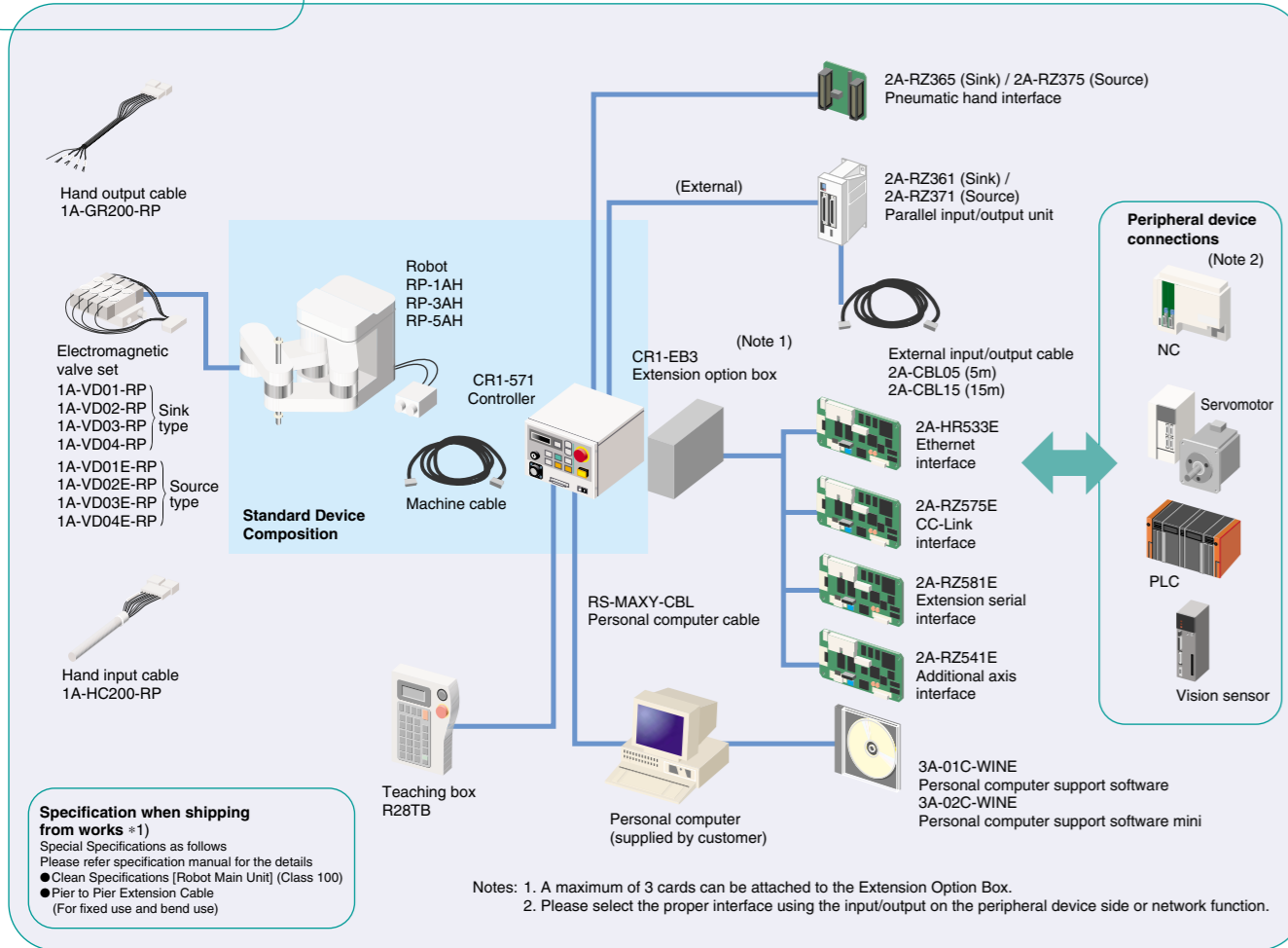


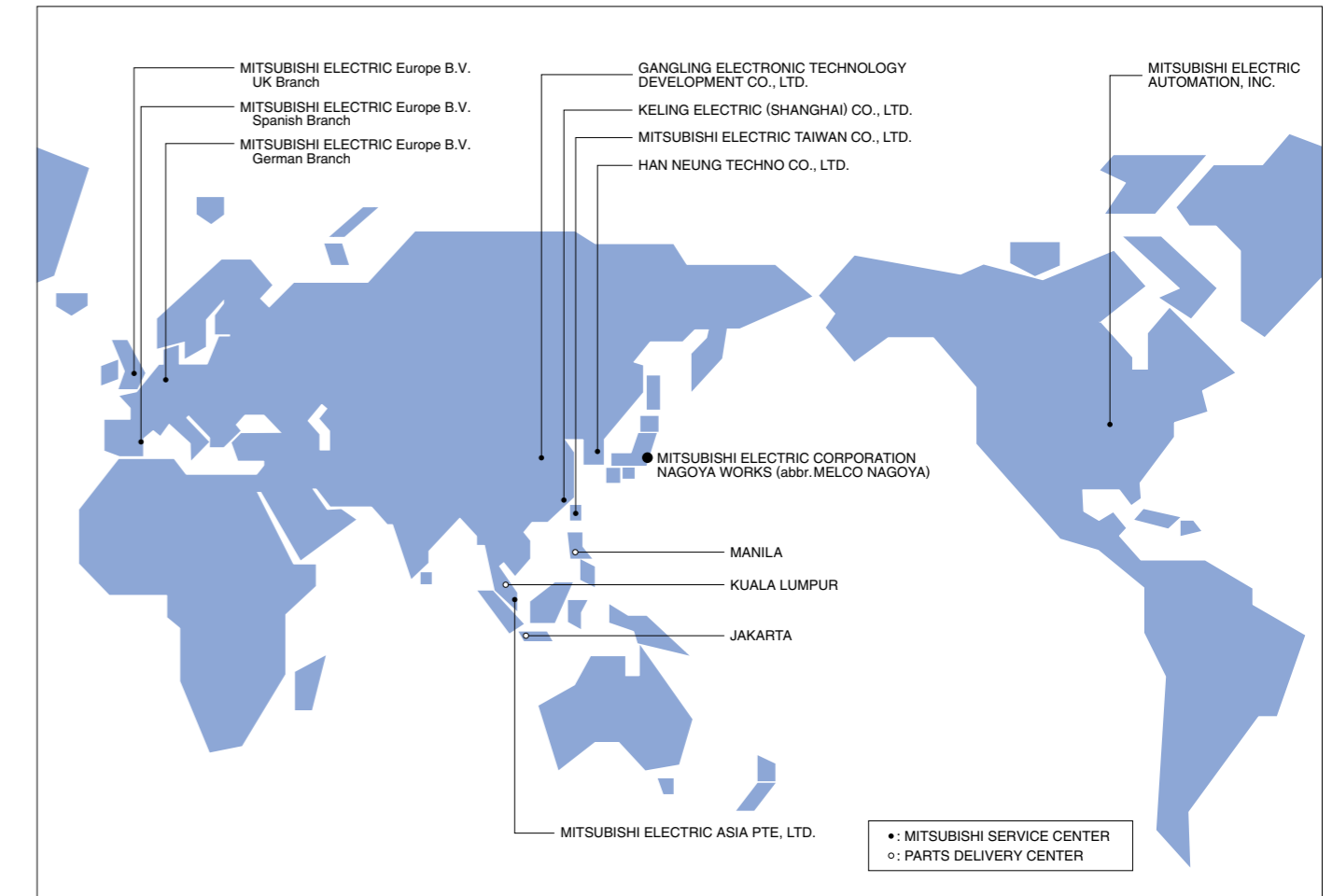
