IRB 910SC
SCARA Overview
IRB 910 SC

Agenda

1. Differentiated value proposition
2. Overview and vision
3. Main features
4. Payload
5. Working range
6. Performance and accuracy
7. Main dimensions
8. Outline manipulator
9. Degree of protection
10. Easy integration
11. Controller
12. Applications
13. Competitive analysis
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Overview
Differentiated value proposition

"fast, cost-effective and, because it's from ABB, accurate"
Overview and vision

- Original vision
- To fill the gap in our small robot portfolio with a competitive 4 axis robot which could be used in high speed accurate small part assembly, machine tending and general pick and place solutions which would require a compact fast accurate robot
Overview and vision
Primary target markets

3C
- Assembly and test of custom chips, Automated board testing, Aerospace electronic components assembly
- Inspections of PC boards, Automated cleaning of circuit board components

Food packaging
- Meat Packaging, snack packaging, Box cutting and taping, Plastic component packaging
- Meat/snack handling operations, Vegetable picking & cutting, Produce packaging

Medical/ Pharmaceutical
- Ideal for lab automation & drug manufacturing operations
- Custom prescription filling, Tablet packaging
Overview and vision
Target main applications

- Small Parts Assembly
  - Screw driving
  - Inserting
  - Assembly/ disassembly
  - Mounting

- Material Handling
  - Picking and placing
  - Parts transfer
  - Parts handling
  - Sorting

- Inspection
  - Product inspection
  - Testing
  - Quality control
Overview and vision
IRB 910SC vs. IRB 120

IRB 910SC
IRB 910SC offers unmatched four axis performance while still having the power of ABB’s rapid and IRC-5 platform

It has been designed to be lightweight and portable, boasts a small footprint with superior speed and accuracy

IRB 120
IRB 120 offers all the functionality and expertise of the ABB range in a much smaller packaging

Its reduced weight of only 25kg and compact design enables it to be mounted virtually anywhere on the production line, with superior control and path accuracy
Overview and vision
Catch up with competition

- Over 100 SCARA product models offered by major robot manufacturers, including EPSON, KUKA, DENSO, Yaskawa, YAMAHA, Mitsubishi, Staubli, Toshiba Machine, Adept Technology, etc
Overview and vision
SCARA portfolio

Payload (kg)

Reach (mm)

450 mm 550 mm 650 mm

3 kg 6 kg 8 kg

To Be Developed

To Be Developed
## Main features

<table>
<thead>
<tr>
<th></th>
<th>IRB 910SC - 3/ 0.45</th>
<th>IRB 910SC - 3/ 0.55</th>
<th>IRB 910SC - 3/ 0.65</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Payload</strong></td>
<td>Maximum 6kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Reach</strong></td>
<td>450 mm</td>
<td>550 mm</td>
<td>650 mm</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>24.5 kg</td>
<td>25 kg</td>
<td>25.5 kg</td>
</tr>
<tr>
<td><strong>Footprint</strong></td>
<td></td>
<td>160mmx160mm</td>
<td></td>
</tr>
<tr>
<td><strong>Shaft Diameter</strong></td>
<td></td>
<td>20 mm</td>
<td></td>
</tr>
<tr>
<td><strong>Degree of Protection</strong></td>
<td></td>
<td>IP30</td>
<td></td>
</tr>
<tr>
<td><strong>Mounting Position</strong></td>
<td></td>
<td>Table top</td>
<td></td>
</tr>
<tr>
<td><strong>Controller</strong></td>
<td></td>
<td>IRC 5 Compact</td>
<td></td>
</tr>
<tr>
<td><strong>Supply Voltage</strong></td>
<td></td>
<td>200-600 V, 50/60Hz</td>
<td></td>
</tr>
<tr>
<td><strong>Power Consumption</strong></td>
<td></td>
<td>200 W</td>
<td></td>
</tr>
<tr>
<td><strong>Cleanroom</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
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</table>
Payload range
IRB 910SC – 3/ 0.45
Payload range
IRB 910SC – 3/ 0.55
Payload range
IRB 910SC – 3/ 0.65
Work range
IRB 910SC – 3/ 0.55
Work range
IRB 910SC – 3/ 0.65
## Work range

