

English

English | V231201



Neuromeka Co., Ltd.

Neuromeka

supports automation for small and medium-sized manufacturers using easy-to-use and economic cobots (collaborative robots). Neuromeka's cobots can cowork with people safely and be programmed easily to apply a variety of applications. Neuromeka is constructing ecosystem for RaaS (robot-as-a-service) platform business based on cobots which helps small and medium-sized companies to deploy and operate robot automation without in-house robot experts. We are to contribute our robot technology to improve every client's productivity.



Robot as a Tool
Robot as a Service
Robots for Every Workplace

History

| | |
|------|---|
| 2013 | 02 founding Neuromeka at Namyangju (Gyeonggi) 07 releasing NRMKFoundation SDK 10 releasing NRMKPlatform SDK |
| 2014 | 01 Venture Company certification 01 installing R&D center 07 relocating HQ in Seongsu (Seoul) 09 releasing STEP/PC and STEP/BBB 10 releasing IGoT/HUB 12 releasing STEP/iMX and STEP/HPC |
| 2015 | 07 releasing CONTY app 08 releasing IGoT/WSN |
| 2016 | 05 attracting series-A investment 07 releasing STEP2 10 releasing Indy RP 11 establishing SCRC (Smart Connected Robot Center) |
| 2017 | 02 INNOBIZ certification 03 releasing Indy3/5/10 04 relocating HQ in Apogee (Seoul) 06 attracting series-B investment 06 relocating SCRC (Smart Connected Robot Center) in POSTECH, C5 (Pohang) 07 setting up Production BU in SCRC 09 releasing Indy7 12 Robot Company of The Year (in Industrial Robots) |
| 2018 | 05 merging Autopower 06 establishing V-SCRC in HCMC (Vietnam) 06 establishing CILab (cobot intelligence laboratory) in POSTECH 07 starting System Engineering business 07 releasing D (Delta robot brand) 07 starting production of Indy7 08 attracting series-C investment 09 Red Dot Design Award (Indy7) 10 starting System Engineering BU (business unit) 10 relocating Production BU (business unit) 12 Robot Company of The Year (in Industrial Robots) 12 KDB NextRound Blue Frog Award 12 releasing STEP3 12 launching pilot business for IndyGo |
| 2019 | 06 relocating HQ in Seongsu (Seoul) 09 releasing Indy12 09 releasing IndyEye 10 releasing IndyCARE 10 relocating to expand Branch Office in Daejeon 12 Robot Company of The Year (in Industrial Robots) 12 2019 Korea Regional Balance Award |
| 2020 | 06 attracting bridge Investment 07 unicorn Startups selection (Ministry of SMEs and Startups) 07 IR52 Jang Young-shil Award 12 Indy7 New Product Certification (NEP) 12 2020 Robot Company of the Year (industrial robot sector) Award 12 establishing China B.O. in Yancheng |
| 2021 | 05 Expansion of Daejeon branch (Jukdong, Daejeon, Korea) 06 excellent corporation R&D center (Ministry of Science and ICT) 08 attracting series-D investment 12 2021 Robot Company of the Year (industrial robot sector) Award 12 governmental commendation, Minister of Trade, Industry and Energy (merit for industrial technology) 12 Certificate of the Innovative Product (Ministry of Trade, Industry and Energy) |
| 2022 | 04 2022 Design Innovation Company by the Ministry of Trade, Industry and Energy 04 establishing US B.O. in Pflugerville, Texas 11 Listed on the KOSDAQ 12 2022 Robot Company of the Year (industrial robot sector) Award |
| 2023 | 04 Expansion of Pohang branch (Buk-gu, Pohang-si) 09 Attained ISO Certification (9001, 14001, 45001) 09 NSF Certification for Indy7 10 Release of NURI collaborative robot series 10 Recognized with an Industry Award (Contribution to the Development of the Mechanical, Robotic, and Aviation Sectors) 11 relocating HQ in Econet Center (Seoul, Seongsu) |

Collaborative Robot

Your first industrial robot for small and medium sized manufacturers

Indy

Indy is Neuromeka's flagship collaborative robot model, featuring a smooth curved design and innovative sensorless collision detection algorithm that ensures worker safety through impedance control. Indy supports intuitive direct teaching and allows online/offline programming through a tablet-based teach pendant app.

Neuromeka offers models with different payload capacities, including Indy 7/12kg models and Indy-RP2, a 7 degree-of-freedom research collaborative robot. Various standard tools such as grippers and vision sensors can be utilized through the expansion port attached to the wrist.



reddot design award
winner 2018



GOOD DESIGN
award winner 2018



Spec

| | Indy7 | Indy7 Pro | Indy-RP2 |
|----------------------------------|---|-------------------------------------|---------------------------------------|
| DOF | 6 (all revolute) | 6 (all revolute) | 7 (all revolute) |
| Payload | 7kg | 7kg | 5kg |
| Joint Motion Range | 1,2,3,4,5 : $\pm 175\text{deg}$ 6 : $\pm 215\text{deg}$ | $\pm 360\text{deg}$ for all joints | $\pm 175\text{deg}$ for all joints |
| Maximum Joint Speed | 1,2,3 : 150deg/s 4,5,6 : 180deg/s | 1,2,3,4 : 150deg/s 5,6 : 180deg/s | 1,2,3,4 : 150deg/s 5,6,7 : 180deg/s |
| Maximum Tool Speed | 1m/s | 1m/s | 1m/s |
| Maximum Reach | 1.3m | 1.3m | 1.3m |
| Maximum Workspace w/Full Payload | 0.8m | 0.8m | 0.8m |
| Repeatability | 100 μm | 50 μm | 100 μm |
| Weight | 28kg | 28kg | 30.5kg |



Spec

| | Indy12 |
|----------------------------------|-------------------------------------|
| DOF | 6 (all revolute) |
| Payload | 12kg |
| Joint Motion Range | $\pm 360\text{deg}$ for all joints |
| Maximum Joint Speed | 1,2 : 120deg/s 3,4,5,6 : 150deg/s |
| Maximum Tool Speed | 1m/s |
| Maximum Reach | 1.8m |
| Maximum Workspace w/Full Payload | 1.2m |
| Repeatability | 100 μm |
| Weight | 55kg |



Spec

| | IndyCB |
|------------------|--|
| Controller | STEP2 |
| Interfaces | EtherCAT, EtherNet, USB, CAN, RS232, RS485 |
| I/O | DI/O 32ch, AI/O 4ch |
| Control Box Size | 420 x 360 x 222 mm |
| Power | max. 700w (avg. ~350w) |
| Weight | ~ 15.5kg |
| Supply Voltage | 100~240 Vac, 50~60hz |

Collaborative Robot

Neuromeke Collaborative Robot Ecosystem

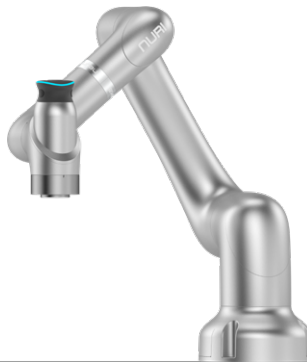
NURI C

The NURI C series represents the heavy-duty model of the NURI series collaborative robots. It has an IP67 rated dustproof and waterproof function, making them suitable for use even in wet environments. Additionally, joint torque sensors are built into all axes, enabling more sensitive responses to collisions and other events.

