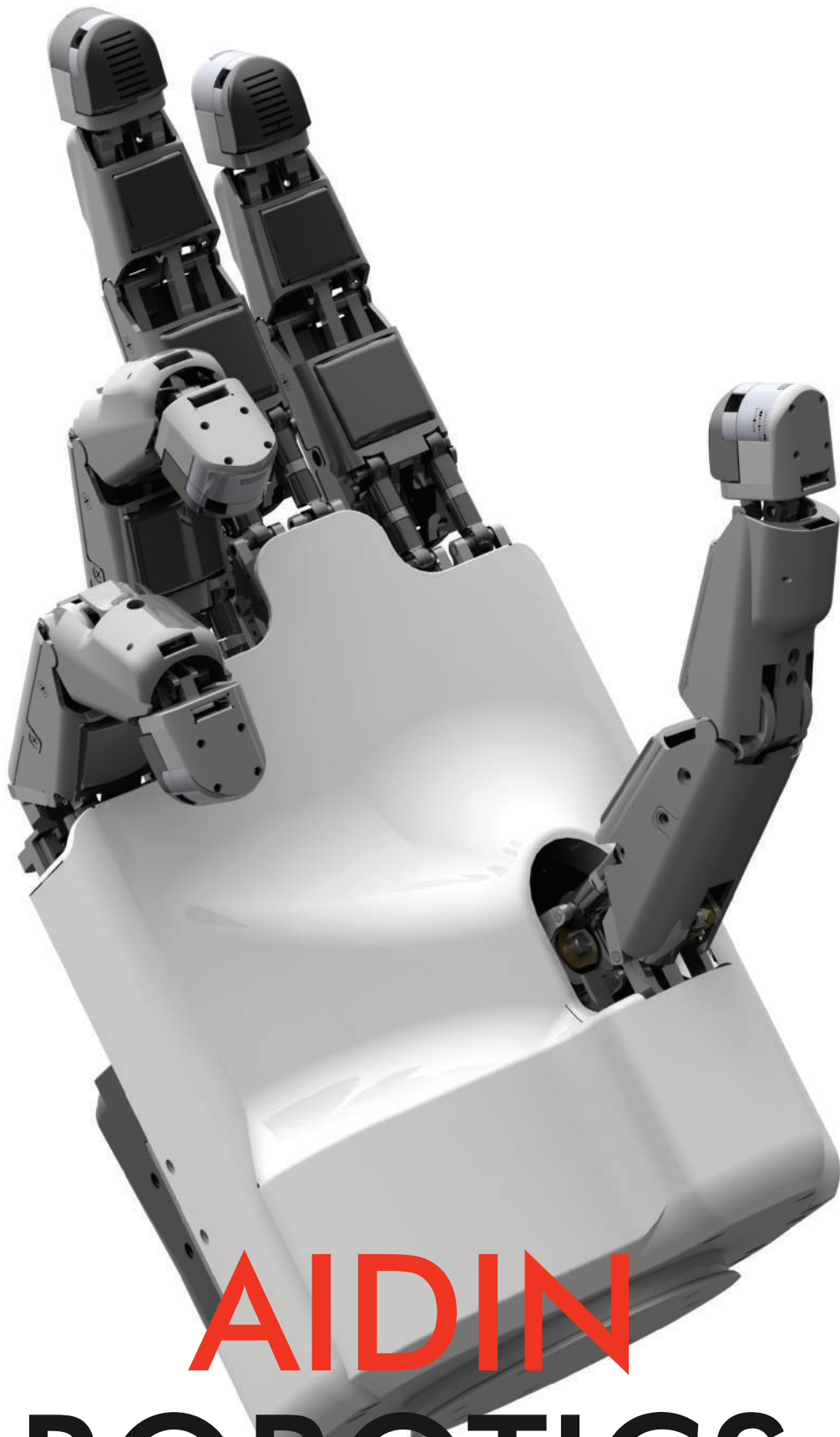




AIDIN ROBOTICS

Physical Interaction Sensor for Humanoid & Collaborative Robot

AIDIN ROBOTICS



AIDIN

ROBOTICS Inc. is a robot company that started from Robotics Innovation Laboratory in the Department of Mechanical Engineering at Sungkyunkwan University in South Korea. Our expertise lies in developing robotic system and AI-driven sensor technologies based on our Field Sensing technology, which we have been accumulating since 1995.

**The world's
leading
field sensing
technology**





One - stop Robotic Solution for Safe Collaboration

We are dedicated to the continuous pursuit of our vision:
creating a safer working environment and coexistence
between humans and robots.





The Competitiveness of AIDIN ROBOTICS

The newest Power Sensing Technology which successfully overcomes the limitation of existing force/torque sensing based on capacitance.

The new robotic components with expanding solution business 2024

Diversify the product lineup of previous force/torque sensor and Release a new safety sensor. Expand to Robotics automation area with self-developed sensors and Lead a market as a robotic components and one-stop solution provider.

