



Digitized Automation for a Changing World

Delta Robot Controller with Servo Drive Integrated ASDA-MS Series



www.deltaww.com

 **DELTA**
Smarter. Greener. Together.

A background image showing an industrial factory setting with various machinery, including robotic arms and conveyor belts, under bright overhead lighting. The scene is slightly blurred to emphasize the text in the foreground.

Integrated Structure, Outstanding Performance

As a leading industrial automation brand, Delta continues to provide automated solutions for a wide range of applications and industries to fulfill customers' demands. Since industrial robots are becoming more and more important for industrial automation, Delta's industrial robot solution combines key products including controllers, AC servo drives, high-speed motion communication and a general communication interface into a real-time and highly flexible Robot Controller with Servo Drive Integrated - the ASDA-MS Series.

Innovative and Integrated Design

The ASDA-MS Series integrates a robot controller and 4 axes of servo drives to perform mathematical calculations, smooth track planning, and provide loop control in one unit, greatly enhancing real-time system calculation performance. This design perfectly fulfills the demands of an industrial robots' complex non-linear system and realizes dynamic compensation to achieve high speed and high precision.

Complete Development Platform

The ASDA-MS Series also supports the IEC61131-3 standard's five kinds of programming language and PLCopen motion function block. It offers Delta Robot Languages (DRL) for robot application program development, so that customers can develop customized functions and programs for applications in various industries. In addition, the ASDA-MS Series integrates peripheral devices (such as machine vision systems, sensors, and central computers) through a variety of communication interfaces, and matches extension axes via high-speed motion BUS such as Modbus and Modbus TCP to build a complete industrial robot solution.

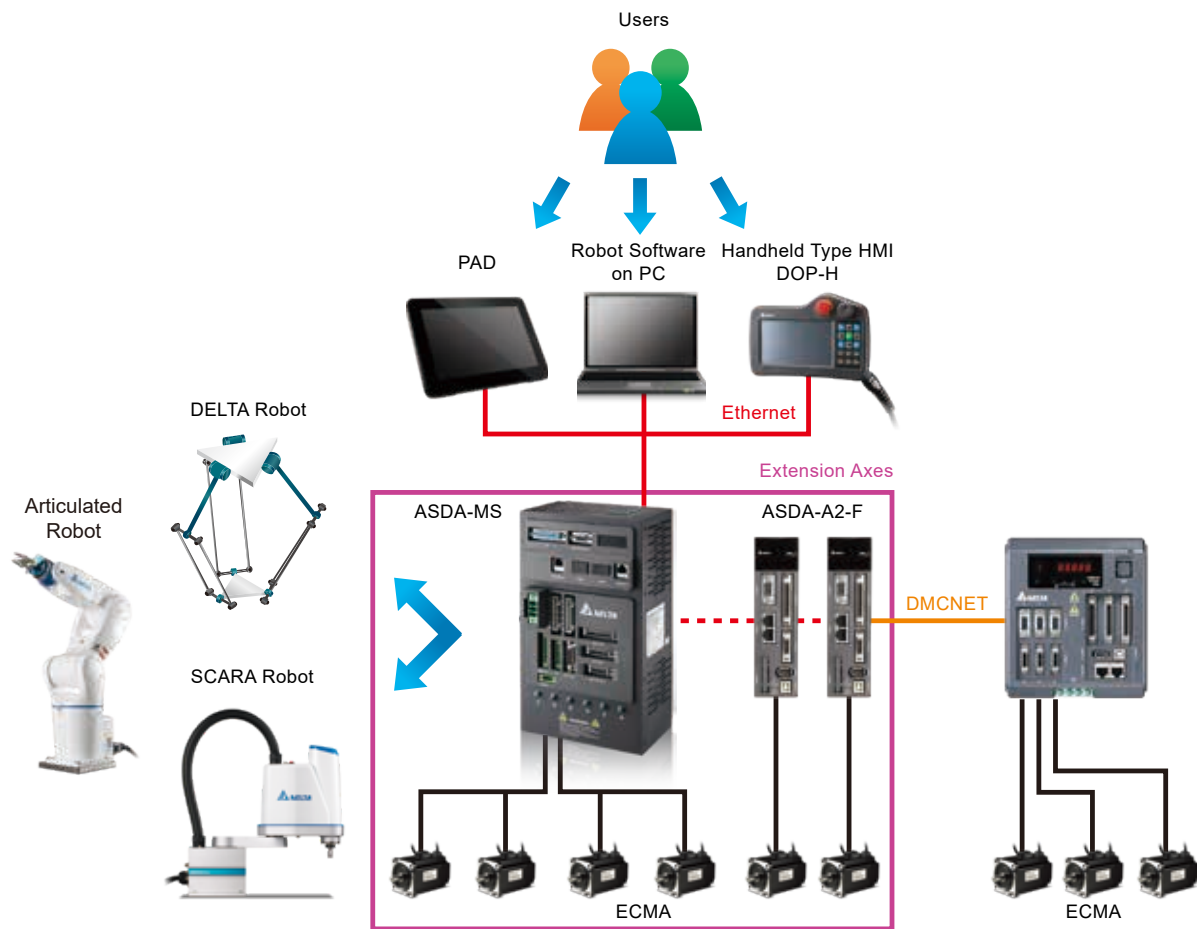
In the competitive global market of industrial robots, Delta offers a professional industrial robot total solution to fulfill all kinds of market requirements and assist customers in improving their competitiveness and enhancing customization to provide "Automation for a Changing World".



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System Structure



Complete Robot Solution

- Integrates robot controller, motion controller and servo drive in one single unit with high flexibility and reliability
- Supports communication protocols for fast and smooth integration with peripheral devices
- Built-in diverse robot control modules for different applications
- Enhanced flexibility and extension with 4-axis robot and 6 external axes motion control
- Supports 5 kinds of programming languages with IEC 61131-3 standard and the PLCopen motion function block
- Offers DRL Languages for developing robot application programs and specific skill functions to fulfill customer requirements
- Supports G-code programming for path planning

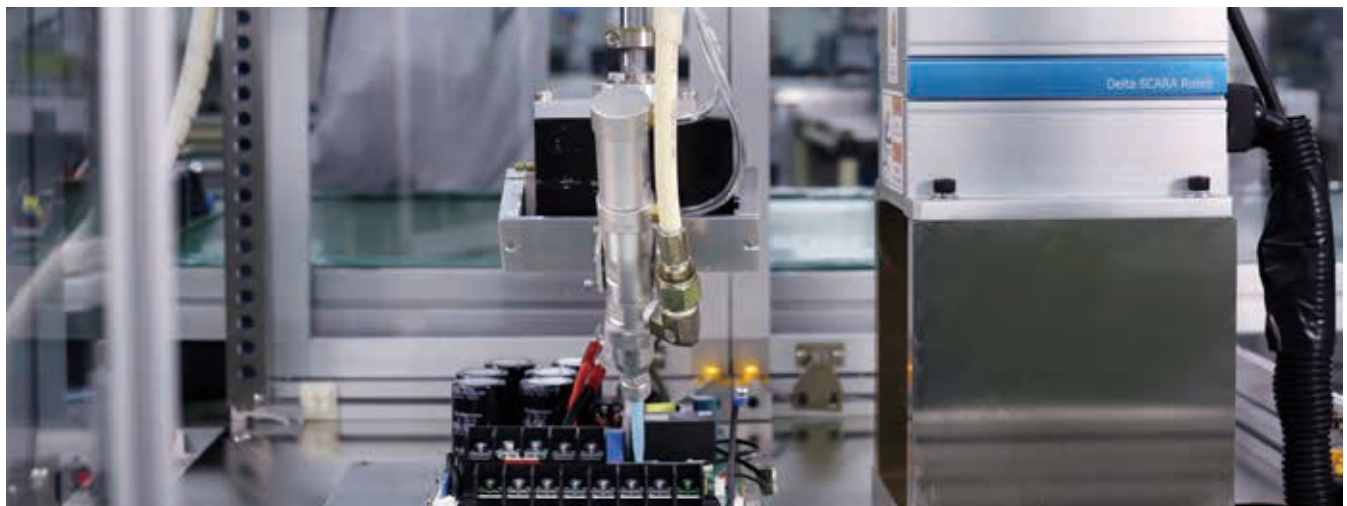
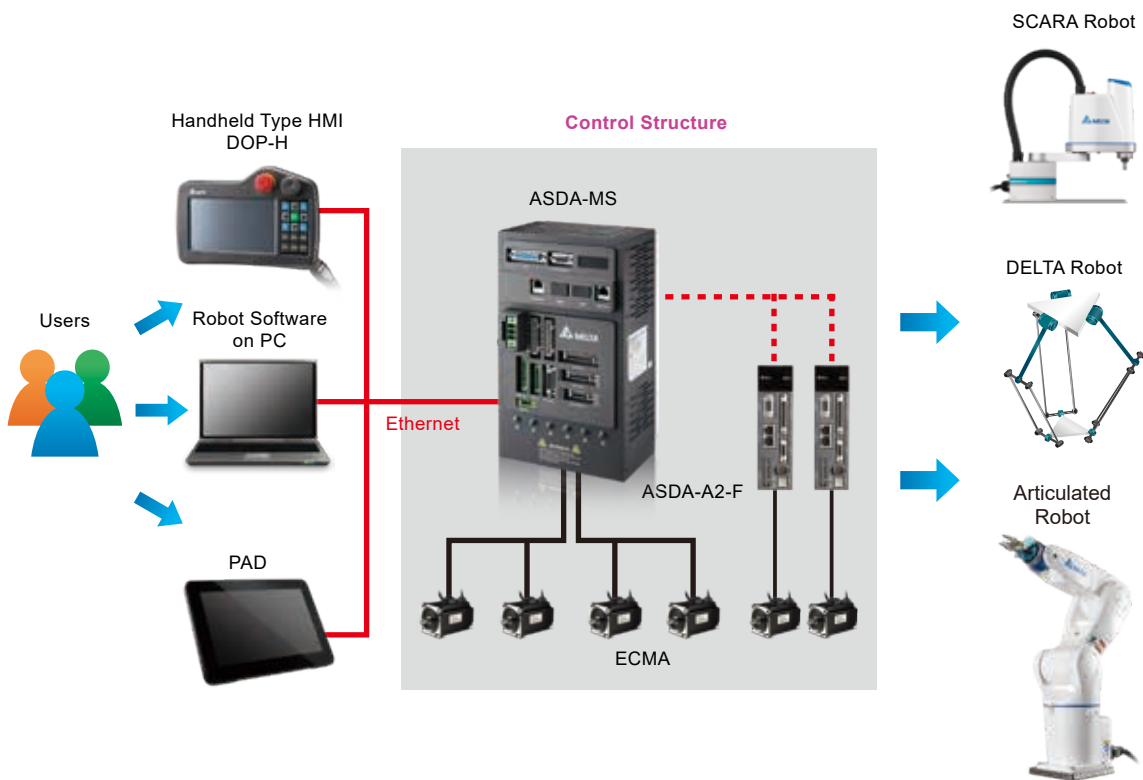
User-Friendly Robot Software

- IEC 61131-3 PLC programming
- DRL programming
- Multiple industrial robot settings
- Intelligent robot calibration
- Real-time monitoring oscilloscope
- Applicable for different types of robots such as SCARA Robots, Delta Articulated Robots and more

Product Features

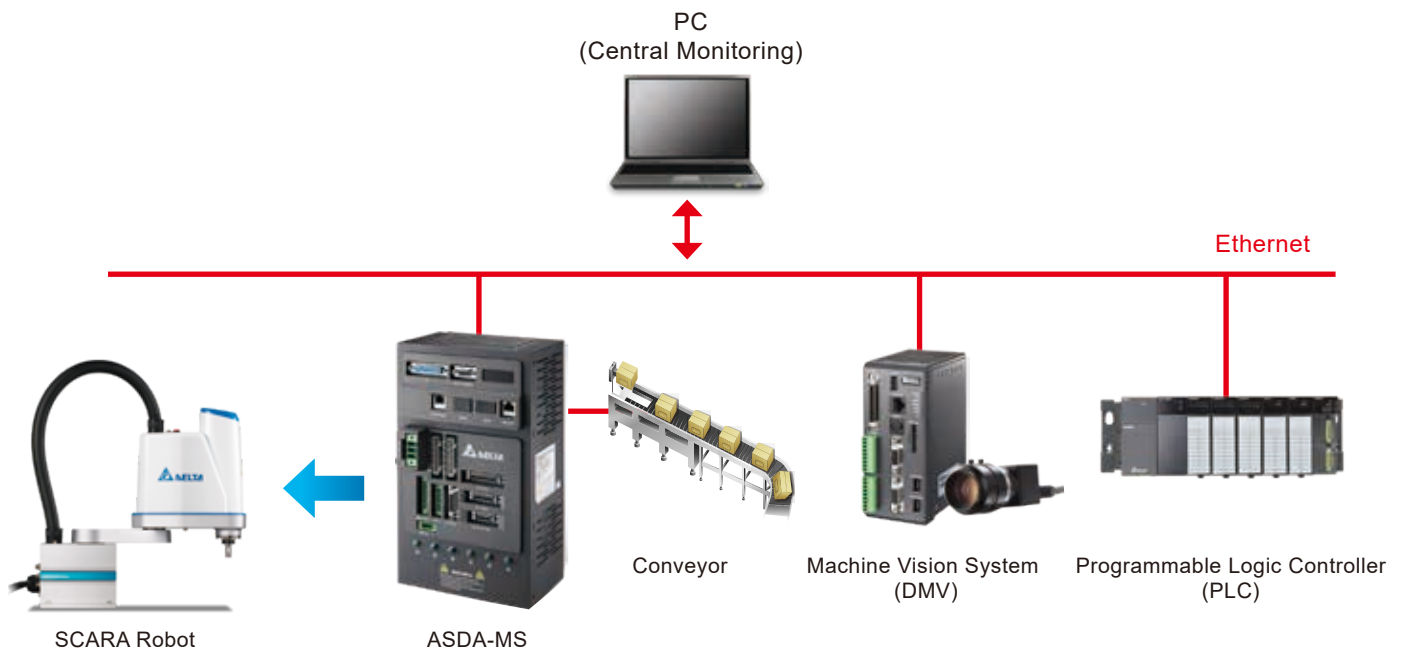
All-in-One Robot Controller

Integrates motion controller, robot controller and 4 servo drives into one single unit to speed up data transmission, enhance system control performance and dynamically compensate non-linear terms that affect robot motion during robot moving processes, which meets the high speed and high precision requirements of robot or motion control applications.



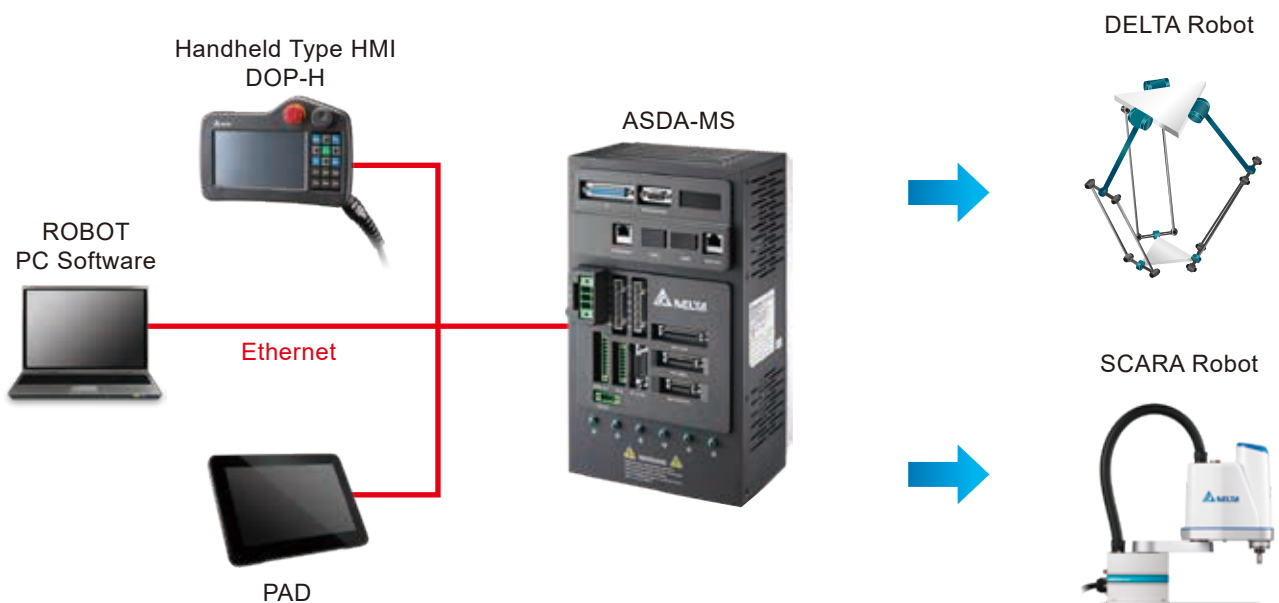
Communication Networks for Integrated System Configuration

Supports communication protocols including Ethernet, RS-485/232 for fast integration with peripheral devices such as PLC, conveyor, DMV and other conveyor lines, offering a complete solution for information exchange with a central monitoring PC.



