# 2 Robot arm

## 2.1 Standard specifications

### 2.1.1 Standard specifications

Table 2-1 : Tab Standard specifications of robot

| Item | | Unit | Specifications | | | |
|---|---|---|---|---|---|---|
| Type | | | RV-6S | RV-6SC | RV-6SL | RV-6SLC |
| Type of robot | | | 6-axis standard arm | | 6-axis long arm | |
| | | | Standard | Clean (Special Specifications) | Standard | Clean (Special Specifications) |
| Degree of freedom | | | 6 | | | |
| Installation posture | | | On floor, hanging | On floor | On floor, hanging | On floor |
| Structure | | | Vertical, multiple-joint type | | | |
| Drive system | | | AC servo motor (brake provided on all axes) | | | |
| Position detection method | | | Absolute encoder | | | |
| Arm length | Upper arm | mm | 280 | | 380 | |
| | Fore arm | | 315 | | 425 | |
| Operating range | Waist (J1) | Degree | 340(−170 to +170) | | | |
| | Shoulder (J2) | | 227(−92 to +135) | | | |
| | Elbow (J3) | | 285(−107 to +166) | | 295(−129 to +166) | |
| | Wrist twist (J4) | | 320(−160 to +160) | | | |
| | Wrist pitch (J5) | | 240(−120 to +120) | | | |
| | Wrist roll (J6) | | 720(−360 to +360) | | | |
| Speed of motion | Waist (J1) | Degree/s | 401 | | 250 | |
| | Shoulder (J2) | | 321 | | 267 | |
| | Elbow (J3) | | 401 | | 267 | |
| | Wrist twist (J4) | | 352 | | | |
| | Wrist pitch (J5) | | 450 | | | |
| | Wrist roll (J6) | | 660 | | | |
| Maximum resultant velocity Note1) | | mm/sec | Approx. 9,300 | | Approx. 8,500 | |
| Load | Maximum Note2) | kg | 6 | | | |
| | Rating | | 5 | | | |
| Pose repeatability Note3) | | mm | ± 0.02 | | | |
| Ambient temperature | | ℃ | 0 to 40 | | | |
| Mass | | kg | Approx. 58 | | Approx. 60 | |
| Allowable moment load | Wrist twist (J4) | N・m | 12 | | | |
| | Wrist pitch (J5) | | 12 | | | |
| | Wrist roll (J6) | | 4.5 | | | |
| Allowable inertia | Wrist twist (J4) | kg・m$^2$ | 0.29 | | | |
| | Wrist pitch (J5) | | 0.29 | | | |
| | Wrist roll (J6) | | 0.046 Note4) | | | |
| Arm reachable radius froot p-axis center point | | mm | 696 | | 902 | |
| Tool wiring Note5) | | | Hand input 8 point / hand output 8 point | | | |
| | | | Six spare wires : AWG#28(0.1mm$^2$) (shielded) | Four spare wires : AWG#24(0.2mm$^2$) | Six spare wires : AWG#28(0.1mm$^2$) (shielded) | Four spare wires : AWG#24(0.2mm$^2$) |
| Tool pneumatic pipes | | | Primary side: Φ6 × 2 (Base to fore arm section) | | | |
| Supply pressure | | MPa | 0.49 ± 10% | | | |
| Protection specification Note6) | | | J1 to J3 axis : IP54<br>J4 to J6 axis : IP65 | – | J1 to J3 axis : IP54<br>J4 to J6 axis : IP65 | – |
| Degree of cleanliness Note7) | | | – | 10(0.3 μm) Internal suction requirement | – | 10(0.3 μm) Internal suction requirement |
| Painting color | | | Light gray (Equivalent to Munsell: 0.8GY7.64/0.81) | | | |

Note1) This is the value on the hand flange surface when all axes are combined.
Note2) The maximum load capacity is the mass with the flange posture facing downword at the ± 10° limit.
Note3) The pose repeatability details are given in Page 7, "2.2.1 Pose repeatability"
Note4) Up to 0.092kg・m$^2$ can be supported by performing variable acceleration/deceleration control and also by setting the load inertia.
Note5) The air hand interface (option) is required when the tool (hand) output is used. Also, if the solenoid set (option) is used, eight points of hand outputs are used for other options. 。
Note6) The protection specification details are given in Page 10, "2.2.5 Protection specifications and working environment".
Note7) The clean specification details are given in Page 11, "2.2.6 Clean specifications" .A down flow(0.3m/s or more) in the clean room is the necessary conditions for the cleanliness.