Producing the second-generation product 2022

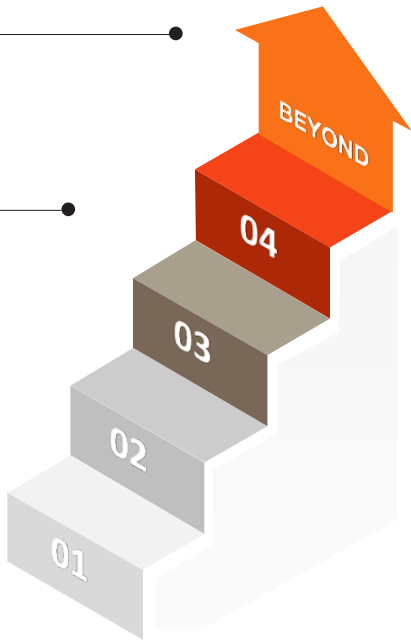
Launch the second-generation version doubling performance and reliability.

Unveil the first-generation force/torque sensor with capacitance type 2019

Build AIDIN ROBOTICS to enhance the competitiveness of Korean robotics industry and production of our sensors.

Develop the core technology of force/torque sensor based on capacitance type ~2019

SKKU Lab successfully developed 'Force/Torque Sensing Technology' based on capacitance type with a reasonable price for decades.



Unique Source Technology for measuring capacitance



A manpower focusing on researching robot field



1/10 price compared to others



Leading a domestic market for miniature, 6-axis sensor

PRODUCTS

1-AXIS

Torque Sensor (Joint)



ATSB50/100/200/400

3-AXIS

3-axis F/T Sensor (Foot)

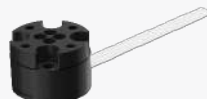
*Coming soon



3FT1000/2000

6-AXIS

Miniature 6-axis F/T Sensor (Fingertip)



AFT20-D15 / AFT50-D15 / AFT100-D20

6-axis F/T Sensor (Wrist)



AFT150-D50

6-axis F/T Sensor



AFT200-D80

COBOT KIT

6-axis F/T Sensor KIT



AFT200-KIT

TACTILE

Tactile Sensor (Fingertip)

*Coming soon



ATT

RADAR

Safety Radar Sensor

*Under development



Panoradar Sensor (ARS-5000)

MODULE

Gripper



Gripper (Susgrip / Susgrip-FT)

ROBOT HAND



AIDIN HAND (AIDIN-Hand)

Robot Motion Controller



Robot Motion Controller (ARC6 / ARC11)

ROBOTIC SOLUTION (AIRO-One)



AIRO-One for Surface Finishing



AIRO-One for Logistics

PLATFORM

*Under development



Quadruped Robot (AIDIN9)

Joint Torque Sensor



Model ATSB 50 / 100 / 200 / 400



Dimensions

ATSB 50 : 84mm x 14mm
ATSB 100 : 100mm x 16mm
ATSB 200 : 100mm x 18mm
ATSB 400 : 120mm x 20mm

Applications Example

Collaborative Robot



Features

Ultra-thin joint torque sensor for collaborative and articulated robots

Ultra-thin joint torque sensor accurately and sensitively measures torque applied to robot joints, enabling precise collision detection and torque control in a compact design.

Excellent environmental resistance
4kV discharge test passed

Applications

- Collaborative robot
- Wearable robot
- Medical device
- Rehabilitation robot

Specifications

Index	Unit	ATSB50	ATSB100	ATSB200	ATSB400
Operating voltage	VDC	5			
Max safe excitation voltage	VDC	10			
Nominal torque range (T_N)	Nm	50	100	200	400
Overload (related T_N)	%	300			
Resolution	Nm	0.01	0.015	0.025	0.05
Noise-free resolution (STD)	Nm	0.03	0.05	0.1	0.2
Dimensions	mm	D84 x H14	D100 x H16	D100 x H18	D120 x H20
Weight	g	120	190	210	310
Sample rate	Hz	1000			
Temperature		10-50 °C			
Interfaces		CAN (2.0 A/B)			
Connector		4 PIN VCC / GND / CAN_H / CAN_L			

3-axis F/T Sensor (Foot)

A sensor mounted on the humanoid robot's ankle, enabling measurement and perception of various forces and ground reaction



Model 3FT1000/2000
*Coming soon

Features

- Mounted on the humanoid robot's ankle to measure forces and torques along 3 axes (Fz, Mx, My)
- Accurately measures load and posture of the robot's foot, enabling stable walking.
- Compact design capable of measuring up to 2000N, suitable for various parts of humanoid robots such as joints and ankles

Applications

Humanoid Robot

Specifications

Index	Unit	3FT2000
Operating Voltage	VDC	5
Max. safe excitation voltage	VDC	12
Nominal force range	N	2000
Nominal torque range	Nm	100
Dimensions	mm	65(D) x 21(H)
Sample rate	Hz	1000
Interfaces	-	CAN
Wire	-	For User: CAN_H / CAN_L / VCC / GND