With payload capacities of 7kg, 12kg, 18kg, and 20kg, these robots are designed for heavy-duty tasks. The 7/12/18/20kg payload models allow for high payload work. They offer the same level of repeatability and path accuracy as industrial robots, making them suitable for various manufacturing automation applications.

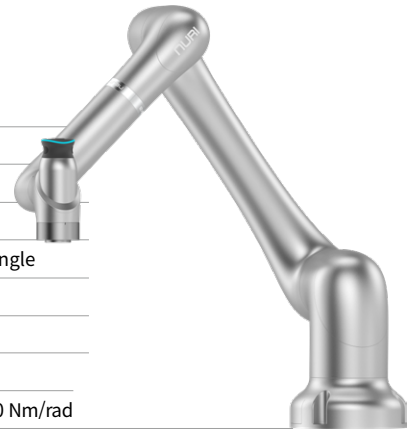
Spec

| | |
|---|---|
| Payload / DOF | 7 kg / 6 DOF |
| Repeatability | ±0.02 mm |
| Maximum Speed | ≤3.2 m/s |
| Mounting Method | Mounting at any angle |
| Weight (built-in control cabinet) | About 27 kg |
| IP Rating | IP54/IP67 |
| Operating Temperature | 0°C~50°C |
| Adjustable Range of Cartesian Stiffness | 0~3000 N/m 0~300 Nm/rad |
| Reach | 988 mm |
| Power Supply | 90-264VAC, 47-63Hz/48VDC |
| Force Sensing (tool flange) | Force x-y-z Torque x-y-z |
| Relative Accuracy of Force Control | 0.5 N 0.1 Nm |
| Range of Motion | ±175° for all joints |
| Maximum Speed | 1,2 : 180°/s 3 : 234°/s 4,5 : 240°/s 6 : 300°/s |



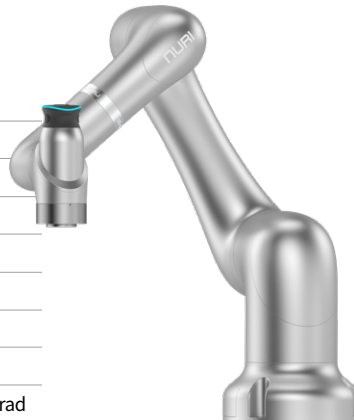
NURI12c

| | |
|---|---|
| Payload / DOF | 12 kg / 6 DOF |
| Repeatability | ±0.03 mm |
| Maximum Speed | ≤3.0m/s |
| Mounting Method | Mounting at any angle |
| Weight (built-in control cabinet) | About 43 kg |
| IP Rating | IP54/IP67 |
| Operating Temperature | 0°C~50°C |
| Adjustable Range of Cartesian Stiffness | 0~3000 N/m 0~300 Nm/rad |
| Reach | 1434 mm |
| Power Supply | 90-264VAC, 47-63Hz/48VDC |
| Force Sensing (tool flange) | Force x-y-z Torque x-y-z |
| Relative Accuracy of Force Control | 0.5 N 0.1 Nm |
| Range of Motion | 1 : ±175° 2 : ±170° 3,4,5,6 : ±175° |
| Maximum Speed | 1,2 : 120°/s 3 : 180°/s 4 : 234°/s 5,6 : 240°/s |



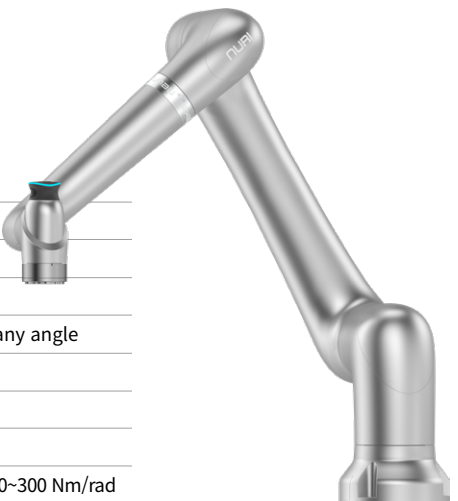
Spec

| | |
|---|---|
| Payload / DOF | 18 kg / 6 DOF |
| Repeatability | ±0.03 mm |
| Maximum Speed | ≤3.0m/s |
| Mounting Method | Mounting at any angle |
| Weight (built-in control cabinet) | About 40 kg |
| IP Rating | IP54/IP67 |
| Operating Temperature | 0°C~50°C |
| Adjustable Range of Cartesian Stiffness | 0~3000 N/m 0~300 Nm/rad |
| Reach | 1062 mm |
| Power Supply | 90-264VAC, 47-63Hz/48VDC |
| Force Sensing (tool flange) | Force x-y-z Torque x-y-z |
| Relative Accuracy of Force Control | 0.5 N 0.1 Nm |
| Range of Motion | 1 : ±175° 2 : ±170° 3 : ±165° 4,5,6 : ±175° |
| Maximum Speed | 1,2 : 120°/s 3,4,5,6 : 180°/s |



NURI20c

| | |
|---|--|
| Payload / DOF | 20 kg / 6 DOF |
| Repeatability | ±0.05 mm |
| Maximum Speed | ≤3.5m/s |
| Mounting Method | Mounting at any angle |
| Weight (built-in control cabinet) | About 75 kg |
| IP Rating | IP54/IP67 |
| Operating Temperature | 0°C~50°C |
| Adjustable Range of Cartesian Stiffness | 0~3000 N/m 0~300 Nm/rad |
| Reach | 1798 mm |
| Power Supply | 90-264VAC, 47-63Hz/48VDC |
| Force Sensing (tool flange) | Force x-y-z Torque x-y-z |
| Relative Accuracy of Force Control | 0.5 N 0.1 Nm |
| Range of Motion | 1,2 : ±175° 3 : ±170° 4,5,6 : ±175° |
| Maximum Speed | 1,2,3 : 120°/s 4 : 180°/s 5,6 : 234°/s |



Collaborative Robot

Neuromeke Collaborative Robot Ecosystem

NURI E

The NURI E series is a collaborative robot with no offset, similar to a human arm, and has joint torque sensors built into all axes, making it highly sensitive to collisions.

Neuromeke provides a model with a payload of 3/7kg, as well as a 6-axis robot and a 7-axis robot for research and development, allowing users to have various routes into automation. With the ability to follow various paths including obstacle avoidance, these collaborative robots are suitable for a wide range of applications such as in education and F&B automation.