### Axis movement / Maximum speed

<table>
<thead>
<tr>
<th>Axis movement</th>
<th>IRB 910SC-3/0.45</th>
<th>Maximum speed</th>
<th>IRB 910SC-3/0.55</th>
<th>Maximum speed</th>
<th>IRB 910SC-3/0.65</th>
<th>Maximum speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Axis 1 Rotation</td>
<td>±140 deg</td>
<td>415 deg/s</td>
<td>±140 deg</td>
<td>415 deg/s</td>
<td>±140 deg</td>
<td>415 deg/s</td>
</tr>
<tr>
<td>Axis 2 Rotation</td>
<td>±150 deg</td>
<td>659 deg/s</td>
<td>±150 deg</td>
<td>659 deg/s</td>
<td>±150 deg</td>
<td>659 deg/s</td>
</tr>
<tr>
<td>Axis 3 Up/ Down</td>
<td>180mm</td>
<td>1.02m/s</td>
<td>180mm</td>
<td>1.02m/s</td>
<td>180mm</td>
<td>1.02m/s</td>
</tr>
<tr>
<td>Axis 4 Rotation</td>
<td>±400 deg</td>
<td>2400 deg/s</td>
<td>±400 deg</td>
<td>2400 deg/s</td>
<td>±400 deg</td>
<td>2400 deg/s</td>
</tr>
</tbody>
</table>

Disclaimer: The numbers contained herein are provisional and subject to change.
## Performance and accuracy

<table>
<thead>
<tr>
<th>Movement</th>
<th>IRB 910SC - 3/ 0.45</th>
<th>IRB 910SC - 3/ 0.55</th>
<th>IRB 910SC - 3/ 0.65</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working range</td>
<td>Maximum speed</td>
<td>Working range</td>
<td>Maximum speed</td>
</tr>
<tr>
<td>Axis 1 Rotation</td>
<td>±140 deg</td>
<td>415 deg/s</td>
<td>±140 deg</td>
</tr>
<tr>
<td>Axis 2 Rotation</td>
<td>±150 deg</td>
<td>659 deg/s</td>
<td>±150 deg</td>
</tr>
<tr>
<td>Axis 3 Up/ Down</td>
<td>180mm</td>
<td>1.02m/s</td>
<td>180mm</td>
</tr>
<tr>
<td>Axis 4 Rotation</td>
<td>±400 deg</td>
<td>2400 deg/s</td>
<td>±400 deg</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Performance</th>
<th>IRB 910SC - 3/ 0.45</th>
<th>IRB 910SC - 3/ 0.55</th>
<th>IRB 910SC - 3/ 0.65</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 kg Picking Cycle</td>
<td>0.370 s</td>
<td>0.380 s</td>
<td>0.385 s</td>
</tr>
<tr>
<td>Max TCP Velocity</td>
<td>6.2 m/s</td>
<td>6.9 m/s</td>
<td>7.6 m/s</td>
</tr>
<tr>
<td>Max TCP Acceleration</td>
<td>65 m/s^2</td>
<td>60 m/s^2</td>
<td>55 m/s^2</td>
</tr>
<tr>
<td>Acceleration Time 0-1m/s</td>
<td>0.04 s</td>
<td>0.05 s</td>
<td>0.06 s</td>
</tr>
<tr>
<td>Axis 3 (Z stroke) Down Force</td>
<td>250 N</td>
<td>250 N</td>
<td>250 N</td>
</tr>
</tbody>
</table>

### Maximum Speed

<table>
<thead>
<tr>
<th>Axis 1+ Axis 2</th>
<th>6.13 m/s</th>
<th>6.86 m/s</th>
<th>7.58 m/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Axis 3</td>
<td>1.02 m/s</td>
<td>1.02 m/s</td>
<td>1.02 m/s</td>
</tr>
<tr>
<td>Axis 4</td>
<td>2400 deg/s</td>
<td>2400 deg/s</td>
<td>2400 deg/s</td>
</tr>
</tbody>
</table>

