ZEN

neuromeka

neuromeka

V20251020

Neuromeka
is a leader in robotics automation, with easy-to-use and cost-effective robots.

Neuromeka is Korea's leading robotics company, pioneering the era of intelligent automation where AI and robotics converge.

Starting from collaborative robots, Neuromeka has expanded its portfolio to include industrial robots, mobile robots, and humanoid platforms — developing every layer of robotics technology in-house, from hardware and components to AI-driven platforms.

With advanced control technologies and AI-based safety intelligence, our robots achieve sensitive collision detection and compliance control without external sensors, while supporting features such as path correction, direct teaching, visual programming, imitation learning, AI-based collision avoidance, and motion optimization.

Neuromeka also builds an RaaS (Robot as a Service) ecosystem that enables customers to easily adopt and operate robotic automation without the need for specialized expertise.

Through robotics innovation, Neuromeka bridges the boundary between humans and industry, creating a safer and more flexible automation environment for all.

HISTORY

2013
02 Neuromeka Co., Ltd. was founded in Namyangju.

2014
01 Certified as a venture company and established an affiliated research institute.
07 Relocated headquarters to Seongsu-dong, Seoul.

2016
10 Released the Indy-RP robot.

2017
03 Launched the Indy3, Indy5, and Indy10 models.
09 Launched the Indy7 model.
12 Received the Technology Award from the Korean Robotics Society.
Selected as one of the "Top 100 Technologies and Innovators Leading Korea" (for manufacturing collaborative robots).
Awarded "Robot Company of the Year" in the industrial robotics category.

2018
06 Established the Cobot Intelligence(CI) Lab in collaboration with POSTECH.
12 Won "Robot Company of the Year" in the industrial robotics category for the second consecutive year.

2019
07 Established a subsidiary in Vietnam.
09 Released the Indy12 model.
Released the IndyEye vision solution.
10 Launched the IndyCARE service.
12 Won "Robot Company of the Year" in the industrial robotics category for the third consecutive year.
Received the Korea Shared Growth Grand Prize.

2020
07 Selected as a preliminary unicorn company by the Ministry of SMEs and Startups.
Received the IR52 Jang Young Sil Award for Indy7.
Obtained ISO 9001 certification.
12 Achieved New Excellent Product(NEP) certification.
Won "Robot Company of the Year" in the industrial robotics category for the fourth consecutive year.
Established a subsidiary in China.
Designated as a promising export small business.

2021
06 Recognized as an outstanding corporate-affiliated research institute by the Ministry of Science.
10 Designated as an innovative product(Fast Track 3).
12 Received a commendation from the Minister of Trade, Industry, and Energy (for contributions to industrial technology promotion).
Won "Robot Company of the Year" in the industrial robotics category for the fifth consecutive year.

2022
04 Selected as a "Design Innovation Promising Company" by the Ministry of Trade, Industry, and Energy.
11 Listed on the KOSDAQ stock exchange.
Released the autonomous mobile robot, Moby.
12 Won "Robot Company of the Year" in the industrial robotics category for the sixth consecutive year.

2023
02 Established a subsidiary in the United States.
05 Relocated manufacturing plant to Pohang.
09 Obtained NSF certification for the Indy7 collaborative robot.
Secured ISO certifications(90021, 14001, 45001, 9001).
10 Released the NURI series.
11 Established the Daegu branch.
12 Won "Robot Company of the Year" in the industrial robotics category for the seventh consecutive year.

2024
04 Signed an MOU with POSCO Holdings to establish a joint research lab.
06 Secured a welding robot supply contract with HD Hyundai Samho.
08 Selected as a KOSDAQ Rising Star.
10 Launched the 100% Domestic Technology, Indy-K.
Establishment of POSCO–Neuromeka Joint Robotics Research Lab.
12 Won "Robot Company of the Year" in the industrial robotics category for the eighth consecutive year.

2025
04 AI-Powered Second-Generation Collaborative Robot Development.
09 Established the Cheonan branch.
Launched the Humanoid Platform Disclosure.(ZEN, NAMY, EIR, RAXIS)
10 Released the World's Lightest 3 kg-Payload Collaborative Robot, OPTi3.

HUMANOID

HUMANOID PLATFORM

Field-Optimized
Next-Generation Humanoid Platform

Neuromeka's humanoid platform is a next-generation lineup for industrial, service, medical, and research applications. With advanced hands and grippers, precision control, and Vision-Language-Action (VLA)–based AI, it delivers delicate, intelligent manipulation. A proprietary data pipeline, VLA framework, teleoperation tools, and GPU infrastructure enable on-site learning, remote operation, and motion-data capture for imitation learning—making Neuromeka humanoids task-ready for immediate deployment.

ZEN

바퀴형 휴머노이드 플랫폼

ZEN	
Dimensions	Foldable structure, mini 1.46 m, max 1.86 m
Body Dof(excl. dexterous hands)	21(19 joints + 2 drive wheels)
Number of Fingers(Single Hand)	4
Dexterous Hand Dof(Single Hand)	13(active)
Tactile Perception(Dual Hands)	2280 ITPU(intelligent Tactile Processing)
Tactile Signal channels(Dual Hands)	6840 channels
Cameras	5 RGB cameras(3 on head + 1 on each)
Arm Repeat Positioning Accuracy	0.5 mm
Arm(inclihand) Rated Horizontal Load	5 kg
Max. Arm(inct. hand) Length	96.5 cm
Chassis Specifications	Max. travel speed 0.6 m/s, Max, Repeatable point-to-point accuracy 1.5 cm, Obstacle crossing height 2 cm, Gradeability 7°
Battery Capacity	40 Ah
Charging Time	6 h
Operating Duration	8 h

NAMY

Humanoid for Service Use

RAXIS

Humanoid for Factory Automation

EIR

Humanoid for Surgical Assistance

	NAMY	RAXIS	EIR
Dimensions	660 mm by 860 mm by 1770 mm	580 mm by 800 mm by 1803 mm	748 mm by 725.5 mm by 1827 mm
Whole Body DOF	19 DOF	19 DOF	18 DOF
Single arm DOF	7 DOF(integrated joint torque sensor at every joint)	7 DOF(integrated joint torque sensor at every joint)	7 DOF(integrated joint torque sensor at every joint)
Single arm payload / reach	5 kg / 650 mm	5 kg / 650 mm	5 kg / 650 mm
Repeatability	0.1 mm	0.1 mm	0.1 mm

INDY

EASY · SAFE · CONNECTED

Easy, safe, and always connected
A global leader in collaborative robots

Collaborative Robot

Easy, safe, and seamlessly connected anytime,
anywhere — a global leader in collaborative robotics.

INDY

The Indy series is Neuromeka's flagship collaborative robot, designed with a sleek curved surface and equipped with an innovative sensorless collision detection algorithm. This ensures worker safety through impedance control, enabling intuitive direct teaching. Programming can be performed online or offline via a tablet-based teach pendant app.

The lineup includes the Indy7 and Indy12, offering options based on payload capacities. An expansion port on the wrist allows for seamless integration with various standard tools, such as grippers and vision sensors.

Certification

| NeP NEW EXCELLENT PRODUCT | NSF | Indy7-K Indy7 / Indy7Pro Indy12 / Indy12Pro | CE | Indy7V3 Indy12V3 | MET RECOGNIZED us | Indy7V3 | KC | Indy7V3/ Indy7Pro Indy12V3/ Indy12Pro | KCs | Indy7V3 Indy12V3 |

Award

iR52 장영실상 | GOOD DESIGN 산업통상자원부선정 | reddot design award winner 2018

Indy7 V3

DOF	6(all revolute)
Payload	7 kg
Joint Motion Range	±360 deg for all joints
Maximum Joint Speed	J1, J2, J3: 150 deg/s | J4, J5, J6: 180 deg/s
Maximum Tool Speed	1 m/s
Reach	1200 mm
IP Rating	IP54
Workspace	800 mm
Repeatability	0.1 mm
Weight	34 kg

Indy12 V3

DOF	6(all revolute)
Payload	12 kg
Joint Motion Range	±360 deg for all joints
Maximum Joint Speed	J1, J2: 120 deg/s | J3, J4, J5, J6: 150 deg/s
Maximum Tool Speed	1 m/s
Reach	1700 mm
IP Rating	IP54
Workspace	1200 mm
Repeatability	0.1 mm
Weight	57 kg

Indy7 Pro (with IndyEye)

DOF	6(all revolute)
Payload	7 kg
Joint Motion Range	±360 deg for all joints
Maximum Joint Speed	J1, J2, J3: 150 deg/s	J4, J5, J6: 180 deg/s
Maximum Tool Speed	1 m/s
Reach	1200 mm
IP Rating	IP54
Workspace	800 mm
Repeatability	0.1 mm
Weight	34 kg

Indy12 Pro (with IndyEye)

|	
DOF	6(all revolute)
Payload	12 kg
Joint Motion Range	±360 deg for all joints
Maximum Joint Speed	J1, J2: 120 deg/s	J3, J4, J5, J6: 150 deg/s
Maximum Tool Speed	1 m/s
Reach	1700 mm
IP Rating	IP54
Workspace	1200 mm
Repeatability	0.1 mm
Weight	57 kg

Vision Solution

## Combining Performance and Value

INDYEYE

IndyEye is an integrated robot vision solution that solves the challenging issue of coordinate system integration between robots and vision systems. Users do not need to implement separate programs or adjust offsets to align the vision coordinate system with the robot's coordinate system. The built-in automatic calibration feature ensures that IndyEye and Indy provide accurate coordinate calculation results.

