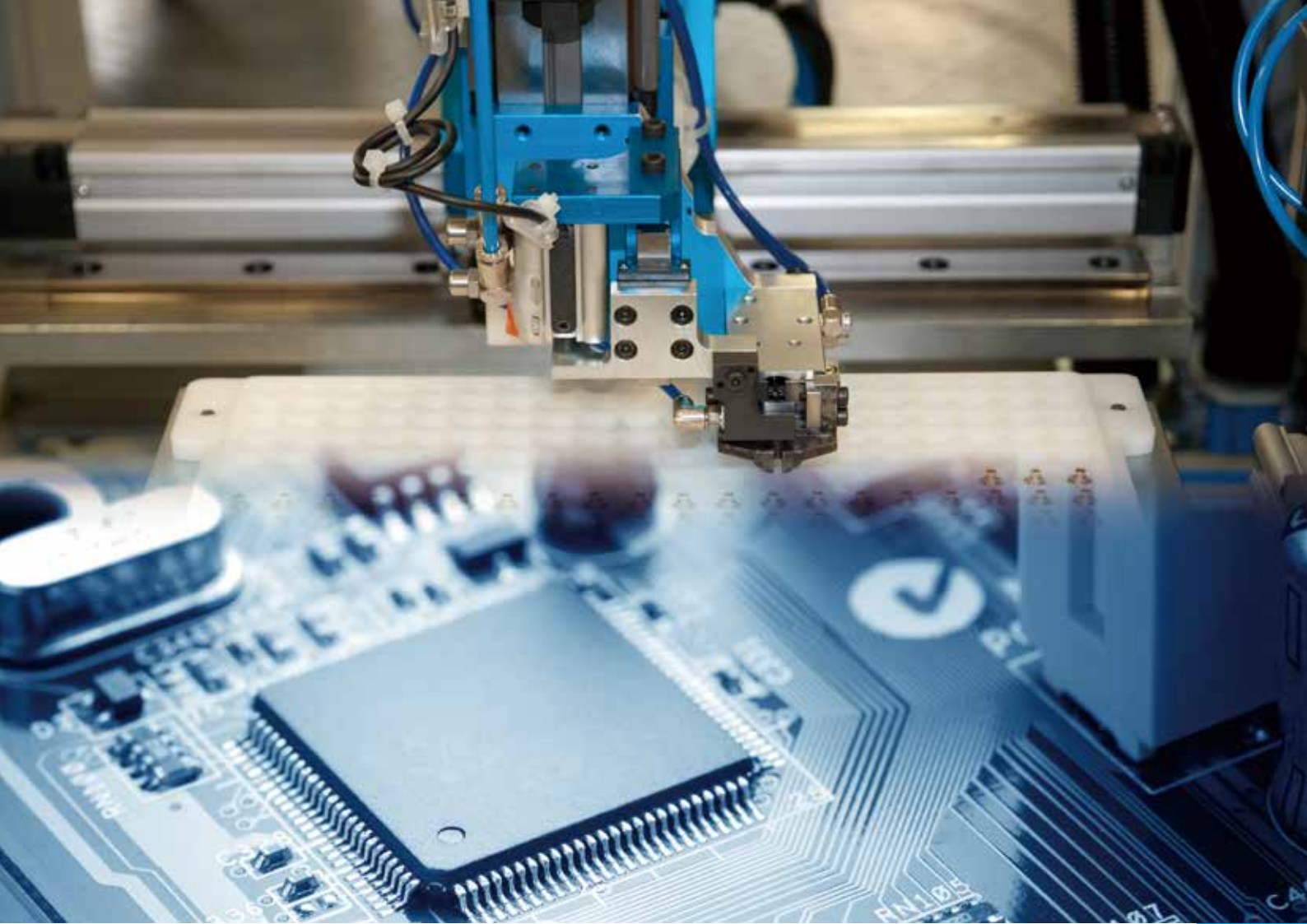




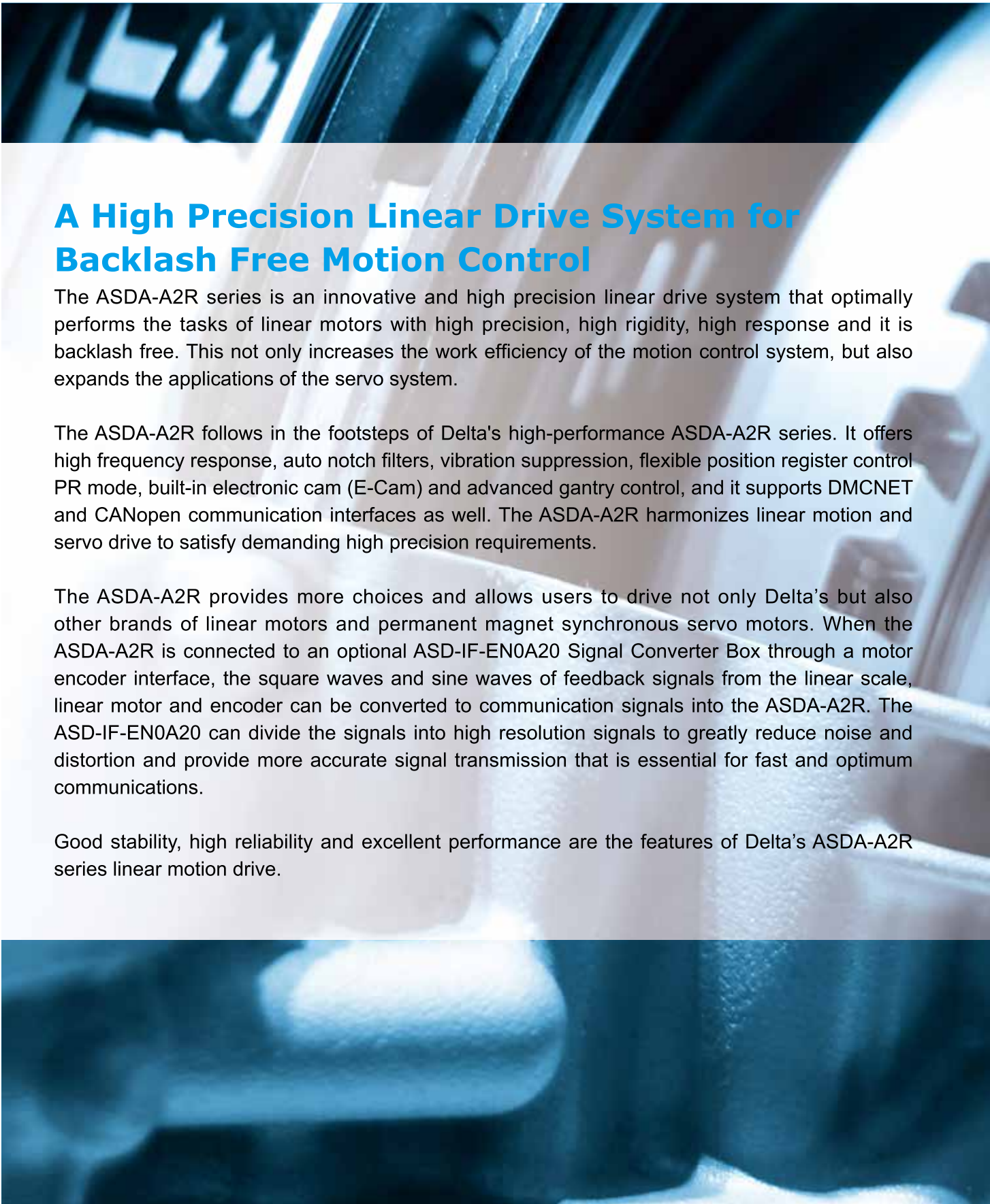
Automation for a Changing World

Delta AC Servo System ASDA-A2R Series



www.deltaww.com

 **DELTA**
Smarter. Greener. Together.



A High Precision Linear Drive System for Backlash Free Motion Control

The ASDA-A2R series is an innovative and high precision linear drive system that optimally performs the tasks of linear motors with high precision, high rigidity, high response and it is backlash free. This not only increases the work efficiency of the motion control system, but also expands the applications of the servo system.

The ASDA-A2R follows in the footsteps of Delta's high-performance ASDA-A2R series. It offers high frequency response, auto notch filters, vibration suppression, flexible position register control PR mode, built-in electronic cam (E-Cam) and advanced gantry control, and it supports DMCNET and CANopen communication interfaces as well. The ASDA-A2R harmonizes linear motion and servo drive to satisfy demanding high precision requirements.

The ASDA-A2R provides more choices and allows users to drive not only Delta's but also other brands of linear motors and permanent magnet synchronous servo motors. When the ASDA-A2R is connected to an optional ASD-IF-EN0A20 Signal Converter Box through a motor encoder interface, the square waves and sine waves of feedback signals from the linear scale, linear motor and encoder can be converted to communication signals into the ASDA-A2R. The ASD-IF-EN0A20 can divide the signals into high resolution signals to greatly reduce noise and distortion and provide more accurate signal transmission that is essential for fast and optimum communications.

Good stability, high reliability and excellent performance are the features of Delta's ASDA-A2R series linear motion drive.



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ASDA-A2R Series Features

System Operation with High Flexibility:

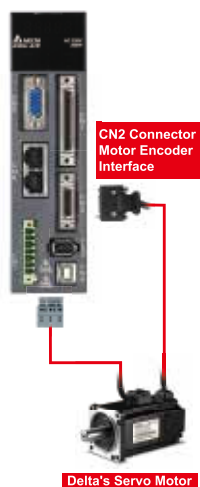
Connecting Various Kinds of Linear Motors and Servo Motors

- ▶ Support for Delta's permanent-magnet synchronous linear motors and servo (rotary) motors.
- ▶ Support for other brands of permanent-magnet synchronous linear motors and servo (rotary) motors.

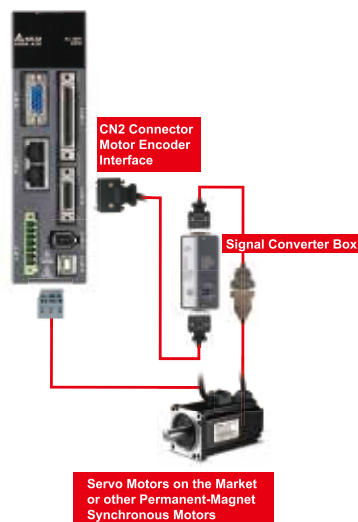


For different feedback configurations, please refer to the following recommended wiring methods for connecting the ASDA-A2R series servo drive.

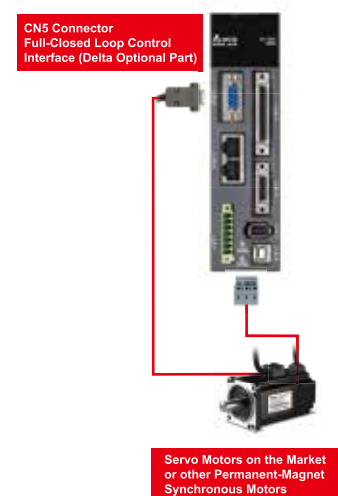
1. Using Delta's ECMA series servo motor.



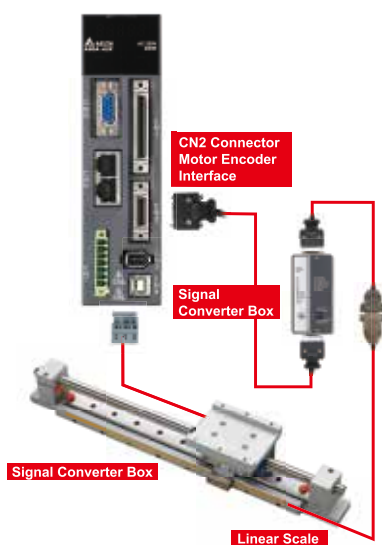
2. When not using Delta's servo motor and if the encoder signals are sinewave, the sine wave can be converted into communication signals by Delta's Signal Converter Box through the CN2 connector for the use of Delta's ASDA-A2R servo system.



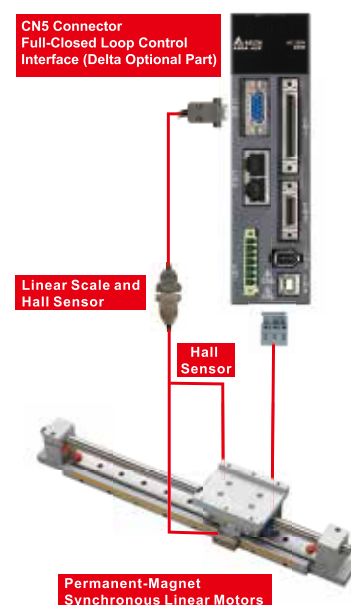
3. When not using Delta's servo motor and if the encoder signals are square wave, the square wave can be converted into communication signals directly through the CN5 connector for the use of Delta's ASDA-A2R servo system.



4. When using the linear motor with a linear scale and if the encoder signals are sine wave, the sine wave can be converted into communication signals by Delta's Signal Converter Box through the CN2 connector for the use of Delta's ASDA-A2R servo system.



5. When using the linear motor with a linear scale and if the encoder signals are square wave, the square wave can be converted into communication signals directly through the CN5 connector for the use of Delta's ASDA-A2R servo system. In addition, when a Hall Sensor is included and placed in-between, the signal can be transmitted via CN5 connector and controlled.



Satisfying Customers' High Speed Communication Requirements: The ASD-IF-EN0A20 Signal Converter Box (optional)

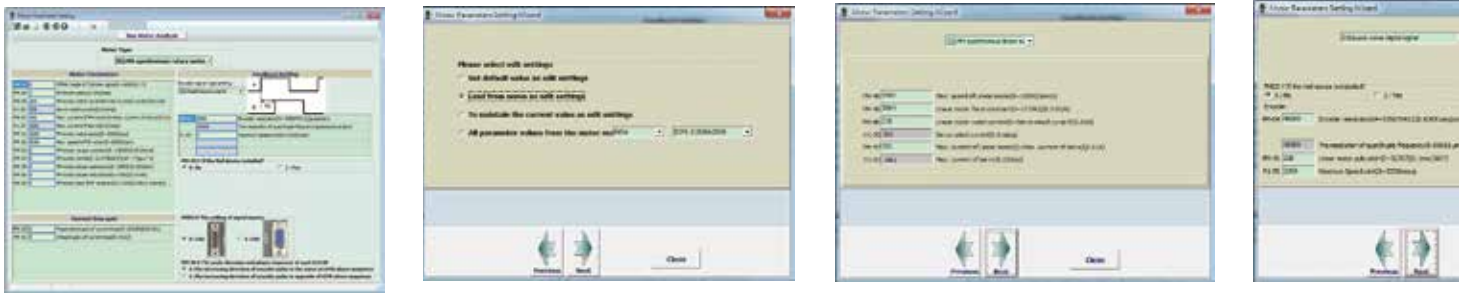
- ▶ Converts the square wave and sine wave to communication signals that can be used and controlled by Delta's servo drive.
- ▶ Supports AB phase square waves of digital signals and sine waves of analog signals.
- ▶ Divides signals up to 2,048 times for accurate signal transmission and enhanced positioning resolution.
- ▶ Delivers original signals over 20m without attenuation to ensure communication quality.



ASDA-A2R Series Features

Simple Setup Procedures Make Motor Connection Quick and Effortless

- ▶ Easy-to-operate and step-by-step procedures help users quickly complete motor setup and connection.



Intelligent Motor Parameter Measuring and Tuning

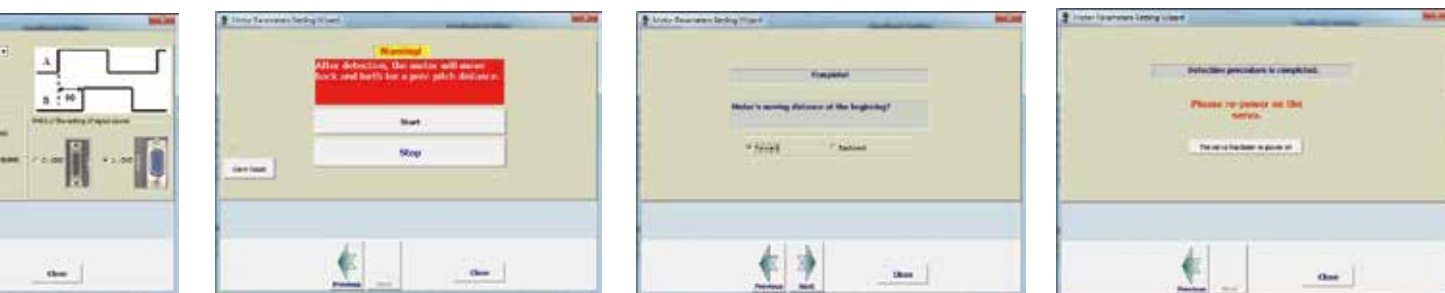
- ▶ Detects related electrical circuit parameters such as motor inductance and resistance.
- ▶ Provides motor current loop parameters for motor auto-tuning.
- ▶ Measures initial conditions on the magnetic field amplification and corrects phase sequence and deviation values of Hall sensor unit
- ▶ Detects and offsets the phase sequence of the motor's U, V, W terminals

Excellent Suppression Functions

- ▶ Vibration Suppression (Low Frequency)
Vibration suppression filters are provided for long arm systems to minimize vibration at the machine edges effectively.
- ▶ Resonance Suppression (High Frequency)
Auto notch filters are provided to suppress mechanical resonance efficiently.

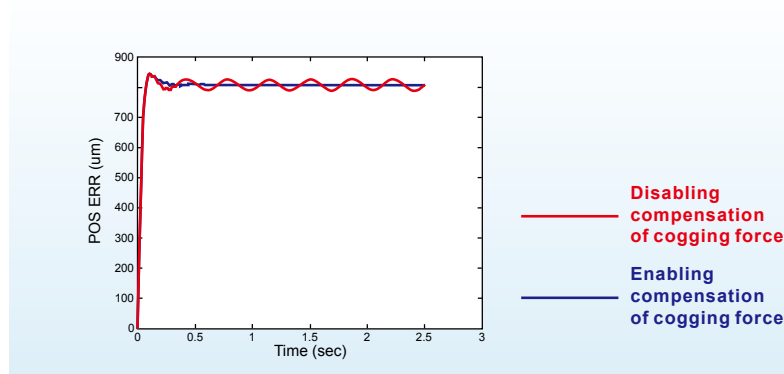
Accurate Positioning and Initiation without a Hall Sensor

- ▶ Keeps high positioning accuracy and reliability while the motor is running without connecting a Hall sensor unit.
- ▶ Detects the angle of a motor magnet by fine-sensing to ensure that magnetic field lines are passing at right angles at power-on.



