

ROBOTICS

## IRB 120

# 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 & beverage, machinery, solar, medical, pharmaceutical, 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 addition 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.

### 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 – optimized 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.

### Reduced footprint

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

Specifications			
Robot version	Reach	Payload	Armload
IRB 120-3.0/0.6	580 mm	3 kg (4 kg*)	0.3 kg


  

Features	
Signal & power supply	10 signals on wrist
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

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

Environment	
Ambient temperature for mechanical unit:	
During operation	+5°C (41°F) up to +50°C (122°F)
During transport & storage	-25°C (13°F) up to +55°C (131°F)
For short periods (max 24 h)	up to +70°C (158°F)
Relative humidity	Max 95%
Protection options	Clean room ISO class 5 (certified by IPA**) 
Noise level	Max 73 dB (A)
Safety	Safety and emergency stops, 2-channel safety circuits supervision, 3-position enabling device.
Emission	EMC/EMI-shielded

Movement			
Robot version	Axis movement	Working range	Max Speed
IRB 120	Axis 1 rotation	+165° to -165°	250°/s
	Axis 2 arm	+110° to -110°	250°/s
	Axis 3 arm	+70° to -110°	250°/s
	Axis 4 wrist	+160° to -160°	320°/s
	Axis 5 bend	+120° to -120°	320°/s
	Axis 6 turn	+400° to -400°	420°/s
IRB 120T	Axis 1 rotation	+165° to -165°	250°/s
	Axis 2 arm	+110° to -110°	250°/s
	Axis 3 arm	+70° to -110°	250°/s
	Axis 4 wrist	+160° to -160°	420°/s
	Axis 5 bend	+120° to -120°	490°/s
	Axis 6 turn	+400° to -400°	600°/s

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

Electrical connections	
Supply voltage	200- 600 V, 50-60 Hz
Transformer rating	3.0 KVA
Power consumption	0.25 kW

\* with vertical wrist  
\*\* ISO class 4 can be reached under certain conditions