This allows for precise location-based tasks even when the robot base is frequently moved. The system also supports conveyor tracking, enabling vision-based tasks on moving workpieces.

Additionally, the provided deep learning functionality can handle objects with irregular shapes or unclear boundaries, as well as situations with poor lighting or other challenging conditions.

IndyEye

Size	67 mm x 67 mm x 74.4 mm
Resolution	1280 x 1024
Frame Rate	5 - 15 FPS
Field of View (H/V/D)	86 º ±5 º / 70 º ±5 º / 100 º ±5 º
Interface	USB 2.0
Working Distance	5 cm - 70 cm
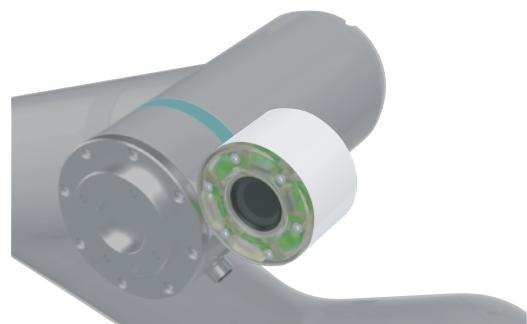
OPTi

COMPACT · SYMMETRIC · PORTABLE

A welding-specialized collaborative
robot optimized for any site, moving easily,
in any direction, anywhere.
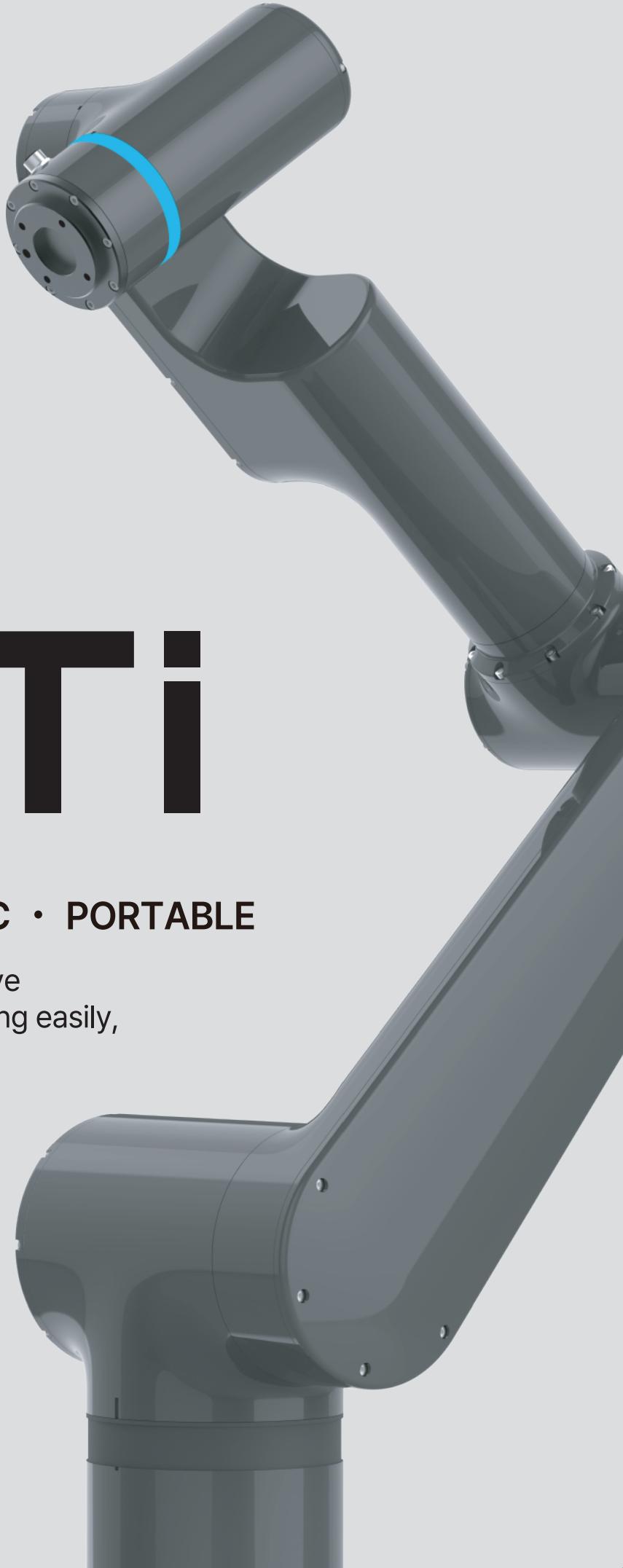
Collaborative Robot

The first collaborative robot designed for welding, enhanced by on-site expertise.

OPTi

OPTi is a new collaborative robot developed by Neuromeka, specifically designed for welding with a 5kg payload capacity. It integrates Neuromeka's welding expertise and features advanced technologies such as sensorless collision detection algorithms, impedance control, and direct teaching. Unlike typical 6-axis robots, the OPTi is designed with a modified axis configuration, allowing for more precise up-and-down movements at the end of the robotic arm. This design makes it particularly suitable for vertical welding tasks. This design not only enhances welding capabilities but also expands its potential for automation tasks in various industries, including food tech and factory automation.

Certification

CE OPTi5   KC OPTi5   KCs OPTi5

OPTi3

DOF	6(all revolute)
Payload	3 kg
Joint Motion Range	J1: ±360 deg, J2: ±150deg, J3: ±150 deg, J4: ±360 deg, J5: ±130 deg, J6: ±360 deg
Maximum Joint Speed	1, 2: 175 deg/s | 3: 180 deg/s | 4, 5, 6: 220 deg/s
Maximum Tool Speed	1 m/s
Reach	940 mm
IP Rating	IP54
Workspace	630 mm
Repeatability	0.05 mm
Weight	10.7 kg(TBD)

OPTi5

DOF	6(all revolute)
Payload	5 kg
Joint Motion Range	J1: ±360 deg, J2: ±160 deg, J3: ±160 deg, J4: ±360 deg, J5: ±180 deg, J6: ±360 deg
Maximum Joint Speed	1, 2, 3: 150 deg/s | 4, 5, 6: 180 deg/s
Maximum Tool Speed	1 m/s
Reach	1350 mm
IP Rating	IP54
Workspace	900 mm
Repeatability	0.05 mm
Weight	36 kg

NURI

Designed to meet every payload requirement.

The leader in building a robust and secure collaborative robot ecosystem.

Collaborative Robot

NURI C Series is the leader in a high payload collaborative robot for heavy-duty tasks with high IP grade.

NURI C

The NURI C Series is the high-payload model in the NURI lineup, designed for heavy-duty collaborative robotics tasks. With an IP67 rating for dust and water resistance, it can be used in environments with water exposure. Additionally, the NURI C features joint torque sensors in all axes, allowing more sensitive reactions to collisions and other external factors. Available in 7, 12, 18, and 20kg payload models, it is suitable for high payload tasks. Offering the same repeatability and path accuracy as industrial robots, the NURI C Series is ideal for a wide range of manufacturing automation applications.

