IRBT 2005: Medium Track Platform Overview
IRBT 2005
Agenda

- Overview
- Differentiated Value Proposition
- Targeted Applications
- Customer Benefits
- Design
- Options
- Technical Features
- Summary
A new modular platform for medium track motion for

- Medium size robots
- Handling applications (up to 1.2 tons)

High degree of modularity.

- Different process applications
- Different robots or fixture transfer
- Different travel length
- Optimize performance based on actual load via dynamic model
- Flexibility to add functionality or extend working range also at a later stage
Differentiated value proposition
IRBT 2005: Medium Track Motion

The only track motion platform on the market to guarantee high speed and precision accuracy, the IRBT 2005 from ABB offers greater flexibility and up to 50% shorter cycle times.
Targeted applications
Robot solutions

The IRBT 2005 is designed to handle a number of robot applications like:

- Material Handling
- Machine Tending
- Arc Welding
- Sealing / Dispensing

Applications that require both speed and/or accuracy will benefit from the system`s design.

The robot system can also be combined with IRBT 2005 and other accessories like positioners.
Targeted applications
Transfer solutions

The IRBT 2005 is designed to fit a number of transfer applications like:

- Indexing different fixtures into automation cell
- Transfer material, like car bodies between different working stations

The concept is prepared to be modular build up to 100 m long

Performance will be optimized based on actual load for each part of the cycle
Customer benefits

- **Performance**
  Unique dynamic model which optimize movement of IRBT2005 according to the payload

- **Modularity**
  Fast to produce, easy to transport and prepared for rebuild, each carriage configured separate gives combination possibilities

- **Small foot print**
  Minimized “dead zone”, maximize useful travel length

- **Low life cycle cost**
  High performance, easy to start up, high reliability
Customer benefits

- Critical building blocks are well protected motor, linear guides, cable connections and the internal built cable chain – empty external cable chain as option.

- Simplified installation Software and hardware. Includes adjustable feet

- Short delivery time

- Standard product support (One-stop-shop)
Customer benefits

- Prepared for different applications
- **High reliability**
  Low maintenance need thanks to choice of robust components which are build in and well protected, built in lubrication system, easy to repair thanks to modular design
- **Supports different layout needs**
  Different length, double carriage, mirrored version, pedestals, transfer solution
- **Common platform** for a medium size robots minimize number of spare parts and improves flexibility for future changes.
- Support offline programming
Design
Basic concept

- A smart compact design made of modules of 1 meter length with symmetrical profile

- Characteristics of design are:
  - Integrated motor
  - Integrated cable chain
  - Protected guide rails and rack
  - Centered robot on carriage
Design
Basic Concept

Standard module 1 m length
Made of one single cast part

Standard end cover

Unique design for the connection between modules and the mechanical end stop

Mechanical end stop

Integrated leveling feet

Connecting elements
### Design Dimensions

- **Floor mounted**
- **Modular concept**
  - 1 m sections
  - Standard and covered version
  - Robot and transfer track
- **Lengths – Travel length**
  - Shortest standard length **2,23m → 0,8m** Travel length
  - Longest standard length **21,23m → 19,8m** Travel length
  - (Transfer track up to 100 m, *ordered in sections, each carriage travel max 19,8 m*)

Minimum track length and maximum travel length are depending the number of carriages.
Options
Supported robots

- IRB1520
- IRB1600
- IRB2600
- IRB4600
  - IRB 4600 with restrictions on:
    - Performance
    - Pedestal heights
    - Additional load
Options
Modular
Options
Many combinations possible
Options
Track type: robot or transfer, carriage quantity

Robot Track
1 or 2 carriages

Transfer Track
1, 2 or 3 carriages
Options
Cover: standard and covered

Standard version
- Rails and rack covered

Covered version (optional)
- Rails, rack, cable chain covered
Options

Additional plate for robot

Additional plate
Mounted opposite to travel direction
(For AW or other application)