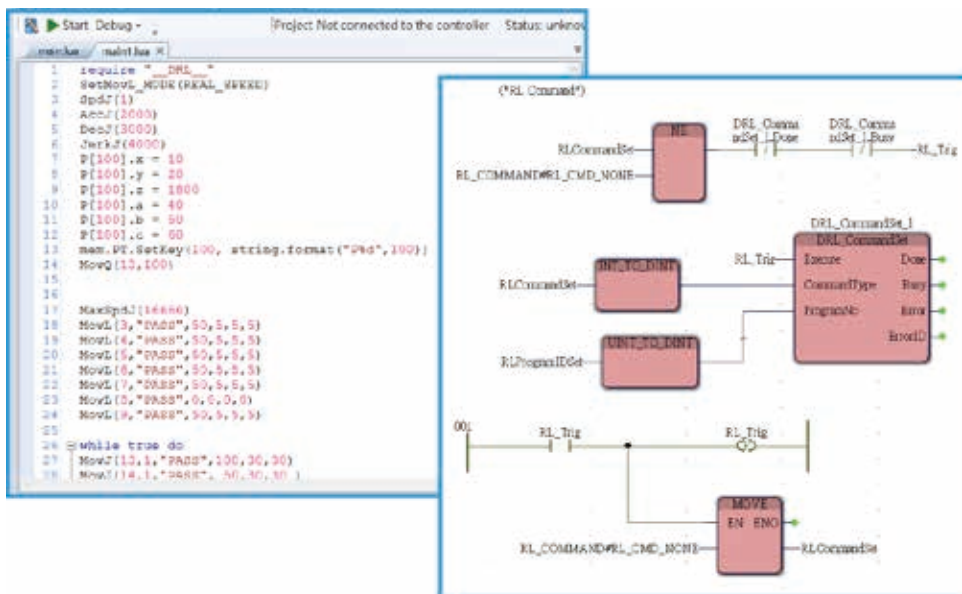
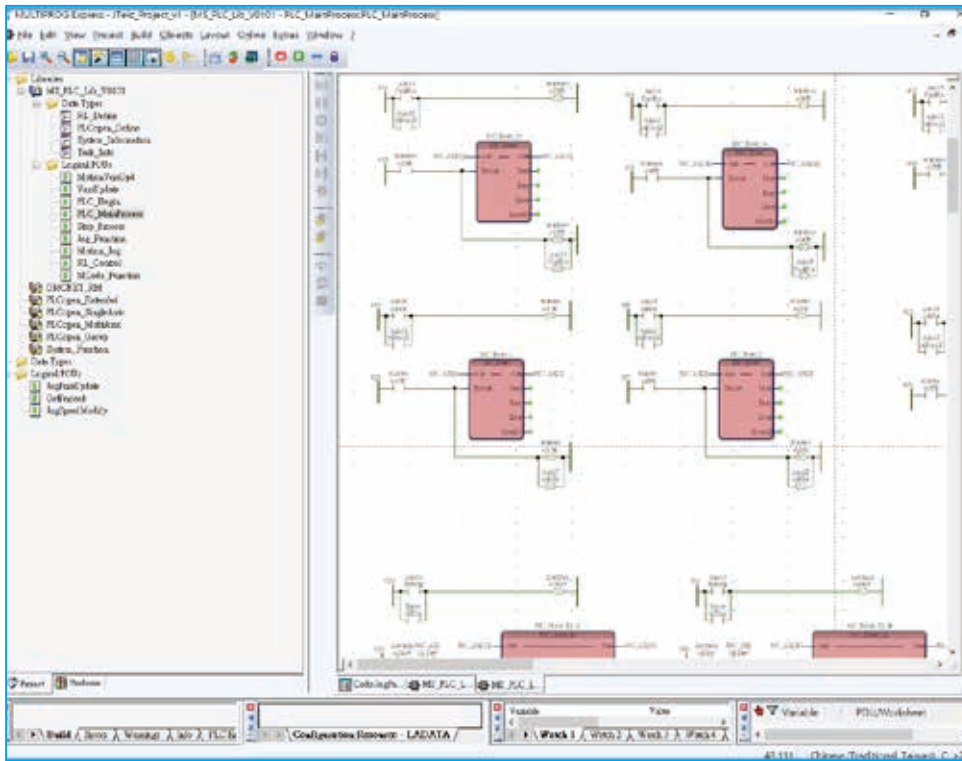
Diverse Robot Control

Offers a variety of tools for implementing functions and supports different types of robots such as the 4-axis SCARA robot, the Linear DELTA, DELTA robot, and the 2 axes extension via DMCNET for 6-axis articulated robot to meet diverse requirements with flexibility and reliability



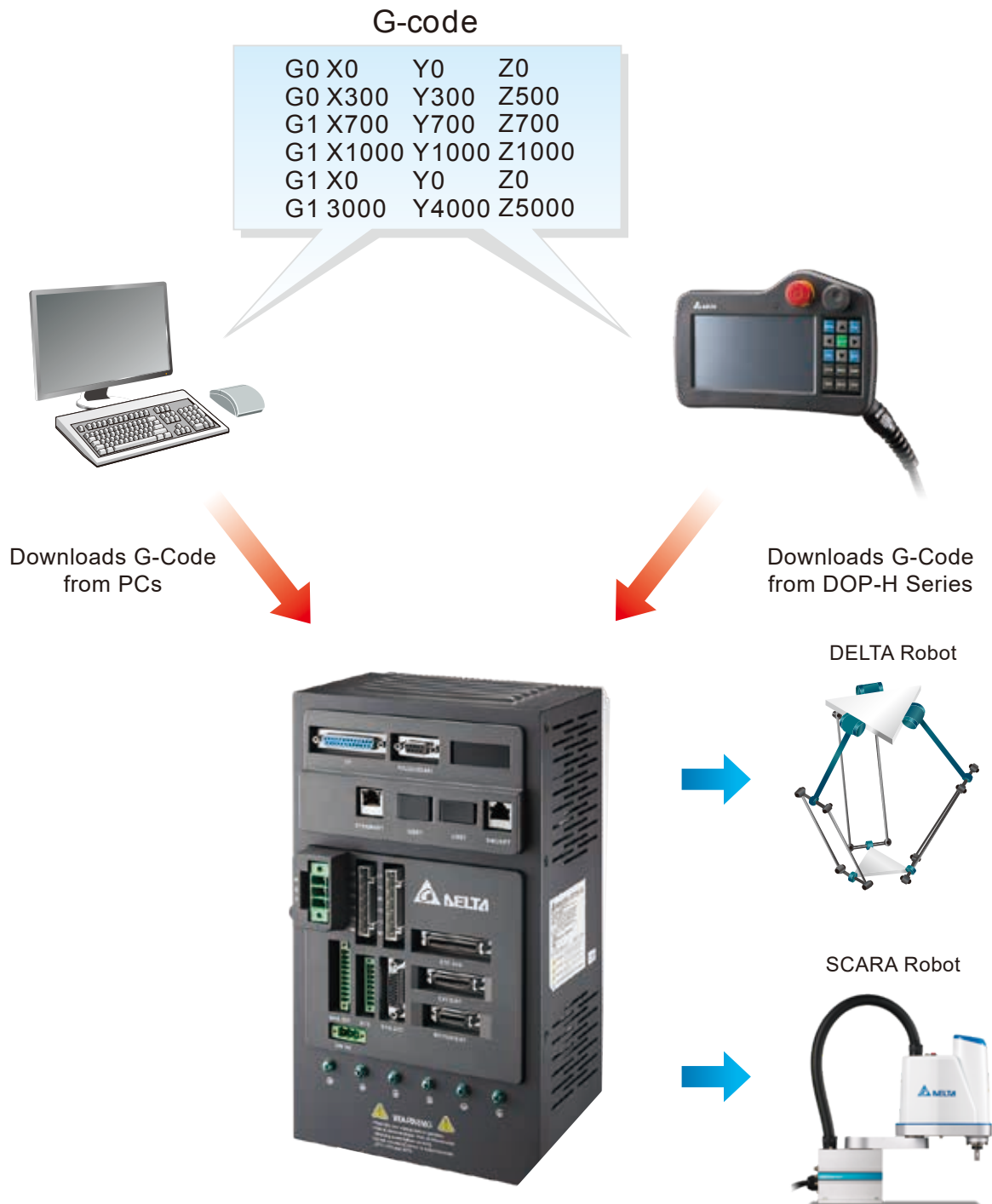
Comprehensive Development Platform

- Provides a comprehensive development platform for customers to design their specific applications, which enhances value-added secondary development and efficiency for various manufacturing techniques
- Meets the requirements for both single robot or workstation applications integrated with Delta's industrial automation products and related robot peripheral devices to create a complete robotic automation solution



Advanced Motion Control Functions

Featuring robot motion commands (e.g. point to point, linear, and arc), and supports G-code standard commands for CNC and other functions, the ASDA-MS Series offers the best solution with built-in optimized path control functions such as handling small path errors, fixing feed rate, and reducing path planning inaccuracy.



DRAS Software (Delta Robot Automation Studio)

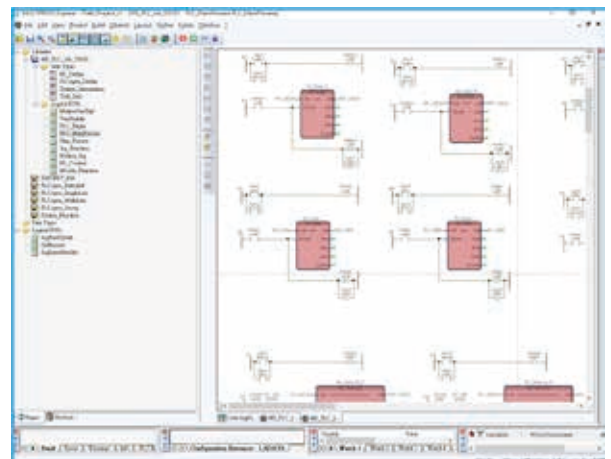
The DRAS Software supports five kinds of IEC 61131-3 programming languages, PLCopen motion function block, and DRL languages for developing customized robot application programs to ensure the uniqueness and completeness of individual systems.



IEC 61131-3 PLC Programming

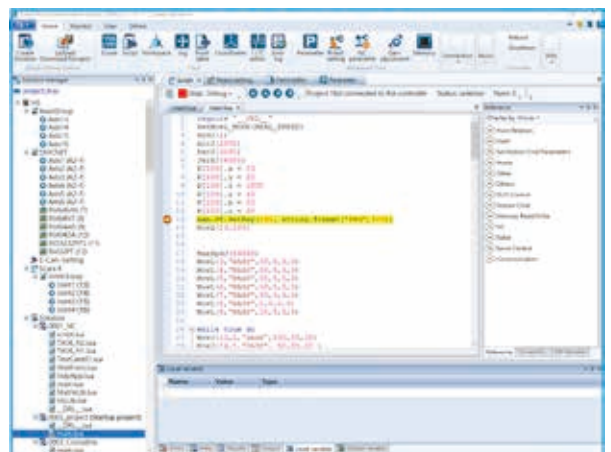
Supports five kinds of IEC 61131-3 programming languages and PLCopen motion function block, offering programming tools to execute techniques and functions for different applications

- LD - Ladder Diagram
- FBD – Function Block Diagram
- SFC – Sequential Function Chart
- IL- Instruction List
- ST – Structured Text



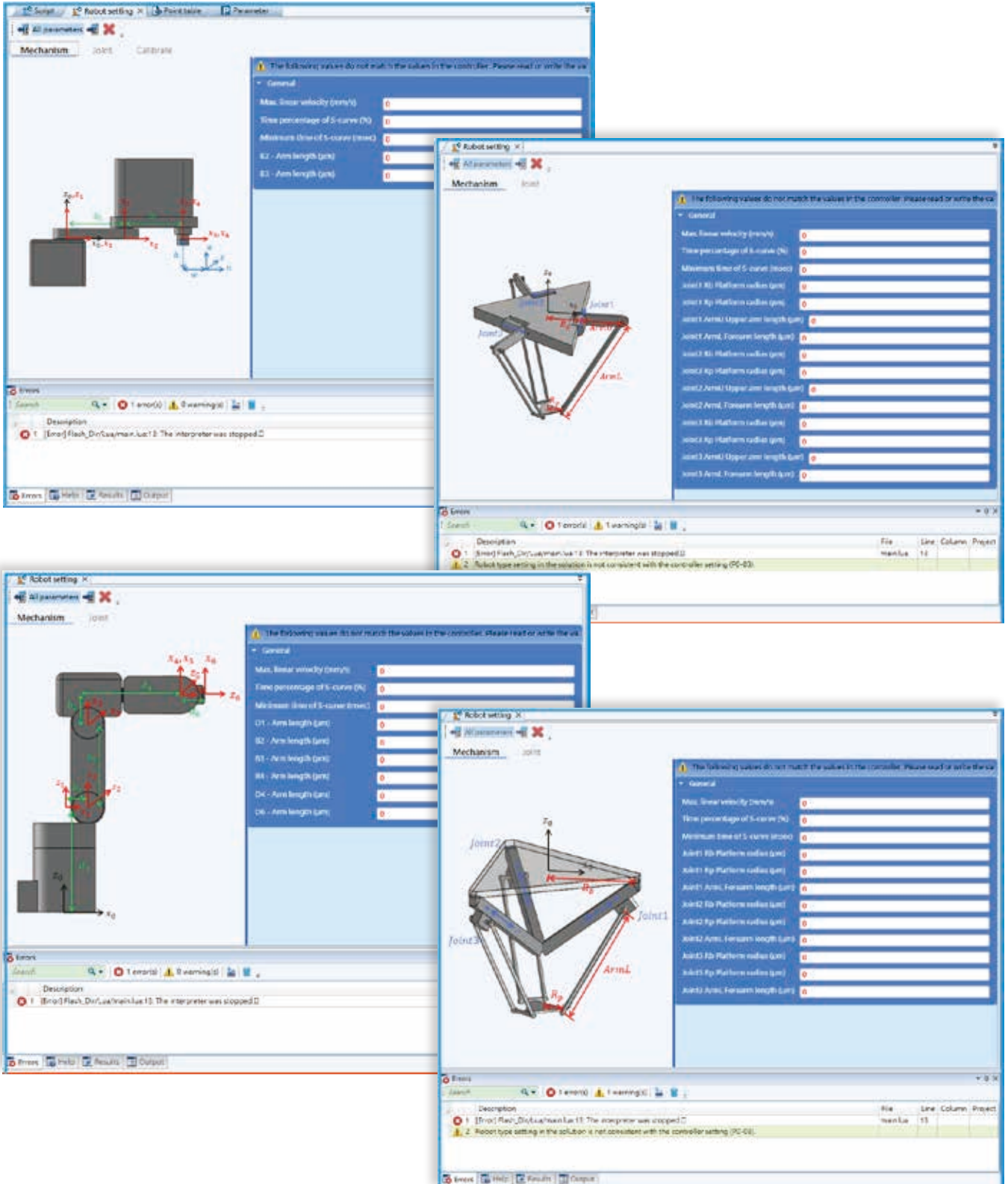
Delta Robot Language (DRL) Programming

Provides programming development for a variety of industry applications to control industrial robots and exchange data between peripheral devices



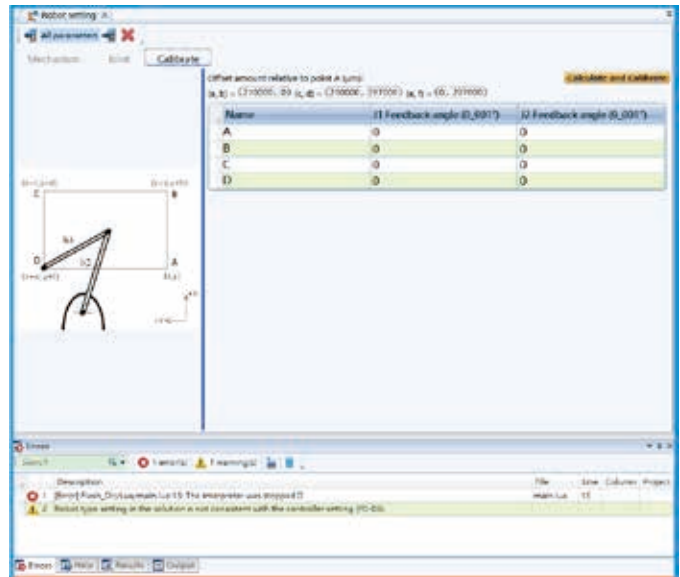
Supports Diverse Industrial Robots

Enables real-time parameter adjustment such as gear ratio, reduction ratio, limit value and deviation of robot arm via intuitive interface design for simple operating procedures



