

English



Rainbow Robotics
Collaborative Robot

RB Series



www.rainbow-robotics.com

ROBOTS FOR COEXISTENCE AND COOPERATION

Rainbow Robotics

Rainbow Robotics, founded by experienced researchers from the prestigious KAIST Humanoid Robot Research Center (HUBO Lab), leads the robot platforms industry. Our mission is to commercialize cutting-edge robots through relentless research and development. We achieve this by securing our own technology and offering high-quality products at competitive prices.

With expertise in humanoid robotics technology, we proudly showcase our in-house developed cobots and world-renowned disaster response robots. However, our commitment to innovation and making a significant impact goes beyond these achievements. Our diverse portfolio includes autonomous mobile robots, medical robots, quadruped robots, and astronomical mounts. We continuously explore new business opportunities, aiming to revolutionize the robotics industry and shape the future of automation.

Company History

- Apr 2023** Established a branch company in Schaumburg, Illinois, U.S.A
- Mar 2023** Samsung Electronics acquired 4.77 percent of Rainbow Robotics
- Jan 2023** Samsung Electronics acquired 10.22 percent of Rainbow Robotics
- Mar 2021** RB-N Series "NSF/ANSI 169" Certification
- Feb 2021** Rainbow Robotics Inc. listed on KOSDAQ (277810)
- Aug 2020** Delivered the LIG Nex1 internal gimbal driving assembly, and 1 other product
- Jul 2020** Signed a service contract to design a satellite monitoring telescope system for the KASI
- Apr 2020** "ISO 9001:2015" Certification
- Jul 2019** Launched the RB Series (collaborative robot)
- Feb 2018** Operated of humanoid robot experience service during 2018 Pyeongchang Winter Olympic Games
- Jul 2017** Secured 10 billion KRW in investment (venture capital)
- Feb 2016** Supplied LIG Nex1 with mount drivers
- Dec 2015** Exported four units of DRC-HUBO+ to the Naval Research Laboratory, USA
- Sep 2015** Operated MOUNT, the electronic and optical space object monitoring system of the KASI
- Jun 2015** "DRC-Hubo" wins 2015 DARPA Robotics Challenge
- Jan 2014** "Venture Company" Certification
- Sep 2013** Exported two HUBO II units to Google Inc., USA
- Dec 2011** Exported six HUBO II units to the MIT with support from the US National Science Foundation
- Jul 2011** Mount technical service agreement signed with the Korea Astronomy and Space Science Institute (KASI)
- May 2011** Established an affiliated research institute
- Feb 2011** Established Rainbow Robotics Inc. (original company name: Rainbow Co., Ltd.)



WE TOUCH THE CORE

Moving forward, Rainbow Robotics aspires to leverage its superior technological capacities to become a leader in the global robotics field.

Collaborative robots RB Series

Rainbow Robotics' RB series cobots feature 6-axis robotic arms, developed using our exclusive technology. With multiple options available (RB3-730, RB3-1200, RB5-850, RB10-1200 and RB16-900), these cobots cater to diverse needs in various work environments. Our RB cobots undergo thorough testing and inspection by TÜV SÜD, a globally renowned certification body. They are certified with CE and KCs, meeting the following standards.

- ISO 13849-1, Cat.3, PL d
- ISO 10218-1
- ISO/TS 15066



RB Series Lineup

RB3-730 RB3-1200 RB5-850 RB10-1200 RB16-900

+ Built-in pneumatic option (A1, A2, A3) | + RB-N Series

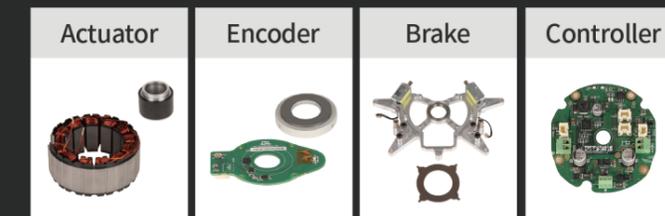
Key Features



In-house production of key components: high performance, competitive pricing

Rainbow Robotics develops and uses core components required in its cobots, such as actuators, encoders, brakes, and controllers, in-house. With these components, the RB series can deliver high driving speeds, precise controls, and braking performance without any play or instability in the braking system. Moreover, the RB series is much more reasonably priced than the competition (30% cheaper) thanks to Rainbow Robotics' extensive use of in-house developed parts.