Detection and Compensation of Motor Cogging Force

- ▶ After the generated cogging force is reduced, the operation of the motor is more smooth and stable.



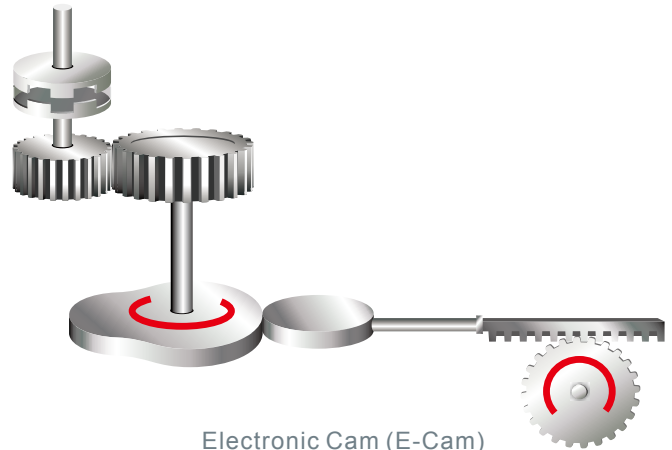
ASDA-A2R Series Features

Full-Closed Loop Control Function

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

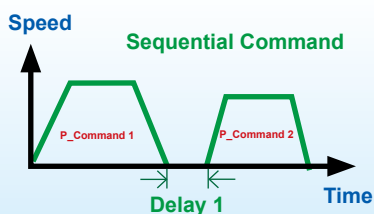
Built-in Electronic Cam (E-Cam) Function

- ▶ 720 points max. for E-Cam outline.
- ▶ Smooth interpolation between points can be completed automatically to yield flexible programming.
- ▶ ASDA-Soft configuration software provides an E-Cam profile editing function for easy tuning and adjustment.
- ▶ Easy to use for flying shear, rotary cut, and other cam applications.

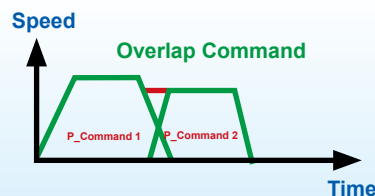


Versatile PR Mode

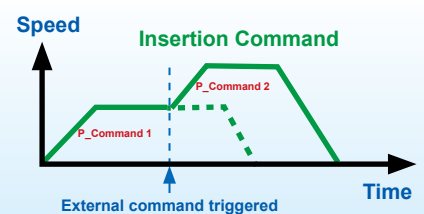
- ▶ ASDA-Soft configuration software offers a parameters editing function for different procedures planning.
- ▶ In PR mode, 64 procedures can be applied for multiple axes to enhance the ability of multiple points and continuous position control.
- ▶ New sub-modes supported, not traditional point-to-point control.
- ▶ Motion profile such as target position, speed command, acceleration and deceleration control can be changed instantaneously.
- ▶ 35 Homing modes / Jump mode / Write parameter mode / Constant speed mode / Position control mode supported.



A command is executed only when the previous command is completed.



The speed command is executed after the delay time or during the deceleration period.



Insertion changes the commands executed at the moment it is inserted.

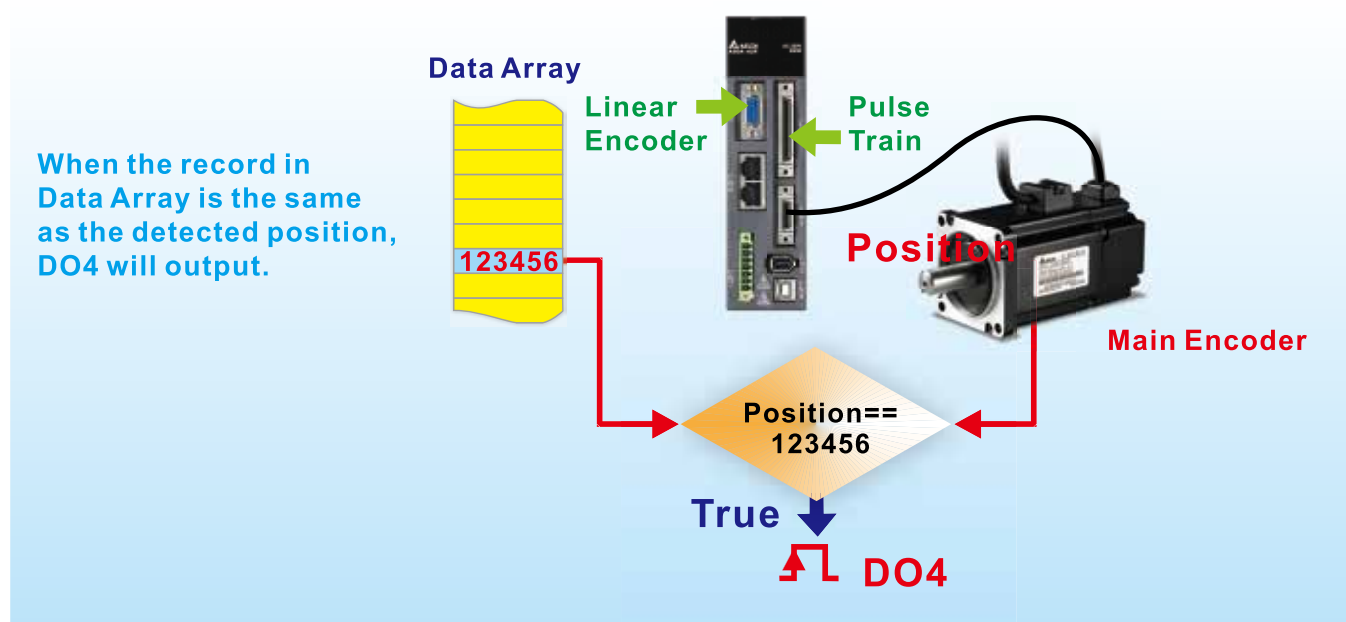
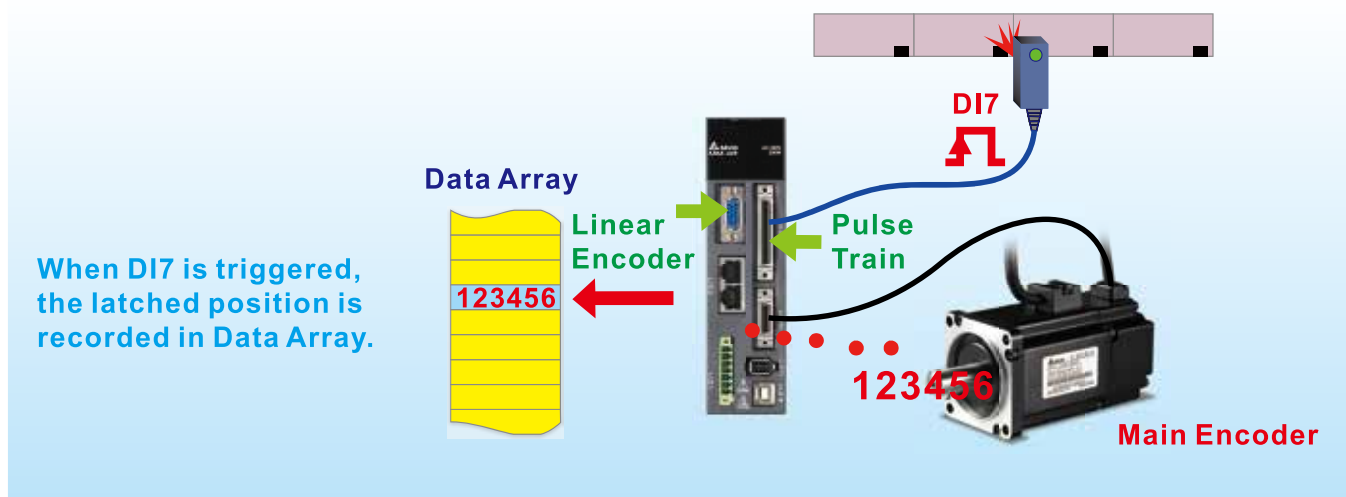
Real Time Capture and Compare Functions

High-speed 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 applications.
- ▶ Maximum 800 records.

High-speed Position Detection Function (Compare)

- ▶ Detects the location on the reference axis.
- ▶ Response time is less than 5us.
- ▶ Maximum 800 records.

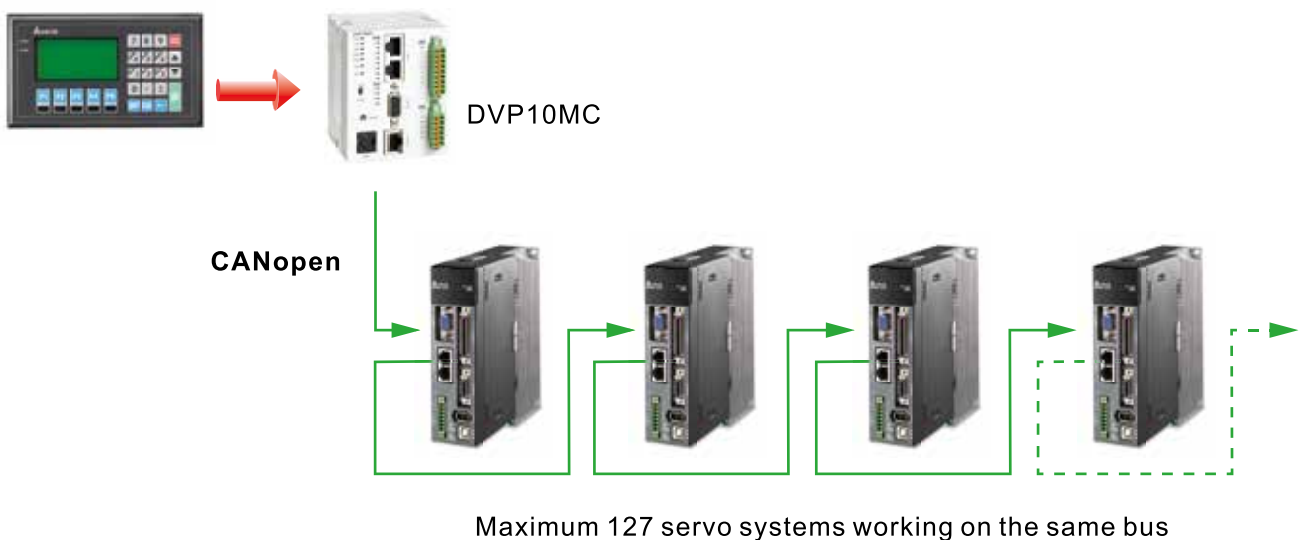


ASDA-A2R Series Features

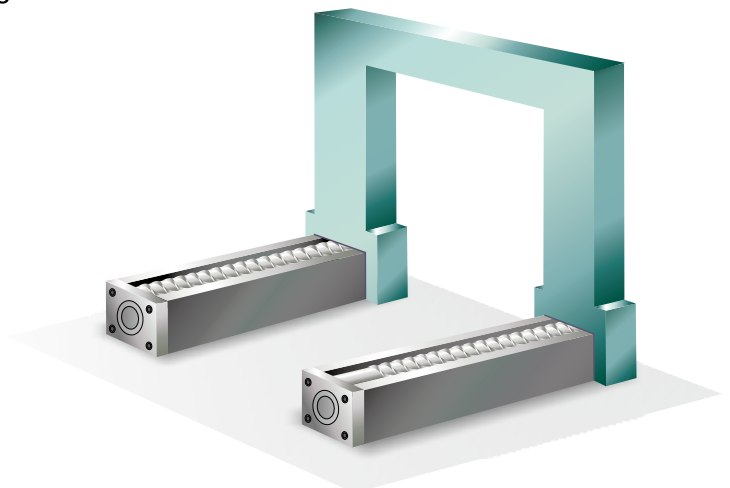
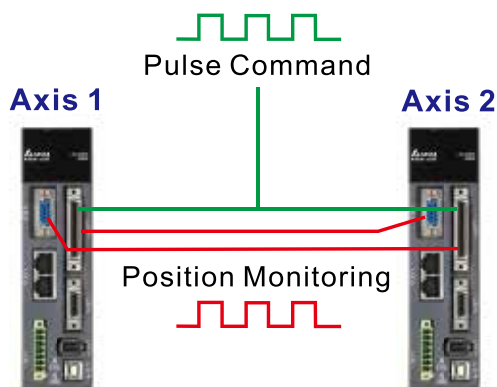
Integrates DMCNET and CANopen communication interfaces
Supports E-Cam and Gantry Control functions. Motion inside. Cost-effective.
Not only a servo drive but also a motion control module.

- ▶ Complies with CANopen DS301 protocol, providing up to 1 Mbps communication rate.
- ▶ Supports motion control modes via the CANopen DS402 protocol.
- ▶ With the aid of Delta's PLC, it can save on wiring and establish a Delta fieldbus system configuration.
- ▶ Capable of reading and writing servo drive parameters in any mode through CANopen communication.

Delta High-Speed Communication Network



Built-in gantry control algorithm and simple wiring make the system more reliable.



Product Line-up

Servo Drives								
	100W	200W	400W	750W	1.0kW	1.5kW	2.0kW	3.0kW
	ASD-A2R-0121-□	ASD-A2R-0221-□	ASD-A2R-0421-□	ASD-A2R-0721-□	ASD-A2R-1021-□	ASD-A2R-1521-□	ASD-A2R-2023-□	ASD-A2R-3023-□

Permanent-magnet Synchronous Servo (Rotary) Motors								
	ECMA-C△0401□S ECMA-C1040F□S	ECMA-C△0602□S	ECMA-C△0604□S ECMA-C△0804□7 ECMA-E△1305□S ECMA-G△1303□S	ECMA-C△0807□S ECMA-C△0907□S ECMA-G△1306□S ECMA-F11305□S	ECMA-C△0910□S ECMA-C△1010□S ECMA-E△1310□S ECMA-F△1308□S ECMA-G△1309□S	ECMA-E△1315□S	ECMA-C△1020□S ECMA-C△1320□S ECMA-E△1820□S ECMA-F11313□S ECMA-F11318□S	ECMA-E△1830□S ECMA-C△1330□4 ECMA-F△1830□S ECMA-E△1835□S

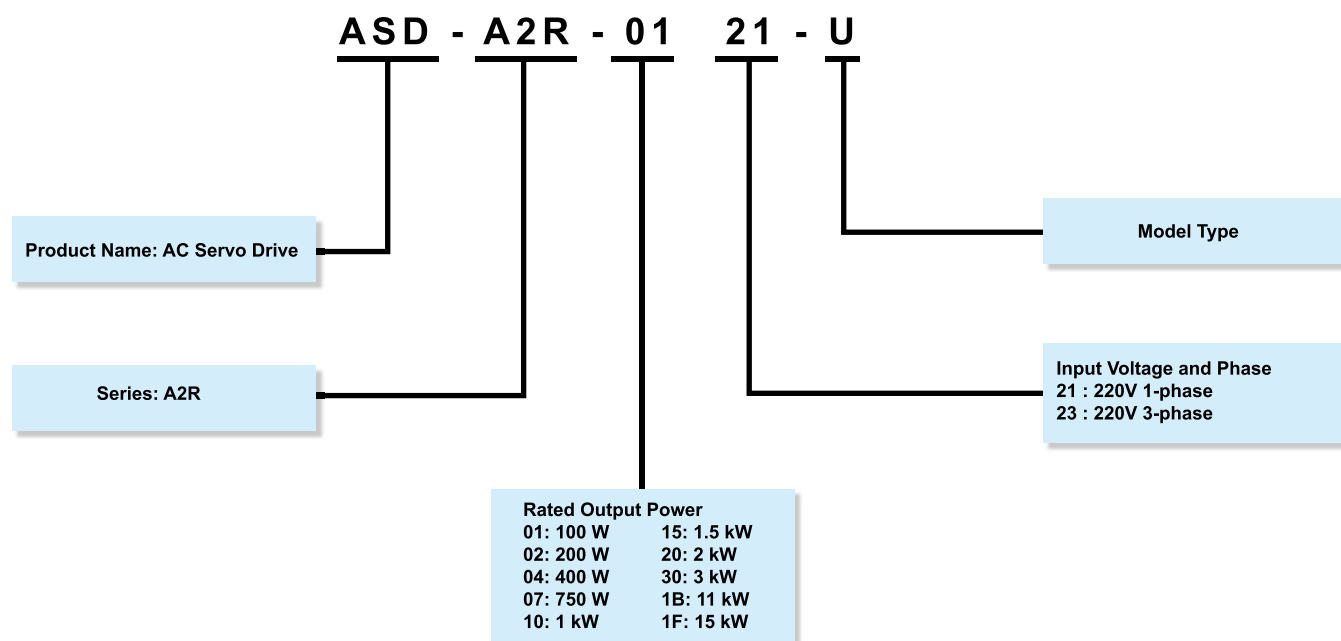
Permanent-magnet Synchronous Linear Motors							-	
	ECML-S1606A2DNS ECML-S1608A2DNS	ECML-S2003A2DNS ECML-S2004A2DNS ECML-S2005A2DNS	ECML-S2504A2DNS ECML-S2506A2DNS ECML-S3204A2DNS	ECML-S2508A2DNS ECML-S3206A2DNS ECML-S3208A2DNS	-	-	-	-



1) The boxes (□) at the ends of the servo drive model names are for the model type of ASDA-A2R. For the actual model name, please refer to the purchased product and the model explanation of the servo drive.
2) The boxes (□) in the servo motor model names are for encoder resolution types (□=1: incremental, 20-bit; △=2: incremental, 17-bit).
3) The boxes (□) in the servo motor model names are for motor shaft specifications (brake, keyway and oil seal).
4) The model name of the linear motors are the type of coil assembly (rotor). For the type of magnetic way (stator), please refer to the model explanation of the ECML Series Servo Motor on page 13.

