

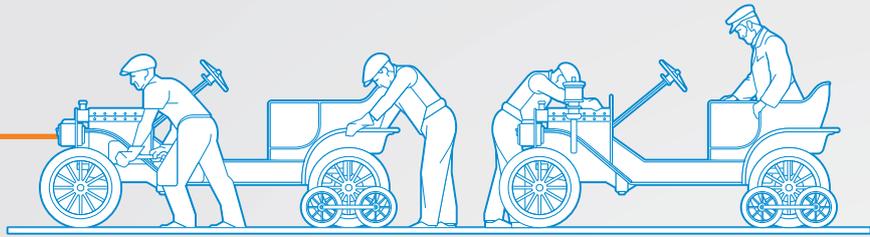
Robotics

Product Range
Improving productivity,
quality and workplace safety

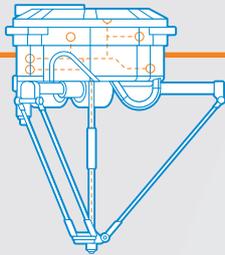
Index

4	The history of ABB robots
6	Customer Service
8	Robots
24	Controllers
26	Track Motions
27	Positioners
32	Application equipment
42	Modular solutions
44	Paint robots
48	Painting equipment
51	Standard Arc Welding cells
54	Software products: RobotWare
56	Application software
58	Software products: RobotStudio®

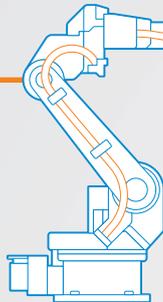
Before robots



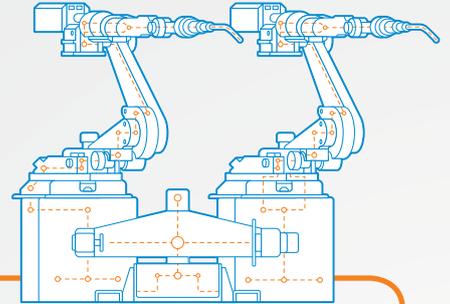
After robots



- Improved safety
- Increased flexibility
- Reduced waste

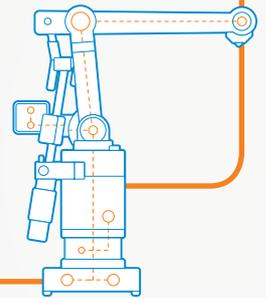


- Improved product quality
- Increased productivity
- Reduced operating costs



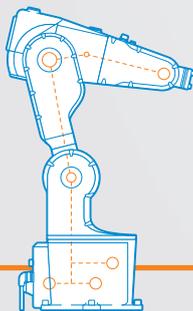
- Improved efficiency
- Increased product consistency

In 1974, the IRB 6 was the start of it all: The world's first microprocessor controlled, electrically-driven industrial robot became commercially available.



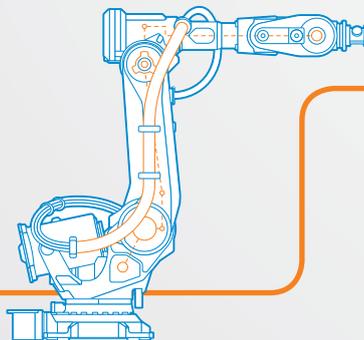
Becoming more useful

Over time, we developed robots for more and more industries and purposes, bringing the benefits of robots to anyone who needs them.



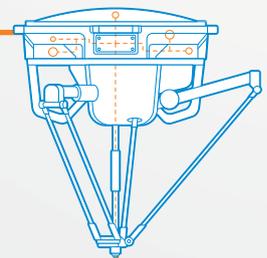
Small robots

For the delicate, fast and flexible tasks



Large heavy duty robots

For those applications that require the ultimate in strength and reach



IRB 360 Flexpicker™

For high, speed, picking and packing

Palletizing robots

For loading a pallet as quickly and accurately as possible

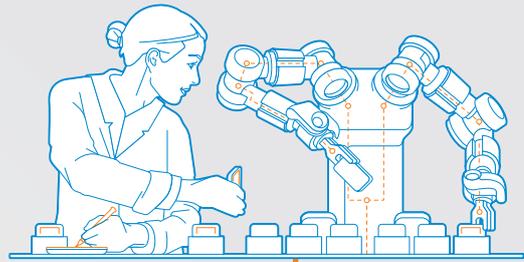
Welding robots

For reaching those hard to reach spaces and delivering a quality weld every time.

Now collaborative

YuMi®, the world's first truly collaborative robot, represents the ultimate in what collaborative robots stand for.

- Inherent safety makes it possible to operate without safety fencing
- Human proportions, for working side-by-side with people and the ability to fit into existing human-sized spaces
- Meant for Small Parts Assembly



Becoming smarter

With advances in hardware, we have delivered technology that can sense its surroundings and work more efficiently.

Integrated Vision

The gift of sight is just as good for a robot

Integrated Force Control

Know where the workpiece is and how hard to push for the perfect finish

Embedded Remote Services

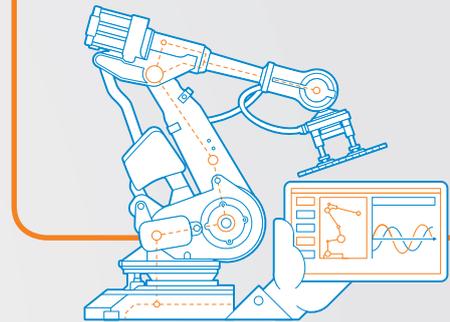
Extending uptime and service life

Superior motion control

Getting from Point A to Point B efficiently and quickly makes all the difference

RobotWare

The software at the heart of a robot for easy optimization and high flexibility



Becoming easier

Making smart robots for many uses is only half the story, the rest comes down to making implementation as easy as possible.

Function packages

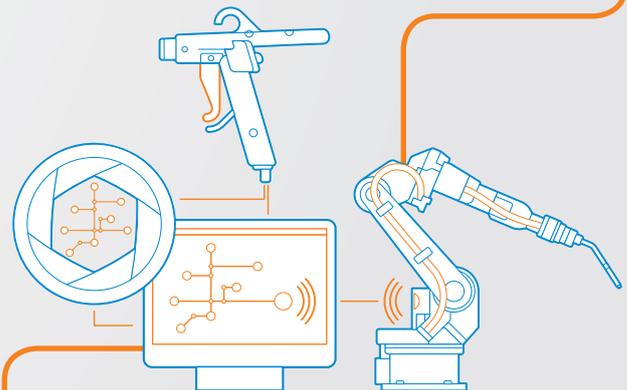
Standardized components and design make for quick startup and reduced costs.

RobotStudio®

Powerful PC-based programming makes it easier than ever to program complex robotic operations.

PowerPacs

Plug-ins for RobotStudio that make programming for specific industries a matter of plug-and-play.



Simplified Robot Programming

A revolution in turning manual motions into robotic paint programs.

Customer Service

At your service worldwide

ABB Robotics' global service presence is unrivaled with over 100 service locations in 53 countries. More than 1,300 dedicated specialists provide technical support, parts, remote troubleshooting, training, on-site repair and workshops for you and your robots. That's global service 24 hours a day, seven days a week.



Service agreements

We have built in full flexibility into our service agreements, where you make your own choices from four core service packages. With the selectable options from our service agreement configuration tool, our experts stand ready to help you choose the service solution that suits your needs. With increased availability and better performance from your installation, you can be sure to keep your operations running within budget.

With a service agreement from ABB, unplanned stops are reduced to a minimum, and when they do happen, ABB can deliver a response within minutes, via our embedded Remote Services.

Installation and commissioning

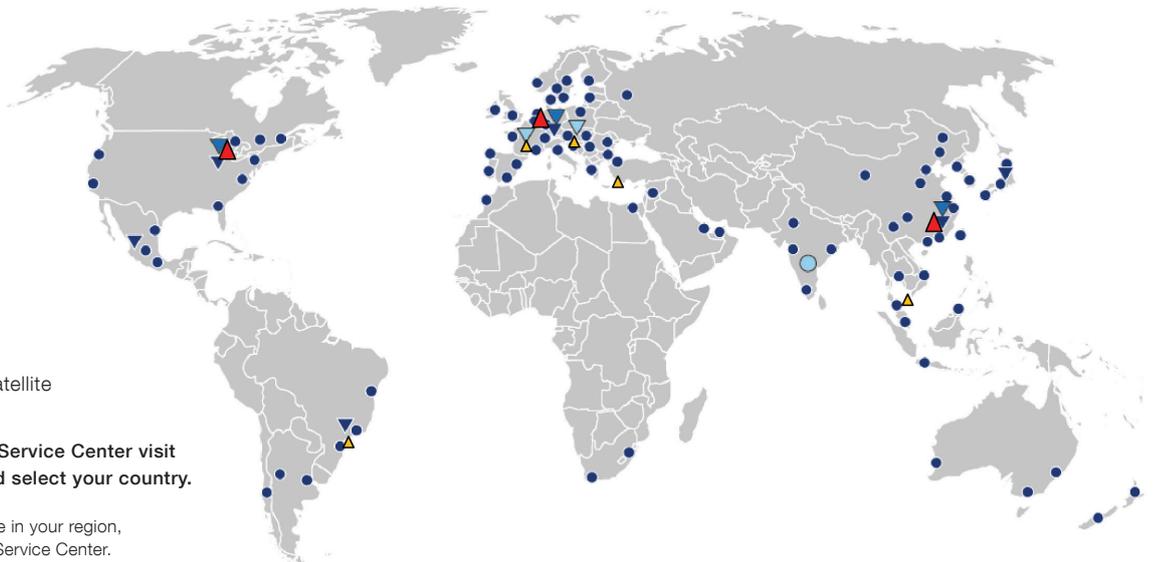
Installation and commissioning of ABB products and systems is one of our core competencies. Our simulation tool, RobotStudio®, helps reduce installation, commissioning and start-up time. With the help of RobotStudio we provide high-performance programs that deliver benefits throughout the entire robot life cycle.

We offer commissioning engineers with extensive experience in robots and robot systems. Their know-how, backed by the expertise of our design team, makes commissioning fast and smooth and lays the foundation for reliable and efficient operation.

- Local Service Center
- ▼ Regional Spare Part Distribution Center
- ▽ Global Repair and Reconditioning Center
- ▼ Local Repair and Reconditioning Center
- Global Service Intelligence Unit
- ▲ Regional Training Competence Center
- ▲ Regional Training Competence Center Satellite

To contact your local ABB Service Center visit www.abb.com/robotics and select your country.

Not all services may be available in your region, please contact your local ABB Service Center.



Replacements and reconditioning

Replacing or upgrading existing equipment with a reconditioned or new ABB robot arm or controller is an alternative to a completely new installation. ABB provides fast and reliable solutions when your robot controller or robot arm needs to be replaced or reconditioned, or when you prefer to harmonize your installed systems. Replacements are provided with proper preparation, pre-programming and program simulation.

ABB has developed unique and innovative new technologies for backward compatibility, such as stand-alone control systems to run previous robot model generations. Replacement can also be performed on process equipment like welding guns and atomizers.

Spares and consumables

As your global supplier of original high-quality new, exchange, repair and spare parts kits, we are by your side ready to deliver the right part, at the right time, in the right place.

All deliveries are possible, whether you need economy, express or emergency shipment. If you need spare parts in-house, we can provide package deals and recommend which parts to stock, locally, based on your needs. We maintain parts availability eight to 10 years after the end of robot series production. Via our robot database, we keep track of each part installed – enabling fast part identification and delivery.

Upgrades and retrofits

An ABB robot's life cycle can sometimes exceed 20 years. Life cycles can be prolonged through upgrades and retrofits. Product or components upgrades are designed to improve performance and extend both the functionality and the lifetime of the product, thereby providing the best possible return on investment by phased migration to the latest technology. It is an attractive alternative to keeping other parameters of the production unit versus making additional investments.

Robot equipment at the end of its life cycle can be replaced by retrofits, leading to improvements in reliability, safety and ultimately performance.

Training

To be able to use your robots in a safe and optimized way it is important to keep your personnel up-to-date on the latest technological advancements. We offer your employees specialized training in more than 50 worldwide locations – to help reduce production costs and unlock the full potential of your robot systems.