Key components of the collaborative robots developed by Rainbow Robotics



Cobot with built-in humanoid robotics technology

Rainbow Robotics is the pioneering company behind HUBO, an extraordinary bipedal robot renowned for its cutting-edge robotics technology. Leveraging its expertise in humanoid robotics, Rainbow Robotics has developed the RB series, a dedicated line of cobots. Each cobot in the RB series is equipped with advanced features, including a collision detection system, a gravity compensation device, and a sophisticated motor control system.



Software for Enhanced User Convenience

The RB series is powered by a Linux-based, real-time robot operating system developed independently by Rainbow Robotics. The operating system uses a supervisory control algorithm to oversee and optimize the performance of each cobot. It supports the precise execution of tasks within a predictable time range. This enables smooth movement and reduces the time required for each move or action. Additionally, Rainbow Robotics can address any issues with a software update if a cobot requires additional functions or upgrades to its system operations.

RB3-730

RB3-730 is a compact, high-precision model with a payload capacity of 3kg and a maximum range of 730mm. With S-pipe joint arrangements, RB3-730 excels in executing contour motions frequently employed in welding and bonding processes, making it suitable for applications in IT, electronics, and bio services.

Specification	
Payload	3 kg / 6.6 lbs
Reach	730 mm / 28.7 in
Repeatability	± 0.05 mm
Footprint	Ø 128 mm
Materials	Aluminum, plastic, steel
Tool connector type	M8 8-pin connector 2ea (12/24V, ~2A)
Cable length (Robot arm)	5 m / 196.8 in
Weight	11 kg / 24.3 lbs
Operating environment	IP 54 / 0-50 °C
Power consumption	100 W with the standard program
Noise	Less than 60dB(A)
Joint range & Max. speed	J1: ± 360° ± 180°/s
	J2: ± 360° ± 180°/s
	J3: ± 150° ± 180°/s
	J4: ± 360° ± 180°/s
	J5: ± 360° ± 360°/s
	J6: ± 360° ± 360°/s



※ Specifications may change to improve performance.

RB5-850

RB5-850 is the standard model of the RB series, with a max load capacity of 5 kg and a max work radius of 927.7 mm. It can be deployed as an all-purpose unit in manufacturing, such as production, assembly, and components fastening, and in service industries such as food and beverage systems, disinfection/sanitizer systems, and robot studios.

Specification	
Payload	5 kg / 11 lbs
Reach	927.7 mm / 33.5 in
Repeatability	± 0.05 mm
Footprint	Ø 173 mm
Materials	Aluminum, plastic, steel
Tool connector type	M10 12-pin connector (12/24V, ~2A)
Cable length (Robot arm)	5 m / 196.8 in
Weight	22 kg / 48.5 lbs
Operating environment	IP 66 / 0-50 °C
Wattage	200W with the standard program
Noise	Less than 65dB(A)
Joint range & Max. speed	J1: ± 360° ± 180°/s
	J2: ± 360° ± 180°/s
	J3: ± 165° ± 180°/s
	J4: ± 360° ± 180°/s
	J5: ± 360° ± 180°/s
	J6: ± 360° ± 180°/s



※ Specifications may change to improve performance.

RB3-1200

RB3-1200 has a payload of 3kg, and a range of up to 1,200mm. It is the model that boasts the largest working radius among all existing small-load cobots currently on the market. It can perform complex tasks, including welding, grinding, and CNC machine tending, and it can be used in combination with an autonomous mobile robot (AMR).

Specification	
Payload	3 kg / 6.6 lbs
Reach	1200 mm / 47.2 in
Repeatability	± 0.05 mm
Footprint	Ø 173 mm
Materials	Aluminum, plastic, steel
Tool connector type	M10 12-pin connector (12/24V, ~2A)
Cable length (Robot arm)	5 m / 196.8 in
Weight	22.4 kg / 49.3 lbs
Operating environment	IP 66 / 0-50 °C
Wattage	200W with the standard program
Noise	Less than 65dB(A)
Joint range & Max. speed	J1: ± 360° ± 180°/s
	J2: ± 360° ± 180°/s
	J3: ± 165° ± 180°/s
	J4: ± 360° ± 180°/s
	J5: ± 360° ± 180°/s
	J6: ± 360° ± 180°/s



※ Specifications may change to improve performance.

