Nicolas De Keijser, Product Manager, Small robots

ABB’s smallest robot - IRB 120
For flexible & compact production
Main Features

- Six axis manipulator
- Payload: 3 kg
- Reach: 580 mm
- Fastest 6-axis robot in ABB range
- Accuracy: +/-0.01 mm
- Foot print: 180 mm squared
- Weight: 25 kg
- All mounting positions
- IP 30 as standard
- All motors and cabling enclosed => easy to integrate
- Variant: IRB 120T
- Optional Clean Room ISO Class 5 (IPA certified)
Load diagram with 0.3 kg armload
Up to 3 kg
Load diagram with vertical wrist & no arm-load
Up to 4.2 kg
Working Range at center of 5th axis
Reaching 580 mm
## Working range / Velocity

<table>
<thead>
<tr>
<th>Axis</th>
<th>Range</th>
<th>Max speed (T)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Axis 1 Rotation</td>
<td>+165° to -165 °</td>
<td>250 °/s</td>
</tr>
<tr>
<td>Axis 2 Arm</td>
<td>+110° to -110 °</td>
<td>250 °/s</td>
</tr>
<tr>
<td>Axis 3 Arm</td>
<td>+70° to -110 °</td>
<td>250 °/s</td>
</tr>
<tr>
<td>Axis 4 Wrist</td>
<td>+160° to -160 °</td>
<td>320 °/s (420 °/s)</td>
</tr>
<tr>
<td>Axis 5 Bend</td>
<td>+120° to -120 °</td>
<td>320 °/s (590 °/s)</td>
</tr>
<tr>
<td>Axis 6 Turn</td>
<td>+400° to -400 °</td>
<td>420 °/s (600 °/s)</td>
</tr>
</tbody>
</table>
Performance & Accuracy

- 1 kg picking cycle 25 x 300 x 25 mm
  - IRB 120: 0.58 s
  - IRB 120T = 0.52 s

- Max TCP velocity: 6.2 m/s (calculated)
- Max TCP acceleration: 28 m/s² (calculated)
- Acceleration time 0-1 m/s: 0.07 s (calculated)

- Accuracy: 0.01 mm (repeatability)
IRB 120 T

- Up to 25% improvement in cycle time
- Ideal for pick & place application with extensive re-orientation of the product
- Well suited for pick and packing applications and guided operations with PickMaster 3™
- Very high wrist axis speed
  - Axis 4: 420°/s
  - Axis 5: 590°/s
  - Axis 6: 600°/s
Main Dimensions
Flexible mounting
All angles
Easy to integrate
Customer interfaces

10 x customer signals
49V, 500mA

4 x air
max diameter 4mm
5 bar

• Customer cable to be done by customer
• No brake release on arm but on controller
Easy to integrate
Mounting interfaces

Only 25 kg

4xM5, PCD 31.5
Acc to ISO 9409-1:2004(E)
IRB 120 Clean Room ISO Class 5
Certified by IPA

- Clean room ISO Class 5 certified by IPA according to ISO 14644-1
  - ISO Class 5 at 50% speed
  - ISO Class 4 at 100% speed
- Special 4-layer paint including a varnish clear coat
- Easy to wipe clean
- Unpainted mounting holes
- Unpainted stainless steel mechanical stops
- Special glue-seals to avoid particles generation in sensible area’s
- No external cabling
- Robot entirely wrapped in 2 layers of protective plastic
Segments & application requirements

Summary

- Compact & light weight arm
- Compact & light weight controller
- Best-in class pose & path accuracy
- Flexible mounting – all angles
- Integrated cabling for minimal integration work
- Shortest cycle time
- Optimized payload & reach for small part handling & assembly
- Very compact turning radius
- Smooth surfaces for easy cleaning
- Optional Clean Room ISO class 5
- IRB 120 T variant
Power and productivity for a better world™