Training courses include standard robot training modules, systems training, process- and applications courses. We also provide customized training to students on site, in an external training facility, or via e-learning and webinars.

Maintenance

Scheduled preventive maintenance reduces the likelihood of failure or component deterioration. Maintenance is carried out regularly or based on robot condition. Preventive maintenance consists of regular inspection and maintenance plus predefined component replacements.

Monitoring robot health with ABB's embedded Remote Services increases robot uptime and productivity while reducing the total cost of ownership. We offer appropriate maintenance paths to upgrade equipment reliability based on a service assessment performed by service experts on-site.

Repairs

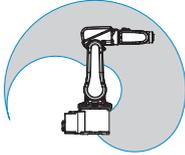
ABB technical support is there for you, answering anything from a quick technical question up to advanced product and application support, or to request services via telephone, e-mail or via web inquiry. With ABB's patented embedded Remote Services troubleshooting tools we can provide a dedicated expert, virtually on site within five minutes for remote support in the event of a specific problem or failure.

ABB robot specialists are on call worldwide to assist you in a matter of hours, avoiding costly production losses. ABB supports different maintenance strategies. In case you opt to focus on corrective repairs, rather than preventive, ABB is there for you to restore your robot.

Robots

IRB 120

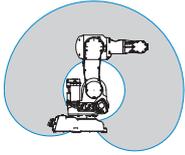
IRB 120 and IRB 120T

	Main applications		
	Assembly	Load (kg)	3
	Machine Tending	Reach (m)	0.58
	Material Handling	Protection available	Std: IP30. Option: Cleanroom class 5, certified by IPA
	Packing/Dispensing	Mounting	Floor, wall, inverted and tilted angles
		Position repeatability (RP)(mm)	0.01
			

Certified by IPA

IRB 140

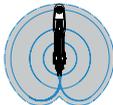
IRB 140 and IRB 140T

	Main applications		
	Arc Welding	Load (kg)	6
	Assembly	Reach (m)	0.81
	Cleaning/Spraying	Protection available	Std: IP67. Option: Cleanroom class 6, Foundry Plus
	Deburring	Mounting	Floor, wall, inverted and tilted angles
	Machine Tending	Position repeatability (RP)(mm)	0.03
	Material Handling		
	Packing		
			

Certified by IPA

IRB 910SC

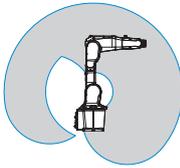
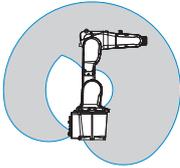
IRB 910SC-3/0.45, IRB 910SC-3/0.55 and IRB 910SC-3/0.65

	Main applications			3/0.45	3/0.55	3/0.65
	Assembly	Load (kg)		3 max 6	3 max 6	3 max 6
	Component Placement	Reach (m)		0.45	0.55	0.65
	Machine Loading	Protection available		Std: IP30	Std: IP30	Std: IP30
	Machine Unloading	Mounting		Table	Table	Table
	Kitting	Position repeatability (RP)(mm)				
		Axis 1 + Axis 2		±0.01	±0.01	±0.01
		Axis 3		±0.01	±0.01	±0.01
	Axis 4		±0.01 deg	±0.01 deg	±0.01 deg	
						

IRB 1200

IRB 1200-5/0.9 and IRB 1200-7/0.7

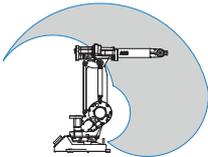


Main applications		5/0.9	7/0.7
Machine Tending	Load (kg)	5	7
Material Handling	Reach (m)	0.90	0.70
	Protection available	Std: IP40. Option: IP67, Clean room ISO 4, food grade lubricate	
	Mounting	Any angle	Any angle
	Position repeatability (RP)(mm)	0.025	0.02
			

IRB 1410

IRB 1410

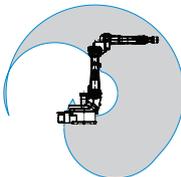


Main applications			
Arc Welding	Load (kg)	5	
	Reach (m)	1.44	
	Protection available	-	
	Mounting	Floor	
	Position repeatability (RP)(mm)	0.02	
			

IRB 1520

IRB 1520ID

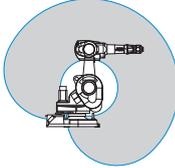
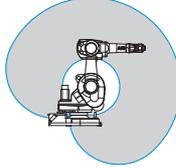


Main applications			
Arc Welding	Load (kg)	4	
	Reach (m)	1.50	
	Protection available	Std. IP40	
	Mounting	Floor, inverted	
	Position repeatability (RP)(mm)	0.05	
			

Robots

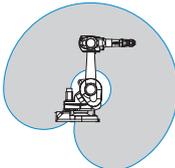
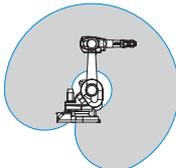
IRB 1600

IRB 1600-6/1.2 and IRB 1600-10/1.2

	Main applications		6/1.2	10/1.2
	Assembly	Load (kg)	6	10
	Cleaning/Spraying	Reach (m)	1.20	1.20
	Extraction	Protection available	Std: IP54. Option: IP67 with Foundry Plus 2	
	Machine Tending	Mounting	Floor, wall, tilted, inverted, shelf	
	Material Handling	Position repeatability (RP)(mm)	0.02	0.02
	Packing			

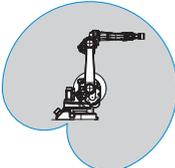
IRB 1600

IRB 1600-6/1.45 and IRB 1600-10/1.45

	Main applications		6/1.45	10/1.45
	Arc Welding	Load (kg)	6	10
	Assembly	Reach (m)	1.45	1.45
	Cleaning/Spraying	Protection available	Std: IP54. Option: IP67 with Foundry Plus 2	
	Cutting	Mounting	Floor, wall, tilted, inverted, shelf	
	Machine Tending	Position repeatability (RP)(mm)	0.02	0.05
	Material Handling			

IRB 1600

IRB 1600ID-4/1.50

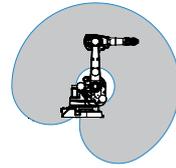
	Main applications		
	Arc Welding	Load (kg)	4
		Reach (m)	1.50
		Protection available	Std: IP40
		Mounting	Floor, inverted, tilted
		Position repeatability (RP)(mm)	0.02
			

IRB 1600

IRB 1660ID-6/1.55



Main applications		
Arc Welding	Load (kg)	6
Machine Tending	Reach (m)	1.55
Material Handling	Protection available	Std: IP 67 (base, lower arm, wrist), IP 54 (axis 4)
	Mounting	Floor, tilted, inverted, shelf
	Position repeatability (RP)(mm)	0.02

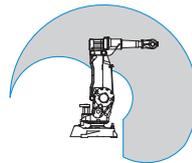


IRB 2400

IRB 2400-10/1.55 and IRB 2400-16/1.55



Main applications		
Cutting/Deburring	Load (kg)	12/20
Grinding/Polishing	Reach (m)	1.55
	Protection available	Std: IP54. Option: IP67 with Foundry Plus 2
	Mounting	Floor, inverted
	Position repeatability (RP)(mm)	0.03



IRB 2600

IRB 2600-12/1.65 and IRB 2600-20/1.65



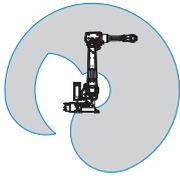
Main applications		12/1.65	20/1.65
Arc Welding	Load (kg)	12	20
Assembly	Reach (m)	1.65	1.65
Cleaning/Spraying	Protection available	Standard: IP67. Option: Foundry Plus 2	
Cutting	Mounting	Floor, wall, tilted, inverted, shelf	
Dispensing	Position repeatability (RP)(mm)	0.04	0.04
Machine Tending			
Material Handling			
Material Handling			
Packing			

Robots

IRB 2600

IRB 2600-12/1.85

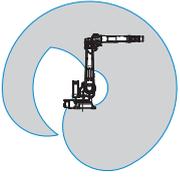


Main applications		
Arc Welding	Load (kg)	12
Assembly	Reach (m)	1.85
Cleaning/Spraying	Protection available	Standard: IP67. Option: Foundry Plus 2
Cutting	Mounting	Floor, wall, tilted, inverted, shelf
Dispensing	Position repeatability (RP)(mm)	0.04
Machine Tending		
Material Handling		
Packing		
		

IRB 2600

IRB 2600ID-8/2.00

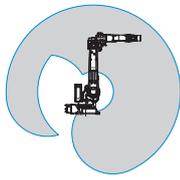


Main applications		
Arc Welding	Load (kg)	8
Dispensing	Reach (m)	2.00
Machine Tending	Protection available	Standard: IP67 (base, lower arm, wrist), IP54 (axis 4)
Material Handling	Mounting	Floor, wall, tilted, inverted, shelf
	Position repeatability (RP)(mm)	0.02
		

IRB 2600

IRB 2600-15/1.85

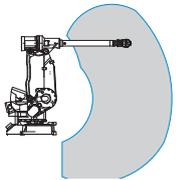


Main applications		
Arc Welding	Load (kg)	15
Assembly	Reach (m)	1.85
Dispensing	Protection available	Std: IP67 (base, lower arm and wrist), IP54 (axis 4)
Machine Tending	Mounting	Floor, wall, tilted, inverted, shelf
Material Handling	Position repeatability (RP)(mm)	0.03
		

IRB 4400

IRB 4400/L10

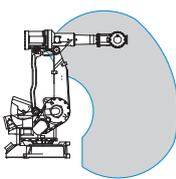


Main applications		
Cutting/Deburring	Load (kg)	10
Die Spraying	Reach (m)	2.55
Dispensing	Protection available	Std: IP54. option: IP67, Foundry Plus
Grinding/Polishing	Mounting	Floor
Measuring	Position repeatability (RP)(mm)	0.05
		

IRB 4400

IRB 4400/60

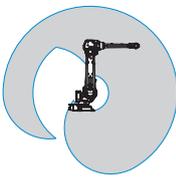


Main applications		
Cutting/Deburring	Load (kg)	60
Dispensing	Reach (m)	1.96
Grinding/Polishing	Protection available	Std: IP54. Option: IP67, steam washable - Foundry Plus
Measuring	Mounting	Floor
	Position repeatability (RP)(mm)	0.05
		

IRB 4600

IRB 4600-20/2.50



Main applications		
Arc Welding	Load (kg)	20
Assembly	Reach (m)	2.50
Dispensing	Protection available	Std: IP67. Option: Foundry Plus 2
Laser Welding	Mounting	Floor, tilted, inverted, shelf
Machine Tending	Position repeatability (RP)(mm)	0.05
Material Handling		
Packing/Palletizing		
Press brake tending		
		

Robots

IRB 4600

IRB 4600-40/2.55



Main applications			
Assembly	Load (kg)		40
Dispensing	Reach (m)		2.55
Laser Welding	Protection available		Std: IP67. Option: Foundry Plus 2
Machine Tending	Mounting		Floor, tilted, inverted, shelf
Material Handling	Position repeatability (RP)(mm)		0.06
Packing/Palletizing			
Press brake tending			

IRB 4600

IRB 4600-45/2.05 and IRB 4600-60/2.05



Main applications			45/2.05	60/2.05
Assembly	Load (kg)		45	60
Deburring	Reach (m)		2.05	2.05
Dispensing	Protection available		Std: IP67. Option: Foundry Plus 2, Foundry Prime 2 (valid for 60 kg variant)	
Machine Tending				
Material Handling	Mounting		Floor, tilted, inverted, shelf	Floor, tilted, inverted, shelf
Packing/Palletizing	Position repeatability (RP)(mm)		0.05	0.06
Press Brake Tending				

IRB 6620

IRB 6620



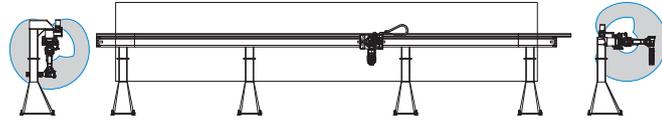
Main applications			
Assembly	Load (kg)		150
Cleaning/Spraying	Reach (m)		2.20
Cutting/Deburring	Protection available		IP54, Foundry Plus 2
Dispensing	Mounting		Floor, tilted, inverted
Grinding/Polishing	Position repeatability (RP)(mm)		0.10
Machine Tending			
Material Handling			
Spot Welding			

