

IRB 120 Industrial Robot ABB's smallest robot – for flexible and compact production

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 25kg 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.

The six-axis robot handles a payload of up to 3kg (4kg with its wrist down) and with a reach of 580 mm, the robot is able to carry out a series of operations using flexible rather than hard automated solutions. The IRB 120 is the perfect building block to design cost effective applications – especially when space is at a premium.

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 version 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.

IRB 120

Specification

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

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

Movement

Axis movements	Working range	Maximum speed	
		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

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	0.92 s	0.69 s
180° axis 6 reorientation		
Acceleration time 0-1 m/s	0.07 s	0.07 s

Electrical connections

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

Physical

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

* With vertical wrist

** ISO class 4 can be reached under certain conditions

Data and dimensions may be changed without notice

Working range at wrist center & load diagram

