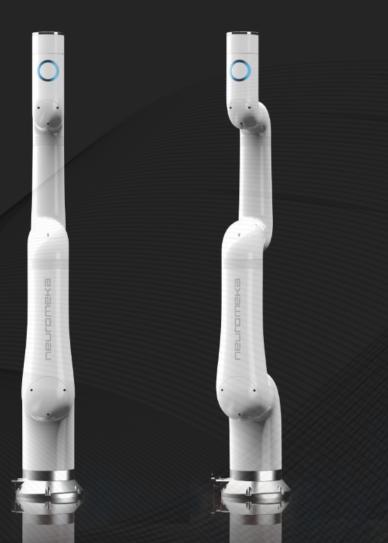


Neuromeka Company Profile



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O1 History

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Customer & Partner

Mission, Vision, Core Value

05 Product



## ABOUT US

Company Name Neuromeka Co., Ltd

CEO Jonghoon Park

Business cobot manufacturing, industrial robot manufacturing, system integration,

robot automation platform service

Establishment February 14<sup>th</sup> 2013

Employees 145

Location [HQ] 15F, W, 7, Yeonmujang 5ga-qil, Seongdong-gu, Seoul, Republic of Korea

[Pohang B.O.] 698-2 Jukcheon-ri, Heunghae-eup, Buk-gu, Pohang-si, Gyeongsangbuk-do,

Republic of Korea

[US 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 Office] 509, 5F, Building 2, Jigiren Xiaozhen, No. 389 Hongxing Road,

Xiaoshan District Economic Development Zone,

Hangzhou City, Zhejiang province, China

Homepage www.neuromeka.com





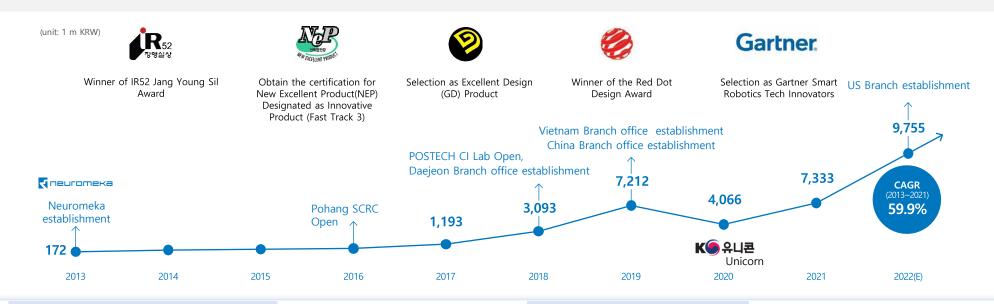
## 01

# Neuromeka is

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

## **GROWTH STORY**

Neuromeka, which has been growing at an annual rate of 59.9% since its establishment, has released the world's first Al collaborative robot.



## Securing and verifying the three basic technologies for commercializing control platforms

- · Release of Robot Control Engine and Real-Time Robot Control Framework
- · Release of Real-Time Embedded Robot Controller
- · Release of Teach Pendant App for Robot Programming
- · Release of IndyRP, a research experimental platform

## Mass production and commercialization of collaborative robots

- · Release of Collaborative Robot Indy
- · Winner of the Korean Robotics Society's Technical
- Award and Academic Award
- · Selected as one of the top 100 future technology
- leaders in Korea [Leading Korea in 2025] (Collaborative
- manufacturing robot sector)

## **Development of Automation Services Business**

- · Release of Delta Robot D and start of automation business
- · Development of RaaS platforms (IndyGo, IndyCare, IndyProto)
- · Development of learning-based vision solution IndyEye
- · Development of collision detection neural network Collision Net
- $\cdot$  Selected as a prospective unicorn by the Ministry of SMEs and Startups
- · Winner of IR52 Jang Young-Shil Award (Indy7)
- · Obtained certification for New Excellent Product (NEP) (Indy7)

## Development of Automation Solution Business

- · Release of Collaborative Industrial Robot ICON
- · Release of All-directional autonomous mobile robot Moby
- Release of welding and palletizing templates
- Release of lab automation templates
- Nelease of lab automation templates
- Release of collaborative robot template for chicken cooking
- · Release of 24-hour unmanned espresso templates
- $\cdot$  Supply of F&B solutions and large enterprise lab automation solutions
- Selected as K-Kitchen anchor company
- · Selected as Smart Robotics Tech Innovators by Gartner
- Designated as an Innovative Product (Fast Track 3)
- Awarded by the Korea Minister of Industry, Trade and Resources
- · Selected as an Excellent Corporate Research Institute by the Korea Ministry of Science and ICT
- · Selected as a promising design innovation company by the Korea Ministry of Industry, Trade and Resources

## HISTORY

2013 **07** releasing NRMKFoundation SDK 10 releasing NRMKPlatform SDK **01** Venture Company certification 2014 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 07 releasing CONTY app 2015 **08** releasing IGoT/WSN **05** attracting series-A investment 2016 **07** releasing STEP2 10 releasing Indy RP 11 establishing SCRC (Smart Connected Robot Center) 02 INNOBIZ certification 2017 **03** releasing Indy3/5/10 **04** relocating HQ in Apquiung (Seoul) **06** attracting series-B investment relocating SCRC in POSTECH, C5 (Pohang) 07 setting up Production BU in SCRC **09** releasing Indy7 12 Robot Company of The Year (in Industrial Robots)

**02** founding Neuromeka at Namyangju (Gyunggi)

05 merging Autopower 2018 **06** establishing V-SCRC in HCMC (Vietnam) establishing CILab (cobot intelligence laboratory) in POSTECH **07** starting System Engineering business releasing D (Delta robot brand) starting production of Indy7 **08** attracting series-C investment **09** Red Dot Design Award (Indy7) **10** starting System Engineering BU (business unit) relocating Production BU (business unit) **12** Robot Company of The Year (in Industrial Robots) KDB NextRound Blue Frog Award releasing STEP3 launching pilot business for IndyGO 06 relocating HQ in Seongsu (Seoul) 2019 **09** releasing Indy12 releasing IndyEye 10 releasing IndyCARE relocating to expand Branch Office in Daejeon **12** Robot Company of The Year (in Industrial Robots) 2019 Korea Regional Balance Award **06** attracting Bridge investment **07** Selection of Reserve Unicorns for Ministry of SMEs and Startups IR52 Jang Young -hil award winner

**12** Indy7 New Product Certification (NEP)

establishing China B.O. in Yancheng

2020 Robot Company of the Year (industrial robot sector) Award

**05** establishing China B.O. in Yancheng 2021 **06** Expansion of Daejeon branch (Jukdong, Daejeon, Korea) **08** attracting series-D investment 12 governmental commendation, Minister of Trade, Industry and Energy (merit for industrial technology) 12 2021 Robot Company of the Year (industrial robot sector) Award 12 Certificate of the Innovative Product (Ministry of Trade, Industry and Energy) 04 establishing U.S.A 2022 04 2022 Design Innovation Company by the Ministry of Trade, Industry and Energy 11 Listed on the KOSDAQ 12 2022 Robot Company of the Year (industrial robot sector) Award **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

the Mechanical, Robotic, and Aviation Sectors)

10 Recognized with an Industry Award (Contribution to the Development of





Pohang





HQ Seongdong-gu, Seoul operation, strategy, MKT Pohang B.O.