RB10-1300

RB10-1300 has a payload of 10kg and a maximum range of 1,300mm, meaning it can handle the heaviest load among all cobots in the RB series. It is effective for tasks involving heavier objects such as packaging, courier transportation, and pallet loading.

Specification	
Payload	10 kg / 22 lbs
Reach	1300 mm / 51.2 in
Repeatability	± 0.05 mm
Footprint	Ø 196 mm
Materials	Aluminum, plastic, steel
Tool connector type	M10 12-pin connector (12/24V, ~2A)
Cable length (Robot arm)	5 m / 196.8 in
Weight	37.1 kg / 81.8 lbs
Operating environment	IP 66 / 0-50 °C
Wattage	350 W with the standard program
Noise	Less than 65dB(A)
Joint range & Max. speed	J1: ± 360° ± 120°/s
	J2: ± 360° ± 120°/s
	J3: ± 165° ± 180°/s
	J4: ± 360° ± 180°/s
	J5: ± 360° ± 180°/s
	J6: ± 360° ± 180°/s



※ Specifications may change to improve performance.

RB16-900

RB16-900 has a payload of 16kg and a maximum range of 900mm, meaning it can handle the heaviest load among all cobots in the RB series, RB16-900 is effective when working with heavy loads (e.g. packaging, courier transportation, palletizing, and assembly automation).

Specification	
Payload	16 kg / 35.3 lbs
Reach	900 mm / 35.4 in
Repeatability	± 0.05 mm
Footprint	Ø 196 mm
Materials	Aluminum, plastic, steel
Tool connector type	M10 12-pin connector (12/24V, ~2A)
Cable length (Robot arm)	5 m / 196.8 in
Weight	32 kg / 70.5 lbs
Operating environment	IP 66 / 0-50 °C
Wattage	350 W with the standard program
Noise	Less than 65dB(A)
Joint range	J1 : ± 360° ± 120°/s J2 : ± 360° ± 120°/s J3 : ± 165° ± 180°/s J4 : ± 360° ± 180°/s J5 : ± 360° ± 180°/s J6 : ± 360° ± 180°/s

※ Specifications may change to improve performance.



Built-in pneumatic option (A1, A2, A3)

Rainbow Robotics also offers a built-in pneumatic line, which makes its cobots much easier to use (eliminates the need to arrange and organize cables). The built-in pneumatic option is compatible with all RB series products. Depending on the pneumatic and signal lines, the user can select either A1, A2, or A3.

Model Name	Pneumatics lines	Signal lines
RB5-850A1	4 EA(Ø 4 mm tube)	N
RB5-850A2	5 EA(Ø 4 mm tube)	12 Pin(AWG28)
RB3-1200A1	4 EA(Ø 4 mm tube)	N
RB3-1200A2	5 EA(Ø 4 mm tube)	12 Pin(AWG28)
RB10-1300A1	1 EA(Ø 8 mm tube)	N
RB10-1300A2	1 EA(Ø 8 mm tube)	12 Pin(AWG28)
RB10-1300A3	4 EA(Ø 4 mm tube)	N

※ Specifications may change to improve performance.
 ※ In addition, when applying the option, it is necessary to check the driving range and operating environment.



Robot Control Box

Robot control box is a device that controls the movement of the robot arm according to the program written by the user. Equipped with digital and analog input/output ports. Various equipments and devices can be connected and used.

