

i-Series Industrial

6 axis  
5Kg payload  
924mm reach

# AUBO-i5

Collaborative Lightweight Robot

Made for Human Centric  
Agile Manufacturing

Versatile-Flexible-User Friendly  
Low Cost-Lightweight



[www.aubo-robotics.com](http://www.aubo-robotics.com)

# AUBO-i5

## 5 Kg Payload Collaborative Robot (Co-Bot)

**AUBO-i5 works closely within environment human without safety equipment, depending on risk assessment.**

### COLLABORATIVE FUNCTION:

- Guide to teach (inverse kinematics motion planning), this manual operation of the robot enables quick and easy programming of the robot by demonstration without any programming skills.
- Works side by side with human operator without safety fence, laser or sensors (after a risk assessment is performed).
- Teach pendant user interface for programming (forward kinematics) enables online programming and simulation via a touch screen tablet.
- Lightweight, flexible, easy to re-purpose this robot weighs in under 24Kg

### SAFETY FUNCTIONS:

- Designed in accordance with IEC 61508 and ISO 10218-1 (5.10.5 power and force limiting) safety requirements and compliant with most all specifications for collaborative robot operation.
- Power and force limiting design brings robot to a protective stop if limits are exceeded or a collision is detected. Speed and force can be adjusted to fit and optimize any application easily.
- Sensors embedded in motor drives provide real-time feedback to prevent dangerous situations.
- Emergency stop buttons are positioned on teach pendant and control box with a braking distance less than 1mm.

### OPEN SOURCE ARCHITECTURE:

- CAN bus network used in this robot for multiple microcontrollers to communicate with each other.
- ROS (Robot Operating System) compatibility is supported through an API.
- Hardware adopts bus protocols with open I/O interface extensions.
- Easily integrate robot into existing production systems.

### RETURN ON INVESTMENT (ROI)

- Low cost of ownership, **no programming skills needed**, and ease of integration into a system all add up to a quick return on your investment.
- Short run, high mix environment job like Lab automation or machine tending are prime examples of industries needing fast redeployment.
- Floor space is a premium cost at most company's usually more than the equipment. A small footprint, lightweight robot will be a huge benefit for any size company's cost of production.
- Repurpose, redeploy and or reinvent applications with the same robot, change the number of degrees of freedom, joints and tubes are modular making it easy to repair as well as reconfigure.

### INTELLIGENCE

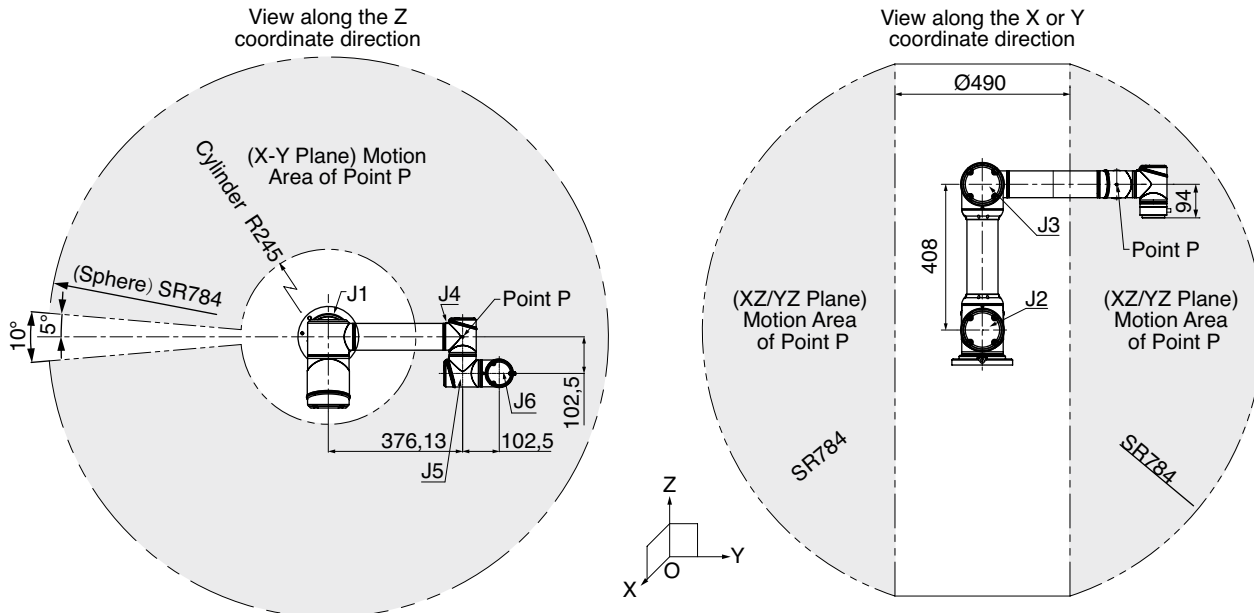
- Vision systems can be easily integrated into controller.
- Software system based on cloud platform management that realizes remote maintenance, fault diagnosis and online upgrading of firmware.
- This research robot platform is used widely around the world in corporate research labs and for academic robotics research.