Buk-gu, Pohang-si

R&D of cobot, vision solution and deep learning

US B.O.
Texas, US

North America regional office

Vietnam B.O.

Ho Chi Minh City, Vietnam

Southeast Asia regional office

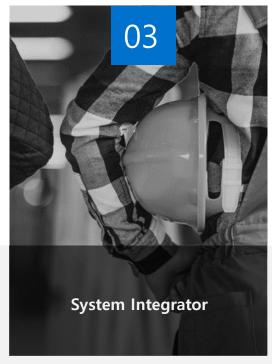
China B.O. Yancheng, China

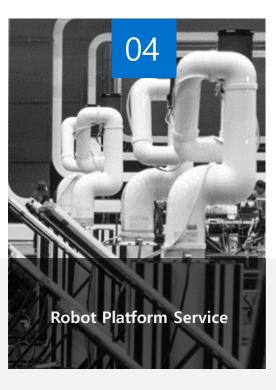
China regional office

## BUSINESS









Neuromeka is leading robot automation with cobot manufacturing, industrial robot manufacturing, SI and robot automation platform service.

## **MISSION**

## **VISION**

## **CORE VALUE**

Neuromeka supports automation for small and medium-sized manufacturers using easy-to-use and economic cobots.

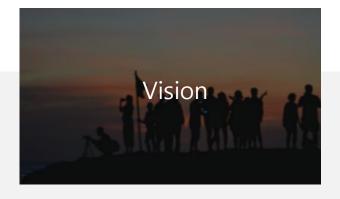
Neuromeka's cobots can cowork with people safely and be programmed easily to apply a variety of applications.

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



Global no.1
In Small and Medium Manufacturing
Process Automation Market



Relentless Learning

Accountable Leadership

Keeping promises to Customers

## 02

# Our Product

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





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 teaching 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.

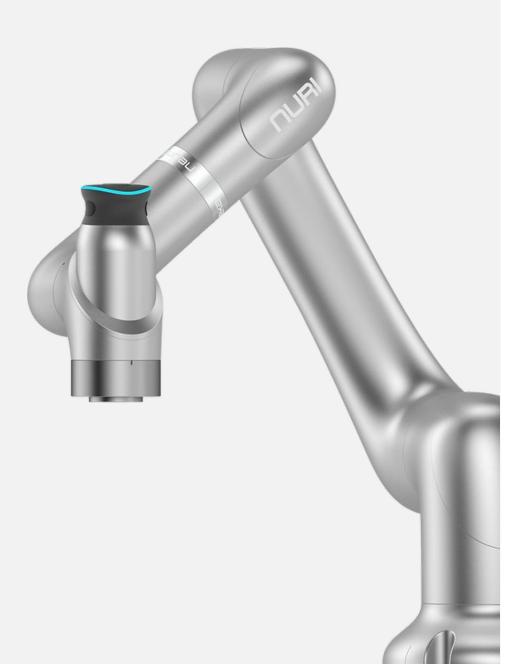


Your first industrial robot for small and medium sized manufacturers 'Indy'

## Spec

| ITEM                   | Indy7                             | Indy12                                     | Indy-RP2 (controlled by STEP3)        |
|------------------------|-----------------------------------|--------------------------------------------|---------------------------------------|
| DOF                    | 6 (all revolute)                  | 6 (all revolute)                           | 7 (all revolute)                      |
| Payload                | 7kg                               | 12kg                                       | 5kg                                   |
| Joint Motion Range     | 1,2,3,4,5 : ±175deg   6 : ±215deg | ±180deg for all joints                     | ±175deg for all joints                |
| Maximum Joint Velocity | 1,2,3:150deg/s   4,5,6:180deg/s   | 1,2: 120deg/s   3: 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                              | 1.8m                                       | 1.3m                                  |
| Repeatability          | 100µm                             | 100μm                                      | 100μm                                 |
| Weight                 | 28kg                              | 55kg                                       | 30.5kg                                |





# NURIC

Neuromeka Collaborative Robot Ecosystem, **NURI C Series** 

[Superior Performance] [Compliant Flexibility]

[Ease of Use] [Excellent Reliability] [Extreme Safety]

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.



### Neuromeka Collaborative Robot Ecosystem, NURI C Series

## Spec

### **ITEM**

Payload / DOF

Repeatablity

Maximum Speed at Tool End

Mounting Method

Weight (built-in control cabinet)

IP Rating

Operating Temperature

Adjustable Range of Cartesian Stiffness

Reach

Power Supply

Force Sensing (tool flange)