### Position Repeatability

<table>
<thead>
<tr>
<th>Axis 1+ Axis 2</th>
<th>±0.015 mm</th>
<th>±0.015 mm</th>
<th>±0.015 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Axis 3</td>
<td>±0.01 mm</td>
<td>±0.01 mm</td>
<td>±0.01 mm</td>
</tr>
<tr>
<td>Axis 4</td>
<td>±0.005 deg</td>
<td>±0.005 deg</td>
<td>±0.005 deg</td>
</tr>
</tbody>
</table>

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Main dimensions
IRB 910SC – 3/ 0.45
Main dimensions
IRB 910SC – 3/ 0.55
Main dimensions
IRB 910SC – 3/ 0.65
Outline manipulator
IRB 910SC three variances comparison

Front view
Side view
Top view
Outline manipulator
IRB 910SC – 3/ 0.55 Vs. IRB 120
## Degree of Protection

**IP 54**

<table>
<thead>
<tr>
<th>Category</th>
<th>First Digit</th>
<th>Second Digit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Solid Foreign Object</td>
<td>Water Ingress Protection</td>
</tr>
<tr>
<td>0</td>
<td>no protection</td>
<td>no protection</td>
</tr>
<tr>
<td>1</td>
<td>protected against solid objects up to 50mm</td>
<td>protected against vertically falling drops of water</td>
</tr>
<tr>
<td>2</td>
<td>protected against solid objects up to 12mm</td>
<td>protected against direct sprays of water up to 15° from the vertical</td>
</tr>
<tr>
<td>3</td>
<td>protected against solid objects over 2.5mm</td>
<td>protected against sprays of water up to 60° from the vertical</td>
</tr>
<tr>
<td>4</td>
<td>protected against solid objects over 1mm</td>
<td>protected against water splashed from all directions</td>
</tr>
<tr>
<td>5</td>
<td>protected against dust</td>
<td>protected against low pressure jets of water from all directions</td>
</tr>
<tr>
<td>6</td>
<td>totally protected against dust</td>
<td>protected against strong jets of water</td>
</tr>
<tr>
<td>7</td>
<td>N/A</td>
<td>protected against immersion</td>
</tr>
<tr>
<td>8</td>
<td>N/A</td>
<td>protected against complete continuous submersion in water</td>
</tr>
</tbody>
</table>

- Cleanroom class: ISO 5
Easy integration
Customer interfaces

<table>
<thead>
<tr>
<th>Position</th>
<th>Connection</th>
<th>Description</th>
<th>Number</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>(R1-R3.CP/CS)</td>
<td>Customer power/signal</td>
<td>10</td>
<td>49V, 500mA</td>
</tr>
<tr>
<td>B</td>
<td>Air</td>
<td>Max. 5 bar</td>
<td>4</td>
<td>Inner hose diameter 4mm</td>
</tr>
</tbody>
</table>
Easy integration
Mounting interfaces
Easy integration
Camera mounting interfaces
The IRC5 Compact controller is a desktop sized robot controller designed for segments such as 3C market. The compact controller protection degree is class IP20.

- Low cost
- Portable (28.5 kg)
- External connectors
- Built-in 16 in /16 out
Customer benefits
Fast and accurate

Shorter cycle time with pin point accuracy gives you a better ROI
Customer benefits
Large working envelope

Enables the best possible use of a compact design which then enables you to handle more tasks in a defined area
Customer benefits
Compact floor Mounting

Smaller cell design better cell layout giving a smaller footprint allowing better use of floor space

Small footprint 160 mm x 160 mm
Lightweight 24.5 kg
Portable
Customer benefits
Three Variants

Common spares and platform across all models. This makes it possible to have less spares for the range.
Customer benefits
Internal Air and signals

There is no need to route cables and air outside the robot, ABB has tested the solution so you don’t need to worry about lifetime of the solution.
Applications
High Speed packing material handling

Material handling
Applications

Inspection
Applications
3C Electronics assembly

Small parts assembly
Summary

- The SCARA is a product designed to be simple to integrate. Cost effective whilst providing a good return on investment. Fast and accurate and very simple structure which makes it easier for first time robotics users.