Standard Control Box



Specification	
I/O ports	Digital input 16 (PNP)
	Digital output 16(PNP)
	Analog input 4 (0~10V)
	Analog output 4 (0~10V)
	RS-232/422/485
Power source	Ethernet (TCP/IP, MODBUS TCP, Control Script) Siemens S7, OMRON Fins, Mitsubishi MC, etc ※ I/O expansion modules available
	100-240V AC, 50-60 Hz
Size	454 x 240 x 416.2 mm / 17.9 x 9.5 x 16.4 in
Weight	RB3-1200/ RB5-850 20.3 kg / 45 lbs RB10-1300 22.2 kg / 49 lbs
Materials	EGI (electric galvanized steel sheet)

DC Control Box



Specification	
I/O ports	Digital input 16 (PNP)
	Digital output 16 (PNP)
	Analog input 4 (0~10V)
	Analog output 4 (0~10V)
	RS-232/422/485
Power source	Ethernet (TCP/IP, MODBUS TCP, Control Script) Siemens S7, OMRON Fins, Mitsubishi MC, etc ※ I/O expansion modules available
	19~72V DC
Size	380 x 182 x 270 mm / 15 x 7.2 x 10.7 in
Weight	11.5 kg / 25.4 lbs
Materials	Stainless steel SUS304
Note	※ Four fixing brackets provided

※ Specifications may change to improve performance.

I/O expansion module

RB Series has a total of 40 I/O ports (default configuration). If more I/O ports are required, users can add ports without using additional equipment, such as a PLC, using the I/O expansion module.



Specification	
I/O ports	Digital input 16 (PNP)
	Digital output 16 (PNP)
	Analog input 4 (0~10V)
	Analog output 4 (0~10V)
Power source	100-240V AC, 50-60 Hz
Size	403 x 313 x 110 mm / 15.9 x 12.3 x 4.4 in
Weight	500 g / 1.1 lbs
Materials	Aluminum

※ Specifications may change to improve performance.

Teaching Pendant

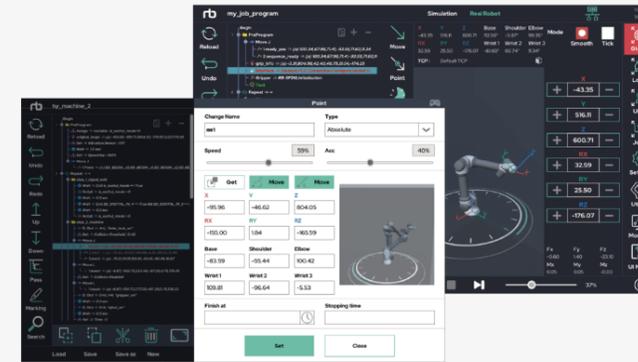
Rainbow Robotics' cobots are easy to program using the Rainbow Robotics Teaching Pendant. Moreover, the icon-based GUI allows users to configure the interface to suit their required conditions. The user-friendly GUI also makes maintenance easier, improves security, and enables intuitive programming. The Teaching Pendant is compatible with Android OS-based smartphones, tablet PCs, and Windows OS-based devices.



UI

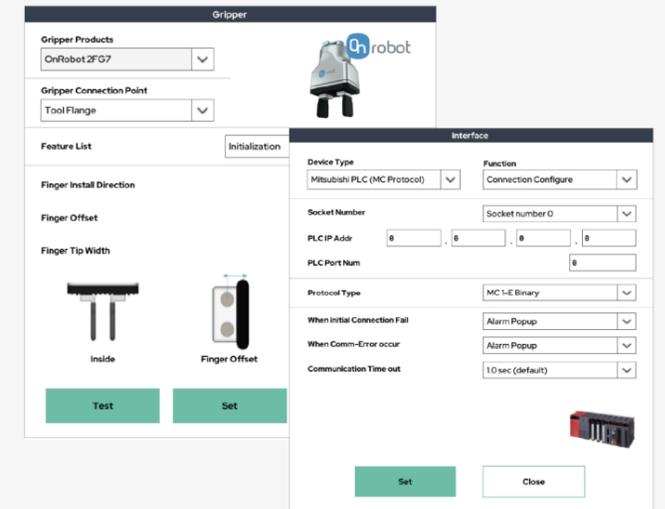
Easy to Handle

Operating and controlling the robot is easy with its user-friendly and intuitive user interface (UI). You can effortlessly and efficiently operate the robot using the touch screen and/or joystick, ensuring a seamless experience.



Various Accessories

Our robots support plug-and-play integration of various grippers and sensors, such as Robotiq/OnRobot. No separate program installation is required to use the robot and its accessories.



Connectivity

Our robots seamlessly communicate with PLCs, sensors, welders, and HMIs through built-in functions. They exchange data with various devices without additional programming.

