



Automation for a Changing World

Delta AC Servo System ASDA-M Series



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 **DELTA**
Smarter. Greener. Together.

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Motion Drive, Control



Inside



Introduction to the ASDA-M Series

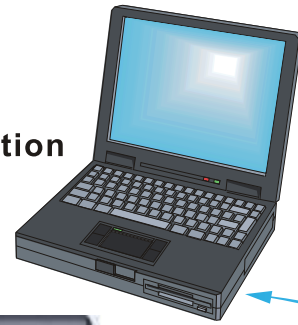
Delta Electronics, Inc., a leading professional manufacturer of industrial automation products, is pleased to announce the launch of its brand new ASDA-M series AC servo system for a multi-axes motion solution. With its innovative servo drive design, the ASDA-M series gives a new definition to servo system and demonstrates a perfect combination of motion controller and servo system.

The development of the new ASDA-M is in response to positive market feedback on our ASDA-A2. The ASDA-M offers high resolution, high frequency response, built-in electronic cam (E-Cam), auto notch filter, vibration suppression, full-closed control, friction compensation and a more flexible position register control PR mode. In addition, it also provides strong motion control functions and advanced design to meet a variety of applications for all types of industrial automation machines.

The ASDA-M goes beyond the typical servo drive. It includes 3 axes servo drives in one frame to provide 3 axes synchronous motion control and it supports real-time data exchange among 3 axes without any time delay. Users can perform 3-axis linear/arc/helical interpolation functions easily. In addition, the ASDA-M features a new gantry control function for synchronous control that is precisely adapted to pure rigid mechanical systems. The upgraded ASDA-Soft software provides a built-in contour analysis function to strengthen system analysis capabilities. The new EzASD software offers a PLC programming and motion commands editing environment to enhance the capabilities of sequence control and development functions. The built-in G-code interpreter is able to decode the G-code commands and complete motions quickly. The ASDA-M supports DMCNET and CANopen communication protocols. Connecting to DMCNET extension digital input and output modules increases system extension flexibility. The CANopen and RS-485 interface for high-speed communication enables the servo system to integrate with other automation more efficiently.

The ASDA-M is a highly integrated solution that provides a real-time and reliable motion control network that offers you a perfectly integrated motion drive and control system.

USB Connection Port for direct connection to personal computers or notebooks



ASDA-M Series Servo System



Real Time I/O (18 Inputs / 9 Outputs)

Z-Axis

Y-Axis

X-Axis



ASDA-M Series Features

Highly Integrated System

- Built-in motion control and PLC functions.
- Multi-axis synchronous interpolation.
- Advanced gantry control.
- Flexible electronic cam (E-Cam) function.
- High-speed frequency response.
- Excellent vibration and resonance suppression functions.
- High-precision full-closed control.
- Versatile PR mode.
- Real time Capture and Compare functions.
- Built-in G-code Interpreter.

New PC Software Functions

- ASDA-Soft provides built-in contour analysis function
- EzASD provides PLC programming and motion commands editing environment.

HMC Series Human Machine Interface & Controller



Supports DMCNET
Communication
Protocol

ASDA-A2 Series Servo Drives
ASD-A2-∗-F

DMCNET High-Speed
Motion Control



32DI / 32DO
or
16DI / 16DO



4-Channel
16-bit D/A
or
4-Channel
16-bit A/D



4-Channel
Pulse Interface

Real Time, Reliable and High-Speed Motion Control Network

- Supports DMCNET and CANopen communication protocols.
- With the aid of Delta's Human Machine Controller (HMC), it can establish an integrated system configuration by DMCNET.
- Supports DMCNET interface for I/O extension modules.

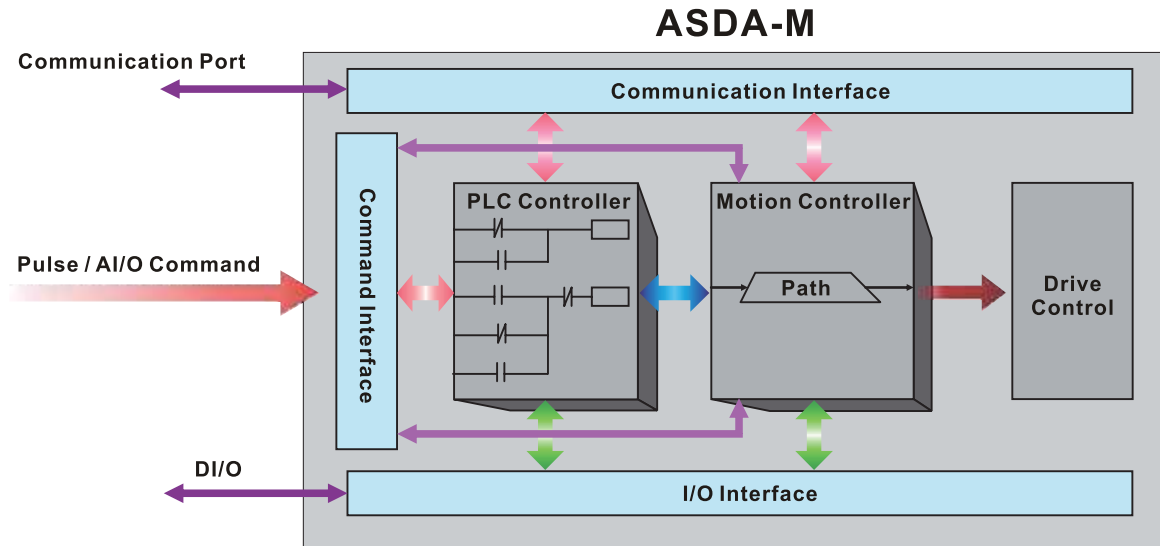
High Precision, High Performance Servo Motors

- Supports incremental type and absolute type encoders.
- Incremental type encoder provides up to 1280000 p/rev resolution for high-precision positioning.

ASDA-M Series Features

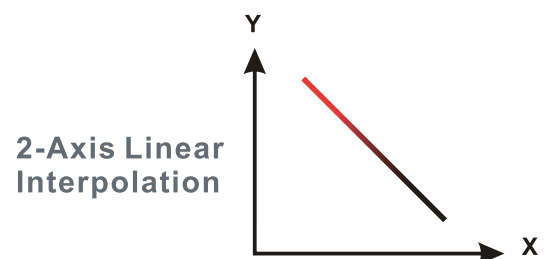
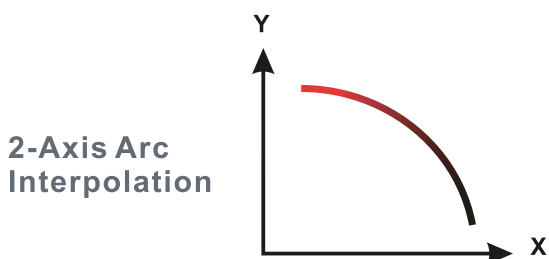
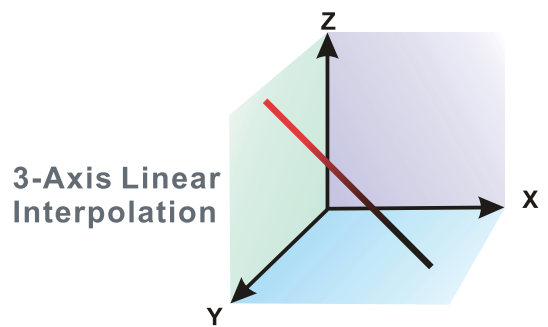
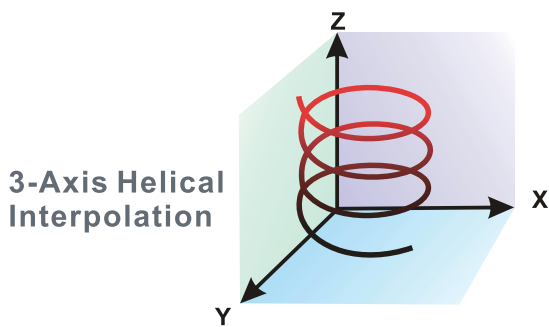
Built-in Motion Control and PLC Functions

- Through the built-in motion control and PLC functions, a motion control system can be set up without an external controller for real time and accurate system control applications. The commands are delivered with no pulse delay and the synchronization it achieves enhances the efficiency of the system.



Multi-axis Synchronous Interpolation

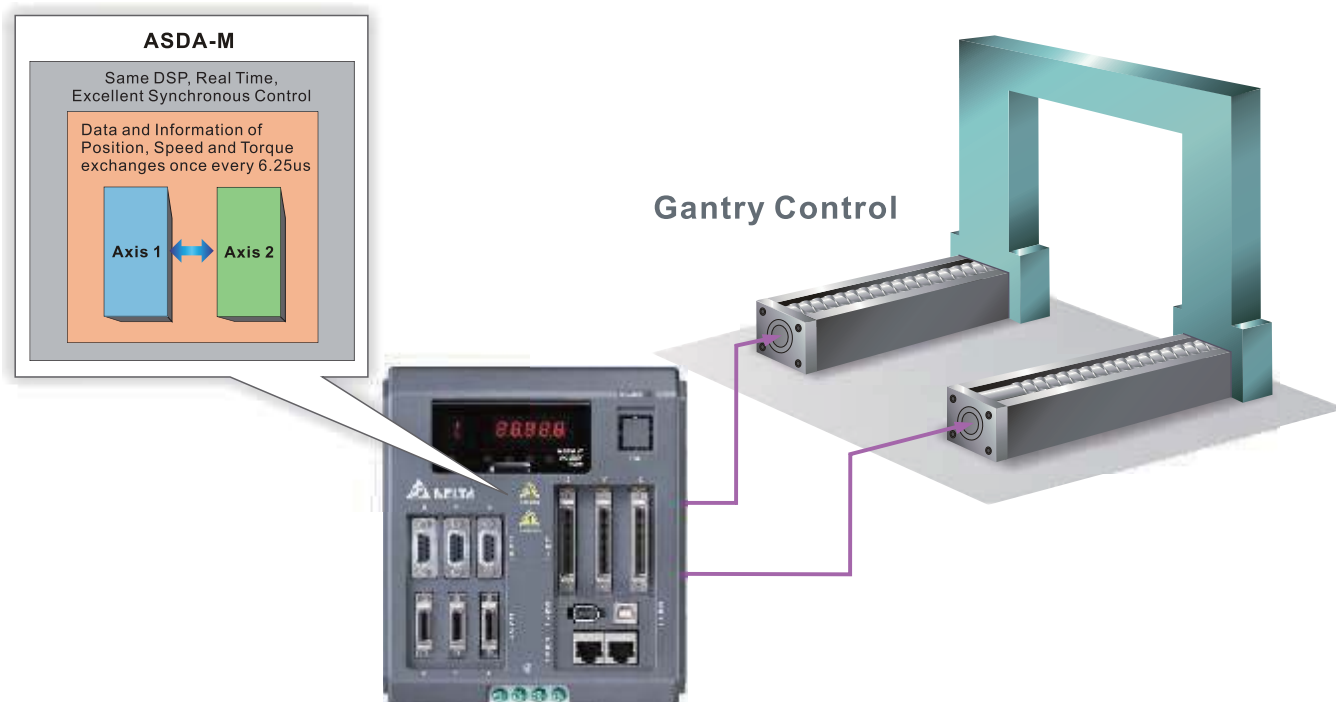
- Various kinds of interpolation functions are available. With just a simple parameters setup, motion commands are generated easily.
- Interpolation commands are built into the ASDA-M series servo drive to offer highly accurate synchronous control without time delay.





Advanced Gantry Control

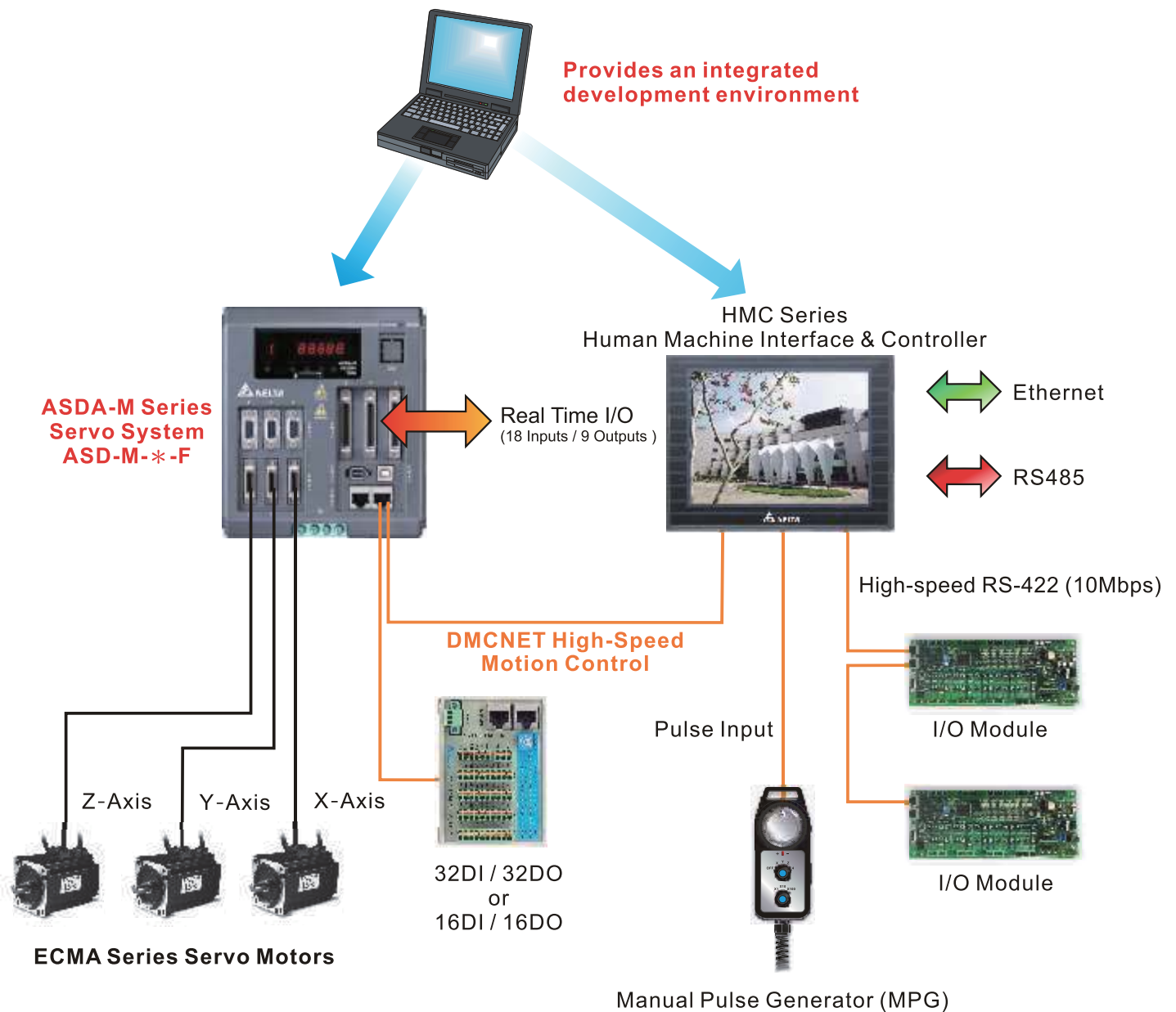
- A large amount of data and calculations among 3 axes can be completed with the same DSP (Digital Signal Processor). Precise synchronization is easy to achieve. This greatly increases the efficiency and performance of gantry control.
- In rigid or general mechanical systems, no matter if the loading on multiple axes is equal or not, the ASDA-M series can perform precise motion control and drive each axis simultaneously.



ASDA-M Series Features

Distributed Motion Control System - HMC Series serves as a Master

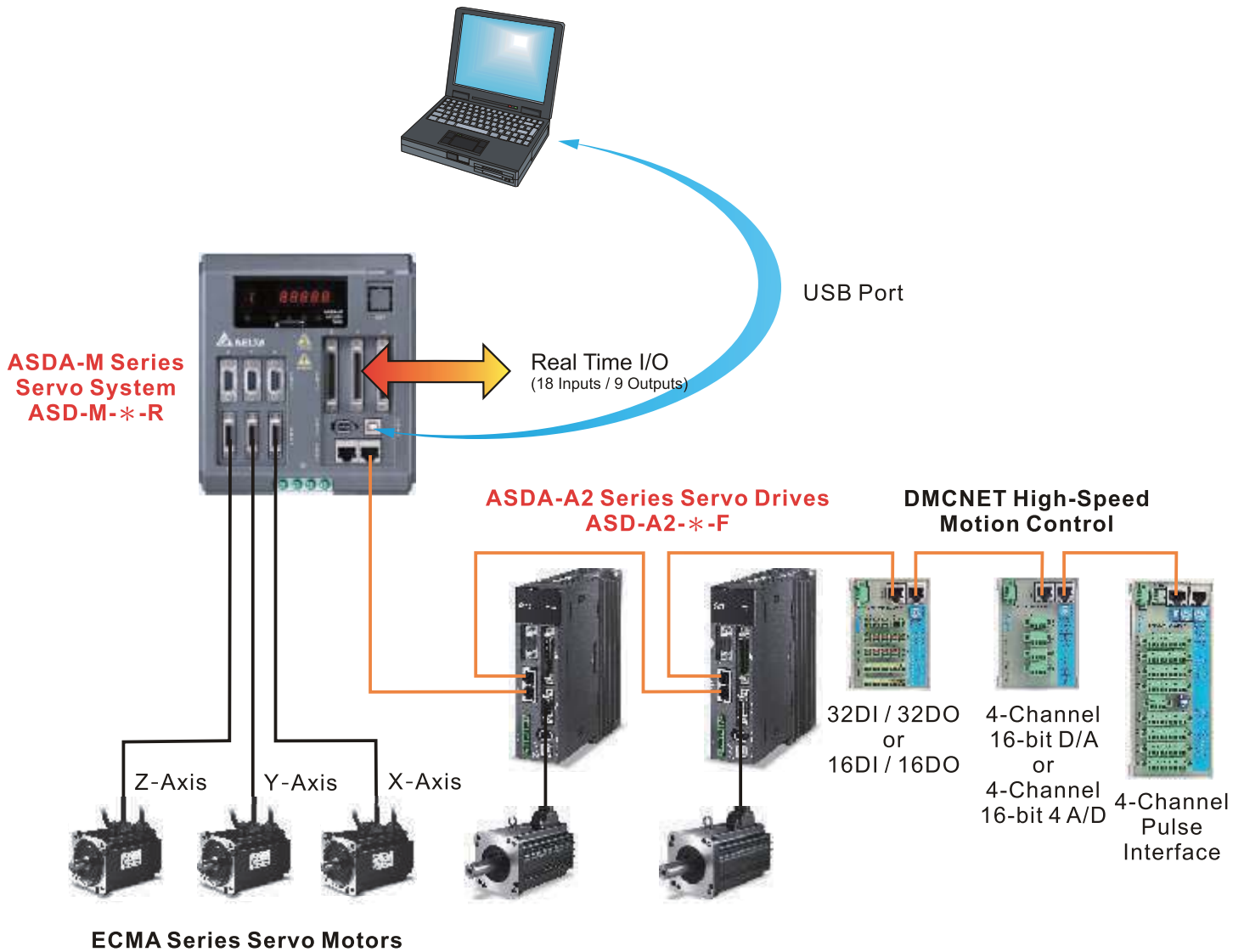
- Up to 10Mbps communication bandwidth is provided. It is capable of controlling 12 slave units within 1ms..
- With the aid of Delta's Human Machine interface & Controller, it offers the best combination of distributed systems to increase effectiveness



Integrated Motion Control System - ASDA-M Series serves as a Master

- Capable of connecting to digital I/O modules, analog I/O modules, 4-Channel pulse interface and other two axes of the ASDA-M series servo systems (ASD-M-*-F models).
- Integrates servo drive and motion control into an all-in-one unit to provide a customizable platform for system design and development.

Provides a PLC programming and motion commands editing environment

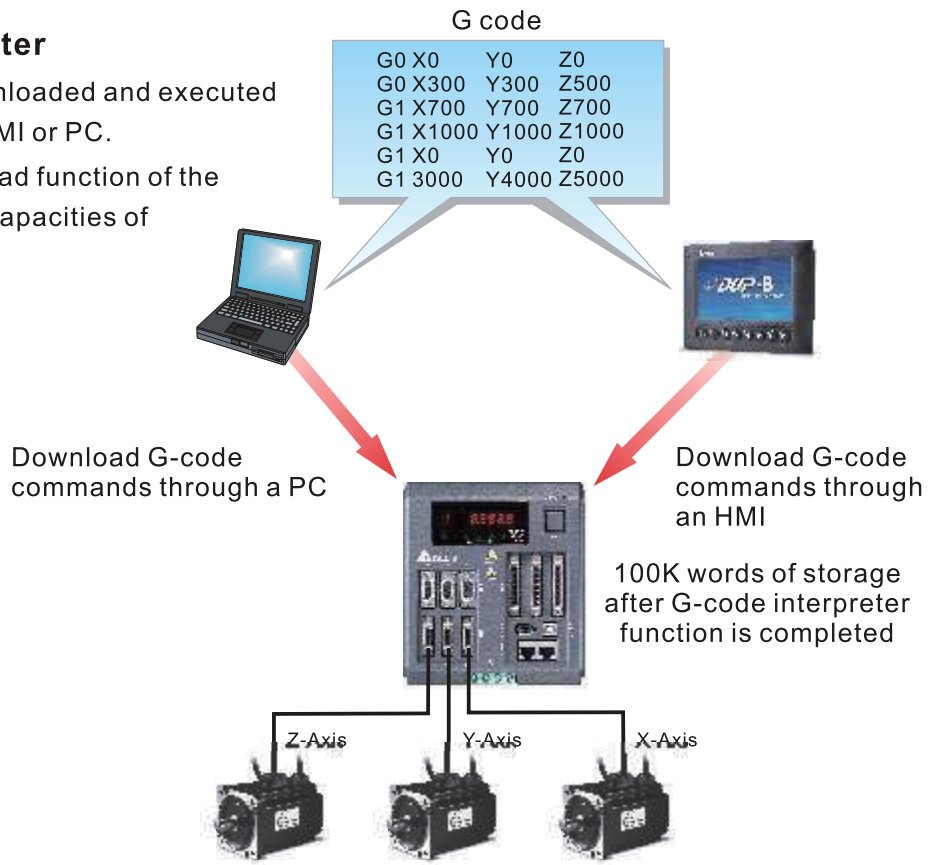


Note: More servo drives with built-in PLC functions as standard will be available soon.

