

IRB 1010

Enhanced productivity in extraordinary narrow space



A small robot with a big performance designed to meet the trend towards the manufacture of miniaturized electronics and wearable devices. With the highest payload of 1.5kg, class-leading precision 0.01mm, and 30% smaller size, the IRB 1010 allows for the highest productivity and high-quality manufacturing.

Consumer demand for smart and wearable devices such as sensors, watches, earphones, glasses, sport, and health trackers, is growing at a rapid-fire pace around the world. Products are smaller and lighter than before. Manufacturers need a smaller robot with higher performance. ABB's smallest ever industrial robot, the IRB 1010 is designed to meet this demand by enabling fast and accurate handling of complex manufacturing processes involving small and delicate components.

The IRB 1010 is also an ideal solution for educational applications. Its compact design makes it suitable for installation on classroom desktops, while its ease-of-use enables both teachers and students to quickly master the skills needed for programming and operation.

Key benefits

- **ABB's smallest industrial robot:** With a 30% smaller* size, IRB 1010 enables it to be installed in even the tightest production spaces, including as part of special purpose machines, accommodating high-density factory layouts and enabling more production by fully utilizing available space.
- **Highest payload for enhanced productivity:** With its class-beating payload of 1.5kg, the IRB 1010 can handle more objects than other lighter payload robots in its class in less time, increasing throughput and productivity.
- **6 brake systems for no production delays:** The inclusion of 6 brake systems enables the robot arm to remain in-situ even when the robot is shut down or paused. With no time needed for the arm to recover its position, the IRB 1010 can resume production faster, delivering higher productivity than other robots in its class.

- **Class-leading precision:** Unmatched position and path repeatability of 0.01mm enable accurate and high-quality manufacturing.
- **Powered by OmniCore:** E10 ultra-slim controller offers best-in-class motion control, 20 percent energy savings (compared with ABB's IRC5 controller) and futureproofing through built-in digital connectivity and 1000+ additional functions to meet changing requirements. The best repeatability is achieved by best-in-class motion control.
- **Added vacuum suction for improved handling:** The larger diameter (Φ4mmx 2 pieces) of the upper arm air hose provides additional power for vacuum suction, making it possible to handle more objects simultaneously and increasing the number of items that can be handled per hour, enabling the IRB 1010 to offer higher productivity than other robots in its class.
- **Simple programming with Robot Control Mate:** Enables users to move, teach and calibrate IRB 1010 from their computers or smart devices such as tablets in real-time, making it easier than ever to control a robot's movements.

* Compared with IRB 120.

Applications:

Material handling, picking and placing, film peeling, bending, and assembly

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Specification

Robot version	Reach (m)	Payload (kg)	Armload (kg)
IRB 1010-1.5/0.37	0.37	1.5	0.2
Number of axes	6		
Protection	IP40		
Mounting	Floor, Ceiling		
Controller	OmniCore E10		
Integrated signal and power supply	12 Signals on wrist ¹		
Integrated air supply	2 air on wrist (Max. 6 Bar) ¹		

¹ There are some reachable space limitation when the payload/pose is tough.

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Performance (according to ISO 9283)

	IRB 1010-1.5/0.37
Pose repeatability, RP	0.01 mm
Pose stabilization time, PSt (s) within 0.1 mm of the position	0.04
Path repeatability, RT	0.01 mm

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Performance

	IRB 1010-1.5/0.37
1 kg picking cycle	
25 x 300 x 25 mm	0.54

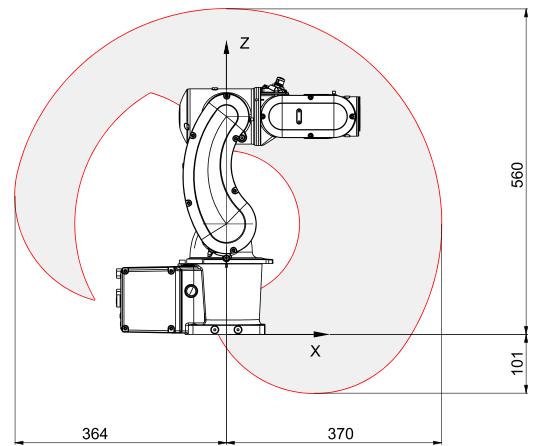
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Physical

