

2 Robot arm

2.1 Standard specifications

2.1.1 Basic specifications

Table 2-1: Standard specifications of RV-5AS-D robot

Item		Unit	Specifications
Type			RV-5AS-D
Environment			Oil mist environments
Degree of freedom			6
Installation posture			Floor mounted / ceiling mounted
Structure			Vertical, multiple-joint type
Drive system			AC servo motor (brake provided on all axes)
Position detection method			Absolute encoder
Motor capacity	Waist (J1)	W	200
	Shoulder (J2)		200
	Elbow (J3)		150
	Wrist twist (J4)		100
	Wrist pitch (J5)		100
	Wrist roll (J6)		50
Operating range	Waist (J1)	Degree	±240
	Shoulder (J2)		±148
	Elbow (J3)		±150
	Wrist twist (J4)		±200
	Wrist pitch (J5)		±120
	Wrist roll (J6)		±200
Speed of motion ^{Note1)}	Waist (J1)	Degree/s	124 (59.6)
	Shoulder (J2)		124 (34.0)
	Elbow (J3)		124 (34.0)
	Wrist twist (J4)		297 (142)
	Wrist pitch (J5)		356 (215)
	Wrist roll (J6)		360
Maximum reach radius (P point)		mm	910
Maximum resultant velocity ^{Note2)}	High-speed operation mode	mm/sec	1,000
	Collaborative operation mode (Standard operation)		250
	Collaborative operation mode (Low-speed operation)		50
Load	Rating	kg	5
	Maximum ^{Note3)}		5.5
Pose repeatability ^{Note4)}		mm	±0.03
Ambient temperature ^{Note5)}	In use	°C	0 to 40
	At transport/storage		-20 to 70 (Without freeze)
Ambient humidity	In use	%RH	45 to 85
	At transport/storage		95 or less (Without dew drops)
Mass		kg	32
Total mass of the moving parts of the robot		kg	27
Allowable moment load	Wrist twist (J4)	N·m	12.8
	Wrist pitch (J5)		12.8
	Wrist roll (J6)		4.9

Item		Unit	Specifications
Allowable inertia	Wrist twist (J4)	kg·m ²	0.34
	Wrist pitch (J5)		0.34
	Wrist roll (J6)		0.10
Wiring	Hand I/O	-	Mechanical interface: 2 inputs/4 outputs Forearm: 6 inputs/0 outputs Base: 0 inputs/4 outputs
	Force sensor cable/ Spare cable	-	5-conductor (24 V/0.7 A) One of the conductors should be used for the frame ground (FG).
	LAN cable	-	Cat-5e supported
Plumbing	Primary hoses	-	Φ6 × 2
	Secondary hoses	-	Φ4 × 4 From the base of the robot to the elbow.
Supply pressure		MPa	0.54
Protection specification ^{Note6)} ^{Note7)}		-	IP54 (ISO Class 5 ^{Note8)})
Status indicator LED		-	Six colors: red, yellow, green, blue, white, and light blue. ^{Note9)}
Painting color		-	Light gray (Equivalent to Munsell: 0.6B7.6/0.2, PANTONE: 428C)
External magnetic field		mT	Less than 10 ^{Note10)}

Note1) Values in parentheses indicate the maximum speed when the input voltage is single-phase 100 to 120 VAC.

Note2) These values represent the maximum overall speed of all axes combined. The safety functions limit the robot to the speeds shown in the table. For accurate collision force data when the robot is in Collaborative operation mode, measure collision forces under actual operating conditions.

For further information on safety functions, refer to the section "Safely-limited speed function (SLS)" in the Function Manual.

Note3) Allowable load when the mechanical interface faces downward at an inclination within ±10° to the vertical direction. Please note that when confirming the contact force that occurs in a collision and when confirming the stopping time and stopping distance at our company, the maximum payload is set to the rated payload of 5.0 kg.

Note4) The pose repeatability details are given in Page 14, "2.2.1 Pose repeatability"

Note5) Sets the robot's operating environmental temperature as parameter OLTMX. The initial value is 30 (°C). Corresponding to the environment, the continuous control action performance and the overload-protection function are optimized. (Refers to "Optimizing the overload level" described in "Chapter 5 Functions set with parameters" of separate instruction manual/ Detailed explanations of functions and operations for details.)

Note6) The protection specification details are given in Page 17, "2.2.6 Protection specifications".

Note7) The protection performance may not be ensured depending on the oil characteristics. Please consult the dealer.

Note8) Clean-room specifications are based on values acquired from Mitsubishi Electric's in-house tests.

Note9) For further information on the meaning of each color, refer to Page 21, "2.3.2 Status indicator LED".

Note10) Do not place a magnet on the robot surface.

2.1.2 The counter-force applied to the installation surface

The counter-force applied to the installation surface for the strength design of the robot installation surface is shown.

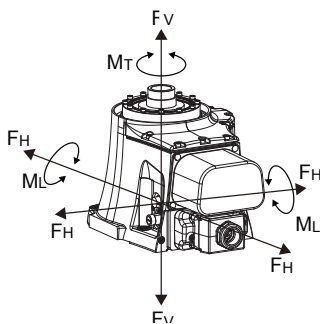


Table 2-2: Value of each counter-force

Item	Unit	Value
Falls moment: M_L	N·m	325
Torsion moment: M_T	N·m	275
Horizontal translation force: F_H	N	700
Vertical translation force: F_V	N	1,010