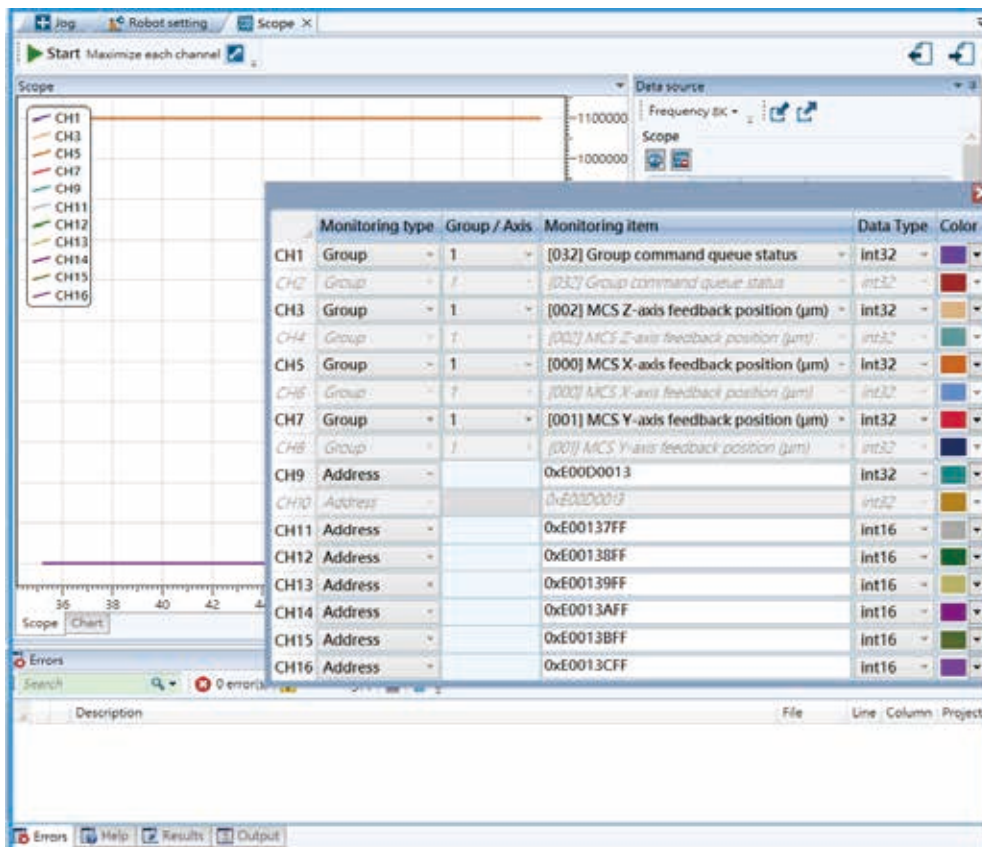
Intelligent Robot Calibration

Allows customers to calibrate deviation of the actual device assembly based on the calibration procedure, which will automatically correct the parameters of devices to match the actual size



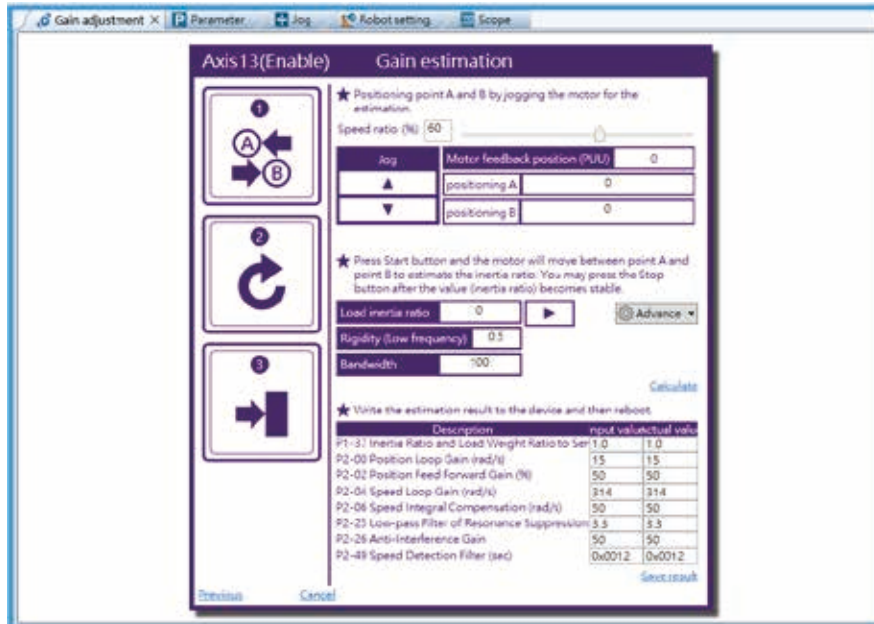
Real-time Monitoring Oscilloscope

Assists customers in monitoring real-time information and the status of the robot arm motion process, including path planning operation, real-time analysis of system conditions and motor controlled parameters such as position, speed and current of each axis during the motion process for optimized parameter adjustment



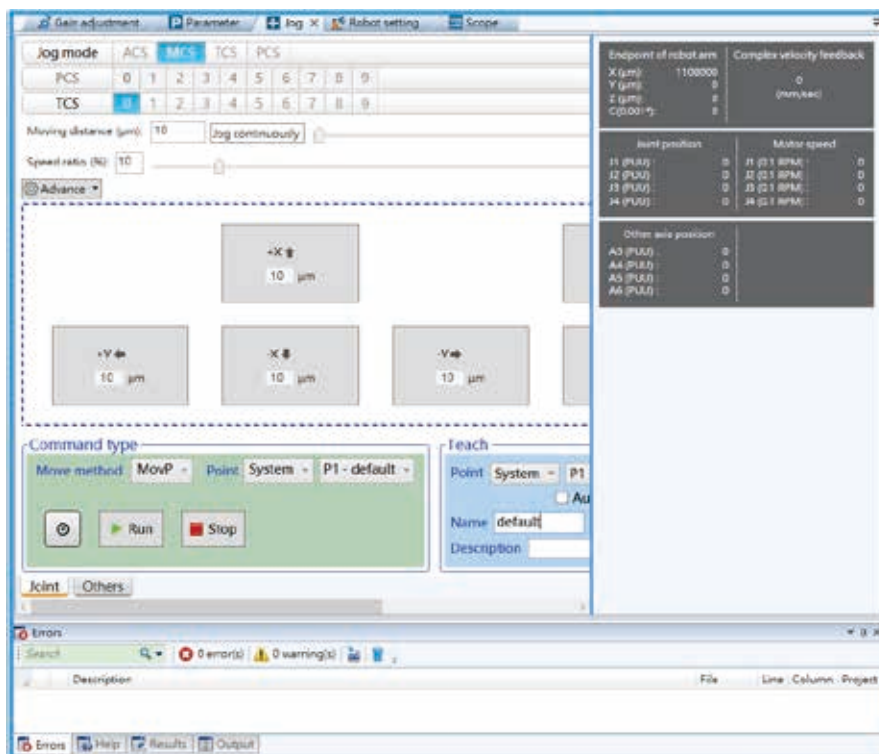
Robot Teaching Function

Operates and instantly records different coordination types, including geodetic coordinates, user coordinates, and work coordinates for precise robot positioning



Dynamic Tuning

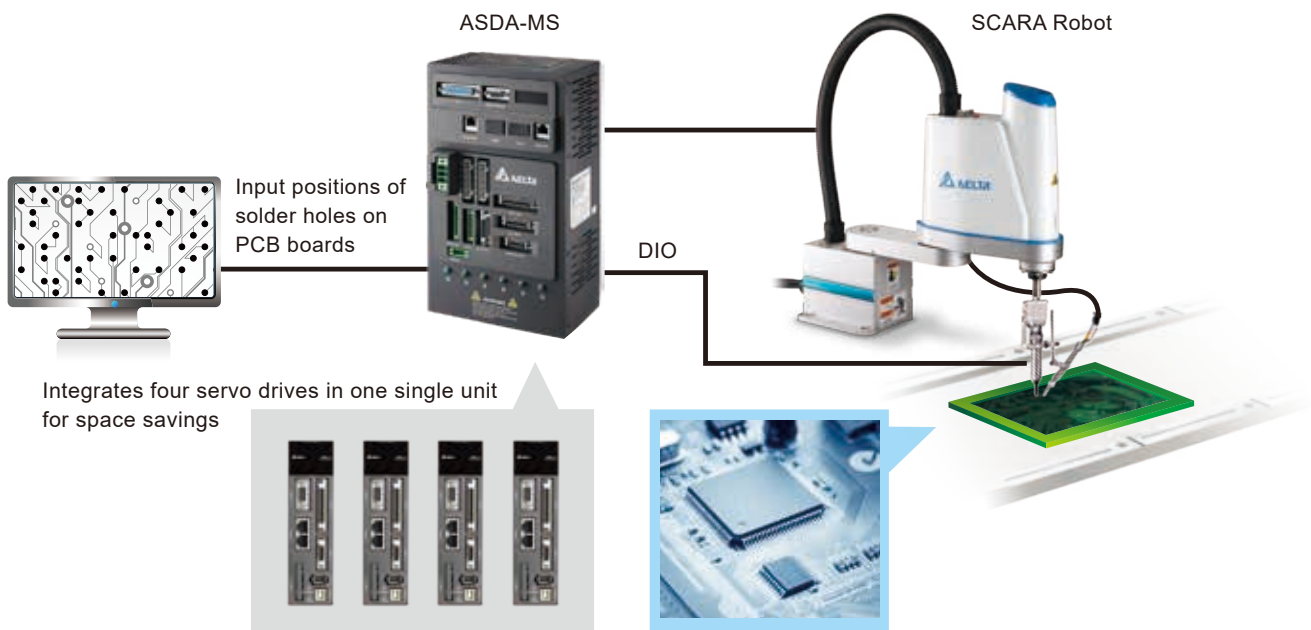
Provides a convenient dynamic tuning function to adjust parameters of each axis for system optimization



Successful Applications

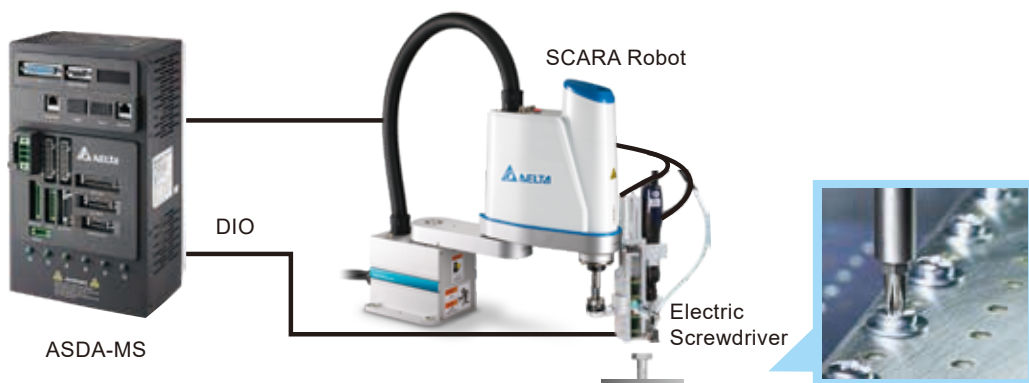
Robotic Soldering Solutions

- Robot controller with servo drive integrated for space savings and simple wiring
- Uses soldering software to export PCB CAD files of solder holes for robot controller to control SCARA in achieving soldering with high speed
- Auto calibration for correcting deviation when changing soldering tools to achieve precision soldering
- Total solution adopts Delta industrial automation products for easy integration and maintenance



Automatic Screw-Driving Solution

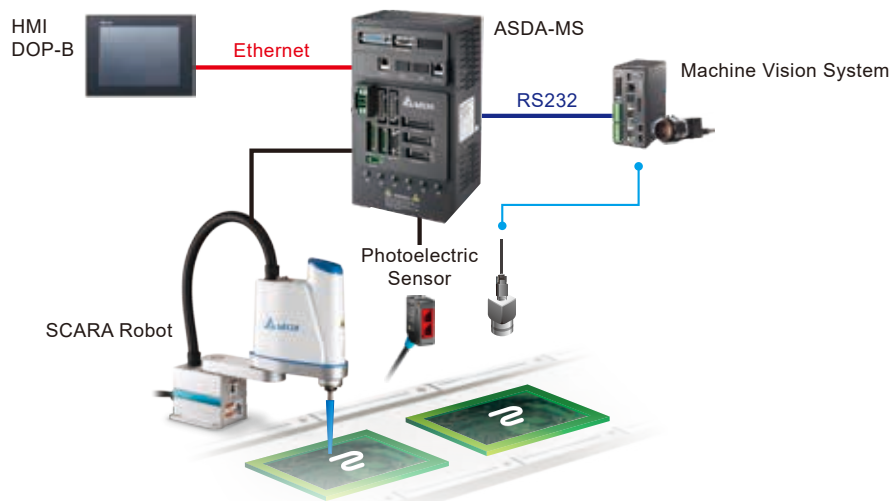
- Robot controller with servo drive integrated for space savings and easy wiring
- SCARA delivers consistent quality with high repeatability
- Flexible robot teaching movement and motion control for interchangeable production
- Total solution adopts Delta industrial automation products for easy integration and maintenance



Successful Applications

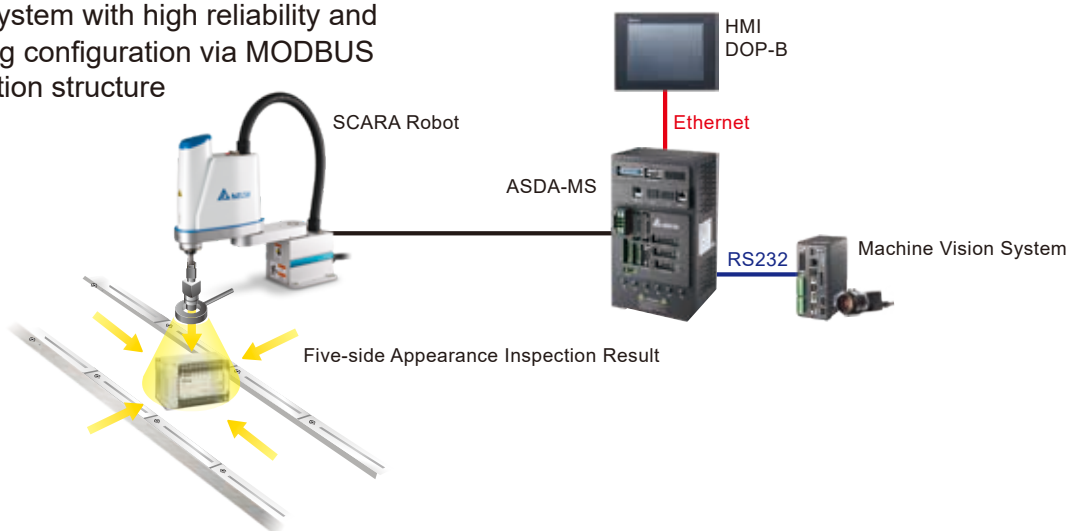
Conveyor Tracking and Glue Dispensing Solution

- SCARA provides fixture-less conveyor tracking with precise glue dispensing
- Synchronizes robot movement to handle workpieces without stopping conveyor for enhanced production efficiency
- Customer-driven PC software offers flexible adjustment and assists users redesign and self-develop for customized applications
- General communication interface easily connects different machine vision systems and modules
- Simple system configuration to perform glue dispensing during conveyance
- Total solution adopts Delta industrial automation products for easy integration and maintenance



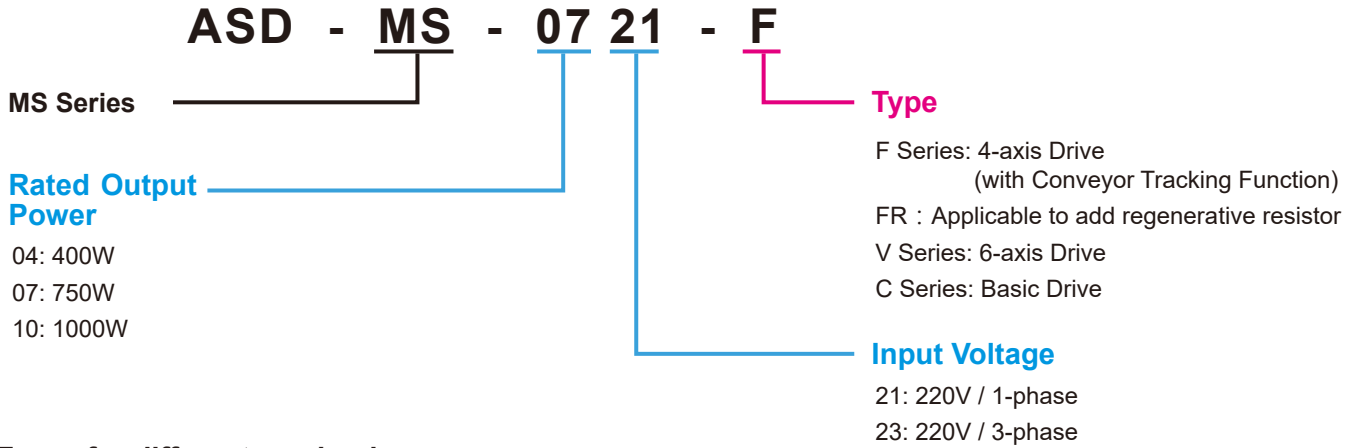
Five-side Appearance Inspection of Finished Goods Solution

- Robot controller with servo drive integrated for saving space and easy wiring
- Combines flexible robot movement with machine vision system for quick inspection of multi-products production
- Simplified system with high reliability and simple wiring configuration via MODBUS communication structure
- Links to MES System for optimized manufacturing and interchangeable production
- Total solution adopts Delta industrial automation products for easy integration and maintenance