Certification — KC s NURI20C

NURI7C

|	
Payload / DOF	7 kg / 6 DOF
Repeatability	0.02 mm
Maximum Speed	≤3.2 m/s
Mounting Method	Mount at any angle
Weight(w/ built-in control cabinet)	About 25 kg
IP Rating	IP67
Operating Temperature	0 °C - 50 °C
Adjustable Range of Cartesian Stiffness	0 - 6000 N/m | 0 - 1000 Nm/rad
Reach	990 mm
Power Supply	90-264 VAC, 47-63 Hz/48 VDC
Force Sensing (tool flange)	Force x-y-z | Torque x-y-z
Relative Accuracy of Force Control	0.1 N | 0.02 Nm
Range of Motion	±360° for all joints
Maximum Speed	J1, J2: 180 °/s | J3: 234 °/s | J4, J5, J6: 240 °/s

NURI12C

|	
	12 kg / 6 DOF
	0.03 mm
	≤3.0 m/s
	Mount at any angle
	About 41 kg
	IP67
	0 °C - 50 °C
	0 - 18000 N/m | 0 - 2500 Nm/rad
	1430 mm
	90-264 VAC, 47-63 Hz/48 VDC
	Force x-y-z | Torque x-y-z
	0.1 N | 0.02 Nm
	±360° for all joints
	J1, J2: 120°/s | J3: 180°/s | J4: 234°/s | J5, J6: 240°/s

NURI18C
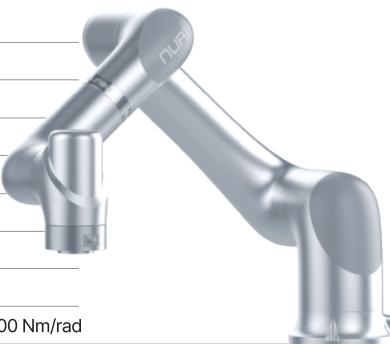
Payload / DOF	18 kg / 6 DOF
Repeatability	0.03 mm
Maximum Speed	≤3.0 m/s
Mounting Method	Mount at any angle
Weight(w/ built-in control cabinet)	About 38 kg
IP Rating	IP67
Operating Temperature	0 °C - 50 °C
Adjustable Range of Cartesian Stiffness	0 - 18000 N/m | 0 - 2500 Nm/rad
Reach	1060 mm
Power Supply	90-264 VAC, 47-63 Hz/48 VDC
Force Sensing (tool flange)	Force x-y-z | Torque x-y-z
Relative Accuracy of Force Control	0.1 N | 0.02 Nm
Range of Motion	J1, J2: ±360 ° | J3: ±165 ° | J4, J5, J6: ±360 °
Maximum Speed	J1, J2: 120 °/s | J3, J4, J5, J6: 180 °/s

NURI20C

	20 kg / 6 DOF
	0.05 mm
	≤3.5 m/s
	Mount at any angle
	About 71 kg
	IP67
	0 °C - 50 °C
	0 - 18000 N/m | 0 - 2500 Nm/rad
	1800 mm
	90-264 VAC, 47-63 Hz/48 VDC
	Force x-y-z | Torque x-y-z
	0.1 N | 0.02 Nm
	J1, J2: ±360 ° | J3: ±170 ° | J4, J5, J6: ±360 °
	J1, J2, J3: 120 °/s | J4 : 180 °/s | J5, J6: 234 °/s

Collaborative Robot

NURI S Series is the leader in a lightweight collaborative robot for education and F&B automation.

NURIS

The NURI S Series is a lightweight collaborative robot model in the NURI series, designed for applications like coffee service and F&B automation. Despite its compact size, the NURI S features built-in joint torque sensors on all axes, ensuring high sensitivity to collisions. Additionally, its IP54 rating makes it suitable for various automation tasks.

With a payload capacity of 3 kg and 4 kg, this collaborative robot delivers the same level of repeatability and path precision as industrial robots and is suitable for education and F&B automation.

NURI3S

Payload / DOF	3 kg / 6 DOF
Repeatability	0.03 mm
Maximum Speed	≤1.5 m/s
Mounting Method	Mount at any angle
Weight(w/ built-in control cabinet)	About 13.8 kg
IP Rating	IP54
Operating Temperature	0 °C - 50 °C
Adjustable Range of Cartesian Stiffness	0 - 3000 N/m	0 - 300 Nm/rad
Reach	710 mm
Power Supply	48 VDC
Force Sensing (tool flange)	Force x-y-z	Torque x-y-z
Relative Accuracy of Force Control	0.1 N	0.02 Nm
Range of Motion	J1, J4, J5, J6: ±360 °	J2: -155 ° to +140 °	J3: -175 ° to +135 °
Maximum Speed	180 °/s for all joints

NURI5S

Payload / DOF	5 kg / 6 DOF
Repeatability	0.03 mm
Maximum Speed	≤2.0 m/s
Mounting Method	Mount at any angle
Weight(w/ built-in control cabinet)	About 16.5 kg
IP Rating	IP54
Operating Temperature	0 °C - 50 °C
Adjustable Range of Cartesian Stiffness	0 - 3000 N/m	0 - 300 Nm/rad
Reach	920 mm
Power Supply	48 VDC
Force Sensing (tool flange)	Force x-y-z	Torque x-y-z
Relative Accuracy of Force Control	0.1 N	0.02 Nm
Range of Motion	J1, J4, J5, J6: ±360 °	J2: -160 ° to +150 °	J3 : -170 ° to +140 °
Maximum Speed	180 °/s for all joints

moby

Autonomous Mobile Robot

Expanding the workspace of collaborative robots.

Autonomous Mobile Robot

An autonomous mobile robot that expands the workspace of collaborative robots, providing greater flexibility and adaptability.

moby

Neuromeka's Moby is an autonomous mobile robot(AMR) platform that enhances the mobility of the Indy collaborative robot. Integrating Indy with Moby expands its operating area, enabling greater flexibility. The sensor plate can be customized to support various sensors, while the work pallet can be swapped based on the task, allowing for diverse applications such as delivery, patrolling, disinfection, and guidance.

Equipped with four 2-degree-of-freedom(DOF) steering wheel modules, Moby minimizes driving force variations, ensuring precise straight-line control and exceptional omni-directional movement. With LiDAR and 3D sensors, Moby can accurately navigate to its target while effectively avoiding obstacles.

			Moby-RP(V3.3)
Weight			180 kg(210 kg with Indy Included)
Payload			40 kg
Dimensions			W 660 mm x L 960 mm x H 600 mm
Guidance System			2D Lidar
Traveling		Navigation	SLAM
		Speed	1.0 m/sec
		Drive Type	Quad Drive
	Drive Wheel	Diameter	200 mm
		Width	50 mm
		Power	350 W
		Payload per Wheel	75 kg
		Wheel Material	Rubber tire
		Voltage	48 V
	Steering	Power	400 W
		Gear Ratio	1 : 70
		Working Range	360 °
Power	Battery Type		Lithium Ion
	Battery Specs		47.19 V 156.8 Ah
Optional Features	Safety Features		LiDAR(2 units)
			Lower Bumper Switch(4 units)
			Emergency Stop Switch(EMS)
	Sensor		Depth Camera(2 or 4 unit options)
	Compatible Collaborative Robot		Indy7 series

Autonomous Mobile Robot for Smart Farm Greenhouse Agriculture

MOBY-Agri

A greenhouse smart farm robot designed for autonomous navigation inside the greenhouse to monitor and manage crops.

Neuromeka's Moby-Agri is an agricultural robot specifically designed for autonomous navigation inside greenhouse smart farms to monitor crops. With Moby-Agri, crop monitoring data, which was previously limited to localized data from fixed IoT sensors, can now be gathered extensively across an entire +100,000 sq. ft greenhouse. This data-driven approach can help increase the yield of greenhouse crops such as tomatoes and peppers.

The robot is configured with a differential drive system for autonomous navigation and is equipped with wheels designed to run on tracks installed in the smart farm greenhouse. Using LiDAR and 3D sensors, Moby-Agri can avoid obstacles and move accurately to its target position. Additionally, it is capable of detecting and following tracks, ensuring precise navigation along the rails and safe dismounting from them.

For crop monitoring, the robot is equipped with a 2-degree-of-freedom(rotation and lift) imaging unit, allowing it to measure crops located up to 3 meters in height.

Moby-Agri

Dimensions(Weight)	600 Type		W 1400mm x L 805 mm x H 491 mm(254 kg)
	650 Type		W 1400mm x L 855 mm x H 491 mm(255 kg)
Guidance System			Lidar
Traveling	Navigation System		SLAM
	Driving Type		Differential Drive
	GRD Drive Wheel	Diameter	235 mm
		Width	74.5 mm
		Speed	Max. 1.0 m/sec
		Wheel Material	Rubber
	Rail Drive Wheel	Diameter	135 mm
		Width	80 mm
		Speed	Max. 0.4 m/sec
		Wheel Material	PTEMG/ Hardness: 95 º ±2 º
	Caster	Diameter	127 mm
		Width	40 mm x 2
		Hardness	95 Shore A
		Payload/ 1 EA	150 kg
		Wheel Material	Polyurethane
Vision Camera Lifting	Type		Lifting ±2 mm
	Stroke	Lifting	Min: 2000 mm, Max: 4100 mm
	Accuracy		Lifting ±5 mm
	Speed		Max: 200 mm/sec
Dimension			W 1400 mm x L 1900 mm x H 450 mm
Power	Type		Lithium Ion
	Driving Time		Max: 10 hours
	Battery		47.19 V 196 Ah
Safety Features			LiDAR(2 units)
			Distance Detection and Image Recognition Depth Camera
			Bumper Switch 2 units)
			Emergency Stop Switch(EMS)

D

Delta Robot

A leader in Korean delta robots for high-speed automation.