Robot base (mm)	135x250
Robot weight (kg)	13.5

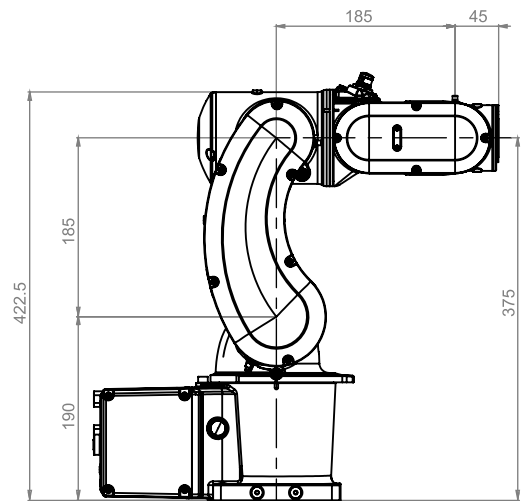
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Movement

Axis movement	Working range	Axis max speed (°/s)
Axis 1	+170 to -170	320
Axis 2	+125 to -75	320
Axis 3	+50 to -180	375
Axis 4	+170 to -170	500
Axis 5	+125 to -125	470
Axis 6	+360 to -360	500

Working range, IRB 1010-1.5/0.37



Dimension, IRB 1010-1.5/0.37

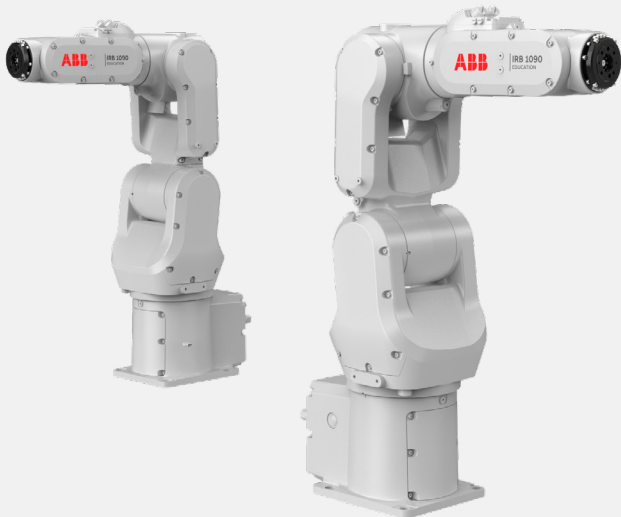


OmniCore E10 ultra slim controller



IRB 1090 industrial education robot

Exclusively designed for educators and students



IRB 1090 industrial education robot is designed exclusively for educators and students to prepare the next generation for their future employment. The future-proof IRB 1090 education robot together with the OmniCore controller, allows students to gain industry-relevant robotic and automation skills, learn about the latest functions, and prepare for their future careers.

Join the future of education with the IRB 1090! Elevate your teaching, inspire your students, and embrace a new era of educational excellence.

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How do we prepare the future workforce?



Industry-relevant skills

Educating how robotic automation can be deployed across different sectors, such as automotive, electronics, food & beverage.



New production techniques

OmniCore controller brings increasing functionalities.



Programming skills

100 free RobotStudio® premium licenses included with the purchase of the IRB 1090 robot.



Design varied educational cells

Educational institutions can design or customize any educational cells as whatever they want.



Future of work

Bridge the skills gap, empower educators, and create careers born out of curiosity.



Authenticated by STEM.org

Designed to empower students with a distinct edge in future employment endeavors.



Elevate your teaching, inspire your students

80% of education professionals have said robots and automation will shape the future of employment over the next ten years. Responding to growing demand in education, the IRB 1090 education robot is designed exclusively for educators and students to gain industry-relevant robotic and automation skills that are important to their future careers.

