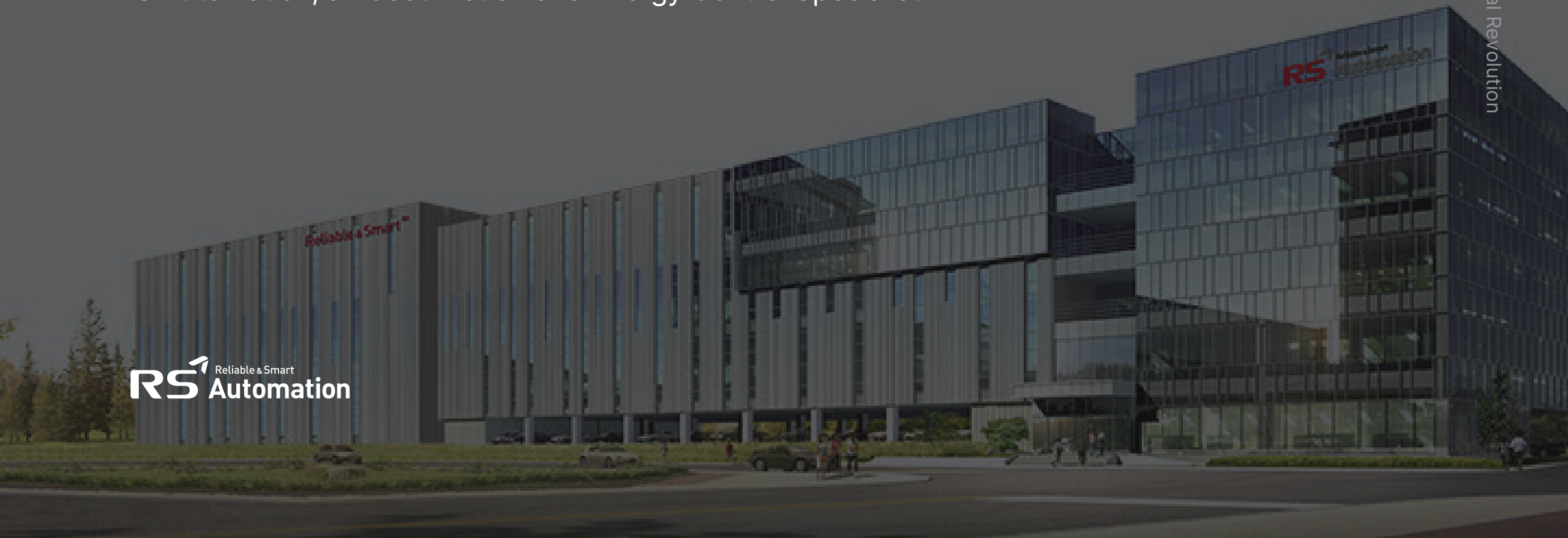
Investor Relations 2025

RS Automation, a Robot Motion and Energy Control Specialist

Engineering the 4th Industrial Revolution



RS Reliable & Smart Automation

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RS Reliable & Smart Automation

CONTENTS

01. Company Introduction Video
02. Global Mega Trend

Prologue

Company Introduction Video

The 4th Industrial Revolution and Robot Intelligence Growth

Robots EXECUTING work that CANNOT be done by Human

Automation/High Precision(Special Purposes)

- Arduous Work → Welding Robot
- High Precision Work → Semiconductor Manufacturing Robot
- Dangerous Work → Disaster Rescue Robot

Industrial Robot

Factory Automation

Future Robot

Smart Factory : Industry 4.0 Digital Transformation

Robots SUPPORTING Work Humans CAN Do

AI/Collaboration/Safety/Network(Human-Friendly)

- Self-Learning → Intelligence Robot
- Human Support → Service Robot
- Collaboration → Collaborative Robot