IRB 6620

IRB 6620LX

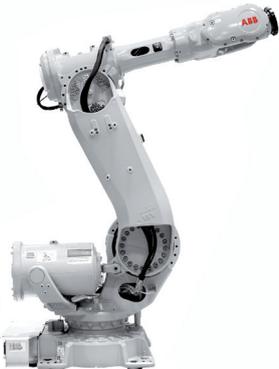


Main applications		
Machine Tending	Load (kg)	150
Material Handling	Reach (m)	1.90
Powertrain Assembly	Protection available	5-axis robot arm: Std IP54. Option: Foundry Plus 2 Std: IP66 (linear axis).
	Mounting	Wall, inverted
	Position repeatability (RP)(mm)	0.10

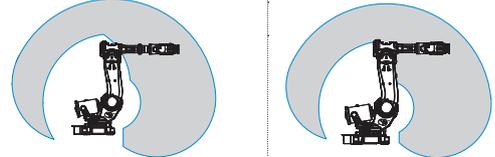


IRB 6640

IRB 6640-185/2.8 and IRB 6640-235/2.55



Main applications		185/2.8	235/2.55
Washing	Load (kg)	185	235
	Reach (m)	2.80	2.55
	Protection available	Std: Foundry Prime 2	
	Mounting	Floor	Floor
	Position repeatability (RP)(mm)	0.10	0.10

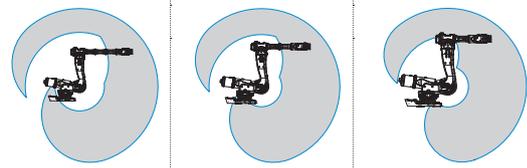


IRB 6650

IRB 6650S-90/3.9, IRB 6650S-125/3.5 and IRB 6650S-200/3.0



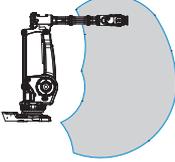
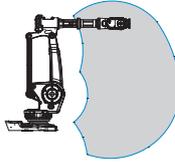
Main applications		90/3.9	125/3.5	200/3.0
Machinine Tending	Load (kg)	90	125	200
Material Handling	Reach (m)	3.90	3.50	3.00
Spot Welding	Protection available	Std: IP67. Option: Foundry Plus 2, High preassure steam washable		
	Mounting	Shelf	Shelf	Shelf
	Position repeatability (RP)(mm)	n.a.	0.13	0.14



Robots

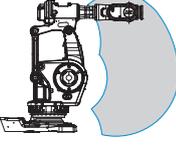
IRB 6660

IRB 6660-100/3.3 and IRB 6660-130/3.1

	Main applications		100/3.3	130/3.1
	Machine Tending	Load (kg)	100	130
	Material Handling	Reach (m)	3.30	3.10
	Press Tending	Protection available	Std: IP67	Std: IP67
		Mounting	Floor	Floor
		Position repeatability (RP)(mm)	0.10	0.11
				

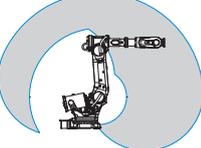
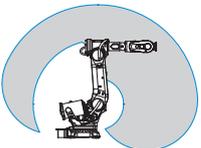
IRB 6660

IRB 6660-205/1.9

	Main applications		
	Cutting	Load (kg)	205
	Grinding	Reach (m)	1.90
	Machining	Protection available	Std: IP67, incl Chip Protection. Option: Foundry Plus 2
	Milling	Mounting	Floor
	Sawing	Position repeatability (RP)(mm)	0.07
			

IRB 6700

IRB 6700-155/2.85 and IRB 6700-200/2.60

	Main applications		155/2.85	200/2.60
	Assembly	Load (kg)	155	200
	Cutting/Deburring	Reach (m)	2.85	2.60
	Grinding/Polishing	Protection available	Std: IP67. Option: Foundry Plus 2	
	Machine Tending	Mounting	Floor	Floor
	Material Handling	Position repeatability (RP)(mm)	0.10	0.10
	Spraying			
	Spot Welding			
				

LeanID option, see page 17

IRB 6700

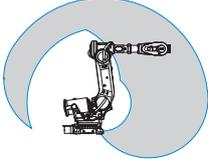
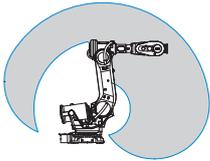
IRB 6700-150/3.20, IRB 6700-175/3.05, IRB 6700-205/2.80 and IRB 6700-235/2.65

Main applications		150/3.20	175/3.05	205/2.80	235/2.65	
	Assembly	Load (kg)	150	175	205	235
	Cutting/Deburring	Reach (m)	3.20	3.05	2.80	2.65
	Grinding/Polishing	Protection available	Std: IP67. Option: Foundry Plus 2			
	Machine Tending	Mounting	Floor	Floor	Floor	Floor
	Material Handling	Position repeatability (RP)(mm)	0.10	0.10	0.10	0.10
	Spraying					
	Spot Welding					
						

LeanID option, see page 17

IRB 6700

IRB 6700-245/3.00 and IRB 6700-300/2.70

Main applications		245/3.00	300/2.70	
	Assembly	Load (kg)	245	300
	Cutting/Deburring	Reach (m)	3.00	2.70
	Grinding/Polishing	Protection available	Std: IP67. Option: Foundry Plus 2	
	Machine Tending	Mounting	Floor	Floor
	Material Handling	Position repeatability (RP)(mm)	0.10	0.10
	Spraying			
	Spot Welding			
				

IRB 6700

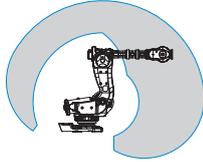
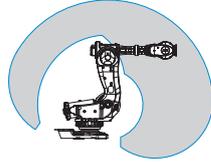
IRB 6700 LeanID

	<p>LeanID is a special option for the IRB 6700 with the DressPack partly integrated into the robot's upper arm. LeanID is intended for production with many complex wrist movements and where the need for flexibility in changing products is high. For LeanID payload decreases. See production specification for more details.</p>
---	---

Robots

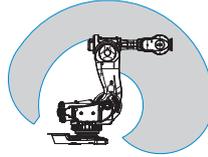
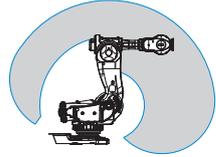
IRB 7600

IRB 7600-325/3.1, IRB 7600-340/2.8

	Main applications		325/3.1	340/2.8
	Assembly	Load (kg)	325	340
	Cutting/Deburring	Reach (m)	3.10	2.80
	Grinding/Polishing	Protection available	Std: IP67. Option: Foundry Plus 2	
	Machine Tending	Mounting	Floor	Floor
	Material Handling	Position repeatability (RP)(mm)	0.10	0.27
	Spot Welding			
				

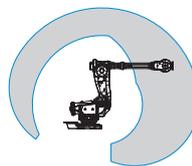
IRB 7600

IRB 7600-400/2.55 and IRB 7600-500/2.55

	Main applications		400/2.55	500/2.55
	Assembly	Load (kg)	400	500
	Cutting/Deburring	Reach (m)	2.55	2.55
	Grinding/Polishing	Protection available	Std: IP67. Option: Foundry Plus 2	
	Machine Tending	Mounting	Floor	Floor
	Material Handling	Position repeatability (RP)(mm)	0.19	0.08
	Spot Welding			
				

IRB 7600

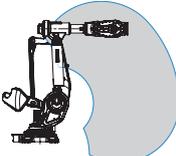
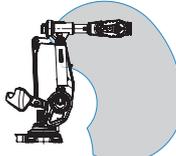
IRB 7600-150/3.50

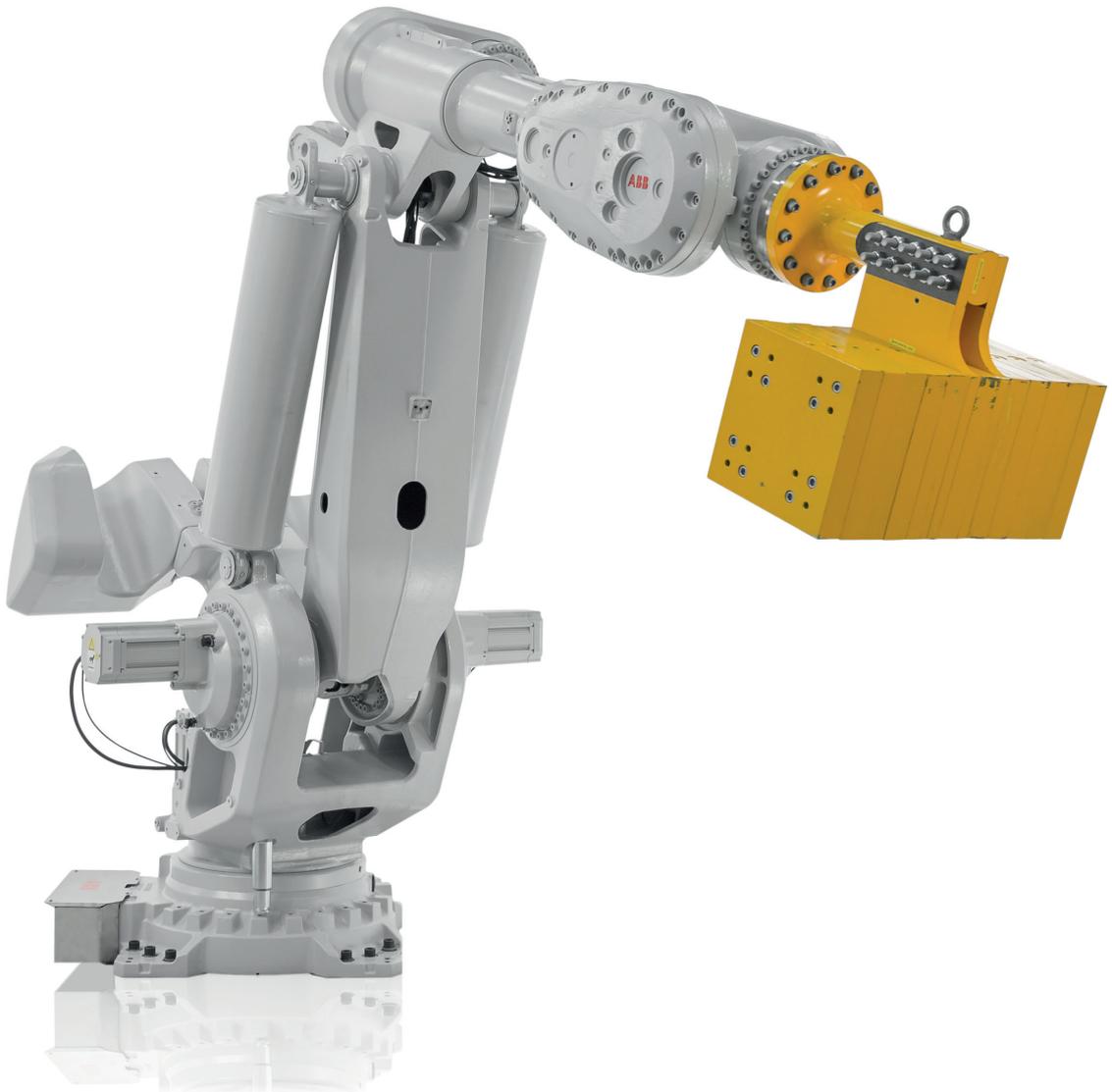
	Main applications			
	Assembly	Load (kg)	150	
	Cutting/Deburring	Reach (m)	3.50	
	Grinding/Polishing	Protection available	Std: IP67. Option: Foundry Plus 2	
	Machine Tending	Mounting	Floor	
	Material Handling	Position repeatability (RP)(mm)	0.19	
				

IRB 8700

IRB 8700-550/4.20 and IRB 8700-800/3.50



Main applications		550/4.20	800/3.50
Material Handling	Load (kg)	550	800
Machine Tending	Reach (m)	4.20	3.50
Machining	Protection available	Std: Foundry Plus 2	
Spot Welding	Mounting	Floor	Floor
	Position repeatability (RP)(mm)	0.10	0.10
			



IRB 8700

Robots

IRB 260

IRB 260-30/1.5



Main applications		
Packing	Load (kg)	30
	Reach (m)	1.53
	Protection available	Std: IP67
	Mounting	Floor
	Position repeatability (RP)(mm)	0.03