Miniature 6-axis F/T Sensor



Model AFT20-D15
AFT50-D15
AFT100-D20



Model AFT100-D20



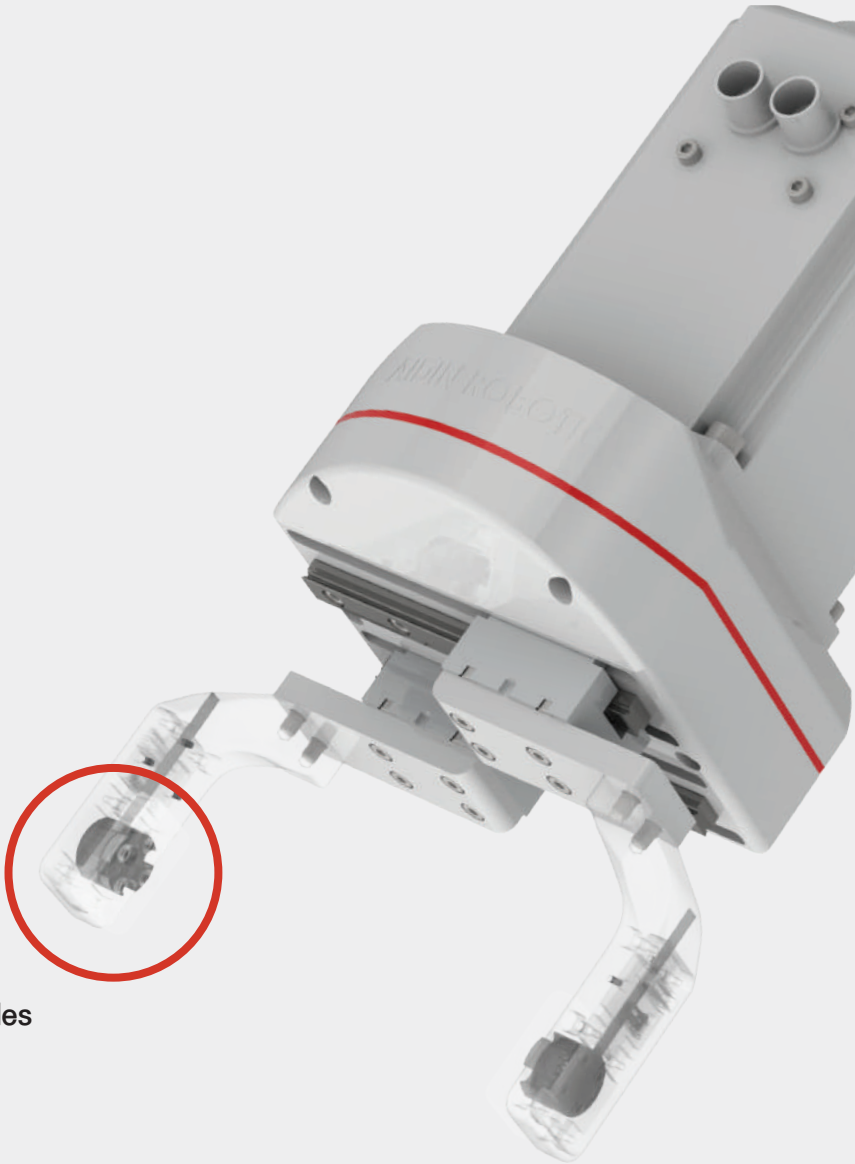
Model AFT20-D15
AFT50-D15

Dimensions
15mm x 10.5mm

Application Examples
Gripper



* Example Image



Features

The world's smallest 6-axis force/torque sensor

Suitable for mounting on the gripper's tip end to handle irregular objects such as food, rubber, and plastic injection-molded products without causing damage

Applicable to VR, haptic devices, and medical fields as well

Excellent environmental resistance
4kV discharge test passed



KC Registration Number R-R-Adn-AFT20-D15

Applications

Gripper



VR / AR device

Haptic device



Robot hand

Medical device



Specifications

Index	Unit	Value		
		AFT20-D15	AFT50-D15	AFT100-D20
Operating voltage	VDC	5		
Max. safe excitation voltage	VDC	10		
Force range	N	20	50	100
Torque range	Nm	0.1	0.25	0.75
Break force	N	30	75	200
Break torque	Nm	0.15	0.35	1.5
Force resolution	N	0.05	0.1	0.13
Torque resolution	Nm	0.0001	0.0002	0.0004
Force noise-free resolution (STD)	m	0.2	0.3	0.4
Torque noise-free resolution (STD)	Nm	0.0005	0.001	0.002
Sample rate	Hz	100	100	300
Dimensions	mm	D15 x H10.5	D15 x H10.5	D20 x H13
Weight	g	3.2	3.2	8.1
Temperature		10-50 ℃		
Interfaces		CAN	CAN	CAN / CAN-FD
Connector		FPC: 0.5 pitch, 8pin Length: 50, 100, 200 mm For User: CAN_H / CAN_L / VCC / GND		

6-axis F/T Sensor (Wrist)

A hollow-structured sensor designed for humanoid robot wrists, arms, and other rotational joints, enabling precise and natural execution of dynamic movements.