4th Industrial Revolution and Smart Factory & Robots

Factory Automation

Special Purposes

Closed Structure

IoT

Cloud

Network

Big Data

AI

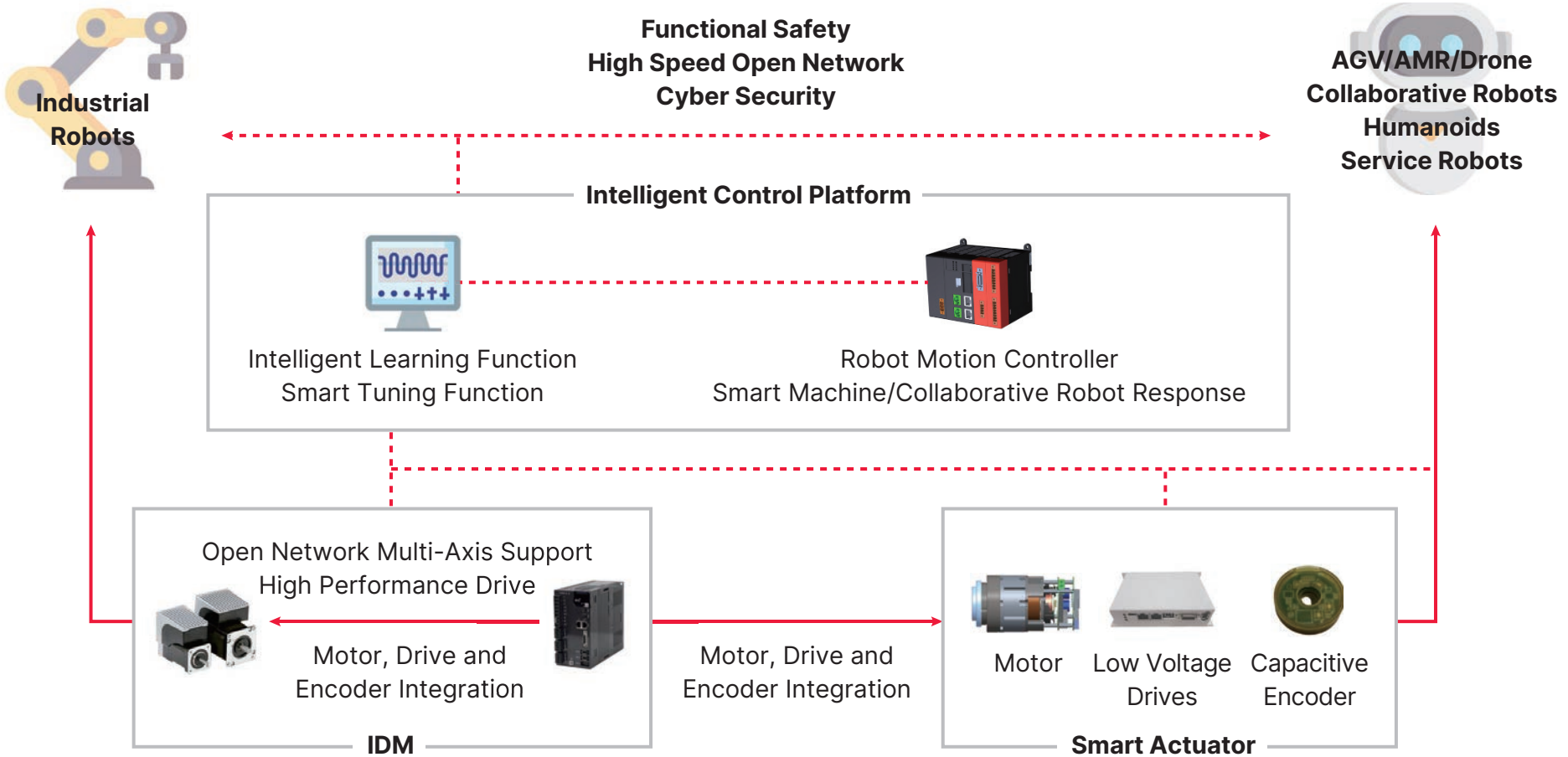
4th Industrial Revolution Smart Factory

Smart

Open Structure

Collaboration

Industrial Robots and Future Robot Technology Evolution

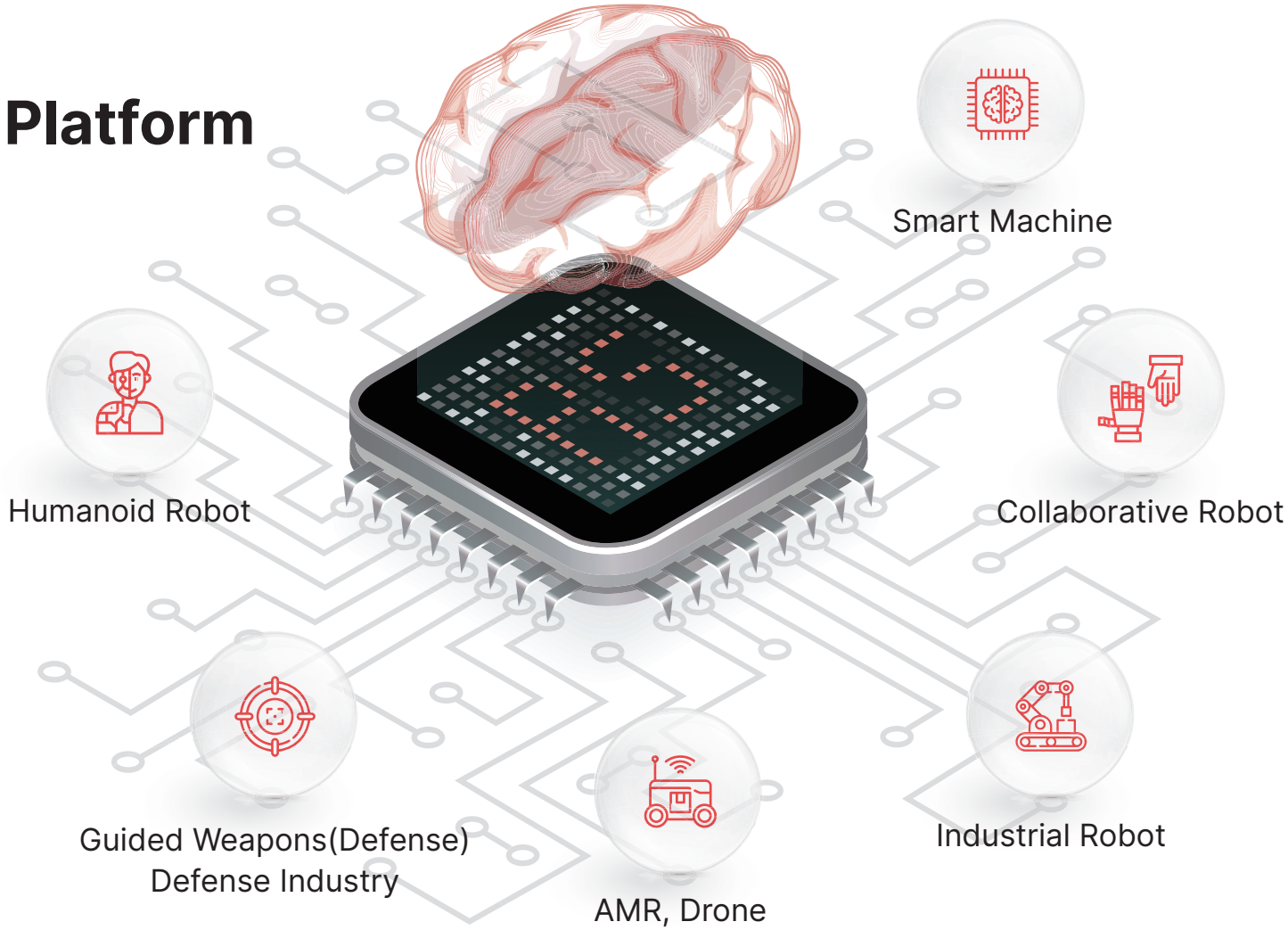


RS Automation
Intelligent Robot Control Platform

01 **Intelligent Learning Function**

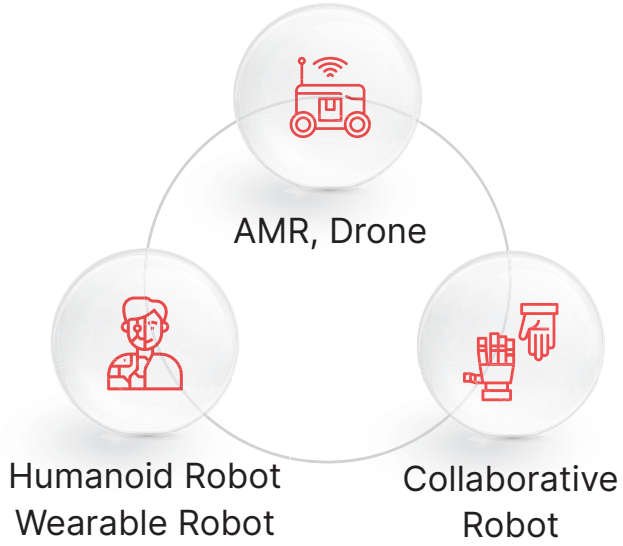
02 **Smart Tuning Function**

03 **Smart Machine,**
Collaborative Robot Response



Smart Actuator for Service Robots

1st Korean Company to Develop Encoder-Integrated Control Module in Korea
3 types of Integrated Drive Modules



Control Integration Module

Current Control Response: 4.5 kHz
Speed Control Response: 2.5 kHz
Built-in 21-bit Capacitive Encoder

Frameless Hollow Motor

Input Voltage: 48 Vdc
Rated Torque: 0.32/0.64/1.27 Nm
Rated/Maximum Speed: 3,000/5,000 rpm