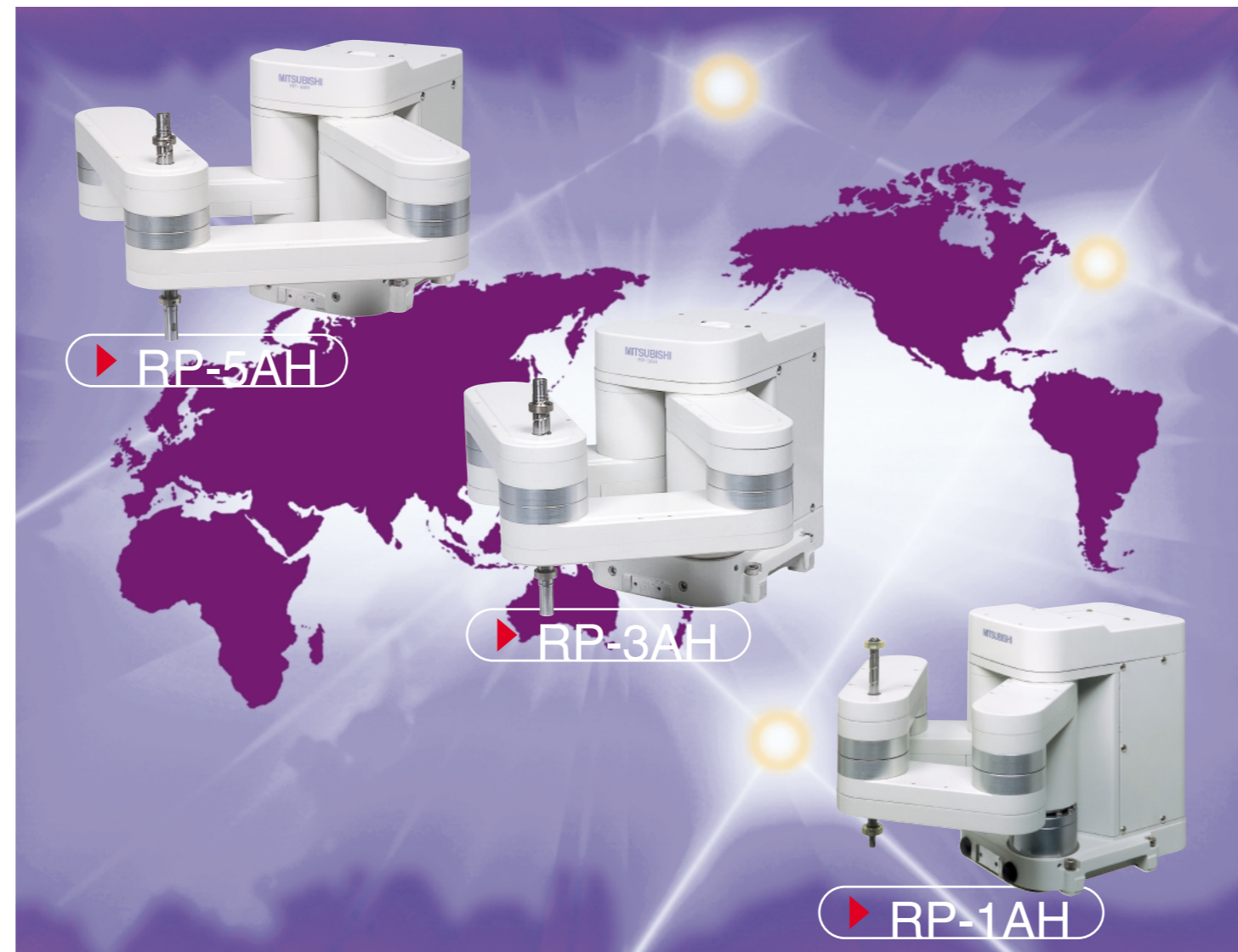
# Proposing the 21st Century's Statue of Robot