Model Explanation

ASDA-A2R Series Servo Drive



Model Type

Type	Full-closed Loop	CANopen	DMCNET	E-CAM	Expansion Slot for Digital Input
M	Yes	Yes	No	Yes	No
U	Yes	No	No	Yes	Yes
F	Yes	No	Yes	No	No
L	Yes	No	No	No	No

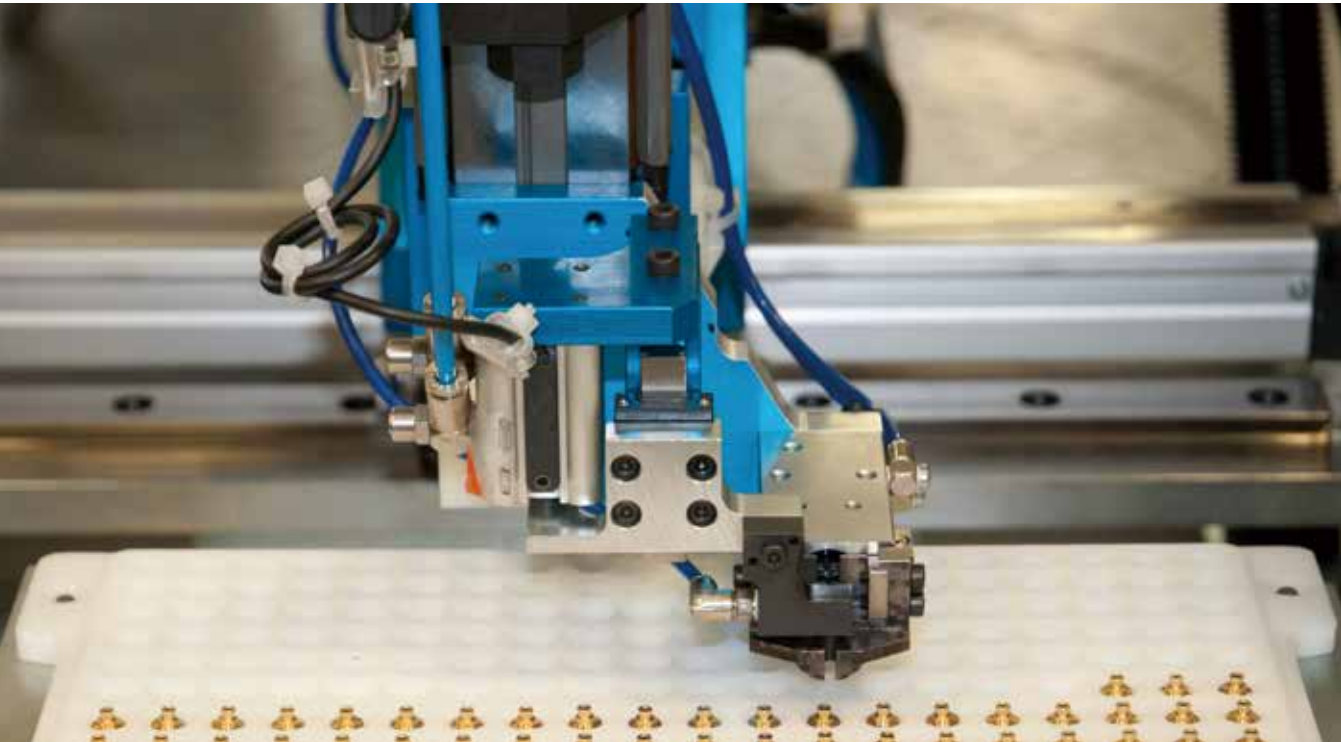
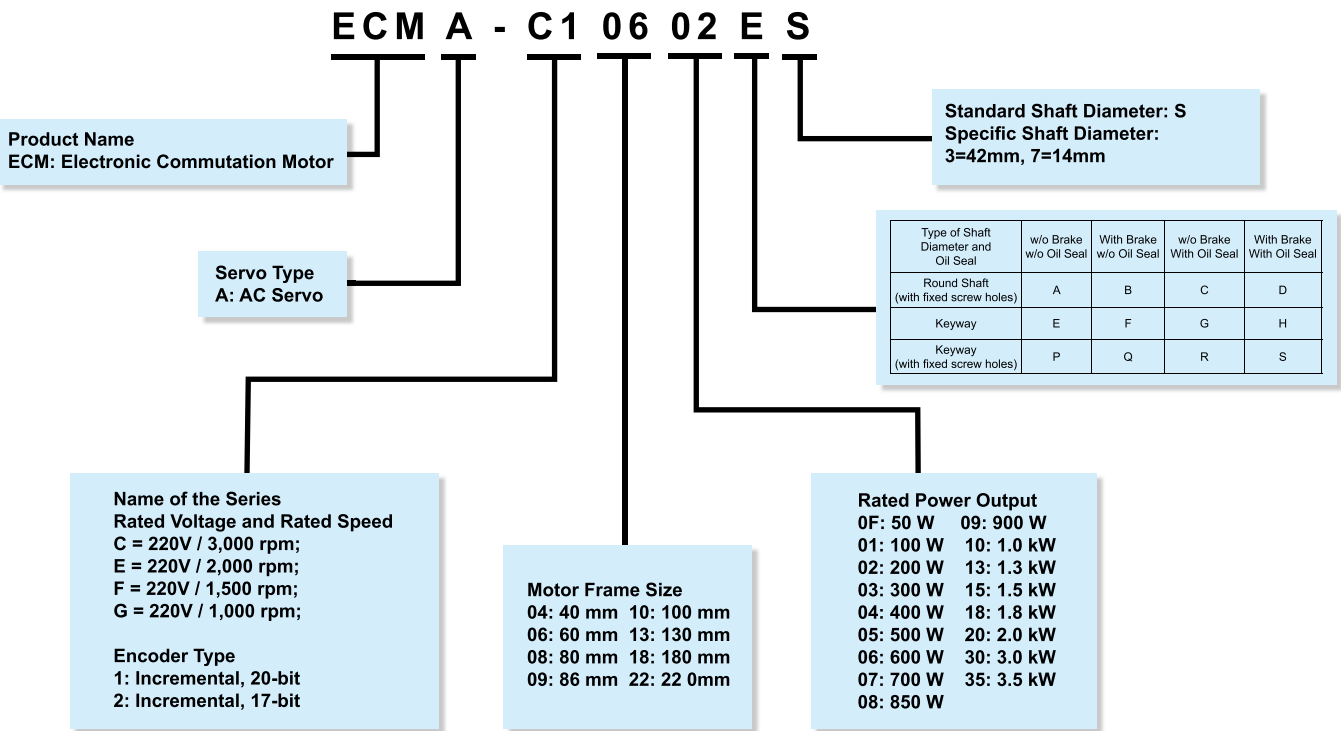
M : Support CANopen

U : Without CANopen

F : For DMCNET

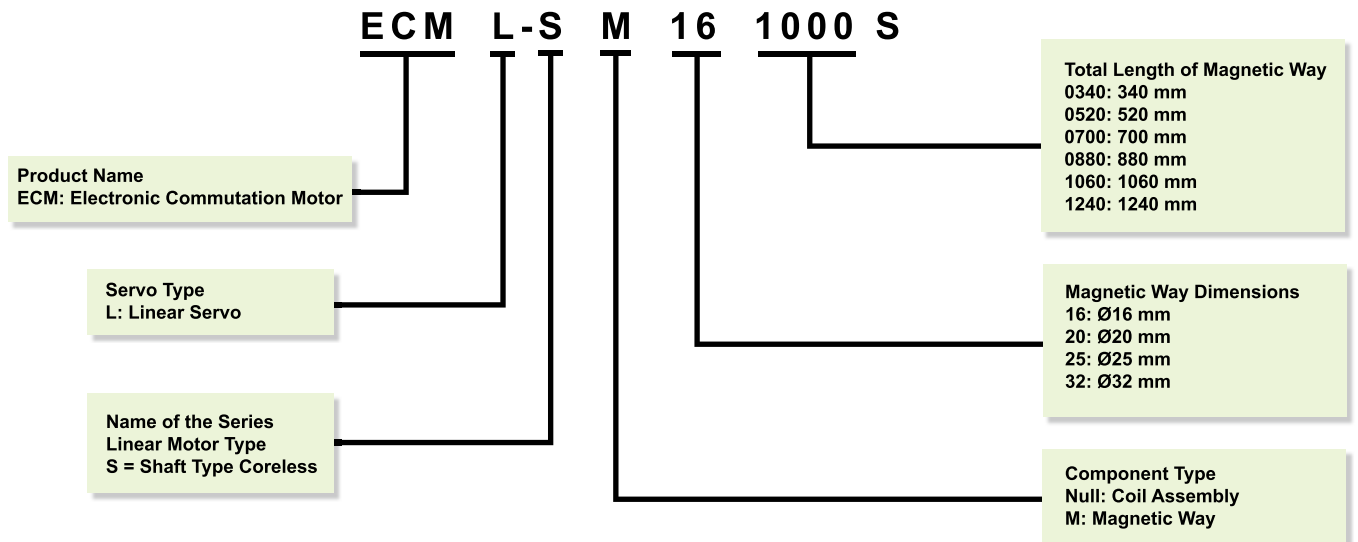
L : Without E-Cam

ECMA Series Servo Motor

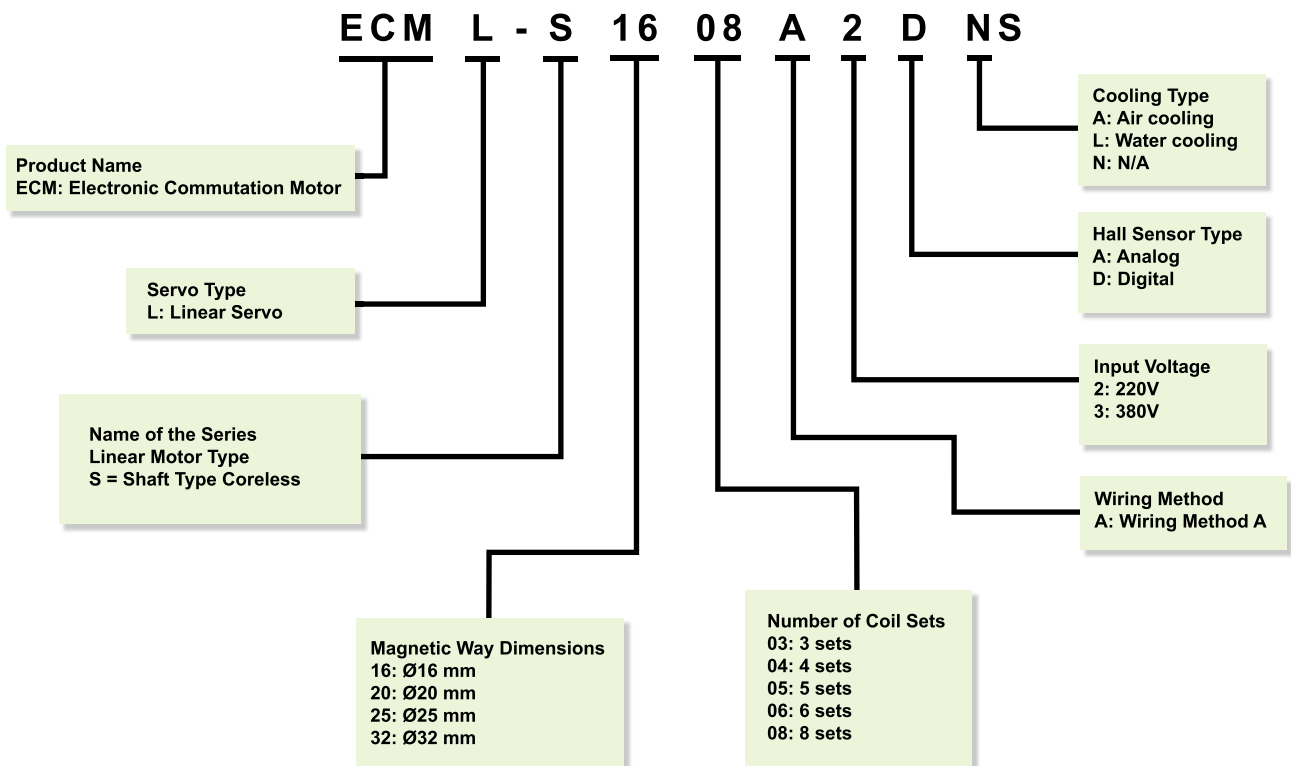


Model Explanation

ECML Series Linear Motor - Magnetic Way



ECML Series Linear Motor - Coil assembly



Servo Motor Features

ECMA

ECMA series servo motors are permanent-magnet AC servo motors, capable of combining with 200V to 230V ASDA-A2R series AC servo drives from 50 W to 3 kW. There are seven frame sizes available: 40 mm, 60 mm, 80 mm, 86 mm, 100 mm, 130 mm and 180 mm. The motor speed is from 1000 r/min to 5000 r/min and maximum torque range is between 1.92 N-m to 119.36 N-m.

For optional configurations, the ECMA series provides brake and oil seal models to fully support customer needs. It also offers two different shaft selections, round shaft and keyway, for various applications.

ECML

ECML series linear motors are permanent-magnet synchronous linear motors which feature:

- Built-in digital hall sensor: When a ECML motor is re-servo on, it can find the phase angle without moving.
- Built-in temperature sensor: A thermistor type of temperature sensor is installed inside the ECML motor. Users can acquire the motor's internal temperature by servo drive or ohmmeter.
- Coil assembly has two sides of mounting holes: This allows users to have more flexibility and expandability for device installation.



Specifications of ECML series Linear Motors

ECML	S16		S20			S25			S32		
	06	08	03	04	05	04	06	08	04	06	08
Rated force (N)	21.8	29	33.2	44.3	55.3	64.4	96.7	131.3	87.4	140.3	187.1
Max. force (N)	87.12	116.16	132.8	177.3	221.3	257.7	386.9	525	349.6	561.3	748.4
Rated current (Arms)	0.66	0.66	1.1	1.1	1.1	1.7	1.7	2.5	1.9	2.7	2.7
Max. instantaneous current (Arms)	2.64	2.64	4.4	4.4	4.4	6.8	6.8	10.0	7.6	10.8	10.8
Force constant-FC (N/A _{rms})	33	44	30.2	40.3	50.3	37.9	56.9	52.5	46	51.9	69.3
Voltage constant –KE (V _{rms} /(m/s))	11	14.7	10.1	13.4	16.8	12.6	19	17.5	15.3	17.3	23.1
Armature resistance (Ohm)	55.7	74.2	15.5	21.6	25.9	11.6	17.4	12.6	13.36	10.7	14.3
Armature inductance (mH)	10.5	14	7	9	11	14.6	22	23	16	12.5	16.6
Rated power (W)	47	62.6	46.9	62.3	78	64.9	97.4	152.5	93.4	151	201.8
Max. instantaneous power (W)	751.7	1001.3	749.7	997.1	1248.3	1038.6	1557.8	2439.6	1494.1	2416.5	3229.5
Motor constant ($\frac{N}{\sqrt{W}}$)	3.2	4.6	4.3	5	5.6	8.0	9.8	10.6	9.0	11.4	13.2
Electric constant (ms)	0.19	0.19	0.35	0.34	0.33	1.26	1.26	1.83	1.2	1.17	1.16
Thermal resistance (°C/W)	1.6	1.2	1.6	1.2	0.96	1.16	0.77	0.49	0.8	0.5	0.37
Weight of coil assembly (kg)	0.35	0.45	0.65	0.83	1.0	1.1	1.6	2.1	1.5	2.2	2.8
Length of coil assembly (mm)	108	138	108	138	168	138	198	258	138	198	258
Vertical Magnetic Adsorption Force (N)	0	0	0	0	0	0	0	0	0	0	0
Magnetic pole pitch (mm)	30		60			60			60		
Air gap (mm)	0.75					1.0			1.75		
Max. temperature of coil assembly (°C)	130										
Insulation class	>10MΩ, DC 500V										
Insulation resistance	1500VAC, 60sec										
Insulation strength	0°C ~ 40°C										
Operating temperature	-10°C ~ 80°C										
Operating humidity	20 ~ 80%RH (non-condensing)										
Storage humidity	20 ~ 80%RH (non-condensing)										
Approvals	CE										



Specifications of ECMA Series Servo Motors

Low Inertia Series

ECMA	C104	C △ 04	C △ 06		C △ 08		C △ 09		C △ 10		C △ 13
	0F	01	02	04 □ S	04	07	07	10	10	20	30
Rated power (kW)	0.05	0.1	0.2	0.4	0.4	0.75	0.75	1.0	1.0	2.0	3.0
Rated torque (N-m) ^{*1}	0.159	0.32	0.64	1.27	1.27	2.39	2.39	3.18	3.18	6.37	9.55
Max. torque (N-m)	0.477	0.96	1.92	3.82	3.82	7.16	7.14	8.78	9.54	19.11	28.65
Rated speed (r/min)	3000						3000		3000		3000
Max. speed (r/min)	5000						3000		5000		4500
Rated current (A)	0.69	0.90	1.55	2.6	2.6	5.1	3.66	4.25	7.3	12.05	17.2
Max. instantaneous current (A)	2.05	2.70	4.65	7.8	7.8	15.3	11	12.37	21.9	36.15	47.5
Max. power per second (kW/s)	12.27	27.7	22.4	57.6	24.0	50.4	29.6	38.6	38.1	90.6	71.8
Rotor inertia (x10-4kg-m ²)	0.0206	0.037	0.177	0.277	0.68	1.13	1.93	2.62	2.65	4.45	12.7
Mechanical constant (ms)	1.2	0.75	0.80	0.53	0.74	0.63	1.72	1.20	0.74	0.61	1.11
Torque constant-KT(N-m/A)	0.23	0.36	0.41	0.49	0.49	0.47	0.65	0.75	0.44	0.53	0.557
Voltage constant -KE(mV/(r/min))	9.8	13.6	16	17.4	18.5	17.2	24.2	27.5	16.8	19.2	20.98
Armature resistance (Ohm)	12.7	9.30	2.79	1.55	0.93	0.42	1.34	0.897	0.20	0.13	0.0976
Armature inductance (mH)	26	24.0	12.07	6.71	7.39	3.53	7.55	5.7	1.81	1.50	1.21
Electric constant (ms)	2.05	2.58	4.3	4.3	7.96	8.36	5.66	6.35	9.3	11.4	12.4
Insulation class	Class A (UL), Class B (CE)										
Insulation resistance	> 100MΩ · DC 500V										
Insulation strength	1.8k Vac, 1 sec										
Weight – without brake (kg)	0.42	0.5	1.2	1.6	2.1	3.0	2.9	3.8	4.3	6.2	7.8
Weight – with brake (kg)	--	0.8	1.5	2.0	2.9	3.8	3.69	5.5	4.7	7.2	9.2
Radial max. loading (N)	78.4	78.4	196	196	245	245	245	245	490	490	490
Axial max. loading (N)	39.2	39.2	68	68	98	98	98	98	98	98	98
Max. power per second (kW/s) (with brake)	--	25.6	21.3	53.8	22.1	48.4	29.3	37.9	30.4	82	65.1
Rotor inertia (x10-4kg-m ²) (with brake)	--	0.04	0.19	0.30	0.73	1.18	1.95	2.67	3.33	4.95	14.0
Mechanical constant (ms) (with brake)	--	0.81	0.85	0.57	0.78	0.65	1.74	1.22	0.93	0.66	1.22
Brake holding torque [N·m (min)] ^{*2}	--	0.3	1.3	1.3	2.5	2.5	2.5	2.5	8	8	10.0
Brake power consumption (at 20°C)[W]	--	7.3	6.5	6.5	8.2	8.2	8.2	8.2	18.7	18.7	19.0
Brake release time [ms (Max)]	--	5	10	10	10	10	10	10	10	10	10
Brake pull-in time [ms (Max)]	--	25	70	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 (use the waterproof connector and shaft seal installation (or oil seal))										
Approvals	 										

Note:

*1 The rated torque is the continuous permissible torque between 0~40°C operating temperature which is suitable for the following heat sink dimensions.