ASDA-M Series Features

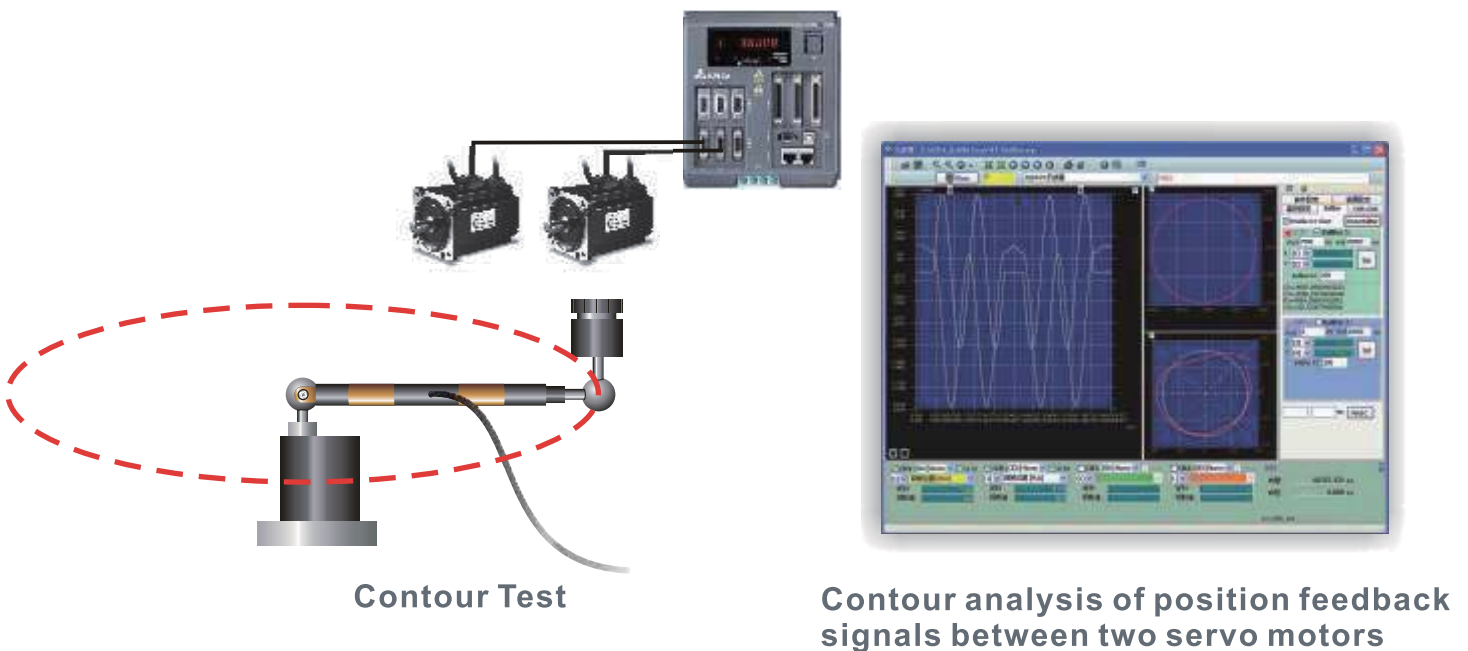
Built-in G-code Interpreter

- G-code commands are downloaded and executed to the servo drive through HMI or PC.
- Using the amortized download function of the HMI is able to increase the capacities of G-code commands.



Contour Analysis Function in ASDA-Soft

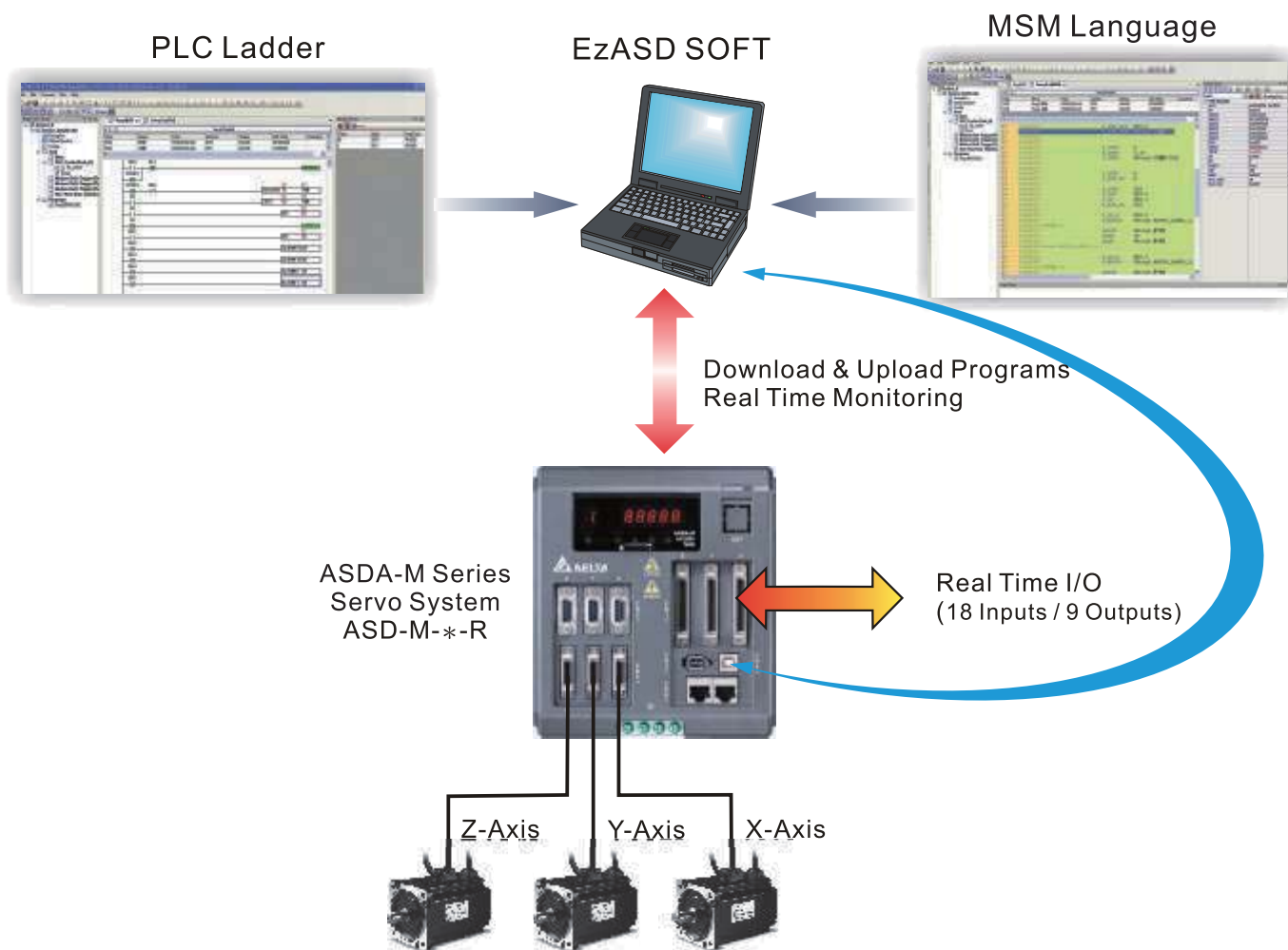
- Capable of monitoring the data of three axes simultaneously.
- Provides 2-axis surface trajectory display function for tracking and analysis.
- Capable of monitoring position commands and trajectory changes for contour error analysis.





zASD, PLC Programs Editing Software

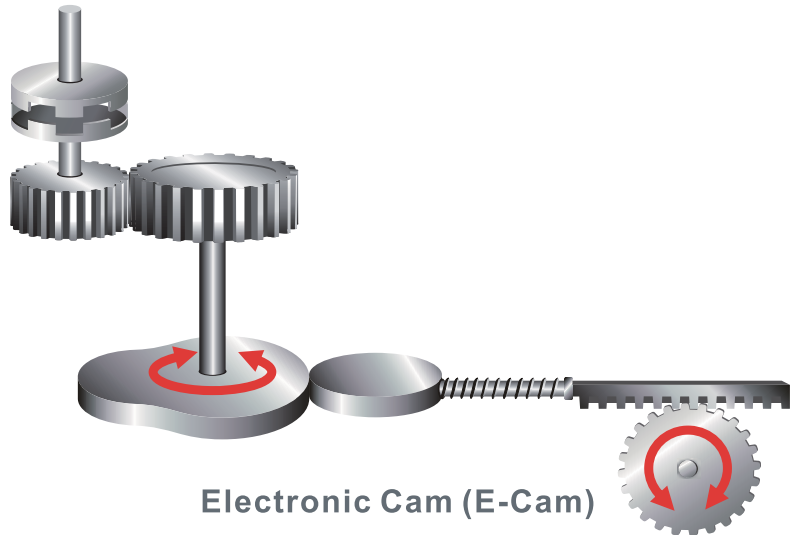
- Users can easily develop and achieve the required sequence control and motion control via EzASD software.
- Supports PLC ladder programs and PLC MSM.



ASDA-M Series Features

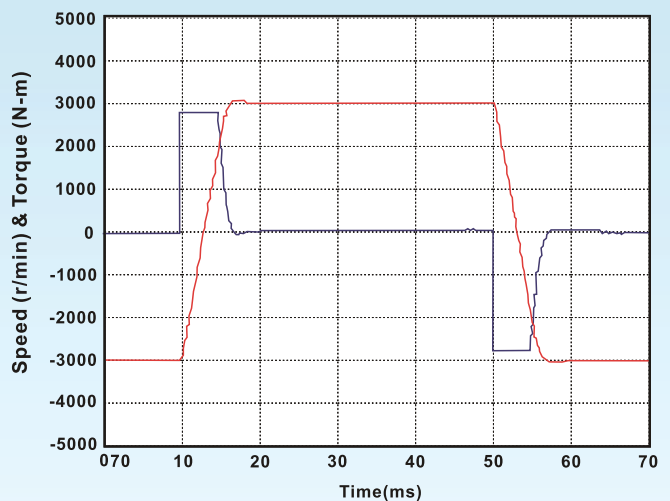
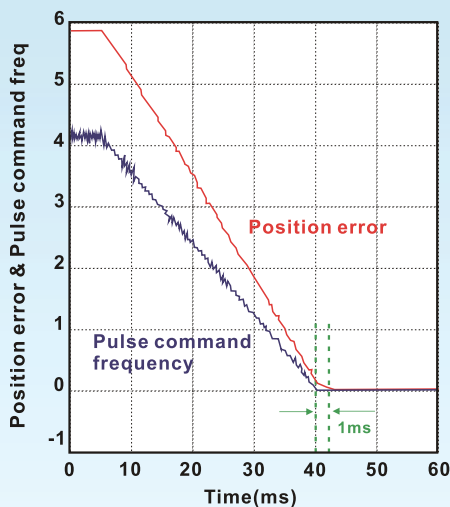
Flexible Electronic Cam (E-Cam)

- A flexible mechanism can be easily configured with three slave axes or only one master axis.
- The switch of slave and master axes is determined by parameter settings that users can change freely.
- ASDA-Soft configuration software provides E-Cam profile editing functions for easy tuning and adjustment.



High Responsiveness

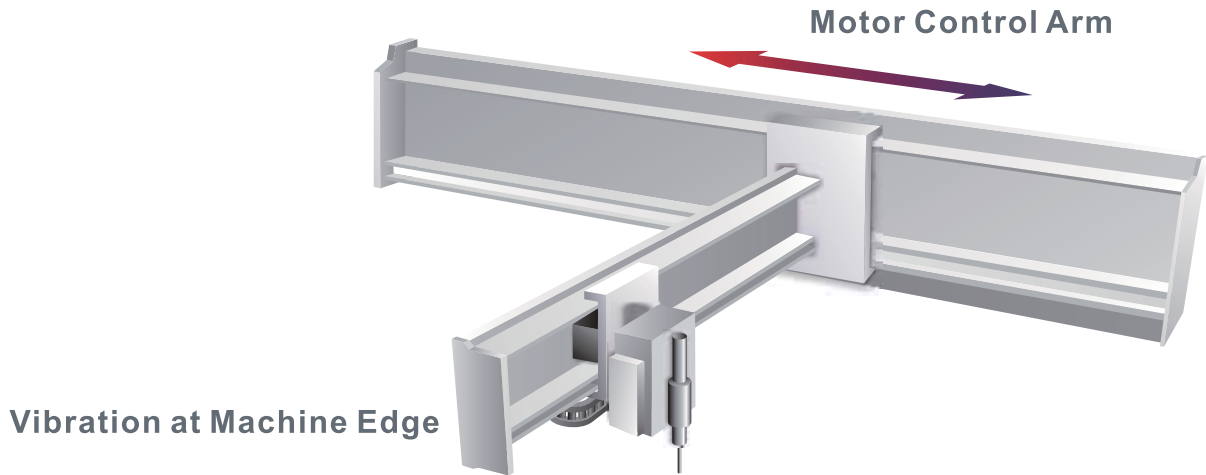
- Up to 1kHz frequency response.
- Settling time below 1ms.
- 7ms acceleration time for speeds from -3000r/min to 3000r/min with an empty load!
(Note: The test record of a 400W motor with 60mm frame size)



Excellent Suppression Functions

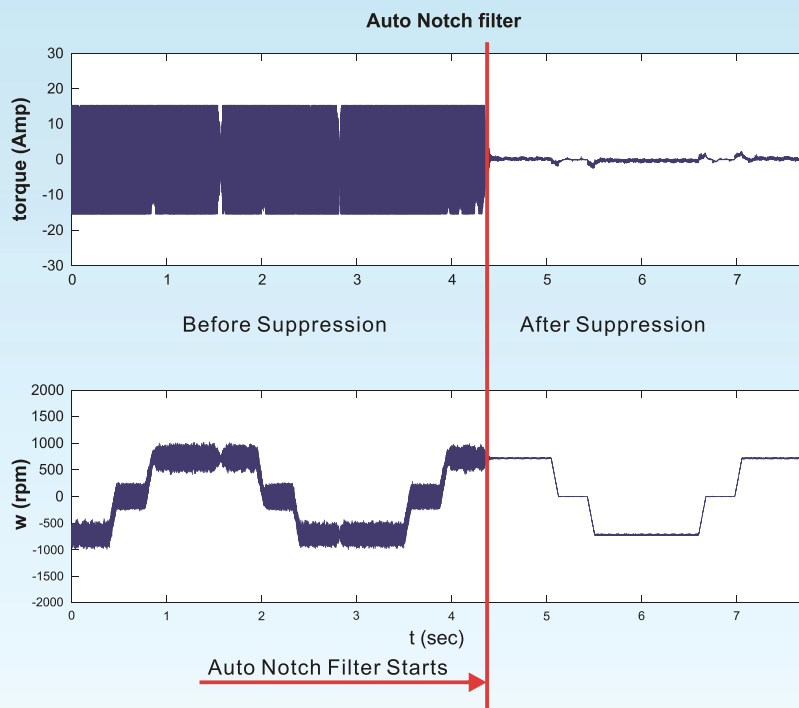
■ Vibration Suppression (Low Frequency)

Two vibration suppression filters are provided for long arm systems to minimize the vibration at machine edges effectively.



■ Resonance Suppression (High Frequency)

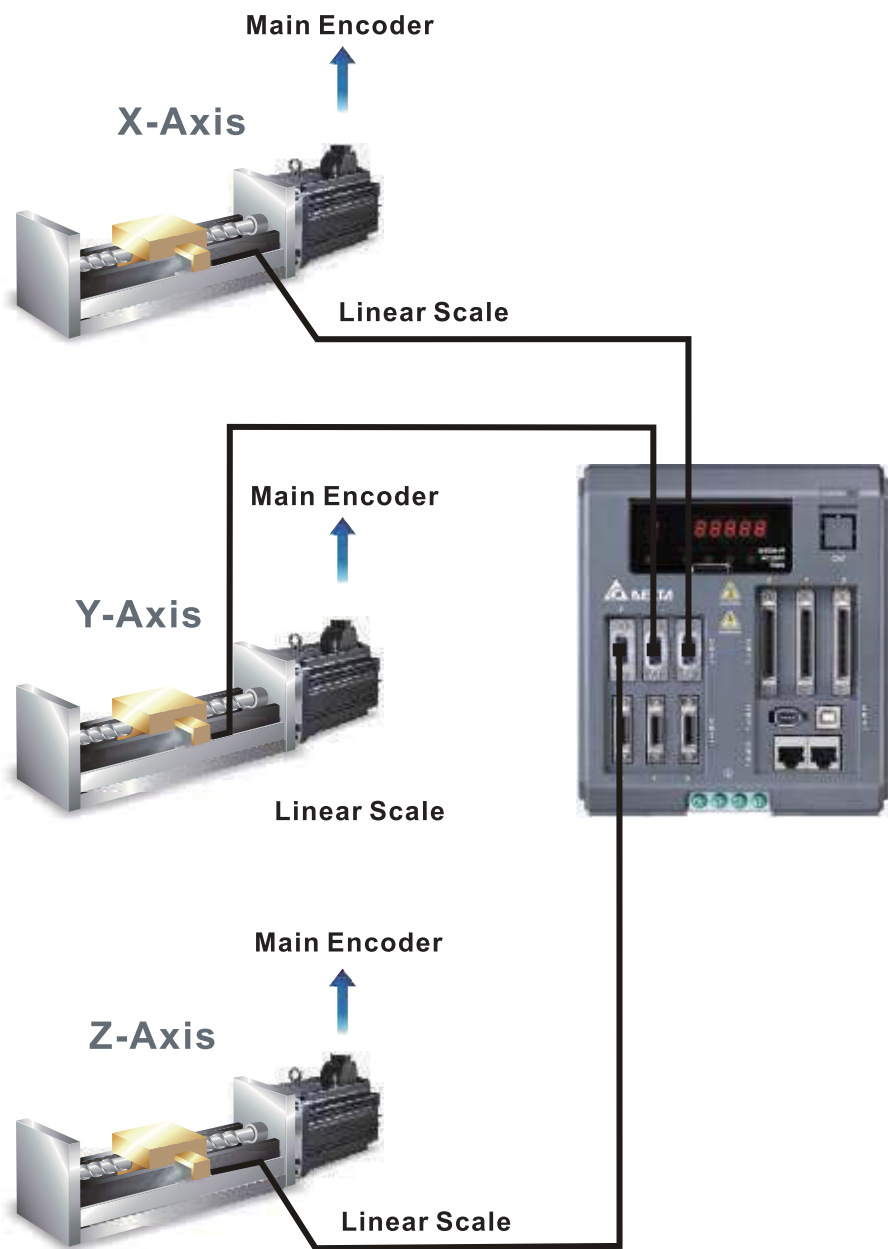
Two auto notch filters and one manual notch filter are provided to suppress mechanical resonance efficiently.



ASDA-M Series Features

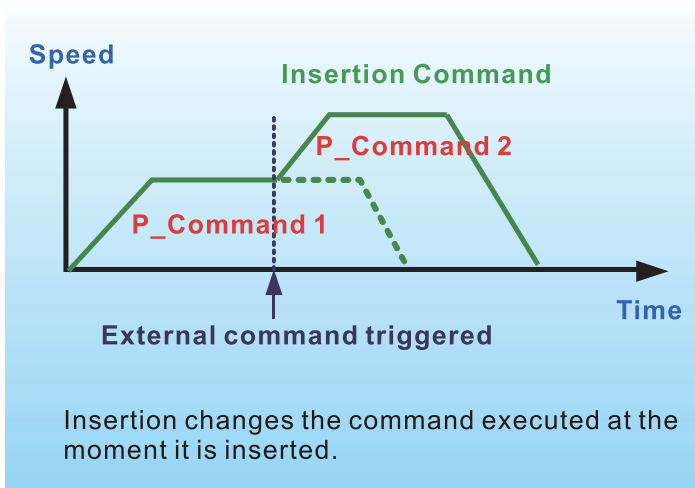
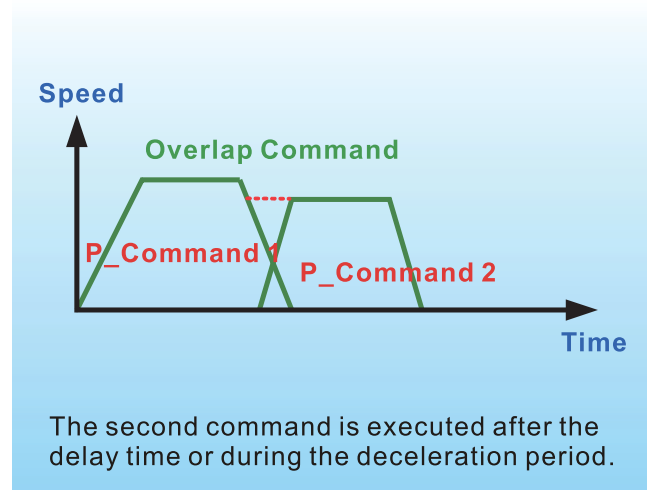
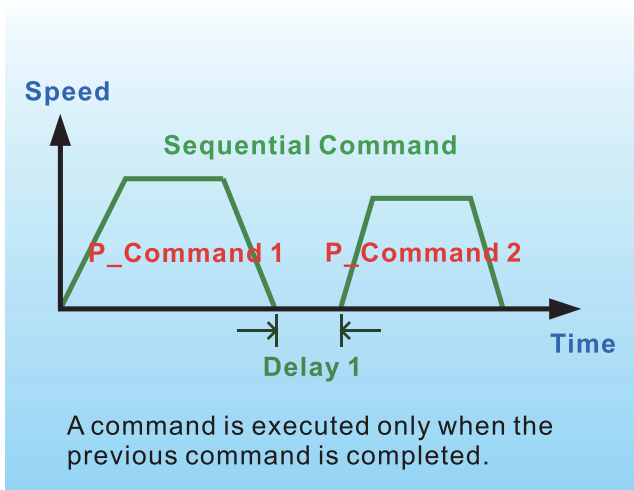
Full-Closed Loop Control Function

- Reduces the effects of backlash and flexibility from the machine and ensures the accuracy of positioning.