## System Configuration



# MITSUBISHI INDUSTRIAL ROBOTS

## MELFA RP-1AH/3AH/5AH



## 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	
	Electromagnetic valve set	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
		2A-RZ575E	CC-Link intelligent device station (1 or 4 stations)	
		2A-RZ581E	RS-232C/422, 1 channel each	
		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 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

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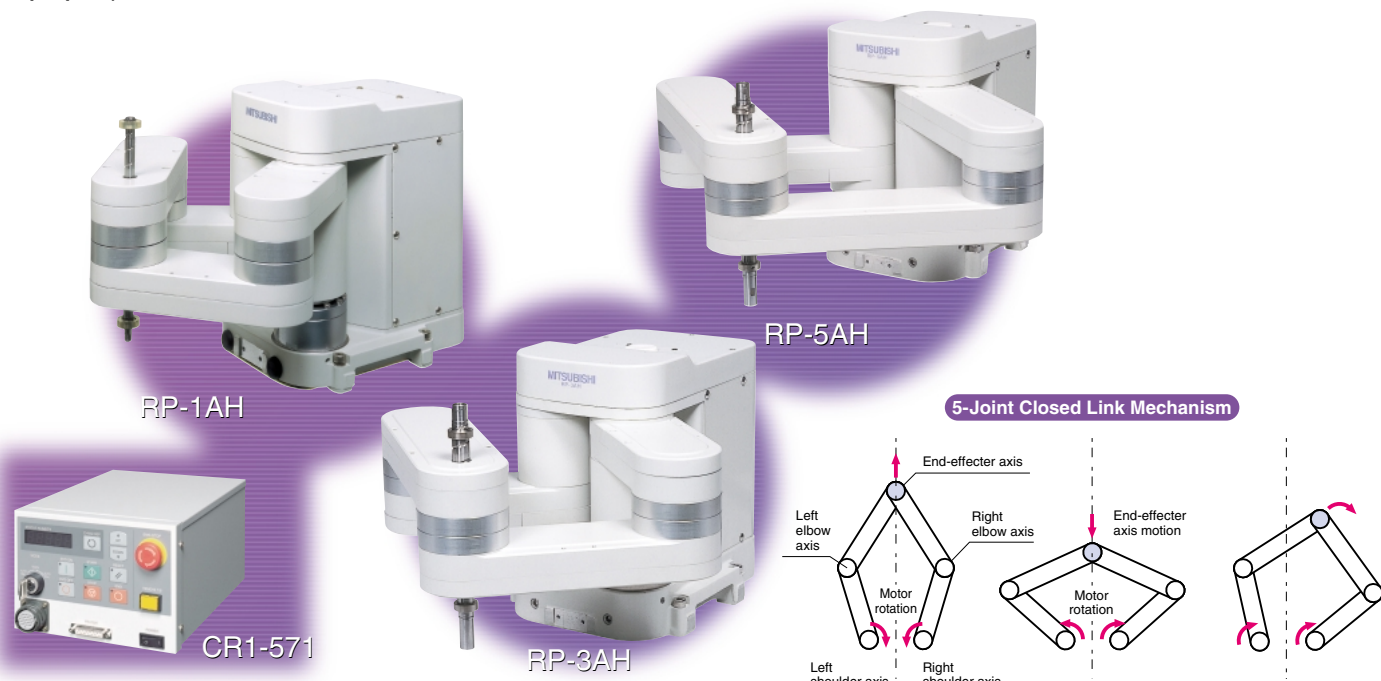
### Safety Warning