Ordering Information

ASDA-MS Series Controller

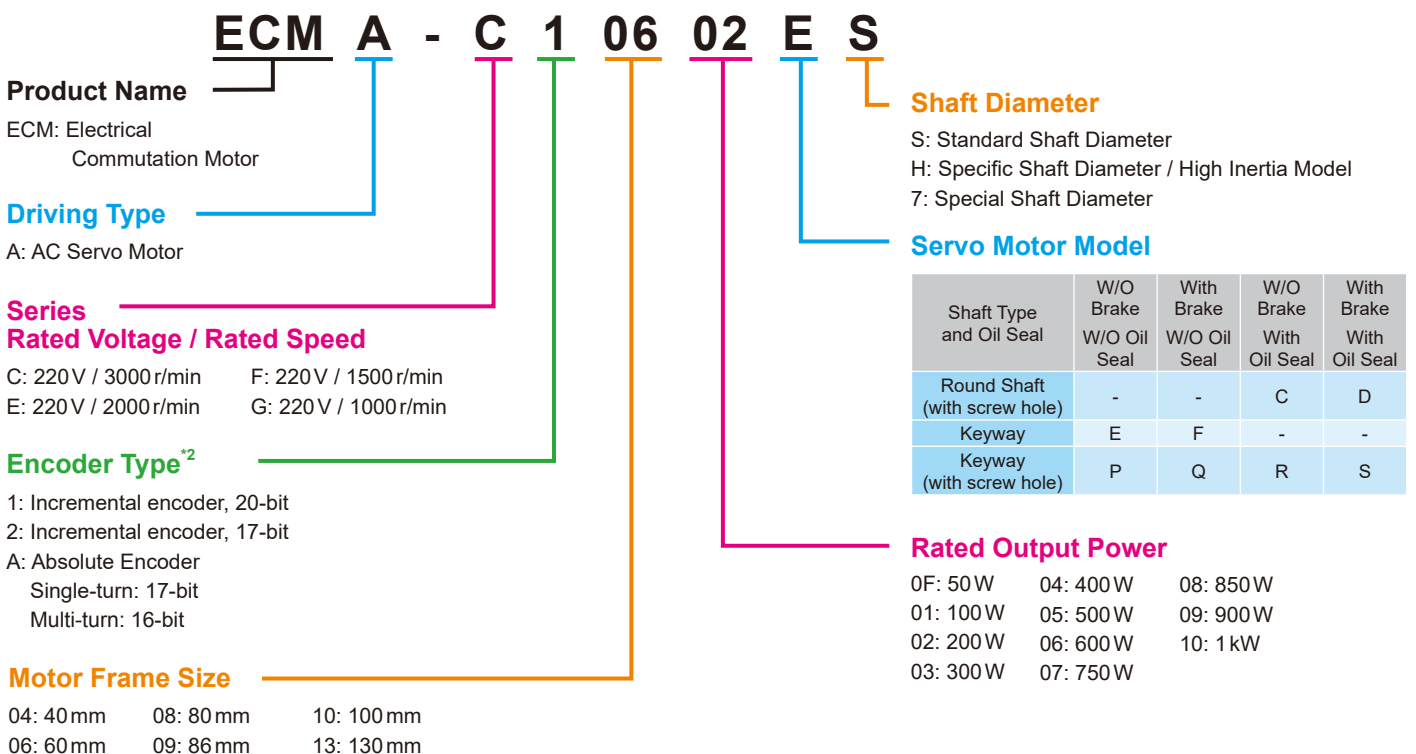


Types for different mechanisms

| | Right angle | SCARA | Articulated | DELTA | Press Unloader | Common Version* |
|--------|-------------|-------|-------------|-------|----------------|-----------------|
| F / FR | ● | ● | | ● | ● | ● |
| C | ● | ● | | | ● | |
| V | | | ● | | | ● |

*Conveyor tracking function available

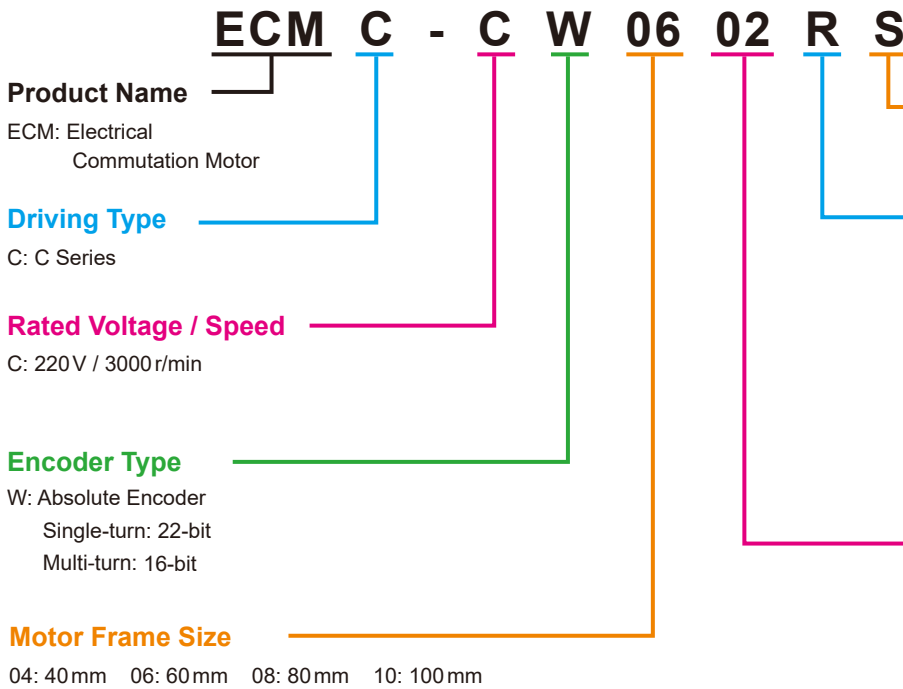
ECMA Series Servo Motors*1



*1: The external axes for ASDA-MS Series must support DMCNET Communication

*2: The motor for ASDA-MS Series must align with the same encoder type

ECMC Series Servo Motors



Shaft Diameter

S: Standard Shaft Diameter

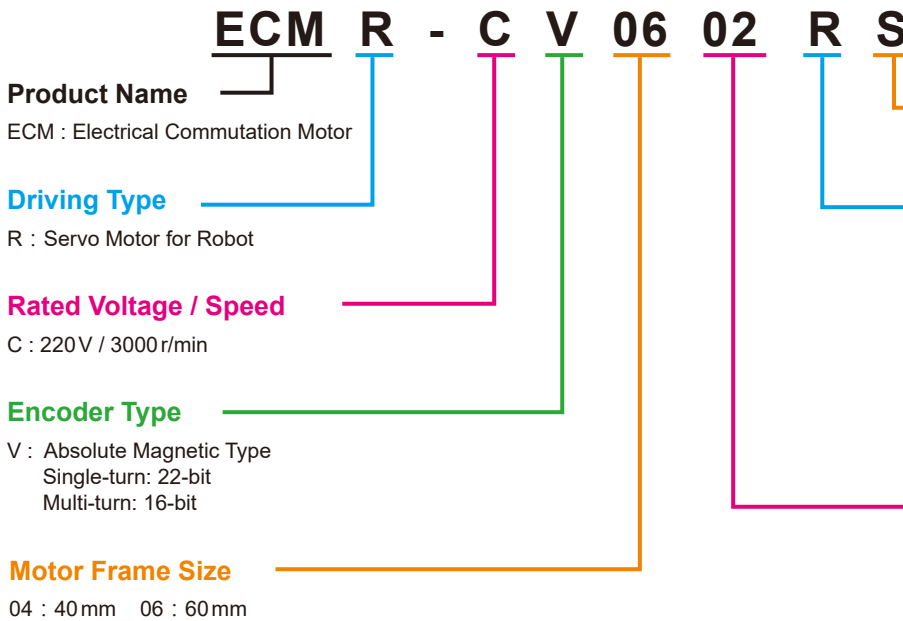
Servo Motor Model

| Shaft Type and Oil Seal | W/O Brake | With Brake | W/O Brake | W/O Brake |
|-------------------------------|--------------|--------------|---------------|---------------|
| | W/O Oil Seal | W/O Oil Seal | With Oil Seal | With Oil Seal |
| Round Shaft (with screw hole) | - | - | - | - |
| Keyway | - | - | - | - |
| Keyway (with screw hole) | - | - | R | S |

Rated Output Power

01: 100W 07: 750W
02: 200W 10: 1KW
04: 400W

ECMR Series Servo Motor



Shaft Diameter

S: Standard Shaft Diameter

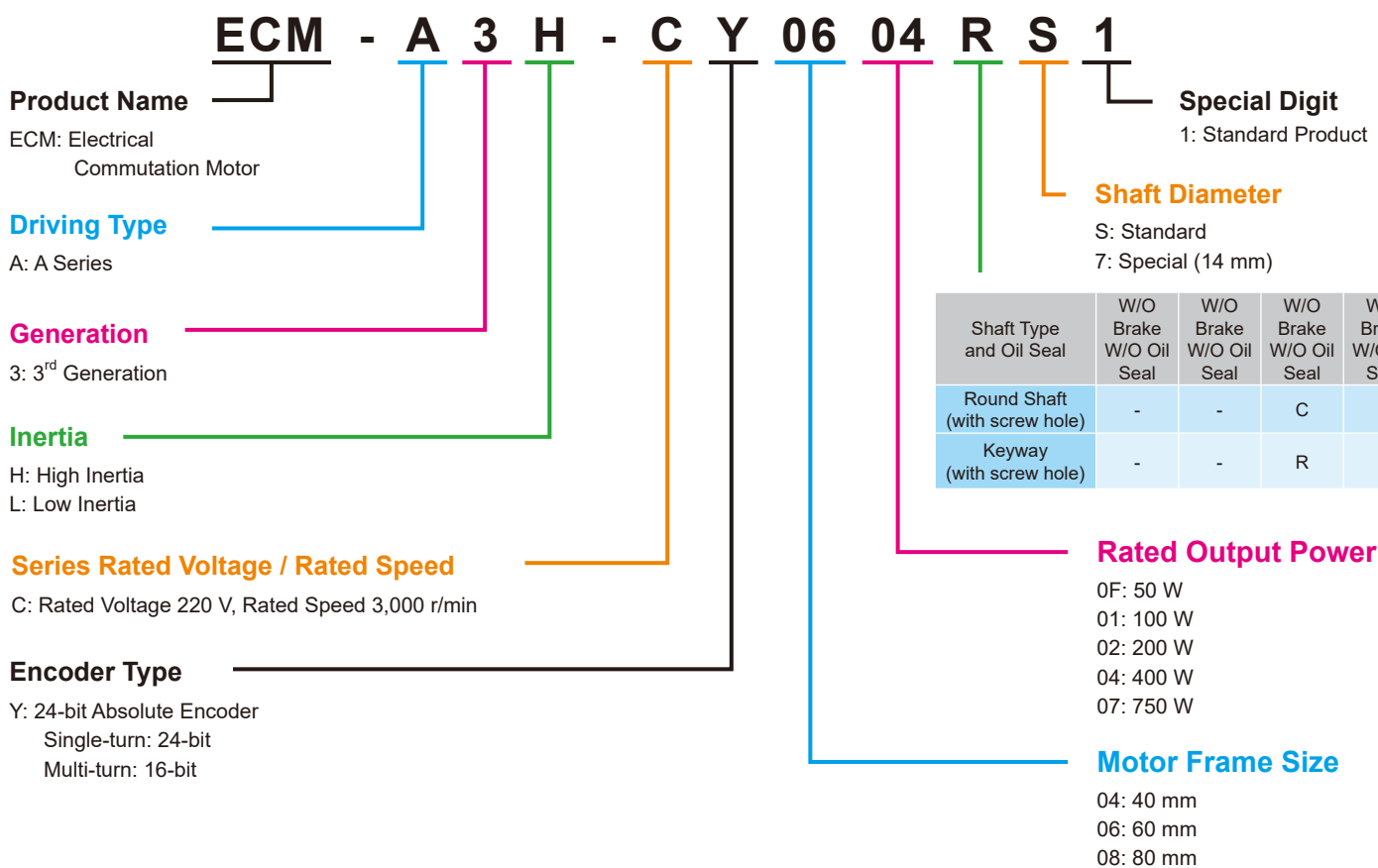
Servo Motor Model

| Shaft Type and Oil Seal | W/O Brake | With Brake | W/O Brake | W/O Brake |
|-------------------------------|--------------|--------------|---------------|---------------|
| | W/O Oil Seal | W/O Oil Seal | With Oil Seal | With Oil Seal |
| Round Shaft (with screw hole) | - | - | - | - |
| Keyway | - | - | - | - |
| Keyway (with screw hole) | - | - | R | S |

Rated Output Power

01 : 100W
02 : 200W
04 : 400W

ECMC-A3 Series Servo Motors



Servo Motor Specifications

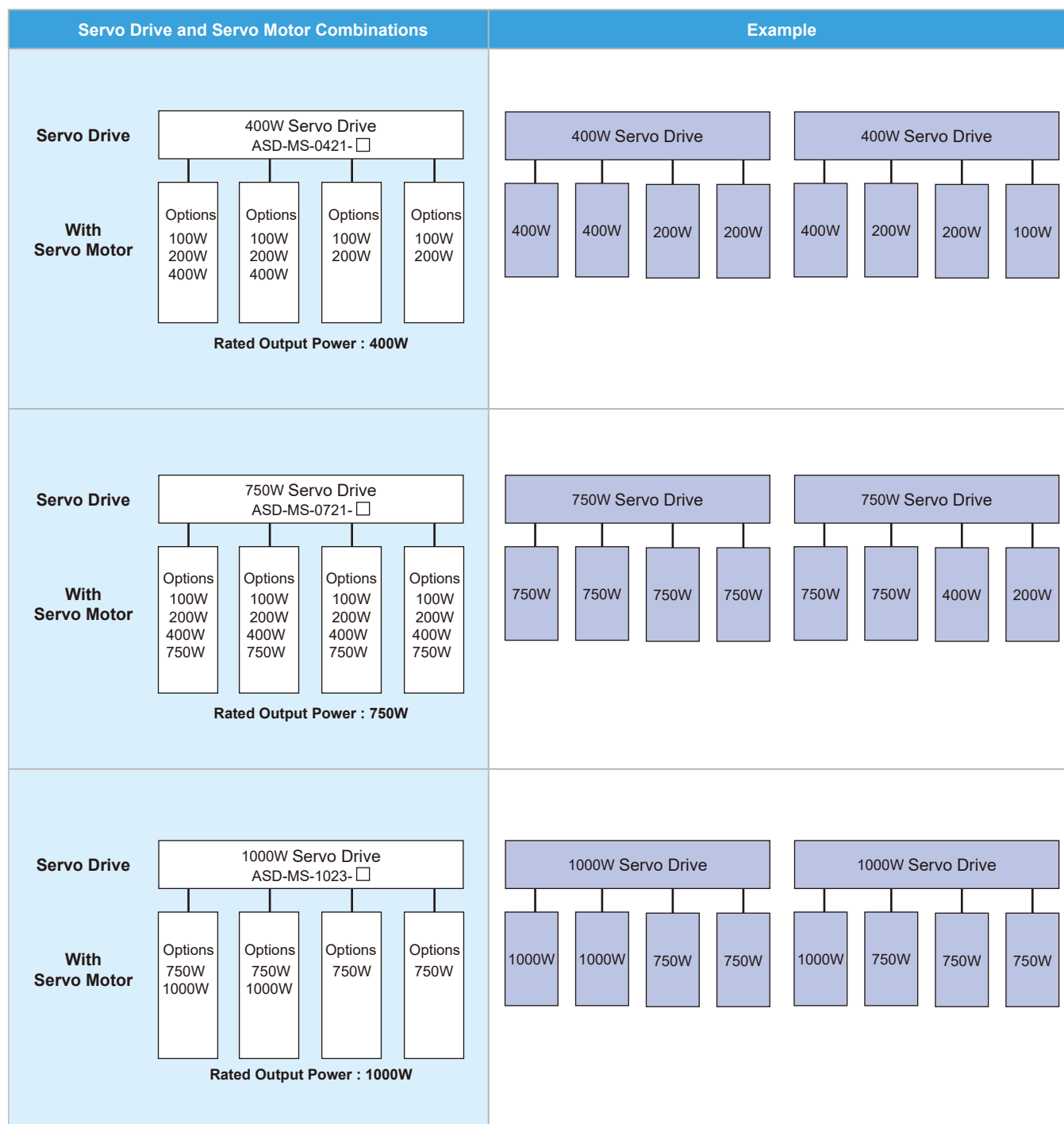
| Model Name | Rated output power (kW) | Rated voltage | Frame | Rated speed | Servo Motor Model Name | Shaft Diameter | Notes |
|-----------------|-------------------------|---------------|-------|-------------|-------------------------|----------------|--|
| ASD-MS-0421-F-□ | 100 | 220V | 40 | 3000RPM | ECMA-C △ 0401 □ S | 8mm | |
| | 100 | 220V | 40 | 3000RPM | ECMC-CW0401 □ S | 8mm | Absolute Magnetic Encoder (Single-turn: 22 bit / Multi-turn: 16 bit) |
| | 100 | 220V | 40 | 3000RPM | ECM-A3 ○ - △ 0401 □ S | 8mm | |
| | 100 | 220V | 40 | 3000RPM | ECMR-CV0401RS | 8mm | Absolute Magnetic Encoder (Single-turn: 22 bit / Multi-turn: 16 bit) |
| | 200 | 220V | 60 | 3000RPM | ECMA-C △ 0602 □ S | 14mm | |
| | 200 | 220V | 60 | 3000RPM | ECMC-CW0602 □ S | 14mm | Absolute Magnetic Encoder (Single-turn: 22 bit / Multi-turn: 16 bit) |
| | 200 | 220V | 60 | 3000RPM | ECM-A3 ○ - △ 0602 □ S | 14mm | |
| | 200 | 220V | 60 | 3000RPM | ECMR-CV0602RS | 14mm | Absolute Magnetic Encoder (Single-turn: 22 bit / Multi-turn: 16 bit) |
| | 400 | 220V | 60 | 3000RPM | ECMA-C △ 0604 □ S | 14mm | |
| | 400 | 220V | 60 | 3000RPM | ECMC-CW0604 □ S | 14mm | Absolute Magnetic Encoder (Single-turn: 22 bit / Multi-turn: 16 bit) |
| | 400 | 220V | 60 | 3000RPM | ECMA-C △ 0604 □ H | 14mm | High Inertia |
| | 400 | 220V | 60 | 3000RPM | ECM-A3 ○ - C △ 0604 □ S | 14mm | |
| | 400 | 220V | 60 | 3000RPM | ECMR-CV0604RS | 14mm | Absolute Magnetic Encoder (Single-turn: 22 bit / Multi-turn: 16 bit) |
| | 400 | 220V | 80 | 3000RPM | ECMA-C △ 0804 □ 7 | 14mm | |
| | 400 | 220V | 80 | 3000RPM | ECM-A3H-C △ 0804 □ S | 14mm | |
| ASD-MS-0721-□ | 750 | 220V | 80 | 3000RPM | ECMA-C △ 0807 □ S | 19mm | |
| | 750 | 220V | 80 | 3000RPM | ECMC-CW0807 □ S | 19mm | Absolute Magnetic Encoder (Single-turn: 22 bit / Multi-turn: 16 bit) |
| | 750 | 220V | 80 | 3000RPM | ECMA-C △ 0807 □ H | 19mm | High Inertia |
| | 750 | 220V | 80 | 3000RPM | ECM-A3 ○ - △ 0807 □ S | 19mm | |
| | 750 | 220V | 86 | 3000RPM | ECMA-C △ 0907 □ S | 16mm | |
| ASD-MS-1023-□ | 1000 | 220V | 80 | 3000RPM | ECMA-C △ 0810 □ S | 19mm | |
| | 1000 | 220V | 86 | 3000RPM | ECMA-C △ 0910 □ S | 16mm | |
| | 1000 | 220V | 100 | 3000RPM | ECMA-C △ 1010 □ S | 22mm | |
| | 1000 | 220V | 130 | 2000RPM | ECMA-E △ 1310 □ S | 22mm | |
| | 1000 | 220V | 130 | 2000RPM | ECMA-E △ 1315 □ S | 22mm | |
| | 1000 | 220V | 130 | 2000RPM | ECMA-E △ 1815 □ S | 35mm | |