Model AFT150-D50



Features

- Compact hollow design for easy installation in tight spaces like robot joints and wrists
- A F/T sensor specifically designed for humanoid robot wrists and arm joints
- Supports CAN 2.0 & CAN-FD, selectable via commands
- All-in-one capacitance sensor, no extra amplifier needed

Applications

- Humanoid Robot
- Collaborative Robot
- Industrial Robot
- Gripper

Specifications

Index	Unit	Value
Operating Voltage	VDC	5
Max. safe excitation voltage	VDC	12
Nominal force range (Fxyz)	N	150
Nominal torque range (Mxyz)	Nm	7.5
Limit force (Fxyz)	N	300
Limit torque (Mxyz)	Nm	10
Dimensions	mm	D50 x H17.7
Weight	g	60
Temperature	°C	10-50
Sample rate	Hz	1000
Interfaces	1,000Kbps	CAN / CAN-FD
Wire	Length : 15cm	For User : CAN_H / CAN_L / VCC / GND

6-axis F/T Sensor

Model AFT200-D80

6-axis F/T Sensor



Dimensions
80mm x 21.5mm

Applicable Robots

- Universal Robots
- Doosan Robotics
- Rainbow Robotics, Neuromeka
- Other collaborative/industrial robots



Features

- The advanced F/T sensor with high precision based on the fringe effect and capacitance
- Essential sensor for robot wrists, enabling tool collision detection, tool weight compensation, force control, direct teaching tool, and object weight measurement
- Excellent environmental resistance
- 4kV discharge test passed
- IP56 obtained waterproof/dustproof rating



Applications

- Industrial / Collaborative robot
- Lead-thru device
- Welding, sanding, grinding, assembly operations
- Warehouse robot
- Smart Factory / Automation

KC Registration Number
CAN R-R-And-AFT200-D8-C
EtherNet R-R-And-AFT200-D8-EN
EtherCAT R-R-Adn-AFT200-D8-EC



Specifications

Index	Unit	Value		
		C(CAN)	EN(EtherNET)	EC(EtherCAT)
Operating voltage	VDC	5	12	12
Max. safe excitation voltage	VDC	12	24	24
Nominal force range	N	200		
Nominal torque range	Nm	15		
Limit force (Fxyz)	N	300		
Limit torque	Nm	25		
Force resolution	N	0.15		
Torque resolution	Nm	0.015		
Force noise-free resolution (STD)	N	0.4		
Torque noise-free resolution (STD)	Nm	0.025		
Maximum sample rate	Hz	1,000		
Dimensions	mm	D80 x H21.5		
IP rating		IP56	IP65	IP65
Operating temperature		10-50 °C		

6-axis F/T Sensor KIT

All-in-One F/T Sensor
based on the advanced field sensing technology

Model AFT200-KIT-RB
 AFT200-KIT-NRMK



Applicable Robot

- Rainbow Robotics RB3, RB5, RB10, RB16
- Neuromeka Indy7
- Accepting our partners



AIDIN ROBOTICS



Features

- F/T sensor applied with the self-developed technology with capacitance
- Support Plug&Play mode based on collaborative robot brand
- Provide Customized KIT for each collaborative robot band
- Easy Set-up mode in Teaching Pendant

Functions

- Precise force measurement
- Force Control mode that any user could use directly in teaching pendant
- Collision detection and stop function through force measurement