IRB 460

IRB 460-110/2.4



Main applications			
Depalletizing	Load (kg)	110	
	Material Handling	Reach (m)	2.40
	Palletizing	Protection available	Std: IP67
		Mounting	Floor
		Position repeatability (RP)(mm)	0.20

IRB 660

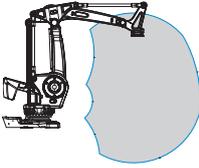
IRB 660-180/3.15 and IRB 660-250/3.15



Main applications		180/3.15	250/3.15	
Material Handling	Load (kg)	180	250	
	Palletizing	Reach (m)	3.15	3.15
		Protection available	Std: IP67	Std: IP67
		Mounting	Floor	Floor
		Position repeatability (RP)(mm)	0.05	0.05

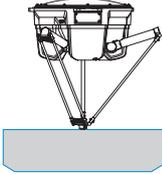
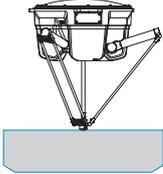
IRB 760

IRB 760-450/3.2

	Main applications		
	Depalletizing	Load (kg)	450
	Full Layer Palletizing	Reach (m)	3.18
	Material Handling	Protection available	Std: IP67
	Palletizing	Mounting	Floor
	Position repeatability (RP)(mm)	0.05	

IRB 360

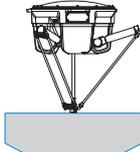
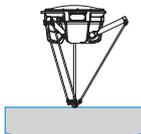
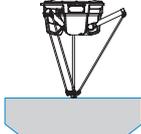
IRB 360-1/1130 and IRB 360-3/1130

	Main applications		1/1130	3/1130
	Assembly	Load (kg)	1	3
	Material Handling	Reach (m)	1.13	1.13
	Packing	Protection available	Std: IP54/67/IP69K. Option: Wash down, Stainless Clean room ISO class 5-7, IRB 360-1/1130 certified by IPA	
	Picking	Position repeatability (RP)(mm)	0.10	0.10
				

IRB 360-1/1130 certified by IPA

IRB 360

IRB 360-8/1130, IRB 360-1/1600 and IRB 360-6/1600

	Main applications		8/1130	1/1600	6/1600
	Assembly	Load (kg)	8	1	6
	Material Handling	Reach (m)	1.13	1.60	1.60
	Packing	Protection available	Std: IP54. Option: Clean room ISO class 5-7 (for IRB 360-1/1600)		
	Picking	Position repeatability (RP)(mm)	0.10	0.10	0.10
					



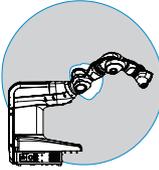
1. Servo gripper (hand) and one pneumatic, with camera | 2. Servo gripper (hand) and two pneumatics with status lights

Robots

YuMi®

IRB 14000-0.5/0.5



Main applications		
Small Parts Material Handling	Load (kg)	0.50
Small Parts Assembly	Reach (m)	0.50
	Protection available	Std: IP30
	Mounting	Table, bench
	Position repeatability (RP)(mm)	0.02
	Functional safety	PL b Cat B
		

Grippers

Small Parts Modular servo gripper



Main applications		
Small Parts Assembly	Weight (g)	215 – 280 depending on configuration
Options Five possible configurations using function modules	Load (g)	Up to 285
	Finger stroke (mm)	50
	Protection	Std: IP30
Function modules	Mounting	YuMi toolflange
	Position repeatability (servo gripper) (mm)	0.05
Servo gripper (default)	Vacuum spec. (bar)	Input max 6, Vacuum max 0.050
1-2 pneumatic units (option)		
Integrated vision (option) via 1.3 MP camera		

Small parts storage, feeding and presentation

FlexFeeder™



Main applications		FlexFeeder-Single	FlexFeeder-Double
Small Parts Presentation 3D to 2D	Max. Feature Dimension	< 25	< 30
	Min. Feature Dimension	> 0.50	> 0.50
Storage and Parts Handling	Product Weight	< 0.1	< 0.1
	Feeder Weight	27	40
For intergration with 2D vision	Feeder Dimension (mm)	754x737x125	754x737x230
	Illumination area dimension (mm)	90x160	200x160

Controllers

IRC5 Single cabinet controller and Drive module



	Single cabinet	Drive module
Size H x W x D (mm)	970 x 725 x 710	720 x 725 x 710
Electrical connections	200–600 V, 50–60 Hz	200–600 V, 50–60 Hz
Protection	Std: IP54 (IP33 in rear compartment)	Std. IP54 (IP33 in rear compartment)
IRB support	All robots	All robots
Based on advanced dynamic modelling, the IRC5 optimizes the performance of the robot for the physically shortest possible cycle time (QuickMove™) and precise path accuracy (TrueMove™).		

IRC5 Compact controller



Size H x W x D (mm)	320 x 449 x 490
Electrical connections	220–230 V, 50–60 Hz, single phase
Protection	Std: IP20
IRB support	IRB 120, IRB 140, IRB 260, IRB 360, IRB 1200, IRB 1410, IRB 1600, IRB 910SC

IRC5 Panel mounted controller



	Control module	Drive module small	Drive module large
Size H x W x D (mm)	375 x 498 x 271	375 x 498 x 299	658 x 498 x 425
Electrical connections	200–600 V, 50–60 Hz	200–600 V, 50–60 Hz	200–600 V, 50–60 Hz
Protection	Std: IP20	Std: IP20	Std: IP20
IRB support	IRB 140, IRB 260, IRB 360, IRB 1200, IRB 1600 (small drive unit), IRB 2400, IRB 2600, IRB 4400, IRB 4600, IRB 6620, IRB 6640, IRB 6650S, IRB 6700, IRB 7600, IRB 460, IRB 660, IRB 760 (large drive unit)		

Process module



Size H x W x D (mm)	Small 720 x 725 x 710 mm, Large 970 x 725 x 710
Electrical connections	Empty cabinet
Protection	Std: IP54

IRC5P Paint robot controller



Size H x W x D	1450 x 725 x 710 mm
Electrical connections	200–600 V, 50–60 Hz
Protection	Std: IP54 (IP33 in rear compartment)
IRB support	Paint robots

FlexPendant



Size	6.5" color touch screen / 1.0 kg
Protection	Std: IP54
IRB support	Non-paint robots

FlexPaint Pendant



Protection	Std: IP54, EX protected
IRB support	Paint robots

FPRC - FlexPendant Retractable Cable



	Small	Large
Size	325 x 275 x 185 (mm)	450 x 361 x 195 (mm)
S4C/S4C+ TPU	3HAC047665-001	3HAC047665-002
IRC5 GTPU 1 & 2	3HAC047666-001	3HAC047666-002IRC5
IRC5 GTPU 3	3HAC047724-001	3HAC047724-002

Track Motions

IRBT

IRBT 2005



Robot model		
IRB 1520	Max Speed (m/s)	2.00
IRB 1600	Protection available	Standard and covered version
IRB 2600	Mounting position	Floor
IRB 4600	Travel length (m)	0.80 – 19.80 (in steps of 1m)
	Acc/Ret (m/s ²)	2.50 up to 4 depending on actual load

IRBT 4004



Robot model		
IRB 4400-60	Max Speed (m/s)	2.00
IRB 4600	Protection available	Std: Foundry, IP65
	Mounting position	Floor
	Travel length (m)	1.90–19.90 (in steps of 1m)
	Acc/Ret (m/s ²)	2.50

IRBT 6004



Robot model		
IRB 6620	Max Speed (m/s)	1.60
IRB 6640	Protection available	Std: Foundry, IP65
IRB 6650S	Mounting position	Floor
IRB 6700	Travel length (m)	1.70–19.70m (in steps of 1m)
	Acc/Ret (m/s ²)	2.00

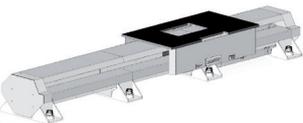
IRBT 7004



Robot model		
IRB 7600	Max Speed (m/s)	1.20
	Protection available	Std: Foundry, IP65
	Mounting position	Floor
	Travel length (m)	1.70–19.70 (in steps of 1m)
	Acc/Ret (m/s ²)	1.80

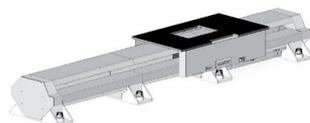
FlexTrack

IRT501-66 and IRT501-66R



Robot model		IRT501-66	IRT501-66R
None	Max Speed (m/s)	2	1.50
(Material Handling track motion)	Load	900	2000
	Travel length	1-25	1-25
	Track length (m)	2.10–105	2.10–105
	Width (m)	0.66	0.66
	Acc/Ret (m/s ²)	2	1.20

IRT501-90 and IRT501-90R



Robot model		IRT501-90	IRT501-90R
None	Max Speed (m/s)	1.50	1.20
(Material Handling track motion)	Load	2000	2950
	Travel length	1-25	1-25
	Track length (m)	2.10–105	2.10–105
	Width (m)	0.90	0.90
	Acc/Ret (m/s ²)	1.20	1

Positioners

FlexLifter

IRL 100 and IRL 190



	100	190
Load (kg)	1000	500
Lifting height (mm)	100	190
Speed (mm/s)	40	76
Lift time (sec)	2.50	2.50
Rotation	Optional 360° rotation	Optional 360° rotation
Mounting	Floor or FlexTrack, IRT501-66R, 90, 90R	Floor or FlexTrack, IRT501-66, 66R, 90,90R

FlexLifter

IRL 600



Load (kg)	600
Lifting height (mm)	600
Speed (mm/s)	200
Lift time (sec)	3
Rotation	
Mounting	Floor or FlexTrack, IRT501-66,66R

FlexPLP

IRPLP - X, Y and Z axis



Axis	3
Static load (kg)	150
Dynamic load (kg)	30
Travel length (mm)	X = 300 or 400, Y = 300 or 400, Z = 200
Speed (mm/s)	100

IRPLP - Z axis



Axis	1
Static load (kg)	150
Dynamic load (kg)	50
Travel length (mm)	200
Speed (mm/s)	100

IRPLP - X and Y axis



Axis	1 or 2
Static load (kg)	150
Dynamic load (kg)	50
Travel length (mm)	300 or 400
Speed (mm/s)	200

Positioners

IRBP A

IRBP A-250, IRBP A-500, IRBP A-750



	A-250	A-500	A-750
Max handling capacity (kg)	250	500	750
Max working envelope ϕ (mm)	1000	1450	1450
Max length (mm)	900	950	950

IRBP B

IRBP B-250, IRBP B-500 and IRBP B-750



	B-250	B-500	B-750
Max handling capacity (kg)	250 (each side)	500 (each side)	750 (each side)
Max working envelope ϕ (mm)	1000	1450	1450
Max length (mm)	900	1000	1000

IRBP C

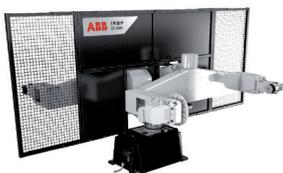
IRBP C-500 and IRBP C-1000



	C-500	C-1000
Max handling capacity (kg)	500 (each side)	1000 (each side)
Max working envelope ϕ (mm)	-	-
Max length (mm)	-	-

IRBP D

IRBP D-600



	D-600
Max handling capacity (kg)	600 (each side)
Max working envelope ϕ (mm)	1200
Max length (mm)	2000

IRBP K

IRBP K-300, IRBP K-600 and IRBP K-1000



	K-300	K-600	K-1000
Max handling capacity (kg)	300 (each side)	600 (each side)	1000 (each side)
Max working envelope ø (mm)	1200	1400	1400
Max length (mm)	4000	4000	4000

IRBP L

IRBP L-300, IRBP L-600 and IRBP L-1000



	L-300	L-600	L-1000
Max handling capacity (kg)	300	600	1000
Max working envelope ø (mm)	1500	1500	1500
Max length (mm)	4000	4000	4000

IRBP L

IRBP L-2000 and IRBP L-5000



	L-2000	L-5000
Max handling capacity (kg)	2000	5000
Max working envelope ø (mm)	1500	2200
Max length (mm)	4000	5000

