IRB 920T Introduction

ABB Robotics

Global Product Manager – Small Robots/Darren Hung
Small Robot Updates

IRB 920T Standard Version

Introduction

Target Applications

Unique Functions
IRB 920T Standard Version: Introduction

On average over 14% faster speed bringing productivity into next level

Better productivity with faster speed and higher flexibility

Target markets:
- Auto
- Tier-1
- CSSR
- Electronics
- GI

Target applications:
- Material Handling
- Loading & Unloading
- Assembly & Testing
- Picking & Placing

Wider small robot portfolio to accomplish more applications with bigger business opportunities
IRB 920T Standard Version: Introduction
Class-leading speed in a compact package

IRB 920T SCARA has a faster speed\(^1\) that allows more units to produce given the same time while its slimmer dimension and internal cable routing require less space or concerns over working cell layout design and implementation. Flexibility offered to select more I/O connectors and large air hose on upper arm for sophisticated applications.

**Customer value proposition**

<table>
<thead>
<tr>
<th>Productivity</th>
<th>10% lighter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faster than other SCARA robots and 14% faster than IRB 910SC, increasing output</td>
<td>than other SCARA robots, reducing cell design costs</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Quality</th>
<th>18% energy efficient*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class-leading repeatability for high quality manufacturing</td>
<td>Achieves higher performance whilst consuming the same unit power</td>
</tr>
</tbody>
</table>

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\(^1\) Compared IRB 910SC
## IRB 920T Standard Version: Introduction

### Competitive edges

<table>
<thead>
<tr>
<th>Feature</th>
<th>Advantage</th>
<th>Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reach</td>
<td>450/550/650mm</td>
<td>Best in class</td>
</tr>
<tr>
<td>No External Cabling</td>
<td>No external cable</td>
<td>Best in class</td>
</tr>
<tr>
<td></td>
<td>tube routing</td>
<td></td>
</tr>
<tr>
<td>Speed</td>
<td>0.29~0.30 sec.(^1)</td>
<td>Leading in class</td>
</tr>
</tbody>
</table>

\(^1\) Cycle time of 25mm-300mm-25mm motion pattern with optimized setup
## IRB 920T Standard Version: Introduction

### Competitive edges

<table>
<thead>
<tr>
<th>Feature</th>
<th>Advantage</th>
<th>Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Integrated Signal Supply</strong></td>
<td><strong>Best in class</strong></td>
<td></td>
</tr>
<tr>
<td>C1: 12 Wires (30V 1.5A)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C2: 8 Wires (30V 1A or 1 Gbits/s)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Integrated Air Supply</strong></td>
<td><strong>Best in class</strong></td>
<td></td>
</tr>
<tr>
<td>Ø6x2+Ø4x2 (Max. 6 bar)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Light Weight</strong></td>
<td><strong>Best in class</strong></td>
<td></td>
</tr>
<tr>
<td>5%~10% Lighter</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
IRB 920T Standard Version: Introduction

Extended stroke as an option

120mm longer stroke to support more applications which require z-dimension reachability
IRB 920T Standard Version: Introduction

Outstanding performance

## Specifications

<table>
<thead>
<tr>
<th>Robot version</th>
<th>IRB 920T-6/0.45</th>
<th>IRB 920T-6/0.55</th>
<th>IRB 920T-6/0.65</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reach (m)</td>
<td>0.45</td>
<td>0.55</td>
<td>0.65</td>
</tr>
<tr>
<td>Max. Payload (kg)</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Number of axes</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protection</td>
<td>IP30 (Standard)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mounting</td>
<td>Floor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Controller</td>
<td>Omnicore</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integrated signal and power supply</td>
<td>20 Signals on wrist (Optional)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integrated air supply</td>
<td>Φ6 x 2 + Φ4 x 2 air on wrist (Max. 6 Bar) (Optional)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integrated ethernet</td>
<td>One 1000 Base-T ethernet port (Optional)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Performance (according to ISO 9283)

<table>
<thead>
<tr>
<th>Metric</th>
<th>IRB 920T-6/0.45</th>
<th>IRB 920T-6/0.55</th>
<th>IRB 920T-6/0.65</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repeatability, RP (mm)</td>
<td>0.01mm</td>
<td>0.02mm</td>
<td>0.02mm</td>
</tr>
<tr>
<td>1 kg picking cycle</td>
<td>25 x 300 x 25 mm^1</td>
<td>0.30s</td>
<td>0.29s</td>
</tr>
</tbody>
</table>