### MODULAR DESIGN:

- Robot can be configured to have between four and seven degrees of freedom to meet user requirement.
- Joint length can be customized to longer or shorter links.

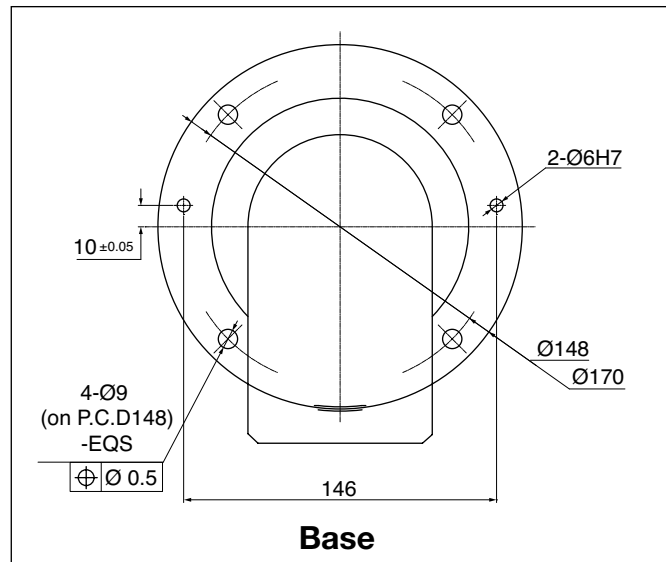
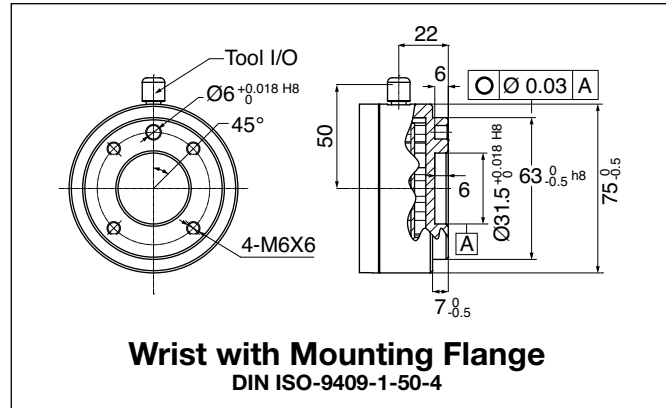
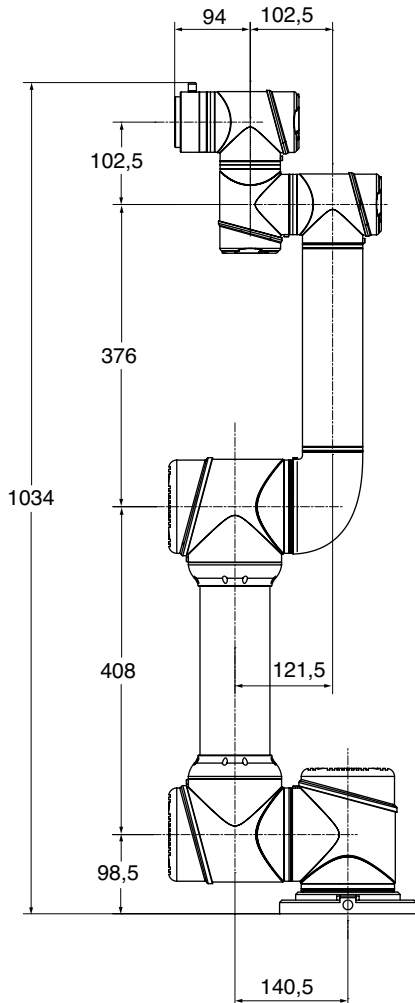
# AUBO-i5 Collaborative Robot (Co-Bot)