The latest functionality

The future-proof IRB 1090 industrial education robot together with the OmniCore E10 ultra slim controller, brings increasing functionalities to enable students to hone their skills on the latest production techniques on the market such as motion control, TrueMove, QuickMove, Externally Guided Motion, and energy-saving power grid feedback solutions. This includes various software packages, such as Wizard easy programming, Robot Control Mate and RobotStudio AR Viewer App.

Varied educational cells

Educational institutions, robot resellers, and system integrators can design and customize a variety of application cells, such as assembly, material handling, inspection, and packaging. This can include different accessories such as vision cameras, grippers, working pieces, pedestals, and moveable carts to meet specific requirements.

Easy to move and install

The IRB 1090 offers 580mm reach and 3.5kg payload, coupled with a 10% smaller footprint and 20% reduction in weight compared to its predecessor, providing the ability to easily move the robot, and save on installation space.

Authenticated by STEM.org

The IRB 1090 education robot, equipped with the prestigious STEM.org authentication, is designed to empower students, providing them with a distinct edge in future employment endeavors.

100 free RobotStudio licenses

100 free RobotStudio premium licenses are included with the purchase of the IRB 1090 robot. Any teacher at a school can get 100 free RobotStudio licenses to use in their classroom. RobotStudio is a virtual tool that students can use to learn the fundamentals of robot programming, even before buying a physical robot.

Diverse applications

Students can learn diverse applications such as:

- Assembly
- Picking/Placing
- Material Handling
- Packaging
- Testing

Specification

Robot version	Reach (m)	Payload (kg)	Armload (kg)
IRB 1090-3.5/0.58	0.58	3.5	0.5
Number of axes	6		
Protection	Standard IP40.		
Mounting	Floor mounted, Suspended ¹		
Controller	OmniCore E10		
Integrated signal and power supply	Up to 16 Signals (C1+C2) on wrist ²		
Integrated air supply	4 air on wrist (Max. 6 Bar) ²		
Integrated ethernet	One 1000 Base-T ethernet Port ²		

¹ There are some reachable space limitation when the payload/pose is tough

² Optional

Performance

IRB 1090-3.5/0.58	
1 kg picking cycle	0.76 s
25 × 300 × 25 mm	

Performance (according to ISO 9283)

IRB 1090-3.5/0.58	
Pose repeatability, RP	0.05 mm
Pose stabilization time, PSt (s) within 0.1 mm of the position	0.2
Path repeatability, RT	0.05 mm

Technical information

Physical

Dimensions robot type	160 × 172 mm
Weight IRB 1090	21 kg

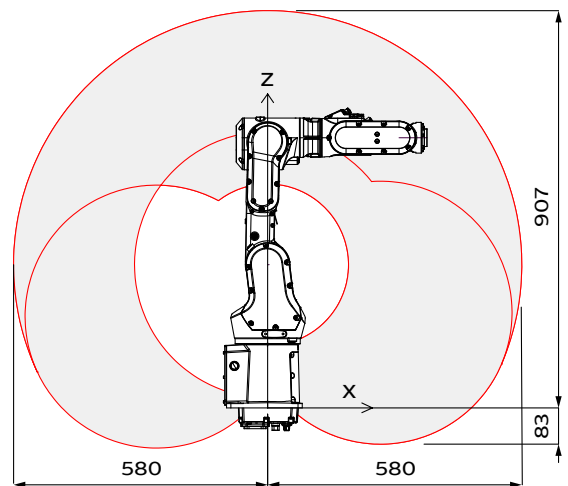
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Movement

Axis movement	Working range	Axis max. speed IRB 1090-3.5/0.58
Axis 1 rotation	+230° to -230°	250°/s
Axis 2 arm	+113° to -115°	250°/s
Axis 3 arm	+55° to -205°	250°/s
Axis 4 wrist	+230° to -230°	320°/s
Axis 5 bend	+120° to -125°	320°/s
Axis 6 turn	+400° to -400°	420°/s

Specifications subject to change without notice

Working range, IRB 1090-3.5/0.58



OmniCore™ Controller, FlexPendant & IRB 1090 Education



IRB 1100

The most compact and fast robot ever



Further expanding ABB's small robot portfolio, IRB 1100 provides 35% increased productivity and up to 10% space savings.