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: Aluminum – F40, F60, F80, F100, F130, F180

*2 The built-in brake of the servo motor is for keeping the item in stop status. Do not use it to decelerate or as a dynamic brake.

Specifications of ECMA Series Servo Motors

Medium/High inertia series

機型：ECMA 系列	E △ 13				E △ 18			G △ 13			F △ 13		F △ 13 F △ 18	F113	
	05	10	15	20	20	30	35	03	06	09	05	08	30	13	18
Rated power (kW)	0.5	1.0	1.5	2.0	2.0	3.0	3.5	0.3	0.6	0.9	0.5	0.85	3.0	1.3	1.8
Rated torque (N-m) ^{*1}	2.39	4.77	7.16	9.55	9.55	14.32	16.71	2.86	5.73	8.59	3.18	5.41	19.10	8.34	11.48
Max. torque (N-m)	7.16	14.3	21.48	28.65	28.65	42.97	50.13	8.59	17.19	21.48	8.92	13.8	57.29	23.3	28.7
Rated speed (r/min)	2000							1000							1500
Max. speed (r/min)	3000							2000							3000
Rated current (A)	2.9	5.6	8.3	11.01	11.22	16.1	19.2	2.5	4.8	7.5	3.9	7.1	19.4	12.6	13
Max. instantaneous current (A)	8.7	16.8	24.9	33.03	33.66	48.3	57.6	7.5	14.4	22.5	12.1	19.4	58.2	38.6	36
Max. power per second (kW/s)	7.0	27.1	45.9	62.5	26.3	37.3	50.8	10.0	39.0	66.0	9.8	21.52	66.4	34.78	52.93
Rotor inertia (x10-4kg-m ²)	8.17	8.41	11.18	14.59	34.68	54.95	54.95	8.17	8.41	11.18	10.3	13.6	54.95	20	24.9
Mechanical constant (ms)	1.91	1.51	1.10	0.96	1.62	1.06	1.08	1.84	1.40	1.06	2.8	2.43	1.28	1.62	1.7
Torque constant-KT(N-m/A)	0.83	0.85	0.87	0.87	0.85	0.89	0.87	1.15	1.19	1.15	0.82	0.76	0.98	0.66	0.88
Voltage constant -KE(mV/(r/min))	30.9	31.9	31.8	31.8	31.4	32.0	32	42.5	43.8	41.6	29.5	29.2	35.0	24.2	32.2
Armature resistance (Ohm)	0.57	0.47	0.26	0.174	0.119	0.052	0.052	1.06	0.82	0.43	0.624	0.38	0.077	0.124	0.185
Armature inductance (mH)	7.39	5.99	4.01	2.76	2.84	1.38	1.38	14.29	11.12	6.97	7	4.77	1.27	1.7	2.6
Electric constant (ms)	12.96	12.88	15.31	15.86	23.87	26.39	26.39	13.5	13.50	16.06	11.22	12.55	16.5	13.71	14.05
Insulation class	A 級 (UL) · B 級 (CE)														
Insulation resistance	100MΩ · DC 500V 以上														
Insulation strength	1.8k Vac, 1 sec														
Weight – without brake (kg)	6.8	7.0	7.5	7.8	13.5	18.5	18.5	6.8	7.0	7.5	6.3	8.6	18.5	9.4	10.5
Weight – with brake (kg)	8.2	8.4	8.9	9.2	17.5	22.5	22.5	8.2	8.4	8.9	7.7	10.0	22.5	10.8	11.9
Radial max. loading (N)	490	490	490	490	1176	1470	490	490	490	490	490	490	1470	490	490
Axial max. loading (N)	98	98	98	98	490	490	98	98	98	98	98	98	490	98	98
Max. power per second (kW/s) (with brake)	6.4	24.9	43.1	57.4	24.1	35.9	48.9	9.2	35.9	62.1	8.8	19.78	63.9	32.66	50.3
Rotor inertia (x10-4kg-m ²) (with brake)	8.94	9.14	11.90	15.88	37.86	57.06	57.06	8.94	9.14	11.9	11.5	14.8	57.06	21.3	26.2
Mechanical constant (ms) (with brake)	2.07	1.64	1.19	1.05	1.77	1.10	1.12	2.0	1.51	1.13	3.12	2.65	1.33	1.73	1.79
Brake holding torque [N·m (min)] ^{*2}	10.0	10.0	10.0	10.0	25.0	25.0	25.0	10.0	10.0	10.0	10	10.0	25.0	10.0	10.0
Brake power consumption (at 20°C)[W]	19.0	19.0	19.0	19.0	20.4	20.4	20.4	19.0	19.0	19.0	19	19.0	20.4	19.0	19.0
Brake release time [ms (Max)]	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Brake pull-in time [ms (Max)]	70	70	70	70	70	70	70	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 (不結露)														
Storage humidity	20 to 90%RH (不結露)														
Vibration capacity	2.5G														
IP Rating	IP65 (使用防水接頭，以及軸心密封安裝 (或是使用油封機種))														
Approvals ^{*4}															

Note:

*1 The rated torque is the continuous permissible torque between 0~40°C operating temperature which is suitable for the following heat sink dimensions.

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: Aluminum – F40, F60, F80, F100, F130, F180

*2 The built-in brake of the servo motor is for keeping the item in stop status. Do not use it to decelerate or as a dynamic brake.

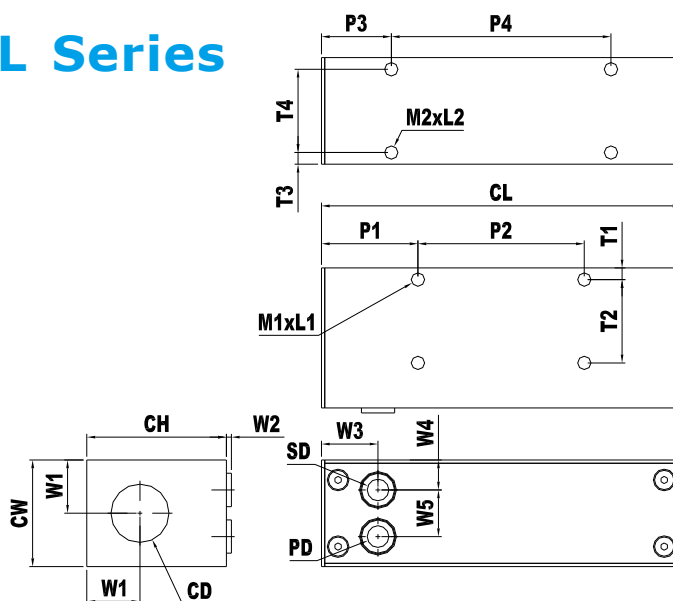
*3 To reach the max. torque limit of motor 250%, to use the servo drive with higher watts.

*4 The application of UL safety compliance for ECMA-F11305, ECMA-F11308, ECMA-F11313, ECMA-F11318 is under processing.

Dimensions of ECML Series Linear Motors

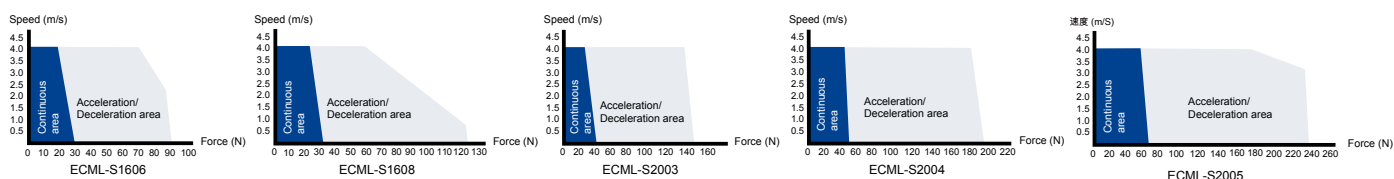
Ironless Linear Motors

Coil Assembly



Model	S1606	S1608	S2003	S2004	S2005
CH	42	42	52	52	52
CW	32	32	42	42	42
CD	17.5	17.5	21.5	21.5	21.5
CL	108	138	108	138	168
P1	29	29	29	29	29
P2	50	80	50	80	110
P3	21	21	21	21	21
P4	66	96	66	96	126
T1	3.5	3.5	3.5	3.5	3.5
T2	25	25	35	35	35
T3	3.5	3.5	3.5	3.5	3.5
T4	25	25	35	35	35
M1 x L1	M4 x 4.5	M4 x 4.5	M4 x 7	M4 x 7	M4 x 7
M2 x L2	M4 x 4.5	M4 x 4.5	M4 x 7	M4 x 7	M4 x 7
W1	16	16	21	21	21
W2	1.5	1.5	1.5	1.5	1.5
W3	17	17	17	17	17
W4	9	9	11	11	11
W5	14	14	20	20	20
PD	6	6	6	6	6
SD	6	6	6	6	6

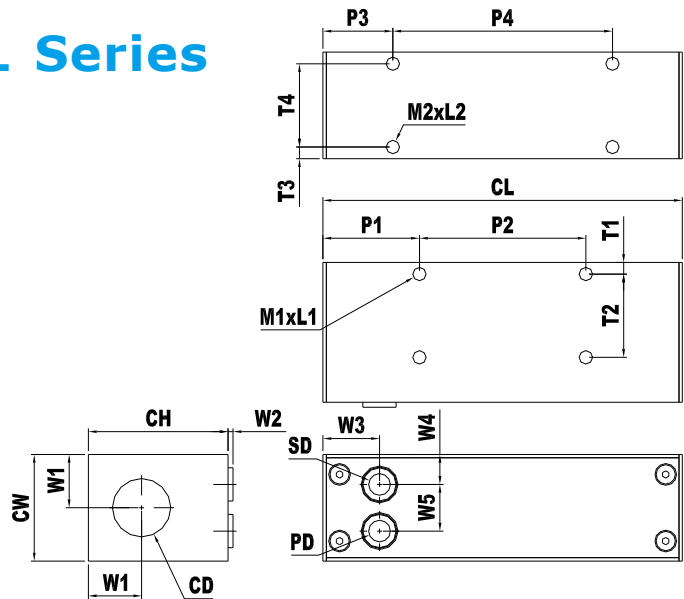
Force and Speed Features (F-S Curve)



Dimensions of ECML Series Linear Motors

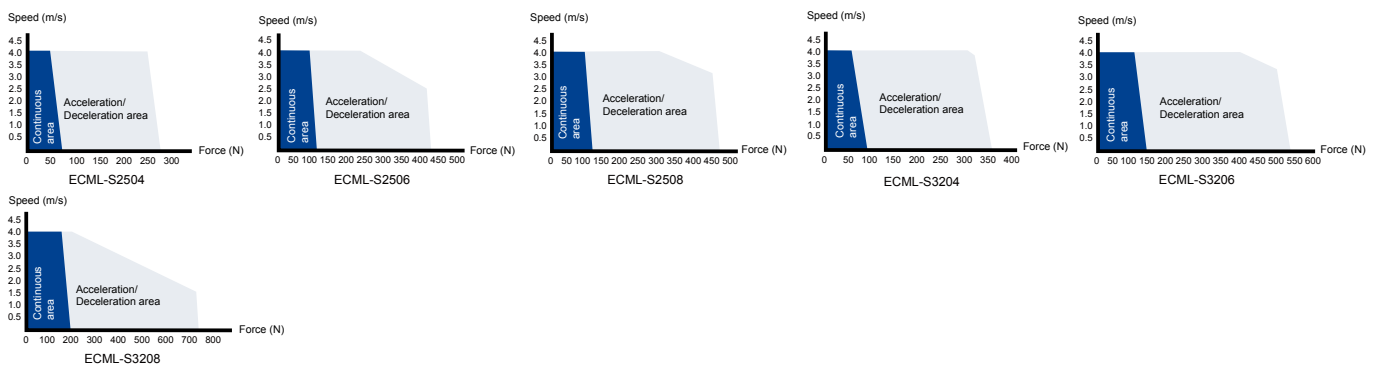
Ironless Linear Motors

Coil Assembly



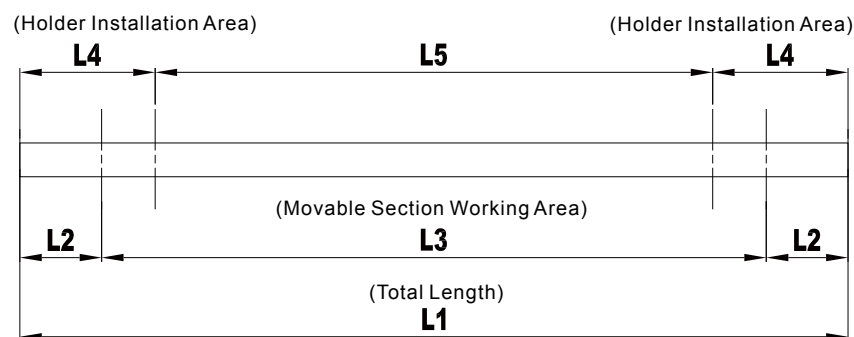
Model	S2504	S2506	S2508	S3204	S3206	S3208
CH	62	62	62	70	70	70
CW	52	52	52	60	60	60
CD	27	27	27	35.5	35.5	35.5
CL	138	198	258	138	198	258
P1	37	37	37	37	37	37
P2	64	124	92x2	64	92x2	92x2
P3	27	27	27	27	27	27
P4	84	144	68x3	84	144	68x3
T1	5	5	5	5	5	5
T2	42	42	42	50	50	50
T3	5	5	5	5	5	5
T4	42	42	42	50	50	50
M1 x L1	M5 x 8	M5 x 8	M5 x 8	M6 x 10	M6 x 10	M6 x 10
M2 x L2	M5 x 8	M5 x 8	M5 x 8	M6 x 10	M6 x 10	M6 x 10
W1	26	26	26	30	30	30
W2	1.5	1.5	1.5	1.5	1.5	1.5
W3	21	21	21	21	21	21
W4	11	11	11	13	13	13
W5	30	30	30	34	34	34
PD	7	7	7	7	7	7
SD	6	6	6	6	6	6

Force and Speed Features (F-S Curve)



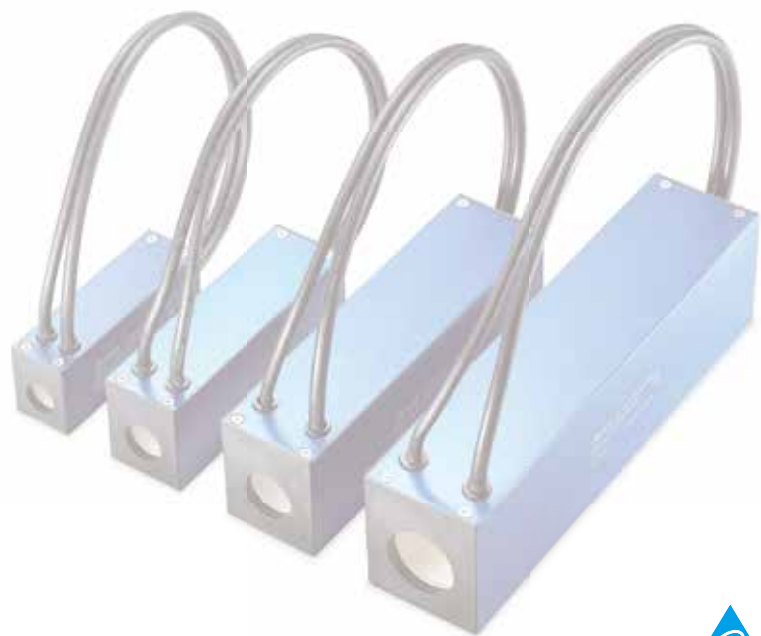
Dimensions of ECML Series Linear Motors

Magnet Shaft



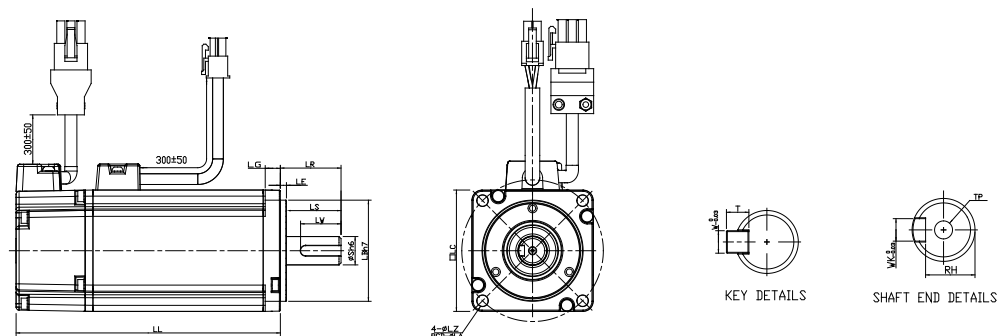
Model	SM16						SM20					
	0340	0520	0700	0880	1060	1240	0370	0550	0730	0910	1090	1270
L1	340	520	700	880	1060	1240	370	550	730	910	1090	1270
L2	35	35	35	35	35	35	35	35	35	35	35	35
L3	270	450	630	810	990	1170	300	480	660	840	1020	1200
L4	25	40	40	60	60	60	35	50	50	60	60	60
L5	290	440	620	760	940	1120	300	450	630	790	970	1150
Approx. mass	0.51	0.78	1.05	1.32	1.59	1.86	0.87	1.29	1.71	2.13	2.55	2.97

Model	SM25						SM32					
	0390	0570	0750	0930	1110	1290	0630	0810	0990	1170	1350	1530
L1	390	570	750	930	1110	1290	630	810	990	1170	1350	1530
L2	45	45	45	45	45	45	45	45	45	45	45	45
L3	300	480	660	840	1020	1200	540	720	900	1080	1260	1440
L4	45	45	60	60	60	60	60	60	90	90	90	90
L5	300	480	630	810	990	1170	510	690	810	990	1170	1350
Approx. mass	1.43	2.08	2.74	3.40	4.06	4.72	3.77	4.85	5.93	7.01	8.09	9.17