D

Neuromeka's D series is a world-class, high-speed, high-precision four-axis delta robot, built on a custom vibration suppression design. It is available in two standard models, with varying payload capacities and workspace radii: D3 (3kg payload) and D6 (6kg payload). Neuromeka offers complete automation solutions with its Delta robots, integrating custom grippers, conveyor belts, and vision sensors with PLCs to meet customer needs for efficient line automation.

Certification

KCs D3 D6

Award

GOOD DESIGN
산업통상자원부선정

D3

Weight		60 kg	
Payload		3 kg	
DOF		4 axes	
Reachable Area	XY Axis	800 mm	
	XY Axis	300 mm	
	Roll Axis	±180 deg	
Repeatability		±0.1 mm	
Actuator		AC Servo Motor, Absolute Encoder	
Cycle Time	Path	Payload	Cycle
	25 x 305 x 25	0 kg	0.30 s
		1 kg	0.45 s
		2 kg	0.51 s
		3 kg	0.55 s

D6

| Weight		80 kg	
Payload		6 kg	
DOF		4 axes	
Reachable Area	XY Axis	1300 mm	
	XY Axis	500 mm	
	Roll Axis	±180 deg	
Repeatability		±0.1 mm	
Actuator		AC Servo Motor, Absolute Encoder	
Cycle Time	Path	Payload	Cycle
	25 x 305 x 25	0 kg	0.30 s
		1 kg	0.36 s
		2 kg	0.37 s
		3 kg	0.39 s
		4 kg	0.41 s
		5 kg	0.43 s
		6 kg	0.45 s

COMPONENTS
& ACCESSORIES
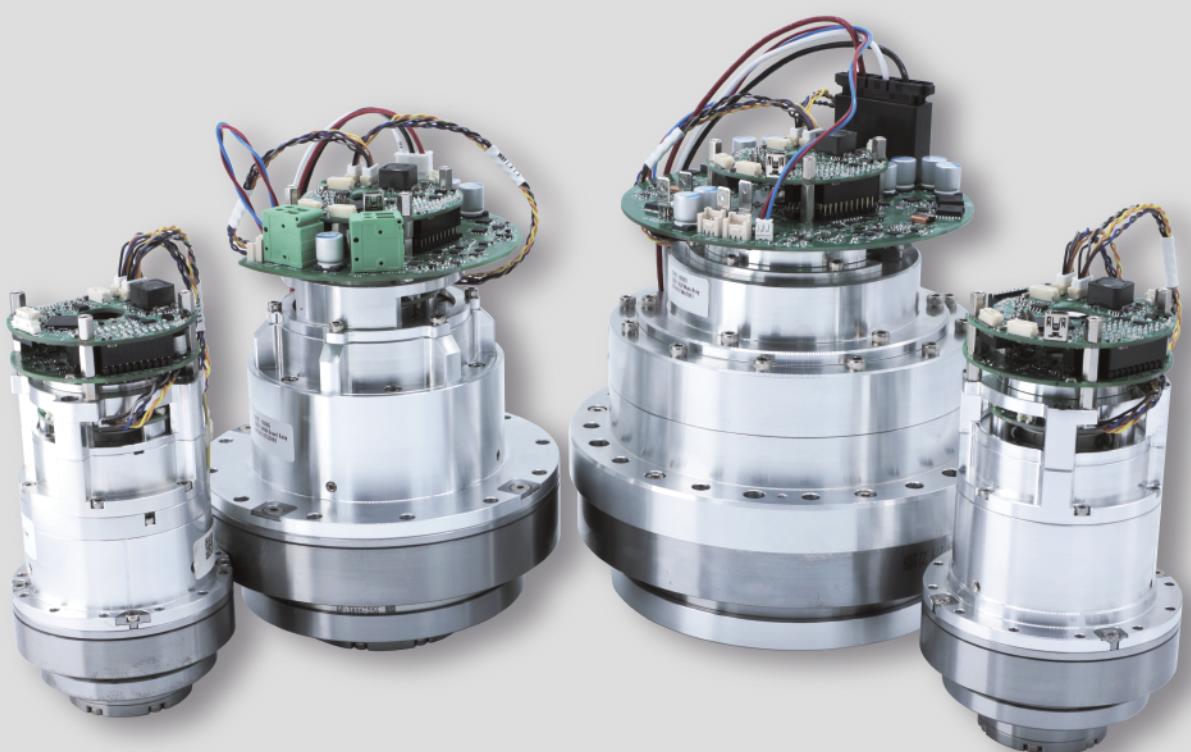
Smart Actuator

An integrated drive module that supports the implementation
of custom robot designs.

CORE

Neuromeka's CORE smart actuators are joint driving modules featuring a frameless motor, harmonic drive, magnetic brake, multi-turn absolute encoder, EtherCAT node board, and motor driver—all integrated within a unified hollow axis structure. This hollow axis design not only improves aesthetics but also allows for seamless routing of motor power and EtherCAT control lines through the hole.

The CORE series, which is used in the Indy lineup, includes four models with different rated power options: CORE100 (100W), CORE200 (200W), CORE500 (500W), and CORE1000 (1300W). Each CORE module supports torque command updates up to 8kHz and allows users to implement custom servo algorithms at the application program level. As the CORE modules are provided without an outer frame by default, they offer greater flexibility for users to design their own custom robots.
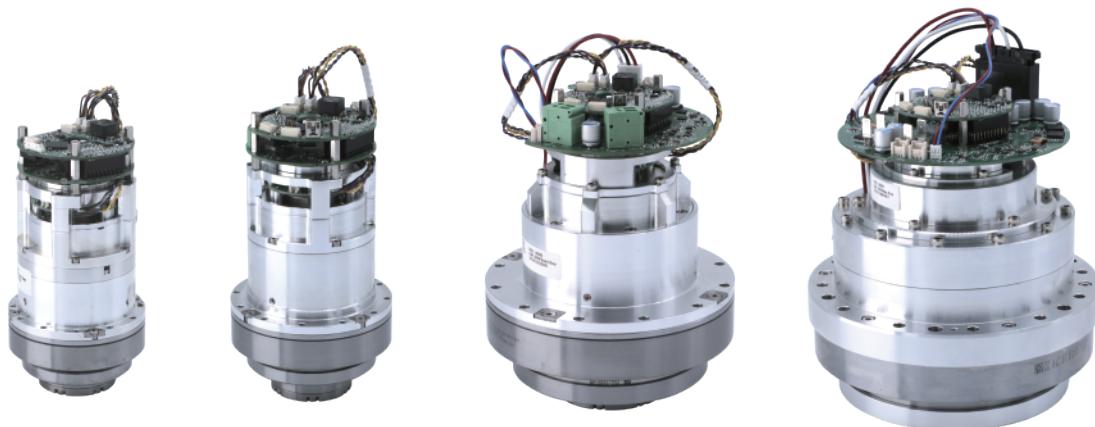
	CORE100	CORE200	CORE500	CORE1000
Rated Power	100 W	200 W	430 W	1130 W
Rated Voltage	48 V	48 V	48 V	48 V
Maximum Continuous Current	4.16 A	5.9 A	12 A	22.6 A
Rated Output Torque	34 Nm	55 Nm	127 Nm	380 Nm
Rated Output Speed	180 deg/s	150 deg/s	150 deg/s	120 deg/s
Size	ø80 x 135 mm	ø90 x 145 mm	ø142 x 155 mm	ø178 x 195 mm
Weight	1.45 kg	1.84 kg	4.87 kg	9.1 kg

Indy CB

Neuromeka's IndyCB is a robot control box that integrates not only the controller but also the power supply, safety devices, IO board, and communication devices. For safety, it includes an emergency stop button, a remote control-type robot program control button, and the IndyKey with an integrated emergency stop (EMO). The wired teach pendant nPad can also be connected as needed. Additionally, a handle has been added for easier mobility, and a separate footrest has been attached to ensure the control box can be securely placed and protected in various environments, improving its usability across a wide range of settings.