Main Features

User's convenience
Rainbow Robotics' Teaching Pendant is a lightweight, highly responsive product, and it can be connected via wired or wireless options. Also, a single Teaching Pendant can control multiple robots.

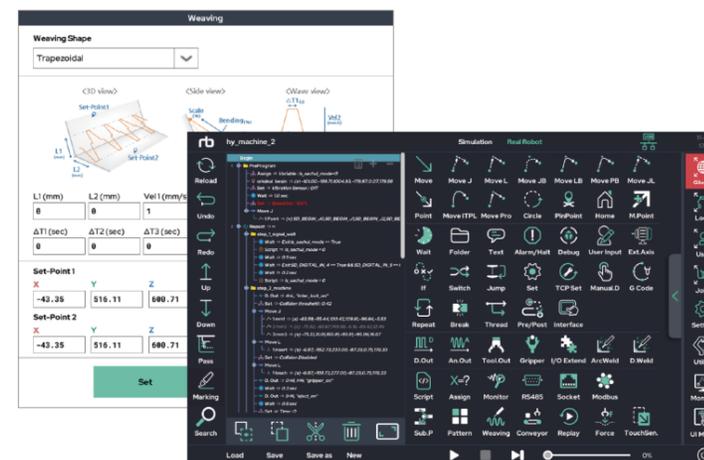
Program configuration
Users can confirm and load previously created programs through the SubProgram and Template functions. When a program is loaded, it is automatically grouped, allowing users to easily view the full overview.

Jog-based interface
When writing a program, a robot often has to be repositioned or relocated. The RB series cobots have a jog dial located next to the programming window. Users can use the jog dial to move the robot and add the desired commands.

Digital output
Users can control the entire port by selecting either ON or OFF. Furthermore, various options such as a bit combination output and pulse output are available for digital output.

Program tree viewing & processing
Users can access the program summary through the program tree, and functions such as zoom/scroll can help view the content with greater accuracy.

Real-time monitoring
The Teaching Pendant features debugging and monitoring functions to check the value of selected variables. While the program is running, users can view the selected variable via a pop-up and monitor variables in real-time.



Various Functions

The Rainbow Robotics program offers a variety of built-in functions. Users can quickly access available functions by inputting a few setting values.

Plug-N-Play Accessories

RB series cobots support “Plug&Play” for easier integration of a variety of peripherals. The streamlined approach accelerates the development process of versatile solutions that are compatible with diverse working conditions.

			
Robotiq Hand-E	JRT JEGB 485/4140	HIWIN SEG-24-TM	MITSUBISHI PLC Series
			
Robotiq 2F-85/140	DH-AG-95	HIWIN SEG-04-TM	LS ELECTRIC PLC Series
			
Robotiq E-Pick	Schunk Co-act	Robotiq F/T Sensor	Welding Equipments ESAB / Kemppi / Kolarc
			
Robotis RHP12RN	Schunk EGP	Robotus F/T Sensor	HMI
			
OnRobot 2FG7	OMRON PLC	Pickit 3D	Siemens PLC
			
OnRobot RG2/RG	Analog Welding Equipments OTC Deihen, Megmeet,etc	Setech NutRunner	SCHMALZ



World's first NSF-certified cobot RB-N Series



RB-N series has been certified by the National Sanitation Foundation (NSF) for safe and hygienic use in the food and beverages market. RB-N series is designed to be used as stand-alone units without the need to add any jackets or additional devices to the robot.

RB-N series features three models : RB5-850N, RB3-1200N, and RB10-1300N. RB-N series can be applied in various food and beverage applications, such as fryers using high-temperature oil and espresso machines using high-pressure steam.

※ The specifications of the RB-N series robots are identical to those of the RB series robots.