Spec

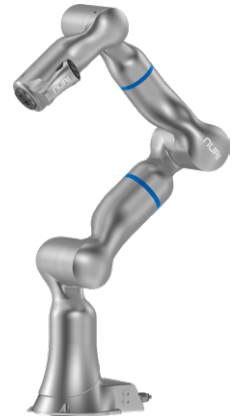
| | |
|---|---|
| Payload / DOF | 3 kg / 6 DOF |
| Repeatability | ±0.03 mm |
| Maximum Speed | ≤3.0 m/s |
| Mounting Method | Mounting at any angle |
| Weight (built-in control cabinet) | About 21 kg |
| IP Rating | IP54 |
| Operating Temperature | 0°C~45°C |
| Adjustable Range of Cartesian Stiffness | 0~3000 N/m 0~300 Nm/rad |
| Reach | 1010 mm |
| Power Supply | 90-264VAC, 47-63Hz/48VDC |
| Force Sensing (tool flange) | Force x-y-z Torque x-y-z |
| Relative Accuracy of Force Control | 0.5 N 0.1 Nm |
| Range of Motion | 1 : ±170° 2,3 : ±120° 4 : ±170° 5 : ±120° 6 : ±360° |
| Maximum Speed | 1 : 180°/s 2 : 150°/s 3 : 180°/s 4,5,6 : 225°/s |

NURI3e



NURI3er

| | |
|---|--|
| Payload / DOF | 3 kg / 7 DOF |
| Repeatability | ±0.03 mm |
| Maximum Speed | ≤3.0 m/s |
| Mounting Method | Mounting at any angle |
| Weight | About 22 kg |
| IP Rating | IP54 |
| Operating Temperature | 0°C~45°C |
| Adjustable Range of Cartesian Stiffness | 0~3000 N/m 0~300 Nm/rad |
| Reach | 1010 mm |
| Power Supply | 90-264VAC, 47-63Hz/48VDC |
| Force Sensing (tool flange) | Force x-y-z Torque x-y-z |
| Relative Accuracy of Force Control | 0.5 N 0.1 Nm |
| Range of Motion | 1,3,5 : ±170° 2,4,6 : ±120° 7 : ±360° |
| Maximum Speed | 1,3,4 : 180°/s 2 : 150°/s 5,6,7 : 225°/s |



Spec

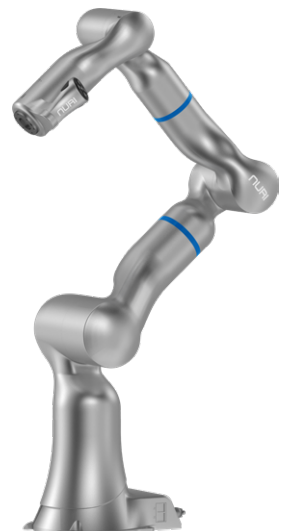
| | |
|---|---|
| Payload / DOF | 7kg / 6 DOF |
| Repeatability | ±0.03 mm |
| Maximum Speed | ≤2.8 m/s |
| Mounting Method | Mounting at any angle |
| Weight (built-in control cabinet) | About 27 kg |
| IP Rating | IP54 |
| Operating Temperature | 0°C~45°C |
| Adjustable Range of Cartesian Stiffness | 0~3000 N/m 0~300 Nm/rad |
| Reach | 1125 mm |
| Power Supply | 90-264VAC, 47-63Hz/48VDC |
| Force Sensing (tool flange) | Force x-y-z Torque x-y-z |
| Relative Accuracy of Force Control | 0.5 N 0.1 Nm |
| Range of Motion | 1,4 : ±170° 2,3,5 : ±120° 6 : ±360° |
| Maximum Speed | 1,2 : 90°/s 3,4,5,6 : 180°/s |

NURI7e



NURI7er

| | |
|---|---|
| Payload / DOF | 7kg / 7 DOF |
| Repeatability | ±0.03 mm |
| Maximum Speed | ≤2.5 m/s |
| Mounting Method | Mounting at any angle |
| Weight | About 29 kg |
| IP Rating | IP54 |
| Operating Temperature | 0°C~45°C |
| Adjustable Range of Cartesian Stiffness | 0~3000 N/m 0~300 Nm/rad |
| Reach | 1125 mm |
| Power Supply | 90-264VAC, 47-63Hz/48VDC |
| Force Sensing (tool flange) | Force x-y-z Torque x-y-z |
| Relative Accuracy of Force Control | 0.5 N 0.1 Nm |
| Range of Motion | 1,3,5 : ±170° 2,4,6 : ±120° 7 : ±360° |
| Maximum Speed | 1,2 : 90°/s 3,4,5,6,7 : 120°/s |



Collaborative Robot

Neuromeke Collaborative Robot Ecosystem

NURI S

The NURI S Series is a lightweight collaborative robot model in the NURI Series, designed for applications such as coffee and F&B automation. Despite its small size, the joint torque sensors built into all axes make it more sensitive to collisions, and its IP54 rating makes it suitable for automation applications.

The model with a payload of 3/4kg is a collaborative robot suitable for education and F&B automation with the same repetition accuracy and path precision as industrial robots.

Spec

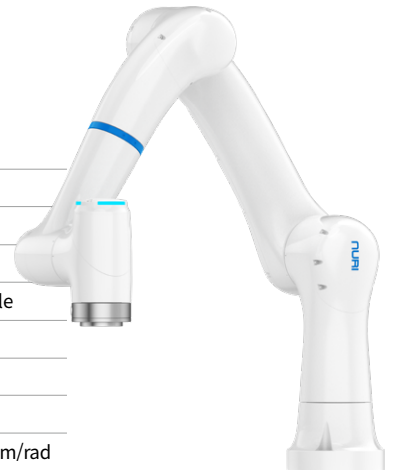
NURI3s

| | |
|---|---|
| Payload / DOF | 3 kg / 6 DOF |
| Repeatability | ±0.02 mm |
| Maximum Speed | ≤3.0 m/s |
| Mounting Method | Mounting at any angle |
| Weight (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 | 705 mm |
| Power Supply | 48VDC |
| Force Sensing (tool flange) | Force x-y-z Torque x-y-z |
| Relative Accuracy of Force Control | 0.5 N 0.1 Nm |
| Range of Motion | 1,4,5,6 : ±175° 2 : -155°~+140° 3 : -175°~+135° |
| Maximum Speed | 180°/s for all joints |



NURI4s

| | |
|---|---|
| Payload / DOF | 4 kg / 6 DOF |
| Repeatability | ±0.03 mm |
| Maximum Speed | ≤2.0 m/s |
| Mounting Method | Mounting at any angle |
| Weight | 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 | 919 mm |
| Power Supply | 48VDC |
| Force Sensing (tool flange) | Force x-y-z Torque x-y-z |
| Relative Accuracy of Force Control | 0.5 N 0.1 Nm |
| Range of Motion | 1,4,5,6 : ±175° 2 : -160°~+150° 3 : -170°~+140° |
| Maximum Speed | 180°/s for all joints |