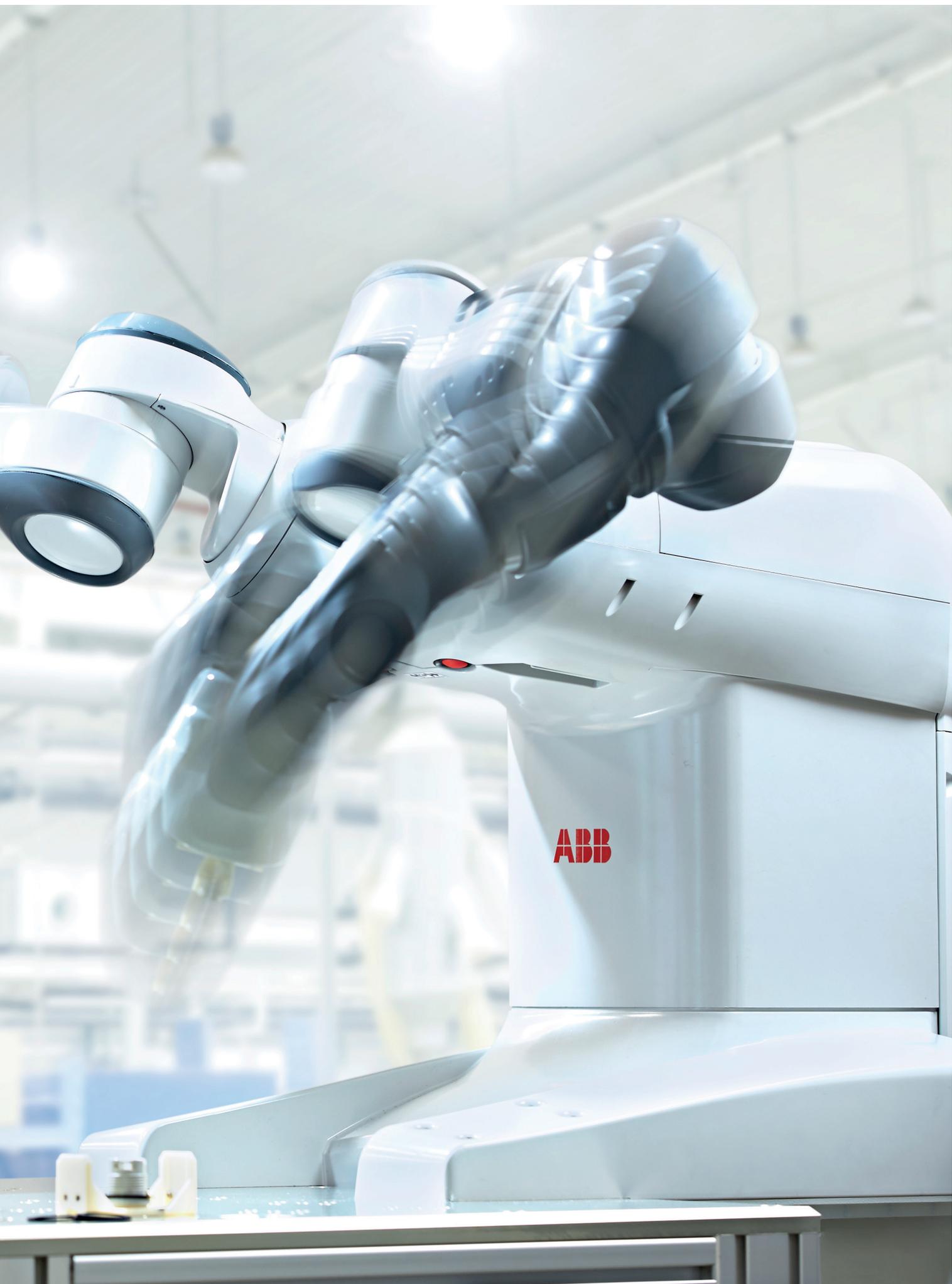
IRBP R

IRBP R-300, IRBP R-600 and IRBP R-1000



	R-300	R-600	R-1000
Max handling capacity (kg)	300 (each side)	600 (each side)	1000 (each side)
Max working envelope ø (mm)	1000	1200	1200
Max length (mm)	1600	2000	2000

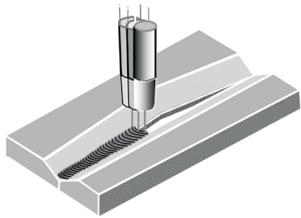




Application equipment

Arc Welding

WeldGuide IV



WeldGuide IV is the most powerful robotic thru-the-arc joint seam tracker on the market. To perform accurate welding it is important not only to see the arc, but also to listen to the sound of the welding process. We had this in mind when developing the thru-the-arc tracking sensor WeldGuide. It uses two sensor inputs - the welding current and the arc voltage. Measurements are synchronized with the weave pattern of the robot along the weld seam and provides both vertical and horizontal correction signals to the robot controller, to ensure consistent location of the welding arc along the seam. The WeldGuide sensor reads the real values from the welding arc 25,000 times per second, which means it is up to 25 times faster than traditional tracking methods.

Arc Welding

Welding torches



We offer a wide range of welding torches from the leading brands for local installation. For delivery with the Esab AristoMig 5000i process equipment we offer the Binzel ABIROB A and ABIROB W torch packages with air and water cooling. For delivery with the RPC process equipment we offer the Binzel ABIROB A torch package (air cooling) for IRB 1520ID and the Esab PSF315 welding torch kit (air cooling) for IRB 1410.

Arc Welding

TSC Torch Service Center 2013



Our Torch Service Center is an integrated system for the mechanical removal of spatter from welding torches. The robot control system operates and supervises the cleaning operation to ensure it does not start until the torch is clamped in the correct position. This guarantees that no vibrations or shocks reach the robot and the torch is locked in the same position every time for more precise cleaning and less wear on the parts being cleaned.

Arc Welding

Bull's Eye



The Bull's Eye provides the user with a fully automated tool center point calibration giving the highest possible level of utilization, quality and productivity from your robot station.

Customised pre-defined programs enable fully automatic tool centre point calibration during production execution, reducing down time to almost zero.

Arc Welding

Esab AristoMig 5000i



Voltage range (V)	8–60
Current range (A)	16–500
Permissible load at MIG/MAG	60% duty cycle: 500A/40V, 100 % duty cycle: 400A/36V
Process methods MIG/MAG	Short arc, Spray arc, Rapid arc, Pulse arc

Esab AristoMig 5000i process equipment standard packages with the Esab AristoMig integrated GUI.
Available for IRB 1600, IRB 1600ID, IRB 2600 and IRB 2600ID.

Arc Welding

Power Source RPC S-400



Connection voltage (V)	400 (-15%... + 20%)
Output current (A)	400 80% duty cycle
Welding mode	Synergic MIG/MAG

ABB RPC S-400 process equipment standard packages with the ABB RPC S integrated GUI.
Available for IRB 1410 and IRB 1520ID. Only for the Asian market.

Arc Welding

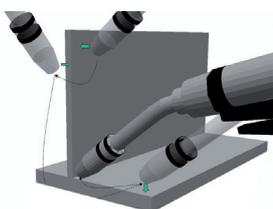
GUIs



Available for Fronius, RPC, Esab, Lincoln and Miller power source packages.
The easy-to-use FlexPendant GUI provides operators with a single point of programming, an overview of cell status and a display of important quality and production data. With just a few buttons, an intuitive and PC-like, multilingual interface, the operator can organize the welding operation with a minimum of training. By integrating the power source interface on the FlexPendant the operator can have full control over voltage, current, speed, gas flow, etc.

Arc Welding

Seam finder SmarTac



Search Speed (mm/s)	20–50 (depending on position accuracy required)
Search time per point/one dimension (sec)	2–6 (depending on workpiece complexity)
Accuracy (mm)	+/- 0.25 (with search speed 20 mm/sec)

Application equipment

Dispensing

Doser (single or double, heated or not heated)



Gross volume (cm ³)	80	155	560
Nominal flow (ml/s)	24	37.50	80
Peak flow (ml/s)	28	44	96
Nominal pressure / peak pressure (bar)	150 / 250	150 / 250	150 / 250
Dimensions* (mm)	170x460x950	180x470x960	200x510x1390

*Max. envelope volume; not heated single doser, incl. inlet and outlet valves; no cabling.

Dispensing

Pump (single or double barrel, heated or not heated)



Barrel size (l)	30	50	200
Follower plate (ø) (mm)	280	355	571
Pressure ratio	65:1	65:1	65:1
Delivery volume per double stroke (cm ³)	150	150	150
Dimensions* (mm)	1070x700x 2350	1070x700x 2350	1070x700x 2350

*Width, depth, maximum height.

Dispensing

Applicator

Gluing	SPA470 Sealing 1 Nozzle*	SPA410 Sealing 3 Nozzles	Material Temperature Conditioning	
			Peltier 600W**	Peltier 800W**
				

*Optional with nozzle changer. **Air- or watercooled.

Integrated Force Control

Integrated Force Control



Conventional robotic solutions are controlled by predefined paths and speeds. However, with Integrated Force Control, the robot reacts to its surrounding and can deviate from its programmed path or speed based on feedback from the force sensor. It is possible to automate complex tasks which previously required skilled personnel and advanced fixed automation.

Integrated Force Control

Integrated Force Control



Main applications	Capacity	Sensor 165	Sensor 660	Sensor 2500
Grinding	Fx, Fy	165 Nm	660 N	2500 N
Milling	Fz	495 N	1980 N	6250 N
Polishing	Mx, My, Mz	15 Nm	60 Nm	400 Nm
Deburring	Dimensions			
Assembly	Height (mm)	40	40	62
Product testing	Diameter (ø mm)	104	104	168

Integrated Vision

Integrated Vision



Compact smart cameras that are easily programmed in RobotStudio® together with the robots makes vision guided robots viable for any user. The vision system is highly robust and proven in industrial solutions under tough conditions. The product comes complete with cables, filters, lenses, cameras and software.

Machining

Force Control



Enables easy teaching and automatic path generation of complex part surfaces and edges for machining processes like polishing, deburring, grinding. Forces are also controlled during the processing instead of the conventional position control of the robot which makes it more sensitive and increases the quality of the finished parts. Suitable function packages are available for various machining robots of ABB.

Machine Tending

Tool System TS 2600ID



The Tools System for IRB 2600ID enables access to tight spaces while having full control of the DressPack by routing the cables and hoses through the robots upper arm. The manifold delivers air, power and signals to any gripper while the optional tool changer is suitable for automatic tool change increasing the flexibility of the tool system. This is giving added benefits of less wear and tear, no restrictions of the robots movement and increased productivity.

Handling capacity (kg)	60
Max air pressure (bar)	10
Air connections	G 1/8"
Max Voltage (V)	60
Max Current (A)	3

Application equipment

Material Handling

DressPack

To support different production needs a family of DressPacks has been developed for Material Handling.

Common features:

- Well documented solutions including training material, circuit diagram and CAD models.
 - Easy to maintain including spare part support.
 - Supports parallel signals as well as common fieldbus communication.
-

Material Handling

Integrated DressPack - LeanID



This type of DressPack creates flexibility for a variety of production demands. It is intended for production where there are high demands on flexibility and accessibility. For operations with many complex wrist movements and where the need for flexibility in changing products is high. No individual adjustments are needed for DressPack.

Material Handling

External with retract arm function



External DressPack with a retract arm pulling the cables away from the wrist. Minor individual adjustments are needed for DressPack.

Material Handling

External



External DressPack targeting production with basic needs for robot handled tool. Individual adjustments are needed for DressPack.