- ✓ **NSF Certified**
 - NSF/ANSI 169 awarded for Special Purpose Food Equipment and Devices
 - Meets requirements for food production facility and equipment
- ✓ **Food-safe Cooking robot**
 - Coated with non-toxic, food-grade paint
 - Tested and certified for direct contact with food
 - Successfully passed crash tests, ensuring absence of harmful substances from collisions
- ✓ **Durable Components**
 - Rust-resistant SUS fasteners/connections
 - High-temperature coupling rings with excellent strength, stiffness, low moisture absorption, fatigue resistance, creep resistance, and hygiene performance
- ✓ **Enhanced User Experience**
 - IP66 rated 6-axis robot arm, providing waterproof and dust-tight protection
 - Stand-alone eliminating the need for jacket changes, increasing work efficiency and reducing costs

NSF Certificate and scope of application



Various F&B industry applications

- Unmanned robot cafes & bars (Programmable recipes: bubble tea, cocktails, craft coffee, refreshers, etc.)
- Soft serve ice cream robot
- Waffle-making robots
- Chicken-cooking robots
- Kitchen utensils-washing robots, etc.



How RB Cobots Drove Innovations in Manufacturing and Hospitality Industry

1 CNC machine tending

CNC machine tending involves the repetitive process of loading raw materials into a machining tool and retrieving the finished product. The RB series cobots handle these simple and repetitive tasks on behalf of human workers and mitigate the risk of industrial accidents. Additionally, the RB series is IP67-rated, making it resistant to dust and water. This allows the robots to continue working seamlessly, even in contact with cutting oil and coolant during machining.



STS PRECISION CO., LTD

“The RB series cobot transformed our manual CNC process, boosting productivity by 5% to 60%. We now meet doubled or tripled customer demands driven by the semiconductor boom. It's been a game-changer, revolutionizing our operations for success in the industry.”

2 Welding solutions

The RB series comes equipped with essential functions for weaving and arc welding, making it highly versatile for a range of welding applications. These include specimen welding, argon welding, weaving welding, pulse welding, arc welding, and corner welding.



J.system

“Welding demands precision and attention to detail. Unlike regular industrial robots, the RB series cobot simplifies the process with its direct teaching function, making inputting robot motions and points a breeze. It's like having a helpful assistant that enhances efficiency and accuracy.”



JCT

“We are a small manufacturing company that specializes in custom-made metal products. We found this cobot welding system ideal for our small-lot productions. It's easy to install, requires no additional devices, and doesn't need a fence around it, so it's space-efficient, too. It truly is a great option for businesses that are struggling to find skilled welders. Even novice robot operators can use cobot welding systems with ease. We are very happy with the cobot welding system and would recommend it to other businesses.”

3 Mold handling

The RB series cobot improves safety and productivity in mold handling in injection molding machines. It ensures that parts are handled consistently and that they are not damaged during the transfer. It can also perform dangerous tasks that would otherwise require operators to put their hands into the injection molding machine to remove newly produced components.



TP Solution

“Robots are incredibly consistent, which led to a significant drop in defects and a major boost in productivity. But here's where it gets even better: cobots go beyond that. They actually empower our workers to learn new skills. No more mundane tasks. Our workers now take control of the whole process and level up their expertise.”

4 Robot cafe platform

The cafes serviced by RB-series cobots operate 24/7 and are fully unmanned, handling everything from order placement to drink service. Ordering is as simple as using the kiosk, and your drink will be ready in 50 seconds or less. You can conveniently track your order status on the screen.



Yellowphant Coffee

“Yellowphant Coffee stands out from other machine-operated cafes with its wide range of offerings. These unmanned franchise locations serve robot-crafted coffee, ice cream, and a variety of soft drinks. Popular among customers in busy areas like highway rest stops and tourist attractions, notable locations include Deokpyeong Rest Area, Geumwang Rest Area, Jukjeon Rest Area, Busan Diamond Tower, Geoje Cable Car, and Daegu Aquarium.”

5 Fried Cooking Robot

Robert using RB series is a robot that automatically performs frying cooking tasks. It is a robot that can cook 50 baskets of fried food per hour, and not only chicken, but also fries such as French fries, cone dogs, and churros.



Robo Arete (Robert Chicken)

“All of our stores have installed a high-tech automated chicken frying system using RB cobots. These cobots not only cook the chicken but also come with safety laser scanners to keep our employees safe. We love how the AI technology optimizes the cooking process, guaranteeing that our recipes turn out exactly as intended. Our franchise owners and corporate headquarters are extremely happy with this cobot solution, especially because it helps us overcome the challenges of increasing labor costs and shortages.”



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