Dimensions of ECMA Series Servo Motors

Motor Frame Size: 86 or below (Units: mm)

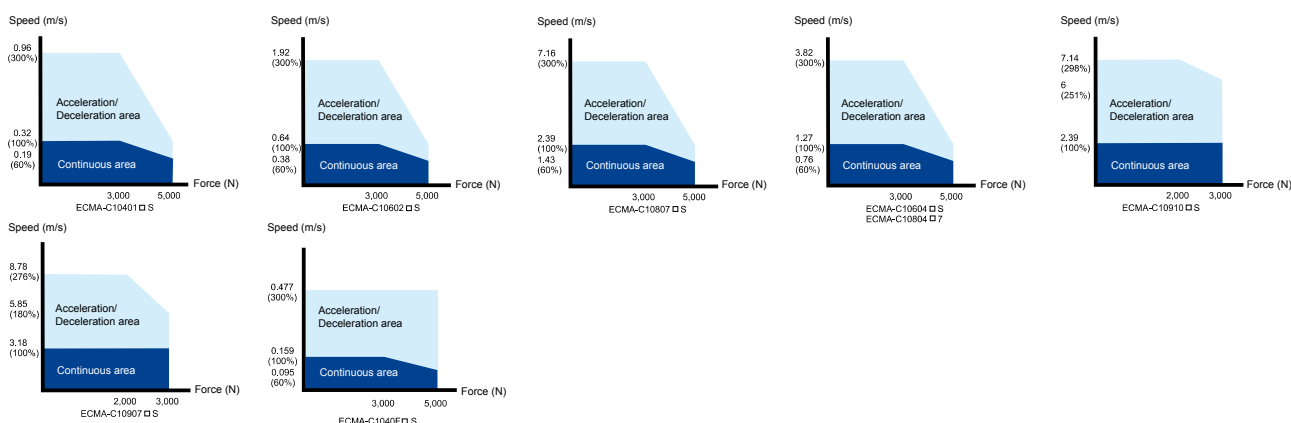


Model	C1040F□S	C△0401□S	C△0602□S	C△0604□S	C△0804□7	C△0807□S	C△0907□S	C△0907□S
LC	40	40	60	60	80	80	86	86
LZ	4.5	4.5	5.5	5.5	6.6	6.6	6.6	6.6
LA	46	46	70	70	90	90	100	100
S	8 ^(+0/-0.009)	8 ^(+0/-0.009)	14 ^(+0/-0.011)	14 ^(+0/-0.011)	14 ^(+0/-0.011)	22 ^(+0/-0.013)	16 ^(+0/-0.011)	16 ^(+0/-0.011)
LB	30 ^(+0/-0.021)	30 ^(+0/-0.021)	50 ^(+0/-0.025)	50 ^(+0/-0.025)	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	112.3	138.3	130.2	153.2
LL (with brake)	--	136.8	141.6	166.8	152.8	178	161.3	184.3
LS	20	20	27	27	27	30	30	30
LR	25	25	30	30	30	35	35	35
LE	2.5	2.5	3	3	3	3	3	3
LG	5	5	7.5	7.5	8	8	8	8
LW	16	16	20	20	20	25	20	20
RH	6.2	6.2	11	11	11	15.5	13	13
WK	3	3	5	5	5	6	5	5
W	3	3	5	5	5	6	5	5
T	3	3	5	5	5	6	5	5
TP	--	MP3 Depth 8	MP4 Depth 15	MP4 Depth 15	MP4 Depth 15	MP6 Depth 20	MP5 Depth 15	MP5 Depth 15

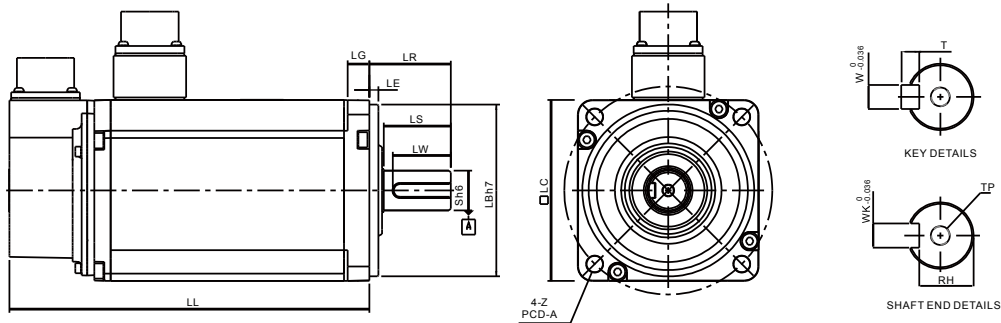


- 1) Dimensions are in millimeters.
- 2) Dimensions and weights might be revised without prior notice.
- 3) Box, (□) represents the shaft end/ brake or the number of oil seal.
- 4) The boxes (△) in the model names are for encoder resolution types (△=1: Incremental encoder, 20-bit; △=2: Incremental encoder, 17-bit).

Torque Features (T-N Curve)



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



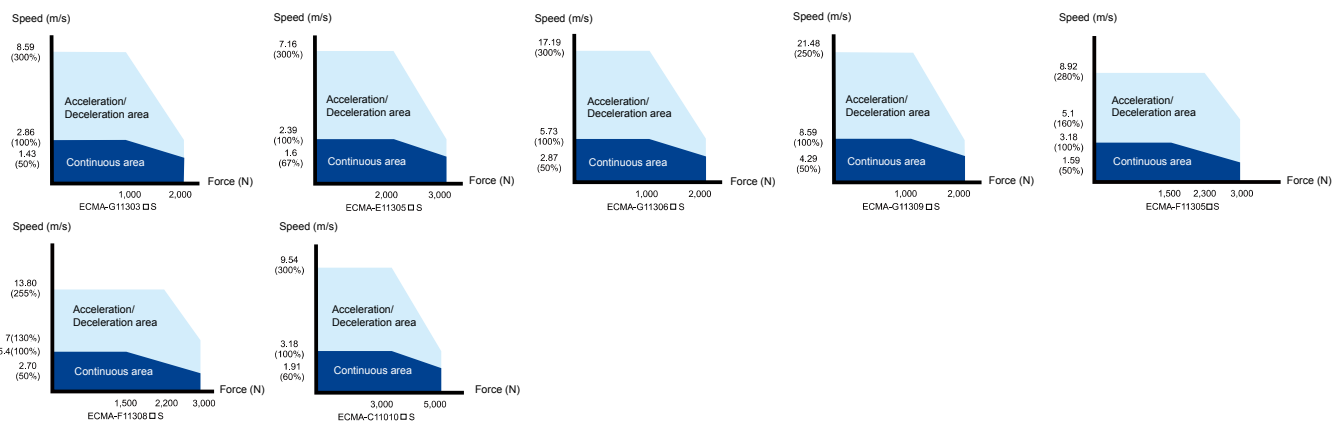
Model	G△1303□S	E△1305□S	G△1306□S	G△1309□S	F11305□S	F△1308□S	C△1010□S
LC	130	130	130	130	130	130	100
LZ	9	9	9	9	9	9	9
LA	145	145	45	145	145	145	115
S	22 ⁺⁰ _(-0.013)	22 ⁺⁰ _(-0.013)	22 ⁺⁰ _(-0.013)	24 ⁺⁰ _(-0.013)	22 ⁺⁰ _(-0.013)	22 ⁺⁰ _(-0.013)	22 ⁺⁰ _(-0.013)
LB	110 ⁺⁰ _(-0.035)	110 ⁺⁰ _(-0.035)	95 ⁺⁰ _(-0.035)	110 ⁺⁰ _(-0.035)	110 ⁺⁰ _(-0.035)	110 ⁺⁰ _(-0.035)	95 ⁺⁰ _(-0.035)
LL (without brake)	147.5	147.5	147.5	163.5	139.5	152.5	153.3
LL (with brake)	183.5	183.5	183.5	198	168	181	192.5
LS	47	47	47	47	47	47	37
LR	55	55	55	55	55	55	45
LE	6	6	6	6	6	6	5
LG	11.5	11.5	11.5	11.5	11.5	11.5	12
LW	36	36	36	36	36	36	32
RH	18	18	18	18	18	18	18
WK	8	8	8	8	8	8	8
W	8	8	8	8	8	8	8
T	7	7	7	7	7	7	7
TP	MP6 Depth 20	MP6 Depth 20	MP6 Depth 20	MP6 Depth 20	MP6 Depth 20	MP6 Depth 20	MP6 Depth 20



NOTE

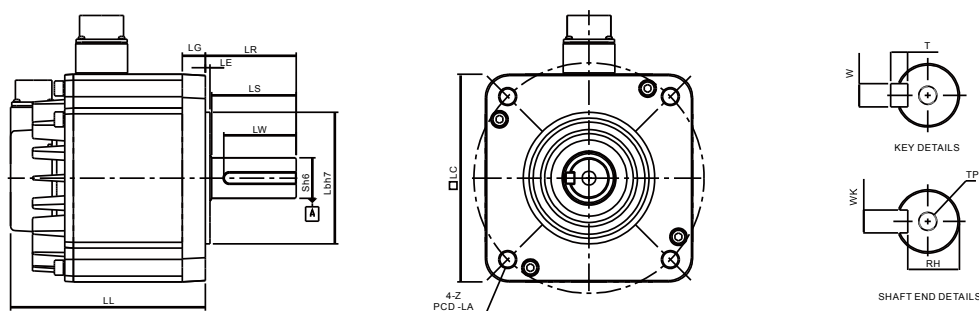
- 1) Dimensions are in millimeters.
- 2) Dimensions and weights might be revised without prior notice.
- 3) Box, (□) represents the shaft end/ brake or the number of oil seal.
- 4) The boxes (△) in the model names are for encoder resolution types
(△=1: Incremental encoder, 20-bit; △=2: Incremental encoder, 17-bit).

Torque Features (T-N Curve)



Dimensions of ECMA Series Servo Motors

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



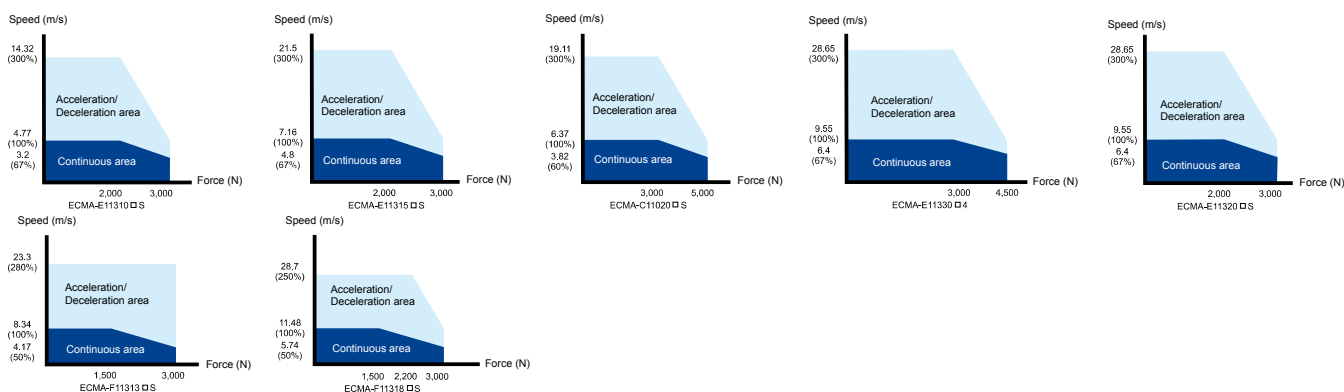
Model	E△1310□S	E△1315□S	E△1020□S	C△1330□4	E△1320□S	F11313□S	F11318□S
LC	130	130	100	130	130	130	130
LZ	9	9	9	9	9	9	9
LA	145	145	115	145	145	145	145
S	22 (+0/-0.013)	22 (+0/-0.013)	22 (+0/-0.013)	24 (+0/-0.013)	22 (+0/-0.013)	22 (+0/-0.013)	22 (+0/-0.013)
LB	110 (+0/-0.035)	110 (+0/-0.035)	95 (+0/-0.035)	110 (+0/-0.035)	110 (+0/-0.035)	110 (+0/-0.035)	110 (+0/-0.035)
LL (without brake)	147.5	167.5	199	187.5	187.5	187.5	202
LL (with brake)	183.5	202	226	216.0	216	- -	- -
LS	47	47	37	47	47	47	47
LR	55	55	45	55	55	55	55
LE	6	6	5	6	6	6	6
LG	11.5	11.5	12	11.5	11.5	11.5	11.5
LW	36	36	32	36	36	36	36
RH	18	18	18	20	18	18	18
WK	8	8	8	8	8	8	8
W	8	8	8	8	8	8	8
T	7	7	7	7	7	7	7
TP	MP6 Depth 20	MP6 Depth 20	MP6 Depth 20	MP6 Depth 20	MP6 Depth 20	MP6 Depth 20	MP6 Depth 20



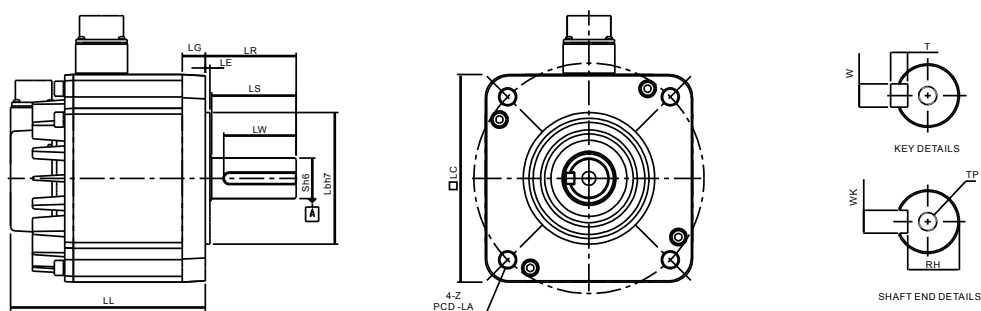
NOTE

- 1) Dimensions are in millimeters.
- 2) Dimensions and weights might be revised without prior notice.
- 3) Box, (□) represents the shaft end/ brake or the number of 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 Features (T-N Curve)



Motor Frame Size: 180 or above (Units: mm)

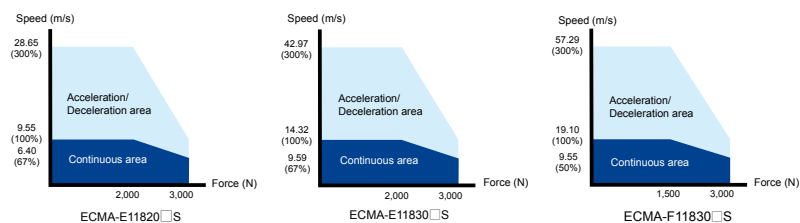


Model	E△1820□S	E△1830□S	E△1835□S	F△1830□S
LC	180	180	180	180
LZ	13.5	13.5	13.5	13.5
LA	200	205	200	200
S	35 ⁽⁺⁰⁾ _(-0.016)	35 ⁽⁺⁰⁾ _(-0.016)	35 ⁽⁺⁰⁾ _(-0.016)	35 ⁽⁺⁰⁾ _(-0.016)
LB	114.3 ⁽⁺⁰⁾ _(-0.035)	114.3 ⁽⁺⁰⁾ _(-0.035)	143.3 ⁽⁺⁰⁾ _(-0.035)	143.3 ⁽⁺⁰⁾ _(-0.035)
LL (without brake)	169	202.1	202.1	202.1
LL (with brake)	203.1	235.3	235.3	235.3
LS	73	73	73	73
LR	79	79	79	79
LE	4	4	4	4
LG	20	20	20	20
LW	63	63	63	63
RH	30	30	30	30
WK	10 ⁽⁺⁰⁾ _(-0.036)	10 ⁽⁺⁰⁾ _(-0.036)	10 ⁽⁺⁰⁾ _(-0.036)	10 ⁽⁺⁰⁾ _(-0.036)
W	10 ⁽⁺⁰⁾ _(-0.036)	10 ⁽⁺⁰⁾ _(-0.036)	10 ⁽⁺⁰⁾ _(-0.036)	10 ⁽⁺⁰⁾ _(-0.036)
T	8	8	8	8
TP	MP12 Depth 25	MP12 Depth 25	MP12 Depth 25	MP12 Depth 25



- NOTE**
- 1) Dimensions are in millimeters.
 - 2) Dimensions and weights might be revised without prior notice.
 - 3) Box, (□) represents the shaft end/ brake or the number of 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 Features (T-N Curve)



Part Names and Functions

• LED Display / Operation Panel / Charge LED

■ 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

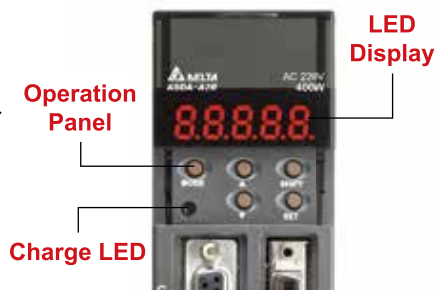
UP : Press this key to increase values on the display

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.



• * Full-Closed Loop Control Interface

- Used to connect linear scale and encoder for controlling A, B, Z phase signals.

• I/O Interface

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

• * High-speed Communication Port

- Used to connect CANopen networks.
- 1-in/1-out communication ports offer easy serial connection.
- CANbus interface, supporting motion modes for CANopen DS402 implementation.

• Motor Encoder Interface

- Used to connect the encoder of the servo motor

• Extension Digital Input Connection Port

- Used to connect a removable digital input terminal block. Max. 6 digital inputs can be added.

• Serial Communication Port

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

• USB Connection Port

- Used to connect personal computers or notebooks.
- 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.



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

■ Internal & External Regenerative Resistor Terminal

1. When using an external resistor, connect it to P $\oplus$ and C $\ominus$, 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

■ Control Circuit Terminal (L1C, L2C or DC24V, DC0V)

220V Series: L1C, L2C are used to connect 200~230Vac, 50/60Hz single-phase or three-phase power supply.

400V Series: DC24V, DC0V are used to connect 24Vdc $\pm$ 10% power supply.

■ Main Circuit Terminal (R, S, T)

220V Series: Used to connect 200~230Vac, 50/60Hz commercial power supply.

400V Series: Used to connect 380~480Vac, 50/60Hz commercial power supply.

- When using an external braking unit, connect it to P $\oplus$ and $\ominus$.