NURI S CB

S Series Control Box



Spec

NURI CB (for S Series)

| | |
|------------------------------|--|
| Controller | Independent control box (LightCab) |
| Dimensions | 228.5 mm × 180 mm × 88 mm |
| Operator Interface | Notebook/PAD/xPad/Interactive Button |
| Safety Protection Device | 1 external emergency stop |
| Direct Teaching Control | Drag mode: Cartesian space/joint space; teaching mode: point position/continuous trajectory |
| Highly Dynamic Force Control | Impedance control of Cartesian/joint space; motion planning for force control search |
| Communication Protocols | TCP/IP 1000Mbit, Modbus TCP, Profinet, Ethernet/IP, DeviceNet, CC-Link, CC-Link IE Field Basic |
| External Control Interface | Highly dynamic external control; low-level force/position control; robot model library and API |

NURI nPad

NURI Teach Pendant



Spec

nPAD

| | |
|------------|--|
| Dimensions | 290 mm × 190 mm × 80 mm |
| Weight | 840 g |
| Connection | Wired |
| Display | 10.1-in LCD with a resolution of 1920 × 1200 |
| IP Rating | IP54 |

Co-Industrial Robot

a high-performance industrial robot with cobot's safety and ease

ICoN

'ICoN' is a next-generation co-industrial robot with the safety and ease-of-use features of the Neuromeka collaborative robot 'Indy'. By adding an advanced collision detection algorithms, status indicators, and peripheral safety devices such as laser scanners, safety that was not found in existing industrial robots has been greatly improved. Direct teaching by impedance control, tablet-based teach pendant app 'CONTY', and force sensor-based Lead-Through devices enable easy programming. 'ICoN' provides high productivity by providing 2.3 times the speed and high repeatability compared to cobots, up to IP67 waterproof and dustproof rating, and 4 pneumatic lines. total 7 models are provided according to the payload and reach.

Spec ICoN3

| | |
|---------------------|--|
| Maximum Reach | 560mm |
| Payload | 3kg |
| Weight | 23kg |
| Ingress Protection | IP65 |
| Repeatability | $\pm 30\mu\text{m}$ |
| DOF | 6 (all revolute) |
| Joint Motion Range | 1: $\pm 170\text{deg}$ 2: $-110/+120\text{deg}$ 3: $-110/+155\text{deg}$ 4: $\pm 200\text{deg}$ 5: $\pm 120\text{deg}$ 6: $\pm 350\text{deg}$ |
| Maximum Joint Speed | 1: 450deg/s 2: 450deg/s 3: 525deg/s 4: 600deg/s 5: 600deg/s 6: 800deg/s |



Spec ICoN7

| | |
|---------------------|--|
| Maximum Reach | 710mm |
| Payload | 7kg |
| Weight | 49kg |
| Ingress Protection | IP65 |
| Repeatability | $\pm 30\mu\text{m}$ |
| DOF | 6 (all revolute) |
| Joint Motion Range | 1: $\pm 170\text{deg}$ 2: $-100/+135\text{deg}$ 3: $-120/+156\text{deg}$ 4: $\pm 200\text{deg}$ 5: $\pm 135\text{deg}$ 6: $\pm 360\text{deg}$ |
| Maximum Joint Speed | 1: 380deg/s 2: 320deg/s 3: 480deg/s 4: 490deg/s 5: 565deg/s 6: 815deg/s |



Spec ICoN7L

| | |
|---------------------|--|
| Maximum Reach | 920mm |
| Payload | 7kg |
| Weight | 53kg |
| Ingress Protection | IP67 |
| Repeatability | $\pm 30\mu\text{m}$ |
| DOF | 6 (all revolute) |
| Joint Motion Range | 1: $\pm 170\text{deg}$ 2: $-100/+135\text{deg}$ 3: $-120/+156\text{deg}$ 4: $\pm 200\text{deg}$ 5: $\pm 135\text{deg}$ 6: $\pm 360\text{deg}$ |
| Maximum Joint Speed | 1: 380deg/s 2: 320deg/s 3: 390deg/s 4: 490deg/s 5: 565deg/s 6: 815deg/s |



(Long Length)



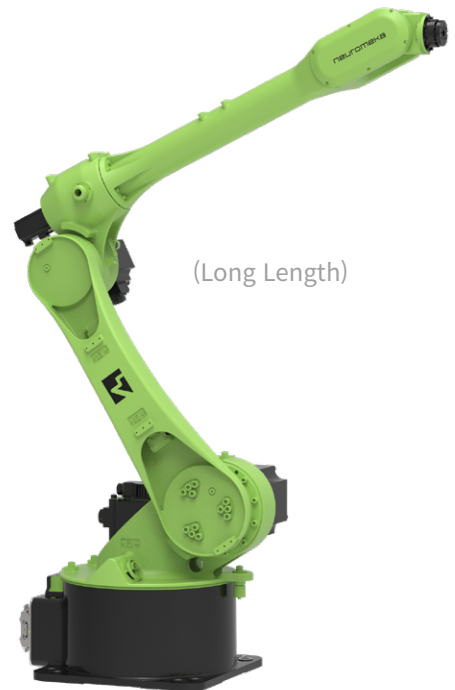
Spec

ICoN10

| | |
|---------------------|--|
| Maximum Reach | 1420mm |
| Payload | 10kg |
| Weight | 180kg |
| Ingress Protection | wrist IP67 |
| Repeatability | ±30μm |
| DOF | 6 (all revolute) |
| Joint Motion Range | 1: ±170deg 2: -85/+150deg 3: -95/+170deg 4: ±195deg 5: ±135deg 6: ±360deg |
| Maximum Joint Speed | 1: 200deg/s 2: 200deg/s 3: 200deg/s 4: 370deg/s 5: 370deg/s 6: 600deg/s |

ICoN12L

| | |
|---------------------|--|
| Maximum Reach | 2001mm |
| Payload | 12kg |
| Weight | 300kg |
| Ingress Protection | wrist IP67 |
| Repeatability | ±60μm |
| DOF | 6 (all revolute) |
| Joint Motion Range | 1: ±170deg 2: -95/+155deg 3: -95/+170deg 4: ±185deg 5: ±135deg 6: ±400deg |
| Maximum Joint Speed | 1: 175deg/s 2: 175deg/s 3: 170deg/s 4: 355deg/s 5: 355deg/s 6: 300deg/s |



Spec

ICoN20

| | |
|---------------------|--|
| Maximum Reach | 1702mm |
| Payload | 20kg |
| Weight | 270kg |
| Ingress Protection | wrist IP67 |
| Repeatability | ±60μm |
| DOF | 6 (all revolute) |
| Joint Motion Range | 1: ±170deg 2: -85/+150deg 3: -95/+170deg 4: ±180deg 5: ±135deg 6: ±400deg |
| Maximum Joint Speed | 1: 175deg/s 2: 175deg/s 3: 170deg/s 4: 360deg/s 5: 360deg/s 6: 600deg/s |