Specifications

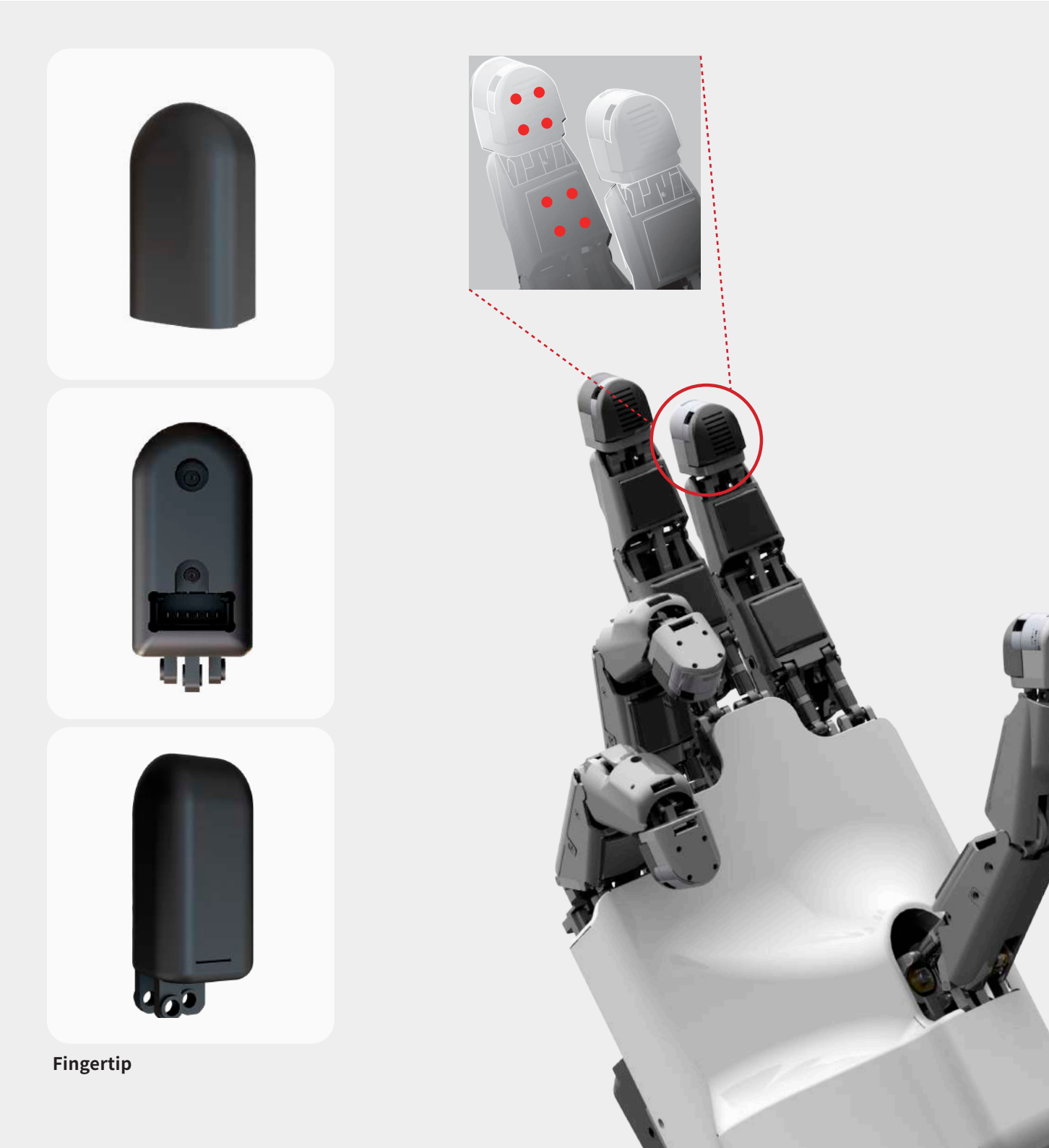
Index	Unit	AFT200-KIT-RB C(CAN)	AFT200-KIT-NRMK C(CAN)
Operating voltage	VDC	5	
Max. Safe excitation voltage	VDC	12	
Nominal force range	N	200	
Nominal torque range	Nm	15	
Resolution (Fxyz)	N	0.15	
Resolution (Txyz)	Nm	0.015	
Dimensions	mm	D80 x H52.3	
Weight	g	505 (Sensor 236g, Bracket 269g)	
IP Rating		IP56	
Operating temperature		10-50℃	

Tactile Sensor

A sensor supporting humanoid robot touch, equipped with AIDIN ROBOTICS' latest technology



Model ATT
*Coming soon



Fingertip

Features

- | A sensor mounted on the hand of a humanoid robot, enabling it to sense touch.
- | Highly flexible, polymer-based design adaptable to various shapes.
- | Enables real-time control with precise force measurement and fast response.
- | Multiple sensing cells allow detection of contact location and force distribution on objects.