• Servo Motor Output (U, V, W)

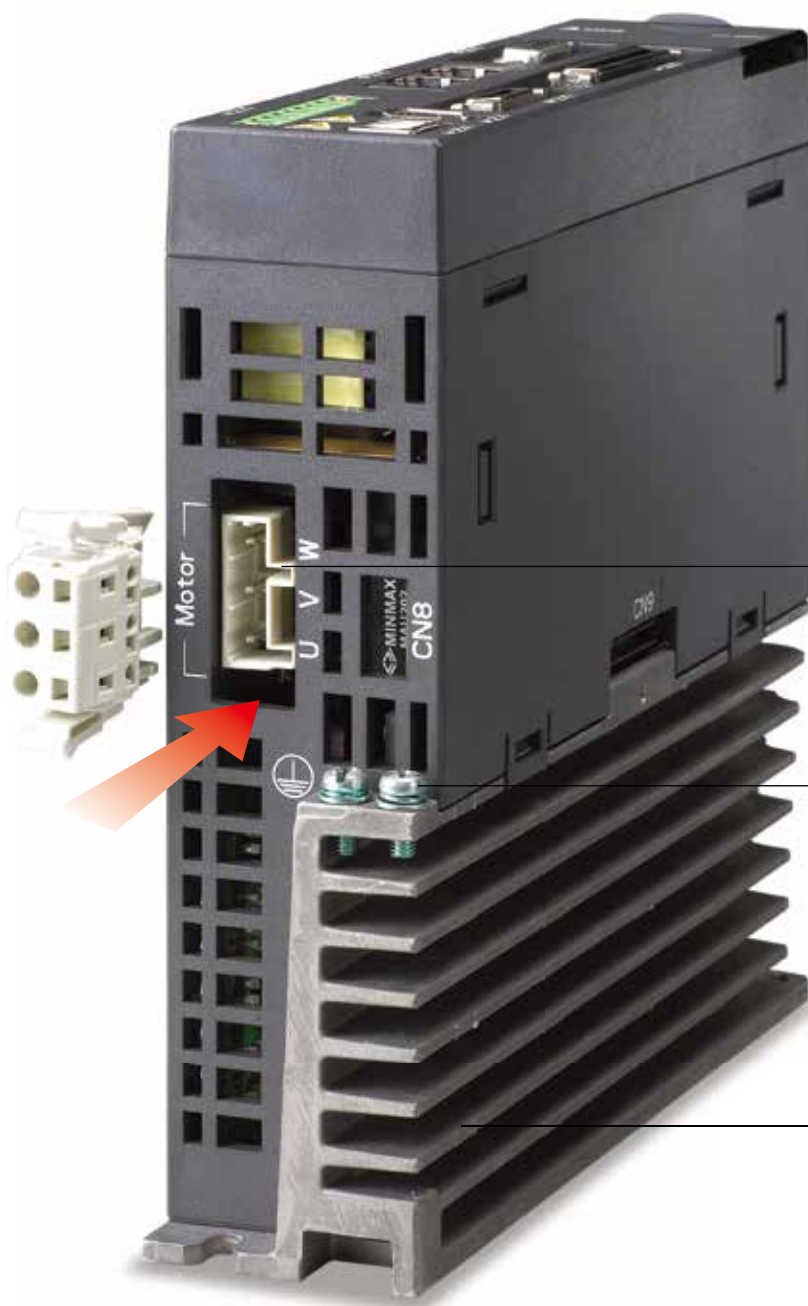
- Used to connect servo motor. Never connect the output terminal to main circuit power as the AC drive may be damaged beyond repair if incorrect cables are connected to the output terminals.

• Ground Terminal

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

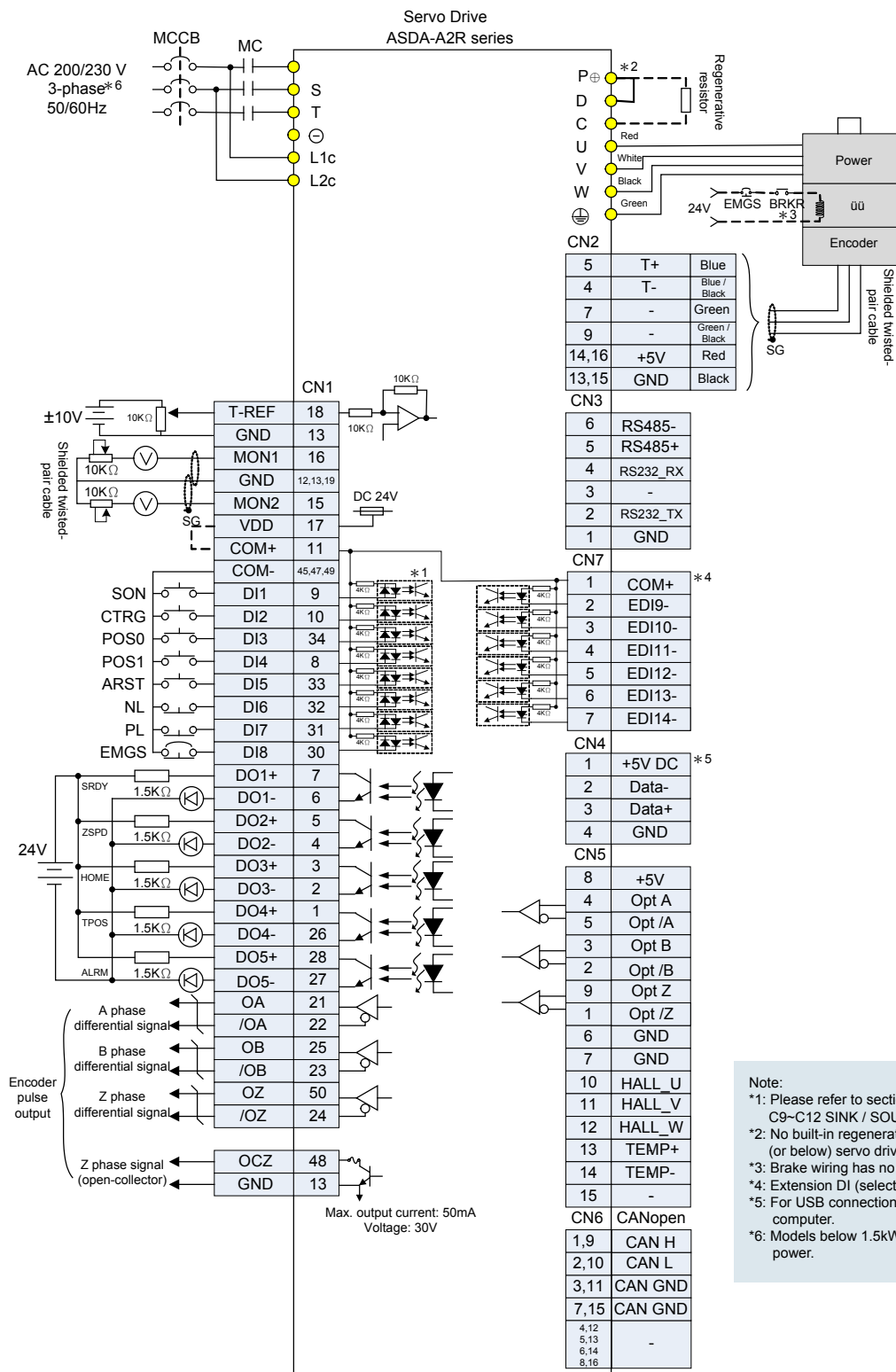
• Heatsink

- Used to secure servo drive and for heat dissipation.



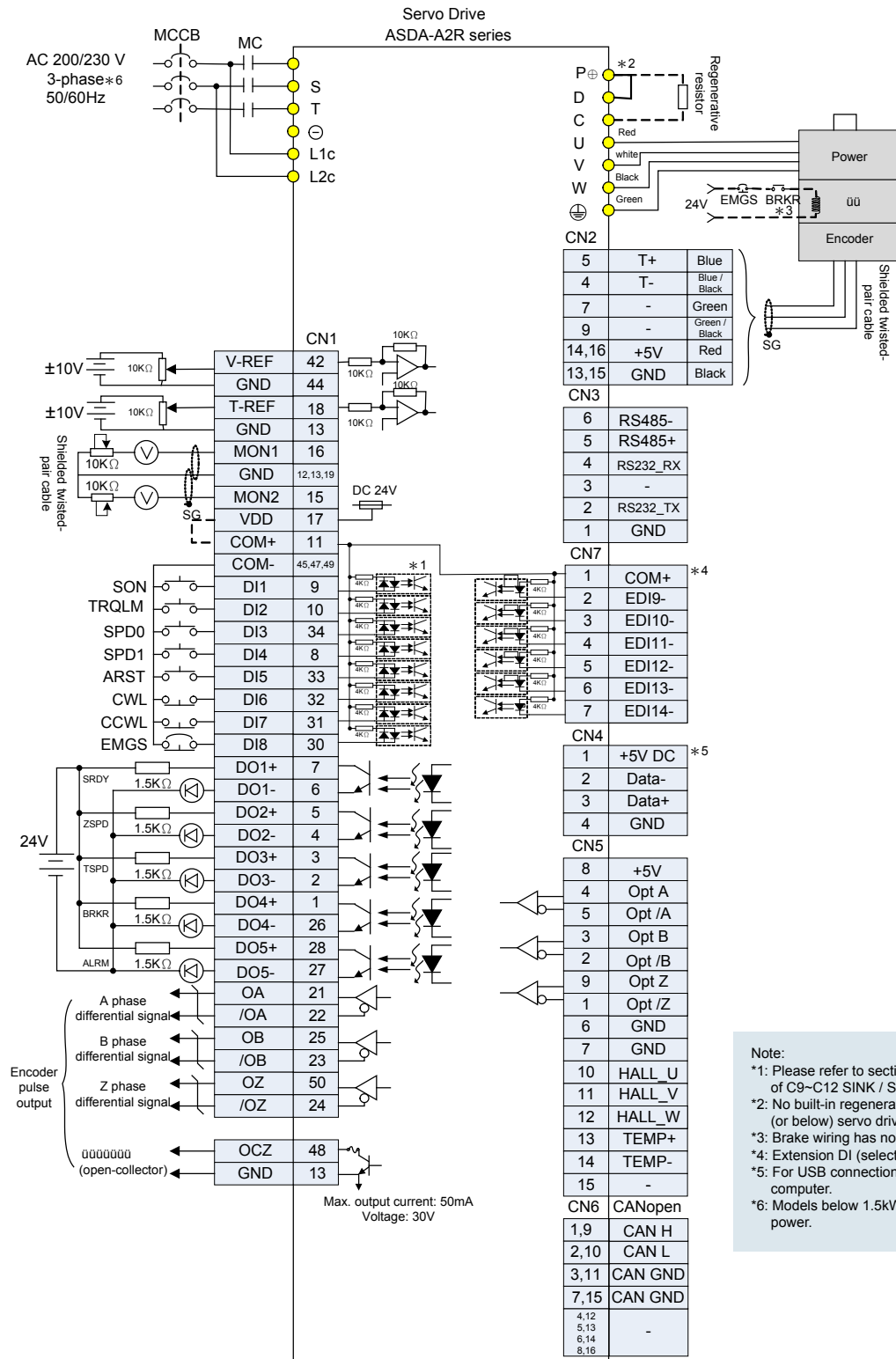
Please note:
*This is a Delta optional part.

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

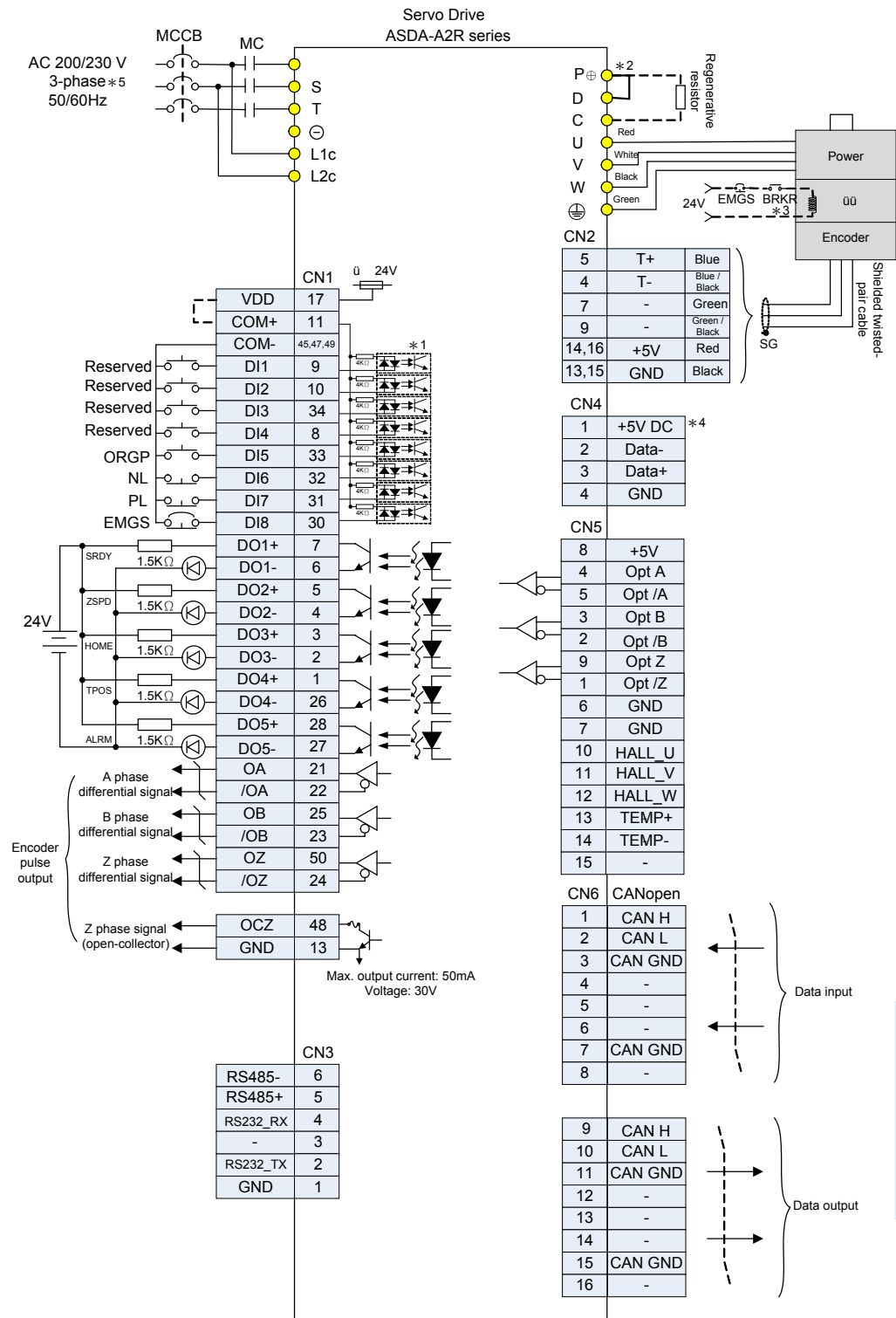


Standard Connection Examples

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

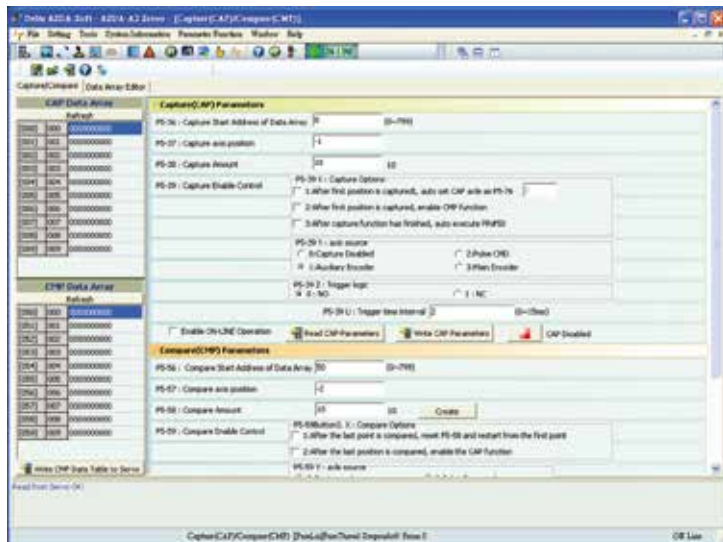


CANopen Communication Mode

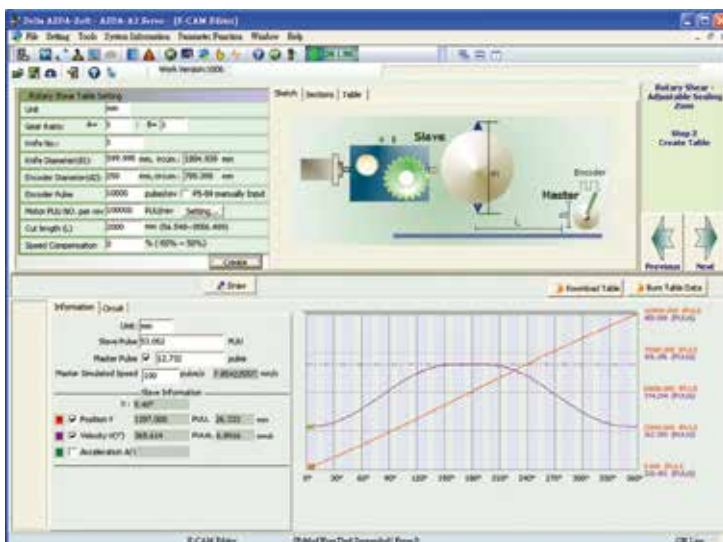


Note:
*1: Please refer to section 3.3.3 for the wiring of C9~C12 SINK / SOURCE mode.
*2: No built-in regenerative resistor for 100W, 200W (or below) servo drives.
*3: Brake wiring has no polarity.
*4: For USB connection. It connects to a personal computer.
*5: Models below 1.5kW can apply single-phase power.