*1. △ =1: Incremental encoder, 20-bit ; △ =2: Incremental encoder, 17-bit ; △ =A: Absolute encoder (Single-turn 17bit/ Multi-turn 16bit)


*2. □ = shaft end/brake or the number of oil seals

*3. ○ =L: Low Inertia ; ○ =H: High Inertia

Servo Drive and Servo Motor Combinations



Specifications

| ASDA-MS Series | | 400W (for 4 axes of control) | 750W (for 4 axes of control) | 1000W (for 4 axes of control) | | | |
|--|--|---|---|--|----------------------------------|-------------------------|----------------------------------|
| | | 04 | 07 | 10 | | | |
| Power Supply | Phase / Voltage | Three-phase / Single-phase 220 V _{AC} | Three-phase / Single-phase 220 V _{AC} | 3-phase 220 V _{AC} | | | |
| | Permissible Voltage Range | Three-phase / Single-phase: 200 ~ 230 V _{AC} · -15% ~ 10% | Three-phase / Single-phase: 200 ~ 230 V _{AC} · -15% ~ 10% | 3-phase: 200 ~ 230 V _{AC} · -15% ~ 10% | | | |
| | Control of Main Circuit | 24V _{DC} · -10%~10% | | | | | |
| | Input Current (3PH) (Units: Arms) | 8.1 | 12.4 | 16.4 | | | |
| | Input Current (1PH) (Units: Arms) | 14.8 | 23.8 | - | | | |
| | Continuous Output Current (Units: Arms) | 2.6 | 5.1 (for each axis) | 7.3(J1.J2) / 5.1(J3.J4) | | | |
| Dimensions (W) x (H) x (D) mm / Weight | | 175 mm x 300 mm x 159 mm / 5.6 kg | | | | | |
| Cooling System | | Fan Cooling | | | | | |
| Encoder Resolution / Feedback Resolution | | 20-bit (1280000 p/rev) | | | | | |
| Control of Main Circuit | | SVPWM (Space Vector Pulse Width Modulation) Control | | | | | |
| Tuning Modes | | Auto / Manual | | | | | |
| Regenerative Resistor | | Built-in | | | | | |
| Robot Control | Programming Languages | Supports IEC61131-3 PLC, Delta Robot Language (DRL), NC-code (basic language) | | | | | |
| | Motion Control Mode | PTP (Point to Point) Motion, Linear Interpolation, Circular interpolation | | | | | |
| | Memory Capacity | 20MByte for User Program and Data Memory 16KByte for PLC SV/DV Variables (Not Retained) 60KByte for PLC DH Variables (Retained) | 1K Points for Global Use (shareable in different programs) Max. 32K Points for Every User Program | | | | |
| Input / Output | Digital I/O | Standard I/O: Input: 24; Output: 12 System I/: Input: 8; Output: 8 | | | | | |
| | Brake Output | Output: 4 | | | | | |
| Communication Interfaces | Ethernet | 1 Channel | | | | | |
| | RS-232 / RS-485 | 1 Port (One port can switch two communication function) | | | | | |
| | DMCNET | 1 Channel | | | | | |
| | USB Host | 1 Port | | | | | |
| Environment | Installation Site | Indoor location (free from direct sunlight) No corrosive liquid and gas (far away from oil mist, flammable gas, dust) | | | | | |
| | Altitude | Altitude 1000m or lower above sea level | | | | | |
| | Atmospheric Pressure | 86 kPa ~ 106 kPa | | | | | |
| | Operating Temperature ² | Combination of Motors | Max. Operating Temperature Limit | Combination of Motors | Max. Operating Temperature Limit | Combination of Motors | Max. Operating Temperature Limit |
| | | - | - | 750 W × 4 | 40°C | - | - |
| | | 400 W × 2 200 W × 2 | 55°C | 750 W × 2 400 W × 2 | 45°C | 1000 W × 2 750 W × 2 | 40°C |
| | | 200 W × 4 | 55°C | 400 W × 4 | 50°C | 750 W × 4 | 40°C |
| | | 200 W × 2 100 W × 2 | 55°C | 400 W × 2 200 W × 2 | 55°C | 750 W × 2 400 W × 2 | 45°C |
| | Storage Temperature | -20°C ~ 65°C | | | | | |
| | Humidity | 0 ~ 90% RH (non-condensing) | | | | | |
| Vibration | 9.80665 m/s ² (1G) less than 20 Hz, 5.88 m/s ² (0.6G) 20 ~ 50 Hz | | | | | | |
| IP Rating | IP20 | | | | | | |
| Power System | TN System ¹ | | | | | | |
| Certifications | IEC/EN 61800-5-1, UL 508C, RCM  | | | | | | |

*1. TN system: A power distribution system having one point directly earthed, the exposed conductive parts of the installation being connected to that point by a protective earth conductor
*2. Operating temperature: please apply this robot controller based on the power output and under appropriate temperature, and avoid extreme heat for normal operation

Exterior of the Robot Controller

Teaching Pendant Connection Port

High-speed Communication Port

- Ethernet: ModbusTCP communication protocol
- USB1, USB2: for USB flash drives
- DMCNET: for DMCNET peripherals

Main Circuit Terminal (R, S, T)

Supports 200 ~ 230V_{AC}, 50/60Hz commercial power supply

Motor Brake Output Terminal (BRK. DIO)

STO I/O Terminal (Safe Torque Off)

Used to connect a certified safety relay or switch for controlling STO I/O signals

Control Circuit Terminal

Connects DC24V power supply

System I/O Terminal (SYS. DIO)

Serial Communication Port

For MODBUS communication control, supporting RS-485 / RS-232 serial communication

LED Display

Indicates the controller's status or fault codes (5 digit, 7 segment)

Servo Motor Output (U, V, W)

Connects the servo motors (please do not connect main circuit power to the terminal as the controller may be damaged)

Standard I/O Terminal (STD. DIO)

Full-Closed Loop Control Interface (EXT. ENC)

Supports position feedback signals (A, B, Z phase)

Motor Encoder Interface (MOTOR. ENC.)

Connects the encoder signals of 4 servo motors

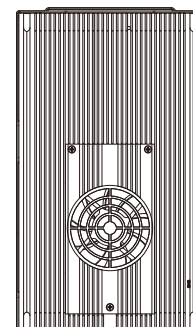
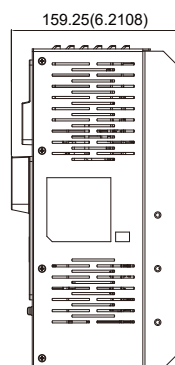
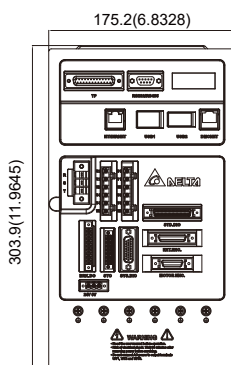
Ground Terminal

Connects the grounding wire of power supply and servo motor



Dimensions of the Robot Controller

Unit: mm (inch) Weight: 5.6 kg



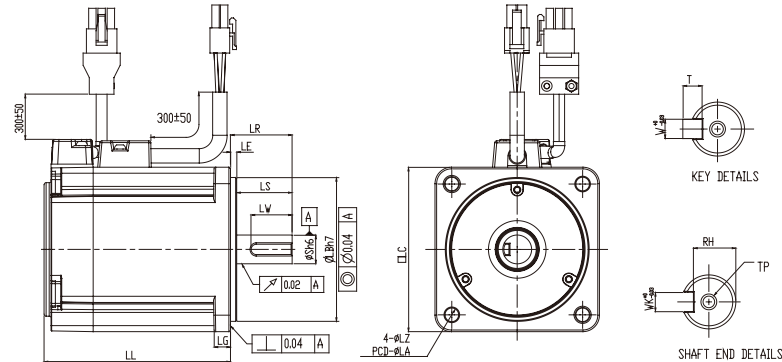
Screw: M4*0.7
Torque: 14 kgf-cm

NOTE

- 1) Dimensions are in millimeters (inches); Weights are in kilograms (kg) and (pounds) (lbs)
- 2) Dimensions and weights of the robot controller may be revised without prior notice

Dimensions of Servo Motors

- ECM-A3 Series



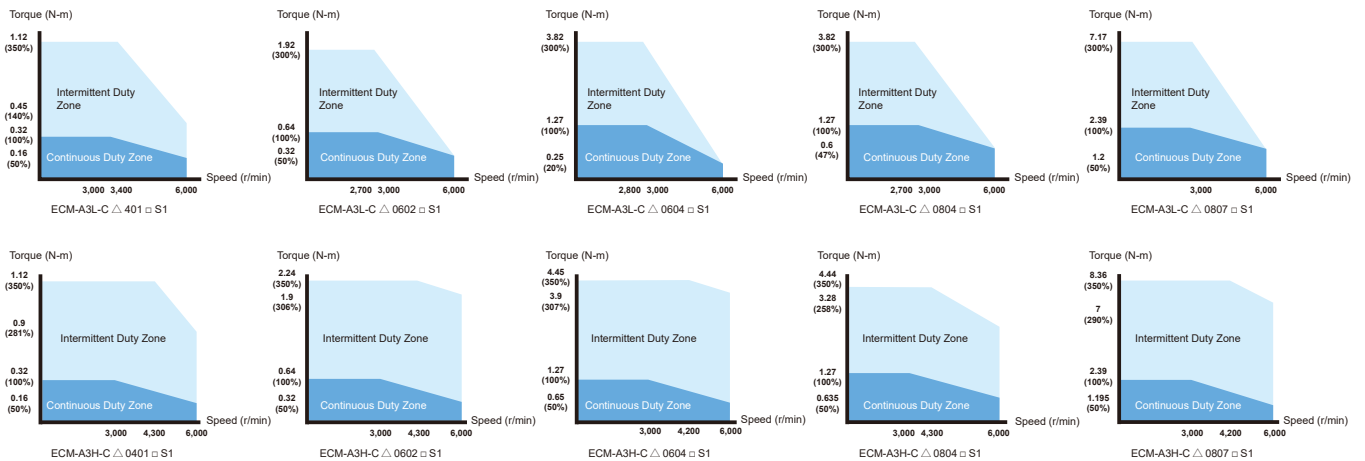
| Model | C 0401 2 S 3 | C 0602 2 S 3 | C 0604 2 S 3 | C 0804 2 7 3 | C 0807 2 S 3 |
|--------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| LC | 40 | 60 | 60 | 80 | 80 |
| LZ | 4.5 | 5.5 | 5.5 | 6.6 | 6.6 |
| LA | 46 | 70 | 70 | 90 | 90 |
| S | 8 ($+0$ -0.009) | 14 ($+0$ -0.011) | 14 ($+0$ -0.011) | 14 ($+0$ -0.011) | 19 ($+0$ -0.013) |
| LB | 30 ($+0$ -0.021) | 50 ($+0$ -0.025) | 50 ($+0$ -0.025) | 70 ($+0$ -0.03) | 70 ($+0$ -0.03) |
| LL (Without Brake) | 85.3 | 84 | 106 | 93.7 | 115.8 |
| LL (With Brake) | 120.1 | 117.6 | 139.7 | 131.2 | 153.2 |
| LS | 22.5 | 27 | 27 | 27 | 37 |
| LR | 25 | 30 | 30 | 30 | 40 |
| LE | 2.5 | 3 | 3 | 3 | 3 |
| LG | 5 | 7.5 | 7.5 | 8 | 8 |
| LW | 16 | 20 | 20 | 20 | 25 |
| RH | 6.2 | 11 | 11 | 11 | 15.5 |
| WK | 3 | 5 | 5 | 5 | 6 |
| W | 3 | 5 | 5 | 5 | 6 |
| T | 3 | 5 | 5 | 5 | 6 |
| TP | M3 Depth 8 | M4 Depth 15 | M4 Depth 15 | M4 Depth 15 | M6 Depth 20 |



NOTE

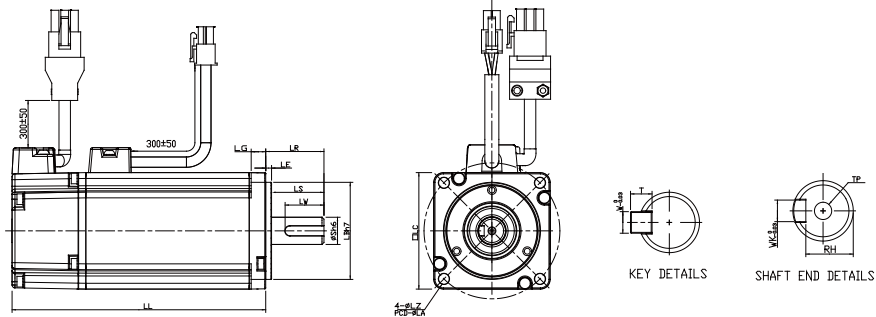
- Unit: mm
- In servo motor model names, [1] signifies encoder type, [2] signifies shaft diameter and oil seal, and [3] signifies special code

Speed-Torque Curves (T-N Curves)



Servo Motor Dimensions

- ECMA Frame Number 86 Series (including the following models)