## Work Envelope-Range of Motion of the Point P



**NOTE:**

1. Double dotted line means regional boundaries
2. The trajectory of Point P may exceed the space area which contained by the double dotted line



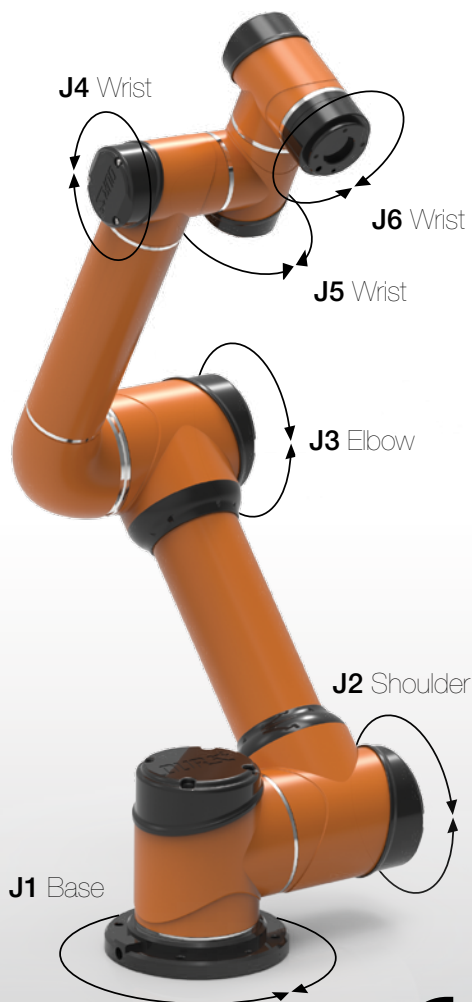


## AUBO-i5

6 axis

5Kg payload

924mm reach



### TECHNICAL SPECIFICATIONS:

<b>Robot Type</b>	AUBO-i5 Articulated Type / Modular
<b>Controlled Axes DoF</b>	6 axes ( J1, J2, J3, J4, J5, J6) J7max
<b>Reach</b>	924 mm
<b>Payload</b>	5Kg
<b>Weight</b>	24 Kg
<b>Footprint</b>	172 mm diameter
<b>Collaborative Operation</b>	Certified safety functions, Patented design, Hand guide operation, Power and force limiting design
<b>Certifications</b>	ISO 10218-1:2011, EN 60204-1:2006 + A1:2009, ISO 12100: 2010, ISO 13849-1:2008, CE
<b>Repeatability</b>	(+/- 0.05 mm)
<b>Linear Velocity</b>	2.8 m/s adjustable
<b>Power Consumption</b>	200 watts typical application
<b>Materials</b>	Aluminum, Steel, Plastic
<b>Ambient Humidity</b>	Normal 75% RH or less without frost or dew, 85% RH short term
<b>Ambient Temperature</b>	0 to 45 degrees Celsius
<b>IP Classification of Robot</b>	IP54
<b>Programing</b>	Teach pendant with user interface, guide to teach, ROS compatibility through an API
<b>Communication</b>	CAN bus
<b>Motor Type</b>	Harmonic drive 48 Volt
<b>Installation Orientation</b>	Any Ceiling, Floor, Wall