		CB 3.0
Input	Voltage	100 – 240 VAC(Operating), 110/230 VAC(Nominal)
	Frequency	Nominal 50/ 60 Hz
	Power Fuse	240 V(Rated voltage) Internal 16 A Circuit breaker
Output	Standby Power	180 W(Robot link ON)
	Rated Power Consumption	Nominal 660 W(Indy7, Opti5), 1600 W(Indy12)
I/O	I/O Output	Digital: Max 24 V(PNP) / 0.75 A, Analog: 0-10 V
	I/O Channels	Digital: 16/16, Analog: 2/2
	I/O Power Supply	Max 24 V / 3 A
Communication	Protocols	EtherNET, EtherCAT, TCP/IP, Modbus TCP
IP	IP Rating	IP 20
Cable Configuration	Cable	Teach Pendant Cable: 5M / 196.85 in
		Robot Cable: 5M / 196.85 in
Operating Environment	Operating Temperature	0 °C to +50 °C
	Storage Temperature	0 °C to +50 °C
	Humidity	10 to 90 %(Non-condensing, operating)

IndyKey

The IndyKey connects to the integrated CB to run the robot's index program or cut off power to perform an emergency stop. Through the LED display, users can monitor the robot's error status or current condition. Additionally, the IndyKey allows for control functions such as resetting the robot, switching between automatic and manual modes, adjusting motion speed, and stopping program execution. The index program can store up to 21 entries.

nPad

Hardware Type: Wired Teach Pendant

		Indykey
Electrical Specifications	Power Consumption	12 V / 0.5 A
	Components	MCU, Key, Switch, 7 Segment LED
Cable Specifications	Rated Voltage	300 V
	Rated Temperature	80 °C
	Operating Voltage	DC 12 V, 24 V
	Length	5 M
	Communication	RS485

	nPad
Dimensions	290 mm × 190 mm × 80 mm
Weight	840 g
Connection	Wired
Display	10.1-in LCD with a resolution of 1920 x1200
IP Rating	IP54

Robot Control Box

Real-time Embedded EtherCAT Master Robot Controller

STEP

The STEP controller comes with the NRMKPlatform SDK, a software framework designed for developing real-time control applications in a Linux/Xenomai environment, which operates on a hard real-time OS. For engineers less familiar with Linux, a development environment running on MS Windows® is also available to support embedded control application development.

STEP is integrated with EtherLab, a proven open-source EtherCAT master stack used for multi-axis synchronized, high-speed real-time distributed control. It supports the development of standard EtherCAT-based real-time control applications via a CoE(CANopen-over-EtherCAT) protocol-based programming interface. Additionally, software tools are provided for the automatic generation of basic CoE-based application code. To support the connection of various devices, STEP includes RS485 and CAN interfaces as standard ports. The NRMKPlatform SDK also provides real-time CAN functionality and integrates the open-source CANOpen framework software, CanFestival, for developing CAN-based applications.

STEP2 is the default controller for real-time control in the Indy lineup, running 4kHz model-based impedance control algorithms. For advanced research and development, STEP3 offers enhanced performance, enabling the development of algorithms based on high-speed deep learning inference computation.

Certification — CE STEP2 STEP3 — KC STEP2Plus

EtherCAT — Linux — XENOMAI

	STEP2 Plus	STEP3
Platform	Fanless Braswell Industrial PC	Skylake Industrial PC
CPU	Intel® Alder Lake-N Processors IMB-1007J(N97, QC, Max Speed Up to 3.6GHz, 12W)	Intel Skylake i7-6700K(3.4 GHz)
RAM	8GB DDR5	8GB DDR4
Storage	128 g(M.2 (Key M, 2242/2280) with PCIe Gen3)	128 g SSD
Ethernet	1 port	1 port
EtherCAT	1 port	1 port
GPIO	7 pin(Only 7 pins excluding GND and 3.3V out of Dsub 9 pins are available)	N/A
RS485/422	1 port	1 port
RS232	3 port	1 port
Dim	212 mm x 198 mm x 62 mm	350 mm x 265 mm x 182 mm
Optional	-	Geforce GTX 1080 Ti

Robot Software
Innovative collaborative
robot control engine

INDYFRAMEWORK

IndyFramework 3.0 is a software framework designed for the efficient development of collaborative robot applications. It operates on Neuromeka's robot controller, STEP, and allows robot control at up to 8KHz(for STEP3). With a universal and robust control algorithm library that can handle the kinematic advantages and model uncertainties of multi-joint robots, as well as an innovative collision detection algorithm, it allows for the safe implementation of various robotic tasks. Additionally, it includes various system functions for building automation systems and remote maintenance capabilities, and is designed with a software structure that allows for future expansion of additional features.

Feature	Specification
High-speed control based on a hard real-time OS	Native EtherCAT master running on the real-time OS Xenomai, optimized for STEP Maximum 8KHz robot control cycle (4kHz for STEP2)
Universal multi-joint robot control library	Kinematics and dynamics algorithms for efficient robot structures Robust control algorithm based on nonlinear H-infinity optimal control Stable workspace control near kinematic singularities Impedance control algorithm in 3D space Various path planning and interpolation algorithms for joint and workspace
Stability and convenience for operation without fences	Power and force limiting function based on collision detection Continuous joint speed, current monitoring, and real-time limitation functionality Online programming: Joint and frame motion programming through the Android teach pendant app, CONTY Direct teaching: Program joint motion by manually moving the robot joints Constrained teaching: Provides guidance to move the robot end effector in a specific direction only when programming frame motion
Various system features for easy automation system setup	Standard modules such as electric grippers, electromagnetic grippers, vacuum suction cups, and automatic screwdrivers Fully isolated DIO (16 channels each), high-performance AIO (2 channels each) External EtherCAT node device interface through internal EtherCAT hub External PLC and controller interfaces such as TCP/IP, Modbus, OPC-UA (SDK programming required depending on the case) Standard IoT protocols, including MQTT
Smart remote maintenance	Remote online software updates (for CONTY, real-time robot control runtime, motor driver firmware, etc.) Automatic log file transmission for remote error diagnosis Webcam-based operational black box for remote site monitoring
Scalable robot software architecture	Expandability of control logic based on a plugin structure Python-based robot motion script programming SDK for developing robot functionality extensions

Teach Pendant App

A teach pendant for collaborative robot programming, designed for everyone.

CONTY

CONTY is a teach pendant app developed by Neuromeka for programming all collaborative robots in the Indy series. It operates on tablets with the standard Android operating system and connects wirelessly or via cable to the STEP robot controller. CONTY supports both online and offline programming, as well as direct teaching for Neuromeka's collaborative robots. With its intuitively designed, feature-rich interface, CONTY makes programming Neuromeka's collaborative robots easy for anyone.
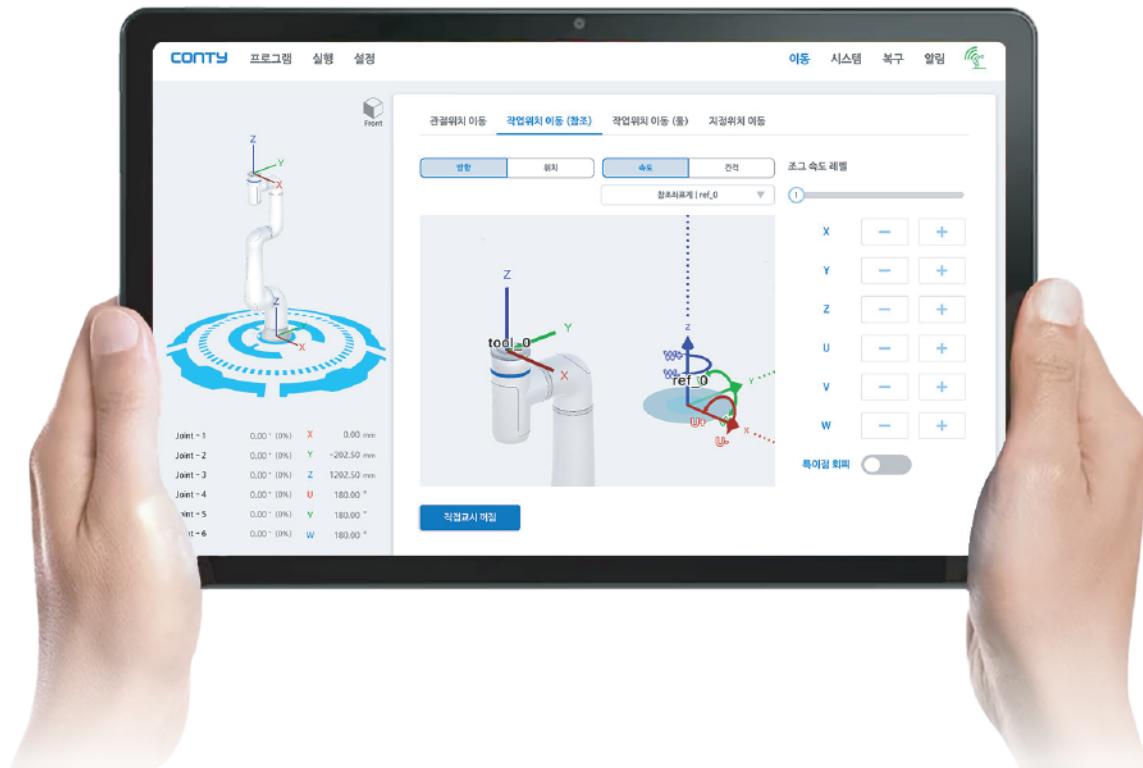
*CONTY is compatible with standard Android OS–based tablets and can be easily installed and operated.