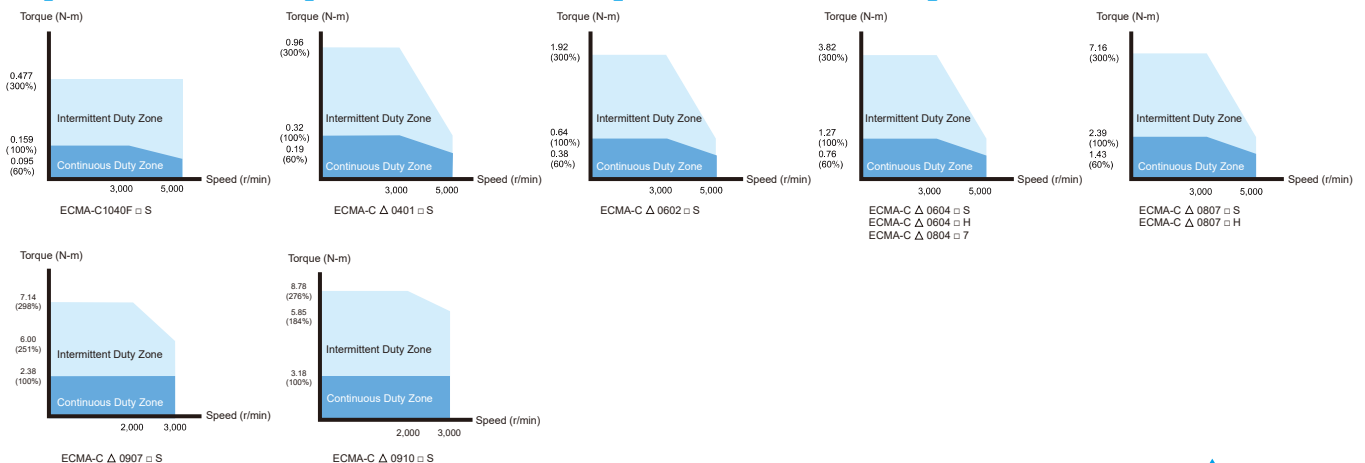


| Model | C1040F □ S | C △ 0401 □ S | C △ 0602 □ S | C △ 0604 □ S | C △ 0604 □ H | C △ 0804 □ 7 | C △ 0807 □ S | C △ 0807 □ H | C △ 0907 □ S | C △ 0910 □ S |
|-----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| LC | 40 | 40 | 60 | 60 | 60 | 80 | 80 | 80 | 86 | 86 |
| LZ | 4.5 | 4.5 | 5.5 | 5.5 | 5.5 | 6.6 | 6.6 | 6.6 | 6.6 | 6.6 |
| LA | 46 | 46 | 70 | 70 | 70 | 90 | 90 | 90 | 100 | 100 |
| S | 8($+0$ -0.009) | 8($+0$ -0.009) | 14($+0$ -0.011) | 14($+0$ -0.011) | 14($+0$ -0.011) | 14($+0$ -0.011) | 19($+0$ -0.013) | 19($+0$ -0.013) | 16($+0$ -0.011) | 16($+0$ -0.011) |
| LB | 30($+0$ -0.021) | 30($+0$ -0.021) | 50($+0$ -0.025) | 50($+0$ -0.025) | 50($+0$ -0.025) | 70($+0$ -0.030) | 70($+0$ -0.030) | 70($+0$ -0.030) | 80($+0$ -0.030) | 80($+0$ -0.030) |
| LL (without brake) | 79.1 | 100.6 | 105.5 | 130.7 | 145.8 | 112.3 | 138.3 | 151.1 | 130.2 | 153.2 |
| LL (with brake) | -- | 136.8 | 141.6 | 166.8 | 176.37 | 152.8 | 178 | 189 | 161.3 | 184.3 |
| LS | 20 | 20 | 27 | 27 | 27 | 27 | 32 | 32 | 30 | 30 |
| LR | 25 | 25 | 30 | 30 | 30 | 30 | 35 | 35 | 35 | 35 |
| LE | 2.5 | 2.5 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| LG | 5 | 5 | 7.5 | 7.5 | 7.5 | 8 | 8 | 8 | 8 | 8 |
| LW | 16 | 16 | 20 | 20 | 20 | 20 | 25 | 25 | 20 | 20 |
| RH | 6.2 | 6.2 | 11 | 11 | 11 | 11 | 15.5 | 15.5 | 13 | 13 |
| WK | 3 | 3 | 5 | 5 | 5 | 5 | 6 | 6 | 5 | 5 |
| W | 3 | 3 | 5 | 5 | 5 | 5 | 6 | 6 | 5 | 5 |
| T | 3 | 3 | 5 | 5 | 5 | 5 | 6 | 6 | 5 | 5 |
| TP | M3 Depth 8 | M3 Depth 8 | M4 Depth 15 | M4 Depth 15 | M4 Depth 15 | M4 Depth 15 | M6 Depth 20 | M6 Depth 20 | M5 Depth 15 | M5 Depth 15 |



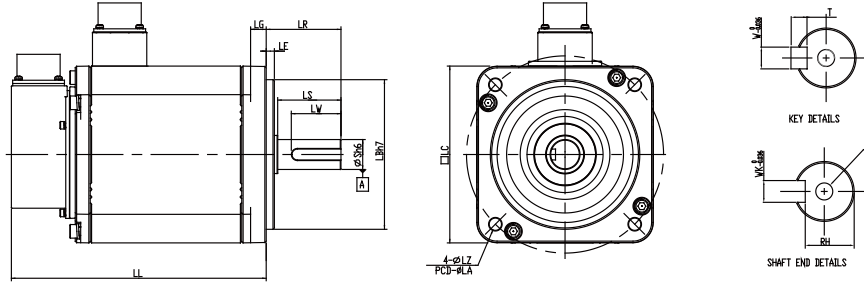
- 1) Dimensions: millimeters (mm)
- 2) Dimensions of the servo motors may be revised without prior notice
- 3) The boxes (□) in the model names are for optional configurations (keyway, brake and oil seal)
- 4) The boxes (△) in the model names are for resolution types
(△=1: Incremental encoder, 20-bit; △=2: Incremental encoder, 17-bit)

Speed-Torque Curves (T-N Curves)



Servo Motor Dimensions

- ECMA Frame Number 100 / 130 Series

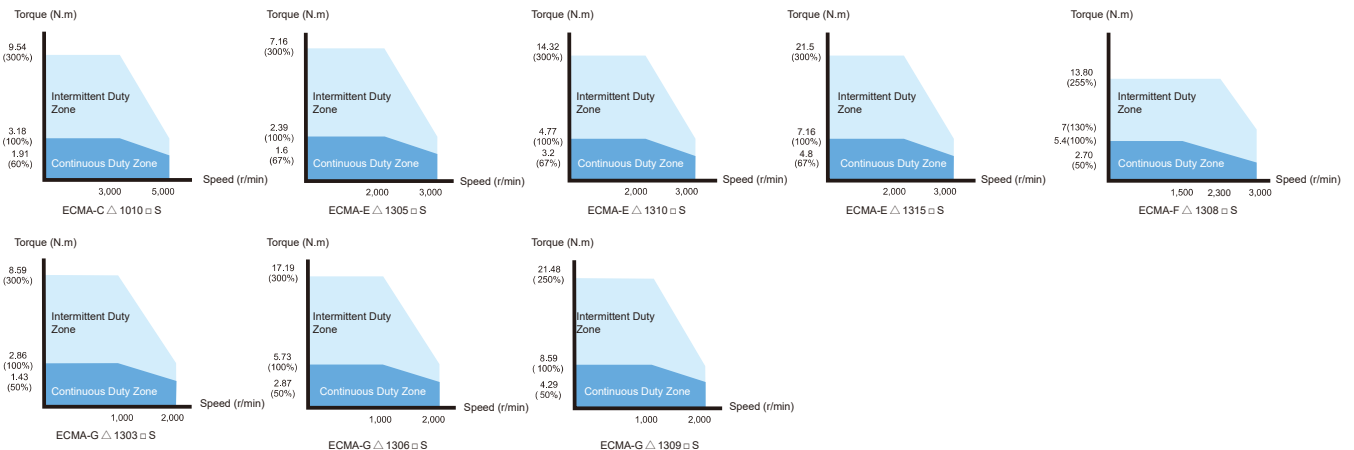


| Model | C \triangle 1010 \square S | E \triangle 1305 \square S | E \triangle 1310 \square S | E \triangle 1315 \square S | F \triangle 1308 \square S | G \triangle 1303 \square S | G \triangle 1306 \square S | G \triangle 1309 \square S |
|--------------------|--|---|---|---|---|---|---|---|
| LC | 100 | 130 | 130 | 130 | 130 | 130 | 130 | 130 |
| LZ | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| LA | 115 | 145 | 145 | 145 | 145 | 145 | 145 | 145 |
| S | 22 ⁽⁺⁰⁾ _(-0.013) | 22 ⁽⁺⁰⁾ _(-0.013) | 22 ⁽⁺⁰⁾ _(-0.013) | 22 ⁽⁺⁰⁾ _(-0.013) | 22 ⁽⁺⁰⁾ _(-0.013) | 22 ⁽⁺⁰⁾ _(-0.013) | 22 ⁽⁺⁰⁾ _(-0.013) | 22 ⁽⁺⁰⁾ _(-0.013) |
| LB | 95 ⁽⁺⁰⁾ _(-0.035) | 110 ⁽⁺⁰⁾ _(-0.035) | 110 ⁽⁺⁰⁾ _(-0.035) | 110 ⁽⁺⁰⁾ _(-0.035) | 110 ⁽⁺⁰⁾ _(-0.035) | 110 ⁽⁺⁰⁾ _(-0.035) | 110 ⁽⁺⁰⁾ _(-0.035) | 110 ⁽⁺⁰⁾ _(-0.035) |
| LL (without brake) | 153.3 | 147.5 | 147.5 | 167.5 | 152.5 | 147.5 | 147.5 | 163.5 |
| LL (with brake) | 192.5 | 183.5 | 183.5 | 202 | 181 | 183.5 | 183.5 | 198 |
| LS | 37 | 47 | 47 | 47 | 47 | 47 | 47 | 47 |
| LR | 45 | 55 | 55 | 55 | 55 | 55 | 55 | 55 |
| LE | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| LG | 12 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 |
| LW | 32 | 36 | 36 | 36 | 36 | 36 | 36 | 36 |
| RH | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 |
| WK | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| W | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| T | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| TP | M6 Depth 20 | M6 Depth 20 | M6 Depth 20 | M6 Depth 20 | M6 Depth 20 | M6 Depth 20 | M6 Depth 20 | M6 Depth 20 |




- 1) Dimensions: millimeters (mm)
- 2) Dimensions of the servo motors may be revised without prior notice
- 3) The boxes (\square) in the model names are for optional configurations (keyway, brake and oil seal)
- 4) The boxes (\triangle) in the model names are for resolution types. \triangle =1: Incremental encoder, 20-bit; \triangle =2: Incremental encoder, 17-bit; \triangle =A: Absolute type

Speed-Torque Curves (T-N Curves)



Servo Motor Specifications

- ECM-A3L/A3H Series


| ECM-A3 Series | ECM-A3L | | | | | ECM-A3H | | | | |
|---|---|--------|--------|--------|--------|---------|--------|--------|--------|--------|
| | C △ 04 | C △ 06 | C △ 06 | C △ 08 | C △ 08 | C △ 04 | C △ 06 | C △ 06 | C △ 08 | C △ 08 |
| | 01 | 02 | 04 | 04 | 07 | 01 | 02 | 04 | 04 | 07 |
| Rated output power (kW) | 0.1 | 0.2 | 0.4 | 0.4 | 0.75 | 0.1 | 0.2 | 0.4 | 0.4 | 0.75 |
| Rated torque (N-m) ^{*1} | 0.32 | 0.64 | 1.27 | 1.27 | 2.39 | 0.32 | 0.64 | 1.27 | 1.27 | 2.39 |
| Maximum torque (N-m) | 1.12 | 1.92 | 3.82 | 3.82 | 7.17 | 1.12 | 2.24 | 4.45 | 4.44 | 8.36 |
| Rated speed (r/min) | 3000 | | | | | | | | | |
| Maximum speed (r/min) | 6000 | | | | | | | | | |
| Rated current (A) | 0.89 | 1.45 | 2.65 | 2.6 | 5.1 | 0.9 | 1.45 | 2.65 | 2.6 | 4.5 |
| Maximum current (A) | 3.5 | 5 | 8.5 | 8.6 | 15.9 | 3.52 | 5.4 | 9.9 | 9.4 | 16.6 |
| Power rating (kW/s) | 25.3 | 45.5 | 107.5 | 45.4 | 111 | 13.8 | 16.4 | 35.8 | 17.5 | 37.8 |
| Rotor moment of inertia (x10 ⁻⁴ kg-m ²)(without brake) | 0.0405 | 0.09 | 0.15 | 0.355 | 0.513 | 0.0742 | 0.25 | 0.45 | 0.92 | 1.51 |
| Mechanical time constant (ms) | 0.817 | 0.64 | 0.41 | 0.68 | 0.405 | 1.38 | 1.37 | 0.96 | 1.31 | 0.91 |
| Torque constant-KT (N-m/A) | 0.36 | 0.44 | 0.48 | 0.49 | 0.469 | 0.356 | 0.44 | 0.48 | 0.49 | 0.53 |
| Voltage constant-KE (mV/(r/min)) | 13.6 | 16.4 | 18 | 17.9 | 17 | 13.2 | 16.4 | 17.2 | 17.9 | 18.7 |
| Armature resistance (Ohm) | 9.47 | 4.9 | 2.27 | 1.6 | 0.6 | 8.34 | 3.18 | 1.68 | 1.19 | 0.57 |
| Armature inductance (mH) | 16.2 | 18.52 | 10.27 | 10.6 | 4.6 | 11 | 8.15 | 4.03 | 4.2 | 2.2 |
| Electrical time constant (ms) | 1.71 | 3.78 | 4.52 | 6.63 | 7.67 | 1.32 | 2.14 | 2.4 | 3.53 | 3.86 |
| Insulation class | A class (UL), B class (CE) | | | | | | | | | |
| Insulation resistance | 100MΩ, DC 500V above | | | | | | | | | |
| Insulation strength | 1.8k V _{AC} , 1 sec | | | | | | | | | |
| Weight (kg)(without brake) | 0.5 | 1.1 | 1.4 | 2.05 | 2.8 | 0.5 | 1.1 | 1.4 | 2.05 | 2.8 |
| Weight (kg)(with brake) | 0.8 | 1.6 | 1.9 | 2.85 | 3.6 | 0.8 | 1.6 | 1.9 | 2.85 | 3.6 |
| Max. radial shaft load (N) | 78 | 245 | 245 | 392 | 392 | 78 | 245 | 245 | 392 | 392 |
| Max. thrust shaft load (N) | 54 | 74 | 74 | 147 | 147 | 54 | 74 | 74 | 147 | 147 |
| Power rating (kW/s)(with brake) | 24.5 | 37.24 | 89.6 | 41 | 95.4 | 13.6 | 15.17 | 34.32 | 15.1 | 34.4 |
| Rotor moment of inertia (x10 ⁻⁴ kg-m ²)(with brake) | 0.0418 | 0.12 | 0.18 | 0.393 | 0.599 | 0.0755 | 0.28 | 0.48 | 1.07 | 1.66 |
| Mechanical time constant (ms)(with brake) | 0.844 | 0.88 | 0.47 | 0.75 | 0.472 | 1.4 | 1.52 | 1.01 | 1.53 | 1 |
| Brake holding torque [N·m (min)] ² | 0.32 | 1.3 | 1.3 | 2.5 | 2.5 | 0.32 | 1.3 | 1.3 | 2.5 | 2.5 |
| Brake power consumption (at 20°C) [W] | 7.3 | 7.2 | 7.2 | 8.4 | 8.4 | 7.3 | 7.2 | 7.2 | 8.4 | 8.4 |
| Brake release time [ms (Max)] | 5 | 20 | 20 | 20 | 20 | 5 | 20 | 20 | 20 | 20 |
| Brake pull-in time [ms (Max)] | 25 | 50 | 50 | 70 | 70 | 25 | 50 | 50 | 70 | 70 |
| Vibration grade (μm) | 16 | | | | | 15 | | | | |
| Operating temperature (°C) | 0°C ~ 40°C | | | | | | | | | |
| Storage temperature (°C) | -10°C ~ 80°C | | | | | | | | | |
| Operating humidity | 20 ~ 90%RH (non-condensing) | | | | | | | | | |
| Storage humidity | 20 ~ 90%RH (non-condensing) | | | | | | | | | |
| Vibration capacity | 2.5G | | | | | | | | | |
| IP Rating | IP65 (when waterproof connectors are used, or when an oil seal is used to be fit to the rotating shaft) | | | | | | | | | |
| Approvals |  | | | | | | | | | |

*1 Rate torque values are continuous permissible values at 0 ~ 40°C ambient temperature when attaching with the sizes of heatsinks listed below:
 ECMA-A3L__ 04 / 06 / 08: 250 mm x 250 mm x 6 mm
 Material: Aluminum – F60, F80

*2 The holding brake is for holding the motor shaft, not for decelerating or stopping the machine