ICoN20L

| | |
|---------------------|--|
| Maximum Reach | 2001mm |
| Payload | 20kg |
| Weight | 280kg |
| Ingress Protection | wrist IP67 |
| Repeatability | ±60μm |
| DOF | 6 (all revolute) |
| Joint Motion Range | 1: ±170deg 2: -85/+150deg 3: -95/+170deg 4: ±180deg 5: ±135deg 6: ±400deg |
| Maximum Joint Speed | 1: 175deg/s 2: 175deg/s 3: 170deg/s 4: 360deg/s 5: 360deg/s 6: 600deg/s |

Autonomous Mobile Robot

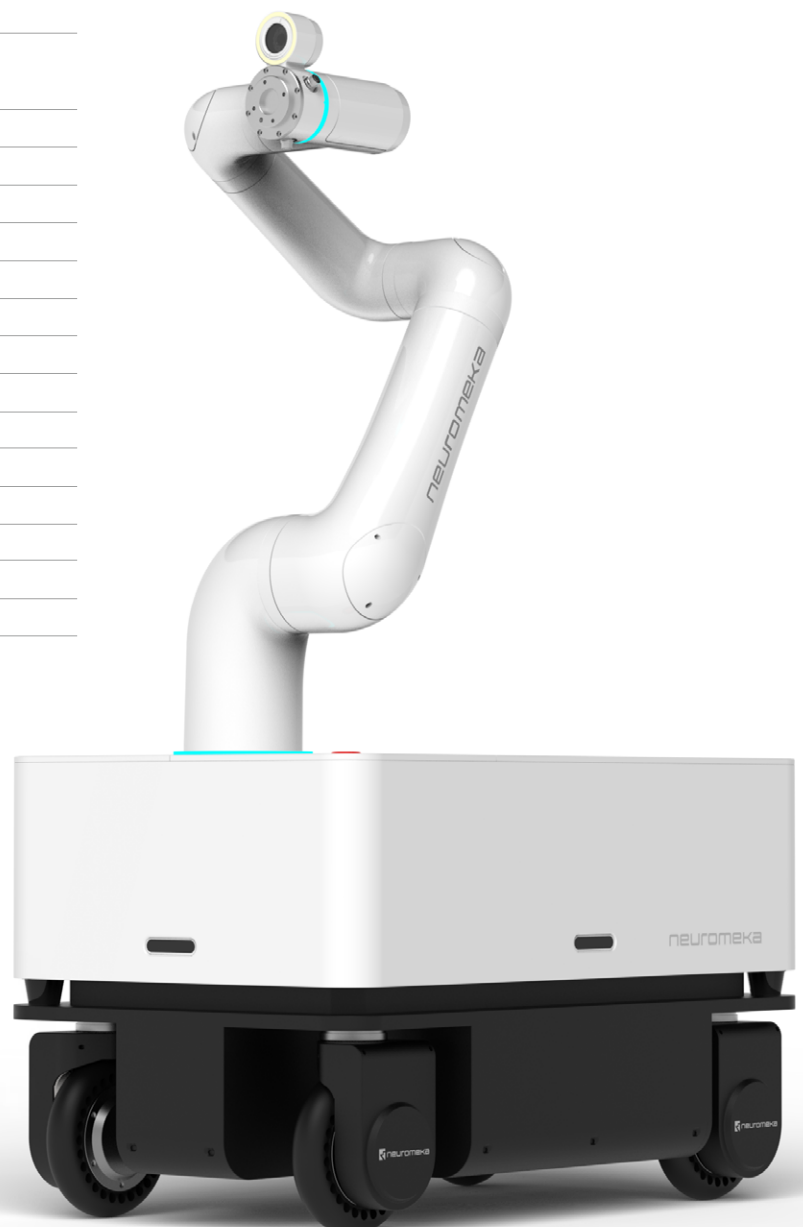
versatile autonomous mobile robot with collaborative robot

Moby

‘Moby’ is Neuromeka’s autonomous mobile robot platform for ‘Indy’. ‘Moby’ makes ‘Indy’ has non-restriction workspace. ‘Moby’ can be equipped with various sensors by changing the sensor plate. Moby can be used for delivery, patrol, quarantine, and guidance by replacing workpallets.

Since the four steering wheel modules (2DOF) minimize the deviation of the driving force, the straight-line controllability and the omnidirectional driving direction controllability are excellent.

| Spec | Moby |
|------------------------------------|--------------------------------|
| Size | 600 x 950 x 589.5 (mm) |
| Weight | 200kg (Indy, battery included) |
| Payload | 100kg |
| Battery | |
| Battery Type | lithium ion battery |
| Battery configuration | 14S18P x 2 Module |
| Total energy capacity | 4.59kWh x 2 Module |
| Usable energy capacity | 3.18kWh x 2 Module |
| Nominal battery capacity | 89.1Ah x 2 Module |
| Voltage range | 42-57.4V |
| Normal voltage | 51.6V |
| Charge voltage | 57.4V |
| Discharge voltage | 39.2V |
| Charge/Discharge current (nominal) | 20A/-20A |
| Charge/Discharge current (max) | 50A/-50A |
| Charge/Discharge power (nominal) | 1,032W/-1,032W |
| Charge/Discharge power (max) | 2,580W/-2,580W |
| DC Disconnect | N-Channel FET and Fuse |



Delta Robot

D

Pride of Korean delta robots for high-speed automation

Neuromeka's 'D' is the world-class high-speed high-precision four-axes delta robot based on custom vibration suppression design. In terms of payload capacity and workspace radius two standard models are under production: 'D3' (with 3kg payload) and 'D6' (with 6kg payload). Neuromeka's delta robots provides total automation solutions with custom grippers, conveyor belts, and vision sensors integrated with PLCs in order to satisfy clients' requirement for line automation.



| Spec | | D3 | |
|----------------|---------------|----------------------------------|-------|
| Weight | | 60kg | |
| Payload | | 3kg | |
| DOF | | 4axis | |
| Reachable Area | XY Axis | 800mm | |
| | XY Axis | 300mm | |
| | Roll Axis | ±180 deg | |
| Repeatability | | ±0.1mm | |
| Actuator | | AC servo motor, absolute encoder | |
| Cycle Time | Path | Payload | Cycle |
| | 25 x 305 x 25 | 0kg | 0.30s |
| | | 1kg | 0.45s |
| | | 2kg | 0.51s |
| | | 3kg | 0.55s |



| Spec | | D6 | |
|----------------|---------------|----------------------------------|-------|
| Weight | | 80kg | |
| Payload | | 6kg | |
| DOF | | 4axis | |
| Reachable Area | XY Axis | 1300mm | |
| | XY Axis | 500mm | |
| | Roll Axis | ±180 deg | |
| Repeatability | | ±0.1mm | |
| Actuator | | AC servo motor, absolute encoder | |
| Cycle Time | Path | Payload | Cycle |
| | 25 x 305 x 25 | 0kg | 0.30s |
| | | 1kg | 0.36s |
| | | 2kg | 0.37s |
| | | 3kg | 0.39s |
| | | 4kg | 0.41s |
| | | 5kg | 0.43s |
| | | 6kg | 0.45s |



Vision Solution

Reasonable price and reliable performance

IndyEye

Deep learning based, high-performance vision solution IndyEye offers affordable solutions through low-cost vision sensor and deep learning server sharing.