▌**Default Tablet Specification**

Included Tablet Specification

CPU	Qualcomm® Snapdragon™ SDM680	WLAN	802.11 a/b/g/n/ac & Bluetooth® 5.1
Display	10.61"(2000 x 1200), IPS, TDDI LCD, 400 nits	Storage	128 GB UFS 2.2
OS	Android	Camera	8MP FF + 8MP AF
Memory	4 GB LPDDR4X	AC Adapter	10 W
Battery	2 Cell Li-Polymer 7700 mA/Hr		

Accessories

Custom tools for
collaborative robots

INDY ACCESSORIES

Neuromeka offers a range of essential, cost-effective tools for collaborative robots. By collaborating with leading tool manufacturers in the industrial robotics sector, we provide optimized tools tailored to the needs of cobot users. These include grippers for the easy transportation of heavy objects, a cost-effective 6-axis force/torque(F/T) sensor for measuring dynamic robot loads, a movable base, and more.

IndyHand(Robot Hand)

Type	Fully actuated robot hand(3-finger)
Weight	1.7 kg
DOF	11
Algorithm	Advanced blind grasping algorithm
Control	Torque control
Actuator	DYNAMIXEL(ROBOTIS)
Features	Flexible grip with three fingers and eleven DOF

BASE(Mobile Base)

Weight	About 50 kg
Height	420 mm or 685 mm
Features	Axial folding mobile base

AIDIN

AFT200-KIT-NRMK c(CAN)

Weight	635 g(Sensor 236 g, Bracket 399 g)
Operating voltage	5 VDC
Max. Safe excitation voltage	12 VDC
Nominal force range	200 N
Nominal torque range	15 Nm
Resolution(Fxyz)	0.15 N
Resolution(Txyz)	0.015 Nm
Dimensions	D80 * H56.3 mm
IP Rating	IP56
Operating temperature	10-60 °C

GIMATIC

Gripper(MPLM 1630)

Gripping Force	63 N
Stroke	2 x 15 mm
Jaw Closing Time	0.37 s
Power Supply	24 Vdc
Nominal Current	0.3 A
Weight	263 g
Feature	Optimized electric gripper for collaborative robots

DH-ROBOTICS

Gripper(PGE-50-26)

Gripping force (per jaw)	10 to 50 N
Stroke	26 mm
Opening/ Closing Time	0.3 s
Repeat Accuracy (Position)	± 0.03 mm
Noise Emission	< 40 dB
Weight	0.4 kg
Driving Method	Precise planetary gears + Rack and pinion
Size	97 X 55 X 29 mm
Vertical Maximum Force	Fz: 150 N
Allowable Moment	Mx: 2.5 N·m, My: 2 N·m, Mz: 3 N·m
Recommended Workpiece Weight	1 kg
Communication Interface	Standard: Modbus RTU (RS485), Digital I/O Optional: TCP/IP, USB2.0, CAN2.0A, PROFINET, EtherCAT

ROBOTIQ

Gripper(2F140)

Stroke	140 mm
Grip Force	10 to 125 N
Form-Fit Grip Payload	2.5 kg
Friction Grip Payload	2.5 kg
Gripper Weight	1 kg
Closing Speed	30 to 250 mm/s
Ingress protection (IP) rating	IP40

APICOO

Gripper(SusGrip)

Power Supply	12 Vdc
Stroke	132 mm
Velocity	10 to 50 mm/s
Maximum Current	4 A
Communication Interface	Digital I/O, Modbus RTU(RS485)

Robot Service Platform

An accessible and hassle-free
collaborative robot service for everyone.

INDYGO

IndyGO is a compound word combining "Indy" (Neuromeka's collaborative robot) and "Go" (indicating action and mobility), symbolizing a comprehensive service for deploying, operating, and maintaining cobots at client sites.

The IndyGO service covers the entire cobot deployment process, including analysis, design, installation, operation, and maintenance. Leveraging a service platform based on the 'Lean Robotics' methodology, it facilitates the automatic diagnosis and analysis of target manual cells. Additionally, it integrates industrial IoT and smart connected maintenance for enhanced smart factory functionality.

Through thorough analysis of production processes, IndyGO delivers customized and integrated services, offering the most efficient robot layouts and operation plans for production lines. This approach reduces costs, maximizes productivity, and adapts flexibly to dynamic manufacturing environments.

IndyGO is specifically designed for small- and medium-sized manufacturing companies, offering leasing and monthly subscription models to minimize initial investment costs and lower the barriers to robot automation adoption. The service provides a complete solution for robot purchasing, system integration, maintenance, and personnel training, enabling cobot-centered automation at a reasonable cost. This ensures a quick and high return on investment.

IndyPD is a field expert responsible for the introduction, maintenance, and training of collaborative robots.

IndyPD dispatched to the field provides the most efficient robot deployment and operation plans for the production process. They work directly with operators to provide real-time solutions that optimize manufacturing processes and improve efficiency. Additionally, IndyPD also serves as a mentor, training some of the customer's operational workers to become IndyPDs themselves. By educating field staff on how to use collaborative robots, IndyPD helps solve on-site issues and ensures that anyone new to robotics can become a competent and skilled user.

| **Deployment Schedule**	**Introduction Phase** Bi-weekly visits for 6 months	------▶	**Stabilization Phase** Weekly visits for 6 months	------▶	**Operation Phase** Bi-weekly visits for 12 months

Remote Management Services

Smart Factory and Robot Remote Management.

INDYCARE

IndyCARE is a web service designed for the remote management of collaborative robots. As long as there is internet connection, users can access the service anytime and anywhere to view real-time robot status, operational data, and event logs for abnormal situations. The operational data includes the robot's default metrics, such as the number of tasks performed and the temperature of each joint, along with three customizable input channels tailored to user needs. Additionally, the service offers video streaming from the robot's workspace through a webcam.

IndyCARE saves event log files and streaming videos for all collisions and emergency stop events that occur during operations, helping robot users identify root causes and enabling engineers to provide remote customer support efficiently.
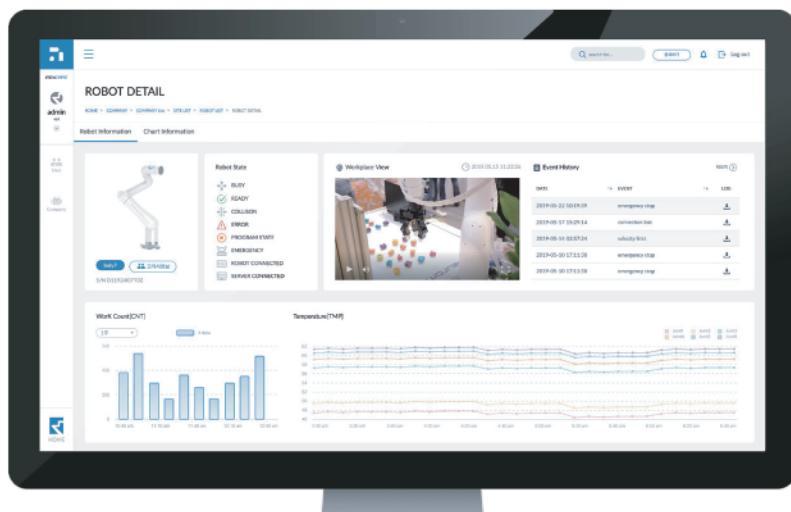
Feature	Description
Real-Time Monitoring of Robot Status	Check whether operations have started Remote management through monitoring of collisions and emergency stop events (email alerts for abnormalities)
Operational Data Collection	Track the number of tasks completed by the robot to measure production output. Monitor joint temperature to detect abnormalities in real time. Customize data parameters to meet specific user requirements.
Worksite Video Streaming	Real-time transmission of on-site conditions to users via a camera connected to IndyCARE Visually check robot status without needing to visit the site
Event Log Collection	Collect log files for changes in robot status (e.g., collisions, emergency stops) Follow-up monitoring for missed events Quick root-cause analysis of abnormalities to reduce maintenance time and costs

TECHNOLOGY

Robot Teaching

Direct Teaching

Neuromeka's direct teaching technology allows users to move the robot manually using a handheld device, enabling them to teach complex tasks easily. This intuitive approach simplifies task programming compared to traditional methods, significantly improving speed and accessibility. Particularly for collaborative robots, teleoperation enhances human-robot interaction, boosting efficiency and safety when teaching robots to perform intricate tasks.