Servo Motor Specifications

- Low Inertia Series

| ECMA Series | C104 | C △ 04 | C △ 06 | | C △ 08 | | C △ 09 | | C △ 10 |
|---|---|--------|--------|--------|--------|------|--------|-------|--------|
| | 0F | 01 | 02 | 04 □ S | 04 | 07 | 07 | 10 | 10 |
| Rated output power (kW) | 0.05 | 0.1 | 0.2 | 0.4 | 0.4 | 0.75 | 0.75 | 1.0 | 1.0 |
| Rated torque (N-m) ^{*1} | 0.159 | 0.32 | 0.64 | 1.27 | 1.27 | 2.39 | 2.39 | 3.18 | 3.18 |
| Maximum torque (N-m) | 0.477 | 0.96 | 1.92 | 3.82 | 3.82 | 7.16 | 7.14 | 8.78 | 9.54 |
| Rated speed (r/min) | 3000 | | | | | | 3000 | | 3000 |
| Maximum speed (r/min) | 5000 | | | | | | 3000 | | 5000 |
| Rated current (A) | 0.69 | 0.90 | 1.55 | 2.60 | 2.60 | 5.10 | 3.66 | 4.25 | 7.30 |
| Maximum current (A) | 2.05 | 2.70 | 4.65 | 7.80 | 7.80 | 15.3 | 11 | 12.37 | 21.9 |
| Power rating (kW/s) | 12.27 | 27.7 | 22.4 | 57.6 | 24.0 | 50.4 | 29.6 | 38.6 | 38.1 |
| Rotor moment of inertia (x10 ⁻⁴ kg-m ²)(without brake) | 0.0206 | 0.037 | 0.177 | 0.277 | 0.68 | 1.13 | 1.93 | 2.62 | 2.65 |
| Mechanical time constant (ms) | 1.14 | 0.75 | 0.80 | 0.53 | 0.74 | 0.63 | 1.72 | 1.20 | 0.74 |
| Torque constant-KT (N-m/A) | 0.23 | 0.36 | 0.41 | 0.49 | 0.49 | 0.47 | 0.65 | 0.75 | 0.44 |
| Voltage constant-KE (mV/(r/min)) | 9.8 | 13.6 | 16.0 | 17.4 | 18.5 | 17.2 | 24.2 | 27.5 | 16.8 |
| Armature resistance (Ohm) | 12.7 | 9.30 | 2.79 | 1.55 | 0.93 | 0.42 | 1.34 | 0.897 | 0.20 |
| Armature inductance (mH) | 26 | 24.0 | 12.07 | 6.71 | 7.39 | 3.53 | 7.55 | 5.7 | 1.81 |
| Electrical time constant (ms) | 2.05 | 2.58 | 4.30 | 4.30 | 7.96 | 8.36 | 5.66 | 6.35 | 9.30 |
| Insulation class | A class (UL), B class (CE) | | | | | | | | |
| Insulation resistance | 100MΩ, DC 500V above | | | | | | | | |
| Insulation strength | 1.8k V _{AC} , 1 sec | | | | | | | | |
| Weight (kg)(without brake) | 0.42 | 0.5 | 1.2 | 1.6 | 2.1 | 3.0 | 2.9 | 3.8 | 4.3 |
| Weight (kg)(with brake) | -- | 0.8 | 1.5 | 2.0 | 2.9 | 3.8 | 3.69 | 5.5 | 4.7 |
| Max. radial shaft load (N) | 78.4 | 78.4 | 196 | 196 | 245 | 245 | 245 | 245 | 490 |
| Max. thrust shaft load (N) | 39.2 | 39.2 | 68 | 68 | 98 | 98 | 98 | 98 | 98 |
| Power rating (kW/s)(with brake) | -- | 25.6 | 21.3 | 53.8 | 22.1 | 48.4 | 29.3 | 37.9 | 30.4 |
| Rotor moment of inertia (x10 ⁻⁴ kg-m ²)(with brake) | -- | 0.04 | 0.19 | 0.30 | 0.73 | 1.18 | 1.95 | 2.67 | 3.33 |
| Mechanical time constant (ms)(with brake) | -- | 0.81 | 0.85 | 0.57 | 0.78 | 0.65 | 1.74 | 1.22 | 0.93 |
| Brake holding torque [Nt-m (min)] ² | -- | 0.3 | 1.3 | 1.3 | 2.5 | 2.5 | 2.5 | 2.5 | 8.0 |
| Brake power consumption (at 20°C)[W] | -- | 7.3 | 6.5 | 6.5 | 8.2 | 8.2 | 8.2 | 8.2 | 18.7 |
| Brake release time [ms (Max)] | -- | 5 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Brake pull-in time [ms (Max)] | -- | 25 | 70 | 70 | 70 | 70 | 70 | 70 | 70 |
| Vibration grade (μm) | 15 | | | | | | | | |
| Operating temperature (°C) | 0°C ~ 40°C | | | | | | | | |
| Storage temperature (°C) | -10°C ~ 80°C | | | | | | | | |
| Operating humidity | 20 ~ 90%RH (non-condensing) | | | | | | | | |
| Storage humidity | 20 ~ 90%RH (non-condensing) | | | | | | | | |
| Vibration capacity | 2.5G | | | | | | | | |
| IP Rating | IP65 (when waterproof connectors are used, or when an oil seal is used to be fit to the rotating shaft) | | | | | | | | |
| Approvals |  | | | | | | | | |

*1 Rate torque values are continuous permissible values at 0 ~ 40°C ambient temperature when attaching with the sizes of heatsinks listed below:

ECMA-__ 04 / 06 / 08: 250 mm x 250 mm x 6 mm

ECMA-__ 10: 300 mm x 300 mm x 12 mm


ECMA-__ 13: 400 mm x 400 mm x 20 mm

Material: Aluminum – F40, F60, F80, F100, F130

*2 The holding brake is for holding the motor shaft, not for decelerating or stopping the machine

Servo Motor Specifications

- Medium / Medium-High / High Inertia Series

| ECMA Series | C Δ 06 | C Δ 08 | E Δ 13 | | | F Δ 13 | G Δ 13 | | |
|---|---|----------------|---------------|-------|-------|---------------|---------------|-------|-------|
| | 04 \square H | 07 \square H | 05 | 10 | 15 | 08 | 03 | 06 | 09 |
| Rated output power (kW) | 0.4 | 0.75 | 0.5 | 1.0 | 1.5 | 0.85 | 0.3 | 0.6 | 0.9 |
| Rated torque (N-m) ^{*1} | 1.27 | 2.39 | 2.39 | 4.77 | 7.16 | 5.41 | 2.86 | 5.73 | 8.59 |
| Maximum torque (N-m) | 3.82 | 7.16 | 7.16 | 14.3 | 21.48 | 13.8 | 8.59 | 17.19 | 21.48 |
| Rated speed (r/min) | 3000 | 3000 | 2000 | | | 1500 | 1000 | | |
| Maximum speed (r/min) | 5000 | 5000 | 3000 | | | 3000 | 2000 | | |
| Rated current (A) | 2.6 | 5.1 | 2.9 | 5.6 | 8.3 | 7.1 | 2.5 | 4.8 | 7.5 |
| Maximum current (A) | 7.8 | 15.3 | 8.7 | 16.8 | 24.9 | 19.4 | 7.5 | 14.4 | 22.5 |
| Power rating (kW/s) | 21.7 | 19.63 | 7.0 | 27.1 | 45.9 | 21.52 | 10.0 | 39.0 | 66.0 |
| Rotor moment of inertia (x10 ⁻⁴ kg-m ²)(without brake) | 0.743 | 2.91 | 8.17 | 8.41 | 11.18 | 13.6 | 8.17 | 8.41 | 11.18 |
| Mechanical time constant (ms) | 1.42 | 1.6 | 1.91 | 1.51 | 1.10 | 2.43 | 1.84 | 1.40 | 1.06 |
| Torque constant-KT (N-m/A) | 0.49 | 0.47 | 0.83 | 0.85 | 0.87 | 0.76 | 1.15 | 1.19 | 1.15 |
| Voltage constant-KE (mV/(r/min)) | 17.4 | 17.2 | 30.9 | 31.9 | 31.8 | 29.2 | 42.5 | 43.8 | 41.6 |
| Armature resistance (Ohm) | 1.55 | 0.42 | 0.57 | 0.47 | 0.26 | 0.38 | 1.06 | 0.82 | 0.43 |
| Armature inductance (mH) | 6.71 | 3.53 | 7.39 | 5.99 | 4.01 | 4.77 | 14.29 | 11.12 | 6.97 |
| Electrical time constant (ms) | 4.3 | 8.36 | 12.96 | 12.88 | 15.31 | 12.55 | 13.55 | 13.50 | 16.06 |
| Insulation class | A class (UL), B class (CE) | | | | | | | | |
| Insulation resistance | 100M Ω , DC 500V | | | | | | | | |
| Insulation strength | 1.8k V _{AC} , 1 sec | | | | | | | | |
| Weight (kg)(without brake) | 1.8 | 3.4 | 6.8 | 7.0 | 7.5 | 8.6 | 6.8 | 7.0 | 7.5 |
| Weight (kg)(with brake) | 2.2 | 3.9 | 8.2 | 8.4 | 8.9 | 10.0 | 8.2 | 8.4 | 8.9 |
| Max. radial shaft load (N) | 196 | 245 | 490 | 490 | 490 | 490 | 490 | 490 | 490 |
| Max. thrust shaft load (N) | 68 | 98 | 98 | 98 | 98 | 98 | 98 | 98 | 98 |
| Power rating (kW/s)(with brake) | 21.48 | 19.3 | 6.4 | 24.9 | 43.1 | 19.78 | 9.2 | 35.9 | 62.1 |
| Rotor moment of inertia (x10 ⁻⁴ kg-m ²)(with brake) | 0.751 | 2.96 | 8.94 | 9.14 | 11.90 | 14.8 | 8.94 | 9.14 | 11.9 |
| Mechanical time constant (ms)(with brake) | 1.43 | 1.62 | 2.07 | 1.64 | 1.19 | 2.65 | 2.0 | 1.51 | 1.13 |
| Brake holding torque [N·m (min)] ^{*2} | 1.3 | 1.3 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| Brake power consumption (at 20°C)[W] | 6.5 | 6.5 | 19.0 | 19.0 | 19.0 | 19.0 | 19.0 | 19.0 | 19.0 |
| Brake release time [ms (Max)] | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Brake pull-in time [ms (Max)] | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 |
| Vibration grade (μ m) | 15 | | | | | | | | |
| Operating temperature (°C) | 0°C ~ 40°C (32°F ~ 104°F) | | | | | | | | |
| Storage temperature (°C) | -10°C ~ 80°C (-14°F ~ 176°F) | | | | | | | | |
| Operating humidity | 20 ~ 90%RH (non-condensing) | | | | | | | | |
| Storage humidity | 20 ~ 90%RH (non-condensing) | | | | | | | | |
| Vibration capacity | 2.5G | | | | | | | | |
| IP Rating | IP65 (when waterproof connectors are used, or when an oil seal is used to be fit to the rotating shaft) | | | | | | | | |
| Approvals |  | | | | | | | | |

*1 Rate torque values are continuous permissible values at 0 ~ 40°C ambient temperature when attaching with the sizes of heatsinks listed below:

ECMA-__ 04 / 06 / 08: 250 mm x 250 mm x 6 mm

ECMA-__ 10: 300 mm x 300 mm x 12 mm

ECMA-__ 13: 400 mm x 400 mm x 20 mm

Material: Aluminum – F40, F60, F80, F100, F130

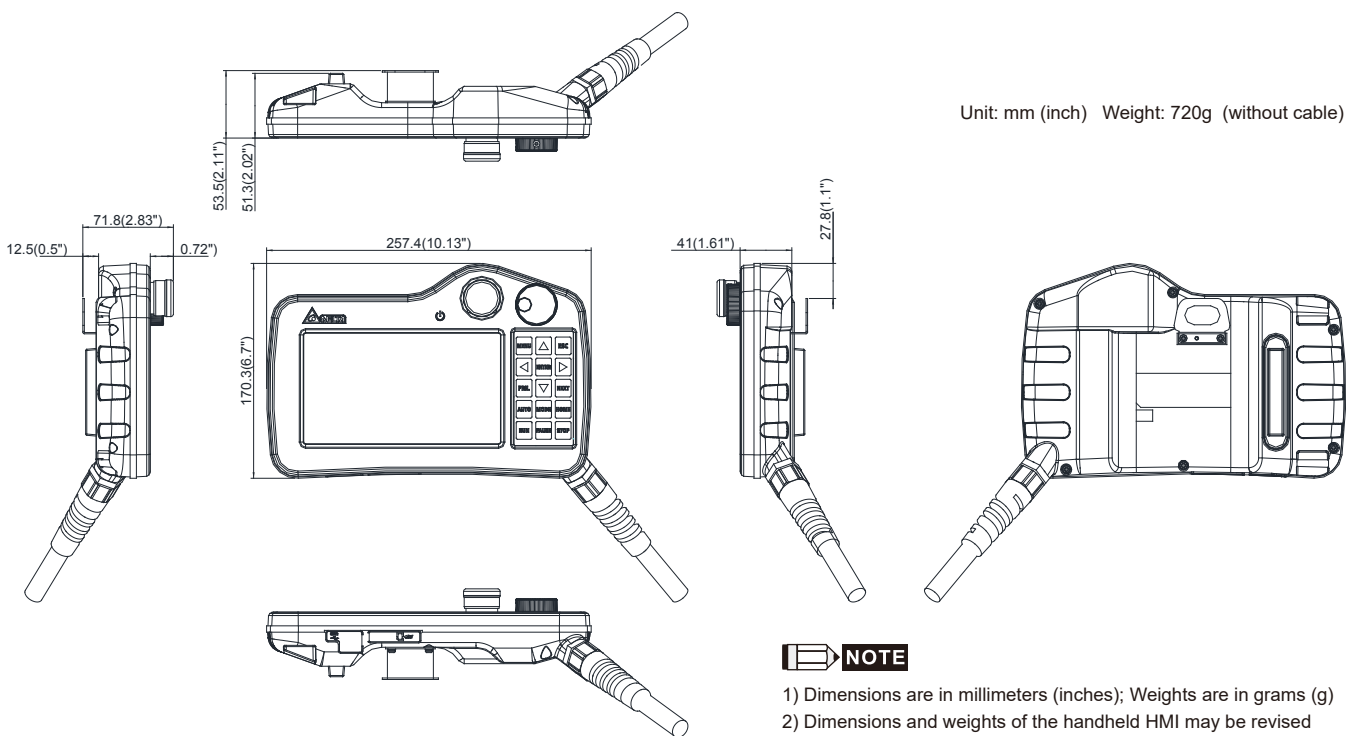
*2 The holding brake is for holding the motor shaft, not for decelerating or stopping the machine

Handheld HMI

DOP-H Series



Dimensions



Specifications

| Model | DOP-H07E425ZM | DOP-H07E465ZM |
|-------------------------------------|--|---|
| LCD Module | Display Size & Type | 7" Widescreen TFT LCD |
| | Display Colors | 65536 colors |
| | Resolution (pixels) | 800 x 480 |
| | Backlight | LED Back Light |
| | Luminance (cd/m2) | 450 |
| | Backlight Life ^{*1} (hours) | 20,000 |
| MCU | 400 MHz | |
| Flash ROM(Bytes) | 128MB | |
| RAM(Bytes) | 64MB | |
| Backup Memory (Bytes) | 16MB | |
| Buzzer | Multi-Tone Frequency (2K ~ 4K Hz) / 80dB | |
| Audio Output | N/A | |
| USB | 1 USB Client Ver 2.0 | |
| SD | SD Card (Supports SDHC) | |
| Serial COM Port | N/A | |
| Ethernet | 1 Ports ^{*2} | |
| Function Key | 15 | |
| Cable Length & Type | 5 m | |
| Emergency Stop | A-contact: B-contact: 1 Rated voltage: DC 24V Max. rated current: 500mA Min. allowable load: DC 5V / 1mA Complies with IEC60947-5-1, EN60947-5-1, IEC60947-5-5, EN60947-5-5, UL 508, CSA C22.2 No.14, GB 14085.5 | |
| 3-Position Operation Switch | A-contact: 1 Rated voltage: DC 24V Max. rated current: 500mA Min. allowable load: DC 3V/5mA Complies with EN/IEC60947-5-8, IEC60947-5-1, EN60947-5-1, JIS C8201-5-1, UL508, CSA C22.2 NO. 14 Applicable standards for use with ISO12100-1, -2 / EN12100-1, -2, IEC60204-1/EN60204-1, ISO11161/prEN11161, ISO10218/EN775, ANSI/RIA R15.06, ANSI B11.19 | |
| Handwheel | N/A | Rated Voltage: < DC 24V in Resolution: 50 (P/R) Output Pulse: Square Output Phase: A, B Phase difference of A and B: 90° ± 45° Max. Frequency response: 200 Hz |
| Perpetual Calendar | Built-in | |
| Cooling Method | Natural cooling | |
| Safety Approval | CE ^{*4} | |
| Waterproof Level of Panel Display | IP55 | |
| Operation Voltage ^{*3} | DC + 24V(-10% ~ +15%) | |
| Voltage Endurance | AC500V for 1 minute (between charging DC24V terminal and FG terminals) | |
| Power Consumption ^{*5} | 5.6W | |
| Backup Battery | 3V lithium battery CR2450 × 1 | |
| Backup Battery Life | About 5 years or more at 25°C but subjects to the temperature and the conditions during usage. | |
| Operation Temperature | 0°C ~ 40°C | |
| Storage Temperature | -20°C ~ +60°C, 10% ~ 90% RH | |
| Operating Environment | 10% ~ 90% RH [0 ~ 40°C] ; 10% ~ 55% RH [41 ~ 50°C] ; Pollution Degree 2 | |
| Vibration | Conforms to IEC61131-2; Continuous: 5Hz ~ 8.3Hz 3.5 mm, 8.3Hz ~ 150Hz 1G | |
| Shock | Conforms to IEC60068-2-27; 11ms, 15G Peak , X, Y, Z direction for 6 times | |
| Dimensions (W) x (H) x (D) mm | 257.4 x 170.3 x 71.8 (emergency stop switch and hook included) | |
| Weight | 750g (cable excluded) | |

*1 The half-life of backlight is defined as original luminance being reduced by 50% when the maximum driving current is supplied to HMI

*2 With built-in isolated power circuit

*3 Please use isolated power supply

*4 Some models are in the process of application for UL and KCC certification. For more information, please consult our distributors

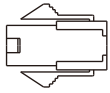
*5 The value of the power consumption indicates the electrical power consumed by HMI with no peripheral devices connected. To ensure normal operation, it is recommended to use a power supply with a capacity 1.5 ~2 times the value of the power consumption

*6 The content of this catalogue may be revised without prior notice. Please consult our distributors or download the most updated version at <http://www.deltaww.com>

Optional Accessories

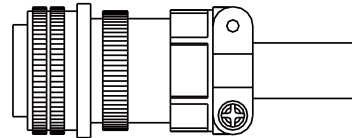
Power Connectors (for both A2 & A3 Series)