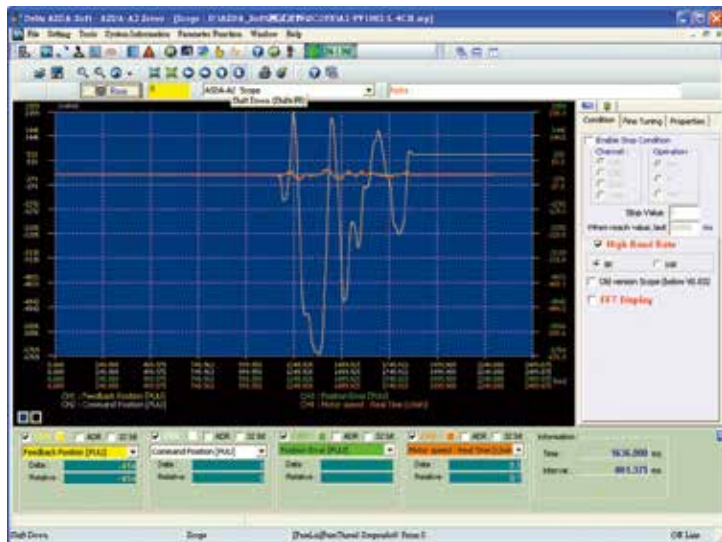
ASDA-Soft Configuration Software



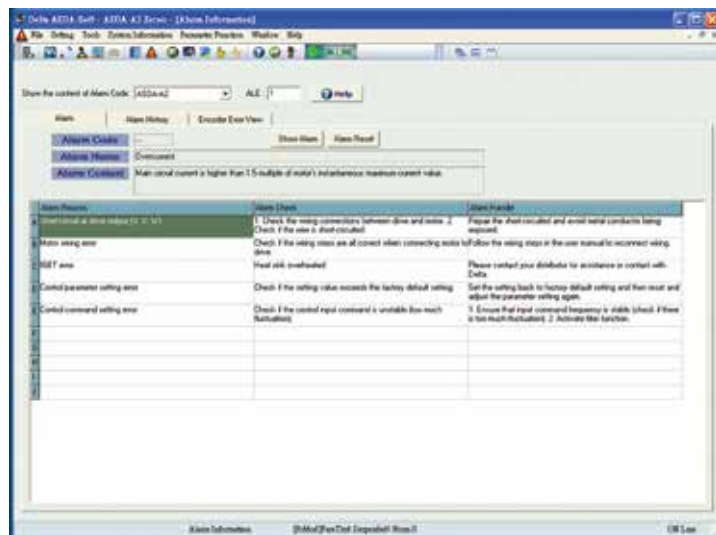
- Strong CAPTURE and COMPARE functions for position latch and detection help you complete system configuration quickly.



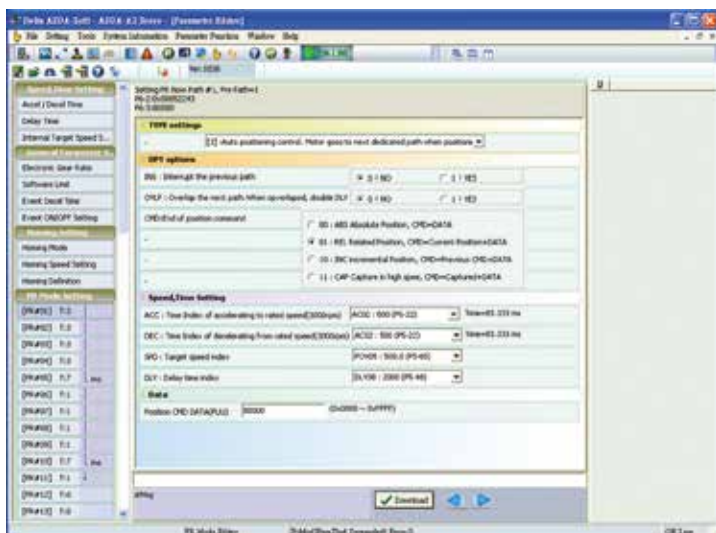
- User-friendly E-Cam editing interface is provided for designing E-Cam outlines and curves freely. In addition, quick settings for flying shear and rotary cut applications are offered.



- Versatile on-line monitoring function, similar to a digital oscilloscope is able to quickly record the status and data of each axis. Real-time monitoring is easy.



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



- 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.

Optional Accessories

• Quick Connectors

- Used for 100W to 300W 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.



• Encoder Cables

- 3m and 5m standard cables are available.
- Customized service is offered to meet the needs of customers.



• RS-232 Communication Cables

- Connects ASDA-A2R to PLC, HMI, and other controllers via RS-232 communication.
- Standard cable length is 3m.



• USB Communication Cables (for PC)

- Connects ASDA-A2R to a PC (via ASDA-Soft configuration software)
- USB1.1 is equipped as standard.



• RS-485 Connectors

- Used to connect multiple ASDA-A2R series products by RS-485 interface through Modbus serial communication.





• 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.

• Regenerative Resistors

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

• CANopen Accessories

- Delta's TAP-CN03 distribution box connects ASDA-A2R to Delta's PLC CAN Master.
- CANopen communication cable is provided. Standard cable length is 0.5m and 1m.

• ASD-IF-EN0A20 Signal Converter Box

- Converts the square wave and sine wave to communication signals that can be used and controlled by Delta's servo drive.
- Connects ASDA-A2R to permanent-magnet synchronous linear motors and servo (rotary) motors.

• Signal Connectors

- For the connection of a ASD-IF-EN0A20 signal converter box.
- Two types are selectable: SCSI 26-pin and SCSI 20-pin.

• Connection Cables

- Connects ASDA-A2R to a ASD-IF-EN0A20 signal converter box.
- 3m and 5m standard cables are available.

Specifications of ASDA-A2R Series Servo Drives

ASDA-A2R Series			100 W 01	200 W 02	400 W 04	750 W 07	1 kW 10	1.5 kW 15	2 kW 20	3 kW 30
Power	Phase / Voltage		Single phase/ Three phase 220 VAC						Three phase 220 VAC	
	Permissible voltage		Single phase/ Three phase 200 ~ 230 VAC, -15%~10%						Three phase 200 ~ 230 VAC, -15%~10%	
	Continuous output current		0.9 Arms	1.55 Arms	2.6 Arms	5.1 Arms	7.36 Arms	8.3 Arms	13.4 Arms	19.4 Arms
Colling method			Natural cooling				Fan cooling			
Encoder resolution / Feedback resolution (for Delta's 20BIT rotary motor)			20-bit (1280000 p/rev)							
Main circuit control			SVPWM control							
Control mode			Manual / Auto							
Position Control Mode	Dynamic brake		N/A				Built-in			
	Max. input pulse frequency		Transmitted by differential: 500K/4Mpps, transmitted by open-collector: 200Kpps							
	Pulse type		Pulse + symbol; A phase + B phase; CCW pulse + CW pulse							
	Command source		External pulse / Register							
	Smoothing strategy		Low-pass and P-curve filter							
	E-gear ratio		E-gear ratio: N / M time, limitation: (1/50 < N/M < 25600) N: 1~32767 / M: 1:32767							
	Torque limit		Parameter settings							
Speed Control Mode	Feed forward compensation		Parameter settings							
	Analog command input	Voltage range	0 ~ ±10 VDC							
		Input resistance	10 KΩ							
	input	Time constant	2.2 us							
		Speed control range ^{*1}	1:5000							
	Command source		External analog command / Register							
	Smoothing strategy		Low-pass and S-curve filter							
	Torque limit		Via parameter setting or analog input							
	Bandwidth		Max.1kHz							
	Speed accuracy ^{*2}		The load fluctuation (0 ~ 100%) is 0.01% The power fluctuation ±10% is 0.01% The ambient temperature fluctuation (0 ~ 50°C) is 0.01%							
Torque control mode	Analog command input	Voltage range	0 ~ ±10 VDC							
		Input resistance	10 KΩ							
	input	Time constant	2.2 us							
		Command source		External analog command / Register						
	Smoothing strategy		Low-pass filter							
Speed limit			Via parameter setting or analog input							
Analog monitor output			The monitor signal which can be set via parameters (Output voltage range: ±8 V)							
Digital Input/Output		Input	Servo on, Fault reset, Gain switch, Pulse clear, Zero clamp, Command input reverse control, Internal position command trigger, Torque (force) limit, Speed limit, Internal position command selection, Motor stop, Speed command selection, Speed / position mode switching, Speed / torque (force) mode switching, Torque (force) / position mode switching, Pt / Pr command switching, Emergency stop, Positive / negative limit, Original point, Forward / reverse operation torque limit, Homing activated, E-CAM engage, Forward / reverse JOG input, Event trigger, E-gear N selection, Pulse input prohibition							
		Output	A, B, Z Line Driver output Servo on, Servo ready, Zero speed, Target speed reached, Target position reached, torque (force) limiting, Servo alarm, Brake control, Homing completed, Early warning for overload, Servo warning, Position command overflows, Software negative limit, Software positive limit, Internal position command completed, Capture procedure completed, Servo procedure completed, Master position area of E-CAM							
Protective function			Over current, Undervoltage, Undervoltage, Overheat, Regeneration error, Overload, Excessive speed deviation, Excessive position deviation, Encoder error, Adjustment error, Emergency stop, Negative / positive limit error, Excessive deviation of full-closed loop control, Serial communication error, Rst leak phase, Serial communication timeout, Short-circuit protection of terminal U, V, W and CN1, CN2, CN3							
Communication interface			RS-232 / RS-485 / CANopen / USB							
Environment	Installation site		Indoors (avoid the direct sunlight), no corrosive fog (avoid fumes, flammable gas and dust)							
	Altitude		Elevation under 1000M							
	Atmospheric pressure		86kPa ~ 106kPa							
	Operating temperature		0°C ~ 55°C (If the temperature is over 45°C, forced air circulation is needed.)							
	Storage temperature		-20°C ~ 65°C							
	Humidity		Under 0 ~ 90% RH (non-condensing)							
	Vibrating		Under 20Hz, 9.80665m/s ² (1G), 20 ~ 50Hz 5.88m/ s ² (0.6G)							
	IP rating		IP20							
	Power system		TN system ^{*4}							
Approvals			IEC/EN 61800-5-1, UL 508C, C-tick							
			  US LISTED 							

Note:

*1 When it is in rated load, the speed ratio is: the minimum speed (smooth operation) / rated speed.

*2 When the command is the rated speed, the velocity correction ratio is: (rotational speed with no load – rotational speed with full load) / rated speed.

*3 Please refer to section 11.6 for overload features.

*4 TN system: The neutral point of the power system connects to the ground directly. The exposed metal components connect to the ground via the protective earth conductor.

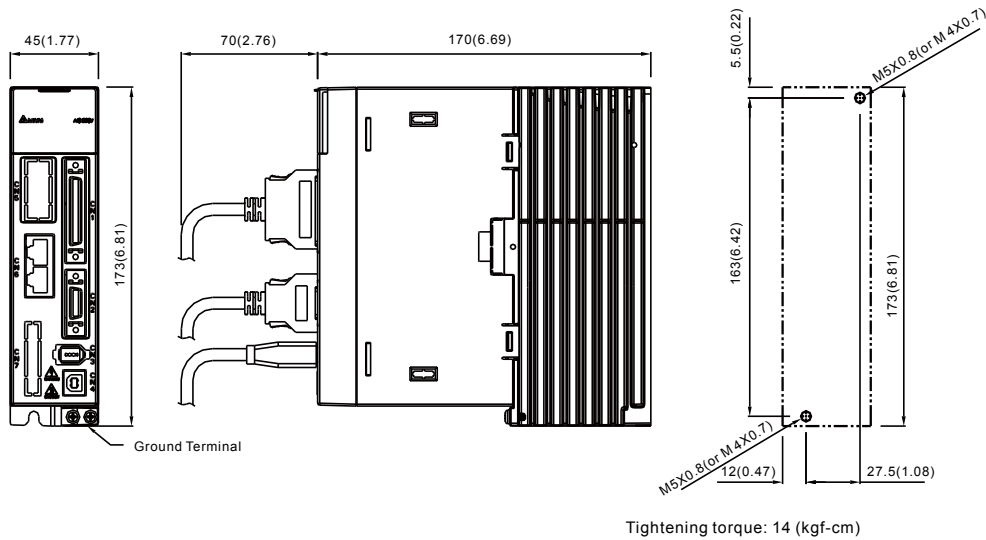


Dimensions of ASDA-A2R Servo Drives

220V Series

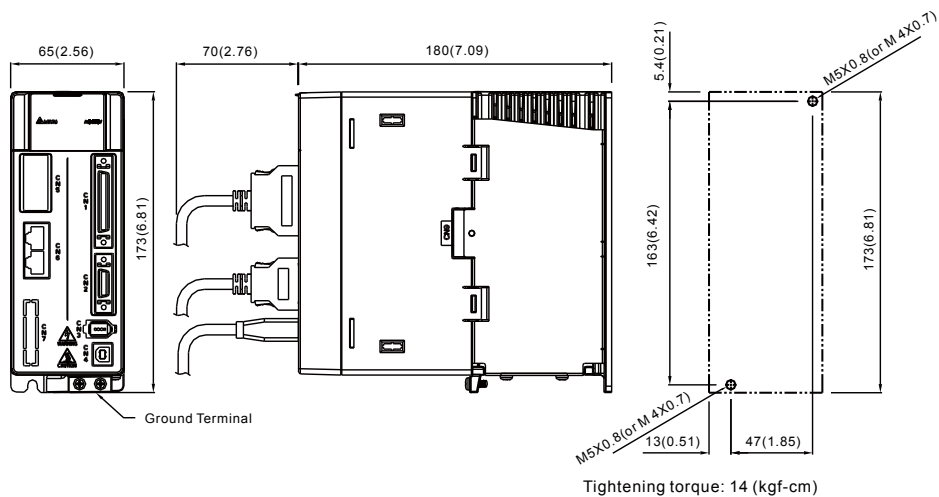
100W / 200W / 400W

Weight
1.5 (3.3)



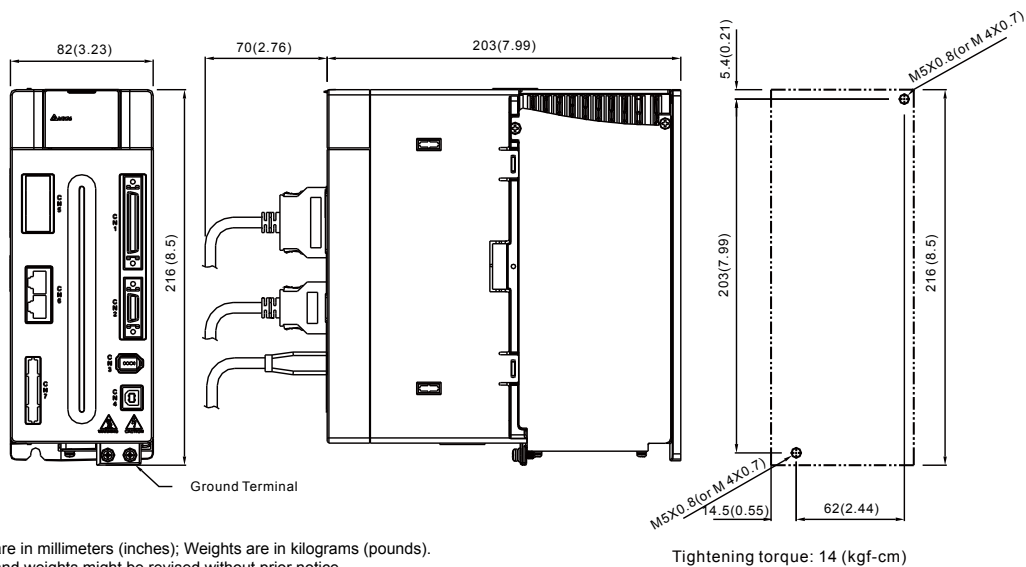
750W / 1.0kW / 1.5kW

Weight
2.0 (4.4)



2.0kW / 3.0kW

Weight
2.89 (6.36)



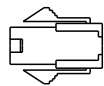
NOTE 1) Dimensions are in millimeters (inches); Weights are in kilograms (pounds).
2) Dimensions and weights might be revised without prior notice.

Optional Cables and Connectors

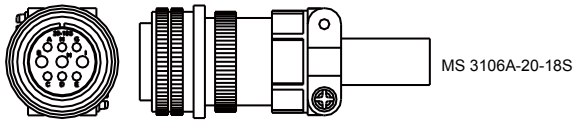
• Power Connectors

ASDBCAPW0000

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

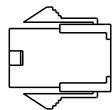


ASD-CAPW1000

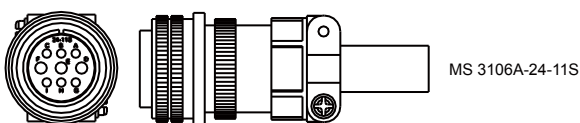


ASDBCAPW0100

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

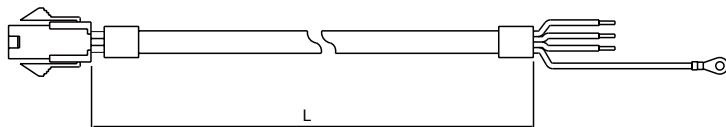


ASD-CAPW2000



• Power Cables

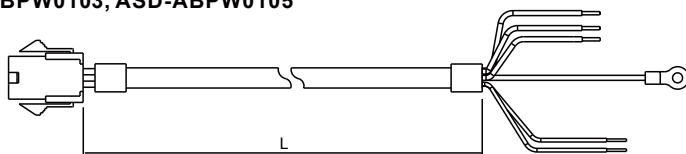
ASD-ABPW0003, ASD-ABPW0005



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

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

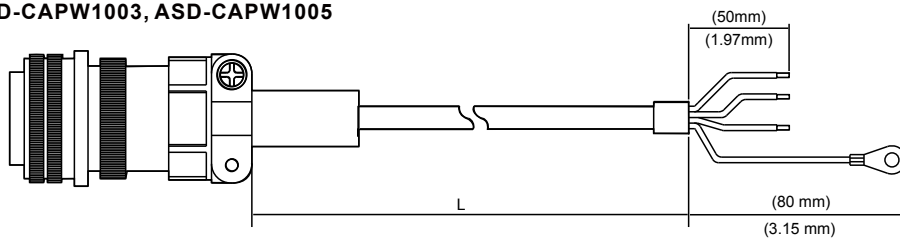
ASD-ABPW0103, ASD-ABPW0105



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

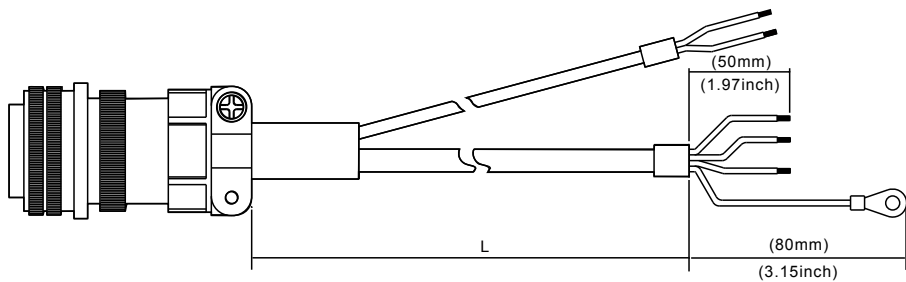
ASD-CAPW1003, ASD-CAPW1005



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

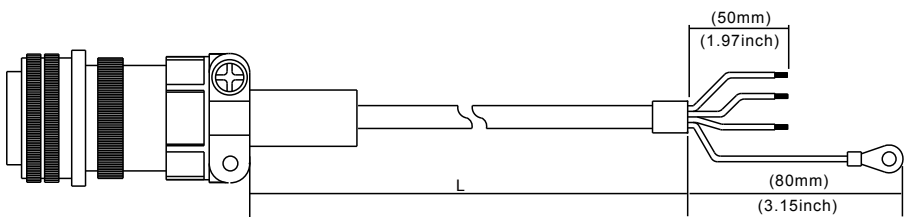
● Power Cables

ASD-CAPW1103, ASD-CAPW1105



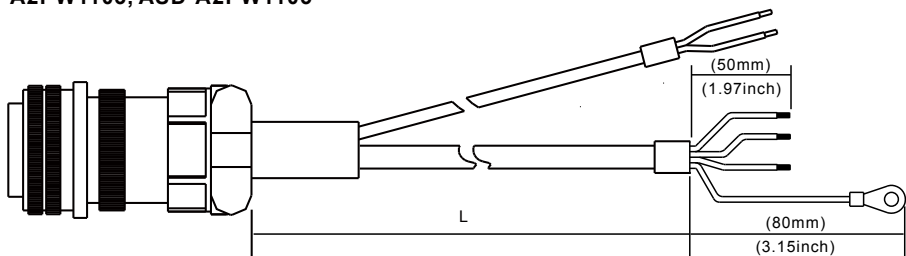
Item	Part No.	Straight	L	
			mm	inch
1	ASD-CAPW1103	3106A-20-18S	3000±100	118±4
2	ASD-CAPW1105	3106A-20-18S	5000±100	197±4

