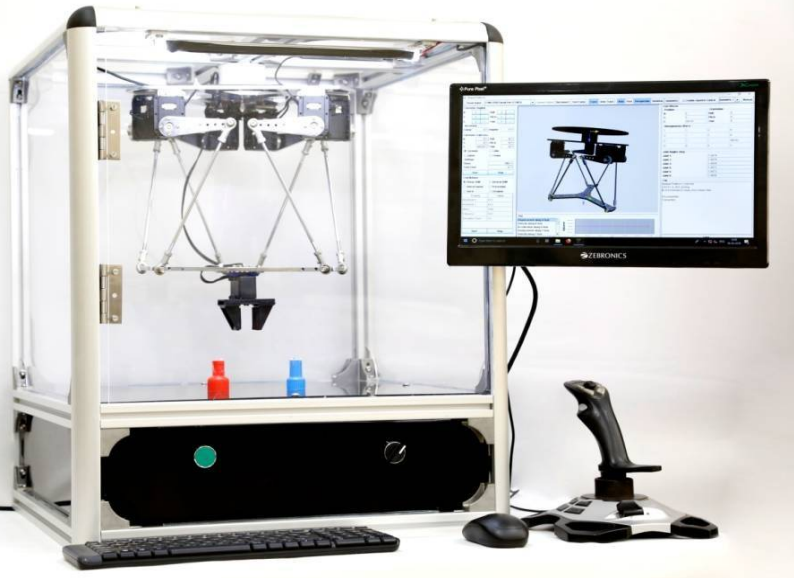


ARUNI 6-DOF PARALLEL ROBOT TRAINING CELL

Teaching Parallel Robot is complex as compared to teaching other robots. The ever-growing use and applications of parallel robots in the industry demands robotics professionals to understand and to have been trained on the Parallel Robots.

Meet Aruni - A 6-DOF Parallel Robot Training Cell!



- ✓ 6-DOF Parallel Robot Learning System.
- ✓ Book with theory on Parallel Robots.
- ✓ Practical with List of Experiments.
- ✓ Sample Programs, Compatibility with Python, MATLAB.
- ✓ Sample Applications.
- ✓ API to Develop Applications yourself.
- ✓ Easy GUI + Joystick for motion & path teaching.

- ✚ Aruni is a **LEARNING SYSTEM COMBINING THEORY AND PRACTICAL** built for students to learn parallel robot intricacies in and out and proceed to develop real-world applications for the industry.
- ✚ Start with the chapters in the manual provided with the training cell and follow up the theory with an experiment on Aruni to see your theory in action. A comprehensive list of theory and practical ensures thorough understanding.
- ✚ We especially thought about students and developers when building our code. One can program directly on the robot using our API and the sample source codes. It's a great way to learn robotics and do useful applications using **MATLAB or Python**.
- ✚ Researchers and Developers can develop applications for Flight Simulation, Gyroscope Testing, Pick and Place of various objects using the Gripper provided and alternate grippers, IoT based tele-control using a mobile device.

MADE IN INDIA



Technical Specifications:

Mechanical	
Type	6 DOF , Parallel Robot
Number of axis	6 (without gripper)
Pose repeatability	± 0.173 mm (ISO 9283)
Weight	5 kg with mounting base
Cubical workspace	60mm \times 60mm \times 60mm
Maximum Displacements	X ~ 160 mm, Y ~ 160mm, Z ~ 100 mm
Maximum Displacements Angular	Roll ~ 43°, Pitch ~ 25°, Yaw ~ 65°
Payload	5 kg (at 12.0 V)
Operating temperature	-5°C to +80°C : Safe for any standard industrial applications
Mounting position	Ceiling (Default Configuration) and Floor.
Size	600mm \times 600mm \times 700mm with Safety enclosure.
Surface finish, paintwork	Moving parts: Chromium plated mild steel. Coupler, Bolts and Links: Stainless Steel Enclosure: T-Slot Aluminum extrusion frame with Acrylic Walls Actuators: Engineering Plastic
Joint Level Accuracy	0.088°
Minimum Incremental Motion X, Y, Z	1.0 mm
Maximum Velocity	0.5 m/s
Maximum Joint Torque	6.0 Nm (at 12V)
Maximum Joint Speed	378°/second
Force/Torque Control	Torque control (up to 10 bit precision) at each joint allows end-effectors force/torque control
Sound Level	< 50dB : Suitable for classrooms or laboratory.
Top Platform	Modified for more agility and light weight. Provision for mounting sensors and gripper.
Electrical	
Operating Voltage	12.0V (Recommended)
Maximum Current	30A at Full load
Standby Current	600mA
Communication	USB to TTL, Single 3-Wire cable for Communication and Power (Half Duplex UART): Supports up-to 12Mbps
Joint level characteristics	<ul style="list-style-type: none"> • Full metalgears • PID adjustable using separate Actuator GUI • Contactless absolute encoder (12 bit for 360°) • Feedback: Position, Temperature • Position, Velocity or Torque Control
Software	
Supported platforms	PC with Windows 10 or higher (Recommended) for GUI and python-based API, Mac or Linux (Ubuntu, Debian, Raspberry Pi, or other distributions) with API
Programming Compatibility	MATLAB and Python

API Compatibility	Python <i>IoT Ready: Using the API without any additional hardware.</i>
Included GUI and Interface Features	<ul style="list-style-type: none"> • Cartesian Jogging for Position and Orientation. • PTP Motion using Cycloidal, Cubic, Quintic, and Cosine trajectories. • Controllers: Virtual using mouse, Android App or 3DJoystick. • Programmed motions: Planar/Vertical SHM, Spiral, Lissajous, Helical, Precession • Live plot for joint angles for any cartesian motion, end-effector homogeneous transformation matrix, error logs. • Mouse interactive 3D visualization and standard views buttons. • Trace feature for end-effector motion visualization. • Inbuilt safety feature for joint angle limits and work space limits. • Record and play feature for path programming or pick and place. • <i>3D Joystick based control.</i> • <i>Teach and Repeat motion programming.</i>

Field of Use:

- As a laboratory apparatus or in classroom for demonstrating parallel robot.
- Positioner for cameras, solar plates, mirrors, surgical instruments etc.
- Low frequency vibration compensators or dynamic balancing.
- Motion Platform: e.g. Simulators, Gaming Stations, Medical applications, Test Workbench.
- Torque Controlled Joints allows it to be used as a haptic feedback device or as an assembly robot.

Scope of Supply:

- 1 No. 6 - RSS pre-assembled parallel platform with Enclosure.
- USB to TTL converter for high-speed communication (Inbuilt).
- 220 to 12V, 25A (SMPS) power supply (Inbuilt); Separate Switch for Actuators and Illuminating LED Light, Emergency stop; 3 core, 3m, submersible cable for Power Supply.
- Full customization in terms of hardware and software may be provided on request(chargeable). E.g.: Customizing top platform for grippers or an accelerometer.
- Spares: **Actuator (Chargeable)**, Rod-end bearing, Nuts-Bolts.
- Logitech Extreme 3D Pro Joystick.
- Integrated PC with preloaded API, Software, Videos, Example codes, Customized Drawings and Documentation.
- Two fingered gripper (Inbuilt).
- **Sensors: Add-on accelerometer for self-balancing or feedback, USB Camera.**
- **Laboratory Manual with 10 Experiments.**

ARUNI 6-DOF PARALLEL ROBOT TRAINING CELL

NUGENIX

**6-RSS
PARALLEL
ROBOT**

**CONTROLLER
GUI**



GRIPPER

**JOYSTICK
INTERFACE**



**FULLY
ENCLOSED
CELL**