Versatile PR Mode

- ASDA-Soft configuration software offers a parameters editing function for different procedures planning.
- In PR mode, 99 procedures can be applied for three axes to enhance the ability of multiple points and continuous position control.
- Motion profile such as target position, acceleration and deceleration control can be changed instantaneously.
- Multi-axis synchronous motion movement is ideal for applications requiring high synchronous control accuracy and variable speed.
- 35 Homing modes / Jump mode / Write parameter mode / Single-axis speed mode / Single-axis position mode / Multi-axis linear interpolation mode / 2-Axis arc interpolation mode / 3-Axis helical interpolation mode / Feed rate mode total 9 kinds of control modes supported.
- Supports absolute commands, relative commands, incremental commands, and high-speed capture commands.

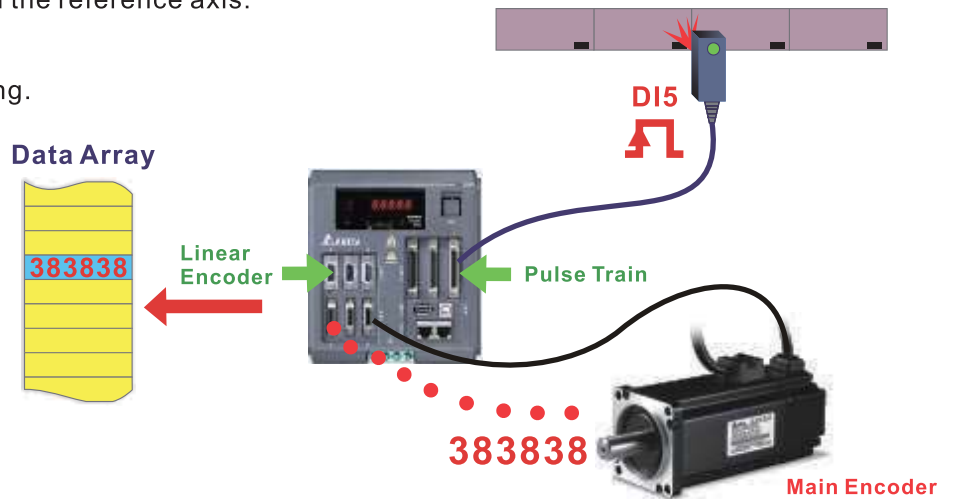


ASDA-M Series Features

Real Time Capture and Compare Functions

Position Latch Function (Capture)

- Latches the coordinate value on the reference axis.
- Response time is less than 5us.
- It can be used to do mark tracking.
- Maximum 1500 records.

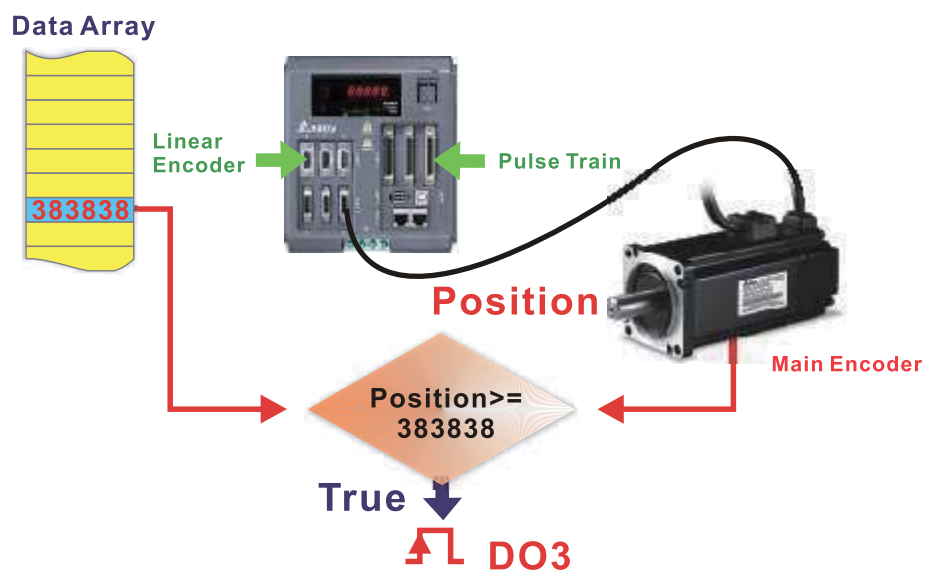


When DI5 is triggered, the latched position is recorded in Data Array.

Position Latch Function (Capture)

Position Detection Function (Compare)

- Detects the location on the reference axis.
- Response time is less than 5us.
- It can be used for CCD camera applications.
- Maximum 1500 records.



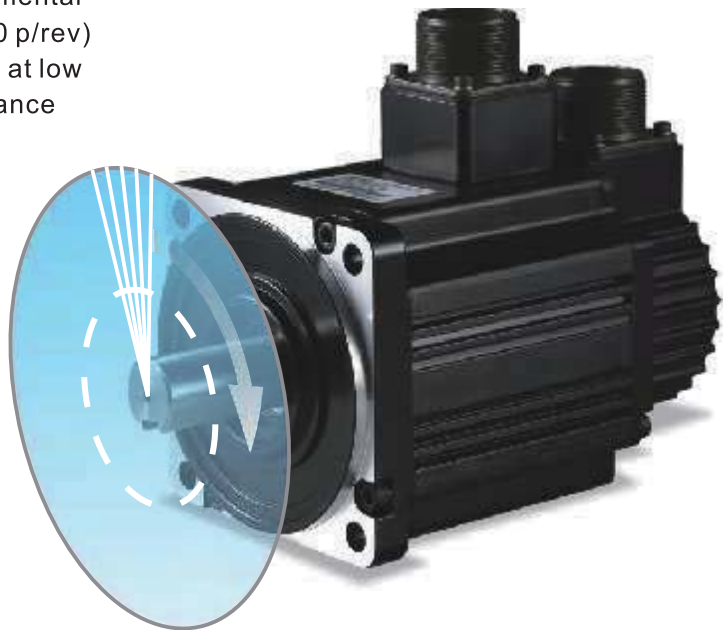
When the record in Data Array is the same as the detected position, DO4 will output.

Position Detection Function (Compare)

High Positioning Accuracy

- ECMA series servo motors feature incremental encoders with 20-bit resolution (1280000 p/rev) which can eliminate unstable commands at low speed, smooth motor operation and enhance the accuracy of positioning.
- Supports 17-bit absolute system and 20-bit incremental system.

Incremental encoder resolution: 1280000 p/rev



Reliable Communication on High-Speed Motion Control Network

- Complies with CANopen DS301 protocol, providing up to 1Mbps communication rate.
- Supports motion control modes via the CANopen DS402 protocol.
- Capable of connecting to maximum servo systems in position, speed and torque modes through CANopen communication.

Delta High-speed Communication Network



DVP-10MC

CANopen

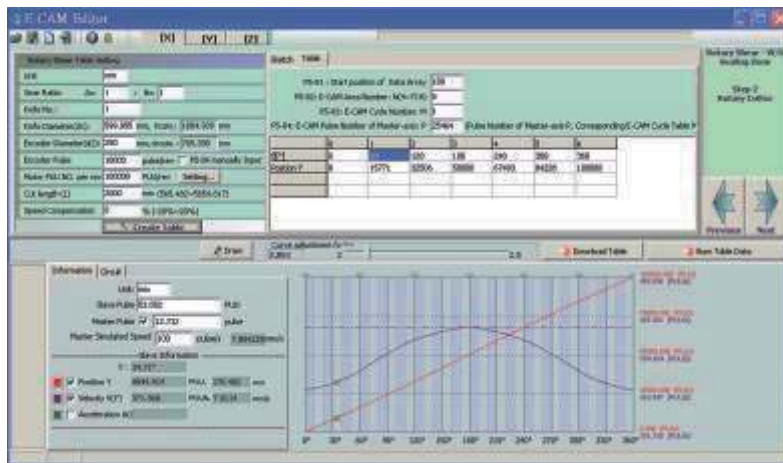
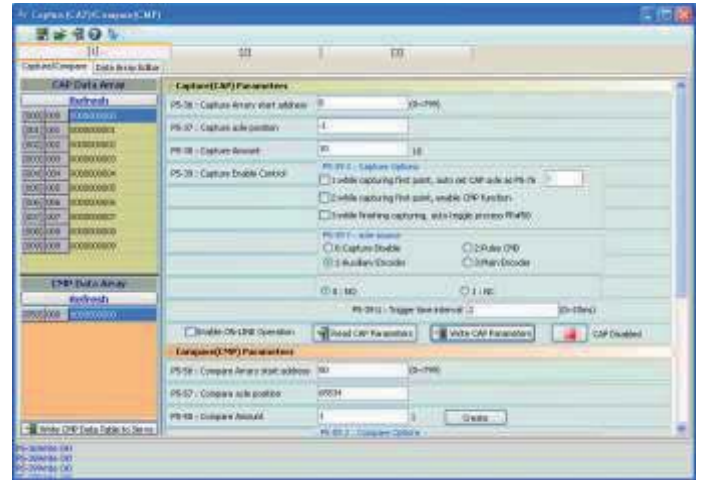


Maximum 127 servo systems working on the same bus

ASDA-Soft Configuration Software

CAPTURE / COMPARE

- Strong Capture and Compare functions for position latch and detection help you complete system configuration quickly.



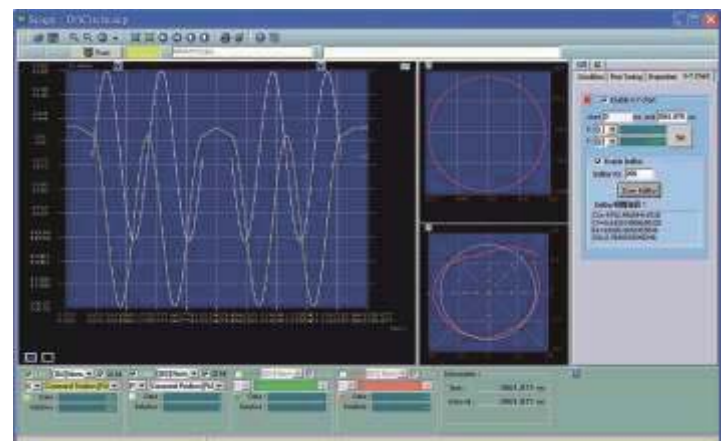
ELECTRONIC CAM (E-CAM)

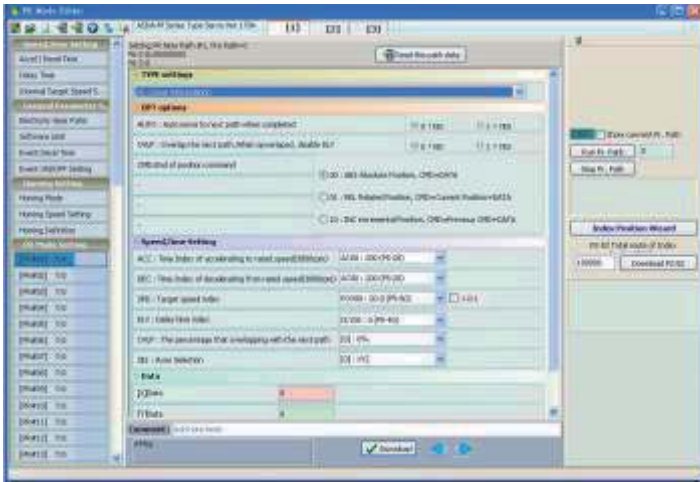
- User-friendly E-Cam editing interface is provided for designing E-Cam outlines and curves freely. In addition, quick settings for flying shear and rotary cut applications are offered.



SCOPE

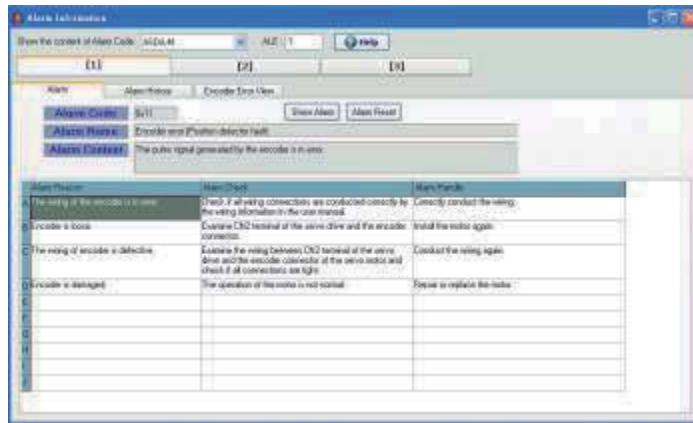
- Versatile on-line monitoring function, similar to a digital oscilloscope is capable of real-time monitoring and quickly recording the status and data of each axis. Values of each channel can also be set and adjusted. Just like the Ballbar test, this function can also collect multi-axis motion movement for precise measurement.





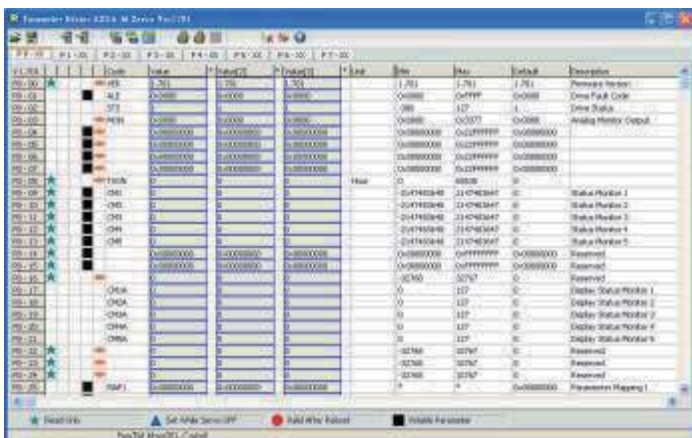
PR MODE

- Easy-to-use editing interface is designed for new and enhanced PR control mode. Homing, point-to-point and other motion control functions for multi-axis positioning control are easily achieved.



ALARM

- Convenient alarm display function is capable of troubleshooting the system easily and recommending timely corrective actions.



PARAMETER

- Multi-functional parameter editor lets you read back all of the parameters of the servo drive to a PC, and then write all of the parameters set in the PC into the servo drive. It also allows you to display, edit, change, compare and print the setting values of specific parameters.

Servo Drive and Servo Motor Combinations

Servo Drives and Servo Motors	Examples	
<p>Servo Drives</p> <p>750W Servo Drive ASD-M-0721-□</p> <p>Servo Motors</p> <p>Options: 100W, 200W, 400W, 750W</p> <p>Options: 100W, 200W, 400W, 750W</p> <p>Options: 100W, 200W, 400W, 750W</p> <p>Output Capacity for One Servo Motor: 750W Max.</p>	<p>750W Servo Drive</p> <p>750W 750W 750W</p>	<p>750W Servo Drive</p> <p>100W 400W 750W</p>
<p>Servo Drives</p> <p>1.5kW Servo Drive ASD-M-1521-□</p> <p>Servo Motors</p> <p>Options: 750W, 1kW, 1.5kW,</p> <p>Options: 750W, 1kW, 1.5kW,</p> <p>Options: 750W, 1kW, 1.5kW,</p> <p>Output Capacity for One Servo Motor: 1.5kW Max.</p>	<p>1.5kW Servo Drive</p> <p>1.5kW 1.5kW 1.5kW</p>	<p>1.5kW Servo Drive</p> <p>750W 1kW 1.5kW</p>
<p>Servo Drives</p> <p>2kW Servo Drive ASD-M-2023-□</p> <p>Servo Motors</p> <p>Options: 1W, 1.5kW, 2kW</p> <p>Options: 1W, 1.5kW, 2kW</p> <p>Options: 1W, 1.5kW, 2kW</p> <p>Output Capacity for One Servo Motor: 2kW Max.</p>	<p>2kW Servo Drive</p> <p>2kW 2kW 2kW</p>	<p>2kW Servo Drive</p> <p>1kW 1.5kW 2kW</p>

Product Line-up

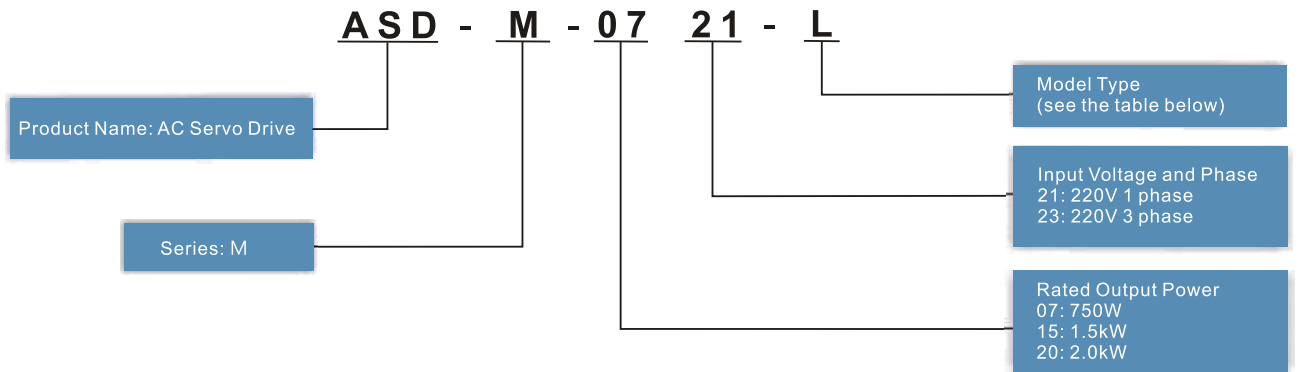
Servo Drives			
	750W	1.5kW	2kW
	ASD-M-0721-□	ASD-M-1521-□	ASD-M-2023-□

Servo Motors			
	ECMA-C△0401□S (S=8mm) ECMA-C△0602□S (S=14mm) ECMA-C△0604□S (S=14mm) ECMA-C△0804□7 (7=14mm) ECMA-C△0807□S (S=19mm) ECMA-C△0907□S (S=16mm) ECMA-E△1305□S (S=22mm) ECMA-G△1303□S (S=22mm) ECMA-G△1306□S (S=22mm)	ECMA-C△0807□S (S=19mm) ECMA-C△0907□S (S=16mm) ECMA-C△0910□S (S=16mm) ECMA-C△1010□S (S=22mm) ECMA-E△1310□S (S=22mm) ECMA-E△1315□S (S=22mm) ECMA-E△1320□S (S=22mm) ECMA-G△1309□S (S=22mm)	ECMA-C△0910□S (S=16mm) ECMA-C△1010□S (S=22mm) ECMA-C△1020□S (S=22mm) ECMA-E△1310□S (S=22mm) ECMA-E△1315□S (S=22mm) ECMA-E△1320□S (S=22mm) ECMA-E△1820□S (S=35mm)

Please note: The ASDA-M series servo drives also support incremental type 17-bit servo motors and absolute type servo motors.
 1) The boxes (△) in the model names are for encoder resolution types (△=1: Incremental encoder, 20-bit; △=2: Incremental encoder, 17-bit).
 2) The boxes □ in the servo motor model names are for optional configurations (keyway, brake and oil seal).
 * ASDA-M Series 2kW models will be available for ordering soon.