Relative Accuracy of Force Control

Range of Motion

Maximum Speed

#### NURI7c

7 kg / 6 DOF

±0.02 mm

≤3.2 m/s

Mounting at any angle

About 27 kg

IP54 / IP67

0°C~50°C

0~3000 N/m | 0~300 Nm/rad

988 mm

90-264VAC, 47-63Hz/48VDC

Force x-y-z | Torque x-y-z

0.5 N | 0.1 Nm

±175° for all joints

1,2:180°/s | 3:234°/s | 4,5:240°/s | 6:300°/s

### NURI12c

12 kg / 6 DOF

±0.03 mm

≤3.0m/s

Mounting at any angle

About 43 kg

IP54 / IP67

0°C~50°C

0~3000 N/m | 0~300 Nm/rad

1434 mm

90-264VAC, 47-63Hz/48VDC

Force x-y-z | Torque x-y-z

0.5 N | 0.1 Nm

1: ±175° | 2:±170° | 3,4,5,6: ±175°

1,2 : 120°/s | 3 :180°/s | 4 : 234°/s | 5,6 : 240°/s

#### NURI18c

18 kg / 6 DOF

±0.03 mm

≤3.0m/s

Mounting at any angle

About 40 kg

IP54 / IP67

0°C~50°C

0~3000 N/m | 0~300 Nm/rad

1062 mm

90-264VAC, 47-63Hz/48VDC

Force x-y-z | Torque x-y-z

0.5 N | 0.1 Nm

1: ±175° | 2:±170° | 3: ±165° | 4,5,6: ±175°

1,2 : 120°/s | 3,4,5,6 : 180°/s

### NURI20c

20 kg / 6 DOF

±0.05 mm

≤3.5m/s

Mounting at any angle

About 75 kg

IP54 / IP67

0°C~50°C

0~3000 N/m | 0~300 Nm/rad

1798 mm

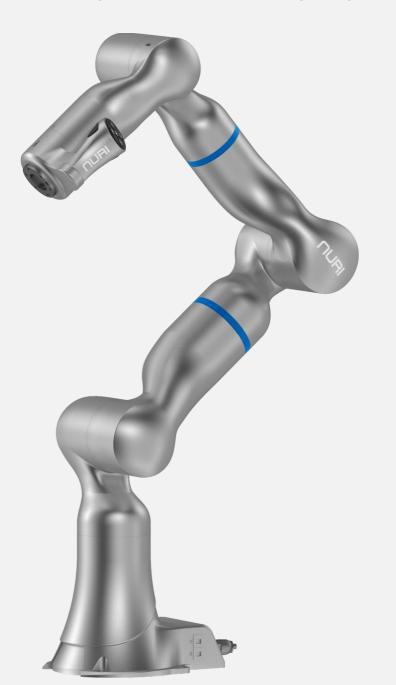
90-264VAC, 47-63Hz/48VDC

Force x-y-z | Torque x-y-z

0.5 N | 0.1 Nm

1,2: ±175° | 3:±170° | 4,5,6: ±175°

1,2,3 : 120°/s | 4 : 180°/s | 5,6 : 234°/s





Neuromeka Collaborative Robot Ecosystem, **NURI E Series** 

[Superior Performance] [NII Compliant Flexibility]

[Ease of Use] [Excellent Reliability] [Extreme Safety]

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.

Neuromeka 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.



## Neuromeka Collaborative Robot Ecosystem, NURI E Series

## Spec

### ITEM

Payload / DOF Repeatablity

Maximum Speed at Tool End

Mounting Method

Weight (built-in control cabinet)

IP Rating

Operating Temperature

Adjustable Range of Cartesian Stiffness

Reach

Power Supply

Force Sensing (tool flange)

Relative Accuracy of Force Control

Range of Motion

Maximum Speed

### NURI3e

3 kg / 6 DOF

±0.03 mm

≤3.0 m/s

Mounting at any angle

About 21 kg

IP54

0°C~45°C

0~3000 N/m | 0~300 Nm/rad

1010 mm

90-264VAC, 47-63Hz/48VDC

Force x-y-z | Torque x-y-z

0.5 N | 0.1 Nm

1: ±170° | 2,3: ±120° | 4: ±170° | 5: ±120° | 6: ±360°

1 : 180°/s | 2 :150°/s | 3 : 180°/s | 4,5,6 : 225°/s

### NURI3er

3 kg / 7 DOF

±0.03 mm

≤3.0m/s

Mounting at any angle

About 22 kg

IP54

0°C~45°C

0~3000 N/m | 0~300 Nm/rad

1010 mm

90-264VAC, 47-63Hz/48VDC

Force x-y-z | Torque x-y-z

0.5 N | 0.1 Nm

1,3,5 : ±170° | 2,4,6 : ±120° | 7 : ±360°

1,3,4 : 180°/s | 2 :150°/s | 5,6,7 : 225°/s

#### NURI7e

7kg / 6 DOF

±0.03 mm

≤2.8 m/s

Mounting at any angle

About 27 kg

IP54

0°C~45°C

0~3000 N/m | 0~300 Nm/rad

1125 mm

90-264VAC, 47-63Hz/48VDC

Force x-y-z | Torque x-y-z

0.5 N | 0.1 Nm

1,4: ±170° | 2,3,5:±120° | 6: ±360°

1,2:90°/s | 3,4,5,6:180°/s

### NURI7er

7kg / 7 DOF

±0.05 mm

≤2.5 m/s

Mounting at any angle

About 29 kg

IP54

0°C~45°C

0~3000 N/m | 0~300 Nm/rad

1125 mm

90-264VAC, 47-63Hz/48VDC

Force x-y-z | Torque x-y-z

0.5 N | 0.1 Nm

1,3,5: ±170° | 2,4,6: ±120° | 7: ±360°

1,2 : 90°/s | 3,4,5,6,7 : 120°/s





Neuromeka Collaborative Robot Ecosystem, **NURI S Series** 

[Lightweight & Flexible] [Fast Returns] [Ease of Use]

[Excellent Reliability] [Extreme Safety]

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.



### Neuromeka Collaborative Robot Ecosystem, **NURI S Series**

## Spec

ITEM

| Payload / DOF    |
|------------------|
| Repeatablity     |
| Maximum Speed at |

Maximum Speed at Tool End

Mounting Method

Weight (built-in control cabinet)

IP Rating

Operating Temperature

Adjustable Range of Cartesian Stiffness

Reach

Power Supply

Force Sensing (tool flange)

Relative Accuracy of Force Control

Range of Motion

Maximum Speed

### NURI3s

3 kg / 6 DOF ±0.02 mm ≤3.0 m/s

Mounting at any angle

About 13.8 kg

IP54

0°C~50°C

0~3000 N/m | 0~300 Nm/rad

705 mm 48VDC

Force x-y-z | Torque x-y-z

0.5 N | 0.1 Nm

1,4,5,6: ±175° | 2: -155°~+140° | 3: -175°~+135°

180°/s for all joints

### NURI4s

4 kg / 6 DOF ±0.03 mm ≤2.0 m/s

Mounting at any angle

About 16.5 kg

IP54 0°C~50°C

0~3000 N/m | 0~300 Nm/rad

919 mm

90-264VAC, 47-63Hz/48VDC Force x-y-z | Torque x-y-z

0.5 N | 0.1 Nm

1,4,5,6: ±175° | 2: -160°~+150° | 3: -170°~+140°

180°/s for all joints

#### ITEM

Controller
Dimensions
Operator Interface

Safety Protection Device

Direct Teaching Control

Highly Dynamic Force Control

Communication Protocols

External Control Interface

### NURI CB (for S Series)

Independent control box (LightCab)

228.5 mm × 180 mm × 88 mm

Notebook/PAD/xPad/Interactive Button

1 external emergency stop

 $\hbox{Drag mode: Cartesian space/joint space; teaching mode: pont}$ 

position/continuous trajectory

Impedance control of Cartesian/joint space;

motion planning for force control search

TCP/IP 1000Mbit, Modbus TCP, Profinet, Ethernet/IP,

DeviceNet, CC-Link, CC-Link IE Field Basic

Highly dynamic external control;

low-level force/position control; robot model library and API

# 

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

Industrial Collaborative robot Next



### Collaborative Safety

advanced collision detection algorithms shows robot status with RGBW light supports peripheral safety devide (e.g. laser scanner)



### Easy-to-use

supports intuitive direct teaching by impedance control user friendly teach pendant app running on android tablet Enables Lead-Through function