Unlike former vision sensors that require demanding working conditions, IndyEye can be applied flexibly to any working environment without large space or bright lights, and deep learning server sharing can store working objects data to respond to customer requests. In small and medium-sized manufacturer that require variants of manufacturing lines frequently, IndyEye enables a variety of tasks and quick application.



| Spec | IndyEye |
|-----------------------|------------------------------|
| Size | 67mm x 67mm x 74.4mm |
| Processing Time | 250~1500ms/img |
| Field of View (H/V/D) | 86° ±5° / 70° ±5° / 100° ±5° |
| Interface | USB 2.0 |
| Working distance | 5cm-70cm |

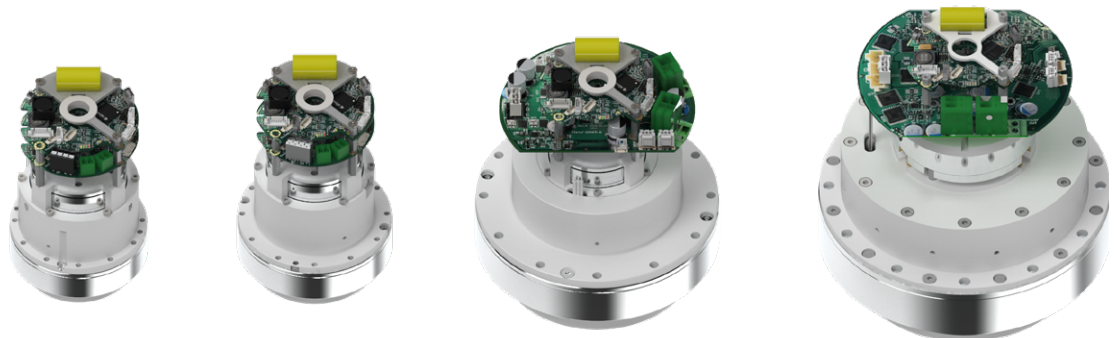
Smart Actuator

Integrated module for your own cobot

CORE

Neuromeka's smart actuators 'CORE' are joint driving modules with frameless motor, harmonic drive, magnetic brake, multi-turn absolute encoder, EtherCAT slave board, and motor driver integrated through a common hollow axis structure. Hollow axis design enables aesthetic robot design for motor power lines and EtherCAT control lines go through the hole.

'CORE' series (adopted to Indy lineup) consists of four models in terms of rated power, e.g. 'CORE100/200/500 and 1000' (100W, 200W, 500W, and 1300W, respectively). Every 'CORE' module supports torque command update up to 8kHz, and users can implement customized servo algorithm at the user application level. As 'CORE' modules are provided without outer frame by default, it helps to design users' custom robot.



| Spec | CORE100 | CORE200 | CORE500 | CORE1000 |
|----------------------------|-------------|-------------|--------------|--------------|
| Rated Power | 100W | 200W | 500W | 1130W |
| Rated Voltage | 48V | 48V | 48V | 48V |
| Maximum Continuous Current | 3.8A | 4.8A | 11.7A | 22.6A |
| Rated Output Torque | 21Nm | 50Nm | 121Nm | 361Nm |
| Rated Output Speed | 180deg/s | 150deg/s | 150deg/s | 120deg/s |
| Size | Ø80 x 135mm | Ø90 x 145mm | Ø142 x 155mm | Ø178 x 195mm |
| Weight | 1.45kg | 1.84kg | 4.87kg | 9.1kg |

‘STEP’ comes with NRMKPlatform SDK, a software framework for development of realtime control applications on Linux/Xenomai environment which is the hard realtime OS. Development environment running on MS Windows® is also provided in order for engineers unfamiliar with Linux environment to develop embedded control applications.

‘STEP’ is integrated with EtherLab, which has been proven open-source EtherCAT master stack for many systems, for multi-axes synchronized high-speed realtime distributed control. Development of standard EtherCAT based realtime control applications is supported by CoE (CANopen-over-EtherCAT) protocol based programming interface. Software tools are provided for automatic generation of basic CoE based application codes. Legacy devices with RS485 or CAN interfaces can be connected for standard ports. In order to facilitate CAN based applications NRMKPlatform SDK has RT CAN and CanFestival (open-source CANOpen framework software) installed.

‘STEP2’ is the default controller responsible for realtime control of Indy lineup, and runs 4kHz model-based impedance control algorithms. ‘STEP3’, a performance model intended for advanced research and development, is integrated with a high-performance GPU card and NVIDIA TensorRT library which facilitates development of a variety of algorithms based on high-speed deep learning inference computation.



| Spec | STEP2 | STEP3 |
|-----------|---|---------------------------------|
| Platform | Fanless Braswell Industrial PC | Skylake Industrial PC |
| CPU | Intel Celeron Braswell soc (4X, 1.6GHz) | Intel Skylake i7-6700K (3.4GHz) |
| RAM | 4GDDR3 | 8GDDR4 |
| Storage | 128G SSD(SATA3) | 128G SSD |
| Ethernet | 1port | 1port |
| EtherCAT | 1port | 1port |
| GPIO | 16pin | N/A |
| RS485/422 | 1port | 1port |
| RS232 | 2port | 1port |
| CAN | 1port | N/A |
| Dim | 204 x 185 x 52 | 350 x 265 x 182 |
| Optional | - | Geforce GTX 1080 Ti |

‘IndyFramework 2.0’ is the Neuromeka’s proprietary software framework developed for efficient development of effective cobot applications. Operating on robot controller ‘STEP’ environment, it is capable of controlling a robot at maximum 8kHz (in case of STEP3 controller). Thanks to general-purpose robust control algorithm library for articulated robots coping with kinematic singularity and model uncertainties as well as innovative collision detection algorithm a variety of robotic tasks can be implemented safely and stably. Furthermore, its software architecture is designed to accommodate extension for more features because a number of system functions necessary for automation system deployment and remote connected maintenance are included.