Model Number Explanation

ASDA-A2 Series Servo Drives

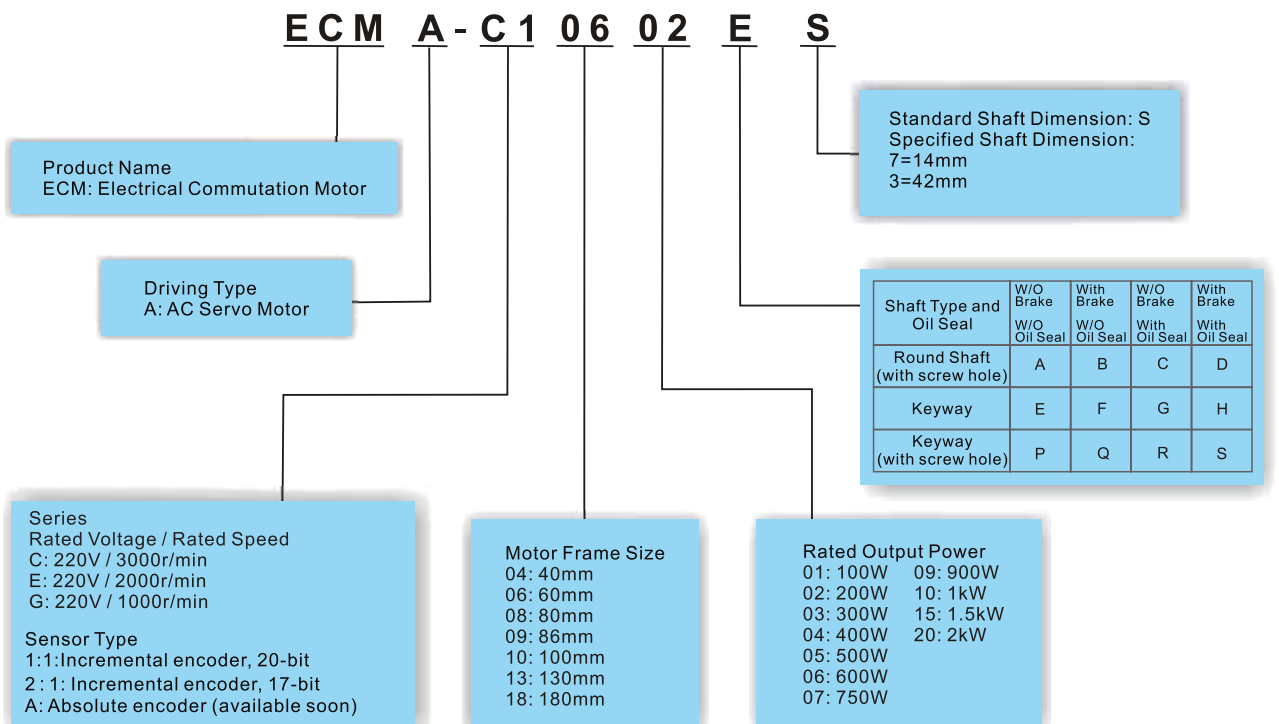


Model Type




Type	Full-Closed Control	CANopen	DMCNET	Built-in PLC functions
L	O	X	X	X
M	O	O	X	X
F	O	X	O	X
R	O	X	O	O

L: Without E-Cam F: For DMCNET M: Support CANopen R: With Communication Extension Function

ECMA Series Servo Motors



Servo Drive Specifications

ASDA-M Series		750W	1.5KW	2.0KW
		07	15	20
Power supply	Phase / Voltage	Three-Phase or Single-Phase 220VAC		Three-Phase 220VAC
	Permissible Voltage Range	Three-Phase or Single-Phase 200~230VAC, -15%~10%		Three-Phase 200~230VAC, -15%~10%
	Continuous output current	5.1 Arms	8.3 Arms	13.4 Arms
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		
Dynamic Brake		Built-in		
Position Control Mode	Max. Input Pulse Frequency	Max. 500Kpps / 4Mpps (Line driver) Max. 200Kpps (Open collector)		
	Pulse Type	Pulse + Direction, A phase + B phase, CCW pulse + CW pulse		
	Command Source	External pulse train (Pt mode) / Internal procedures (Pr mode)		
	Smoothing Strategy	Low-pass and P-curve filter		
	Electronic Gear	Electronic gear N/M multiple N: 1~32767, M: 1:32767 (1/50<N/M<25600)		
	Torque Limit Operation	Set by parameters		
	Feed Forward Compensation	Set by parameters		
Analog Input Command	Voltage Range	0 ~ ±10 VDC		
	Input Resistance	10Ω		
	Time Constant	2.2 μs		
Speed Control Mode	Speed Control Range ^{*1}	1:5000		
	Command Source	External analog signal / Internal parameters		
	Smoothing Strategy	Low-pass and S-curve filter		
	Torque Limit Operation	Set by parameters or via analog input		
	Frequency Response Characteristic	Maximum 1kHz		
Speed Accuracy ^{*2} (at rated rotation speed)		0.01% or less at 0 to 100% load fluctuation		
		0.01% or less at ±10% power fluctuation		
		0.01% or less at 0°C to 50°C ambient temperature fluctuation		
Torque Control Mode	Analog Input Command	Voltage Range	0~±10 VDC	
		Input Resistance	10KΩ	
		Time Constant	2.2 μs	
	Command Source	External analog signal / Internal parameters		
	Smoothing Strategy	Low-pass filter		
Speed Limit Operation	Set by parameters or via analog input			
Analog Monitor Output		Monitor signal can set by parameters (Output voltage range: ±8V)		
Digital Inputs/Outputs	Inputs	Servo On, Reset, Gain switching, Pulse clear, Zero speed CLAMP, Command input reverse control, Command triggered, Speed/Torque limit enabled, Position command selection, Motor stop, Speed Position Selection, Position / Speed mode switching, Speed / Torque mode switching, Torque / Position mode switching, Pt / Pr command switching, Emergency stop, Forward / Reverse inhibit limit, Reference "Home" sensor, Forward / Reverse operation torque limit, Move to "Home", Electronic cam, Forward / Reverse JOG input, Event trigger Pr command, Electronic gear ratio (Numerator) selection and Pulse inhibit input		
	Outputs	Encoder signal output (A, B, Z Line Driver and Z Open Collector) Servo ready, Servo On, At Zero speed, At Speed reached, At Positioning completed, At Torques limit, Servo alarm (Servo fault) activated, Electromagnetic brake control, Homing completed, Output overload warning, Servo warning activated, Position command overflow, Forward / Reverse software limit, Internal position command completed, Capture operation completed output., Motion control completed output., Master position of E-CAM (electronic CAM)		
Protective Functions		Overcurrent, Overvoltage, Undervoltage, Motor overheated, Regeneration error, Overload, Overspeed, Abnormal pulse control command, Excessive deviation, Encoder error, Adjustment error, Emergency stop activated, Reverse/ Forward limit switch error, Position excessive deviation of full-close control loop, Serial communication error, Input power phase loss, Serial communication time out, short circuit protection of U, V, W, and CN1, CN2, CN3 terminals		
Communication Interface		RS-232 / RS-485 / CANopen / USB		
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	86kPa~106kPa		
	Operating Temperature	0°C~55°C (If operating temperature is above 45°C, forced cooling will be required)		
	Storage Temperature	-20°C ~65°C		
	Humidity	0~90% RH (non-condensing)		
	Vibration	9.80665m/s ² (1G) less than 20Hz, 5.88m/s ² (0.6G) 20 to 50Hz		
	IP Rating	IP20		
Power System	TN System ^{*3}			
Approvals		   IEC/EN 61800-5-1, UL 508C, C-tick		

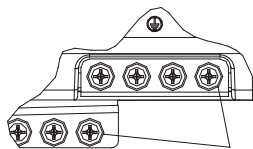
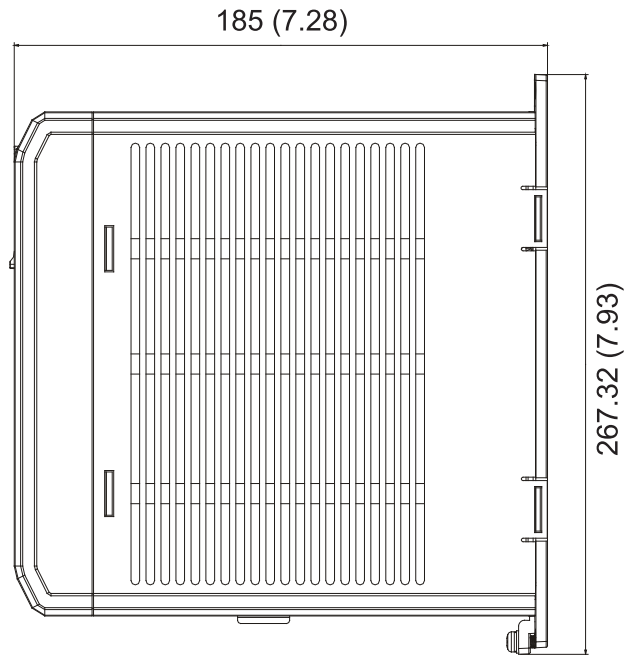
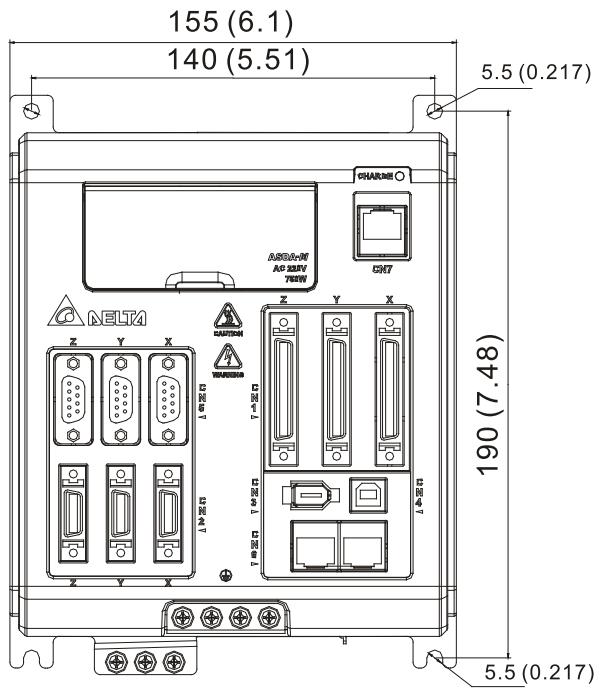
Footnote: *1. Rated rotation speed: When full load, speed ratio is defined as the minimum speed (the motor will not pause).

*2. When command is rated rotation speed, the speed fluctuation rate is defined as: (Empty load rotation speed / Full load rotation speed) / Rated rotation speed

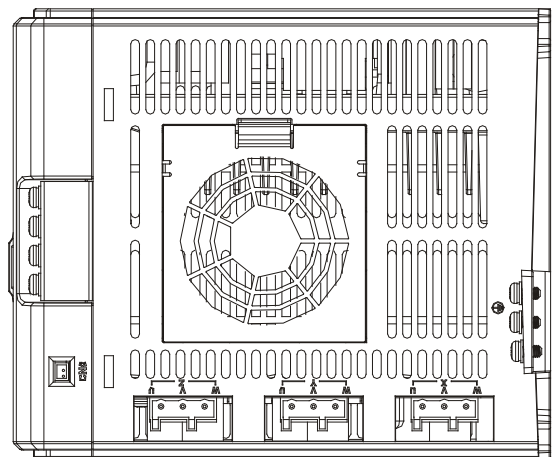
*3. TN system: A power distribution system having one point directly earthed, the exposed conductive parts of the installation being connected to that point by a protective earth conductor.

Servo Drive Dimensions

ASD-M-0721 (750W)



Screw: M4x0.7
Screw Torque: 14(kgf-cm)



Weight
1.5 (3.3)



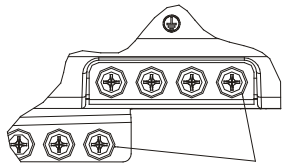
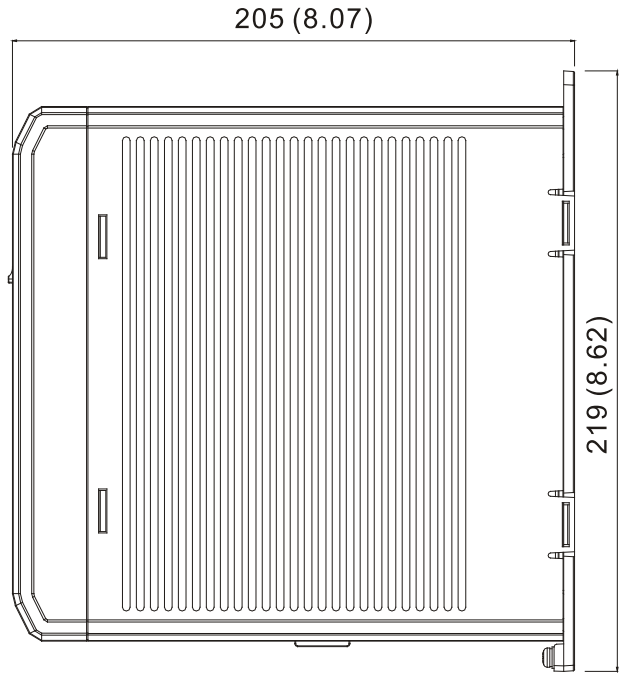
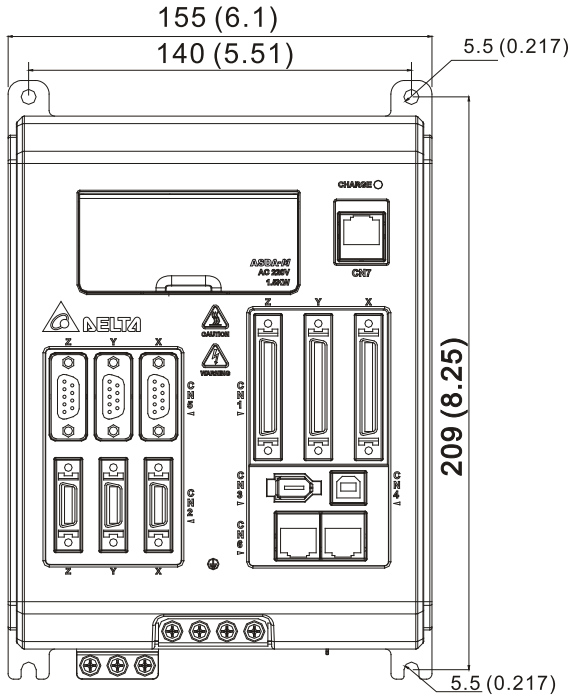
NOTE

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

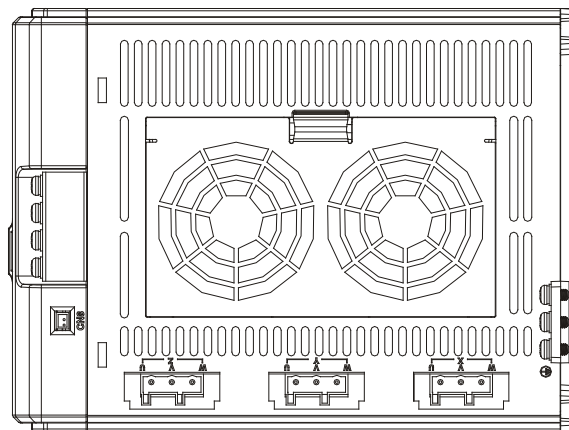
Servo Drive Dimensions

ASD-M-1521 (1.5kW)

ASD-M-2023 (2kW)



Screw: M4x0.7
Screw Torque: 14(kgf-cm)



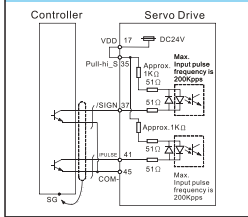
Wight
2.0 (4.4)

- NOTE**
- 1) Dimensions are in millimeters (inches); Weights are in kilograms (kg) and (pounds (lbs)).
 - 2) Dimensions and weights of the servo drive may be revised without prior notice.

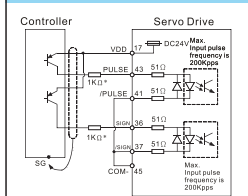
Standard Connection Examples

Position (PT) Control Mode (for Pulse Command Input)

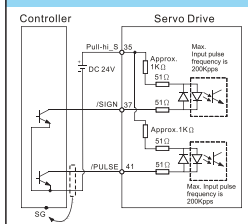
Pulse input (Open-collector NPN), for the use of internal power supply



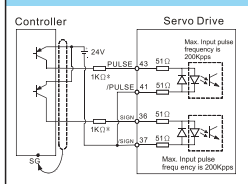
Pulse input (Open-collector PNP), for the use of internal power supply



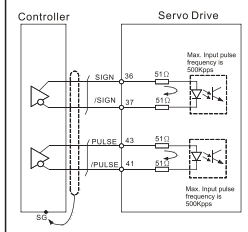
Pulse input (Open-collector NPN), for the use of external power supply



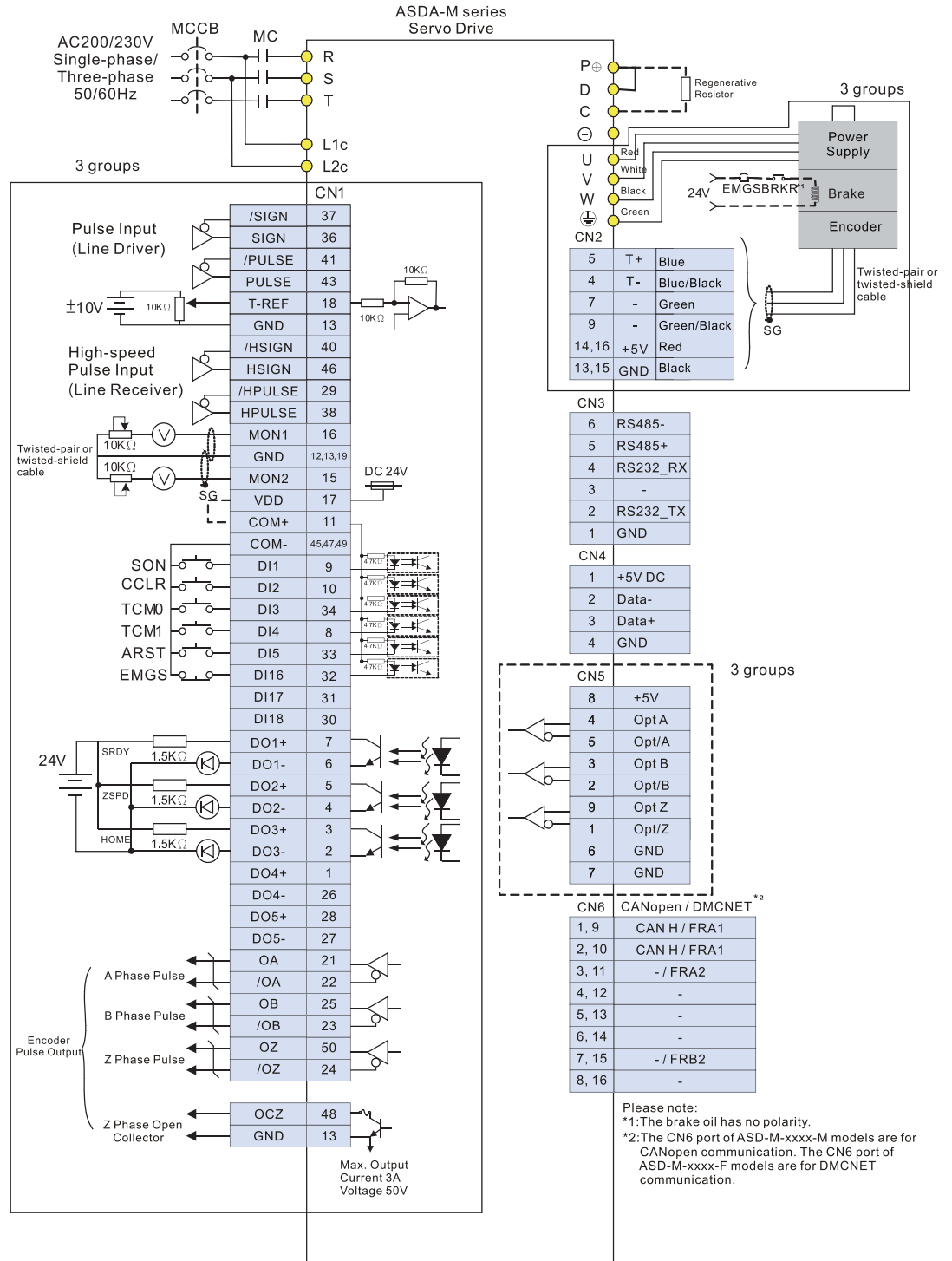
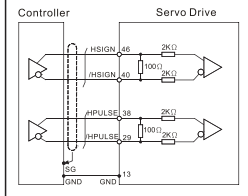
Pulse input (Open-collector PNP), for the use of external power supply



Pulse input (Line driver)



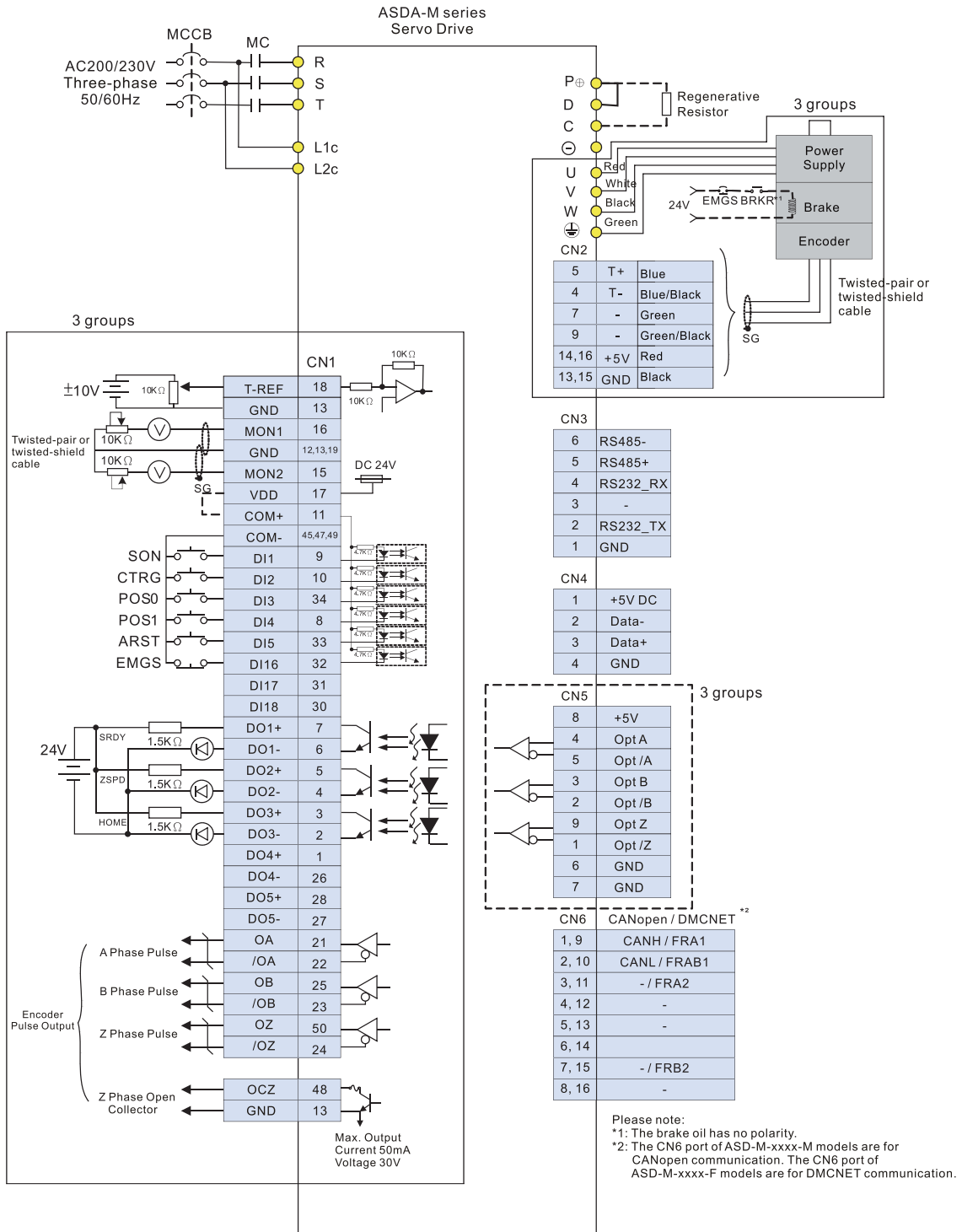
High-speed pulse input (Line driver)



Please note:
 *1: The brake oil has no polarity.
 *2: The CN6 port of ASD-M-xxxx-M models are for CANopen communication. The CN6 port of ASD-M-xxxx-F models are for DMCNET communication.

