

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



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.

The IRB 120 robot is the latest addition to ABB's new fourthgeneration 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.

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, cycletimes 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 3TM.

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 |
| IRB 120-3.0/0.6 | 580 mm | 3 kg (4 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 me | 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 supervi- sion, 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)

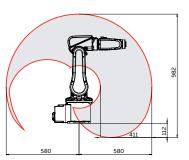
| | IRB 120 | IRB 120T |
|--|---------|----------|
| 25 x 300 x 25 mm | 0.58s | 0.52s |
| 25 x 300 x 25 mm with 180° axis 6 reorientation | 0.92s | 0.69s |
| Acceleration time 0-1m/s | 0.07s | 0.07s |

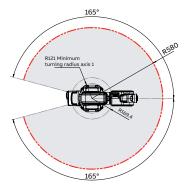
Electrical connections

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| Electrical connections | |
|------------------------|--|
| 200- 600 V, 50-60 Hz | |
| 3.0 KVA | |
| 0.25 kW | |
| | |

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





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1250 Brown Road Auburn Hills, MI 48326 United States

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