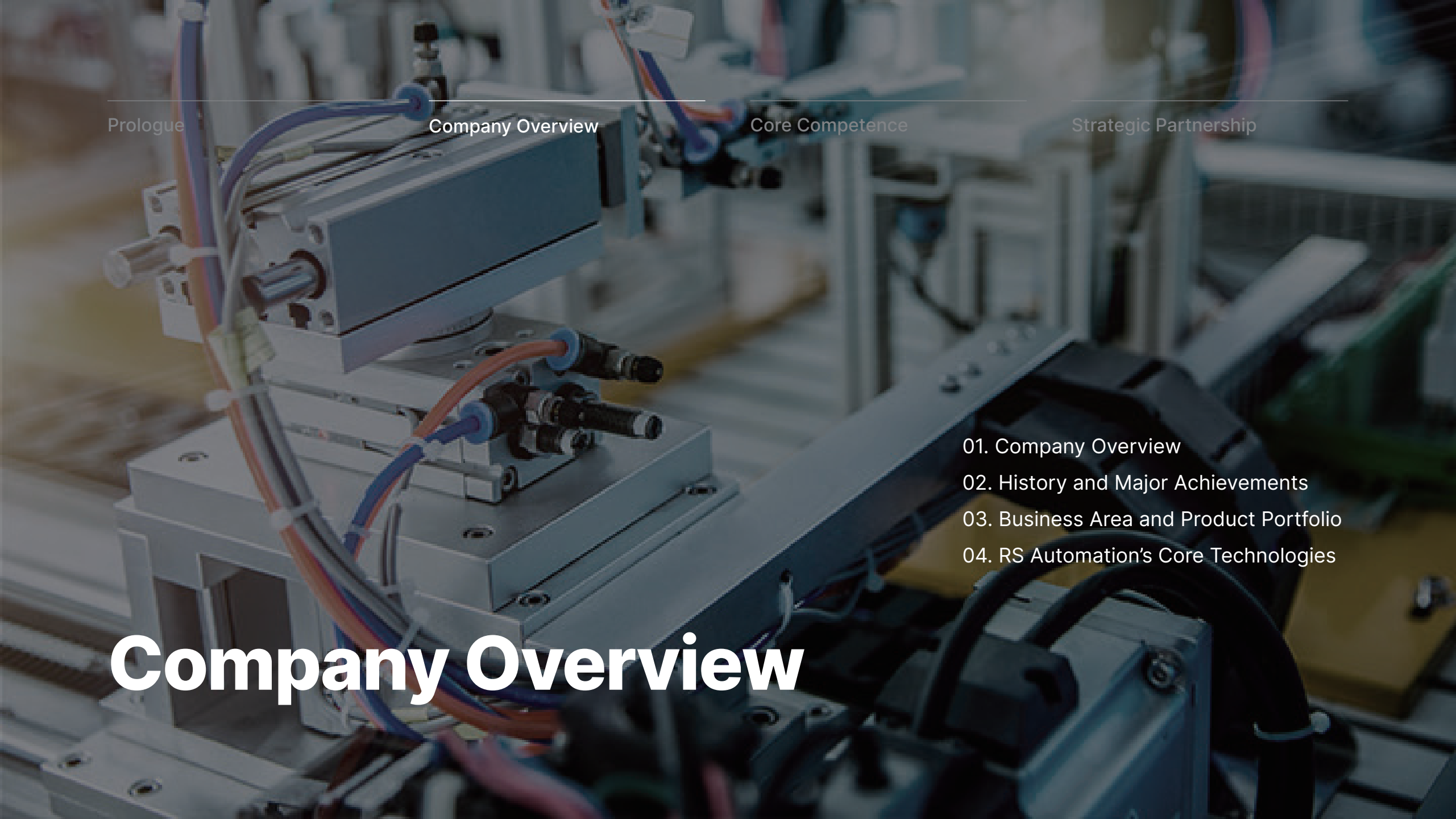
Product Lineup

Φ80 x 68mm
710g

Φ100 x 75mm
830g

Φ140 x 80mm
1,530g

Smart Actuator



Company Overview

Korea’s only Automation Company based on 30 years of Partnership with Samsung and Rockwell

1995

Samsung Electronics
Automation Team

2002

Rockwell Automation
Samsung Joint Venture

2010

Establishment of
RS Automation

Korea’s only Automation Company based on 30 years of Partnership with Samsung and Rockwell

Yonsei University

Bachelor/Master

Electronic Engineering(1981/1983)

University of Southern California
Master Computer Science(1988~1995)

Ph.D. Computer Science on
Robot & Artificial Intelligence(1988~1995)

Awards

Minister of Trade, Industry and Energy Award(2015)

Korea Technology Award(2016)

Minister of Trade, Industry and Energy Award
hosted by ATC Association(2016)

Member of the National Academy of Engineering(2016)

Presidential Citation at the Korea Robot Awards(2019)

President of the Control Robot System Society(2020)

CEO | Duk Hyun Kang

RS Automation Leading the 4th Industrial Revolution with Unrivaled Control Technology

2010~

2010

Establishment of RS Automation

2012

Achieved Accumulated Revenue $200 Million USD

First in Korea to Export
$20 Million/Year in Motion Controllers

2014

Development of 22-bit Encoder

Cumulative Sales of Robot Controllers
: 12,000 units

2015

No. 1 in Energy Control Devices in Korea

Development of Smart Tuning
Proprietary Technology

2016~

2016

Korea Technology Award

2017

Establishment of 2nd Factory

Selected as WC300 Company

KOSDAQ IPO

2019

Establishment of RS Automation China JV

Selected as Top 100 Hidden Champions
in Materials, Parts, and Equipment

Presidential Award at the Korea Robot Awards

2020~

2020

Establishment of RS Automation USA

2021

Semiconductor Logistics Line adopts OHT Standard

Achieved $100 Million USD in Annual Sales

Strategic Partnership with LS ELECTRIC

2023

62 Control-Technology Patents

Collaborative Robot Drive Module selected
as National Project for Korea

IEC 62443 Cyber Security Certification

RS Automation, Specializing in Robot Motion and Energy Control Devices

Robot Motion Control Business Area

Optical Encoder
Magnetic Encoder
Capacitive Encoder
Korea's 1st 22-bit Optical Encoder

Network Controller
Embedded Ethernet
CPU Redundancy

Network Servo Drive
Multi-Axis Servo Drive
Functional Safety
Smart Tuning

Network Motion Controller
Multi-Axis Control over 100 axes
Real-Time High-Speed
Motion Network

Energy Control Business Area

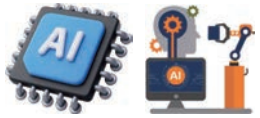
ESS PCS/PV PCS
Energy Storage System
Power Conditioning System