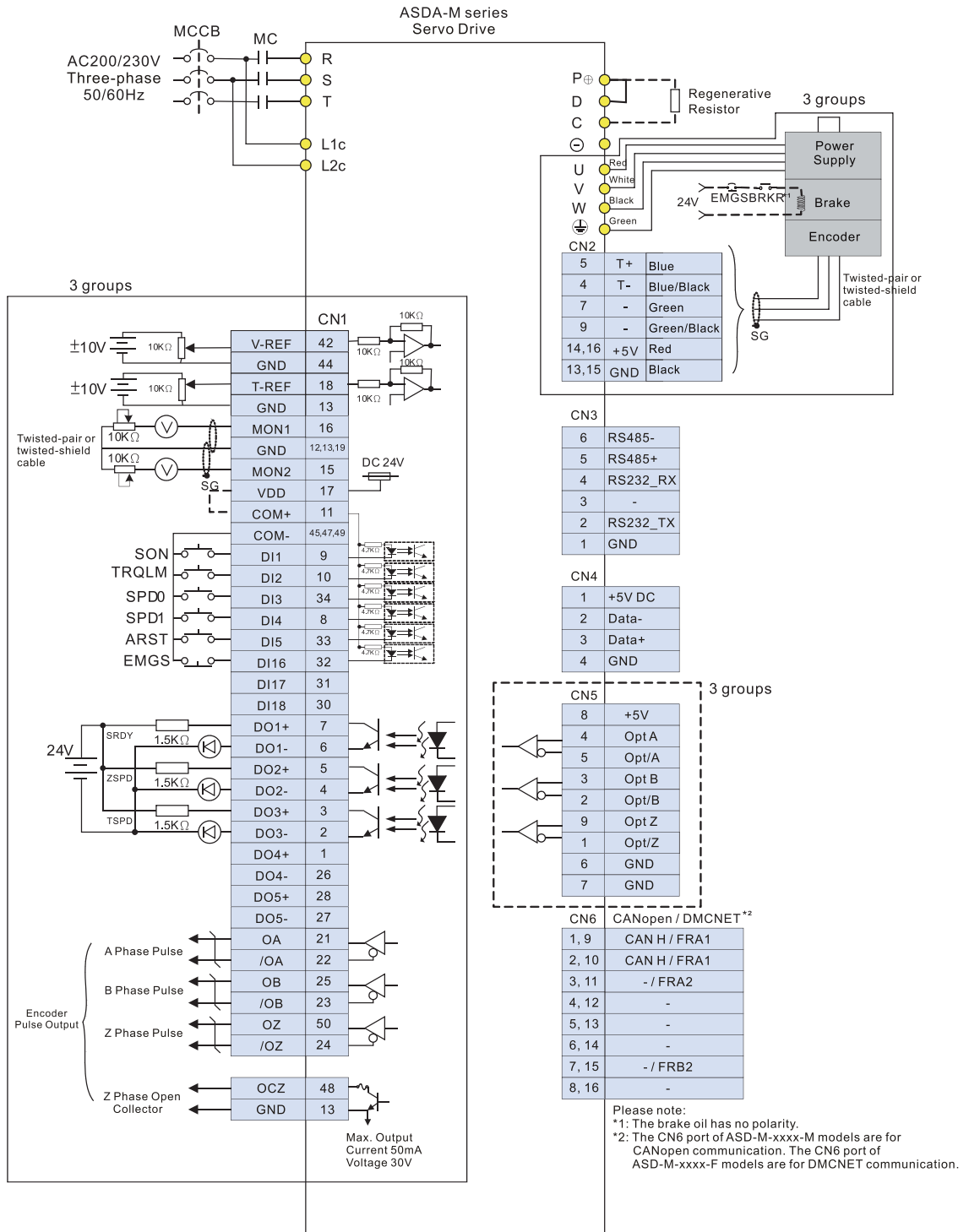
Standard Connection Examples

Position (PR) Control Mode (for Internal Procedure Control)



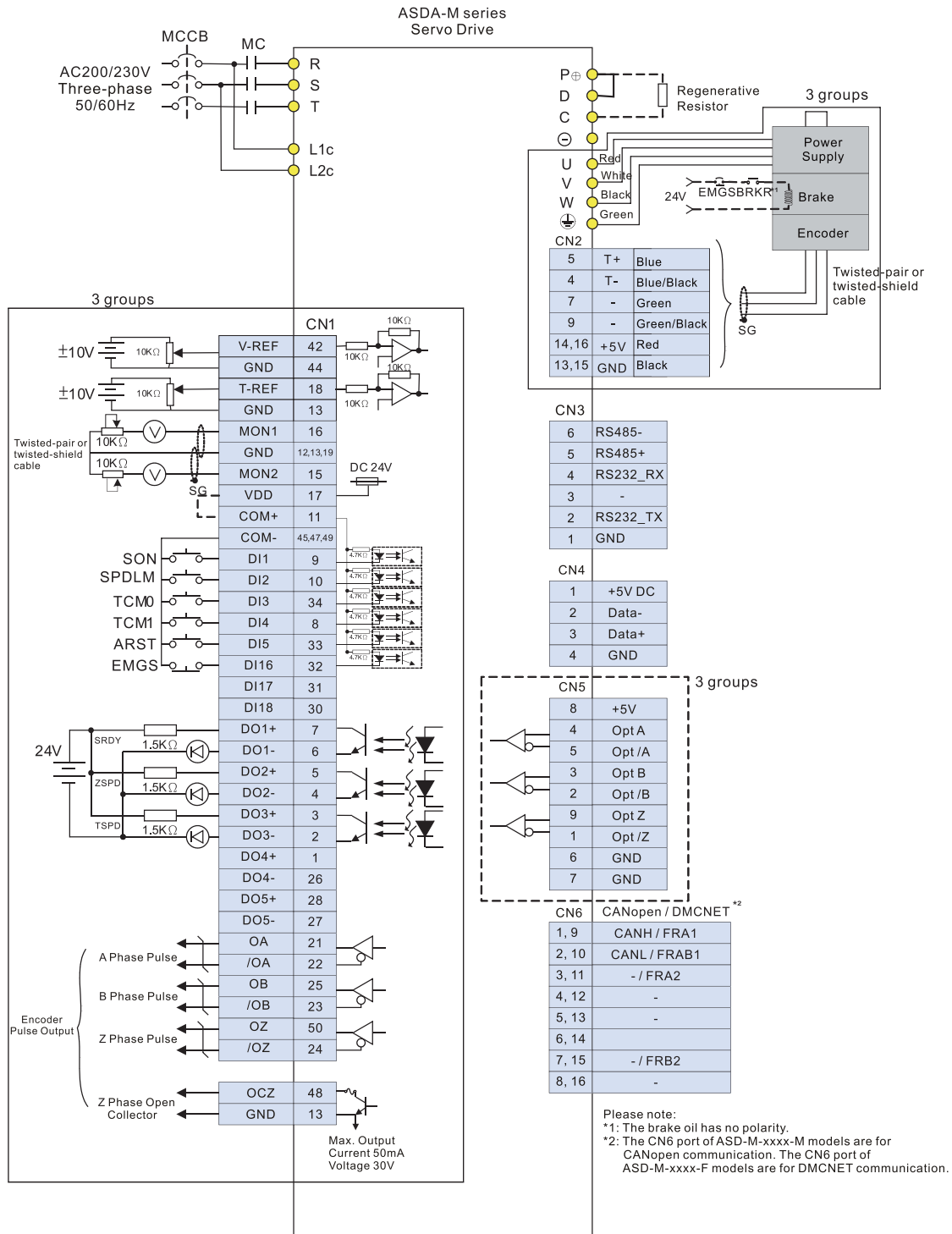
Standard Connection Examples

Speed (S,Sz) Control Mode (for Analog Voltage Input and Internal Parameter Setting)



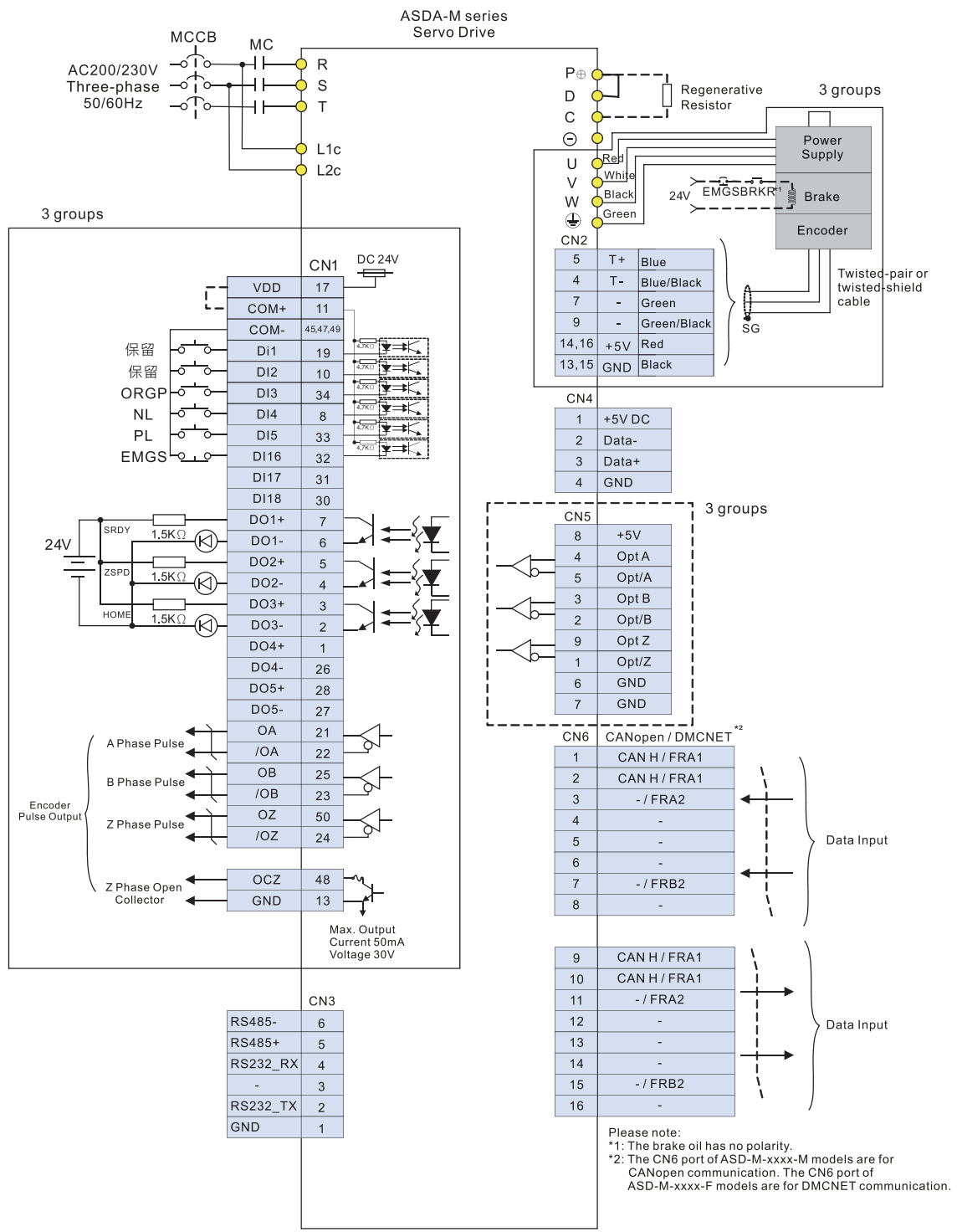
Standard Connection Examples

Torque (T,Tz) Control Mode (for Analog Voltage Input and Internal Parameter Setting)



Standard Connection Example

CANopen / DMCNET Communication Mode (for ASDA-M, ASDA-M-F and ASDA-M-R models)





Servo Motor Features



ECMA series servo motors are permanent AC servo motors, capable of combining with 200 to 230V ASDA-M series AC servo drives from 750W to 2kW.

There are seven frame sizes available: 40mm, 60mm, 80mm, 86mm, 100mm, 130mm and 180mm. The motor speed is from 1000 r/min to 5000 r/min and the torque output is from 0.92 N-m to 28.65 N-m.

In terms of optional configurations, the ECMA series provides brake and oil seal models to fully support our customers' needs. It also offers two different shaft selections, round shaft and keyway, for various applications.

Servo Motor Specifications

Low Inertia Series

ECMA Series	C△04			C△06			C△08		C△09		C△10	
	01	02	04	04	07	07	10	10	20			
Rated output power (kW)	0.1	0.2	0.4	0.4	0.75	0.75	1.0	1.0	2.0			
Rated torque (N-m) ^{*1}	0.32	0.64	1.27	1.27	2.39	2.39	3.18	3.18	6.37			
Maximum torque (N-m)	0.96	1.92	3.82	3.82	7.16	7.14	8.78	9.54	19.11			
Rated speed (r/min)	3000											
Maximum speed (r/min)	5000											
Rated current (A)	0.90	1.55	2.6	2.6	5.1	3.66	4.25	7.3	12.05			
Maximum current (A)	2.70	4.65	7.8	7.24	15.3	11	12.37	21.9	36.15			
Power rating (kW/s)	27.7	22.4	57.6	22.1	48.4	29.6	38.6	38.1	90.6			
Rotor moment of inertia (x10 ⁻⁴ kg·m ²)	0.037	0.177	0.277	0.68	1.13	1.93	2.62	2.65	4.45			
Mechanical time constant (ms)	0.75	0.80	0.53	0.73	0.62	1.72	1.20	0.74	0.61			
Torque constant-KT (N-m/A)	0.36	0.41	0.49	0.49	0.47	0.65	0.75	0.44	0.53			
Voltage constant-KE(mV/(r/min))	13.6	16	17.4	18.5	17.2	27.5	24.2	16.8	19.2			
Armature resistance (Ohm)	9.30	2.79	1.55	0.93	0.42	1.34	0.897	0.20	0.13			
Armature inductance (mH)	24.0	12.07	6.71	7.39	3.53	7.55	5.7	1.81	1.50			
Electrical time constant (ms)	2.58	4.3	4.3	7.96	8.36	5.66	6.35	9.3	11.4			
Insulation class	Class A (UL), Class B (CE)											
Insulation resistance	100MΩ, DC 500V											
Insulation strength	AC 1500 V, 60 seconds											
Weight (kg) (without brake)	0.5	1.2	1.6	2.1	3.0	2.9	3.8	4.3	6.2			
Weight (kg) (with brake)	0.8	1.5	2.0	2.9	3.8	3.69	5.5	4.7	7.2			
Max. radial shaft load (N)	78.4	196	196	245	245	245	245	490	490			
Max. thrust shaft load (N)	39.2	68	68	98	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	82			
Rotor moment of inertia (Kg·m ²) (with brake)	0.04	0.192	0.30	0.73	1.18	1.95	2.67	3.33	4.95			
Mechanical time constant (ms) (with brake)	0.81	0.85	0.57	0.78	0.65	1.74	1.22	0.93	0.66			
Brake holding torque [Nt·m (min)]	0.3	1.3	1.3	2.5	2.5	2.5	2.5	8	8			
Brake power consumption (at 20°C) [W]	7.2	6.5	6.5	8.2	8.2	8.2	8.2	18.5	18.5			
Brake release time [ms (Max)]	5	10	10	10	10	10	10	10	10			
Brake pull-in time [ms (Max)]	25	70	70	70	70	70	70	70	70			
Vibration grade (μm)	15											
Operating temperature (°C)	0°C to 40°C											
Storage temperature (°C)	-10°C to 80°C											
Operating humidity	20 to 90%RH (non-condensing)											
Storage humidity	20 to 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 fitted to the rotating shaft (an oil seal model is used))											
Approvals	 											

Footnote:

*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 : 250mm x 250mm x 6mm

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

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



ECMA-__ 18 : 550mm x 550mm x 30mm

Material type : Aluminum F40, F60, F80, F100, F130, F180

*2 The holding brake is used to hold the motor shaft, not for braking the rotation. Never use it for decelerating or stopping the machine.

Servo Motor Specifications

Medium / High Inertia Series

Model: ECMA Series	E△13				E△18	G△13		
	05	10	15	20	20	03	06	09
Rated output power (kW)	0.5	1.0	1.5	2.0	2.0	0.3	0.6	0.9
Rated torque (N-m) ^{*1}	2.39	4.77	7.16	9.55	9.55	2.86	5.73	8.59
Maximum torque (N-m)	7.16	14.3	21.48	28.65	28.65	8.59	17.19	21.48
Rated speed (r/min)	2000				1000			
Maximum speed (r/min)	3000				2000			
Rated current (A)	2.9	5.6	8.3	11.01	11.01	2.5	4.8	7.5
Maximum current (A)	8.7	16.8	24.9	33.03	33.03	7.5	14.4	22.5
Power rating (kW/s)	7.0	27.1	45.9	62.5	62.5	10.0	39.0	66.0
Rotor moment of inertia (× 10 ⁻⁴ kg.m ²)(without brake)	8.17	8.41	11.18	14.59	14.59	8.17	8.41	11.18
Mechanical time constant (ms)	1.91	1.51	1.10	0.96	0.96	1.84	1.40	1.06
Torque constant-KT (N-m/A)	0.83	0.85	0.87	0.87	0.87	1.15	1.19	1.15
Voltage constant-KE (mV/(r/min))	30.9	31.9	31.8	31.8	31.8	42.5	43.8	41.6
Armature resistance (Ohm)	0.57	0.47	0.26	0.174	0.174	1.06	0.82	0.43
Armature inductance (mH)	7.39	5.99	4.01	2.76	2.76	14.29	11.12	6.97
Electrical time constant (ms)	12.96	12.88	15.31	15.86	15.86	13.55	13.50	16.06
Insulation class	Class A (UL), Class B (CE)							
Insulation resistance	100MΩ, DC 500V							
Insulation strength	AC 1500 V, 60 seconds							
Weight (kg) (without brake)	6.8	7	7.5	7.8	13.5	6.8	7	7.5
Weight (kg) (with brake)	8.2	8.4	8.9	9.2	17.5	8.2	8.4	8.9
Max. radial shaft load (N)	490	490	490	490	1176	490	490	490
Max. thrust shaft load (N)	98	98	98	98	490	98	98	98
Power rating (kW/s) (with brake)	6.4	24.9	43.1	59.7	24.1	9.2	35.9	62.1
Rotor moment of inertia (× 10 ⁻⁴ kg.m ²)(with brake)	8.94	9.14	11.9	15.88	37.86	8.94	9.14	11.9
Mechanical time constant (ms) (with brake)	2.07	1.64	1.19	1.05	1.77	2.0	1.51	1.13
Brake holding torque [Nt-m (min)]	10.0	10.0	10.0	10.0	25.0	10.0	10.0	10.0
Brake power consumption (at 20°C) [W]	19.0	19.0	19.0	19.0	20.4	19.0	19.0	19.0
Brake release time [ms (Max)]	10	10	10	10	10	10	10	10
Brake pull-in time [ms (Max)]	70	70	70	70	70	70	70	70
Vibration grade (μm)	15							
Operating temperature (°C)	0°C to 40°C (32°F to 104°F)							
Storage temperature (°C)	-10°C to 80°C (-14°F to 176°F)							
Operating humidity	20 to 90%RH (non-condensing)							
Storage humidity	20 to 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 fitted to the rotating shaft (an oil seal model is used))							
Approvals	 							

Footnote:

*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 : 250mm x 250mm x 6mm

ECMA-__10 : 300mm x 300mm x 12mm

ECMA-__13 : 400mm x 400mm x 20mm

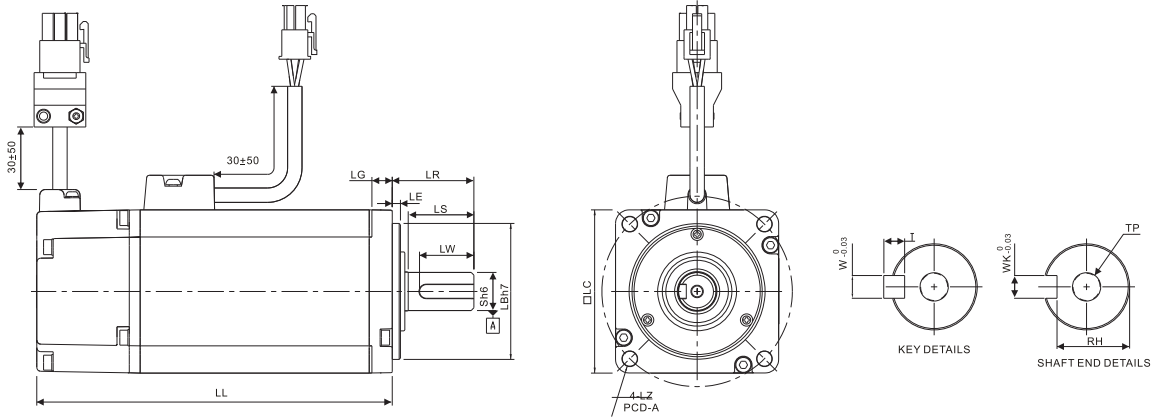
ECMA-__18 : 550mm x 550mm x 30mm

Material type : Aluminum F40, F60, F80, F100, F130, F180

*2 The holding brake is used to hold the motor shaft, not for braking the rotation. Never use it for decelerating or stopping the machine.

