About Aubo Robotics

Aubo Robotics was developed in collaboration between three 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.

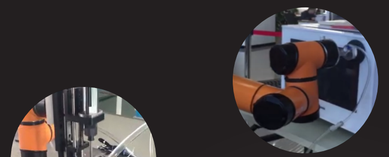
The Aubo robot uses the CAN bus network to communicate between joints. This offers un-parallel versatility to configure this robot from 3 to 7 DOFs. This modular design also enables users to alter the number of links and the length between joints to fit custom applications. Low cost of ownership and 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 programing 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.

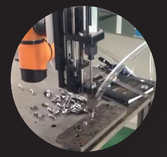
Some places where you may see AUBO-i5 Robot:
Assembly, Packaging, Welding, Pick and Place, Inspection, Machine Tending, Pharmaceutical and Medical Labs, Research and Development, and Academia.

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

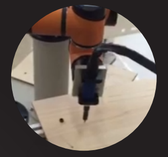
Applications for Collaborative Robots



Case Polishing



Assembly



Product Testing

Education

Machine Tending

Dispensing

Load/Unload

AUBO

Aubo Robotics USA
2450 E.J. Chapman Dr.
Knoxville, TN. 37996
Tel.: 865-307-7406
www.aubo-robotics.com
www.auborobotics.com

Aubo Robotics China
3rd Floor, Shilong Sunshine Building
No.98 of Lianshihu West Road
Bejing, China
Tel.: +86 10 8859 5859
Fax: +86 10 6086 9515
www.our-robotics.com
www.auborobotics.cn

AUBO Robotics Germany
Isoldenstraße 40
80804 München, Deutschland
Tel.: +49 (0) 89 3613746
www.aubo-robotics.de
www.auborobotics.de

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

AUBO

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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 programing of the robot by demonstration without any programing skills.
- Works side by side with human operator without safety fence, laser or sensors (after a risk assessment is preformed).
- Teach pendent user interface for programing (forward kinematics) enables online programing 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 Pl d 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 pendent 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) is supported though 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 programing 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 companies usually more than the equipment. A small foot print, lightweight robot will be a huge benefit for any size companies 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.

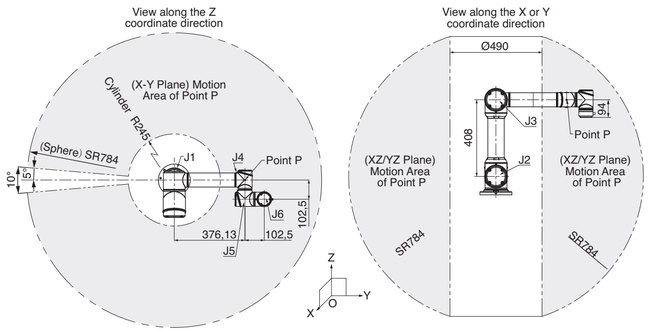
INTELLIGENCE

- Vison 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.

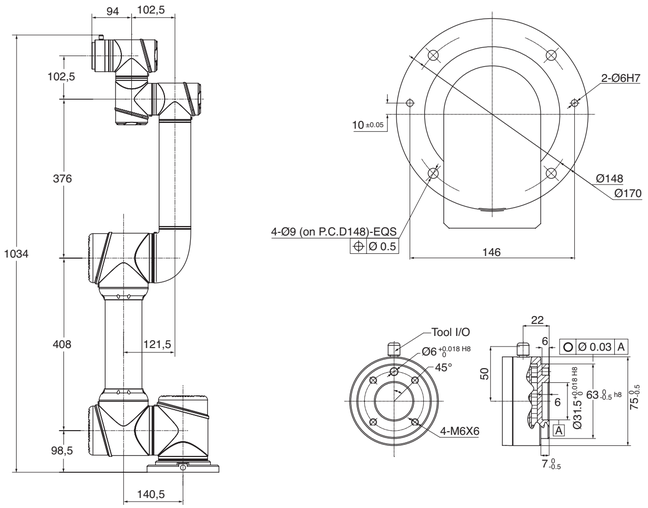
MODULAR DESIGN:

- 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.

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



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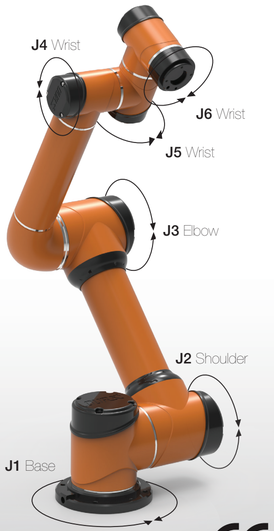
AUBO

AUBO-i5

6 axis
5Kg payload
924mm reach



Certified

TECHNICAL SPECIFICATIONS:

Robot Type	OUR-i5 Articulated Type / Modular
Controlled Axes DoF	6 axes (J1, J2, J3, J4, J5, J6) J7max
Reach	922 mm
Payload	5Kg
Weight	24 Kg
Footprint	148 mm diameter
Collaborative Operation	Certified safety functions, Patented design, Hand guide operation, Power and force limiting design
Certifications	ISO 10218-1:2011, EN 60204-1:2006 + A1:2009, ISO 12100: 2010, ISO 13849-1:2008, CE
Repeatability	(+/- 0.05 mm)
Linear Velocity	2.8 m/s adjustable
Power Consumption	200 watts typical application
Materials	Aluminum, Steel, Plastic
Ambient Humidity	Normal 75% RH or less without frost or dew, 85% RH short term
Ambient Temperature	0 to 45 degrees Celsius
IP Classification of Robot	IP54
Programing	Teach pendant with user interface, guide to teach, ROS open though API
Communication	CAN-Bus
Motor Type	Harmonic drive 48 Volt
Installation Orientation	Any Ceiling, Floor, Wall

AXIS MOVEMENT

	WORKING RANGE	MAXIMUM SPEED	MAX. JOINT MOMENTS
J1 axis rotation base	(+/-) 175°	150°/sec	207 Nm
J2 axis rotation shoulder	(+/-) 175°	150°/sec	207 Nm
J3 axis rotation elbow	(+/-) 175°	150°/sec	207 Nm
J4 axis wrist rotation	(+/-) 175°	180°/sec	34 Nm
J5 axis wrist swing	(+/-) 175°	180°/sec	34 Nm
J6 axis wrist rotation	(+/-) 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

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

I/O PORTS

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

TEACH PENDANT

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