Power Stack Module
High Efficiency Power Conversion

UPS
Power Supply Maintenance Device
Power Solutions for Servers and Networks

Securing Proprietary Technology and Unrivaled Advanced Technology

AI/Tuning Platform



Motion Control Algorithm

Robotics and Mechatronics

Drive and Power

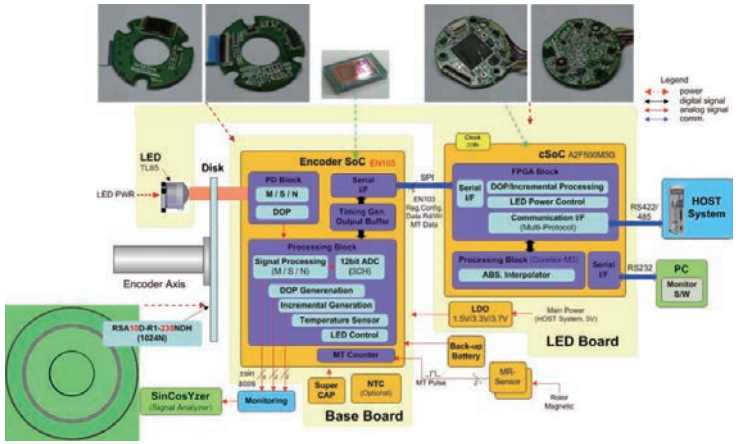
Industrial Network

DeviceNet
EtherNet/IP
SERCOS interface
EtherCAT

Core Competence

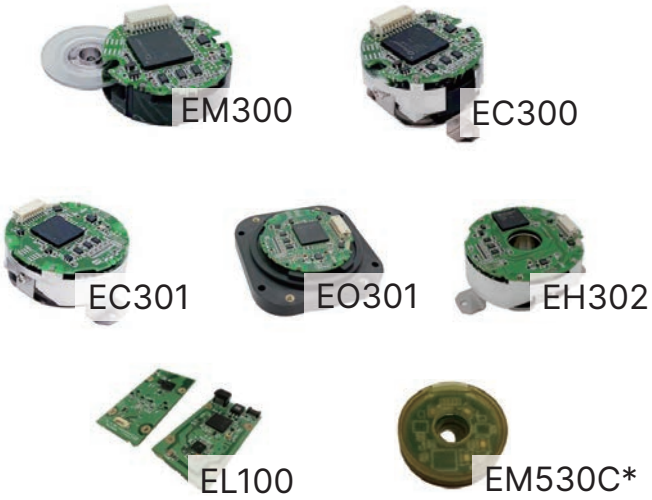
Optical Encoder

Robot Motion Control Business Area



- Opto-ASIC Light Receiver Structure to minimize Optical Noise
- Disk and Light Receiving Element Shape for Obtaining High Quality Sine Waves
- Disc Pattern and Light Receiving Element Shape to minimize Assembly Eccentricity
- Disk Pattern for Absolute Angle Estimation and Error Correction
- Absolute Angle and Relative Angle Estimation Algorithm

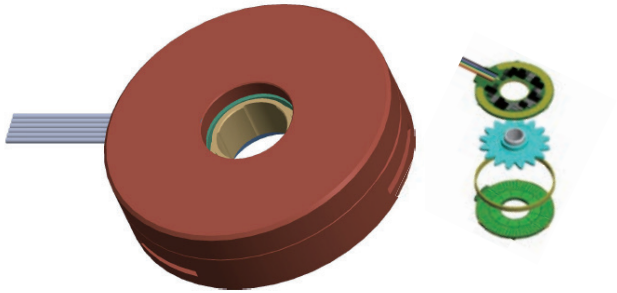
RSA Encoder

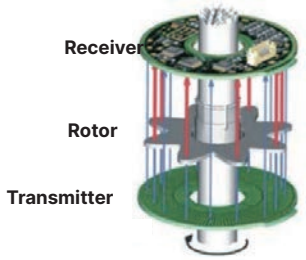


*Product Launch soon.

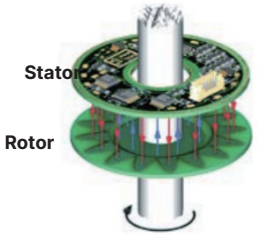
Capacitive Encoder

1st in Korea





DiskType



Disk-Less Type

Specification*

- Ultra-small Absolute Position Encoder(Φ25 x 7mm)
- Resolution: 19 bit
- Angle Error: ±0.02°
- Communication I/F: BiSS-C, T-Format

*For Disk Type

Characteristic

- Capacitive Encoder that detects Changes in Capacitance According to Rotation Angle
- Low Voltage, Resistant to External Shocks, Pollution, and Magnetic Disturbances
- Disk Type: Ultra-small Design Suitable for Weapon Systems such as Guided Weapon Seekers
- Disk-less Type: Suitable for High-performance Servo Motors due to Thin and High-resolution Design

Application

- Defense Weapon Systems such as Guided Weapons, anti-Aircraft Guns, and Air Defense Missiles
- Mobile Robots such as AGV, AMR, etc.
- High-Performance Servo Motor

Low Voltage DC Drives

Low Voltage DC
Servo Drives

Encoder Solution

Low Voltage DC
Servo Drives

Characteristic

- 100% Localized Solution using RSA's own IP
- Miniaturization and Lower Cost through Integrated Control of Drive and Encoder
- Low Voltage Solution Suitable for Mobile Environment
- Adoption of High-performance Smart Servo Control Method

Application

- Smart Actuator for Robots
- Drive Integrated Motor
- Linear Conveyor System
- Picker of Semiconductor Inspection/Packaging Equipment
- Mobile Robots such as AGV, AMR, etc.

CSD7 Servo Drive

Single Axis Servo Drive

Characteristic

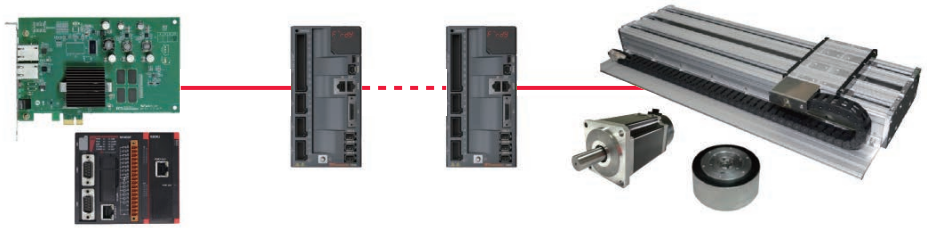
- EtherCAT Network Type and Pulse/Analog Type
- Extensive Product Lineup Ranging from 100W to 5KW
- Safety Standards: STO, CE, NRTL/C, RoHS
- Supports Rotary Motor(23bit High-Resolution Encoder)
- 3rd Party Linear, DD Motor Support
- Smart Tuning

Application

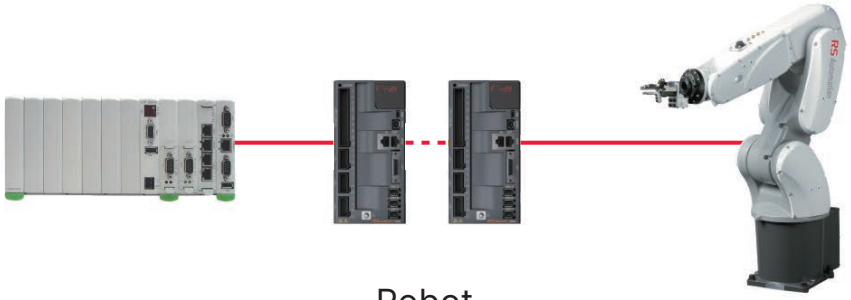
- Semiconductor, FPD, Secondary Battery, Robots, Smartphone Industry
- Assembly Equipment, Inspection Equipment, Logistics, Packaging, etc.