Servo Motor Dimensions

Frame Size 80mm and below (Units: mm)

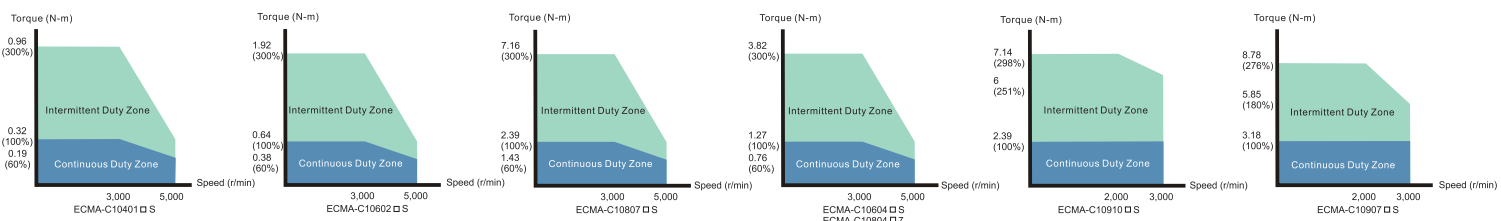


Model	C△0401□S	C△0602□S	C△0604□S	C△0804□7	C△0807□S	C△0907□S	C△0910□S
LC	40	60	60	80	80	86	86
LZ	4.5	5.5	5.5	6.6	6.6	6.6	6.6
LA	46	70	70	90	90	100	100
S	8 ^(+0/-0.009)	14 ^(+0/-0.011)	14 ^(+0/-0.011)	14 ^(+0/-0.011)	19 ^(+0/-0.013)	16 ^(+0/-0.011)	16 ^(+0/-0.011)
LB	30 ^(+0/-0.021)	50 ^(+0/-0.025)	50 ^(+0/-0.025)	70 ^(+0/-0.030)	70 ^(+0/-0.030)	80 ^(+0/-0.030)	80 ^(+0/-0.030)
LL (W/O Brake)	100.6	105.5	130.7	112.3	138.3	130.2	153.2
LL (With Brake)	136.6	141.6	166.8	152.8	178	161.3	184.3
LS (W/O Oil Seal)	20	27	27	27	32	30	30
LS (With Oil Seal)	20	24	24	24.5	29.5	30	30
LR	25	30	30	30	35	35	35
LE	2.5	3	3	3	3	3	3
LG	5	7.5	7.5	8	8	8	8
LW	16	20	20	20	25	20	20
RH	6.2	11	11	11	15.5	13	13
WK	3	5	5	5	6	5	5
W	3	5	5	5	6	5	5
T	3	5	5	5	6	5	5
TP	M3 Depth 8	M4 Depth 15	M4 Depth 15	M4 Depth 15	M6 Depth 20	M5 Depth 15	M5 Depth 15



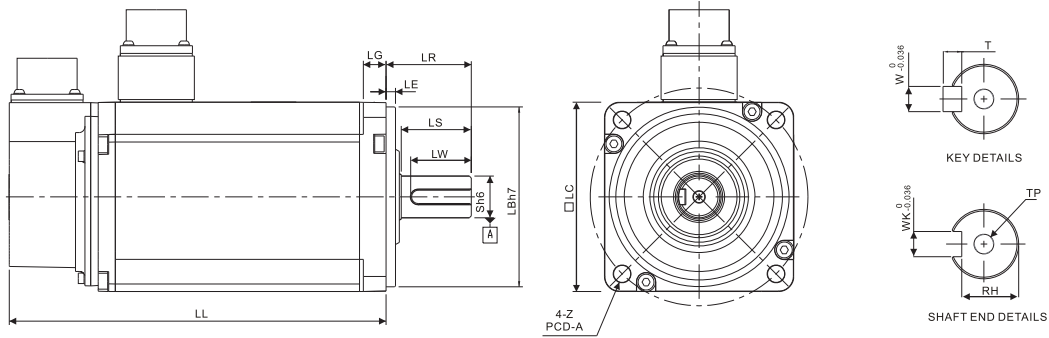
- 1) Dimensions are in millimeters.
- 2) Dimensions of the servo motors may be revised without prior notice.
- 3) The boxes (□) in the servo motor model names are for optional configurations (keyway, brake and oil seal).
- 4) The boxes (△) in the model names are for encoder resolution types (△=1: Incremental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

Torque Curves (T-N Curves)



Servo Motor Dimensions

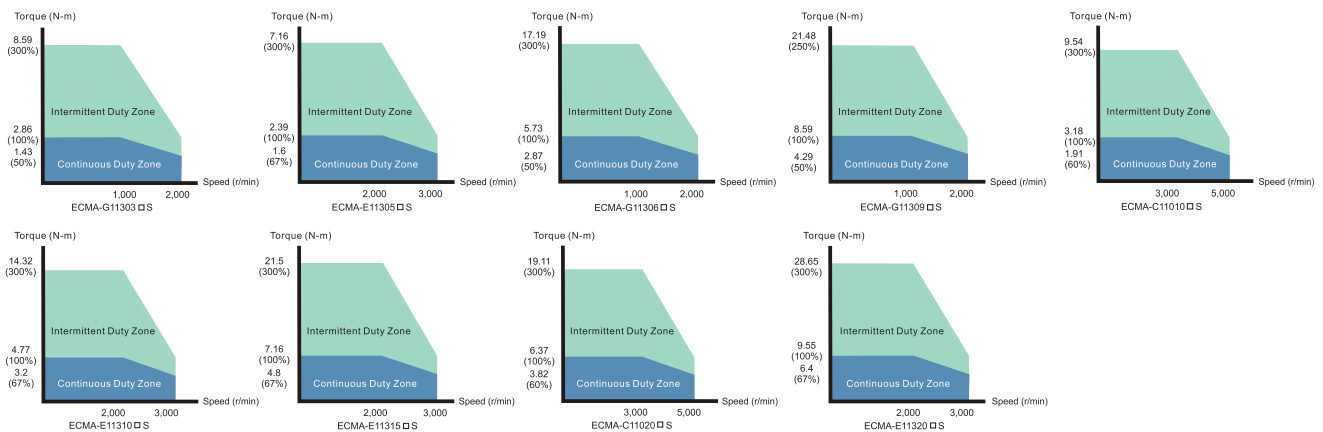
Frame Size 100m ~ 130m (Units:mm)



Model	G△1303□S	E△1305□S	G△1306□S	G△1309□S	C△1010□S	E△1310□S	E△1315□S	C△1020□S	E△1320□S
LC	130	130	130	130	100	130	130	100	130
LZ	9	9	9	9	9	9	9	9	9
LA	145	145	145	145	115	145	145	115	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)	22 ^(+0/-0.013)
LB	110 ^(+0/-0.035)	110 ^(+0/-0.035)	110 ^(+0/-0.035)	110 ^(+0/-0.035)	95 ^(+0/-0.035)	110 ^(+0/-0.035)	110 ^(+0/-0.035)	110 ^(+0/-0.035)	95 ^(+0/-0.035)
LL (W/O Brake)	147.5	147.5	147.5	163.5	153.3	147.5	167.5	199	187.5
LL (With Brake)	183.5	183.5	183.5	198	192.5	183.5	202	226	216
LS	47	47	47	47	37	47	47	37	47
LR	55	55	55	55	45	55	55	45	55
LE	6	6	6	6	5	6	6	5	6
LG	11.5	11.5	11.5	11.5	12	11.5	11.5	12	11.5
LW	36	36	36	36	32	36	36	32	36
RH	18	18	18	18	18	18	18	18	18
WK	8	8	8	8	8	8	8	8	8
W	8	8	8	8	8	8	8	8	8
T	7	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	M6 Depth 20

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

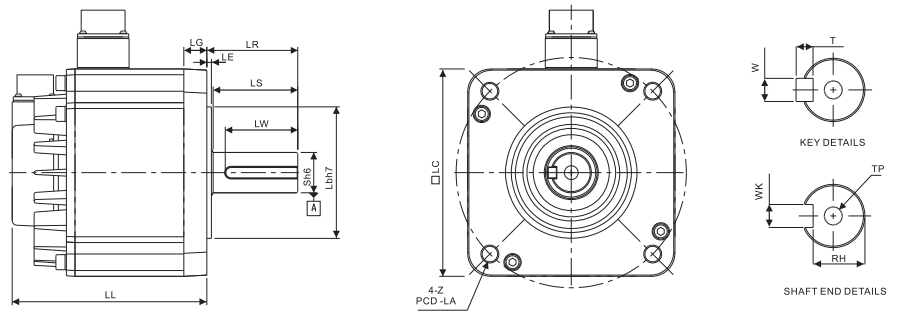
Torque Curves (T-N Curves)





Servo Motor Dimensions

Frame Size 180mm (Units: mm)

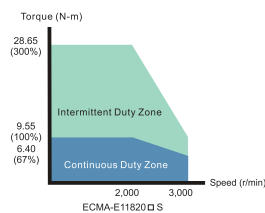


Model	E△1820□S
LC	180
LZ	13.5
LA	200
S	35 (+0/-0.016)
LB	114.3 (+0/-0.035)
LL (W/O Brake)	169
LI (With Brake)	203.1
LS	73
LR	79
LE	4
LG	20
LW	63
RH	30
WK	10
W	10
T	8
TP	M12 Depth 25



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

Torque Curves (T-N Curves)



DMCNET™ Remote I/O Modules

Delta Motion Control Network

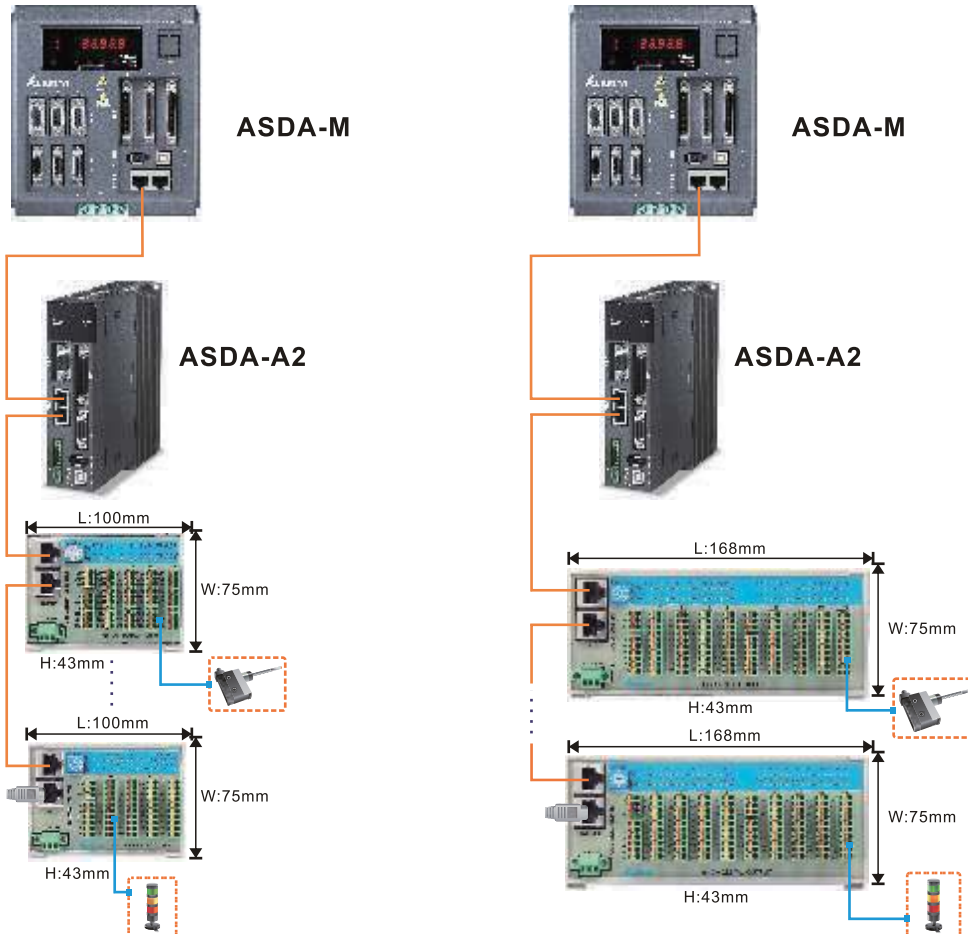
Distributed Extension Modules

- ASD-DMC-RM32MN/ASD-DMC-RM32NT
- ASD-DMC-RM64MN/ASD-DMC-RM64NT

Electrical Specifications

Item	RM32MN / RM64MN	RM32NT / RM64NT
Circuit Type	Single	Transistor
Signal Type	SINK / SOURCE	SINK
Power Supply Voltage	24VDC (5mA)	24VDC (0.1A / 1Point)
Response Time / Work Frequency	0 ~ 3ms (adjustable)	1KHz
Active Level (OFF → ON)	> 16.5VDC	20us
Active Level (ON → OFF)	< 8VDC	30us
Noise Immunity	ESD (IEC 61131-2, IEC 61000-4-2): 8KV Air Discharge EFT (IEC 61131-2, IEC 61000-4-4): Power Line: 2KV, Communication I/O: 1KV RS (IEC 61131-2, IEC 61000-4-3): 80MHz ~ 1GHz, 10V/m	
Operation / Storage Environment	Operation: 0°C ~ 50°C (32°F ~ 122°F) Storage: -20°C ~ 70°C (-4°F ~ 158°F)	

Installation & Wiring



DMCNET™ Remote I/O Modules

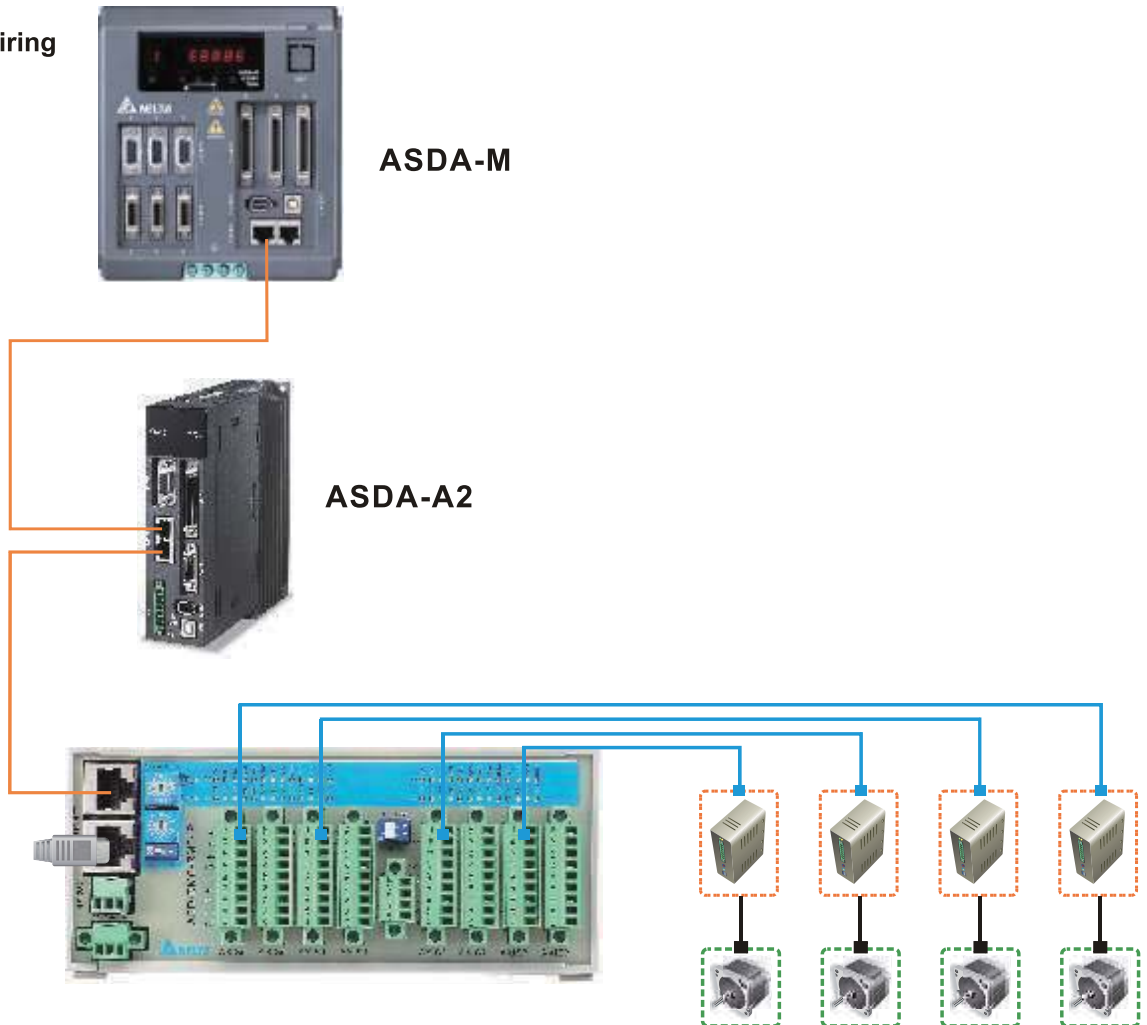
Delta Motion Control Network

ASD-DMC-RM04PI

Electrical Specifications

ASD-DMC-RM04PI		ASD-DMC-RM04PI		
Item	Input (QA,QB,QZ,DI1,DI2)	Item	Input (MEL,PEL,ORG,SLD)	Output (MEL,PEL,ORG,SLD)
Circuit Type	Single	Circuit Type	Single	Transistor
Signal Type	SINK	Signal Type	SINK / SOURCE	SINK
Power Supply Voltage	5VDC	Power Supply Voltage	24VDC (5mA)	5~24VDC (30mA / 1 Point)
Work Frequency	QA, QB, QZ : 200KHz (5mA / 1 Point) DI1, DI2 : 1KHz (5mA / 1 Point)	Work Frequency	1ms	CW, CCW : 200KHz DO1, DO2 : 1KHz
Noise Immunity	ESD (IEC 61131-2, IEC 61000-4-2): 8KV Air Discharge EFT (IEC 61131-2, IEC 61000-4-4): Power Line: 2KV, Communication I/O: 1KV RS (IEC 61131-2, IEC 61000-4-3): 80MHz ~ 1GHz, 10V/m	Active Level (OFF → ON)	> 16.5VDC	--
		Active Level (ON → OFF)	< 8VDC	--
Operation / Storage Environment	Operation: 0°C ~ 50°C (32°F ~ 122°F) Storage: -20°C ~ 70°C (-4°F ~ 158°F)	Noise Immunity	ESD (IEC 61131-2, IEC 61000-4-2): 8KV Air Discharge EFT (IEC 61131-2, IEC 61000-4-4): Power Line: 2KV, Communication I/O: 1KV RS (IEC 61131-2, IEC 61000-4-3): 80MHz ~ 1GHz, 10V/m	
		Operation / Storage Environment	Operation: 0°C ~ 50°C (32°F ~ 122°F) Storage: -20°C ~ 70°C (-4°F ~ 158°F)	