Applications

- | Humanoid Robot
- | Robot Hand

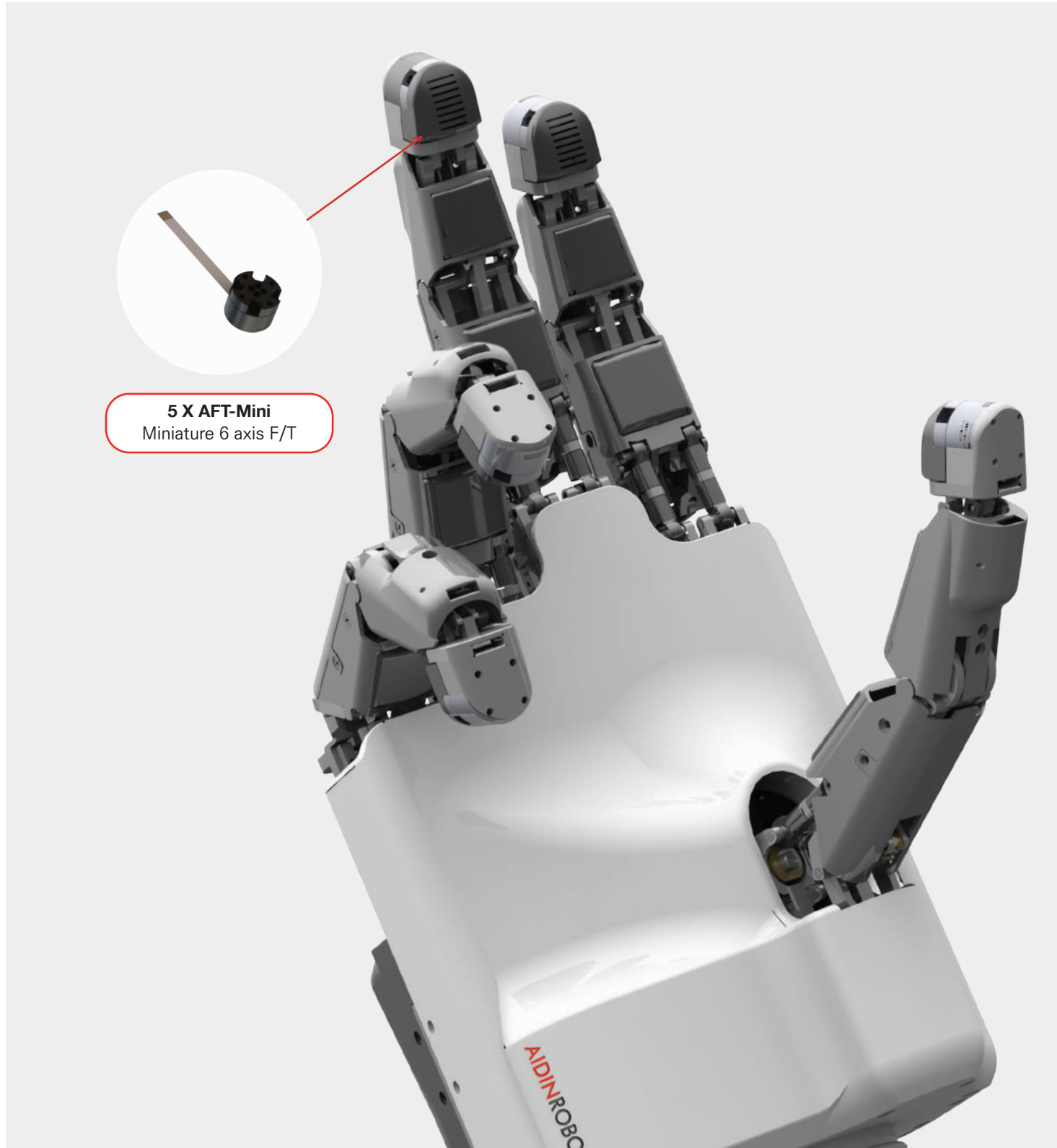
Specifications

Index	Unit	Value
Operating Voltage	VDC	5
Max. safe excitation voltage	VDC	12
Nominal force range	N	30
Force resolution	mN	6
Dimensions	mm	26(L) x 15(W) x 8(H)
Sample rate	Hz	100
Interfaces	-	CAN
Wire	-	For User: CAN_H / CAN_L / VCC / GND

AIDIN HAND



*Only for Research Purpose



Features

AIDIN ROBOTICS' proprietary humanoid hand featuring a 6-axis force torque sensor on the fingertip

Dexterous future-proof picking system: Capable of various grasping modes (power, 3-point, pinch, etc.) suitable for different types of objects, and featuring integrated 6-axis F/T sensors, it can reliably handle delicate objects without causing damage

Human-level compact size and light weight

Link-driven mechanism: Offers both high precision and high force efficiency

Applications

- Industrial / Collaborative robot
- Warehouse picking robot
- Home-service robot
- Prosthetic hand

Specifications

Index	Unit	Value
Grasping mode	Mode	Power Mode (cylindrical, spherical, etc.) Precision Mode (pinch, tripod, etc.)
Degree of Freedom (Finger)	DoF	3
Degree of Freedom (Hand)	DoF	15
Finger-tip force	N	20
Payload	kg	15
Size	mm	291 x 112 x 120
Weight	kg	1.3
Finger-tip sensor	EA	5 (Miniature 6-axis F/T Sensor, AFT20-D15)

Gripper

SusGrip

Robot gripper providing many smart functions based on parallel motion

Gripper

Model SusGrip / SusGrip-FT





Features

- | A widen parallel motion, High-precision (**Max 128mm**)
- | Smart function (**Object Detection, Automated Lock**)
- | **Precise force control mode** with force sensor (Susgrip-FT model)
- | **High-speed** and **Strong power** with BLDC motor
- | Safe use (**No pinch point**)
- | Intuitive GUI



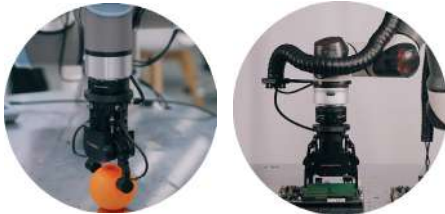
KC Registration Number(SUSGRIP R-R-26a-SusGrip
*Only for SUSGRIP Model

Applications

- | Various manufacturing process (Pick & Place) / Sorting / Handling / Palletizing / Assembly / Measure

Industry

- | Semi-conductor / Service / Logistics / Healthcare / Retail



Specifications

Index	Unit	Value
Gripping force	N	90
Stroke	mm	0-128
Form-fit payload	Kg	5
Operating Voltage	V	24
Max Current	A	2
Repetition accuracy	mm	0.1
Position resolution	mm	0.2
Speed	mm/s	60
Weight	gram	1215