User-Friendly Control	Create various task motions without complex programming.
Flexible and Efficient Tasks	Accelerates the task teaching process and handles advanced tasks that are difficult with traditional methods.
Enhanced Collaboration	Improves interaction between users and robots through real-time adjustments during the teaching process.

Voice Teaching

Neuromeka's voice teaching technology uses AI to enable voice commands for its collaborative robots, allowing users to give instructions using natural language. This innovative feature eliminates the need for complex programming or manual operation, making it easy for anyone to use. By offering a more intuitive and user-friendly way to interact with robots, voice teaching streamlines workflows and enhances efficiency.

AI-Based Natural Language Control	Easily operate the robot with user-friendly voice commands.
Task Instruction Without Programming	Save time and effort by instructing tasks through voice commands without complex programming.
Accessible for Everyone	Interact with the robot without needing specialized technical knowledge, enhancing accessibility.

STT(Speech to Text) → Language Processing (LLM - Large Language Model) → Operating
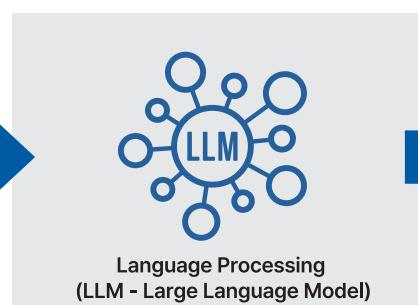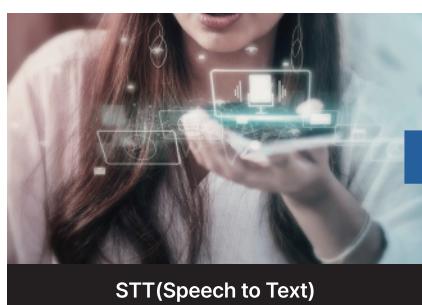
Imitation Learning

Neuromeka's collaborative robot, Indy, is equipped with imitation learning technology, allowing the robot to observe and learn tasks demonstrated by the user through remote control. Once the robot has observed the demonstration, it can replicate the task. This innovative method allows users to teach robots complex and diverse tasks, expanding the potential applications of robots in both industrial and everyday settings. Imitation learning is particularly effective for non-standardized tasks that were difficult to implement using previous teaching methods, allowing robots to adapt flexibly to complex and dynamic work environments.

Intuitive Task Training	Easily operate the robot with precise movements, without the need for complex programming.
Capability for Complex Tasks	Accelerates the task training process and enables handling of advanced tasks that were challenging with traditional methods.
Flexible Adaptability to Environments	Enhances interaction between users and robots through real-time adjustments during the training process.
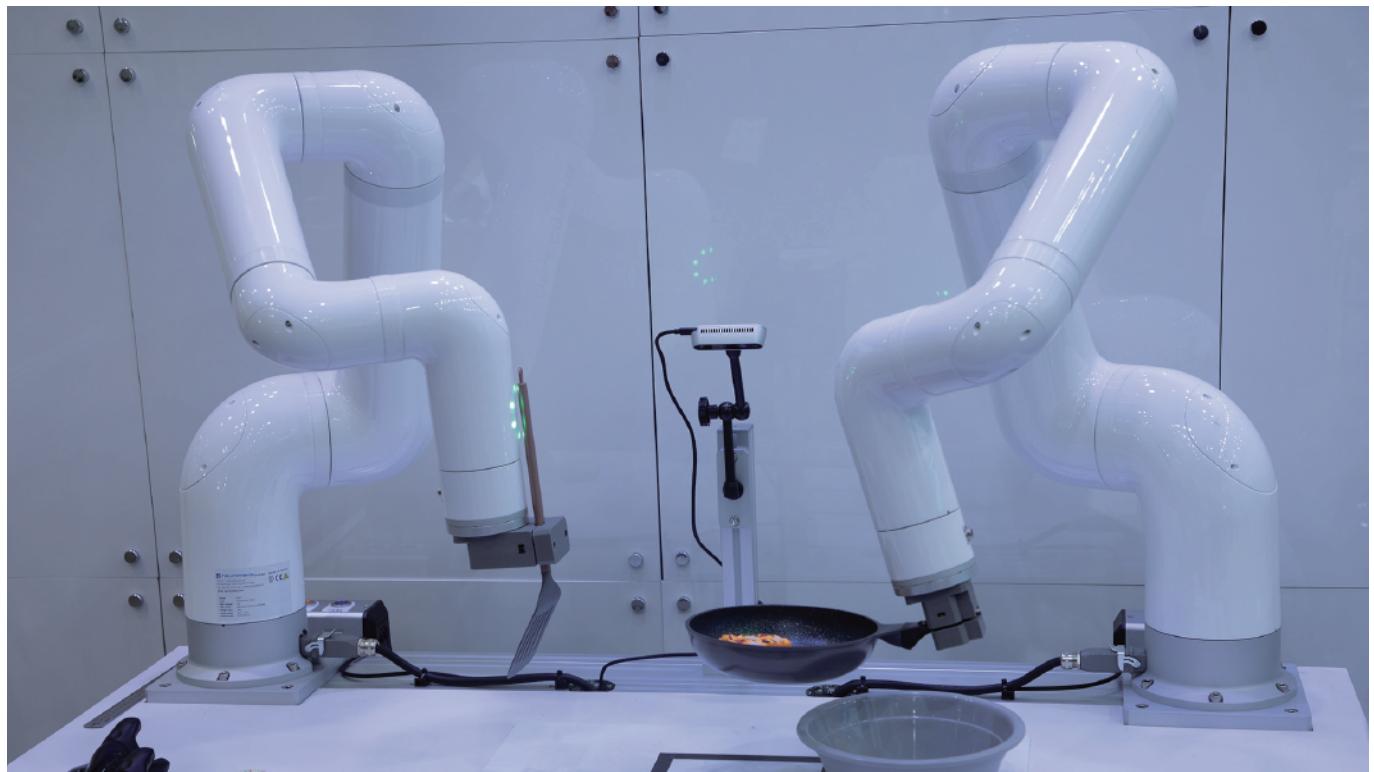
Sensorless Compliance Control

Sensorless compliance control is an advanced technology that allows the robot to adapt to external forces without requiring expensive force/torque (F/T) sensors or joint torque sensors (JTS). By utilizing enhanced algorithms, this system allows the robot to adjust its movements in response to unexpected contact, ensuring smooth and safe operation while maintaining high safety standards.

Cost-Effective Solution

No additional sensors are required, significantly reducing hardware costs.

Enhanced Safety

The robot intuitively responds to external forces, preventing potential damage during unexpected interactions.

Smooth Operation

Performs safe and reliable tasks in dynamic environments without compromising performance.

Safety Filter

Safety filter technology ensures that the robot operates within designated safe zones, preventing self-collisions or contact with surrounding objects during remote operation and task training. By setting virtual boundaries, the system protects the robot's structure and environment, even during fast or complex movements.

Collision Prevention

The robot prevents self-collisions and unintended contact with surrounding objects.

Enhanced Safety

Maintains strict operational boundaries to ensure safe and reliable robot movements.

Improved Reliability

Provides consistent protective features during training and operation, ensuring the robot can operate safely in dynamic environments.

APPLICATION
SOLUTIONS

Palletizing

COBOT PALLETIZER

Neuromeka's palletizing solution allows businesses to build a highly functional and affordable logistics automation system using collaborative robots.

The system is designed for simplicity, allowing even beginners to set up and operate it with ease. Compared to traditional industrial robots, Neuromeka's solution offers a significantly lower cost, making automation more accessible than ever. With easy installation, intuitive operation, and minimal maintenance, Neuromeka's palletizing solution simplifies logistics automation.

| Category	Industrial Robots	Other Collaborative Robots	Neuromeka Collaborative Robots
Usability	For experts	Suitable for beginners	Suitable for beginners
Cost	High (50k – 200k USD/robot)	Low (20k – 50k USD/cobot)	Low
Safety Fence	Required	Not required	Not required
Maintenance	Requires specialized training	Simple	Simple
Mobility	Not movable	Limited mobility	Movable (with carts/AGVs)
Unstructured Stacking	Not possible	Limited function (Pick up only)	Fully functional (Pick & Place)

Machine Tending

COBOT MACHINE TENDING

Neuromeka's machine tending solution offers a cost-effective and highly functional automation system using collaborative robots. By integrating with equipment such as milling machines, CNC lathes, and stamping presses, it enhances efficiency across industries like plastic injection molding, metalworking, mold manufacturing, semiconductor processing, and welding.