D8 Servo Drive

Multi-Axis Servo Drive



Rotary Motor/Linear Motor/Direct Drive Motor



Robot

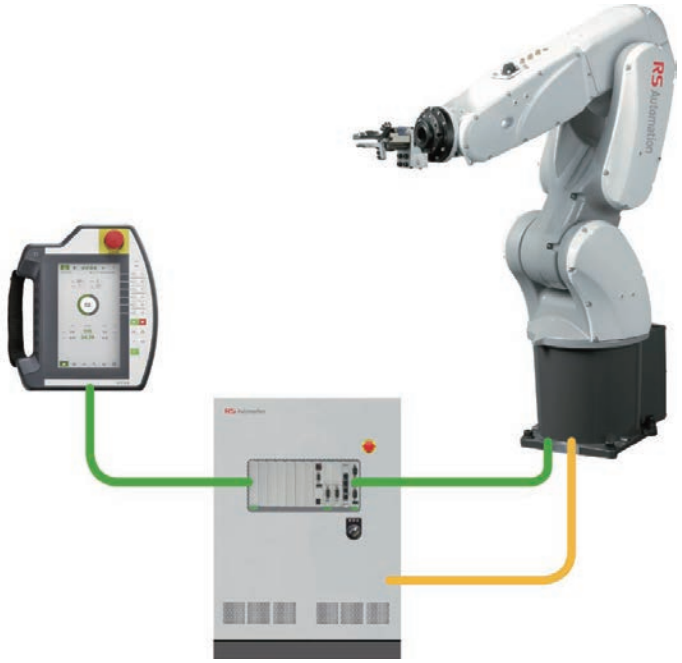
Characteristic

- When 2- or 3-axis Control of Rotary Motors, Linear Motors, and Direct Drive Motors is Required
- Cost Reduction through Reduction of Servo Drive Quantity, Power, and Network Cables
- Installation Space Reduction of 36% compared to Using Individual Servo Drives
- Supports Enhanced Safety Standards: STO, SS1, SS2, SOS, SLS

Application

- Composed of Multiple Axes and Required Equipment
- Equipment requiring Minimal Installation Space
- Robotic Applications

SMART FACTORY Solution



Characteristic

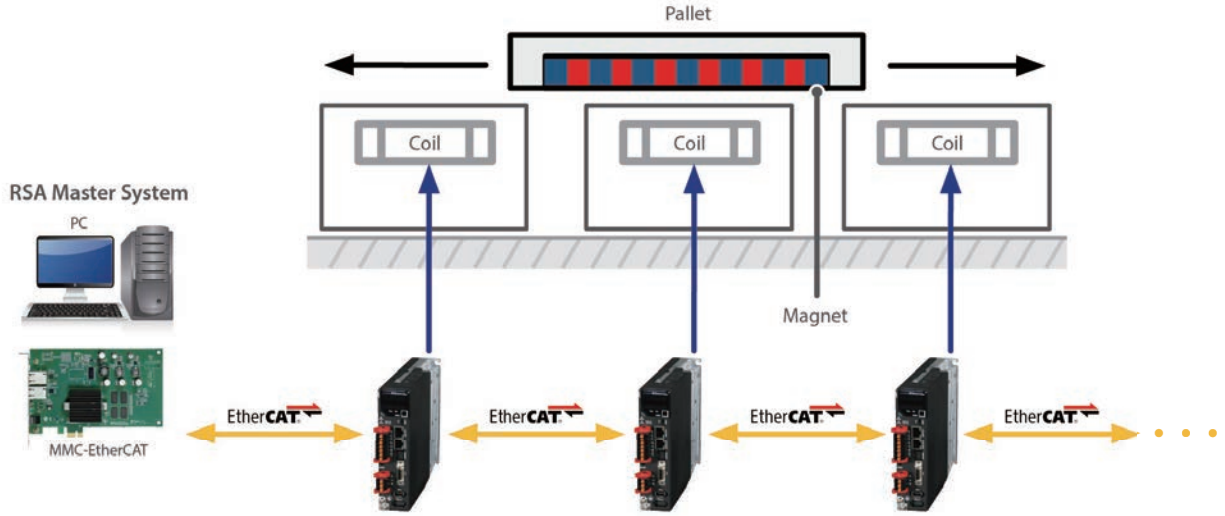
- Library of over 30 Different Robot Solutions
- Setting up the Robot for Teaching without Program Coding
- Providing Developer Convenience through GUI
- Simulation and actual Robot Movements Match through Application of Dynamics
- Dramatically reduces System Development Time and Cost

Application

- Processes such as Semiconductor, Display, Automobile, Logistics, etc.
- Injection Molding: Die Casting, Resin, Press
- Assembly: Nut Tightening, Sealing
- Post-processing: Grinding, Polishing
- Logistics: Transportation, Packaging, Picking
- Inspection: Measurement, Inspection Process

MMD(Logistics Robot)

Moving Magnet Drive



Characteristic

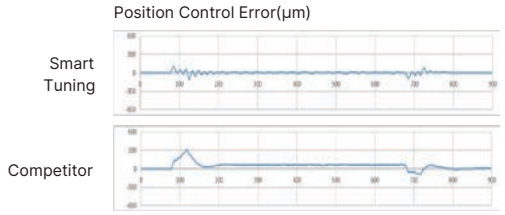
- Large-scale Motor Control and I/O Control using EtherCAT PC Master
- Reduced Cable Usage using EtherCAT Network
- Cost Savings through Convenient Maintenance Time Reduction
- Smooth Speed Control and Precise Position Control Possible

Application

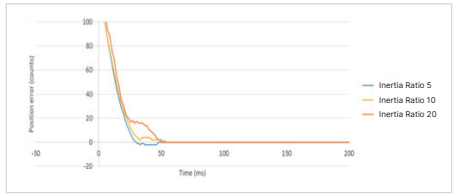
- Logistics System suitable for Clean and Vacuum Environments
- Can be operated in Logistics Process and Unit Process Equipment

Smart Tuning Solution

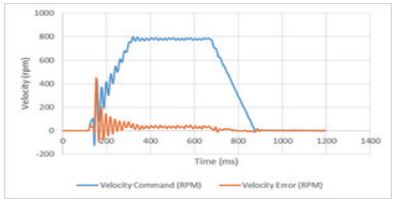
Smart Tuning Technology that Simultaneously Satisfies
User Convenience and High-Performance Position Control



