

IRB 120 industrial robot

ABB's smallest robot – for flexible and compact



The IRB 120 robot is the latest addition to ABB's new fourth-generation of robotic technology and ABB's smallest robot ever produced. Ideal for material handling and assembly applications, the new IRB 120 robot provides an agile, compact and lightweight solution with superior control and path accuracy.

Compact and lightweight

As the smallest robot from ABB, the IRB 120 offers all the functionality and expertise of the ABB range in a much smaller package. Its reduced weight of only 25 kg and compact design enables it to be mounted virtually anywhere, whether it is inside a cell, on top of a machine or close to other robots on the production line.

Multipurpose

Ideal for a wide range of industries including the electronic, food and beverage, machinery, solar, pharmaceutical, medical and research sectors, the IRB 120 joins ABB's fourth-generation of new robotic technology.

A white finish Clean Room ISO class 5 version enhances this versatility by making it suitable for environment with stringent cleanliness standard.

Food Grade Lubrication

This Food Grade Lubrication (NSF H1) option includes Clean Room ISO Class 5 which ensure uncompromising safety and hygiene for food and beverage applications. The Clean Room ISO 5 design eliminates the potential for contamination of the food handling area. This option provides smooth surfaces and special paint for easier cleaning.

Easy to integrate

Weighing in at only 25kg, this robot arm is truly the most portable and easy to integrate on the market. It can be mounted at any angle without any restriction. The smooth surfaces are easy to clean and the cables for air and customer signals are internally routed, all the way from the foot to the wrist, ensuring that integration is effortless.

Optimized working range

In addition to a horizontal reach of 580 mm, the robot has best in class stroke and the ability to reach 112 mm below its base. Furthermore, the IRB 120 has a very compact turning radius, which is enabled by the robots symmetric architecture, without offset on axis 2. This ensures the robot can be mounted close to other equipment and the slim wrist enables the arm to reach closer to its application.

Fast, accurate and agile

Designed with a light, aluminum structure, the powerful compact motors ensure the robot is enabled with a fast acceleration, and can deliver accuracy and agility in any application. Using the IRB 120T variant, cycle-times can be reduced up to 25% where the work piece needs extensive re-orientation and axis 4, 5 and 6 are predominantly used. This faster versions is well suited for pick and packing applications and guided operations together with PickMaster 3™.

IRC5 Compact controller – optimised for small robots

ABB's new IRC5 Compact controller takes the capabilities of the extremely powerful IRC5 controller and presents them in a truly compact format.

The new Compact controller brings accuracy and motion control to applications, which previously had been exclusive to large installations.

In addition to space saving benefits, the new controller also enables easy commissioning through one phase power input, external connectors for all signals and a built-in expandable 16 in, 16 out, I/O system.

RobotStudio for offline programming enables manufacturers to simulate a production cell to find the optimal position for the robot, and provide offline programming to prevent costly downtime and delays to production.

Reduced footprint

For applications where floor space is crucial, the combination of the new compact, lightweight architecture of the IRB 120 with the new IRC5 Compact controller introduces a significantly reduced footprint.

* With vertical wrist
** ISO class 4 can be reached under certain conditions
Data and dimensions may be changed without notice


Features	
Integrated signal supply	10 signals on wrist
Integrated air supply	4 air on wrist (5 bar)
Position repeatability	0.01 mm
Robot mounting	Any angle
Degree of protection	IP30
Controllers	IRC5 Compact / IRC5 Single cabinet

Performance		IRB 120	IRB 120T
1 kg picking cycle			
25 x 300 x 25 mm		0.58 s	0.52 s
25 x 300 x 25 with 180° axis 6 reorientation		0.92 s	0.69 s
Acceleration time 0-1 m/s		0.07 s	0.07 s

Physical	
Dimension robot base	180 x 180 mm
Dimension robot height	700 mm
Weight	25 kg

Movement		Maximum speed	
Axis movements	Working range	IRB 120	IRB 120T
Axis 1 Rotation	+165° to -165°	250 °/s	250 °/s
Axis 2 Arm	+110° to -110°	250 °/s	250 °/s
Axis 3 Arm	+70° to -110°	250 °/s	250 °/s
Axis 4 Wrist	+160° to -160°	320 °/s	420 °/s
Axis 5 Bend	+120° to -120°	320 °/s	590 °/s
Axis 6 Turn	+400° to -400°	420 °/s	600 °/s

Specification			
Variants	Reach	Payload	Armload
IRB 120-3/0.6	580 mm	3 kg (4kg)*	0.3 kg

Environment	
Ambient temperature for Robot manipulator:	
During operation	+5°C (41°F) to +45°C (122°F)
Relative transportation and storage	-25°C (-13°F) to +55°C (131°F)
For short periods	up to +70°C (158°F)
Relative humidity	Max 95%
Options	Clean Room ISO class 5 (certified by IPA)** 
Noise level	Max 70 dB (A)
Safety	Safety and emergency stops 2-channel safety circuits supervision 3-position enabling device
Emission	EMC/EMI-shielded

Electrical connections	
Supply voltage	200–600 V, 50/60 Hz
Rated power	
Transformer rating	3.0 kVA
Power consumption	0.25 kW

Working range at wrist center & load diagram

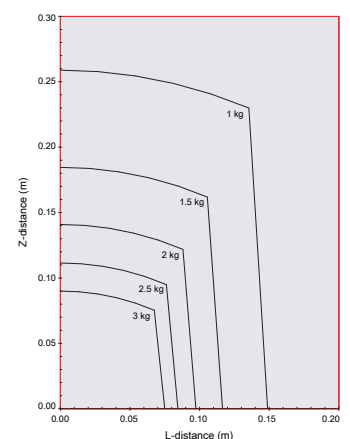
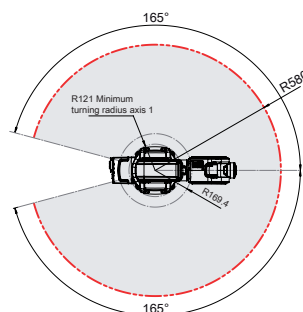
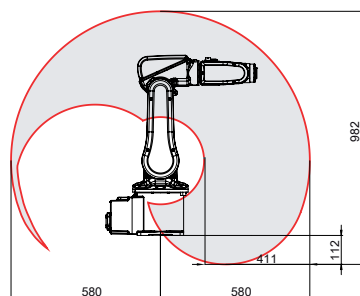


ABB Engineering (Shanghai) Ltd.
Robotics
No. 4528 Kangxin Highway,
Pudong New District
201319, Shanghai, China
Phone: +86 21 6105 6666

abb.com/robotics

We reserve the right to make technical changes or modify the contents of this document without prior notice. With regard to purchase orders, the agreed particulars shall prevail. ABB does not accept any responsibility whatsoever for potential errors or possible lack of information in this document.

We reserve all rights in this document and in the subject matter and illustrations contained therein. Any reproduction, disclosure to third parties or utilization of its contents – in whole or in parts – is forbidden without prior written consent of ABB.
Copyright © 2017 ABB
All rights reserved