Class-leading performance for high-quality manufacturing

Aimed at increasing manufacturing productivity, IRB 1100 provides up to 35% faster cycle times and best-in-class repeatability for high quality manufacturing. IRB 1100 consistently outperforms similar robots in terms of payload and position repeatability (RP) even when under space constraints. Indeed, IRB 1100 offers the highest payload for a robot of its class.

Compact and small footprint design ensures flexible installation

Compared to the previous generation, the IRB 1100 robot design was optimized with a 10% smaller footprint and over 20% weight reduction for space-efficient installation in diverse environments, such as electronics manufacturing factories.

The small footprint allows multiple robots to be deployed simultaneously in order to collaboratively perform automation operations, enabling more flexible handling for heavy-load operations with complex tools/end effectors.

Powered by ABB's new OmniCore™ controller, IRB 1100 is equipped with advanced motion control capabilities, making it ideal for supporting rapid assembly, pick-and-place, and material handling applications.

Rugged yet compact IP67 rated

The IRB 1100 has IP40 as standard protection and IP67 as option. The entire robot is designed to be IP67 compliant according to IEC 60529 - from base to wrist, which means that the electrical compartments are sealed against water and solid contaminants.

Cleanroom ISO 4

IRB 1100 Cleanroom version provides lower production costs to industries requiring minimal environmental pollutants.

Key benefits

- Offers 35% faster cycle times for increased productivity
- 10% smaller footprint and over 20% weight reduction for easy installation
- The highest payload for a robot of its class
- Equipped with up to 16 I/O connections (C1+C2) for more sophisticated/ complex applications

Main applications

- Assembly & Testing
- Loading & Unloading
- Screw driving
- Rubber insertion
- Polishing, grinding, buffing, deburring and sanding

Specification

Robot version	Reach (m)	Payload (kg)	Armload (kg)
IRB 1100-4/0.475	0.475	4	0.5
IRB 1100-4/0.58	0.58	4	0.5
Number of axes	6		
Protection	Standard IP40. Option IP67.		
Cleanroom	Option ISO 4		
Mounting	Any angle ¹		
Controller	OmniCore E10, C30, C90XT		
Integrated signal and power supply	Up to 16 Signals (C1+C2) on wrist ²		
Integrated air supply	4 air on wrist (Max. 6 Bar) ²		
Integrated ethernet	One 1000 Base-T ethernet Port ²		

¹ There are some reachable space limitation when the payload/pose is tough.

² Optional

Performance (according to ISO 9283)

	IRB 1100-4/0.475	IRB 1100-4/0.58
Pose repeatability, RP	0.01 mm	0.01 mm
Pose stabilization time, PSt (s) within 0.1 mm of the position	0.08	0.19
Path repeatability, RT	0.05 mm	0.05 mm

Performance

	IRB 1100-4/0.475	IRB 1100-4/0.58
1 kg picking cycle		
25 x 300 x 25 mm	0.42 s	

Physical

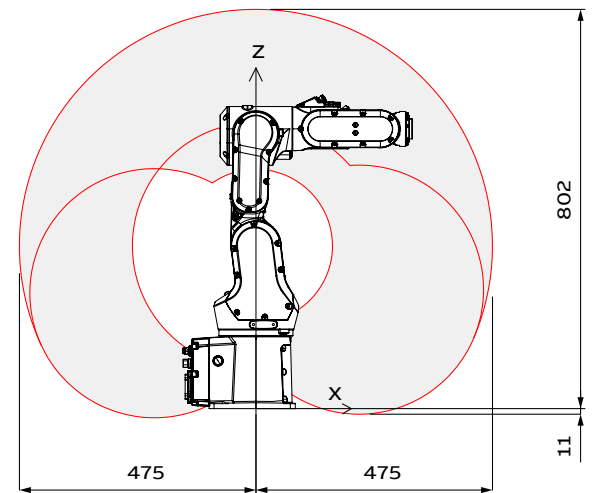
Dimensions robot type	160 x 172 mm
Weight IRB 1100	21 kg