### AXIS MOVEMENT

<b>J1 axis rotation base</b>	(+/-) 175°	150°/sec	207 Nm
<b>J2 axis rotation shoulder</b>	(+/-) 175°	150°/sec	207 Nm
<b>J3 axis rotation elbow</b>	(+/-) 175°	150°/sec	207 Nm
<b>J4 axis wrist rotation</b>	(+/-) 175°	180°/sec	34 Nm
<b>J5 axis wrist swing</b>	(+/-) 175°	180°/sec	34 Nm
<b>J6 axis wrist rotation</b>	(+/-) 175°	180°/sec	34 Nm

WORKING RANGE	MAXIMUM SPEED	MAX. JOINT MOMENTS
(+/-) 175°	150°/sec	207 Nm
(+/-) 175°	150°/sec	207 Nm
(+/-) 175°	150°/sec	207 Nm
(+/-) 175°	180°/sec	34 Nm
(+/-) 175°	180°/sec	34 Nm
(+/-) 175°	180°/sec	34 Nm

### I/O PORT ON WRIST

Voltage	Current	Digital In	Digital out	Analog In	Analog Out
0/12/24 V	800 mA	4	4	2	0

### CONTROL BOX

<b>Dimensions (LxWxH)</b>	683x220x622 mm
<b>Weight</b>	20Kg
<b>Cabling</b>	5mm
<b>Color</b>	Black
<b>Communication</b>	RS-485, CAN-Bus, TCP/IP 100M, Modbus TCP
<b>Power supply</b>	120 - 240 VAC, 50 - 60 Hz
<b>IP Classification</b>	IP54



### I/O PORTS

	i-Series
<b>Digital in</b>	24
<b>Digital out</b>	16
<b>Analog In</b>	3
<b>Analog out</b>	4
<b>Power input</b>	24 Volts
<b>Power output</b>	3A

### TEACH PENDANT

<b>Dimensions (LxWxH)</b>	355x235x54 mm
<b>Weight</b>	1.8 Kg
<b>Display Screen</b>	30 cm Touch LCD Screen
<b>Cabling</b>	4.5 mm
<b>IP Classification</b>	IP54
<b>Color</b>	Orange



## About Aubo Robotics

Aubo Robotics was established in collaboration between professors from the USA and China to make a lightweight intelligent collaborative robot. This robot arm was specially designed with important functions from the start, combining state of the art technology with user friendliness to make this a collaborative robot (Co-bot). The open source architecture enables the Robot Operating System (ROS) to be supported through an API for both industrial and academic uses.

The Aubo robot uses the CAN bus networks to communicate between joints. This offers un-parallel versatility to configure this robot from 3 to 7 DOFs. This modular design also enables users to alter the number of links and the length between joints to fit custom applications. Low cost of ownership and high positional repeatability are some of the other criteria that makes up the outstanding features of this robot. Aubo Robotics holds several core patents and has strategic cooperation with several public companies leveraging the best of all new technologies.

Robotic automation is no longer out of range for small to midsize companies. The user-friendly setup facilitates ROI in real production environments so employees without programming skills can adapt this robot for most high mix or small batch applications. Aubo looks forward to helping companies make use of this new technology and gain competitive advantage in manufacturing environment while reducing the dangerous and repetitive tasks performed by workers today.

### **Some places where you may see AUBO-i5 Robot:**

Assembly, Packaging, Welding, Pick and Place, Inspection, Machine Tending, Pharmaceutical and Medical Labs, Research and Development, and Academia.



*The AUBO-i5 works closely within human environments without safety equipment, depending on risk assessment.*

# Applications for Collaborative Robots



Assembly



Case Polishing



Product Testing



Education



Machine Tending



Dispensing



Load/Unload



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