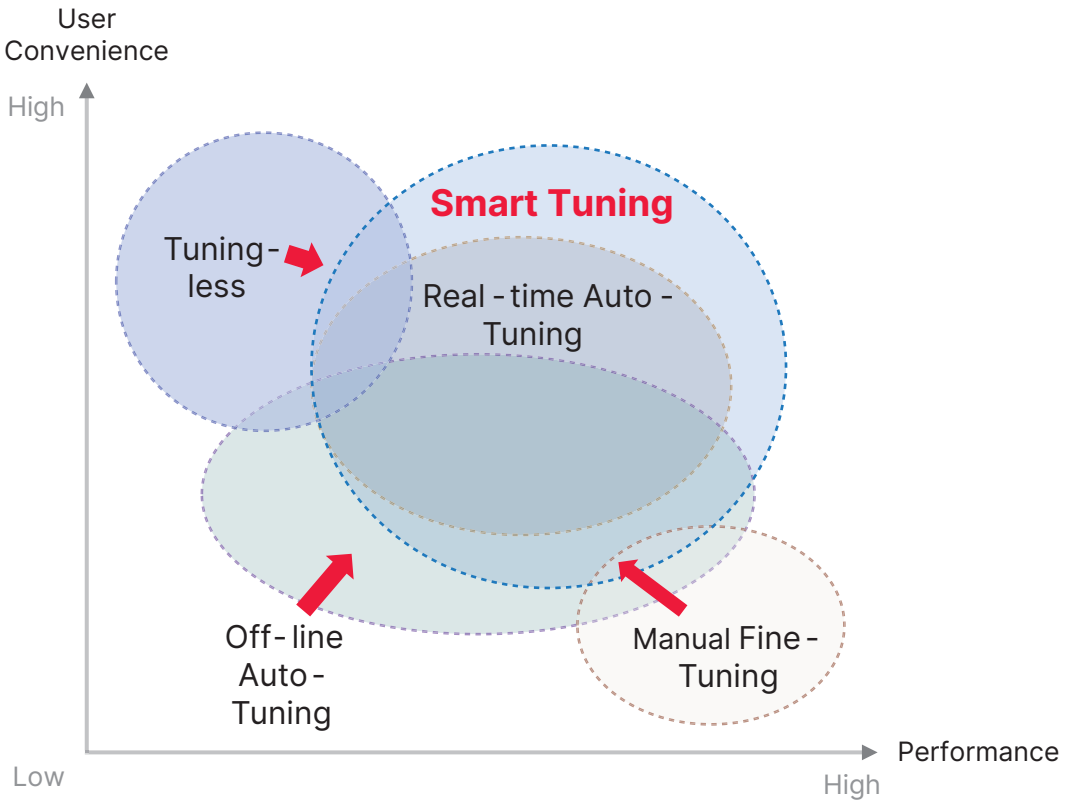
High-Performance Position Control -Path Tracking Control