Installation & Wiring



■ ASD-DMC-RM04DA/ASD-DMC-RM04AD

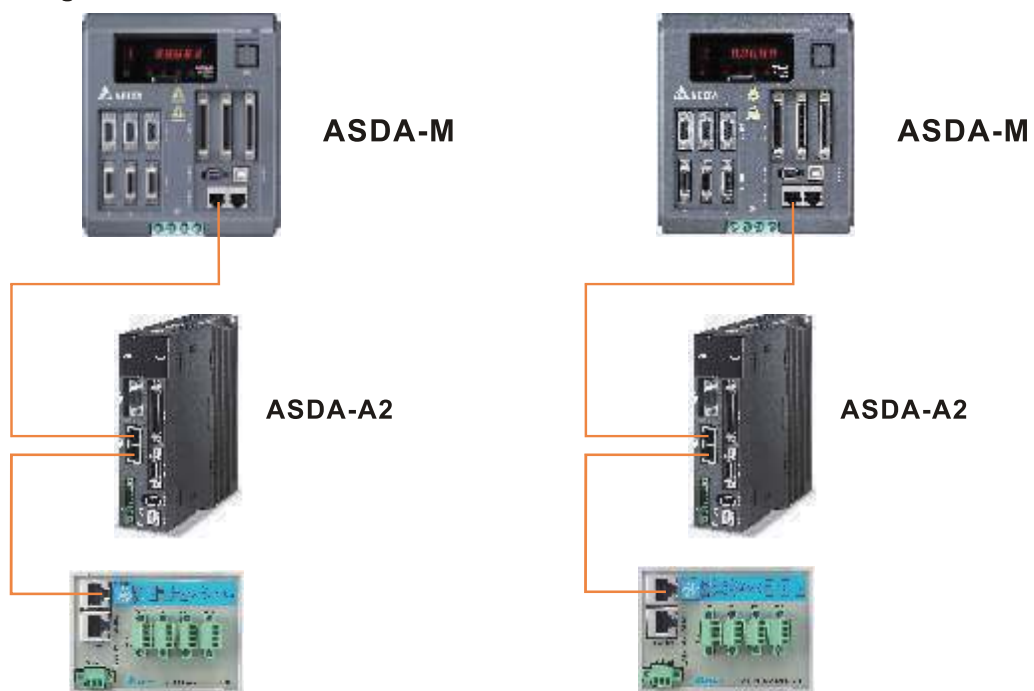
Electrical Specifications

ASD-DMC-RM04DA	
Item	Digital to Analog - Output Point (RM04DA)
Analog Output Channel	4-Channel / Module
Range of Analog Voltage Output	-10~10V : -5~5V : 0~10V : 0~5V
Range of Analog Current Output	0~24mA : 0~20mA : 4~20mA
Over Range of Analog Output	10%
Max. Output Current	24mA
Allowable Load Impedance	0~500Ω
Range of Digital Data	0~4096
Resolution	16bits
DC Output Impedance	0.3Ω
Response Time	1ms
Digital Data Format	16 significant bits
Isolation	Internal circuit and analog output terminals are isolated by optical coupler.
Protection	Voltage output is protected by a circuit breaker. But, a short circuit lasting for too long may cause damage to internal circuits. Current output can be open circuit.
Noise Immunity	ESD (IEC 61131-2, IEC 61000-4-2): 8KV Air Discharge EFT (IEC 61131-2, IEC 61000-4-4): Power Line: 2KV, Communication I/O: 1KV RS (IEC 61131-2, IEC 61000-4-3): 80MHz ~ 1GHz, 10V/m
Operation / Storage Environment	Operation: 0°C ~ 50°C (32°F ~ 122°F) Storage: -20°C ~ 70°C (-4°F ~ 158°F)

Electrical Specifications

ASD-DMC-RM04AD	
Item	Analog to Digital - Input Point (RM04AD)
Analog Output Channel	4-Channel / Module
Range of Analog Voltage Output	-10~10V : -5~5V : 0~10V : 0~5V
Range of Analog Current Output	0~20mA
Range of Digital Data	0~65535
Resolution	16bits
Voltage Input Impedance	140KΩ
Current Input Impedance	249Ω
Overall Accuracy	±0.5% when in full scale (25°C, 77°F) ±1% when in full scale within the range of 0°C ~ 55°C, 32°F ~ 131°F
Response Time	Min. 1ms. Max. 3ms × the number of channels
Isolation	Internal circuit and analog output terminals are isolated by optical coupler.
Range of Absolute Voltage Input	-15 ~ 15 V
Range of Absolute Current Input	32mA
Digital Data Format	16 significant bits
Noise Immunity	ESD (IEC 61131-2, IEC 61000-4-2): 8KV Air Discharge EFT (IEC 61131-2, IEC 61000-4-4): Power Line: 2KV, Communication I/O: 1KV RS (IEC 61131-2, IEC 61000-4-3): 80MHz ~ 1GHz, 10V/m
Operation / Storage Environment	Operation: 0°C ~ 50°C (32°F ~ 122°F) Storage: -20°C ~ 70°C (-4°F ~ 158°F)

Installation & Wiring



Part Names and Functions

LED Display / Operation Panel

■ LED Display

The 5 digit, 7 segment LED displays the servo status or fault codes

■ Operation Panel

Function keys used to perform status display, monitor and diagnostic, function and parameter setting.

Function Keys:

MODE: Press this key to select/change mode

SHIFT: Press this key to shift cursor to the left

UP: Press this key to increase values on the display

DOWN: Press this key to decrease values on the display

SET: Press this key to store data

Charge LED

- A lit LED indicates that either power is connected to the servo drive or a residual charge is present in the drive's internal power components.

I/O Interface

- Used to connect Delta's DVP series PLC or other external controllers for controlling I/O signals.

Full-Closed Loop Control Interface

- Used to connect linear scale and encoder for controlling A, B, Z phase signals for inputs of X, Y, Z axes.

Motor Encoder Interface

- Used to connect the encoder of the servo motor and feedback the signals to X, Y, Z axes of the servo drive.

Serial Communication Port

- Used to connect PLC, HMI, and other controllers for RS-485 / RS-232 serial communication.

Ground Terminal

- Used to connect grounding wire of power supply and servo motor.

High-speed Communication Port

- Used to connect CANopen networks.
- DMCNE Tinterface, supporting motion modes for CANopen DS402 implementation.
- CANbus interface, supporting motion modes for CANopen DS402 implementation.

USB Connection Port

Ver 1.1 USB is equipped as standard.

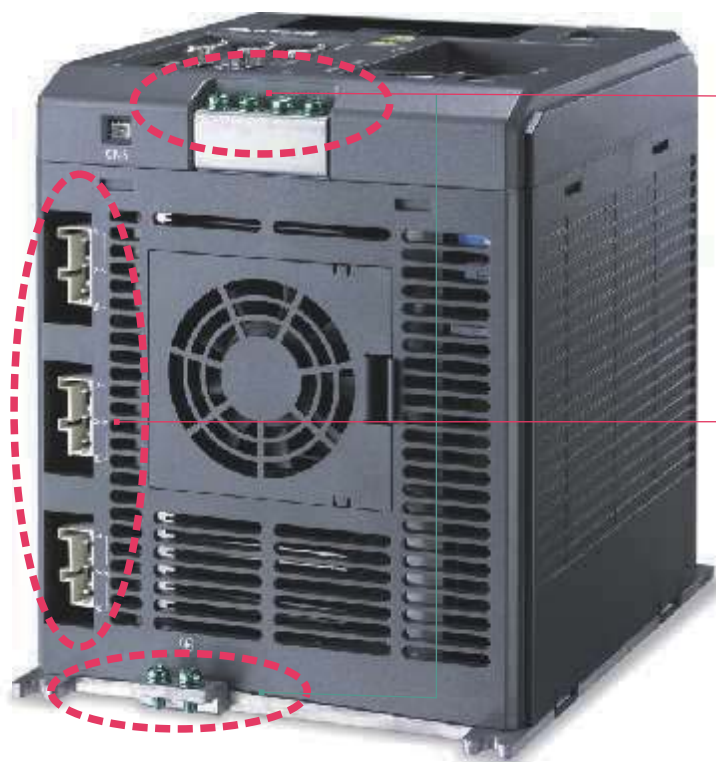
- Direct connectivity to personal computers or notebooks, capable of accessing data through ASDA-Soft configuration software.
- Monitor speed upon software is up to 1Mbps.





Control Circuit Terminal / Main Circuit Terminal / Internal & External Regenerative Resistor Terminal

- Control Circuit Terminal (L1c, L2c)
L1c, L2c are used to connect 200~230Vac, 50/60Hz single-phase or three-phase power supply.
- Main Circuit Terminal (R, S, T)
Used to connect 200~230Vac, 50/60Hz commercial power supply.
- When using an external braking unit, connect it to P \oplus and \ominus .
- Internal & External Regenerative Resistor Terminal
 1. When using an external resistor, connect it to P \oplus and C, and ensure an open circuit between P \oplus and D.
 2. When using an internal resistor, ensure the circuit is closed between P \oplus and D, and the circuit is open between P \oplus and C. (Note: Please refer to the table of regenerative resistor specifications for the models with a built-in regenerative resistor.)
 3. When using an external braking unit, connect it to P \oplus and \ominus , and ensure an open circuit between P \oplus and D, and P \oplus and C



Ground Terminal

- Used to connect grounding wire of power supply and servo motor.

Servo Motor Output (U, V, W)

- Used to connect servo motor. Never connect the output terminal to main circuit power as the AC drive may be damaged beyond repair if incorrect cables are connected to the output terminals.

Optional Accessories

Quick Connectors

- Used for 750W to 2kW servo drives
- One operating lever is provided for wire to terminal block insertion.



Power Cables

- 3m and 5m standard cables are available.
- Customized service is offered to meet the needs of customers.
- Two types are selectable: with brake and without brake.
- For selecting a power cable, please refer to the table of servo drive, servo motor and accessories combinations on page 49~53.



Encoder Cables

- 3m and 5m standard cables are available.
- Customized service is offered to meet the needs of customers.
- For selecting an encoder cable, please refer to the table of servo drive, servo motor and accessories combinations on page 49~53.



RS-232 Communication Cables

- Connects ASDA-M to PLC, HMI, and other controllers via RS-232 communication.
- Standard cable length is 3m.
- Delta Part Number: ASD-CARS0003





Terminal Block Modules

- Easy installation and wiring
- 0.5m connection cable is provided. Easy to reduce the space required.
- Easy to expand system's I/O configuration.
- Delta Part Number: ASD-BM-50A

Regenerative Resistors

- For selecting a regenerative resistor, please refer to the table of regenerative resistor specifications on page 50.

USB Communication Cables (for PC)

- Connects ASDA-A2 to a PC (via ASDA-Soft configuration software)
- USB1.1 is equipped as standard.
- Delta Part Number: DOP-CAUSBAB

CANopen Accessories

- Delta's TAP-CN03 distribution box connects ASDA-A2 to Delta's PLC CAN Master.
- CANopen communication cable is provided. Standard cable length is 0.5m and 1m.
- For selecting CANopen accessories, please refer to the table of other accessories on page 49.

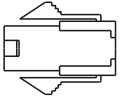
RS-485 Connectors

- Used to connect multiple ASDA-M systems by RS-485 interface through Modbus serial communication.
- Delta Part Number: ASD-CNIE0B06

Optional Cables and Connectors

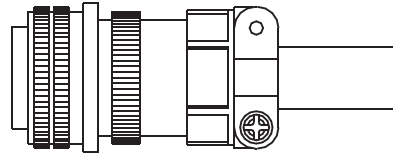
Power Connectors

ASDBCAPW0000



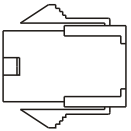
Title	Part No.	Manufacturer
Housing	C4201H00-2*2PA	JOWLE
Terminal	C4201TOP-2	JOWLE

ASD-CAPW1000



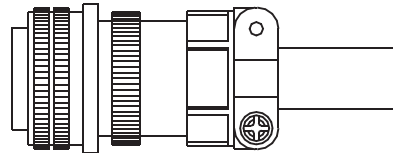
3106A-20-18S

ASDBCAPW0100



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

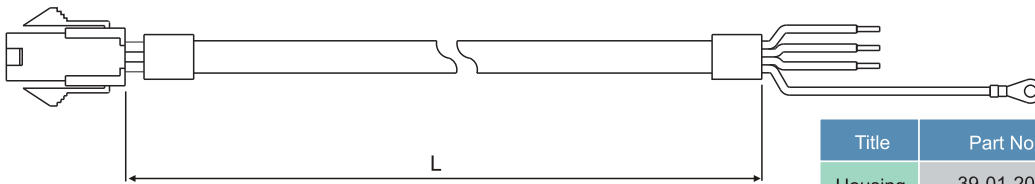
ASD-CAPW2000



3106A-24-11S

Power Cables

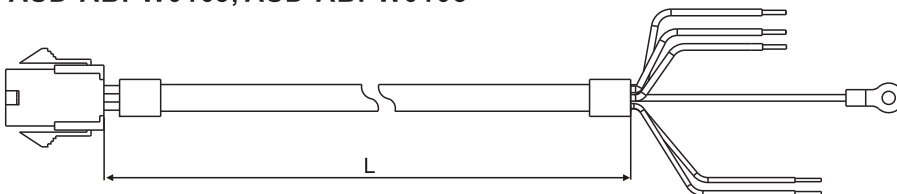
ASD-ABPW0003, ASD-ABPW0005



Title	Part No.	Manufacturer
Housing	39-01-2041	JOWLE
Terminal	39-00-0040	JOWLE

Item	Part No.	L	
		mm	inch
1	ASD-ABPW0003	3000 ±100	118±4
2	ASD-ABPW0005	5000±100	197±4

ASD-ABPW0103, ASD-ABPW0105

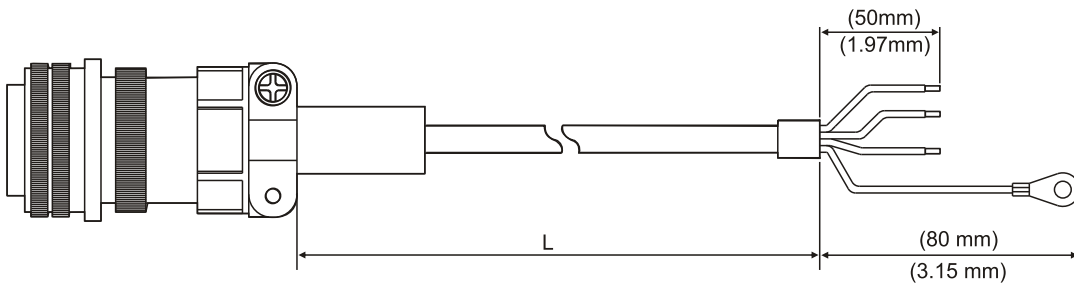


Title	Part No.	Manufacturer
Housing	C4201H00-2*3PA	JOWLE
Terminal	C4201TOP-2	JOWLE

Item	Part No.	L	
		mm	inch
1	ASD-ABPW0103	3000±100	118±4
2	ASD-ABPW0105	5000±100	197±4

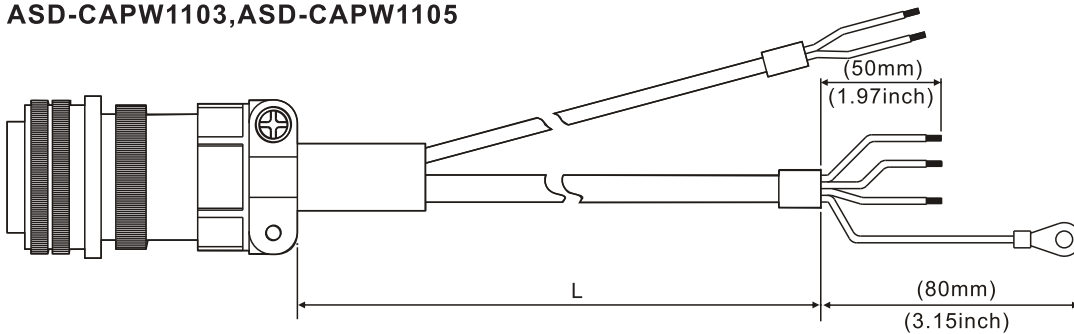
Power Cables

ASD-CAPW1003, ASD-CAPW1005



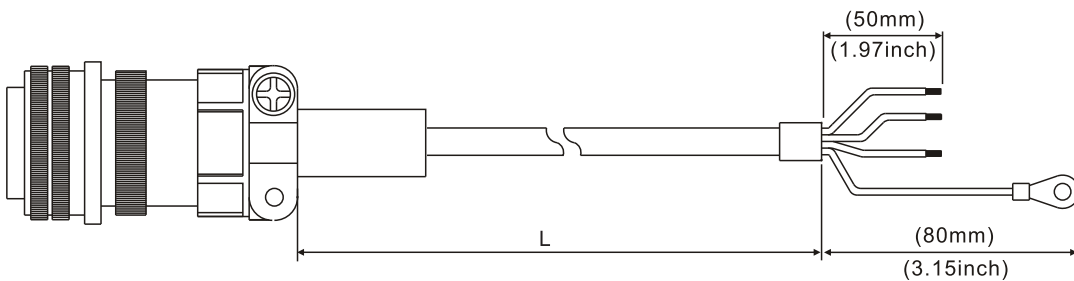
Item	Part No.	Straight	L	
			mm	inch
1	ASD-CAPW1003	3106A-20-18S	3000±100	118±4
2	ASD-CAPW1005	3106A-20-18S	5000±100	197±4

ASD-CAPW1103, ASD-CAPW1105



Item	Part No.	Straight	L	
			mm	inch
1	ASD-CAPW1103	3106A-20-18S	3000±100	118±4
2	ASD-CAPW1105	3106A-20-18S	5000±100	197±4

ASD-A2PW1003, ASD-A2PW1005

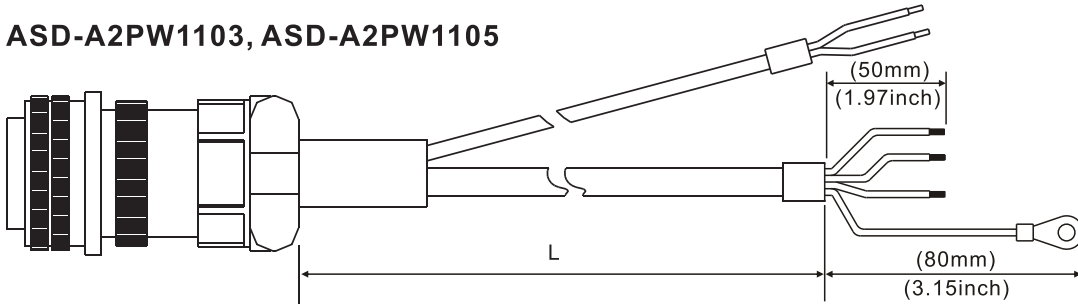


Item	Part No.	Straight	L	
			mm	inch
1	ASD-A2PW1003	3106A-20-18S	3000±100	118±4
2	ASD-A2PW1005	3106A-20-18S	5000±100	197±4

Optional Cables and Connectors

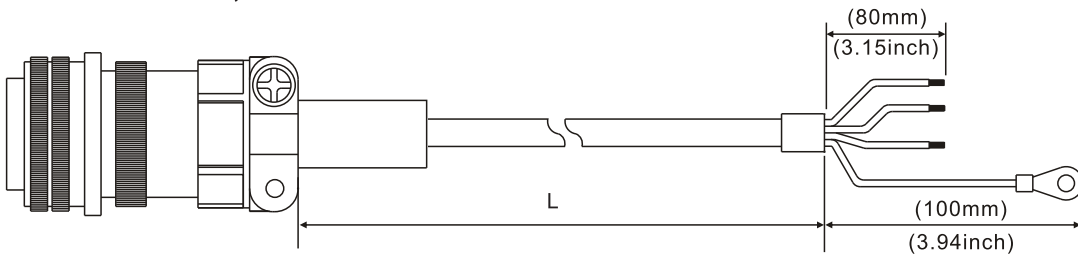
Power Cables

ASD-A2PW1103, ASD-A2PW1105



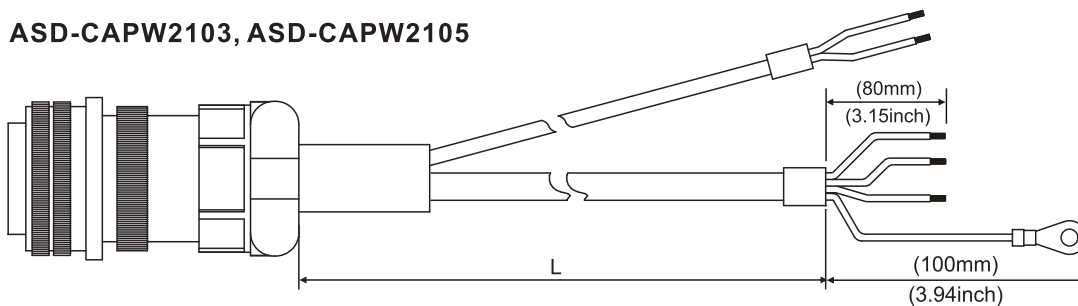
Item	Part No.	Straight	L	
			mm	inch
1	ASD-A2PW1103	3106A-20-18S	3000±100	118±4
2	ASD-A2PW1105	3106A-20-18S	5000±100	197±4

ASD-CAPW2003, ASD-CAPW2005



Item	Part No.	Straight	L	
			mm	inch
1	ASD-CAPW2003	3106A-24-11S	3000±100	118±4
2	ASD-CAPW2005	3106A-24-11S	5000±100	197±4