| Function | Features |
|---|---|
| High-speed control on hard RT OS | Native EtherCAT master running on realtime OS Xenomai optimized for ‘STEP’ Robot control frequency of maximum 8kHz (4kHz for ‘STEP2’) |
| General-purpose articulated robot control library | Efficient kinematics and dynamics algorithm for a variety of robot structures Nonlinear H-infinity optimal control based robust control algorithm Stable task control capability near kinematic singularities Impedance control algorithm in three-dimensional space A variety of path planning algorithms and trajectory interpolation algorithms in joint and task space |
| Safety and convenience by operation without fences | Collision detection based ‘power and force limiting’ feature Realtime monitoring and limitation of joint velocities and currents Online programming for joint and frame moves by ‘CONTY’ (Android teach pendant app) Direct teaching for joint move programming by physically moving robot joints Impedance teaching for frame move programming by physically moving the robot end-effector in selected translation and/or orientation directions |
| System utility functions to facilitate automation system implementation | Standard tool modules such as electrical grippers, electro-magnetic grippers, vacuum suction tools, automatic bolt runners Fully isolated DIO (each 16 channels) and high-performance AIO (each 2 channels) Independent EtherCAT port for interface of external slaves (via internal EtherCAT hub) TCP/IP, Modbus, and OPC-UA for interfacing external PLCs and/or controllers (SDK programming may be necessary) Standard IoT protocols such as MQTT |
| Smart Connected Maintenance | Remote online SW update (‘CONTY’ app, realtime robot control runtime, and motor driver firmware) Log file transfer for remote diagnosis for system malfunction Webcam based operation black-box feature for remote site monitoring |
| Extendable robot SW architecture | Plugin structure for control logic extension Python-based robot motion script programming SDK for extension of robot functionalities and algorithms |

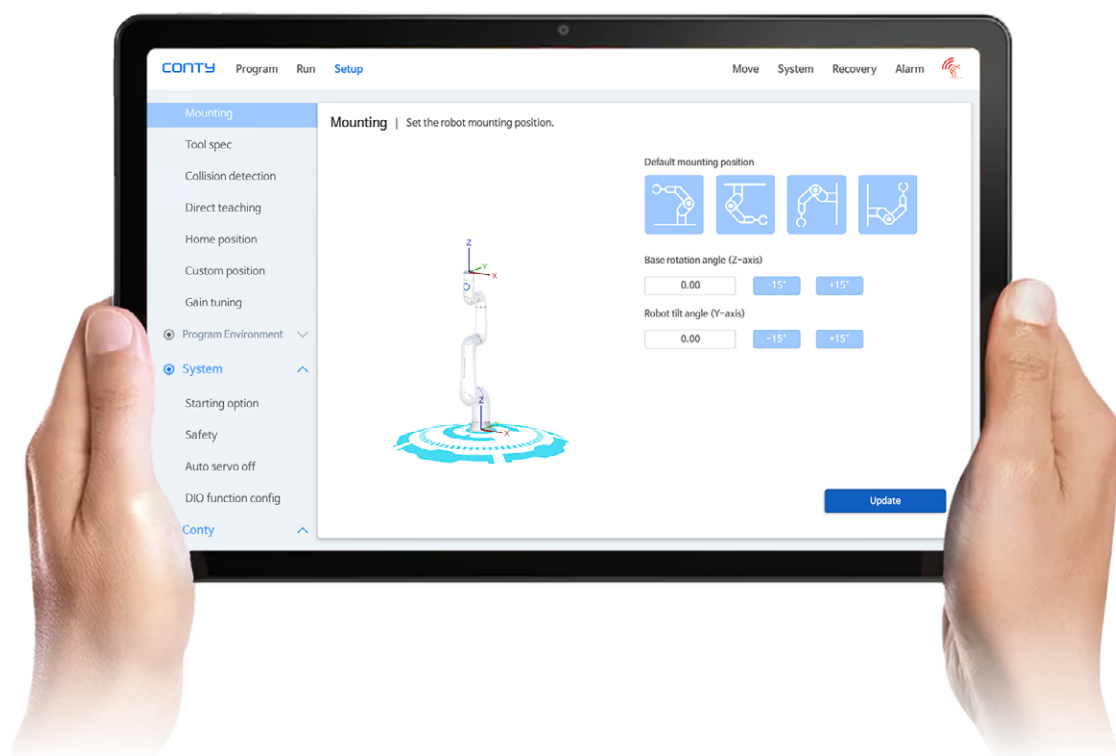
Teach Pendant

Everyone's teach pendant for cobot programming

CONTY

'CONTY' is the teach pendant app (running on Android OS) developed independently to program every cobot of Neuromeka. As such it runs on every standard android tablet. Communicating with the robot controller 'STEP' in wired or wireless manner, it supports online and offline programming of Indy lineup as well as direct teaching. Thanks to abundant features designed intuitively anyone can program Neuromeka's cobot.

*Available with exclusive tablet for 'CONTY'



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

Standard Tools

Robot as a Tool

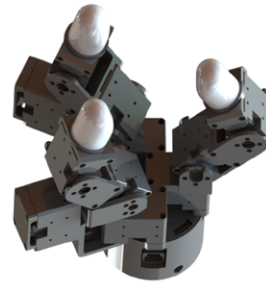
IndyTools

Neuromeka offers a variety of tools that are required for cobots at an economical price. By collaborating with tool manufacturers used in industrial robots, we provide optimum tools that cobot users need. Gripper for easy transportation of heavy objects during work, low-cost 6-axis F/T sensor that can measure robot's dynamical load robot, movable base for, and more.

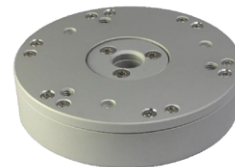
| Spec | Gripper (MPLM 1630) |
|-----------------|---|
| Gripping Force | 63N |
| Stroke | 2 x 15mm |
| Jw Closing Time | 0.37s |
| Power Supply | 24Vdc |
| Nominal Current | 0.3 |
| Weight | 263g |
| Feature | Optimized electric gripper for collaborative robots |



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



| Spec | Torque Sensor (RFT76-HA01) |
|---------------|---|
| Dimension | Ø76 x 18.5mm |
| Weight | 200g |
| Data Rate | max 1,000Hz |
| Load Capacity | 300N, 8Nm(torque) |
| Resolution | 200mN, 8mNm(torque) |
| Feature | Capacitance type, 6 axis force with low price |



| Spec | BASE (Mobile Base) |
|---------|---------------------------|
| Weight | About 50kg |
| Height | 420mm, 685mm |
| Feature | Axial folding mobile base |