## High-Performance

815deg/s maximum speed and 0.03mm 4 pneumatic tube up to IP67

### '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





# 

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

Industrial Collaborative robot Next

| ITEM                | ICoN3                              | ICoN7                              | ICoN7L                             | ICoN10                             |
|---------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|
| Maximum Reach       | 560mm                              | 710mm                              | 920mm                              | 1420mm                             |
| Payload             | 3kg                                | 7kg                                | 7kg                                | 10kg                               |
| Weight              | 23kg                               | 49kg                               | 52kg                               | 180kg                              |
| Ingress Protection  | IP65                               | IP65                               | IP67                               | Wrist IP67                         |
| Repeatabillity      | ± 30µm                             | ± 30µm                             | ± 30µm                             | ± 30µm                             |
| DOF                 | 6                                  | 6                                  | 6                                  | 6                                  |
| Joint Motion Range  | 1: ±170   2: -110, +120   3: -110, | 1: ±170   2: -100, +135   3: -120, | 1: ±170   2: -100, +135   3: -120, | 1: ±170   2: -85, +150   3: -95,   |
| (deg)               | +155   4: ±200   5: ±120   6: ±350 | +156   4: ±200   5: ±135   6: ±360 | +156   4: ±200   5: ±135   6: ±360 | +170   4: ±195   5: ±135   6: ±360 |
| Maximum Joint Speed | 1: 450   2: 450   3: 525   4: 600  | 1: 380   2: 350   3: 480   4: 490  | 1: 380   2: 320   3: 390   4: 490  | 1: 200   2: 200   3: 200   4: 370  |
| (deg/s)             | 5: 600   6: 800                    | 5: 565   6: 815                    | 5: 565   6: 815                    | 5: 370   6: 600                    |
|                     |                                    |                                    |                                    |                                    |

| ICoN12L                            | 1                                                                                                                                              |
|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| 2001mm                             | •                                                                                                                                              |
| 12kg                               | 2                                                                                                                                              |
| 300kg                              | 2                                                                                                                                              |
| Wrist IP67                         | ١                                                                                                                                              |
| ± 60µm                             | :                                                                                                                                              |
| 6                                  | 6                                                                                                                                              |
| 1: ±170   2: -95, +155   3: -95,   | -                                                                                                                                              |
| +170   4: ±185   5: ±135   6: ±400 | -                                                                                                                                              |
| 1: 175   2: 175   3: 170   4: 355  | •                                                                                                                                              |
| 5: 355   6: 300                    | 5                                                                                                                                              |
|                                    | 2001mm  12kg 300kg Wrist IP67 ± 60µm 6  1: ±170   2: -95, +155   3: -95, +170   4: ±185   5: ±135   6: ±400  1: 175   2: 175   3: 170   4: 355 |

| ICoN20                             |
|------------------------------------|
| 1702mm                             |
| 20kg                               |
| 270kg                              |
| Wrist IP67                         |
| ± 60µm                             |
| 6                                  |
| 1: ±170   2: -85, +150   3: -95,   |
| +170   4: ±180   5: ±135   6: ±400 |
| 1: 175   2: 175   3: 170   4: 360  |
| 5: 360   6: 600                    |
|                                    |

| ICoN20L                            |
|------------------------------------|
| 2001mm                             |
| 20kg                               |
| 280kg                              |
| Wrist IP67                         |
| ± 60µm                             |
| 6                                  |
| 1: ±170   2: -85, +150   3: -95,   |
| +170   4: ±180   5: ±135   6: ±400 |
| 1: 175   2: 175   3: 170   4: 360  |
| 5: 360   6: 600                    |
|                                    |

# **MOPA**

Versatile autonomous mobile robot with collaborative robot



Agile

agile and precise control with 4 steering wheels (2DOF)



Extensive

non-restriction on workspace



Integrated

Integration with sensor and workpallet by changing the sensor plate.

'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.





# MOBY

Versatile autonomous mobile robot with collaborative robot

## Spec

| ITEM |  |
|------|--|
| Size |  |

### Moby

600 x 950 x 589.5 (mm)

Weight 200kg (Indy, battery included)

Payload 100kg Rotation radius

1,082mm

### ITEM

Battery Type

Pack Size

Weight

Battery configuration Total energy capacity

Usable energy capacity

Nominal battery capacity

Voltage range Mormal voltage

Charge voltage

Discharge voltage

Charge/Discharge current (nominal)

Charge/Discharge current (max

Charge/Discharge power (nominal) Charge/Discharge power (max)

DC Disconnect

### Battery

lithium ion battery

W 430 x D 433.4 x H 317 (mm)

98kg

14S18P x 2 Module

4.59kWh x 2 Module

3.18kWh x 2 Module

89.1Ah x 2 Module

42-57.4V

51.6V

57.4V

39.2V

20A/-20A 50A/-50A

1,032W/-1,032W

2,580W/-2,580W

N-Channel FET and Fuse



Pride of Korean delta robots for high-speed automation 'D'





Neuromeka's 'D' is the world-class high-speed high-precision four-axes delta robot based on cu stom 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 au tomation solutions with custom grippers, conveyor belts, and vision sensors integrated with PLC s in order to satisfy clients' requirement for line automation.



Pride of Korean delta robots for high-speed automation 'D'

## Spec

| ITEM          |                |           | D3                               | D6                               |
|---------------|----------------|-----------|----------------------------------|----------------------------------|
| Weight        |                |           | 60kg                             | 80kg                             |
| Payload       |                |           | 3kg                              | 6kg                              |
| DOF           |                |           | 4axis                            | 4axis                            |
| ı             |                | XY Axis   | 800mm                            | 1300mm                           |
| ı             | Reachable Area | Z Axis    | 300mm                            | 500mm                            |
| ı             |                | Roll Axis | ±180 deg                         | ±180 deg                         |
| Repeatability |                |           | ±0.1mm                           | ±0.1mm                           |
| Actuator      |                |           | AC servo motor, absolute encoder | AC servo motor, absolute encoder |







Reasonable price and reliable performance, ideal vision solution for Cobot 'IndyEye'



High-performance

Vision solution

with deep learning



Reasonable

Reasonable price via low-cost vision sensor and shared deep learning server



Flexible

Various applications without installation obstacle

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

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

# IND4E76

Reasonable price and reliable performance, ideal vision solution for Cobot 'IndyEye'

## Spec

| TEM | Indy | /Ενε |
|-----|------|------|

Size 67mm x 67mm x 74.4mm

Processing Time 250~1500 ms/img

Field of View (H/V/D)  $86^{\circ} \pm 5^{\circ} / 70^{\circ} \pm 5^{\circ} / 100^{\circ} \pm 5^{\circ}$ 

Interface USB2.0

Working distance 5cm-70cm



# CORE

Integrated module for your own cobot 'CORE'



## All in one

all components integrated, i.e. Harmonic drive, motor, brake, encoder, drivers, and EtherCAT controller



