



User's Manual – Alpha 2D

September 2020



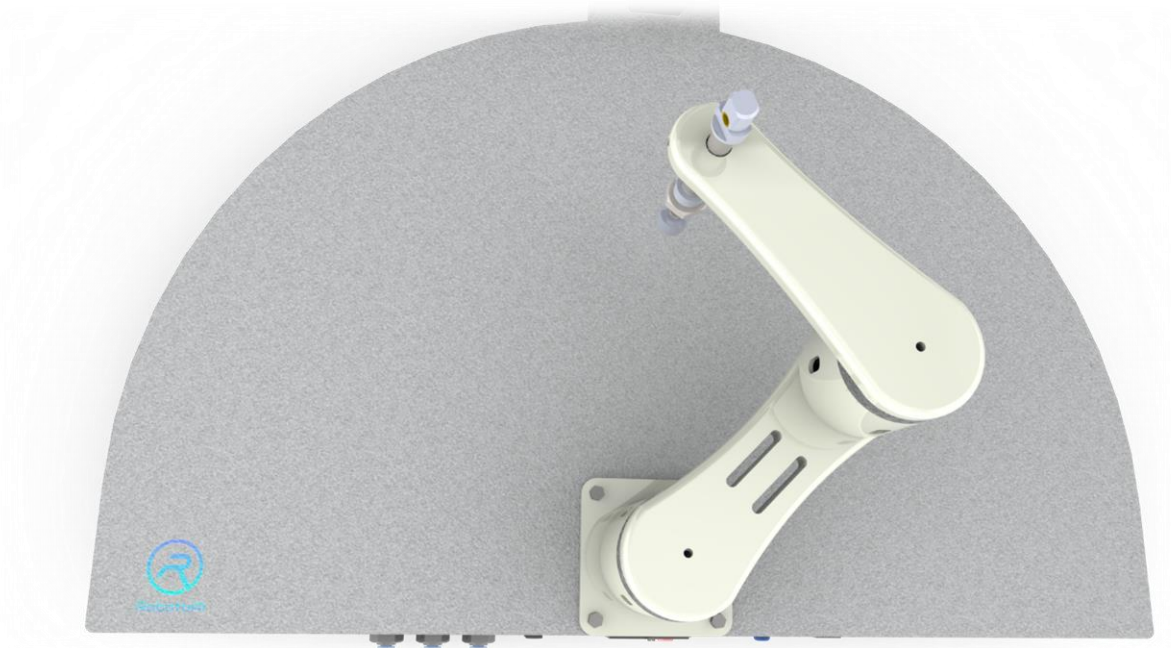
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User Manual

Robotic Arm

Alpha 2D - 2 Axis Robotic Arm with Vision systems





The Alpha Manipulators are one of the world's few kind of educational robots that are specially engineered for providing a best class educational experience. Alpha builds a great learning platform for students and helps in learning its control parameters through Robot Operating System (ROS). Alphas are flexible for on board installation in mobile robots and can also be indigenously installed in various flat platforms. These robots help the users in learning navigation trajectories for various applications such as machine tending, packaging, palletizing etc., We provide a wide variant in manipulators such as Alpha-D, Alpha-2D, Alpha-3D, Alpha-4D, Alpha-6D which enables easy learning and implementation that comes with different DOFs respectively. The users can make use of these robots for getting trained before starting with industrial robots and software platforms. It has been designed for R&D laboratories, higher education, training etc.,

TECHNICAL SPECIFICATIONS

Weight	3 Kg (Excluding Metal case)
Payload	200 g
Reach	300 mm
Repeatability	+/- 1 mm
Power supply	220V AC
Communication	USB
Interface/Programming	Windows/Linux (ROS)
Power consumption	120 W
Materials	ABS Plastic (3D Printed)
Ports	1 USB

Note: 3rd Joint is not controllable (Pneumatic actuated)

Safety Precautions



Please do not move the joints manually during ON/OFF conditions.

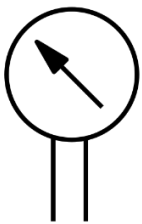


Keep in a cool and dry place.

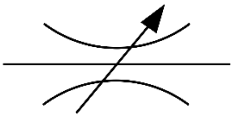
Getting Started



220V AC SUPPLY ONLY



**LESS THAN 6 BAR
PRESSURE**



**VARIABLE THROTTLE VALVES USED AT THE CYLINDER.
KEEP THE PRESSURE LOW AT THE CYLINDERS. FAST
ACTUATION MAY DAMAGE THE ARM.**



HANDLE WITH CARE

Camera Initialization

- **Install cameras as you prefer.**
- **Attach them to the adjustable stand with good lighting conditions.**
- **Make sure that it covers the entire 180-degree workspace.**

Capabilities and Features

1. Performs forward and inverse kinematics with analytical and numerical solvers.
2. Performs trajectory and motion planning with the help of MoveIt planning groups.
3. Performs pick and place with the help of perception stacks.
4. Performs object tracking based on colour and shapes.
5. Performs HIL and SIL in Gazebo, RViz with flexible embedded hardware architectures.
6. Performs visual servoing techniques for pick and place, tracking, trajectory planning etc.,
7. Model based learning approach for writing imitations using IK Solvers.
8. Learn transformations between robot and world frame.
9. Experience hands on approach from low level hardware stacks to higher level APIs.
10. Adaptable to various ML, DL Techniques.

Warranty



Alpha – Robotic arms are primarily designed for Educational, Research purposes. We kindly request you to follow the safety precautions. We provide 1 Year solid warranty covering under manufacturing defects only.

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