High-Performance Position Control -Load Fluctuation Compensation

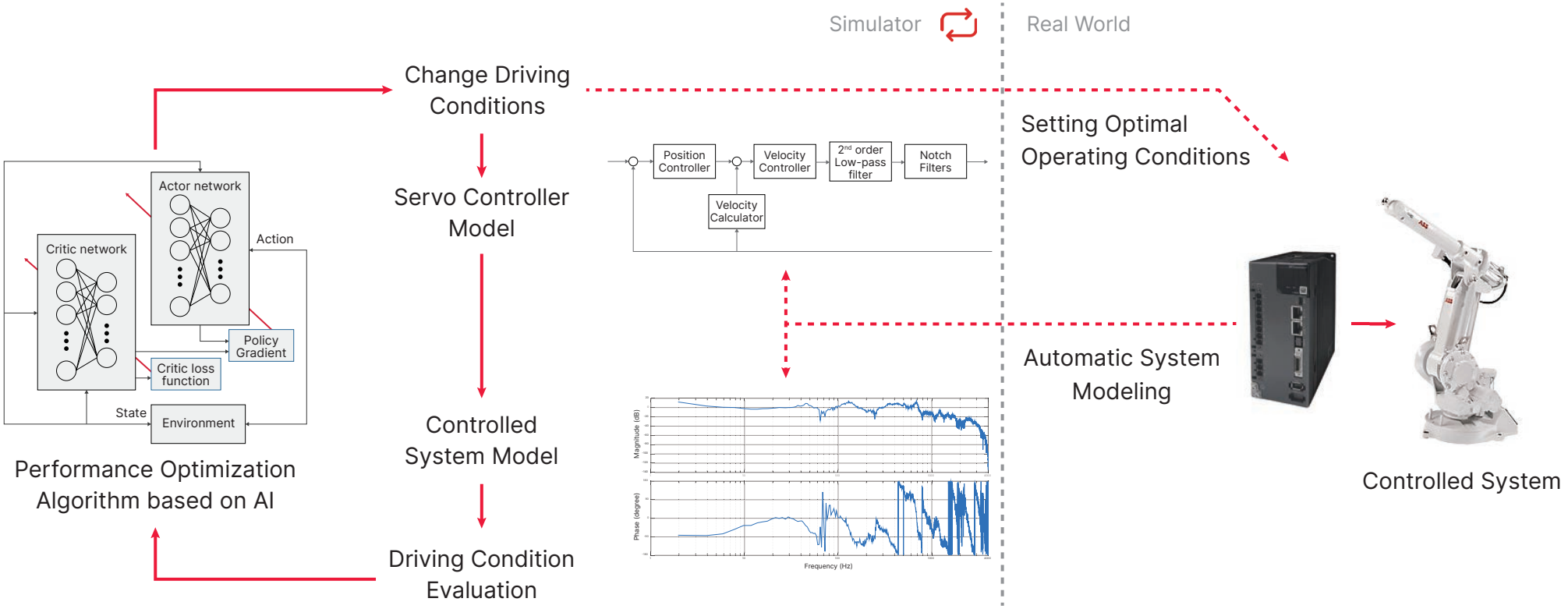


Real-Time Vibration Suppression



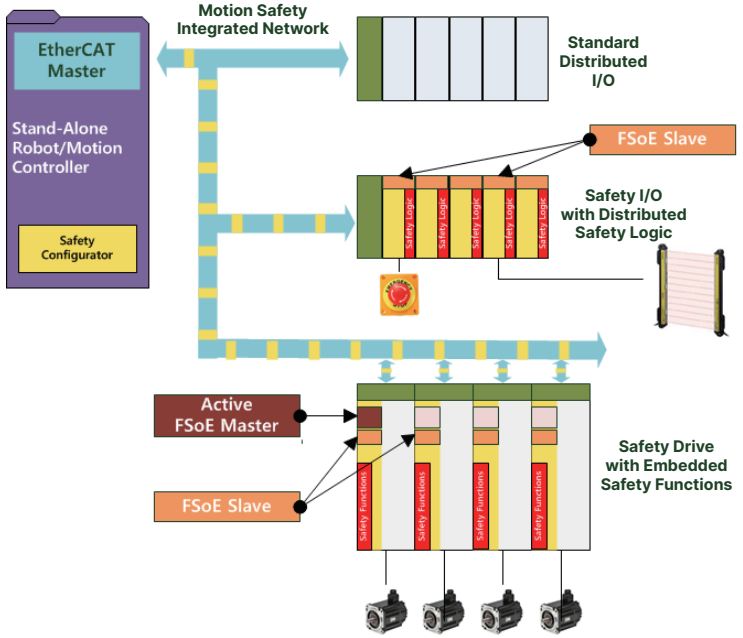
Smart AI Solution

Performance Optimization Technology based on AI Technology



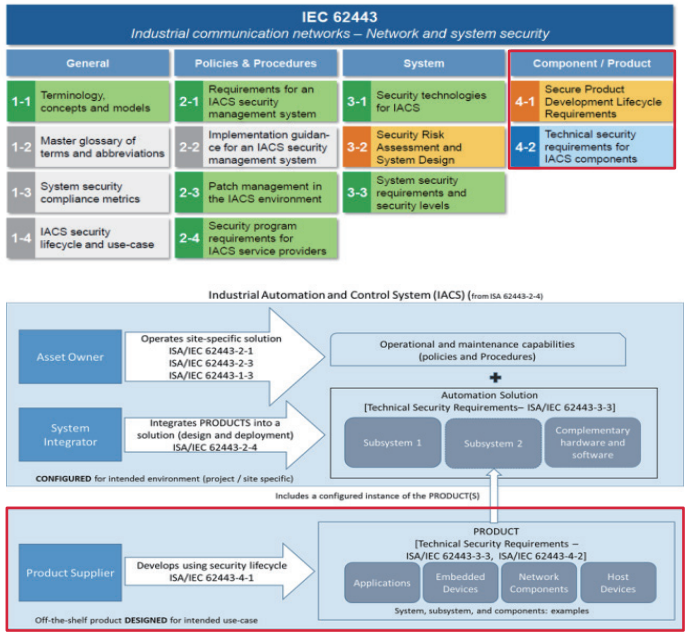
Functional Safety and Cyber Security

Functional Safety



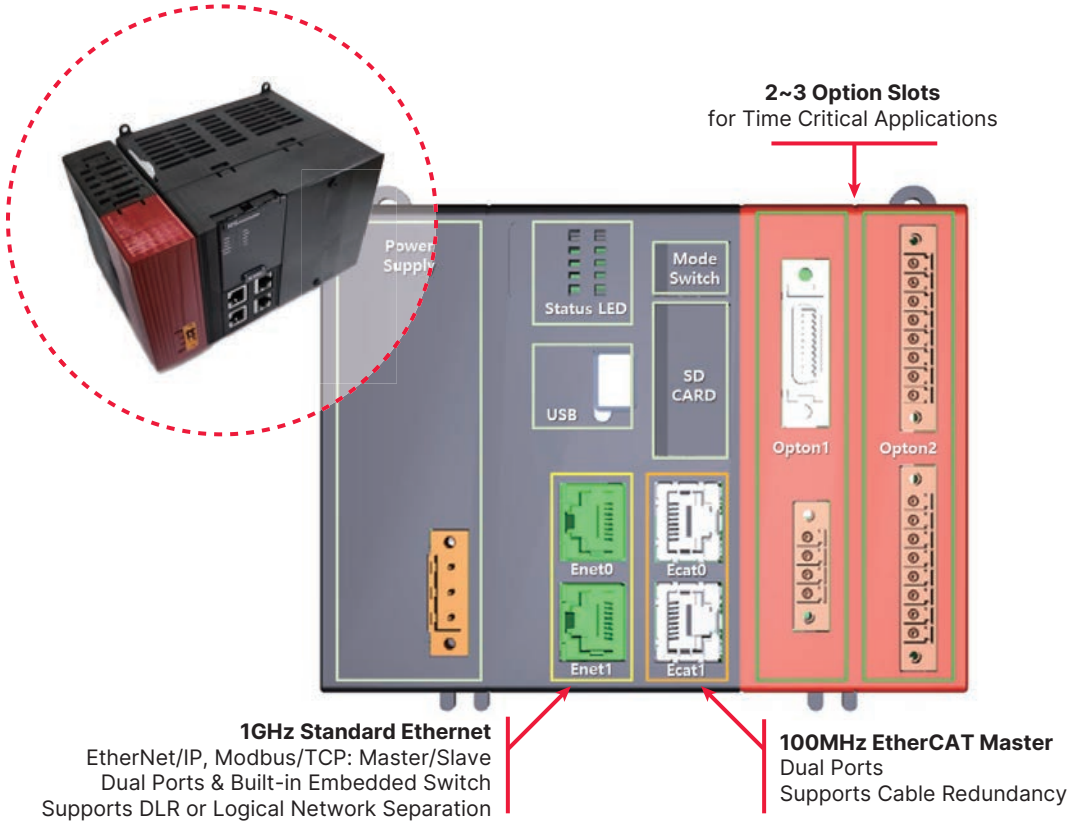
Advanced Functional Safety Technology based on IEC 61800-5-2 and FSoE

Cyber Security



Cybersecurity Technology based on IEC 62443

X80 Next Generation Controller



Characteristic

- Enhanced Execution Speed and Network Capability with Full Scale Motion Master Supporting 32 axes 500μs coordinated Position Control
- High Performance based on Multi-Core CPU (Dual 1.5GHz A15 + 2 C66X DSP + 2 Dual 200MHz M4)
- Dual 1GHz EtherNet supporting Modbus/TCP and EtherNet/IP
- Dual 100MHz EtherCAT with Cable Redundancy
- Option Slots for Time Critical Applications

Application

- Semiconductor, FPD, Secondary Battery, Robots, Smartphone Industry
- Assembly Equipment, Inspection Equipment, Logistics, Packaging, etc.

Key Elements of Energy Control Devices
Smart Cube Technology

- ✓ Heat Dissipation Optimized Design
- ✓ Designed to Minimize Stray Inductance
- ✓ Securing Reliability through Installation of Protection Circuit
- ✓ Application of Long-life Capacitor

Flexibility
Flexible Development
Tailored to Customer Needs

Cost Efficient
Cost-Saving
Stack Development

Stability
Quality Assurance through
High-Intensity Reliability Tests

Scalability
Modular Stack Parallel
Connection Expansion Structure

1500Vdc 3Level PV PCS

Modular Stack

- Maximum Input Voltage 1500Vdc
- Apply 3 Level NPC Topology
- Unit Module Capacity 625kW(600Vac)
- Long Life Capacitor Applied
- Designed for Stack Modularity

PV PCS
(European Efficiency 98.68% (625kW))

625kW **1.25MW** **3MW**

Securing Global Technology through Excellent R&D Staff and Performance

Top 100 Hidden Champions in Materials, Parts, and Equipment

"Top 100 Future Technology and Engineers that will lead Korea in 2020"

[Selected by the National Academy of Engineering: Sang Hoon Lee, Sang Seop Lee]