Motor Units and Gear units

Gear Units MTD / MID



Product/MTD and MID	MTD 250	MTD 500	MTD 750	MTD 2000	MTD 5000	MID 500	MID 1000
Max handling capacity (kg)	300	600	1000	2000	5000	1300	3300
Max continuous torque (Nm)	350	650	900	3800	9000	1400	3800
Max bend moment (Nm)	650	3300	5000	15000	60000	5000	15000

Motor Units and Gear units

Motor Units MU



Product/MU	MU 100	MU 200	MU 300	MU 400
Rated Speed (rpm)	3300	5000	5000	4700
Max dynamic torque (Nm)	4.30	14	42.80	50

Palletizing

FlexGripper – Claw



Handled products	1
Max. weight per lift (kg)	50
Gripper weight (kg)	70
Finger pitch (mm)	75
Bag dimensions (LxWxH range) (mm)	(300-750)x(300-550)x(120-250)
Main application	Bag palletizing

Palletizing

FlexGripper – Vacuum



Handled products	1-2	1-5
Max. weight per lift (kg)	40	60
Gripper weight (kg)	45	80
Finger pitch (mm)	1-zone	2-zone
Bag dimensions (LxWxH range) (mm)	(200-650)x(200-500)x(150-330)	(200-1200)x(200-500)x(150-330)
Main application	Case palletizing	

Application equipment

Palletizing

FlexGripper – Vacuum



Handled products	1-5
Max. weight per lift (kg)	40
Gripper weight (kg)	75
Finger pitch (mm)	10
Bag dimensions (LxWxH range) (mm)	Max 1200x500x300 mm, Min 240x240x100
Main application	Case palletizing handled pallet types: GMA/AUS/EUR/ISO

Press Automation

IRB 6660RX (7-axis robot)



Main applications		
Press Automation	Load (kg)	75/50
Machine Tending	Reach (m)	3.10 + 1.3/1.45
Material Handling	7th axis rotational	Offset 6th–7th axis: 1.30/1.45 m Height: 127 mm

Press Automation

IRB 7600RX (7-axis robot)



Main applications		
Press Automation	Load (kg)	85/80
Machine Tending	Reach (m)	3.50 + 1.30/1.45
Material Handling	7th axis rotational	Offset 6th–7th axis: 1.30/1.45 m Height: 127 mm

Press Automation

IRB 6660FX (7-axis robot)



Main applications		
Press Automation	Load (kg)	40
Machine Tending	Reach (m)	3.10 + 1.40
Material Handling	7th axis rotational	Stroke: ± 1.40 m Height: 130 mm Max. speed: 5 m Max. acceleration: 20 (m/s ²)

Press Automation

IRB 7600FX (7-axis robot)

	Main applications		
	Press Automation	Load (kg)	100
	Machine Tending	Reach (m)	3.10 + 1.75
	Material Handling	7th axis rotational	Stroke: ± 1.75 m Height: 130 mm Max. speed: 5 m Max. acceleration: 18 (m/s ²)

Press Automation

IRB 760 Twin XB

	Main applications		
	Press Automation	Load (kg)	150 (Crossbar, tooling and part)
	Material Handling	Reach (m)	3.10 + 1.75

Press Automation

Carbon Fiber tooling

	Main applications	
	Press Automation	Our modular tooling concept combines carbon fiber for structural components (1 & 2) with aluminum components (3) for adaptation to each specific part.
	Material Handling	Carbon fiber improves performance thanks to a dramatic reduction in deflection, vibrations and weight. Its design features a reduced height for optimum cycle time.
		The carbon fiber boom (1) is an extension of the robot arm. With a length of 1450 mm, it has been dimensioned to handle up to 100kg. The carbon fiber gondola arm (2) is a common component for 6- and 7- axis robots. There are two length variants: 1000 and 1400 mm.

Press Automation

DDC - Dynamic Drive Chain (Press servotechnology)

	<p>DDC allows new and existing presses to take full advantage of servo technology with limited peak power, using a servo motor to open and close the press faster while performing the stamping process with the energy accumulated in the flywheel. It consists of a servo kit (gear motor plus drive) that is integrated in the same master control as the automation. The DDC line is capable of running 30% faster than common lines. Energy losses decrease thanks to regeneration capability of both motors.</p>
--	--

Spot Welding

Spot Welding DressPack

To support different production needs a family of DressPacks has been developed for Spot Welding applications or when they are combined with Material Handling.

Common features:

- Well documented solutions including training material, circuit diagram and CAD models.
 - Easy to maintain including spare part support.
 - Supports parallel signals as well as common fieldbus communication.
 - Supports pneumatic or servo welding guns.
 - Supports AC or MFDC welding application.
-

Spot Welding

Integrated DressPack - LeanID



This type of DressPack creates flexibility for a variety of production demands. It is intended for production where there are high demands on flexibility and accessibility. For operations with many complex wrist movements and where the need for flexibility in changing products is high. No individual adjustment is needed for DressPack.

Spot Welding

External with retract arm function



External DressPack with a retract arm pulling the cables away from the wrist. Minor individual adjustment needed for DressPack.

Spot Welding

Spot Welding cabinet



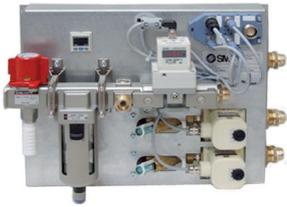
Dedicated controller cabinet for spot welding processes, including spot welding timer.

The cabinet supports different process needs, like:

- AC or MFDC welding technique.
 - Robot handled or stationary welding guns.
 - Pneumatic or servo controlled welding guns.
-

Spot Welding

Water and Air Unit



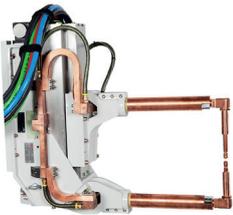
A fully integrated water and air unit for spot welding processes.

The unit supports different process needs like:

- Robot handled or stationary welding guns.
- Pneumatic or servo controlled welding guns.

Spot Welding

FlexGun IRG X-Gun



Type	X-Gun
Transformer	MFDC or AC
Max stroke (mm)	245
Max force (daN)	757 (gun body capability)
Arm length (mm)	227-600
Weight (kg)	100-150
Key feature	Same body for both X and C gun

Spot Welding

FlexGun IRG C-Gun



Type	C-Gun
Transformer	MFDC or AC
Max stroke (mm)	245
Max force (daN)	757 (gun body capability)
Arm length (mm)	0-250
Weight (kg)	100-150
Key feature	Same body for both X and C gun

Modular solutions

FlexMT®

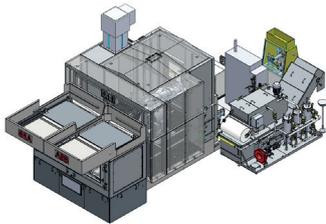
FlexMT®



A leader in the development of automation solutions, the FlexMT sets the standard in flexible machine tool tending. This robotic solution increases machine utilization by as much as 60 percent. Available in two variants, the FlexMT 20 (20kg/1.65m reach) and the FlexMT 60 (60kg/2.05m reach), the FlexMT comes complete with a robot controller inside its fully integrated control cabinet. The FlexMT is a pre-engineered, well-tested and reliable automation solution.

Machining

FlexWasher



2-in-1 process

Our FlexWasher technology combines high pressure water de-burring (HPWD) and parts washing into one system. This system removes eyelash burrs and other foreign materials without removing parent material.

Robotic Agility

Our FlexWashers take advantage of the robot's agility to move the part around stationary HPWD tools or the HPWD tool around the part in a fixture. The result is a uniform and unsurpassed cleanliness of parts with simple as well as complex geometries.

Green technology

Our FlexWasher technology is different because it does not use heated water to remove burrs and debris. This results in significant lower energy consumption and operating costs. The patented closed loop water filtration system with best-in-class low water consumption also reduces waste handling costs.

Palletizing

PalletPack



PalletPack is a package of pre-engineered products to make end-of-line and bag palletizing solutions more accessible and easier to use. The package includes robot, gripper and easy-to-use wizard on Flexpendant for setting up different palletizing tasks. A PLC including safety is included for control of the complete line.

Packing

RacerPack



RacerPack is a robot function package for packing of flow wrapped products. Receiving flow wraps on a high speed in feed conveyor, RacerPack distributes the products into an indexing belt from which the IRB 360 picks up the products and pack them into boxes. The product is modular and can be ordered with full configuration or modules depending on the need.

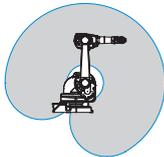


Paint robots

IRB 52

IRB 52

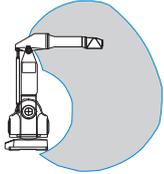


Main applications			
Painting	Load (kg)		7
	Reach (m)		1.20-1.45
	Protection available (RP) (mm)		Std: IP67, Ex
	Specific		Floor mounted. Wall mounted and inverted are selectable
	Pose repeatability		0.15
			

IRB 580

IRB 580-12, 1220 mm

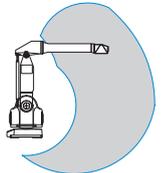


Main applications			
Painting	Load (kg)		10
	Reach (m)		2.20
	Protection available (RP) (mm)		Std: IP67, Ex
	Specific		Floor mounted
	Pose repeatability		0.30
			

IRB 580

IRB 580-12, 1620 mm



Main applications			
Painting	Load (kg)		10
	Reach (m)		2.60
	Protection available (RP) (mm)		Std: IP67, Ex
	Specific		Floor mounted
	Pose repeatability		0.30
			

IRB 580

IRB 580-13/14, 1220-1620 mm

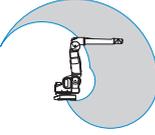


Main applications		
Painting	Load (kg)	10
	Reach (m)	2.20-2.60, rail travel length: 1 - 14
	Protection available (RP) (mm)	Std: IP67, Ex
	Specific	Clean wall rail, In-booth rail
	Pose repeatability	0.30
		

IRB 5400

IRB 5400-12 Slim arm



Main applications		
Painting	Load (kg)	25
	Reach (m)	3.10
	Protection available (RP) (mm)	Std: IP67, Ex
	Specific	Floor mounted
	Pose repeatability	0.15
		

IRB 5400

IRB 5400-13/14 Slim arm

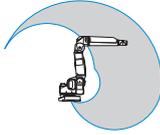


Main applications		
Painting	Load (kg)	25
	Reach (m)	3.10, rail travel length: 1 - 14
	Protection available (RP) (mm)	Std: IP67, Ex
	Specific	Clean wall rail, In-booth rail
	Pose repeatability	0.15
		

Paint robots

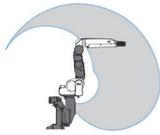
IRB 5400

IRB 5400-22 Process arm

	Main applications		
	Painting	Load (kg)	25
		Reach (m)	3.10
		Protection available (RP) (mm)	Std: IP67, Ex
		Specific	Floor mounted
		Pose repeatability	0.15
			

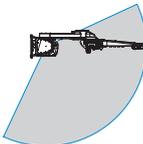
IRB 5400

IRB 5400-23/24 Process arm

	Main applications		
	Painting	Load (kg)	25
		Reach (m)	3.10, rail travel length: 1 - 14
		Protection available (RP) (mm)	Std: IP67, Ex
		Specific	Clean wall rail, In-booth rail
		Pose repeatability	0.15
			

IRB 5500

IRB 5500

	Main applications		
	Painting	Load (kg)	13
		Reach (m)	3
		Protection available (RP) (mm)	Std: IP67, Ex
		Specific	Wall mounted – axis 1 "horizontal" Wall mounted – axis 1 "vertical"
		Pose repeatability	0.15
			

Bending backwards possibility on axis 3 (may be limited by the hose guiding on the robot)

IRB 5500

IRB 5500 Elevated rail



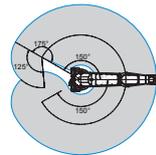
Main applications		
Painting	Load (kg)	13
	Reach (m)	3
	Protection available (RP) (mm)	Std: IP67
	Specific	Floor or Elevated. Robot: tilted, upright & inverted
	Pose repeatability	0.15

IRB 5350 Door Opener

5350 3-axis/4-axis



Main applications		
Door Opening	Load (kg)	5
	Reach (m)	1.35, rail length: 3 - 10
	Protection available (RP) (mm)	Std: IP66, Ex
	Specific	Floor mounted, rail mounted
	Pose repeatability	0.15



Painting equipment

Color Change Unit

Color Change Unit



Our color change units are specifically designed for fast color change. The internal bores of the color change unit are without "dead-ends," reducing the cleaning cycle to a minimum. Both plastic and steel versions are available, with or without recirculation. The ABB color change units are compatible with solvent based and water borne paint materials used in 1K and 2K systems.

2K Mixer Unit

2K Mixer Unit



Our 2K mixers are specifically designed for precise mixing of two component fluids and optimized for fast material change. The 2K mixer unit is using the same fluid valves as in the color change unit (common parts). 2K mixer unit is designed and optimized to be used in combination with ABB's gear pumps (and IPS software).