ASDBCAPW0000
(for servo motors with 40/60/80/86 frame size)



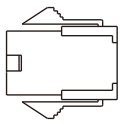
| Title | Part No. | Manufacturer |
|----------|----------------|--------------|
| Housing | C4201H00-2*2PA | JOWLE |
| Terminal | C4201TOP-2 | JOWLE |

ASD-CAPW1000
(for servo motors with 100/130 frame size)



3106A-20-18S

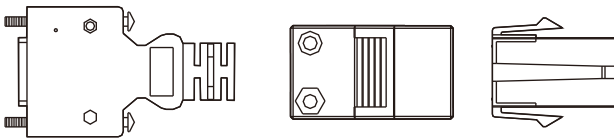
ASDBCAPW0100
(for servo motors with 40/60/80/86 frame size and brake cable)



| Title | Part No. | Manufacturer |
|----------|----------------|--------------|
| Housing | C4201H00-2*3PA | JOWLE |
| Terminal | C4201TOP-2 | JOWLE |

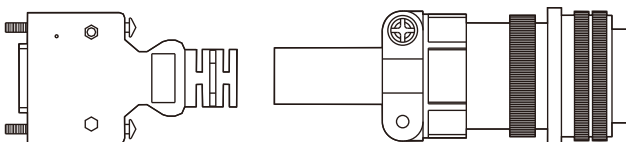
Encoder Connectors

ASD-ABEN0000



| | Title | Part No. | Manufacturer |
|------------|----------|--------------------|--------------|
| MOTOR SIDE | Housing | AMP (1-172161-9) | AMP |
| | Terminal | AMP (170359-3) | AMP |
| | CLAMP | DELTA (34703237XX) | DELTA |
| DRIVE SIDE | PLUG | 3M 10120-3000PE | 3M |
| | SHELL | 3M 10320-52A0-008 | 3M |

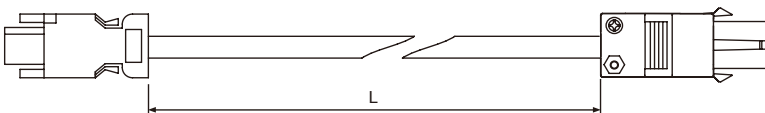
ASD-CAEN1000



| | Title | Part No. | Manufacturer |
|------------|-------|-------------------|--------------|
| MOTOR SIDE | | 3106A-20-29S | ----- |
| DRIVE SIDE | PLUG | 3M 10120-3000PE | 3M |
| | SHELL | 3M 10320-52A0-008 | 3M |

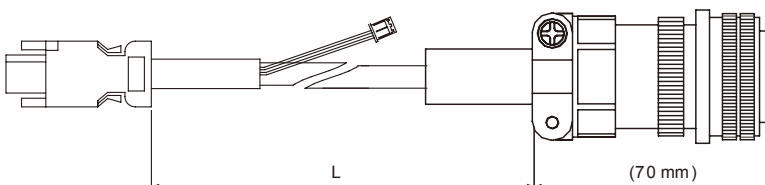
Absolute Encoder Cables

ACS3-CAEA1003 / ACS3-CAEA1005



| Item | Part No. | L | |
|------|---------------|------------|---------|
| | | mm | inch |
| 1 | ACS3-CAEA1003 | 3000 ± 100 | 118 ± 4 |
| 2 | ACS3-CAEA1005 | 5000 ± 100 | 197 ± 4 |

ACS3-CAEA3003 / ACS3-CAEA3005

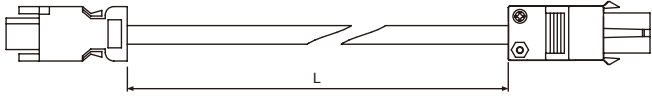


| Item | Part No. | L | |
|------|---------------|------------|---------|
| | | mm | inch |
| 1 | ACS3-CAEA3003 | 3000 ± 100 | 118 ± 4 |
| 2 | ACS3-CAEA3005 | 5000 ± 100 | 197 ± 4 |

Optional Accessories

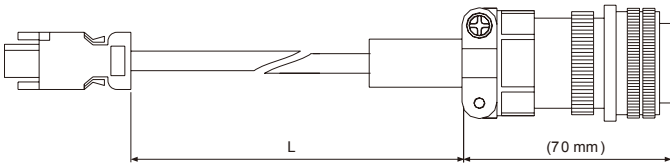
Incremental Encoder Cables

ACS3-CAEN1003 / ACS3-CAEN1005



| Item | Part No. | Straight | L | |
|------|---------------|--------------|------------|---------|
| | | | mm | inch |
| 1 | ACS3-CAEN1003 | 3106A-20-29S | 3000 ± 100 | 118 ± 4 |
| 2 | ACS3-CAEN1005 | 3106A-20-29S | 5000 ± 100 | 197 ± 4 |

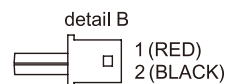
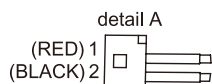
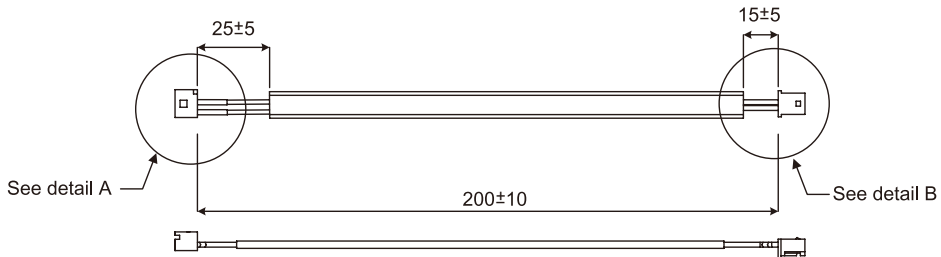
ACS3-CAEN3003 / ACS3-CAEN3005



| Item | Part No. | Straight | L | |
|------|---------------|--------------|------------|---------|
| | | | mm | inch |
| 1 | ACS3-CAEN3003 | 3106A-20-29S | 3000 ± 100 | 118 ± 4 |
| 2 | ACS3-CAEN3005 | 3106A-20-29S | 5000 ± 100 | 197 ± 4 |

Battery Box Cord AW (Connects to the battery side of the encoder cable)

Model number: 3864573700

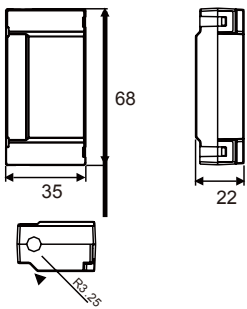


Unit: mm

Battery Boxes with batteries

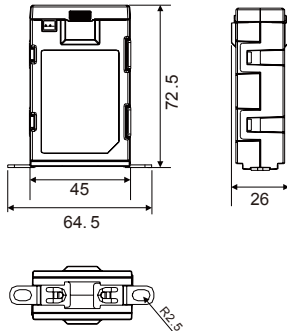
Single-battery Type

ASD-MDBT0100



Dual-battery Type

ASD-MDBT0200



Unit: mm

Optional Accessories

| Title | Type | Part No. |
|-------------------------------|--|----------------|
| Terminal Accessory Kit | Standard I/O Terminal (STD.DIO) Main Circuit Terminal (R,S,T) Control Circuit Terminal (24V) Servo Motor Output (U,V,W) 2 Set STO Connector Motor Brake Output Terminal STO I/O Terminal (Safe Torque Off) System I/O Terminal (SYS.DIO) Motor Encoder Interface (MOTOR. ENC.) Full-Closed Loop Control Interface (EXT.ENC) | GMC-MS00AC |
| Servo Motor Encoder Connector | Quick Connector | ASD-ABEN0000 |
| | Military Connector | ASD-CAEN1000 |
| Servo Motor Power Connector | Non Quick Release Connector | ASDBCAPW0000 |
| | Quick Release Connector | ASDBCAPW0100 |
| | Military Connector | ASD-CAPW1000 |
| DMCNET Extension IO Module | DMCNET Extension Module 32 DI (NPN//PNP) | ASD-DMC-RM32MN |
| | DMCNET Extension Module 32 DO Transistor Output | ASD-DMC-RM32NT |
| | DMCNET Extension Module 64 DI (NPN//PNP) | ASD-DMC-RM64MN |
| | DMCNET Extension Module 64 DO Transistor Output | ASD-DMC-RM64NT |
| | DMCNET Extension Module 16 DI/ 16 DO Transistor Output | ASD-DMC-RM32PT |
| | DMCNET Extension Module with 4 sets of analog input | ASD-DMC-RM04AD |
| | DMCNET Extension Module with 4 sets of analog output | ASD-DMC-RM04DA |
| | DMCNET Extension Module with 4 sets of pulse output | ASD-DMC-RM04PI |

| DMCNET Communication Cables | |
|-----------------------------|---|
| NC-CAB-DMC003 | DMCNET and Servo Drives Cables (0.3 m) |
| NC-CAB-DMC015 | DMCNET and Servo Drives Cables (1.5 m) |
| NC-CAB-DMC030 | DMCNET and Servo Drives Cables (3.0 m) |
| NC-CAB-DMC050 | DMCNET and Servo Drives Cables (5.0 m) |
| NC-CAB-DMC100 | DMCNET and Servo Drives Cables (10.0 m) |
| ASD-TR-DM0008 | DMCNET Bus-way Terminal Communication Resistance (optional) |

Global Operations

ASIA (Taiwan)



Taoyuan Technology Center (Green Building)



Taoyuan Plant 1



Tainan Plant (Diamond-rated Green Building)



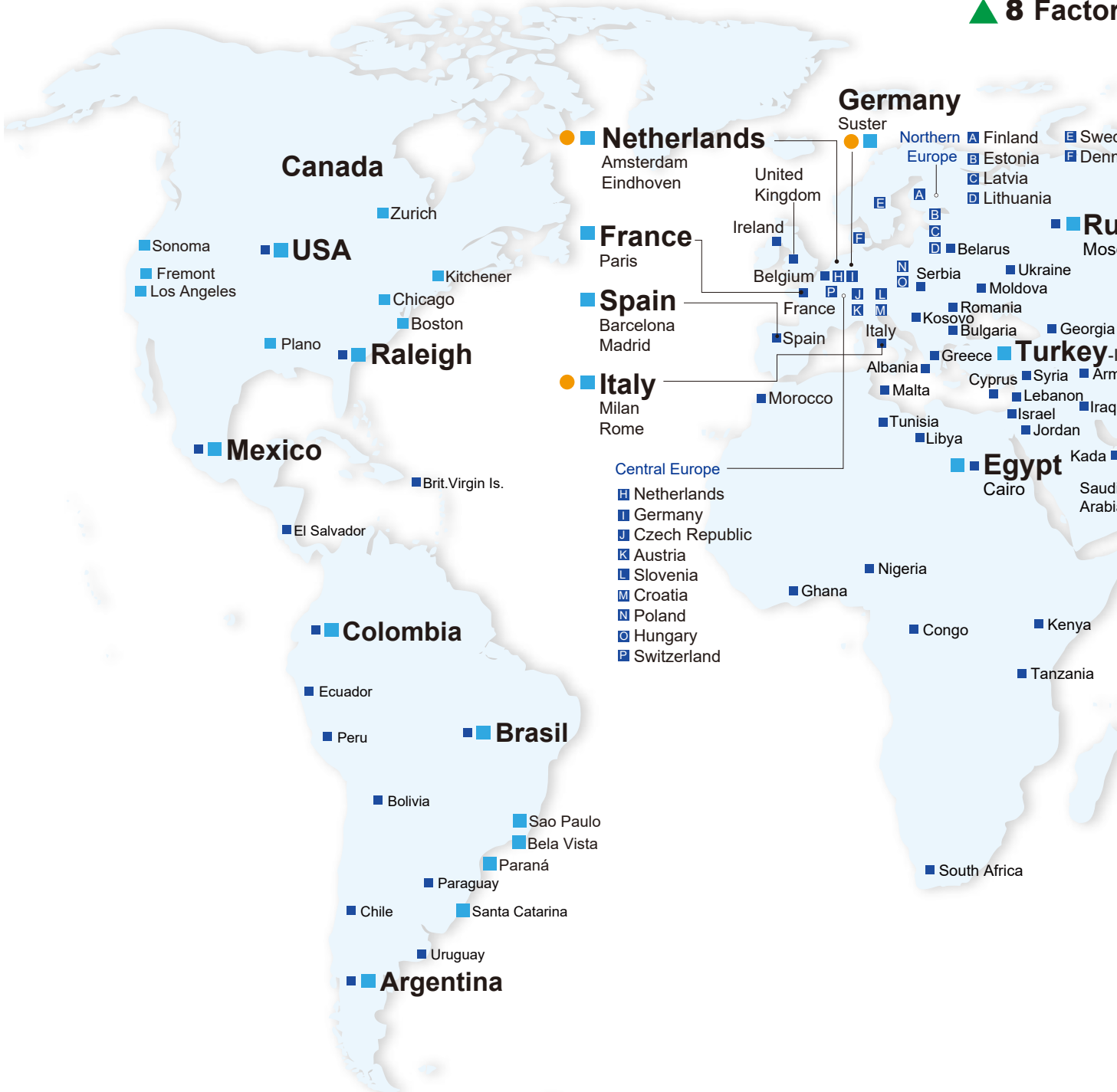
Wujiang Plant 3



Shanghai Office

ASIA (China)

▲ 8 Factor



ASIA (Japan)



Tokyo Office

ASIA (India)



Rudrapur Plant (Green Building)

EUROPE



Amsterdam, the Netherlands

AMERICA

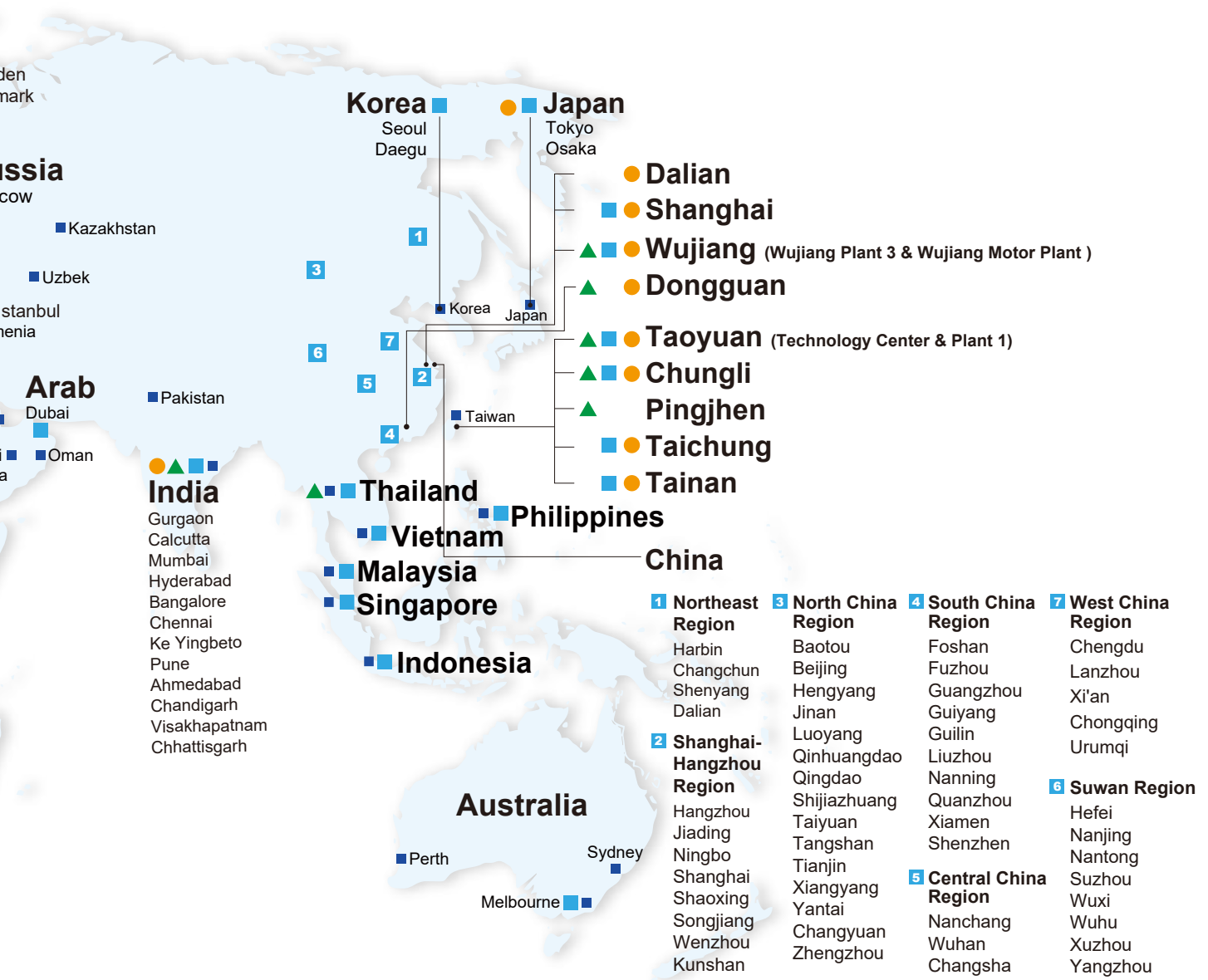


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