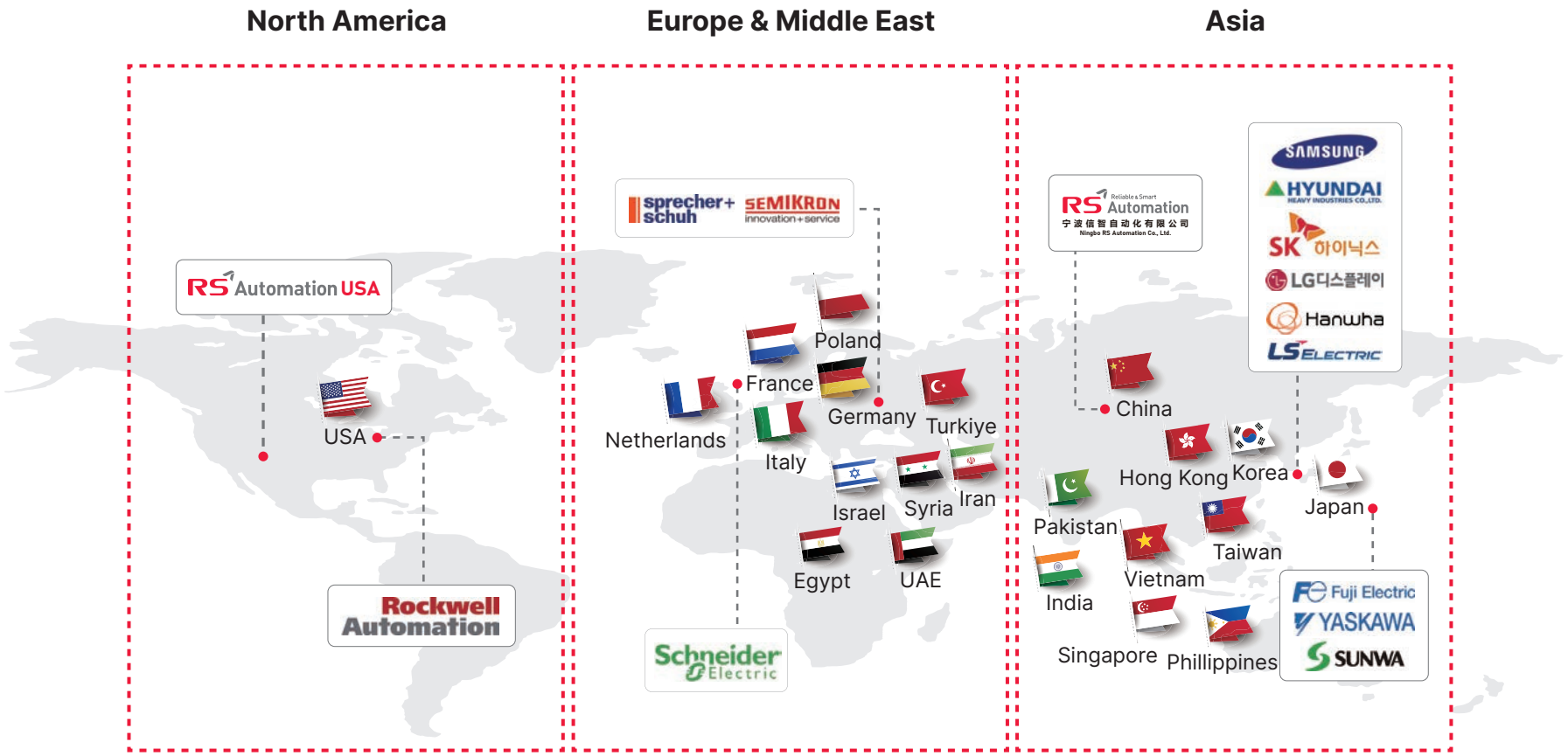
Korea Technology Award

EtherCAT-based
High-Performance Network
Motion Control Solution

01. Global Network
02. Management Performance
03. Establishment of an Overseas Corporation

Strategic Partnership

Securing Major Distribution Networks and Strategic Partners around the World(21 Countries)



Domestic Major Projects

RA SMC

Smart Motor Control

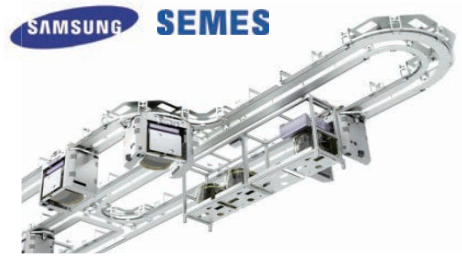
Soft Starter

Worldwide Sales

Amusement Parks, Escalators, etc.

Samsung Electronics

OHT System



Semiconductor Line

P3, P4, SAS, SDI

Products: CSD7, RSMA

LGD: Moving Magnet

TV Inspection Line

Display

LGD Vietnam, Guangzhou, Nanjing

Product: CSD7

Abiman: Take-Out Robots

Take-Out Robots

Take-Out Robots for Injection Molding Machine

Abiman(formerly YUDO)

Products: CSD7, CSMA

Domestic Major Projects

SEMES: Handler

STH5800 Test Handler

SEMES

Semiconductor Test Equipment

Full-scale Application in 2021

Samsung Electronics

Products: CSD7, CSMA, X8 I/O

SEMES: Sorter

TEPAS20 Sorter

SEMES

Semiconductor Package Equipment

Full-scale Application in 2021

Samsung Electronics

Products: CSD7, D8, CSMA

SEMES: Probe System

SEMPRO PRIME et al.

SEMES

Semiconductor Back-end Process

Application of Various Probe Facilities to Samsung

Products: X8 PLC, CSD7

SEMES: Wet Station

LOTUS

SEMES

Semiconductor Cleaning Equipment

Recruitment 2022

Application of LOTUS Equipment to Samsung Electronics

Products: X8 scrubber I/O

Domestic Major Projects

Cymechs: EFEM

Opener

Semiconductor Transfer Equipment

Samsung Electronics, SK Hynix

Products: CSD7, CSMT

GigaVis: AOI

AOI Equipment

PCB Inspection, Repair

Products: MMC, F/M

GnBS: Plasma Scrubber

Plasma Scrubber

Semiconductor Post-Process Environmental Facilities

Samsung Electronics, SK Hynix

Products: X8 PLC, EOI

Techwing: Handler

Test Handler

Semiconductor Test Equipment

SK Hynix, Export

Products: MMC, CSD7, CSMT

RS Automation USA

RS Automation USA

Location

Henderson, Nevada, USA

Year of Establishment

2020

Showcase Mask Manufacturing Equipment utilizing RSA Product

Growing RSA Brand Awareness

Entering the North American Automation Market

Ningbo RS Automation

Reliable & Smart RS Automation
宁波信智自动化有限公司
Ningbo RS Automation Co., Ltd.

Location

Ningbo City, China

Sales items

Servo Drive, Motor, Motion Controller, Network Controller, etc.

Strengthening R&D Capabilities

Maximizing R&D Synergy with Harbin Institute of Technology

2021 Ningbo City High-Quality Talent Entrepreneurship Project Enterprise Certification

Investor

- RS Automation(51%)
- Harbin Institute of Technology Ningbo Intelligent Equipment Research Institute(29%)
  (Harbin Institute of Technology Ningbo Institute of Intelligent Equipment Technology)
- Heilongjiang Yinghe Investment Group(20%)
  (Heilongjiang Yinghe Investment Group)

World Leading Robot Motion & Energy Control Solution Provider

RS Automation Commits to **Pursue and Overcome Challenges**

Connected
Multiple Robots
Network Motion

Smart
Intelligent Robot
Smart Actuator
Encoder/Sensor

Reliable
Safety Technology
Cybersecurity Technology
Power Cube Technology

THANK YOU

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