### Design-centric

hollow axis design for maximizing joint travel range and aesthetic link design



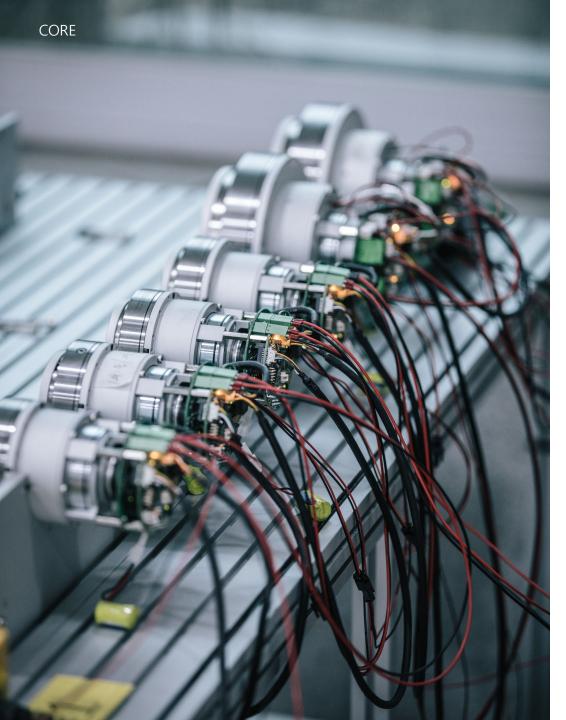
## Compatible

CoE protocol for standard EtherCAT master controllers

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 throu gh the hole. 'CORE' series (adopted to Indy lineup) consists of four models in terms of rated power, e.g. 'COR E100/200/500 and 1000' (100W, 200W, 500W, and 1000W, respectively). Every 'CORE' module supports torqu e 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.





# CORE

Integrated module for your own cobot 'CORE'

## Spec

| ITEM                       | CORE100     | CORE200    |
|----------------------------|-------------|------------|
| Rated Power                | 100W        | 200W       |
| Rated Voltage              | 48V         | 48V        |
| Maximum Continuous Current | 3.8A        | 4.8A       |
| Rated Output Torque        | 21Nm        | 50Nm       |
| Rated Output Speed         | 180deg/s    | 150deg/s   |
| Size                       | Ф80 x 135mm | Ф90x 145mr |
| Weight                     | 1.45kg      | 1.84kg     |

| ITEM                       | CORE500      | CORE1000     |
|----------------------------|--------------|--------------|
| Rated Power                | 500W         | 1130W        |
| Rated Voltage              | 48V          | 48V          |
| Maximum Continuous Current | 11.7A        | 22.6A        |
| Rated Output Torque        | 121Nm        | 515Nm        |
| Rated Output Speed         | 150deg/s     | 120deg/s     |
| Size                       | Ф142 x 155mm | Ф178 x 195mm |
| Weight                     | 4.87kg       | 9.1kg        |

# STEP

Realtime embedded EtherCAT master robot controller 'STEP'



### Powerful

based on high perfor mance realtime OS



### **Industrial**

implementing high-speed, realtime, multi-axes, and synchronized distributed control



### Versatile

integrating a variety of open source libraries and device interfaces

'STEP' comes with NRMKPlatform SDK, a software framework for development of realtime control applications on Linu x/Xenomai environment which is the hard realtime OS.

Development environment running on MS Windows® is also provided in order for engineers unfamiliar with Linux en vironment 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 c otrol applications is supported by CoE (CANopen-over-EtherCAT) protocol based programming interface. Software too Is 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 impedanc e control algorithms. 'STEP3', a performance model intended for advanced research and development, is integrated with a high-performance GPU card and NIVIDIA TensorRT library which facilitates development of a variety of algorithms based on high-speed deep learning inference computation.





# STEP

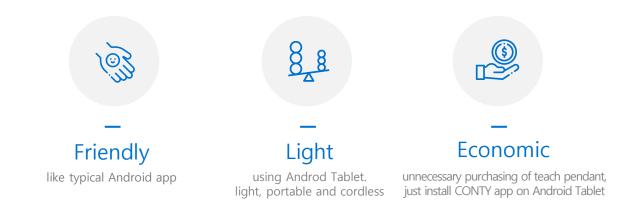
Realtime embedded EtherCAT master robot controller 'STEP'

## Spec

| ITEM      | 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 × 185 × 52                        | 350 × 265 × 182                |
| Optional  | -                                     | Geforce GTX 1080 Ti            |

# CONTY

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'



# CONTY

Everyone's teach pendant for cobot programming 'CONTY'

## Spec

ITEM Exclusive Tablet for 'CONTY'

CPU MediaTek Deca-Core MT6797T (10-core)

Display 10.1inch / 2560 X 1600 (WQXGA)

OS Android

Memory / Storage 4GB / 64GB eMMC

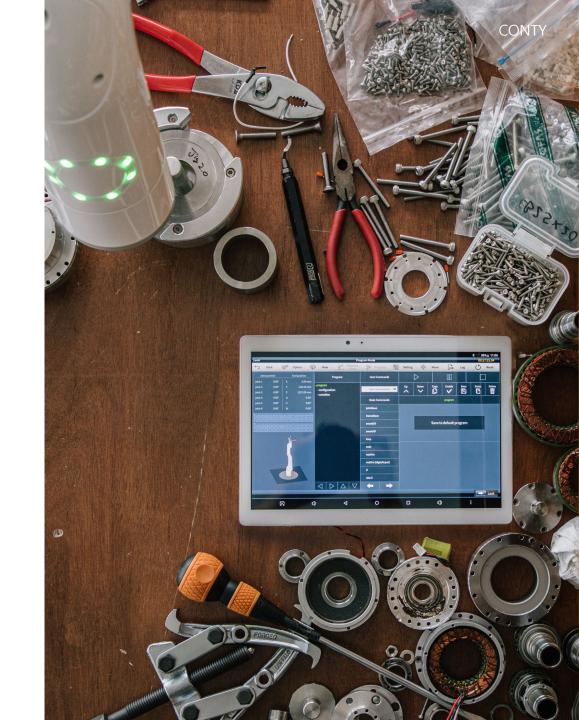
Battery 8000mAh

Network Wi-Fi 2.4GHz/5GHz (IEEE 802.11 ac/a/b/g/n) / GPS

Size / Weight 239mm × 166.9mm × 7.5mm / 550g

Camera 1,300 megapixel (Front, Rear)

Components Tablet, Charger, Cable, Cover case



# INDYTOOLS

Link robot control SW and teach pendant 'IndyTools'



### ITEM

Model name Gripping Force 63N Stroke Jw Closing Time 0.37s Power Supply : 0.3A Nominal Current

Mass Feature

### Gripper

MPLM 1630

2x15mm

24Vdc

263a

Optimized electric gripper for collaborative robots



### ITEM

Model name Finger

Weight

DOF Algorithm

Control

Actuator Feature

#### **Robot Hand**

IndyHand

Fully actuated robot hand (3-finger)

1.7kg

Advandced blind grasping algorithm

Torque control

DYNAMIXEL (ROBOTIS)

Flexible grip with three fingers and eleven DOF



### ITEM

Model name Dimension Weight

Data Rate Load Capacity Resolution Feature

### Torque Sensor

RFT76-HA01 Φ76 x 18.5mm

200g

max 1,000Hz

300N, 8Nm(torque)

200mN, 8mNm(torque)

Capacitance type, 6 axis force torque sensor with low price



### **ITEM**

Model name Weight Height Feature

### BASE

Mobile Base about 50kg 420mm / 685mm Axial folding mobile base



Robot as a Service 'IndyGO'

'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 m aintenance of cobots for clients.