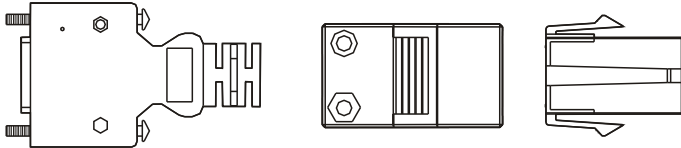
ASD-CAPW2103, ASD-CAPW2105



Item	Part No.	Straight	L	
			mm	inch
1	ASD-CAPW2103	3106A-24-11S	3000±100	118±4
2	ASD-CAPW2105	3106A-24-11S	5000±100	197±4

Encoder Connectors

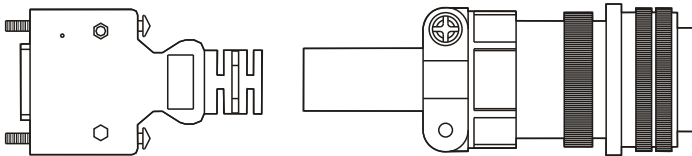
ASD-ABEN0000



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

Encoder Cables

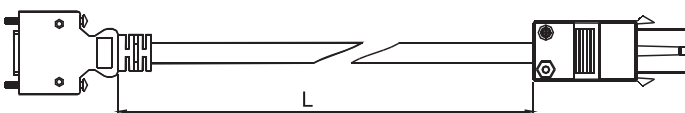
ASD-CAEN1000



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

Encoder Cables

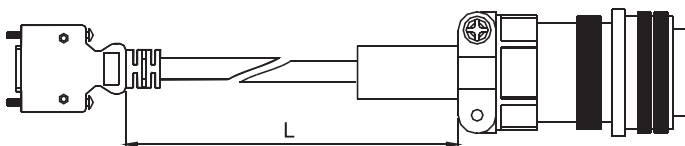
ASD-ABEN0003, ASD-ABEN0005



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

Item	Part No.	L	
		mm	inch
1	ASD-ABEN0003	3000±100	118±4
2	ASD-ABEN0005	5000±100	197±4

ASD-CAEN1003, ASD-CAEN1005



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

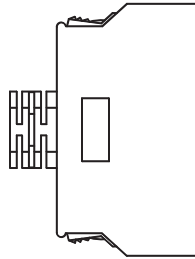
Item	Part No.	Straight	L	
			mm	inch
1	ASD-CAEN1003	3106A-20-29S	3000±100	118±4
2	ASD-CAEN1005	3106A-20-29S	5000±100	197±4

Optional Cables and Connectors

I/O Signal Connector

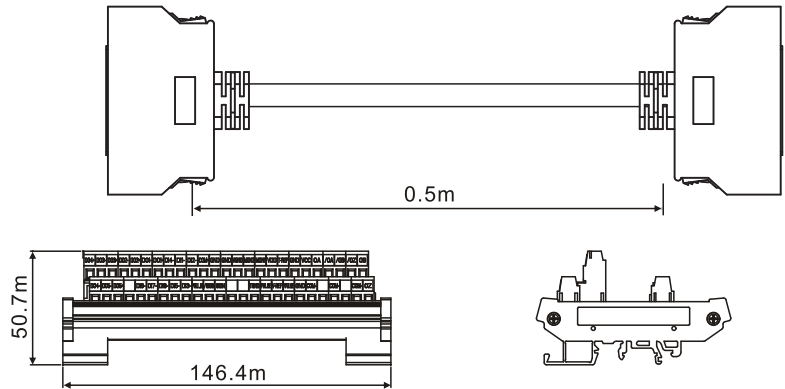
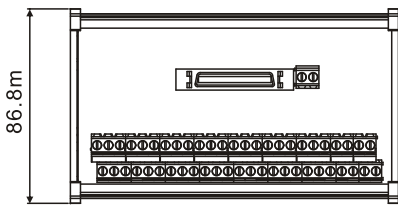
ASD-CNSC0050

Vendor Name	Vendor P/N
3M TAIWAN LTD	10150-3000PE
3M TAIWAN LTD	10350-52A0-008



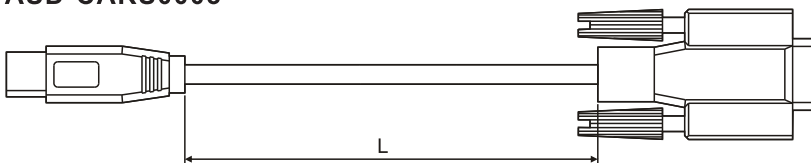
Terminal Block Module

ASD-BM-50A



RS-232 Communication Cable

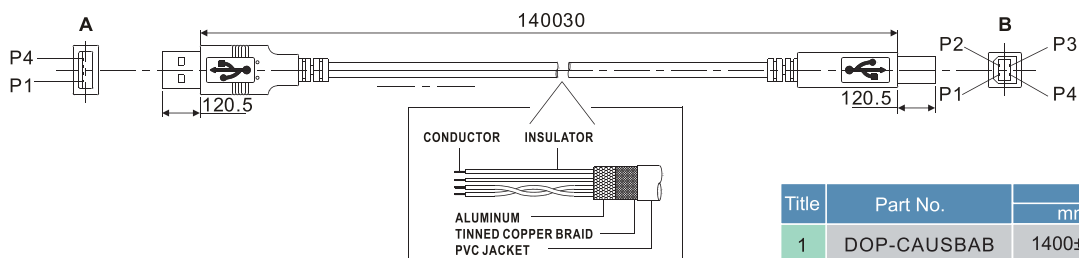
ASD-CARS0003



Item	Part No.	L	
		mm	inch
1	ASD-CARS0003	3000±100	118±4

Communication Cable between Drive and Computer (for PC)

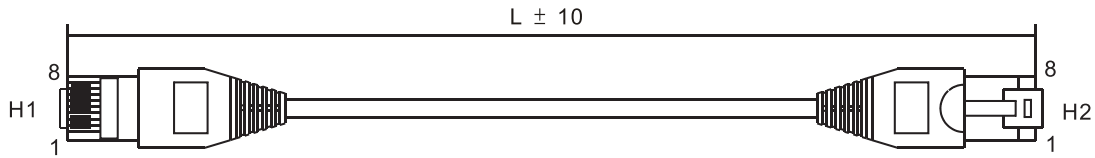
DOP-CAUSBAB



Title	Part No.	L	
		mm	inch
1	DOP-CAUSBAB	1400±30	55±1.2

CANopen Communication Cable

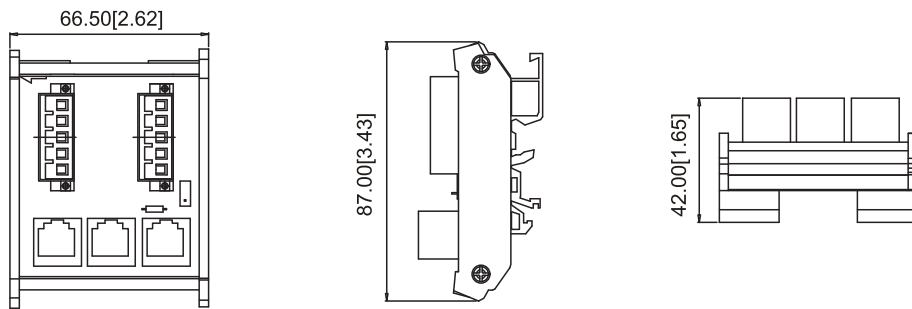
TAP-CB03, TAP-CB04



Title	Part No.	L	
		mm	inch
1	TAP-CB03	500±10	19±0.4
2	TAP-CB04	1000±10	39±0.4

CANopen Distribution Box

TAP-CN03

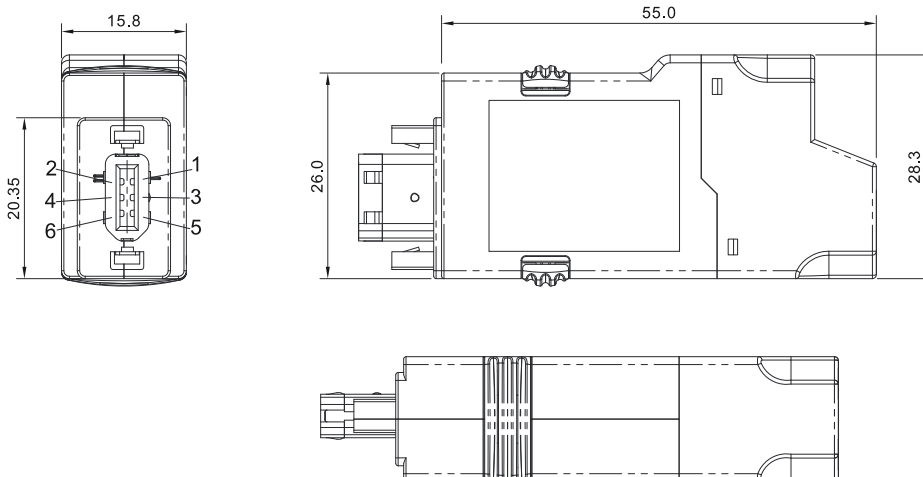


NOTE

Accessories images shown here may differ from actual product appearance. Please refer to the actual product appearance.

RS-485 Connector

ASD-CNIE0B06



Servo Drive, Servo Motor & Accessories Combinations

750W Servo Drive and 100W Low Inertia Servo Motor

Servo Drive	ASD-M-0721-□
Low Inertia Servo Motor	ECMA-C△0401□S
Power Cable (Without Brake)	ASD-ABPW000X
Power Connector (Without Brake)	ASDBCAPW0000
Power Cable (With Brake)	ASD-ABPW010X
Power Connector (With Brake)	ASDBCAPW0100
Incremental Encoder Cable	ASD-ABEN000X
Absolute Encoder Cable	ASD-A2EB000X
Encoder Connector	ASD-ABEN0000

(X=3 indicates that the cable length is 3m; X=5 indicates that the cable length is 5m)

750W Servo Drive and 200W Low Inertia Servo Motor

Servo Drive	ASD-M-0721-□
Low Inertia Servo Motor	ECMA-C△0602□S
Power Cable (Without Brake)	ASD-ABPW000X
Power Connector (Without Brake)	ASDBCAPW0000
Power Cable (With Brake)	ASD-ABPW010X
Power Connector (With Brake)	ASDBCAPW0100
Incremental Encoder Cable	ASD-ABEN000X
Absolute Encoder Cable	ASD-A2EB000X
Encoder Connector	ASD-ABEN0000

(X=3 indicates that the cable length is 3m; X=5 indicates that the cable length is 5m)

750W Servo Drive and 400W Low Inertia Servo Motor

Servo Drive	ASD-M-0721-□
Low Inertia Servo Motor	ECMA-C△0604□S ECMA-C△0804□7
Power Cable (Without Brake)	ASD-ABPW000X
Power Connector (Without Brake)	ASDBCAPW0000
Power Cable (With Brake)	ASD-ABPW010X
Power Connector (With Brake)	ASDBCAPW0100
Incremental Encoder Cable	ASD-ABEN000X
Absolute Encoder Cable	ASD-A2EB000X
Encoder Connector	ASD-ABEN0000

(X=3 indicates that the cable length is 3m; X=5 indicates that the cable length is 5m)

750W Servo Drive and 500W Medium Inertia Servo Motor

Servo Drive	ASD-M-0721-□
Medium Inertia Servo Motor	ECMA-E△1305□S
Power Cable (Without Brake)	ASD-CAPW100X
Power Cable (With Brake)	ASD-CAPW110X
Power Connector	ASD-CAPW1000
Incremental Encoder Cable	ASD-CAEN100X
Absolute Encoder Cable	ASD-A2EB100X
Encoder Connector	ASD-CAEN1000

(X=3 indicates that the cable length is 3m; X=5 indicates that the cable length is 5m)

750W Servo Drive and 300W High Inertia Servo Motor

Servo Drive	ASD-M-0721-□
Medium-High Inertia Servo Motor	ECMA-G△1303□S
Power Cable (Without Brake)	ASD-CAPW100X
Power Cable (With Brake)	ASD-CAPW110X
Power Connector	ASD-CAPW1000
Incremental Encoder Cable	ASD-CAEN100X
Absolute Encoder Cable	ASD-A2EB100X
Encoder Connector	ASD-CAEN1000

(X=3 indicates that the cable length is 3m; X=5 indicates that the cable length is 5m)

750W Servo Drive and 750W Low Inertia Servo Motor

Servo Drive	ASD-M-0721-□
Low Inertia Servo Motor	ECMA-C△0807□S ECMA-C△0907□S
Power Cable (Without Brake)	ASD-ABPW000X
Power Connector (Without Brake)	ASDBCAPW0000
Power Cable (With Brake)	ASD-ABPW010X
Power Connector (With Brake)	ASDBCAPW0100
Incremental Encoder Cable	ASD-ABEN000X
Absolute Encoder Cable	ASD-A2EB000X
Encoder Connector	ASD-ABEN0000

((X=3 indicates that the cable length is 3m; X=5 indicates that the cable length is 5m)

Servo Drive, Servo Motor & Accessories Combinations

750W Servo Drive and 600W High Inertia Servo Motor

Servo Drive	ASD-M-0721-□
Medium-High Inertia Servo Motor	ECMA-G△1306□S
Power Cable (Without Brake)	ASD-CAPW100X
Power Cable (With Brake)	ASD-CAPW110X
Power Connector	ASD-CAPW1000
Incremental Encoder Cable	ASD-CAEN100X
Absolute Encoder Cable	ASD-A2EB100X
Encoder Connector	ASD-CAEN1000

(X=3 indicates that the cable length is 3m; X=5 indicates that the cable length is 5m)

1.5kW Servo Drive and 1kW Low Inertia Servo Motor

Servo Drive	ASD-M-1521-□
Low Inertia Servo Motor	ECMA-C△1010□S
Power Cable (Without Brake)	ASD-CAPW100X
Power Cable (With Brake)	ASD-CAPW110X
Power Connector	ASD-CAPW1000
Incremental Encoder Cable	ASD-CAEN100X
Absolute Encoder Cable	ASD-A2EB100X
Encoder Connector	ASD-CAEN1000

(X=3 indicates that the cable length is 3m; X=5 indicates that the cable length is 5m)

1.5kW Servo Drive and 1kW Medium Inertia Servo Motor

Servo Drive	ASD-M-1521-□
Low Inertia Servo Motor	ECMA-C△0910□S
Power Cable (Without Brake)	ASD-ABPW000X
Power Connector (Without Brake)	ASDBCAPW0000
Power Cable (With Brake)	ASD-ABPW010X
Power Connector (With Brake)	ASDBCAPW0100
Incremental Encoder Cable	ASD-ABEN000X
Absolute Encoder Cable	ASD-A2EB000X
Encoder Connector	ASD-ABEN0000

(X=3 indicates that the cable length is 3m; X=5 indicates that the cable length is 5m)

1.5kW Servo Drive and 1kW Medium Inertia Servo Motor

Servo Drive	ASD-M-1521-□
Medium Inertia Servo Motor	ECMA-E△1310□S
Power Cable (Without Brake)	ASD-CAPW100X
Power Cable (With Brake)	ASD-CAPW110X
Power Connector	ASD-CAPW1000
Incremental Encoder Cable	ASD-CAEN100X
Absolute Encoder Cable	ASD-A2EB100X
Encoder Connector	ASD-CAEN1000

(X=3 indicates that the cable length is 3m; X=5 indicates that the cable length is 5m)

1.5kW Servo Drive and 900W High Inertia Servo Motor

Servo Drive	ASD-M-1521-□
Medium-High Inertia Servo Motor	ECMA-E△1309□S
Power Cable (Without Brake)	ASD-CAPW100X
Power Cable (With Brake)	ASD-CAPW110X
Power Connector	ASD-CAPW1000
Incremental Encoder Cable	ASD-CAEN100X
Absolute Encoder Cable	ASD-A2EB100X
Encoder Connector	ASD-CAEN1000

(X=3 indicates that the cable length is 3m; X=5 indicates that the cable length is 5m)

1.5kW Servo Drive and 1.5kW Medium Inertia Servo Motor

Servo Drive	ASD-M-1521-□
Medium Inertia Servo Motor	ECMA-E△1315□S
Power Cable (Without Brake)	ASD-CAPW100X
Power Cable (With Brake)	ASD-CAPW110X
Power Connector	ASD-CAPW1000
Incremental Encoder Cable	ASD-CAEN100X
Absolute Encoder Cable	ASD-A2EB100X
Encoder Connector	ASD-CAEN1000

(X=3 indicates that the cable length is 3m; X=5 indicates that the cable length is 5m)

Servo Drive, Servo Motor & Accessories Combinations

2kW Servo Drive and 2kW Low Inertia Servo Motor

Servo Drive	ASD-M-2023-□
Low Inertia Servo Motor	ECMA-C△1020□S
Power Cable (Without Brake)	ASD-A2PW100X
Power Cable (With Brake)	ASD-A2PW110X
Power Connector	ASD-CAPW1000
Incremental Encoder Cable	ASD-CAEN100X
Absolute Encoder Cable	ASD-A2EB100X
Encoder Connector	ASD-CAEN1000

(X=3 indicates that the cable length is 3m; X=5 indicates that the cable length is 5m)

2kW Servo Drive and 2kW Medium Inertia Servo Motor

Servo Drive	ASD-M-2023-□
Medium Inertia Servo Motor	ECMA-C△1320□S
Power Cable (Without Brake)	ASD-A2PW100X
Power Cable (With Brake)	ASD-A2PW110X
Power Connector	ASD-CAPW1000
Incremental Encoder Cable	ASD-CAEN100X
Absolute Encoder Cable	ASD-A2EB100X
Encoder Connector	ASD-CAEN1000

(X=3 indicates that the cable length is 3m; X=5 indicates that the cable length is 5m)

2kW Servo Drive and 2kW Medium Inertia Servo Motor

Servo Drive	ASD-M-2023-□
Medium Inertia Servo Motor	ECMA-C△1820□S
Power Cable (Without Brake)	ASD-A2PW200X
Power Cable (With Brake)	ASD-A2PW210X
Power Connector	ASD-CAPW2000
Incremental Encoder Cable	ASD-CAEN100X
Absolute Encoder Cable	ASD-A2EB100X
Encoder Connector	ASD-CAEN1000

(X=3 indicates that the cable length is 3m; X=5 indicates that the cable length is 5m)

NOTE

- 1) The boxes (□) at the ends of the servo drive model names are for optional configurations. For the actual model name, please refer to the model explanation of the servo drives.
- 2) The boxes (□) in the servo motor model names are for optional configurations (keyway, brake and oil seal).
- 3) The boxes (△) in the model names are for encoder resolution types (△=1: Incremental encoder, 20-bit; △=2: Incremental encoder, 17-bit).

Other Accessories (for ASDA-M series all models)	
Description	Delta Part Number
50Pin I/O signal connector (Cn1)	ASD-CN5C0050
Terminal Block Module	ASD-BM-50A
RS-232 Communication Cable	ASD-CARS0003
Communication Cable between Drive and Computer(for PC)	DOP-CAUSBAB
CANopen Communication Cable	TAP-CB03 / TAP-CB04
CANopen Distribution Box	TAP-CN03
RS-485 Connector	ASD-CNIE0B06
Regenerative Resistor 400W 40Ω	BR400W040
Regenerative Resistor 1kW 20Ω	BR1K0W020
Regenerative Resistor 3kW 10Ω	BR1K5W005

Safety Information

Global Standards	ASDA-A2 series is designed to fully comply with demanding international standards, i.e. IEC and EN, etc. for all fields of industrial automation technology.
EMS standard	EN61000-4-6 Leve 3
	EN61000-4-3 Leve 3
	EN61000-4-2 Leve 2 and 3
	EN61000-4-4 Leve 3
	EN61000-4-8 Leve 4
	EN61000-4-5 Leve 3
Conducted & Radiated Emissions	Complies with EN550011 Class A Group 1, with external EMC filter
CE Marking	CE recognized. Complies with Directive 2006/95/EC of the European Parliament and EMC Directive 2004/108/EC.
UL Approval	UL (U.S.), cUL (Canada) recognized.
Test Standard	IEC/EN50178, IEC/EN60529
	IP20
Vibration	1G less than 20Hz, 0.6G 20 to 50Hz. Complies with IEC/EN50178
Shock	15gn 11ms. Complies with IEC/EN600028-2-27
Pollution Degree	Degree 2. Complies with IEC/EN61800-5-1

Regenerative Resistor Specifications

Servo Drive (kW)	Specifications of Built-in Regenerative Resistors		Min. Allowable Resistance (Ohm)
	Resistance (parameter P1-52) (Ohm)	Capacity (parameter P1-53) (Watt)	
0.75	40Ω	60W	20Ω
1.5	20Ω	100W	10Ω
2.0	20Ω	100W	10Ω

Note

- When the fault, ALE05 (Regeneration Error) occurs, please increase the regenerative resistor capacity or decrease the regenerative resistor resistance (the regenerative resistor resistance should not be less than the minimum allowable resistance listed in the above table.)
- If the situation is not improved after increasing the regenerative resistor capacity or decreasing the regenerative resistor resistance, please purchase regenerative resistor module.
- When combining multiple small-capacity regenerative resistors in parallel to increase the regenerative resistor capacity, make sure that the total resistance value of the regenerative resistors should not be less than the minimum allowable resistance listed in the above table.



Smarter. Greener. Together.

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*We reserve the right to change the information in this catalogue without prior notice.