Movement

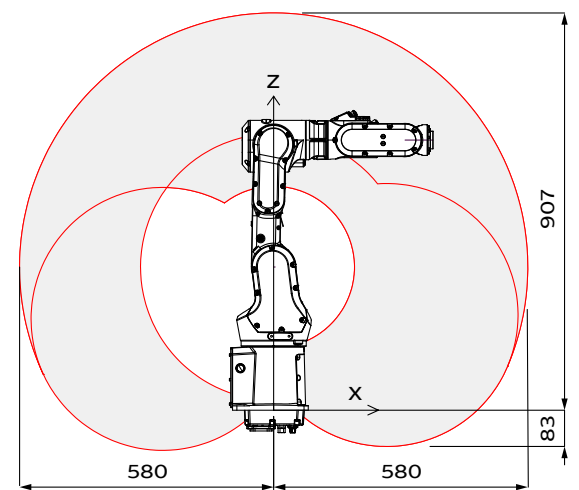
Axis movement	Working range	Axis max. speed IRB 1100-4/0.475	Axis max. speed IRB 1100-4/0.58
Axis 1 rotation	+230° to -230°	460°/s	460°/s
Axis 2 arm	+113° to -115°	380°/s	360°/s
Axis 3 arm	+55° to -205°	280°/s	280°/s
Axis 4 wrist	+230° to -230°	560°/s	560°/s
Axis 5 bend	+120° to -125°	420°/s	420°/s
Axis 6 turn	+400° to -400°	750°/s	750°/s

Specifications subject to change without notice.

Working range, IRB 1100-4/0.475



Working range, IRB 1100-4/0.58



OmniCore™ Controller, FlexPendant & IRB 1100



IRB 1200

A compact, flexible, fast and functional small industrial robot



Have you ever wanted to make your machines 15% smaller and 10% faster? ABB's IRB 1200 allows you to do exactly that. Specifically, it addresses the needs of material handling and machine tending applications for flexibility, ease of use, compactness and short cycle times while still maintaining large working envelopes.

The IRB 1200 comes in three variants -7 kg/0.9 m, 7 kg/0.7 m, 5 kg/0.9 m. All IRB 1200 variants can be mounted at any angle and come with IP 40 protection as standard. These variants are available with Food Grade Lubrication, Foundry Plus 2, and Cleanroom options.

Food Grade Lubrication option

This option features food grade lubrication on all axes, wrist flanges, motor covers, and IP67 protection against dust and liquid. NSF H1 food-grade lubrication throughout is designed to meet the constraints of food and beverage applications.

Foundry Plus 2 option

The Foundry Plus 2 option enables the robot to withstand harsh environments and meets the requirements for use in metal die casting, sand casting, forging, and machining applications. The Foundry Plus 2 is IP67 compliant from base to wrist, meaning that the robot's electrical compartments are sealed against liquid and solid contaminants.

Cleanroom option

This option means that the cleanroom robot is sealed, which reduces particle contamination and prevents grease and oil leakage into production areas for products and devices such as electronics, pharma, and lab automation. The cleanroom robot is ISO 14644-1 Class 3 certified, making it ideal for

manufacturing settings requiring exceptional cleanliness and minimal particle emission, all while maintaining top-notch speed and performance.

Compact

The IRB 1200 has no offset in axis two, which results in a longer stroke than other small robots and it, meaning it can be placed very close to the work piece and still be functional. This allows for a much more compact installation when the robot is mounted on the ceiling inside a small cell, such as in electronics machining or polishing applications. The robots' large useable working area contained in a small package leads to shorter cycles and more compact machines.