'IndyGO' provides service covering the whole process of cobot deployment of analysis-design-in stallation-operation-maintenance necessary. To this end a service platform adopting 'Lean Robo tics' 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 re duction as well as productivity maximization and can be applied actively to dynamically changin g manufacturing processes. 'IndyGO' is specializing in small and medium sized manufacturing c ompanies is provided with leasing and monthly subscription model to minimize the initial invest ment cost, thereby lowering the barrier to constructing robot automation production line. All co sts, time, and effort for robot purchasing, system integration, maintenance, and related personn el training can be solved through 'IndyGO' service, and cobot-centered automation can be oper ated at a reasonable cost, which in turn guarantees quick and high return on investment.



# INDYCARE

The beginning of remote management of robots for smart factory 'IndyCARE'



### Remote

Management beyond time and space limitation



### Effective

Reconsideration of the time and cost efficiency required for cobot management

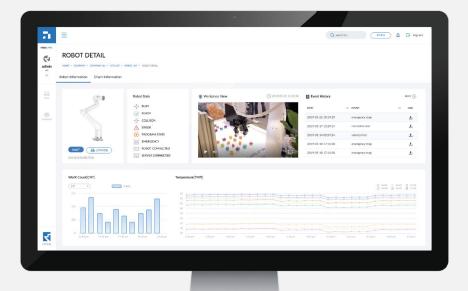


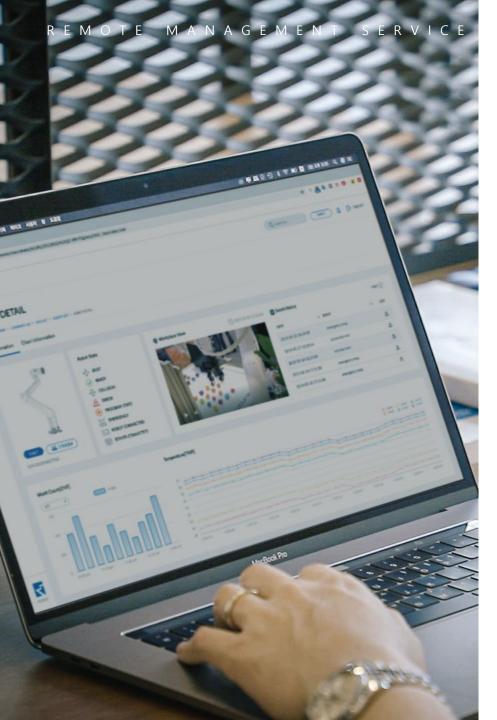
### Preventable

Real-time monitoring to prevent malfunction of cobots

### '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.





## INDYCARE

The beginning of remote management of robots for smart factory 'IndyCARE'

| function ———                   |                                                                                                                                                                                                                                                               |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Real-time monitoring of cobots | - 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)                                                                              |
| Store work date                | <ul> <li>Measure the productivity by collecting data on the work count by the Cobots</li> <li>Temperature measurement of each joint monitoring for abnormal conditions</li> <li>Customizing of data values</li> </ul>                                         |
| Video streaming of worksite    | <ul> <li>Real-time transmission of the work site situation to the robot administrator with the camera connected to the 'IndyCARE'.</li> <li>Visually check the status of cobot without visit each worksite</li> </ul>                                         |
| Collecting event log           | <ul> <li>Collect log files for changes in cobot status (collision, emergency stop, etc.)</li> <li>Subsequent monitoring of missed situations by robot administrators</li> <li>Fast analysis of robot anomalies to reduce maintenance time and cost</li> </ul> |

## 03

# **Business Overview & Application**

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

### Key achievements of collaborative robot automation platform

(Small and medium-sized manufacturing companies)

Establishment of Automation System for production lines of domestic Small and Medium-sized Manufacturing Companies

### S1 Company Press Process Reference

Refrigerator production line Continuous press process automation





### P company Assembly/Welding Reference

Air conditioner production line
Air conditioner hood
Semi-finished product welding process
automation





#### S2 Company Machine Tending Reference

Automotive hydraulic valve CNC machining

Machine tending automation





## Manufacturing











## Manufacturing



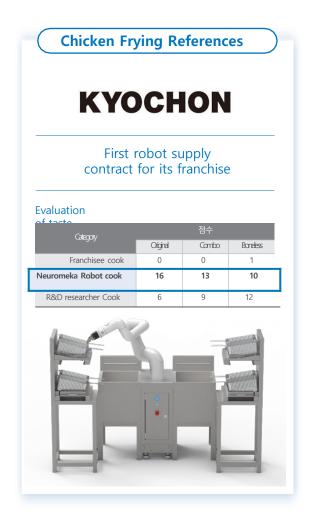




#### Major achievements of collaborative robot automation platform

(F&B Industry)

Starts business with leading domestic chicken franchise and expands to various F&B fields such as pizza, cafes, and highway rest area restaurants