GearPump Unit

GearPump Unit



Our precision paint pump provides constant and consistent fluid regulation for automatic coating applications. It is specifically designed for fast color change. The ABB gear pumps can be used for paint, catalyst and clear coat and are available in sizes: 1.2 cc/rev, 3 cc/rev, 6 cc/rev and 9 cc/rev. The compact design uses light weight materials and is optimized for low material waste and color change time.

M-PAC Color Change Module & Gear Pump Module

M-PAC Color Change Module



The modular concept of M-PAC paint application equipment makes it easy to combine the various components to build compact and light units for integration on the robot arms. This enables for the robots to use high acceleration and the application solution to have minimum material waste. The color change module can be mounted directly on a gear pump module for maximum paint savings and minimum color change time. This complete assembly is designed to be integrated in the robot with the shortest possible supply line to the atomizer (typically less than 650 mm).

Compact CBS Unit

Compact CBS Unit and C-CBS2



The Compact CBS is an optimized solution for internal charge waterborne materials. This CBS unit is used to prepare and change the paint cartridges in the CBS bell atomizer which is handled and controlled by the ABB paint robot. It is a cost effective solution, prepared for 1 or 2 filling stations with flushable cartridges. Flushable cartridges are used when the cartridges are connected to a color change unit for changing the paint material in the same cartridge. Color change waste in a flushable cartridge is slightly more than with dedicated cartridges (< 30 ml).

IRB 5320 Workpiece Positioner

IRB 5320 Workpiece Positioner



The IRB 5320 Workpiece Positioner is a manipulator that is integrated with a six-axis paint robot, simplifying the painting process. It operates with either one or three axes. The three-axis version of the IRB 5320 is used to precisely position workpieces for painting. The turntables are controlled by the fully-integrated robot servo unit alternating as the loading/unloading station and as the place where the robot paints the workpieces. This single-axis positioner is built, with precision and reliability, on the proven ABB robotics gear box and delivered in several thousand units prior to this introduction.

IRB 5330 Paint External Axis Kit

Paint External Axis Kit



Our pre-engineered Paint External Axis Kit is for the control and positioning of ABB paint robots on linear or vertical axes solutions. This ex-certificated servo unit is specially designed to be used, together with customized track motion systems, as an engineering building block for paint application, extending possibilities for large object painting with the use of a standardized external axis solution.

Air Control Unit

Air Control Unit



Our Air Control Unit (ACU) is a high performance, cost-efficient air flow controller typically used for high volume paint applications. This extremely accurate and reliable unit controls the air flow destined to a paint gun or paint bell and contains three different channels that control spray patterns, bell rotation and even paint flow for some applications.

Atomizers (RB1000-SAD, -SSD)

RB1000-SAD, -SSD



The Robobel family of internal charged bells consist of highly efficient, high performance rotary atomizers for solvent borne paint, providing high finish quality and high transfer efficiency. It includes the popular 926 atomizer, the 951 with pattern control function, and the RB1000 high performance atomizer with up to 1000cc/min paint flow capacity.

CBS Atomizers

RB1000-WSC



Our Cartridge Bell System (CBS) is the optimal solution for saving paint, both for water borne and solvent borne paints. Color changing is done by changing the paint cartridge, resulting in near zero paint-loss for dedicated color-cartridges. For efficient use of space and cost a flushable version is also available. Key features are: Pattern control for high transfer efficiency, and high flow capacity for high acceleration robots.

Painting equipment

Atomizers

RB1000-EXT



Our external charged bell is a highly efficient atomizer designed for waterborne paint. By utilizing the same air motor as the RB1000 series, the rotation speed performance is up to max 80,000 rpm with a paint flow of 700cc/min in primer. The atomizer is designed with an air heater-free system and has a newly designed electrodes, providing high transfer efficiency.

Atomizers

ROBOBEL031-PC



The 031-PC bell is easiest way for general industry customers to gain access to ABB's bell atomizer technology. The circle spray pattern and variable pattern control of ROBOBEL031-PC bring a lot of benefits to users that normally use spray gun. Since the 031-PC uses no high-voltage, not only both water-borne and solvent-borne but also coating materials can be used. There are widely line-up bell cup and selectable for suitable size.

Application package

Paint Application Packages (PAP)



ABB's standardized paint application packages are complete solution designed to have your system up and running very quickly. They are pre-engineered and pre-connected to enable fast installation. They require less field tuning and come documented with standardized interfaces. The packages are flexible. You can choose between gun or bell, select the number of colors, pump sizes, cable length, etc.

Application package

Simplified Robot Programming (SRP)



The ABB Simplified Robot Programming solution combines modern motion tracking technology, with smart software and a teaching handle (tracing device) which resembles a traditional spray gun. Recording mode is activated from the teaching tool and records paint commands along the motion path, visually guided by a line laser to see where the trigger on points are located on the object. Speed, accuracy and fluidness of motion are fully editable in RobView once the recording has stopped.

Feather duster

Feather duster



Designed for the cleaning of car bodies preliminary to Painting, The FeatherDuster system advantageously replace purpose-built "tack off" machines with robotic technology that is incredibly flexible and built on well-established standards to achieve higher quality, efficiency and ease of use.

FlexArc™ Standard Arc Welding cells

Complete plug n' produce solution

FlexArc cells deliver maximum performance while making optimum use of available space.

All equipment is installed on the common platform which provides for easy relocation within the production facilities.

Complete cell is tested in production including welding test, therefore, customers obtains fully functioning solution without need for additional on-site commissioning. FlexArc features the FlexPendant GUI, which not only provides operators with an overview of the status of the cell, but also important quality and production data.

Cells based on A-type positioners

FlexArc A



Robot	IRB 1520ID, IRB 1600(ID), IRB 2600(ID), IRB 4600
Number of robots	1-2
Positioners	IRBP A-250, IRBP A-500, IRBP A-750
Handling capacity	Max 750 kg
Process equipment package	Fronius, SKS, ESAB, Kemppi
Welding torch	Fronius, Dinse, Binzel, SKS
Safety equipment	Complete system of safety features- safety encing, light curtains, laser scanner, froll doors, safety locks, safety PLC

Cells based on B-type positioners

FlexArc B



Robot	IRB 1520ID, IRB 1600(ID), IRB 2600(ID), IRB 4600
Number of robots	1-2
Positioners	IRBP B-250, IRBP B-500, IRBP B-750
Handling capacity	Max 750 kg
Process equipment package	Fronius, SKS, ESAB, Kemppi
Welding torch	Fronius, Dinse, Binzel, SKS
Safety equipment	Complete system of safety features - safety fencing, light curtains, laser scanner, roll doors, safety locks, safety PLC

FlexArc™ Standard Arc Welding cells

Complete plug n' produce solution

Cells based on C-type positioners

FlexArc C



Robot	IRB 1520ID, IRB 1600(ID), IRB 2600(ID), IRB 4600
Number of robots	1-2 (up to 3 on request)
Positioners	IRBP C-500, IRBP C-1000
Handling capacity	Max 1000 kg
Process equipment package	Fronius, SKS, ESAB, Kemppi
Welding torch	Fronius, Dinse, Binzel, SKS
Safety equipment	Complete system of safety features – safety fencing, light curtains, laser scanner, roll doors, safety locks, safety PLC

Cells based on D-type positioners

FlexArc D



Robot	IRB 1520ID, IRB 1600(ID), IRB 2600(ID), IRB 4600
Number of robots	1-2 (up to 3 on request)
Positioners	IRBP D-300, IRBP D-600
Handling capacity	Max 600 kg
Process equipment package	Fronius, SKS, ESAB, Kemppi
Welding torch	Fronius, Dinse, Binzel, SKS
Safety equipment	Complete system of safety features – safety fencing, light curtains, laser scanner, roll doors, safety locks, safety PLC

Cells based on K-type positioners

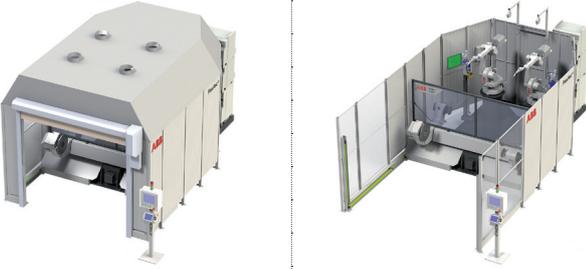
FlexArc K



Robot	IRB 1520ID, IRB 1600(ID), IRB 2600(ID), IRB 4600
Number of robots	1-2 (up to 4 on request)
Positioners	IRBP K-300, IRBP K-600, IRBP K-1000
Handling capacity	Max 1000 kg
Process equipment package	Fronius, SKS, ESAB, Kemppi
Welding torch	Fronius, Dinse, Binzel, SKS
Safety equipment	Complete system of safety features – safety fencing, light curtains, laser scanner, roll doors, safety locks, safety PLC

Cells based on R-type positioners

FlexArc R

	Robot	IRB 1520ID, IRB 1600(ID), IRB 2600(ID), IRB 4600
	Number of robots	1-2 (up to 4 on request)
	Positioners	IRBP R-300, IRBP R-600, IRBP R-1000
	Handling capacity	Max 1000 kg
	Process equipment package	Fronius, SKS, ESAB, Kemppi
	Welding torch	Fronius, Dinse, Binzel, SKS
	Safety equipment	Complete system of safety features – safety fencing, light curtains, laser scanner, roll doors, safety locks, safety PLC

Cells based on 2L-type positioners or fixed tables

FlexArc 2L

	Robot	IRB 1520ID, IRB 1600(ID), IRB 2600(ID), IRB 4600
	Number of robots	1
	Positioners	2 IRBP L or 2 fixed tables
	Handling capacity	Max 300 kg
	Process equipment package	Fronius, SKS, ESAB, Kemppi
	Welding torch	Fronius, Dinse, Binzel, SKS
	Safety equipment	Complete system of safety features – safety fencing, light curtains, laser scanner, roll doors, safety locks, safety PLC

Cells based on 2L-type positioners

FlexArc 2L

	Robot	IRB 1520ID, IRB 1600(ID), IRB 2600(ID), IRB 4600
	Number of robots	1-2 (up to 3 on request)
	Positioners	2 IRBP L
	Handling capacity	Max 300 kg
	Process equipment package	Fronius, SKS, ESAB, Kemppi
	Welding torch	Fronius, Dinse, Binzel, SKS
	Safety equipment	Complete system of safety features – safety fencing, light curtains, laser scanner, roll doors, safety locks, safety PLC

Software products

RobotWare

To boost your productivity and decrease your total cost of owning and operating a robot-based solution, ABB has developed a family of software products to support every stage of the robot life cycle.

RobotWare is a collection of robot software, which offers in its basic design – superior motion control and enables the quick integration of additional hardware. For RobotWare there are a number of options and specific application software available.

They represent tools for robot users who need additional functionality, for example running multiple tasks, transfer information from file to robot, communicating with a PC and performing advanced motion tasks. For more information, please visit www.abb.com/robotics

RobotWare – Features

QuickMove™ and TrueMove™



Based on advanced dynamic modelling, the IRC5 optimizes the performance of the robot for the physically shortest possible cycle time (QuickMove) and precise path accuracy (TrueMove). Together with a speed-independent path, predictable and high-performance behavior is delivered automatically, with no tuning required by the programmer. What you program is what you get.

RobotWare – Options

AbsAcc



Absolute Accuracy (AbsAcc) is a calibration concept which ensures a TCP absolute accuracy of better than ± 1 mm in the entire working range with some limitation for “bending backwards” robots. The user is supplied with robot calibration data (compensation parameters saved on the manipulator SMB) and a certificate that shows the performance (“birth certificate”). The difference between an ideal robot and a real robot can typically be up to 10mm, resulting from mechanical tolerances and deflection in the robot structure. The Absolute Accuracy option is integrated in the controller algorithms for compensation of this difference, and does not require external position recalculation.

RobotWare – Options

Collision Detection

Collision Detection is a software option, which reduces collision impact forces on the robot. In this way, the robot and external equipment can be protected from severe damage.