Robot Motion Controller

Model ARC6
 ARC11



Features

- | Real-time motion/force controller for collaborative robots, designed to be compatible with AIDIN ROBOTICS' sensor products
- | Equipped with Xenomai, EtherCAT, and ROS middleware

Applications

- | Industrial / Collaborative robot
- | Sanding, grinding, welding, assembly applications
- | Articulated robot control
- | Warehouse picking robot control

Specifications

Index	ARC 6	ARC 11
CPU	6th gen intel	11th gen intel
CPU TDP	i7-6600U	i7-1185G7E
Memory Type	DDR4 2133MHz 8GB / mSATA128GB	DDR4 3200MHz 16GB / NVME 500GB
Power	9~36VDC (12VDC)	9~36VDC (12VDC)
Ethernet	Intel i210 / i211 1G (2 Port)	Intel i219 1G / i225 / i226 2.5G (2 Port)
Connection	DP1.2 X1, DVI-D X1, USB3.0 X4, 8bit DIO	HDMI2.0, DP1.4 X2, eDP DP1.4 X1, USB3.2 gen2 X4, USB type-C X1, 8bit DIO
Operating Humidity	0~90%	0~90%
Operating temperature	0~60 °C	0~60 °C
Interfaces	EtherNET, EtherCAT	EtherNET, EtherCAT
Operating System	RT-OS Ubuntu 14.04 Xenomai 2.4 RT-OS Ubuntu 20.04 Xenomai 3.2.4 (SOEM) (Select one)	RT-OS Ubuntu 20.04 Xenomai 3.2.4 (SOEM)

AIRO-One Solution for Surface Finishing

Force Control Solution for Manufacturing Automation

- | Smart Force/Torque Sensor-Based No-Code Automation Solution
- | Immediate task automation through intuitive robot teaching
- | Applicable to various tasks such as grinding, polishing, welding, and more