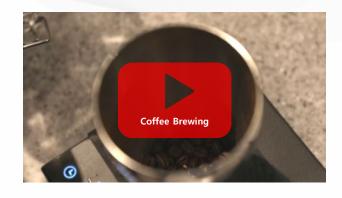




## F&B, Service













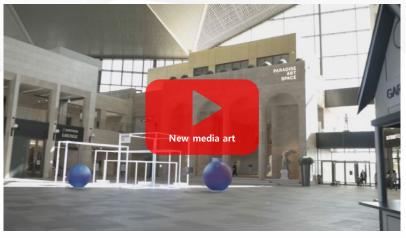
## F&B, Service

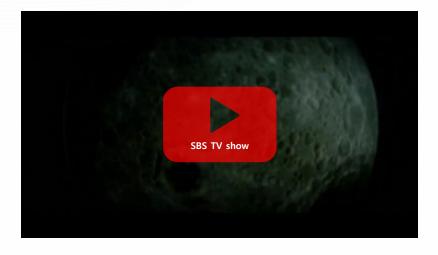


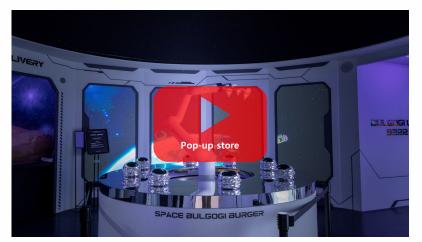


## Media, Art









### 04

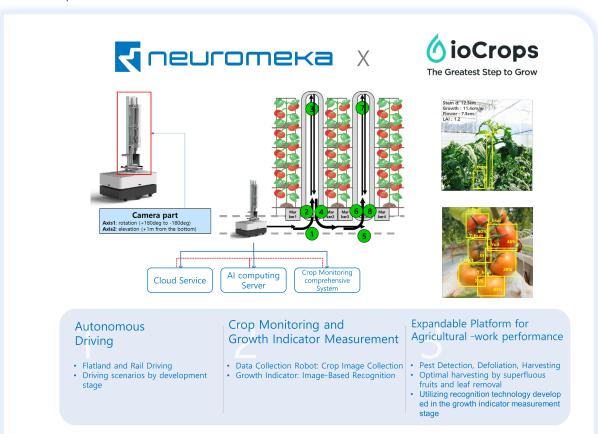
## New Business Overview

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

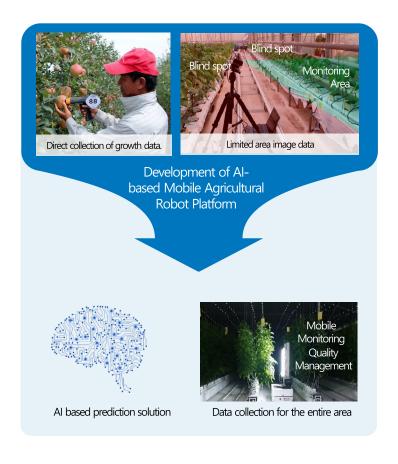
### Smart Farm Robot Platform Development

Leading next-generation smart farm technology with autonomous driving, control, crop image data recording, Al-based image processing, and remote communication technology

Consortium development with Ag-Tech startup, ioCrops for agricultural production innovation



Advantages of smart farm robot platforms



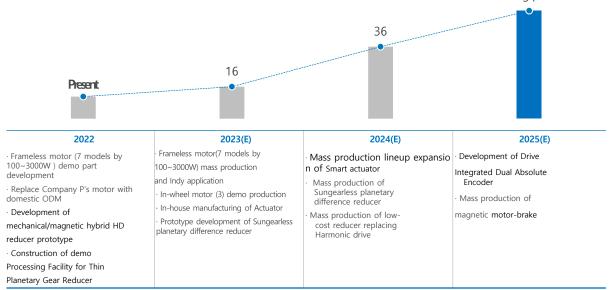
### Vertical integration of core parts manufacturing

Continuous enhancement of hardware competitiveness through the vertically integrated manufacturing technology of parts such as motor and reducer.



#### **▼INDY 7 Cost Savings Forecast**

| Part name         | Cost saving rate compared to current price |      |  |
|-------------------|--------------------------------------------|------|--|
| D 1               | 2023                                       | 2024 |  |
| Reducer           | 10%                                        | 30%  |  |
| Motor             | 1 2 / 3                                    |      |  |
| Mechanical parts  | 15%                                        | 72%  |  |
| Circuit materials | 10%                                        | 40%  |  |
| Machining parts   | 43%                                        | 43%  |  |
|                   | 0%                                         | 20%  |  |
| PBA               | 15%                                        | 45%  |  |
| Others            | 9%                                         | 19%  |  |
| TOTAL             | 16%                                        | 36%  |  |



### Starting the space cleaning robot business

Entering the space cleaning business through government project orders and developing Korea's first space industry collaborative robot.

### **▼**Prospects and major players in the space cleaning market



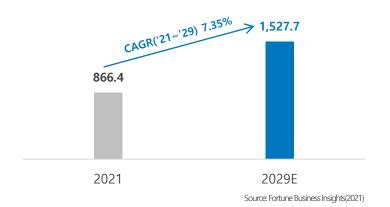


The Japanese startup 'Eil'

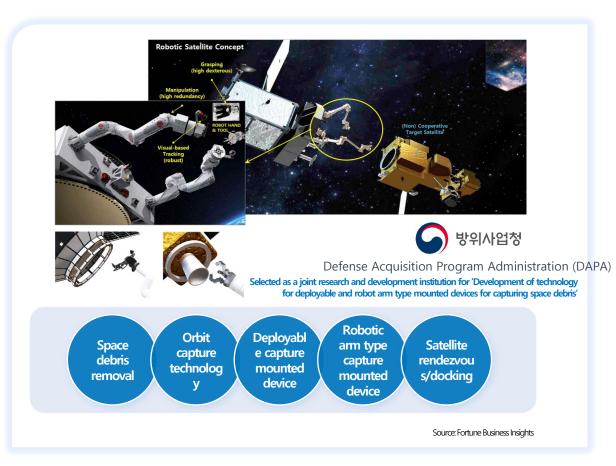
The Russian space startup 'StartRocket'

The global space debris monitoring and removal market

(Unit: M\$)



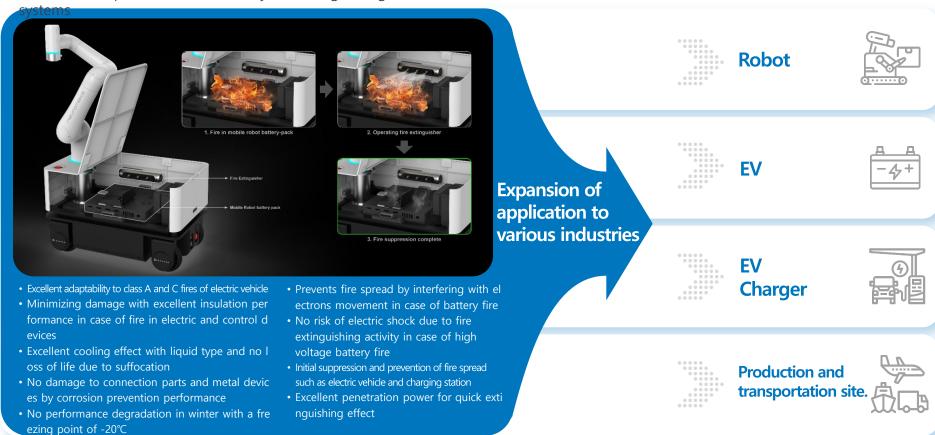
#### **₹**Entering the space-related robot market



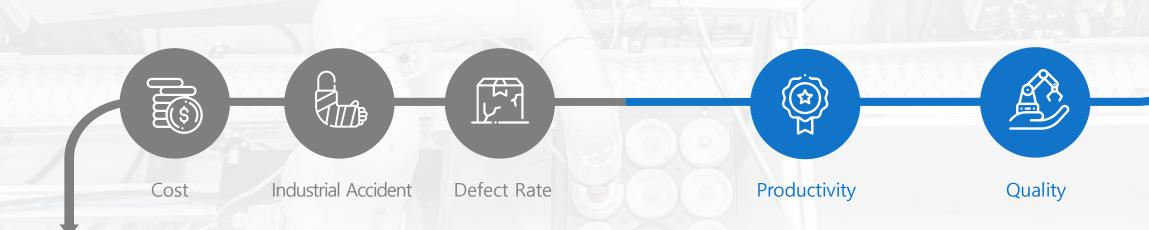
### Development of a battery fire extinguishing system