### Physical

<table>
<thead>
<tr>
<th>Metric</th>
<th>IRB 920T-6/0.45</th>
<th>IRB 920T-6/0.55</th>
<th>IRB 920T-6/0.65</th>
</tr>
</thead>
<tbody>
<tr>
<td>Robot base</td>
<td>170x193mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Robot weight (kg)</td>
<td>22</td>
<td>23</td>
<td>24</td>
</tr>
</tbody>
</table>

^1 Cycle time for 25mm-300mm-25mm motion pattern with optimized setup
IRB 920T Standard Version: Introduction

Customer interfaces

A. 12 x customer signals 30V, 1.5A
B. 8 x customer signals 30V, 1A or 1Gbits/s
C. 4 x air, 6bar (outer hose diameter 6mm x 2 + outer hose diameter 4mm x 2)
D. Brakes Release (axis 3 and 4)
E. Lamp
IRB 920T Standard Version: Introduction
IRB 920T design concept

Front View

- Easier to change battery
- No need to replace grease/lubrication
- Flexible to do layout with fewer inference of floor cable

Side View

- The upper arm are shared across three variants
- Screw holes on the side for application use
- It is reachable for TCP to move below the base plate

Top View

- Lamp as option
- Easier maintenance

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## IRB 920T Standard Version: Introduction

Smaller and Yet Perform Better

### Advantages
- Over 14% faster speed\(^1\)
- No external tube cabling design
- A wide variety of 3 variants in 450/550/650mm reaches
- Over 18% more energy efficiency\(^1\)
- Over 5% weight reduction\(^1\)
- Double the number of I/Os connection\(^1\)
- IP30, IP54 and Clean Room support\(^2\)

### Benefits
- Higher productivity given short cycle time
- No worries over external cable interference
- Flexibility to fit in application with adequate reach selection
- Friendly for environmental sustainability
- Lighter weight to mitigate impact over shop floor design
- Up to 20 I/Os for more sophisticated applications
- More options for various occasions such as harsh and clean environment

\(^1\) In comparison with IRB 910SC
\(^2\) IP54 and clean room as option in the 2nd wave
IRB 920T Standard Version: Target Applications
Targeted Industry: Solution for All Business Lines

Electronics

General Industry
# IRB 920T Standard Version: Target Applications

Typical application requirement and IRB 920T fits

<table>
<thead>
<tr>
<th>Application</th>
<th>Payload &amp; Reach</th>
<th>Accuracy &amp; Repeatability</th>
<th>Speed</th>
<th>Protection</th>
<th>Motion Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loading &amp; Unloading</td>
<td>🟢🟢🟢🟢</td>
<td>🟢🟢🟢🟢</td>
<td>🟢🟢🟢🟢</td>
<td>🟢🟢🟢🟢</td>
<td>🟢🟢🟢🟢</td>
</tr>
<tr>
<td>Assembly</td>
<td>🟢🟢🟢🟢</td>
<td>🟢🟢🟢🟢</td>
<td>🟢🟢🟢🟢</td>
<td>🟢🟢🟢🟢</td>
<td>🟢🟢🟢🟢</td>
</tr>
<tr>
<td>Picking &amp; Placing</td>
<td>🟢🟢🟢🟢</td>
<td>🟢🟢🟢🟢</td>
<td>🟢🟢🟢🟢</td>
<td>🟢🟢🟢🟢</td>
<td>🟢🟢🟢🟢</td>
</tr>
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</table>

- 6kg/450mm
- 6kg/550mm
- 6kg/650mm

IP 30
Clean Room ISO 4/5
IP54

2nd wave release!
Universal connectors and air hoses

Supporting universal M12 connectors up to 24 I/O connectors as option on the upper arm

Supporting up to \( \Phi 6 \) air hoses as option on the upper arm

IRB 1300 supports up to 9 air hoses as option on the upper arm\(^1\)
ABBB Unique Function – ESD Compliant

Comply IEC 61340-5-1 & ANSI ESD S20.20 directive

1. Mechanical Design
   High quality metal structure design guarantees good conductivity without residual charges

2. Grounding
   Well-grounded body ensures way to quickly discharge

3. ESD Testing
   Certify resistance measurement test

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New Generation OmniCore Controller
Will unleash new levels of value

Customer value proposition

**Productivity**
Best-in-class motion control, cycle times, and path accuracy

**Sustainability**
Lower power consumption\(^1\) to save 20% energy

**Scalable, tailored**
1000+ functions, wide variety of controllers and applications to fit all needs

**Next-level digital**
Cyber-secure out-of-box connectivity enables higher uptime and better productivity

\(^1\) compared to IRC5