These solutions minimizes industrial accidents associated with repetitive, high-risk tasks such as loading and unloading heavy machinery. Neuromeka's proprietary algorithms ensure a secure working environment for human operators. Additionally, the system can be paired with autonomous mobile robots (AMRs) for greater mobility, handling payloads of up to 20 kg. Neuromeka's in-house systems integration ensures high-quality performance and reliability. Neuromeka's machine tending solution features a detachable system design for emergency response, quick installation with minimal stabilization time, and a user-friendly teach pendant with an enhanced UI for easy operation. Neuromeka provides remote teaching support through IndyCARE, along with rapid after-sales service (AS) backed by an in-house customer support team and an extensive partner network. With Neuromeka's machine tending solution, businesses can achieve seamless automation, improved safety, and higher productivity with minimal operational disruption.
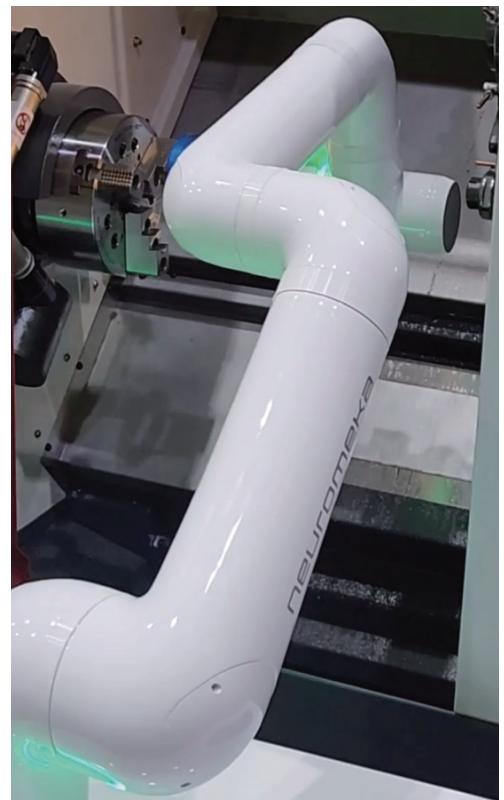
Easy Programming

COBOT WELDING SOLUTION

Welding is one of the most critical tasks in shipbuilding and various industrial fields, requiring a high level of skill. However, exposure to numerous hazards and extreme working conditions has led to a decline in skilled welders, resulting in labor shortages and quality inconsistencies.

Neuromeka's collaborative robot welding automation solutions address these challenges across the welding industry. With features like touch sensing and arc sensing, our solutions ensure consistent quality that exceeds human capabilities while maintaining uninterrupted operations, even in extreme environments.

Additionally, Neuromeka's proprietary algorithms ensure worker safety during operations. Thanks to intuitive teaching methods and simple installation, our world-class robotic welding automation solutions are both accessible and easy to deploy in any location.

AUTONOMOUS MOBILE ROBOT-BASED WELDING SYSTEM

Reduced Working Time
By applying a symmetrical welding-optimized collaborative robot, interference between left and right joints is minimized, shortening travel paths between weld lines.

Minimized Non-Welding Area
Neuromeka is the only cobot manufacturer possessing 3F and 2F arc-sensor-based weld-tracking technology, minimizing idle movement outside welding zones.

CAD-less Welding
Using a 3D camera and touch sensors, the system automatically recognizes weld lines, eliminating the need for OLP (Offline Programming).

Unmanned Operation
A 3D vision system detects obstacles and interferences during travel and prior to welding, automatically determining whether welding is feasible.

Enhanced Safety
Improved trolley navigation and safety functions significantly reduce the risk of accidents during operation.

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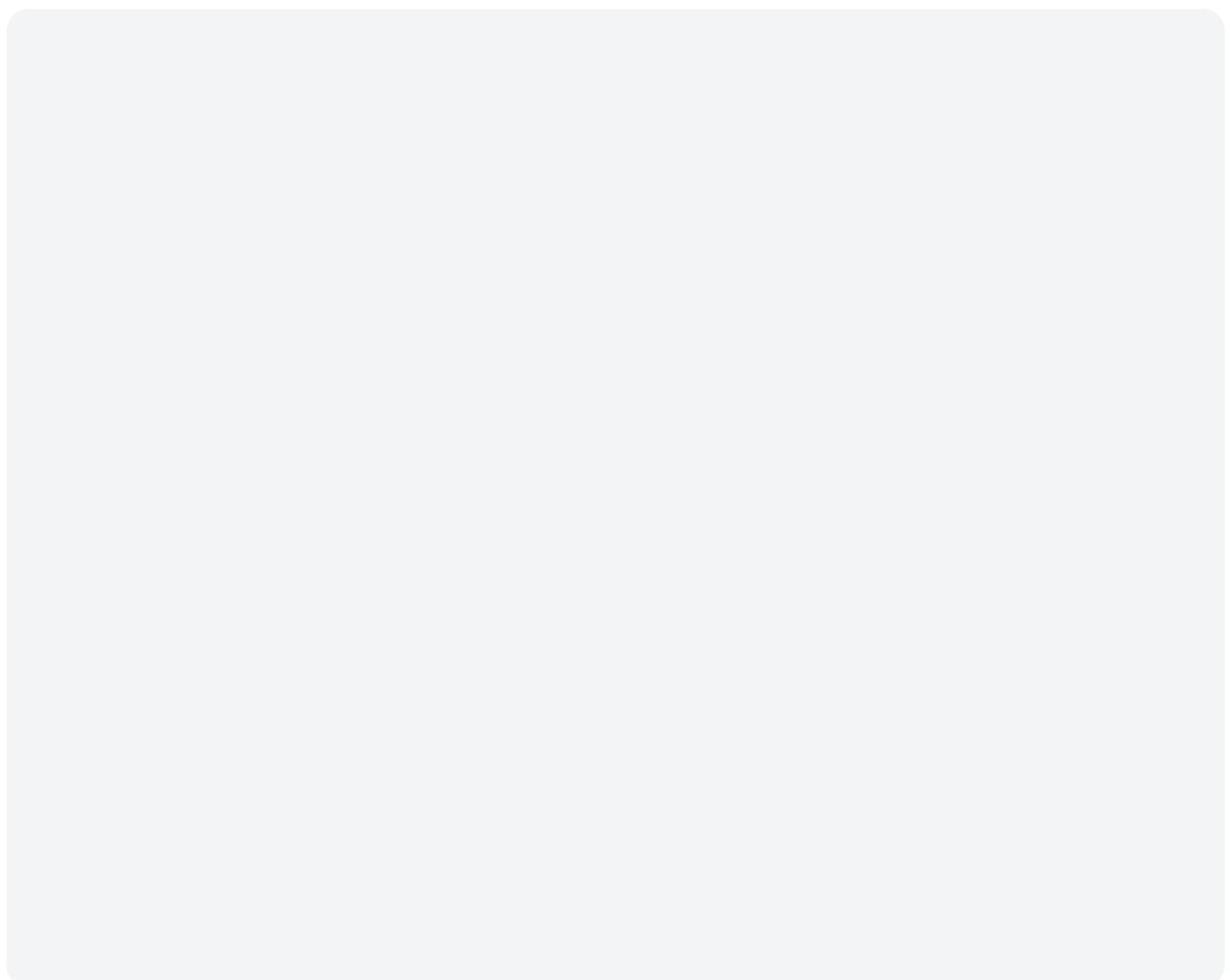
Headquarters 78 Achasan-ro, Seongdong-gu, Seoul 04782, South Korea

Pohang Branch 698-2 Jukcheon-ri, Heunghae-eup, Buk-gu, Pohang, Gyeongbuk 37948, South Korea

Daegu Branch 402 Robot Innovation Center, 75 Nowon-ro, Buk-gu, Daegu 41496, South Korea

Cheonan Branch 111, 4sandan 3-ro, Jiksan-eup, Seobuk-gu, Cheonan-si, Chungcheongnam-do 31040, South Korea

U.S. Office 1501 Panther Loop, Building 4B, Pflugerville, TX 78660, USA

Vietnam Office Room 03-07, Level 3, Tower 1, OneHub Saigon, Plot C1-2, D1 Street, Saigon Hi-Tech Park, Tan Phu Ward, District 9, Ho Chi Minh City, Vietnam

China Office 3rd Floor, Building 2, No. 82 Xindudong Road, Yancheng Economic and Technological Development Zone, Jiangsu, China

KRC Hangzhou 5th Floor, Building 2, Jiqiren Xiaozhen, No. 389 Hongxing Road, Xiaoshan District Economic Development Zone, Hangzhou, Zhejiang, China

Website www.neuromeka.com

Main Phone 1661-0773

Fax 070-4032-3327

Sales sales@neuromeka.com

Marketing/PR pr@neuromeka.com

Technical Support technical-support@neuromeka.com

Online Manual http://docs.neuromeka.com

GitHub http://github.com/neuromeka-robotics