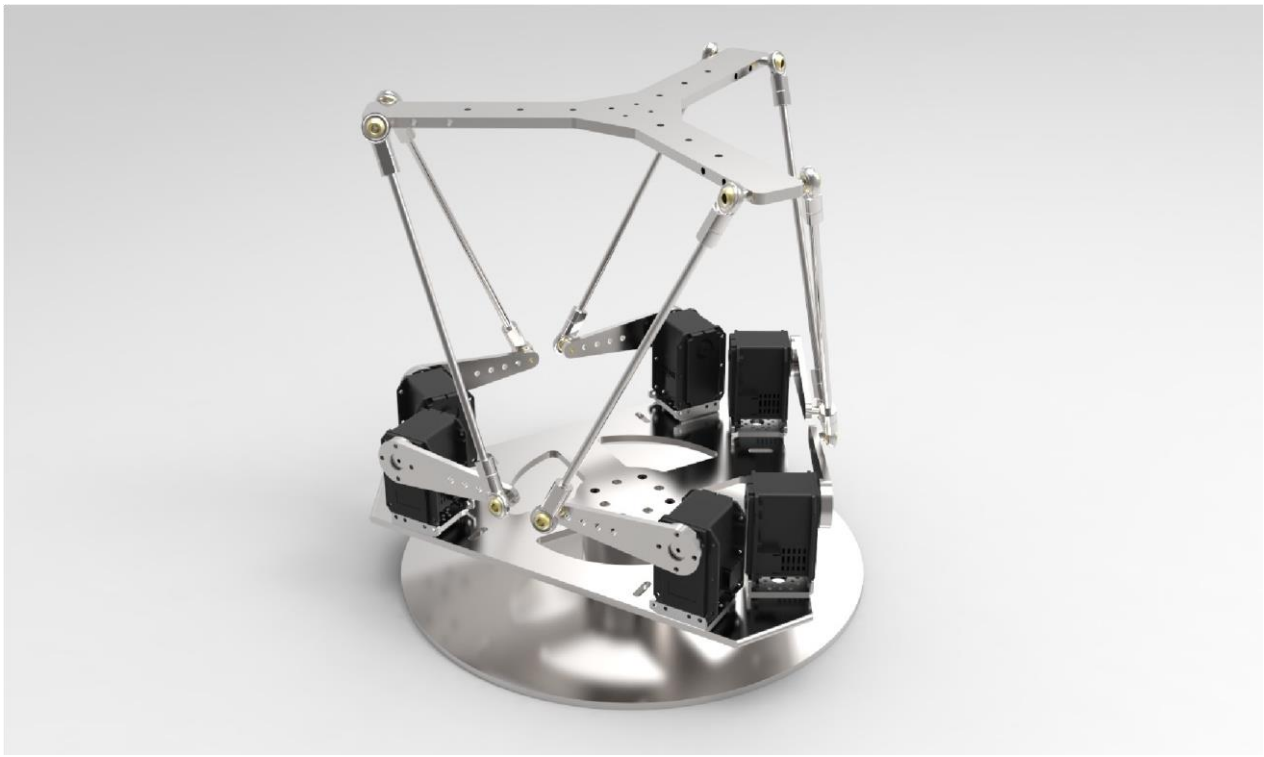
# 6-DOF Parallel Robot



## Technical Specifications:

| Mechanical | |
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| Type | 6 DOF, Parallel Robot |
| Number of axis | 6 |
| Pose repeatability | ±0.17 mm (ISO 9283) |
| Weight | 5 kg with mounting base |
| Cubical workspace | 60mm × 60mm × 60mm |
| Maximum Displacements | X ~ 160mm, Y ~ 160mm, Z ~ 160mm |
| Maximum Angular Displacements | Roll ~ 43°, Pitch ~ 25°, Yaw ~ 65° |
| Payload | 8 kg (at 12.0V) |
| Operating temperature | -5°C to +80°C |
| Mounting position | Floor, ceiling, walls, floating |

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| Size | 300mm × 300mm × 450mm with Supporting Base Stand of 50mm. |

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| Surface finish, paintwork | Base stand: (stationary) Metallic grey, Moving parts: Stainless Steel |
| Material | Body: Chromium plated mild steel,<br>Actuators: Engineering plastic body<br>Links: Mild Steel<br>Coupler and Bolts: Stainless Steel |
| Joint Level Accuracy | 0.088° |
| Minimum Incremental Motion X,Y,Z | 1.5mm |
| Maximum Velocity | 0.5m/s |
| Maximum Joint Torque | 6.0N.m (at 12V) |
| Maximum Joint Speed | 378°/second |
| Force/Torque Control | Torque control (upto 10 bit precision) at each joint allows end-effector force/torque control |
| Sound Level | < 50dB |
| Top Platform | Modified for more agility and light weight. Provision for mounting sensors and gripper. |
| **Electrical** | |
| Operating Voltage | 12.0V (Recommended) |
| Maximum Current | 25A at Full load |

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| Standby Current | 600mA |
| Connecting Cable | Single 3-Wire cable for Communication and Power. |
| Actuator Characteristics | • Full metal gear<br>• PID adjustable using seperate Actuator GUI<br>• Contactless absolute encoder (12 bit for 360°) |
| | • Feedback: Position, Temperature<br>• Position, Velocity or Torque Control |
| Power Supply | 110/220 V to 12V |
| **Software** | |
| Supported platforms | PC with Mac or Linux (Ubuntu, Debian, Raspberry Pi, or other distributions.) |
| Programming Compatibility | MATLAB, Python, Java, C/C++, C#, LabView, ROS. |
| Communication | USB to TTL (Daisychain - Half duplex Asynchronous Serial Communication) |
| API Compatibility | Python, ROS |

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| Included GUI Features | • Cartesian Jogging for Position and Orientation<br>• PTP Motion using Cycloidal, Cubic, Quintic, and Cosine trajectories<br>• Controllers: Virtual using mouse, Android App or 3D Joystick<br>• Programmed motions: Planar/Vertical SHM, Spiral, Lissajous, Helical, Precession<br>• Live plot for joint angles for any cartesian motion, end-effector homogeneous transformation matrix, error logs<br>• Mouse interactive 3D visualization and standard views buttons<br>• Trace feature for end-effector motion visualization<br>• Inbuilt safety feature for singularity check and joint angle limits |

**Scope of Supply:**

- 1 No. all rotary parallel Stewart platform with actuators and base stand.
- USB to TTL converter for communication.
- 12V, 30A power supply.
- Junction box with Emergency stop.
- 3 core, 10m, submersible cable.
- USB Drive with Software, API, Assembly Instructions, User Documentation, Android Application, Videos and Example codes.
- Full customization in terms of hardware and software may be provided on request (chargeable).
- Lab. Manuals for teaching (chargeable).

**Requirement:**

- Standard computer with i5 processor or above, 8 GB RAM, with Graphics card.
- Preferably with Linux Ubuntu 14.04 or higher.

**Field of Use:**

- As a laboratory apparatus or in classroom for demonstrating parallel robot.
- Positioners: for cameras, solar plates, mirrors, surgical instruments, etc.
- Low frequency vibration compensators or dynamic balancing (needs appropriate sensors).
- Motion platform: e.g. simulators, gaming stations, medical applications, test workbench, etc.
- Torque controlled joints allows it to be used as a haptic feedback device or as an assembly robot.


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