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

**MITSUBISHI ELECTRIC CORPORATION**  
HEAD OFFICE: MITSUBISHI DENKI BLDG., 2-2-3, MARUNOUCHI, CHYODA-KU, TOKYO 100-8310, JAPAN

# 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 8 1/2x11 sheets of paper).



**Closed Link Construction**

Highly rigid mechanism enables very accurate high-speed operation.

**Lightweight & Compact**

The controller mechanism is the size of an 8 1/2x11 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		
J3 vertical motion	mm 150x105 (A6 size)	210x148 (A5 size)	297x210 (A4 size)
J4	Deg. 30	±200	50
J1	Deg./s 480	432	432
J2	Deg./s 480	432	432
J3 vertical motion	mm/s 800	960	960
J4	Deg./s 3000	1330	1330
Cycle time*3	s 0.28	0.33	0.38
Repeat position accuracy	mm ±0.005	±0.008	±0.01
J4	Deg. ±0.02	±0.03	
Allowable wrist inertial moment	kg·m <sup>2</sup> 0.3x10 <sup>-3</sup>	1.6x10 <sup>-3</sup>	3.2x10 <sup>-3</sup>
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		

### Controller

Model	CR1-571
Path control	PTP, CP
No. of control axes	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
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 (for PC, vision sensor, etc. connection)
RS232C	Ports 1 (for teaching box only)
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
Input voltage limit	V 180-253/90-132VAC, 1 phase (207-253VAC, 1 phase at CE*5)
Power capacity*6	kVA 0.7
Ground	Ω less than 100 (D-type ground)
Configuration	Independent mounting, open configuration
Overall dimensions*7	mm 212(W)×250(D)×151(H)
Weight*7	kg Approx. 8

<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.

## Features



**Smallest Controller in the Industry Equipped with Powerful 64 bit CPU**  
 ● New redesigned controller requires a setup area the size of an 8 1/2x11 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 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 8 1/2x11 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.

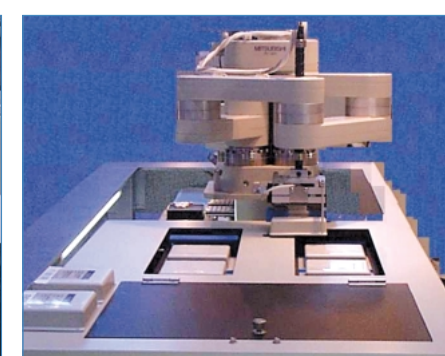
## Main Applications



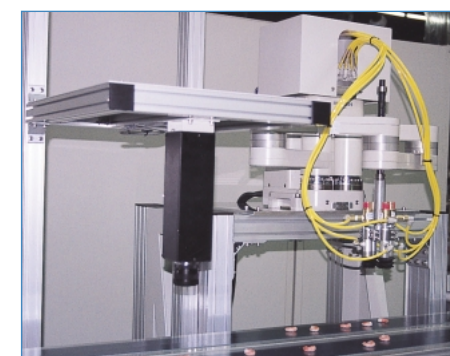
Mounting of high-precision parts



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 motion limit**

**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°.

**RP-5AH motion limit**

**RP-3AH motion limit**

**Common to RP-3AH/5AH**

## Controller External Dimensions

**RP-5AH motion limit**

**RP-3AH motion limit**

**Common to RP-3AH/5AH**

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.