RobotWare – Options

Communications



Several optional RobotWare functions are available for communication to and from the robot such as:

- | | | |
|----------------|-------------------------------|--|
| - FTP Client | - FlexPendant Interface | - File and Serial Channel Handling |
| - NFS Client | - Field bus Command Interface | - EtherNet/IP m/s |
| - PC Interface | - Socket Messaging | - PROFINET SW, master/slave and slave only |

RobotWare – Options

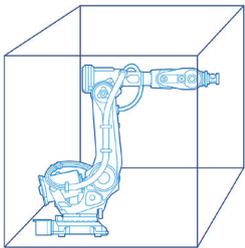
Conveyor Tracking



Conveyor Tracking (also called line tracking) is the function which makes the robot follow a work object on a moving conveyor. While tracking the conveyor, the programmed TCP speed, relative to the work object, will be maintained even when the conveyor speed is changing slowly.

RobotWare – Options

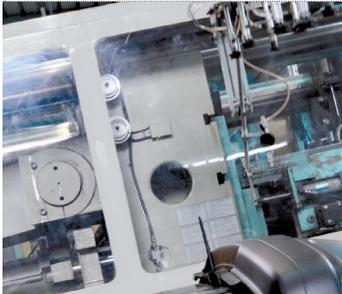
SafeMove



SafeMove builds on the latest developments in robotic safety and modernization in safety regulations (ISO 10218). It performs safety classified monitoring of robot motion, covering complex position zones, speed limitation, standstill supervision, tool orientation etc. If a safety hazard is detected, SafeMove executes an emergency stop or alerts a superior PLC within fractions of a second. With SafeMove, it is possible to restrict the cell size to precisely what is needed, saving valuable floor space. It is also possible to create production concepts where robot and operator interact more closely, without compromising safety. For limited needs, a simplified version of monitoring of axis positions is available, where each joint position can be defined and monitored individually.

RobotWare – Options

SoftMove



SoftMove is a cartesian soft servo option that allows the robot to be compliant or floating to adjust to external forces or variations in work objects. SoftMove can lower the stiffness of the robot in a pre-defined cartesian direction (in relation to either the tool or the work object) while keeping the original behavior in the other directions. The basic behavior of the softness is mainly controlled by stiffness and damping parameters. With SoftMove, the robot is compliant in one direction only which facilitates high accuracy and reliability. The option reduces robot programming time and enables effective interaction between robot and machine, which reduces cycle time.

RobotWare – Options

MultiMove™



The option MultiMove – Independent makes a robot system a MultiMove system with independent robots functionality. A MultiMove system is a system where a common controller controls up to four robots, each equipped with its own drive module. MultiMove system exists in two different modes – Independent and Coordinated. With MultiMove Independent, the robots run independently of each other, i.e. controlled by separate RAPID tasks. It is also possible to run positioners independently (controlled by separate RAPID tasks).

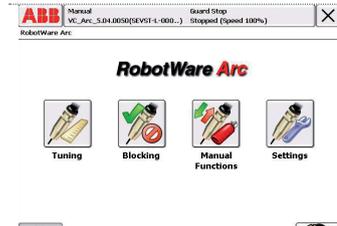
The option MultiMove – Coordinated makes a robot system a MultiMove system with coordinated robots functionality. A MultiMove system is a system where a common controller controls up to four robots, each equipped with its own drive module. MultiMove exists in two different modes – Independent and Coordinated. With the MultiMove Coordinated option, a MultiMove system is able to work together on a common work piece and coordinated in a common workobject. MultiMove Coordinated also includes all MultiMove Independent functionality.

Application software

ABB offers a full range of easy-to-use software tools to help you to improve your process, optimize your production, increase productivity, reduce risks and maximize the return of investment of your robot systems.

Arc Welding

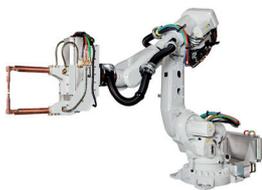
RobotWare Arc



RobotWare Arc comprises a large number of dedicated arc welding functions. It is a simple yet powerful program since both the positioning of the robot and the process control and monitoring are handled in one instruction.

Spot Welding

RobotWare Spot



Dedicated software that simplifies the Spot Welding application. Advanced motion control for an electrical servo gun are built in features. RobotWare Spot is designed to be a general and flexible software platform offering both standard configurations as well as giving possibility to create customized solutions. All with the target to give easy to use function packages for different types of spot welding systems.

Cutting

RobotWare Cutting



Modern ABB robots are used for high precision laser cutting. This is possible through a combination of ABB robot features and advanced cutting software products, RobotStudio Cutting PowerPac and RobotWare Cutting, developed specifically for robotic laser cutting. Using robots for laser cutting offers substantial cost benefits compared to using laser cutting machines. Robotic laser cutting reduces capital investment by up to 35 percent* and uses less floor space.

* A ABB robot based standard function package compared to a dedicated cutting machine.

Dispensing

RobotWare Dispense



RobotWare-Dispense can be used for different types of dispensing processes. It is a software option typically used for gluing, sealing, spraying and other similar processes, but can also be useful in a wide spectrum of other applications.

Picking and Packing

PickMaster 3



PickMaster is the tool for guiding robots in the packaging process. The PC based software product uses comprehensive graphical interfaces to configure powerful applications where up to eight robots may work in a team along conveying belts. PickMaster 3 includes advanced vision technique and tightly integrated conveyor tracking capability. The integrated vision system is advanced, however PickMaster 3 is also open to communicate with any external sensor. (line scanners, color vision, 3D, etc.).

Machine Tending

RobotWare Machine Tending



An integrated set of software tools that uses ABB's extensive experience in machine tending to reduce operational expenditure and increase productivity through easy and flexible programming, straightforward configuration and trouble free operation of ABB robots.

RobotWare Machine Tending is a flexible controller software for deployment and operation of ABB robots. It provides configurable and powerful tools, including an intuitive graphical user interface, that facilitates trouble-free and safe operation for everyone.

Assembly

RobotWare Force Control



RobotWare Force Control will greatly facilitate the use of robots for tasks that needs "touch sensing", like assembly, fixturing, product testing etc. The option is based on the force control concept, i.e. a robot control strategy where the robot movements are adapted to the feedback from a force sensor. Thus the robot can automatically search for the correct location, and assemble parts using intelligent force/torque motion without the risk for jamming or part damage.

RobView

RobView



With RobView 5 you can manage your paint installation, whether it is one or many robots, visualize the complete paint process, and operate and supervise your paint robot cell. A basic version of RobView 5 is bundled with all IRC5P paint robots, free of charge*. It is an affordable graphical user interface for low budget installations. However, it is scalable and expandable with plug-in options for large and advanced installations.

* Requires activation.

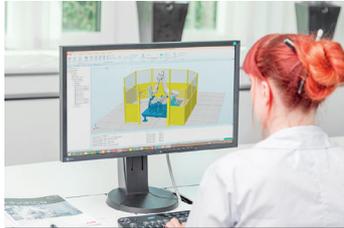
Software products

RobotStudio®

Computer-based programming is the best way to maximize return on investment for robotic systems, resulting in lower costs, faster time to market and superior end products. RobotStudio allows programming to be done on a computer without committing to construction or disturbing existing production.

RobotStudio

RobotStudio

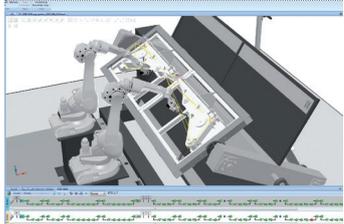


The computer-based system design in RobotStudio ensures you do it right the first time, with the ability to verify tooling, cycle times, work envelopes and product throughput before any construction begins in the real world.

Achieving perfectly optimized solutions is made possible because you can quickly and easily try multiple configurations on your PC. You can be certain your system will work properly in the real world after seeing it work in the virtual world. The end result is greatly reduced risk.

RobotStudio – PowerPacs

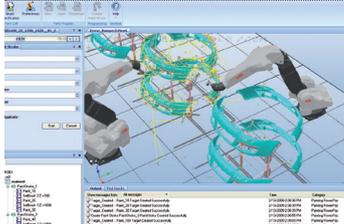
RobotStudio ArcWelding PowerPac



ArcWelding PowerPac is an add-in to RobotStudio that makes it fast and easy to program arc-welding applications. It includes VirtualArc, an expert system that makes it possible to determine the process parameters necessary to achieve a particular welding result. Use of ArcWelding PowerPac makes it easy to make sure that the optimum tool angles are always used, resulting in higher quality welds and shorter cycle-times.

RobotStudio – PowerPacs

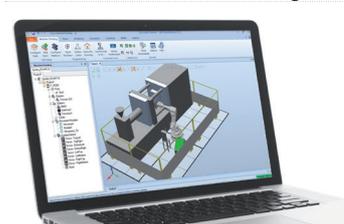
RobotStudio Painting PowerPac



The Painting PowerPac integrates paint programming knowledge and paint process tools into RobotStudio. It will speed up your programming and simulation of painting robots and painting equipment, and is a faster and more intuitive way to create paint programs. Paint strokes are easy to create and edit. Instructions for paint events are automatically added to your program and the event trigger axis automatically selected. Robot positions for the acceleration and deceleration distances are calculated automatically. Paint process performance parameters can be predicted off-line.

RobotStudio – PowerPacs

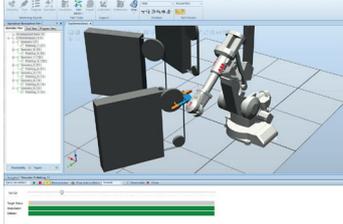
RobotStudio Machine Tending PowerPac



RobotStudio Machine Tending PowerPac – an add-on for RobotStudio, ABB's powerful PC-based programming tool – provides a platform for quick, easy creation and editing of machine tending robot cells in a 3D virtual environment. RobotStudio Machine Tending PowerPac is seamlessly integrated with RobotWare Machine Tending.

RobotStudio – PowerPacs

RobotStudio Machining PowerPac



Machining PowerPac reduces programming complexity by 50% and optimizes machining tool path to improve product quality. The PowerPac guides the users in creating accurate targets and paths from surfaces and edges on an imported CAD model while having control of related process parameters in the simulation. In addition the PowerPac provides the possibility to convert CNC-Code to RAPID and customize conversion to match different machine setups. RobotStudio MachiningPowerPac not only supports the traditional position controlled processes but also supports force controlled processes and is seamlessly integrated with Robotware Machining FC.

RobotStudio – PowerPacs

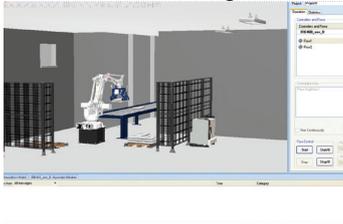
RobotStudio Cutting PowerPac



RobotStudio Cutting PowerPac is an offline programming tool that allows operators to create, modify and verify cutting programs in an offline 3D simulation instead of on the factory floor. RobotStudio Cutting PowerPac is seamlessly integrated with RobotWare Cutting.

RobotStudio – PowerPacs

RobotStudio Palletizing PowerPac



RobotStudio Palletizing PowerPac makes programming robot palletizing systems easier than ever before. As no programming skills are required, RobotStudio Palletizing PowerPac software radically reduces programming times and creates fully tested simulations, and real robot system programs, in minutes.

RobotStudio – PowerPacs

RobotStudio Picking PowerPac



Picking PowerPac is an offline tool that simulates PickMaster 3 in picking applications. The PowerPac offers ease of use configuration of a picking application which can be simulated and fully optimized before being downloaded into PickMaster 3 for real production.

Contact us

ABB AB Robotics

Hydrovägen 10
SE-721 36 Västerås, Sweden
Phone: +46 21 325000

ABB Engineering (Shanghai) Ltd. Robotics

No. 5, Lance 369, Chuangye Road
201319, Shanghai, China
Phone: +86 21 6105 6666

www.abb.com/robotics

Note:

We reserve the right to make technical changes or modify the contents of this document without prior notification. With regard to purchase orders, the agreed particulars shall prevail. ABB does not accept any responsibility whatsoever for potential errors or possible lack of information in this document.

We reserve all rights in this document and in the subject matter and illustrations contained therein. Any reproduction, disclosure to third parties or utilization of its contents – in whole or in part – is forbidden without prior written consent of ABB.

Copyright© 2016 ABB Robotics.
All rights reserved

 www.facebook.com/ABBRobotics

 www.twitter.com/ABBRobotics

 www.youtube.com/ABBRobotics

 www.linkedin.com/company/abb