Expansion of fire extinguishing system business that can reduce the risk of secondary battery and battery fires

Overview and performance of battery fire extinguishing



# ADVANTAGE OF ROBOT AUTOMATION



Down

### CERTIFICATION



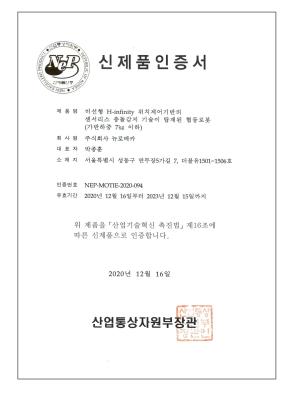




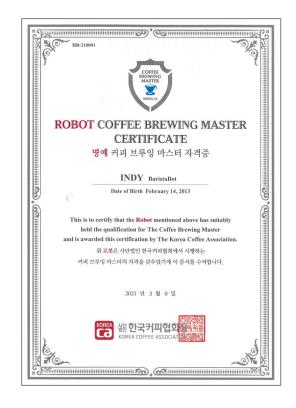




### CERTIFICATION







### CUSTOMER

| Company                 | 7%  CJ Logistics Corp.  EYEDEA Inc.  HIMS Co., Ltd.  ISA Co., Ltd.  KITECH  KT Corp.  KT Commerce Co., Ltd.  LG Household & Health Care  LG Electronics Inc.  LSIS Co., Ltd  SK telecom Co., Ltd. | TMC  KEONWOONG TECH C  GOPIZZA Co.  KUKDONG JEYEN Co., I  GIMPO INDUSTRY Co.,  NAVER Co., Ltd.  NEXBRAIN  knowhow factory  e Ltd.  DAWOOFA  Daincube Co., Ltd.  Dayang Chemical Co., L  DSME Co., Ltd. | Rastech Co., Ltc. Robostar Co., Ltc. Ltd. ROBOTOUS Inc. ROBOTECH Co ROBOTIS Co., L LOTTE DATA CON COMPANY Mando Corp. MadGenerator | d.<br>c.<br>., Ltd.<br>td.                                   | SAMSUNG<br>samsung h<br>Shinshinsa<br>C-Stone Te<br>CATECH CO<br>ASETEC CO<br>IEG Co, Ltd<br>itiz | neavy industries Co., Ltd. Co., Ltd. echnologies Co., Ltd. o., Ltd. o., Ltd. d. G MACHINERY Co., Ltd. | Youngshin Factory Automation Co., Ltd. WSS Co., Ltd. ONETECHKOREA Co., Ltd. Wizard UVER EIP Communication Co., Ltd. EasyEndo Surgical WebDisk Ehwa Diamond Industrial Co., Ltd. JS-TEC Co., Ltd. ZETABANK | TAEJIN Co., Ltd. PASECO Femtobiomed Inc. 4DWelcome & Mediaflow POSCO Hatio, Lab. Inc. KOREA RENTAL Korea conveyor ind. Co., Itd Hanyang Packaging Machinaery Co., Ltd. HYUNDAI MOBIS Hyundai Heavy Industries Co., Ltd. |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Educational Institution | Kyung Hee University Keimyung University Korea University Kwangwoon University                                                                                                                    | DONGWON F&B  Kookmin University DGIST Dong-a University Pukyong National University                                                                                                                    | BULLSONE Co., bitsensing Inc.  UNIST Pusan National University Sungkyunkwan University Ajou University                             | Ltd.  Andong National Jeonbuk National Chung-ang Unive KAIST | ESPA University University                                                                        | Koreatech<br>Korea Polytechnic Unive<br>Korea Polytechnics<br>Handong Global Univer                   | Seoul National University Of                                                                                                                                                                              | re And Technology                                                                                                                                                                                                       |
| Research Institution    | DGIST<br>KETI<br>KIMM                                                                                                                                                                             | KIST<br>KITECH<br>KATECH                                                                                                                                                                               | center Of Human-centered I<br>National Rehabilitation Cente<br>Korea Institute Of Footwear                                         | er                                                           |                                                                                                   | National Science Museu<br>Korea Institute Of Robo<br>Korea Electrotechnology                          | tics & Technology Convergence                                                                                                                                                                             |                                                                                                                                                                                                                         |
| Overseas Company        | APPLIED MEDICAL                                                                                                                                                                                   |                                                                                                                                                                                                        | ISA TECHNOLOGY PTE. LTD.                                                                                                           |                                                              |                                                                                                   | RELIANCE ENGINEERING                                                                                  | G COMPANY                                                                                                                                                                                                 |                                                                                                                                                                                                                         |

JIANGSU SOPHIA SUPPLY CHAIN MANAGEMENT CO., LTD.

MINAMIDA CO.,LTD.

PHANTOM AI, Inc.

SAM Elektronik San.ve Tic. Ltd.Şti.

SOUTHERN SUPPLY CO., LTD.

TALENT SYNERGY SDN. BHD.

Overseas Company

BEJJING NOVA TECHNOLOGY CO.,LTD.

HANGZHOU GUOCHEN ROBOT TECHNOLOGY CO., LTD.

BOTZIAN & KIRCH GMBH

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| Daegu                      | CANI                 | 205, 164, Obong-ro, Buk-gu, Daegu, Republic of Korea                                                               | +82 10 4977 4333 | sdh1730@gmail.com        |
| Gyeongsang-do              | Geumgang FA          | 352, Seobu-ro 1701beon-gil, Juchon-myeon, Gimhae-si, Gyeongsangnam-do, Republic of Korea                           | +82 55 335 0693  | rbtlr73@naver.com        |
|                            | Diosis               | 15-5, Export-daero 5-gil, Gumi-si, Gyeongsangbuk-do (Gongdan-dong), Republic of Korea                              | +82 54 464 8227  | leeshy@daum.net          |
|                            | Robotable            | Room 207, Building 3, Robot Research Center, 33 Robot Land-ro, Changwon-si, Gyeongsangnam-do,<br>Republic of Korea | +82 70 4010 1800 | sales@robotable.me       |
|                            | lotal                | 27-21, Dulneum-gil, Yangsan-si, Gyeongsangnam-do, Republic of Korea                                                | +82 51 911 2800  | Jh.park@rotal.kr         |
|                            | MAYR KOREA           | 3F, 1533 Yeondeok-ro 9beon-gil, Seongsan-gu, Changwon, Gyeongsangnam-do, Republic of Korea                         | +82 10 3149 5037 | smg@mayrkorea.com        |
| USA                        | CEK Technology, Inc. | 1501 Panther Loop Suite 4A Pflugerville, TX 78660, USA                                                             | +1 512 745 3604  | cek@cektech.com          |
|                            | AMS                  | 10030 Via de la Amistad San Diego, CA 92154                                                                        | +1 619 661 5985  | cjkim@ams-fa.com         |