Features and benefits

- 15% smaller cells that have 10% shorter cycle times
- Available with Food Grade Lubrication
- Optionally with SafeMove functionality
- Available with Foundry Plus 2 protection for harsh environments
- IP40 protection as standard; cleanroom, IP67 and Foundry Plus 2 protection are also available options
- 4 air ducts, 10 customer signals and Ethernet routed internally from wrist flange to foot
- Mountable at any angle
- Large useable working area in a compact footprint

Specification

Robot version	Reach (m)	Payload (kg)	Armload (kg)
IRB 1200-7/0.7	0.7	7	0.3
IRB 1200-5/0.9	0.9	5	0.3
IRB 1200-7/0.9	0.9	7	0.5
Number of axes	6		
Protection	Standard IP40 Option IP67 and Foundry Plus 2		
Cleanroom	Option ISO class3		
Food Grade Lubricant	Option, only available with IRC5		
Mounting	Any angle		
Controller	OmniCore E10, C30, C90XT, IRC5 Compact/IRC5 Single Cabinet		
Integrated signal and power supply	10 signals on wrist		
Integrated air supply	4 air on wrist (5 Bar)		
Integrated ethernet	One 100/10 Base-TX ethernet port		

Performance (according to ISO 9283)

	IRB 1200-7/0.7	IRB 1200-5/0.9	IRB 1200-7/0.9
1 kg picking cycle			
25 x 300 x 25 mm	0.4s	0.41s	0.41s
Max. TCP Acceleration	35 m/s*s	36 m/s*s	36m/s*s
Acceleration time 0-1 m/s	0.06 s	0.06 s	0.06 s
Position repeatability	0.02 mm	0.025 mm	0.025 mm

¹ based on OmniCore E10

Technical information

Electrical Connections

Supply voltage	200-600 V, 50-60 Hz
Rated power transformer rating	4.5 kVA
Power consumption	0.39 kW

Physical

Robot base	210 x 210 mm
Robot height	
IRB 1200-7/0.7	869 mm
IRB 1200-5/0.9	967 mm
IRB 1200-7/0.9	967 mm
Robot weight	
IRB 1200-7/0.7	52 kg
IRB 1200-5/0.9	54 kg
IRB 1200-7/0.9	54 kg

Environment

Ambient temperature for robot manipulator	
During operation	+ 5°C (41°F) to + 45°C (113°F)
With food grade lubrication during operation	+ 5°C (41°F) to + 35°C (95°F)
Complete robot during transportation and storage	- 25°C (-13°F) to + 55°C (131°F)
During short periods (max. 24 hours)	up to + 70°C (158°F)
Relative humidity	Max. 95%
Noise level	< 70 dB

Data and dimensions may be changed without notice.

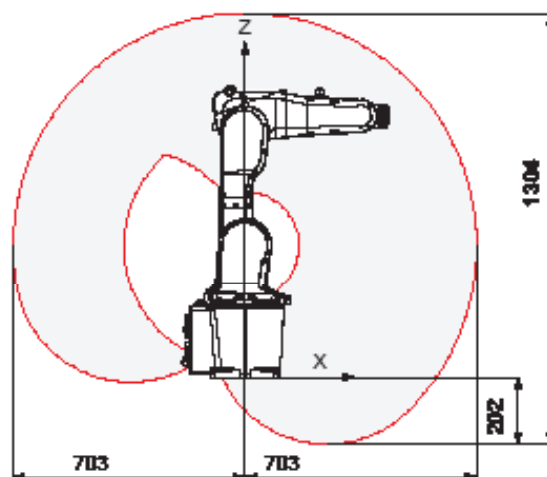
Movement

Axis movement	Working range	Axis max. speed
Axis 1 rotation	+170° to -170°	288°/s
Axis 2 arm	+135° to -100° ²	240°/s
Axis 3 arm	+70° to -200°	297°/s
Axis 4 wrist	+270° to -270°	400°/s
Axis 5 bend	+130° to -130°	405°/s
Axis 6 turn	Default: +400° to -400° Max. rev: ±242	600°/s

² Axis 2 for IRB1200-5/0.9 and IRB1200-7/0.9 is +130° to -100°

* IRB1200-7/0.9 Wall mounted robot has a work area for axis 1 that depends on payload and the positions of other axes. Simulation in RobotStudio is recommended

Working range, IRB 1200 7/0.7



Working range, IRB 1200 5/0.9 and IRB 1200-7/0.9