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

ASD-A2PW1103, ASD-A2PW1105

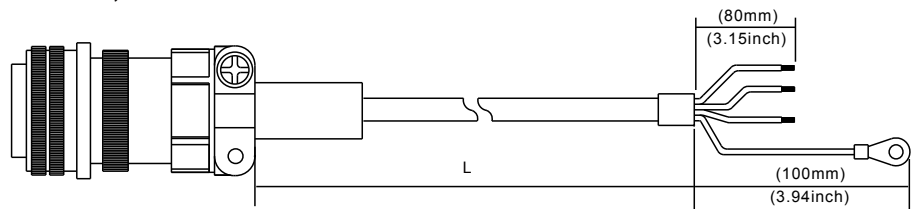


Item	Part No.	Straight	L	
			mm	inch
1	ASD-A2PW1103	3106A-20-18S	3000±100	118±4
2	ASD-A2PW1105	3106A-20-18S	5000±100	197±4

Optional Cables and Connectors

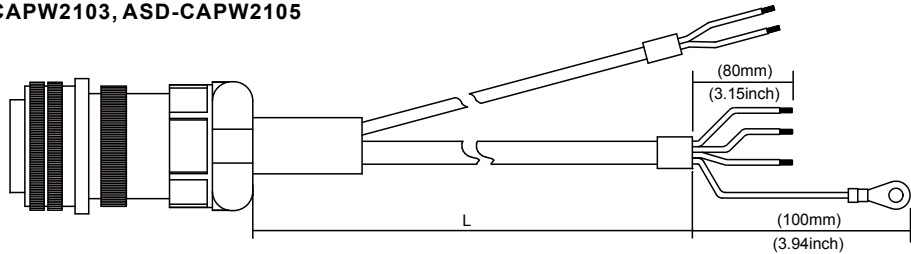
• Power Cables

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

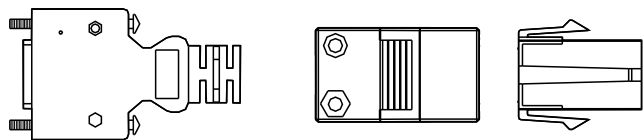
ASD-CAPW2103, ASD-CAPW2105



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

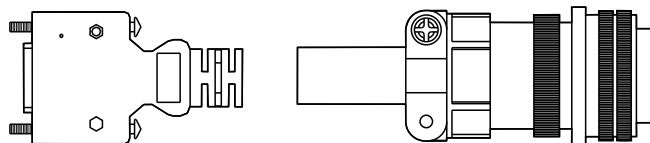
• Encoder Connectors

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

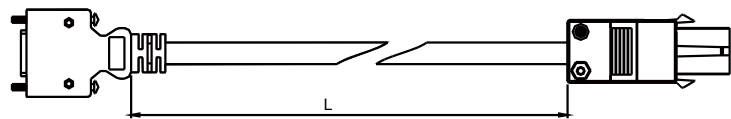
ASD-CAEN1000



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

● Incremental Encoder Cables

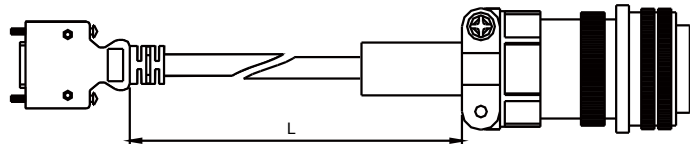
ASD-ABEN0003, ASD-ABEN0005



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

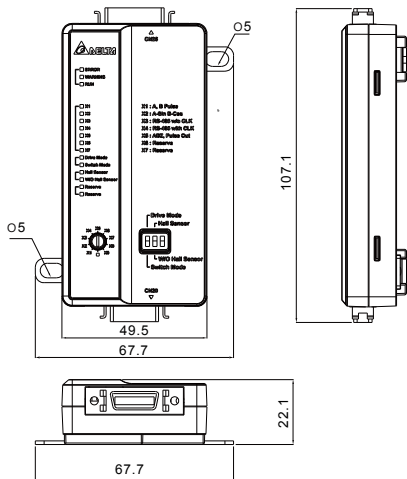


Title		Part No.	Manufacturer
MOTOR SIDE		3106A-20-29S	-----
DRIVE SIDE	PLUG	3M 10120-3000PE	3M
	SHELL	3M 10320-52A0-008	3M

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

● ASD-IF-EN0A20 Signal Converter Box

ASD-IF-EN0A20



● SCSI 26pin Connector

ASD-CN5C0026

Title	Part No.	Vender Part No.	Manufacturer
Housing	305059030L	10326-52A0-008	3M
Terminal	307740120L	10126-3000PE	3M

● SCSI 20pin Connector

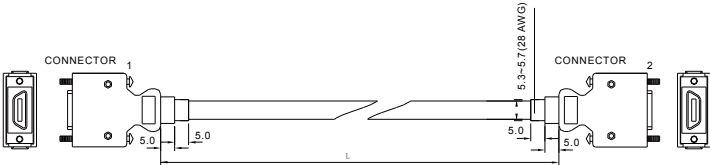
ASD-CN5C0020

Title	Part No.	Vender Part No.	Manufacturer
Housing	305059010L	10320-52A0-008	3M
Terminal	307740110L	10120-3000PE	3M

Optional Cables and Connectors

Absolute Encoder Cables

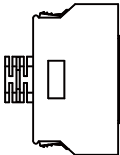
ASD-CASC2003,ASD-CASC2005



Item	Part No.	mm (AWG)	Type	L	
				mm	inc
1	ASD-CASC2003	5.3~5.7(28AWG)	UL2464	3000±100	118±4
2	ASD-CASC2005	5.3~5.7(28AWG)	UL2464	5000±100	197±4

IO Signal Connector (CN1)

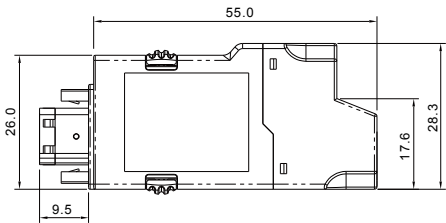
ASD-CN5C0050



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

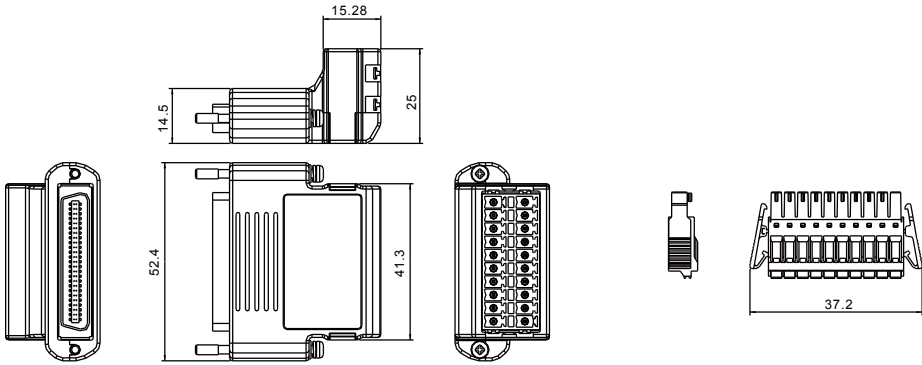
RS-485 Connector

ASD-CNIE0B06



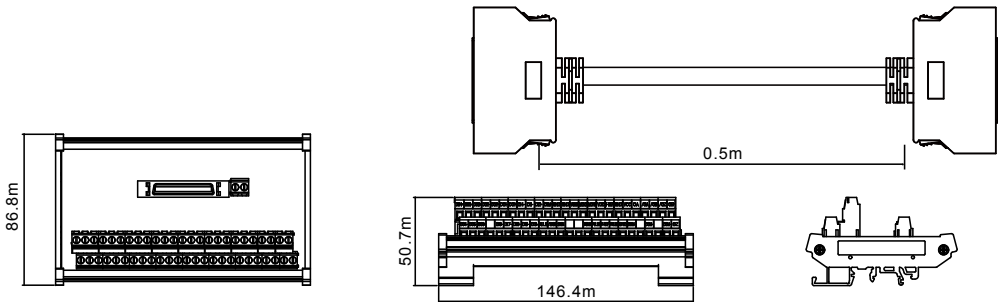
CN1 Connector

ASD-IF-SC5020



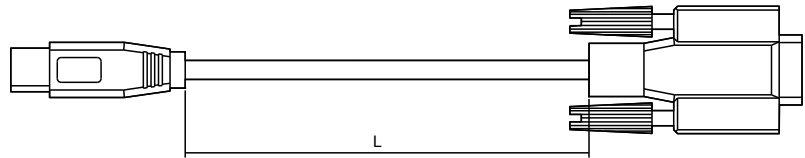
Terminal Block Module

ASD-BM-50A



● RS-232 Communication Cable

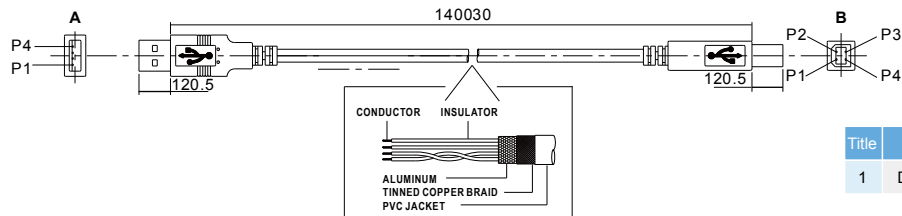
ASD-CARS0003



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

● Communication Cable between Drive and Computer (for PC)

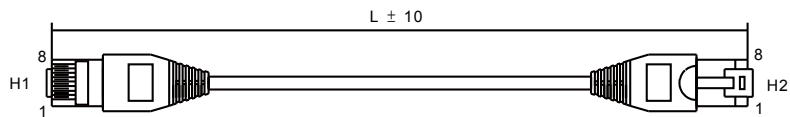
DOP-CAUSBAB



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

● CANopen Communication Cable

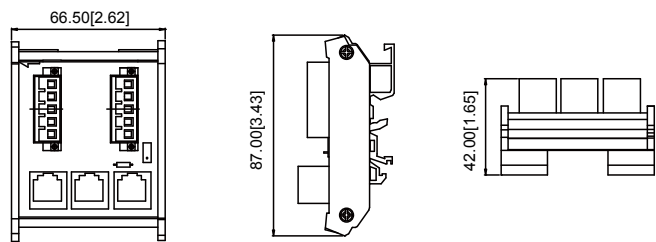
TAP-CB03, TAP-CB04



Title	Part No.	L	
		mm	inch
1	TAP-CB03	300±10	19±0.4
2	TAP-CB04	500±10	39±0.4

● CANopen Distribution Box

TAP-CN03



NOTE

Servo Drive, Servo Motor and Accessories Combinations

100W Servo Drive and 50W Low Inertia Servo Motor

Servo Drive	ASD-A2R-0121-□
Low Inertia Servo Motor	ECMA-C1040F□S
Power Cable (Without Brake)	ASD-ABPW000X
Power Connectors (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)

100W Servo Drive and 100W Low Inertia Servo Motor

Servo Drive	ASD-A2R-0121-□
Low Inertia Servo Motor	ECMA-C△0401□S
Power Cable (Without Brake)	ASD-ABPW000X
Power Connectors (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)

200W Servo Drive and 200W Low Inertia Servo Motor

Servo Drive	ASD-A2R-0221-□
Low Inertia Servo Motor	ECMA-C△0602□S
Power Cable (Without Brake)	ASD-ABPW000X
Power Connectors (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)

400W Servo Drive and 400W Low Inertia Servo Motor

Servo Drive	ASD-A2R-0421-□
Low Inertia Servo Motor	ECMA-C△0401□S ECMA-C△0804□7
Power Cable (Without Brake)	ASD-ABPW000X
Power Connectors (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)

400W Servo Drive and 600W Medium Inertia Servo Motor

Servo Drive	ASD-A2R-0421-□
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)

400W Servo Drive and 300W High Inertia Servo Motor

Servo Drive	ASD-A2R-0421-□
High Inertia Servo Motor	ECMA-E △ 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 500W High Inertia Servo Motor

Servo Drive	ASD-A2R-0721-□
High Inertia Servo Motor	ECMA-F11305□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-A2R-0721-□
Low Inertia Servo Moto	ECMA-C △ 0807□S ECMA-C △ 0907□7
Power Cable (Without Brake)	ASD-ABPW000X
Power Connectors (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 and Accessories Combinations

750W Servo Drive and 600W High Inertia Servo Motor

Servo Drive	ASD-A2R-0721-□
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)

1kW Servo Drive and 1kW Low Inertia Servo Motor

Servo Drive	ASD-A2R-1021-□
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)

1kW Servo Drive and 1kW Low Inertia Servo Motor

Servo Drive	ASD-A2R-1021- □
Low Inertia Servo Motor	ECMA-C △ 0910□ S
Power Cable (Without Brake)	ASD-ABPW000X
Power Cable (With Brake)	ASDBCAPW0000
Power Connector	ASD-ABPW010X
Incremental Encoder Cable	ASDBCAPW0100
Absolute Encoder Cable	ASD-ABEN000X
Encoder Connector	ASD-ABEN0000

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

1kW Servo Drive and 1kW Medium Inertia Servo Moto

Servo Drive	ASD-A2R-1021-□
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)

1kW Servo Drive and 850W Medium-High Inertia Servo Motor

Servo Drive	ASD-A2R-1021-□
Medium-High Inertia Servo Motor	ECMA-F △ 1308 □ 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)

1kW Servo Drive and 900W High Inertia Servo Motor

Servo Drive	ASD-A2R-1021-□
High Inertia Servo Motor	ECMA-G △ 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)

1kW Servo Drive and 1.5kW Medium Inertia Servo Moto

Servo Drive	ASD-A2R-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)

2kW Servo Drive and 2kW Low Inertia Servo Motor

Servo Drive	ASD-A2R-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)

Servo Drive, Servo Motor and Accessories Combinations

2kW Servo Drive and 2kW Medium Inertia Servo Motor

Servo Drive	ASD-A2R-2023-□
Medium Inertia Servo Motor	ECMA-E △ 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-A2R-2023-□
Medium Inertia Servo Motor	ECMA-E △ 1820 □S
Power Cable (Without Brake)	ASD-CAPW100X
Power Cable (With Brake)	ASD-CAPW210X
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)

2kW Servo Drive and 1.3kW Medium-High Inertia Servo Motor

Servo Drive	ASD-A2R-2023- □
Medium-High Inertia Servo Motor	ECMA-F11313□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 1.8kW Medium-High Inertia Servo Motor

Servo Drive	ASD-A2R-2023-□
Medium-High Inertia Servo Motor	ECMA-F11318□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)

3kW Servo Drive and 3 kW Low Inertia Servo Motor

Servo Drive	ASD-A2R-3023-□
Low Inertia Servo Motor	ECMA-C △ 1330□4
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)

3kW Servo Drive and 3kW Medium Inertia Servo Motor

Servo Drive	ASD-A2R-3023-□
Medium Inertia Servo Motor	ECMA-E △ 1830□S
Power Cable (Without Brake)	ASD-CAPW200X
Power Cable (With Brake)	ASD-CAPW210X
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)

3kW Servo Drive and 3.5kW Medium Inertia Servo Motor

Servo Drive	ASD-A2R-3023-□
Medium Inertia Servo Motor	ECMA-E △ 1835□S
Power Cable (Without Brake)	ASD-CAPW200X
Power Cable (With Brake)	ASD-CAPW210X
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)

3kW Servo Drive and 3kW Medium-High Inertia Servo Motor

Servo Drive	ASD-A2R-3023-□
Medium-High Inertia Servo Motor	ECMA-F △ 1830□S
Power Cable (Without Brake)	ASD-CAPW200X
Power Cable (With Brake)	ASD-CAPW210X
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)

Servo Drive, Servo Motor and Accessories Combinations

Other Accessories (for ASDA-A2R 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 1.5kW 10Ω	BR1K5W005

Safety Information

Global Standards	ASDA-A2R series is designed to fully comply with demanding international standards, such as IEC, EN and more for all fields of industrial automation technology.	
EMC standard	EN61000-4-6	Level 3
	EN61000-4-3	Level 3
	EN61000-4-2	Level 2 and Level 3
	EN61000-4-4	Level 3
	EN61000-4-8	Level 4
	EN61000-4-5	Level 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)	
0.1	-	-	30W
0.2	-	-	30W
0.4	40W	40W	30W
0.75	40W	60W	20W
1.0	40W	60W	20W
1.5	40W	60W	20W
2.0	20W	100W	10W
3.0	20W	100W	10W

Note:

- 400W ~ 4.5kW servo drives provide a built-in regenerative resistor.
- 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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