Model AIRO-One for S/P/G

AIRO-One Solution for Surface Finishing



SANDING

AIRO-One for Sanding



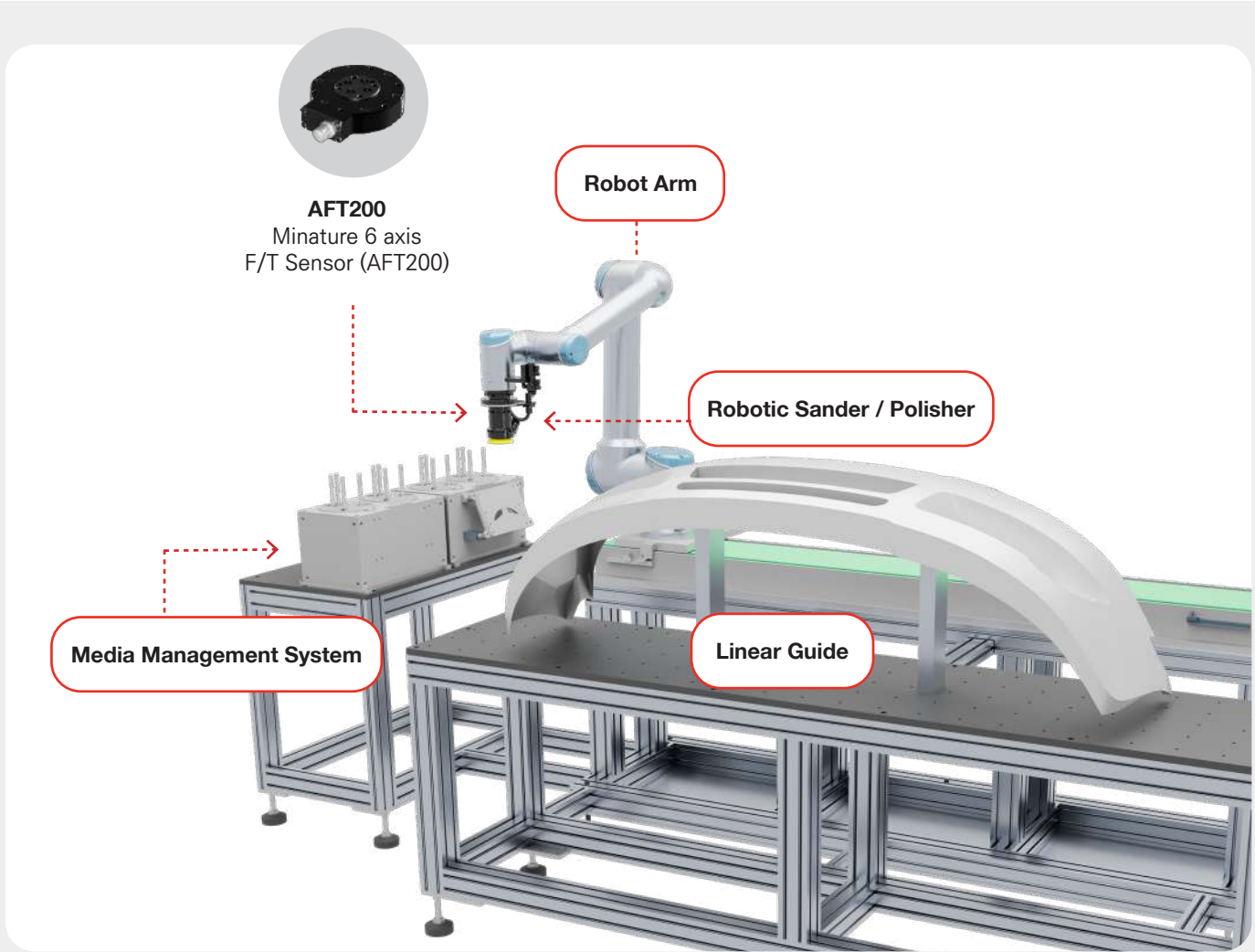
POLISHING

AIRO-One for Polishing



GRINDING

AIRO-One for Grinding



AFT200
Miniature 6 axis
F/T Sensor (AFT200)

Robot Arm

Robotic Sander / Polisher

Media Management System

Linear Guide

- | Easy task teaching (points, trajectories, force, etc.)
- | Active surface force control technology through target force setting
- | Adaptable to various objects, including flat/curved surfaces, narrow areas, and more



> Attach a force torque sensor (AFT200) to the robot body to **analyze the shape and stiffness of the surface** to be processed, and perform polishing process with a **constant vertical force**



Precise Force Control Technology

Self-developed 6 axis F/T sensor & high-performance robot controller ensure $\pm 0.1\text{N}$ precision



Robot Control

Robot performs control execution with no additional equipment



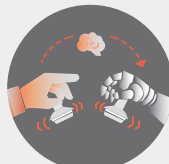
Algorithm System

Analyzes object surfaces to generate optimal paths, positions, and angles for precise task



High Productivity

Delivers consistent quality and high productivity, supporting up to 16 hours of continuous daily operation



User-Friendly Environment

An intuitive 3D task-teaching system enabling easy operator programming with dynamic simulation

AIRO-One Solution for Logistics

- Effortless Object Recognition and Grasping:** Our advanced logistics picking system identifies and grasps random objects with no pre-registration required
- Integrated AI Vision Technology:** Our AI vision algorithm, integrated with a smart gripper, adapts to handle objects of any type or size in logistics environments
- Optimized Object Handling:** By unifying suction and gripper control, our system applies optimal grasping strategies for seamless, efficient logistics operations

Model AIRO-One Solution for Logistics



Productivity

- Productivity : 1000 pieces per hour
- Weight of graspable objects : 3kg
- Size of graspable objects : 300mm

AIRO-One Solution For Logistics

Suction Cup
Tool Changer

Smart Gripper

Suction: 300mm

Gripper Operating Range
200mm

Bin Shaking Device

Quadruped Robot for Industrial Facility Inspection Solution



*Under Development



Features

- Quadruped robot solution for **management and maintenance work** in all facilities, power plants, chemical plants and any harmful or inferior environment
- Customize the robot function** based on modular design following **any customer's request** and easy maintenance
- Provide the customizable solution **attached with other equipment** (thermal, monitor, noise, vibration, gas)

Panoradar Sensor



Model ARS-5000

*Under Development

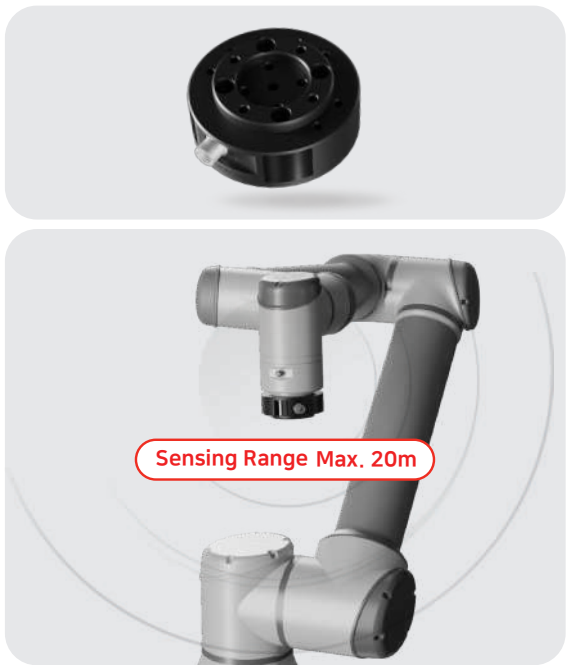
Safety sensor for detecting all people and objects set on a wrist of co-bot without any blind spot

Features

- Safety sensor detecting an surrounding environment and any obstacles to make safe working environment for all workers
- Obstacle Detection (Max 20m)
- Providing a widen detecting scope and accuracy without any blind spot (Presence detection / Segmentation / Motion / Tracking / Speed detection)
- Range Resolution: 3cm
- 360 degree detection FoV
- Digital output interface (EtherNet)
- Obtaining safety zone

Applications

- Industrial robot / Collaborative robot
- AMR / AGV
- Humanoid robot
- Delivery robot
- Industrial robot for safety
- Quadruped robot





AIDIN ROBOTICS

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