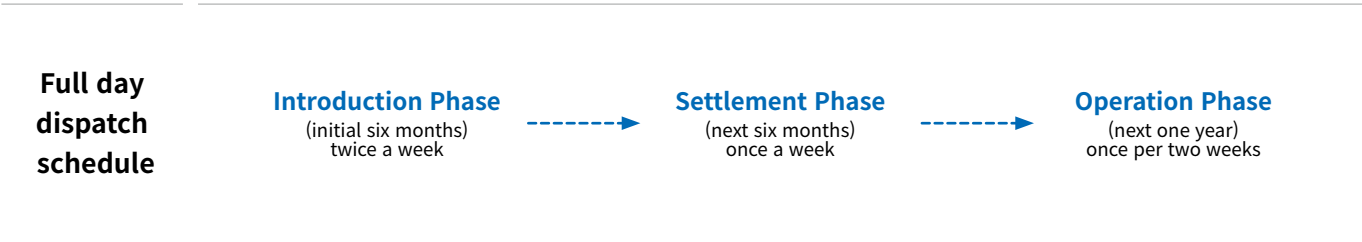
‘IndyGO’, which is the compound word of ‘Indy’ (Neuromeka’s cobot) and ‘go’ (meaning ‘go to clients sites’), stands for the total solution service providing deployment, operation as well as maintenance of cobots for clients. ‘IndyGO’ provides service covering the whole process of cobot deployment of analysis-design-installation-operation-maintenance necessary. To this end a service platform adopting ‘Lean Robotics’ methodology is utilized to facilitate automatic diagnosis and analysis of target manual cells. It also provides smart factory feature using industrial IoT and smart connected maintenance.

Customized and integrated ‘IndyGO’ services through thorough analysis of production process provide a most efficient robot layout and operation plan in production line. This enables cost reduction as well as productivity maximization, and can be applied actively to dynamically changing manufacturing processes. ‘IndyGO’ is specializing in small and medium sized manufacturing companies is provided with leasing and monthly subscription model to minimize the initial investment cost, thereby lowering the barrier to constructing robot automation production line. Robot purchasing, system integration, maintenance and related personnel training can be solved through ‘IndyGO’ service, and cobot-centered automation can be operated at a reasonable cost, which in turn guarantees quick and high return on investment.



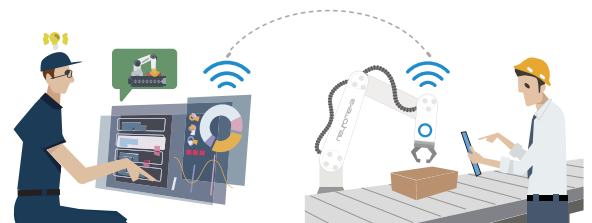
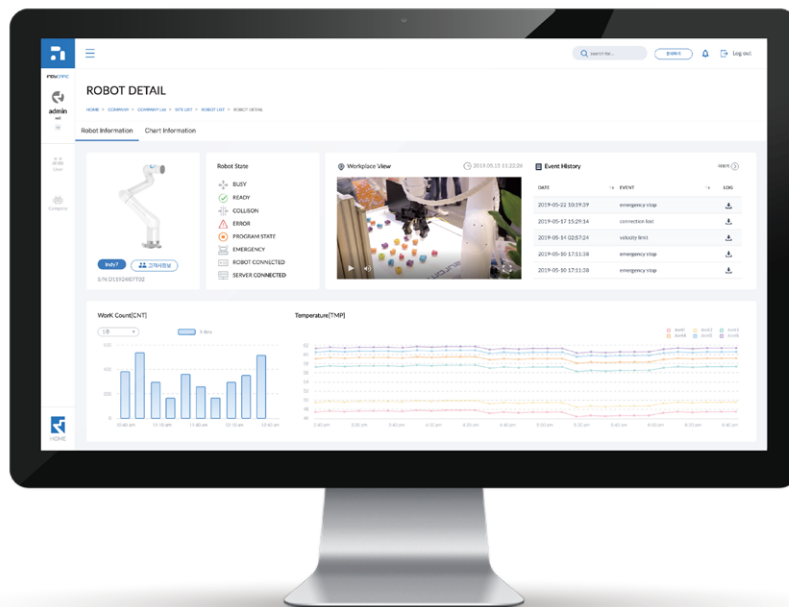
‘IndyPD’ is an on-site cobot specialist for the introduction, maintenance and training of cooperative robot cells.

‘IndyPD’, which will be dispatched to the field (initially from Neuromeka), provides the most efficient robot layout and operation plan for the production process, and communicates directly with workers to provide an immediate solution to a production process that needs to be changed. In addition, ‘IndyPD’ also serves as a mentor to train some of the client’s employees as ‘IndyPD’. He/she educates field staff on how to use cobots, and to solve problems in the field, and helps anyone new to cobots become a competent and skilled cobot specialist. In the future, customers can drive their own automation using in-house ‘IndyPD’s at a lower cost and can also make ‘IndyGO’ business by themselves to neighbor partners.



‘IndyCARE’ is a web service created for remote management of cobots. If you have an Internet connection, you can access the cobot’s real-time status, operating data, and event logs anytime, anywhere. The operating data has three additional input channels that can be customized to fulfill the user’s needs, in addition to Cobot’s work counts and the temperature of each joint. We also provide video streaming services of the worksite through the accompanying web camera with cobot.

‘IndyCARE’ stores event log files and streaming videos for all collision detection and emergency stop situations during work to help determine the causes of robot administrators and enable engineers to provide remote CS support.



Function

Real-time monitoring of cobots

Store work date

Video streaming of worksite

Collecting event log

Features

Check whether or not operations are started
Remote management with collision and emergency stop situation monitoring (email alarm function in case of an abnormal situation)

Measure the productivity by collecting data on the work count by the Cobots
Temperature measurement of each joint monitoring for abnormal conditions
Customizing of data values

Real-time transmission of the work site situation to the robot administrator with the camera connected to the ‘IndyCARE’
Visually check the status of cobot without visit each worksite

Collect log files for changes in Cobot status (collision, emergency stop, etc.)
Subsequent monitoring of missed situations by robot administrators
Fast analysis of robot anomalies to reduce maintenance time and cost



Robot as a Tool
Robot as a Service
Robots for Every Workplace

Homepage www.neuromeka.com

Tel +82 2 1661-0773

FAX +82 70-4032-3327

Sales sales@neuromeka.com

MKT/PR pr@neuromeka.com



Facebook www.facebook.com/neuromeka

Instagram www.instagram.com/neuromeka_robotics

LinkedIn www.linkedin.com/company/neuromeka

Youtube www.youtube.com/neuromeka

KakaoTalk(Channel) **neuromeka**

HQ (04782) Econet Center, 78 Ahasan-ro, Seongdong-gu, Seoul

Pohang B.O. (37948) 698-2 Jukcheon-ri, Heunghae-eup, Buk-gu, Pohang-si, Gyeongsangbuk-do

USA B.O. 1501 Panther Loop, Bldg. 4B Pflugerville, TX 78660, USA

Vietnam B.O. 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

China B.O. 3F, Building 2, No. 82 Xindudong Road, Yancheng Economic and Technological Development Zone, Jiangsu province, China

KRC Hangzhou 509, 5F, Building 2, Jiqiren Xiaozhen, No. 389 Hongxing Road, Xiaoshan District Economic Development Zone, Hangzhou City, Zhejiang province, China