Basic plate for all robot variants
Pedestal could be added

Additional holes for accessories
Options
Standard robot pedestals

- **250 mm pedestal**
  - IRB 1520
  - IRB 1600
  - IRB 2600
  - IRB 4600

- **500 mm pedestal**
  - IRB 1520
  - IRB 1600
  - IRB 2600

- **750 mm pedestal**
  - IRB 1520
  - IRB 1600
  - IRB 2600

- **1000 mm pedestal**
  - IRB 1520
  - IRB 1600
  - IRB 2600

2 height standard robot pedestals
- 250 mm
- 500 mm

2 combinations
- 750 mm (250 + 500 mm)
- 1000 mm (500 + 500 mm)
Options
External cable chain for robot

External empty cable chain
On side of carriage’s openings for cables

Mounting: Standard or Mirrored
Carriage: single or with additional plate

490mm exceeds the end of track with simple carriage plate
Options
Internal cable packages

Internal cable chain of IRBT 2005 is delivered prepared with the suitable cables for

- Robots IRB 1520 / 1600 / 2600 / 4600
- ABB Torch Service Center: TSC, TS96, Bulls Eye
- Arc Welding Power Source: Interface box / AristoMig 5000i / S-400 / P-250
- Customer Power/Signal cables Parallel / DeviceNet / Profibus / Ethernet/Profinet
## Options Summary

<table>
<thead>
<tr>
<th>Options</th>
<th>IRBT 2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Track type</td>
<td>Robot or Transfer</td>
</tr>
<tr>
<td>Carriages</td>
<td>1 to 2 for Robot, 1 to 3 for Transfer</td>
</tr>
<tr>
<td>Track length</td>
<td>2 to 21 modules of 1m length</td>
</tr>
<tr>
<td>Track travel direction</td>
<td>Standard or Mirrored</td>
</tr>
<tr>
<td>Track version</td>
<td>Standard or Covered</td>
</tr>
<tr>
<td>Extension module for transfer</td>
<td>2 to 21 modules of 1m length, 1 to 3 transfer carriage</td>
</tr>
<tr>
<td>Additional carriage plate</td>
<td>For each robot carriage</td>
</tr>
<tr>
<td>Robot Orientation Robot Pedestals</td>
<td>0°, 90°, 180°, 270° 250mm to 1000mm (limited to 250mm for IRB4600)</td>
</tr>
<tr>
<td>External cable chain</td>
<td>For each robot carriage</td>
</tr>
<tr>
<td>Internal cables packages</td>
<td>Robot cables, TSC, Arc Welding power source, CP/CS</td>
</tr>
</tbody>
</table>
Technical features
Integrated leveraging feet

- Ease the levelling adjustment
- Allow to guide when drilling whole
- Avoid moving the whole track to put anchors M16.
- Require specific tools for adjustment.
Technical features
Surface treatment on covers

A coarse paint covers the cover plates to avoid slipping
## Technical features

### Performance

<table>
<thead>
<tr>
<th>Feature</th>
<th>IRBT 2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload</td>
<td>1200 kg</td>
</tr>
<tr>
<td>Speed</td>
<td>2 m/s</td>
</tr>
<tr>
<td>Acceleration</td>
<td>2,5 m/s² → 4 m/s² payload &lt; 600kg</td>
</tr>
<tr>
<td>Repeatability</td>
<td>≤ ± 0.05mm</td>
</tr>
<tr>
<td>Width</td>
<td>700mm → 1048mm with external cable chain</td>
</tr>
<tr>
<td>Height</td>
<td>435mm → 490mm with external cable chain</td>
</tr>
<tr>
<td>Weight</td>
<td>636 kg → 4992 kg</td>
</tr>
<tr>
<td>Temperature</td>
<td>+5°C C (41°F) to +40°C C (122°F)</td>
</tr>
<tr>
<td>IP Protection</td>
<td>IP65</td>
</tr>
</tbody>
</table>
Summary

- The IRBT 2005 is a unique platform solution that offers a number of values:
  - Unique performance in terms of speed and accuracy adopting to actual payload. Seamless integration with the robot system using the TrueMove and QuickMove features.
  - A modularity concept with to give flexibility in all product lifetime stages.
  - A high number of standard options to help customizing to each given configuration need.
  - Supported via ABB’s global network.
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