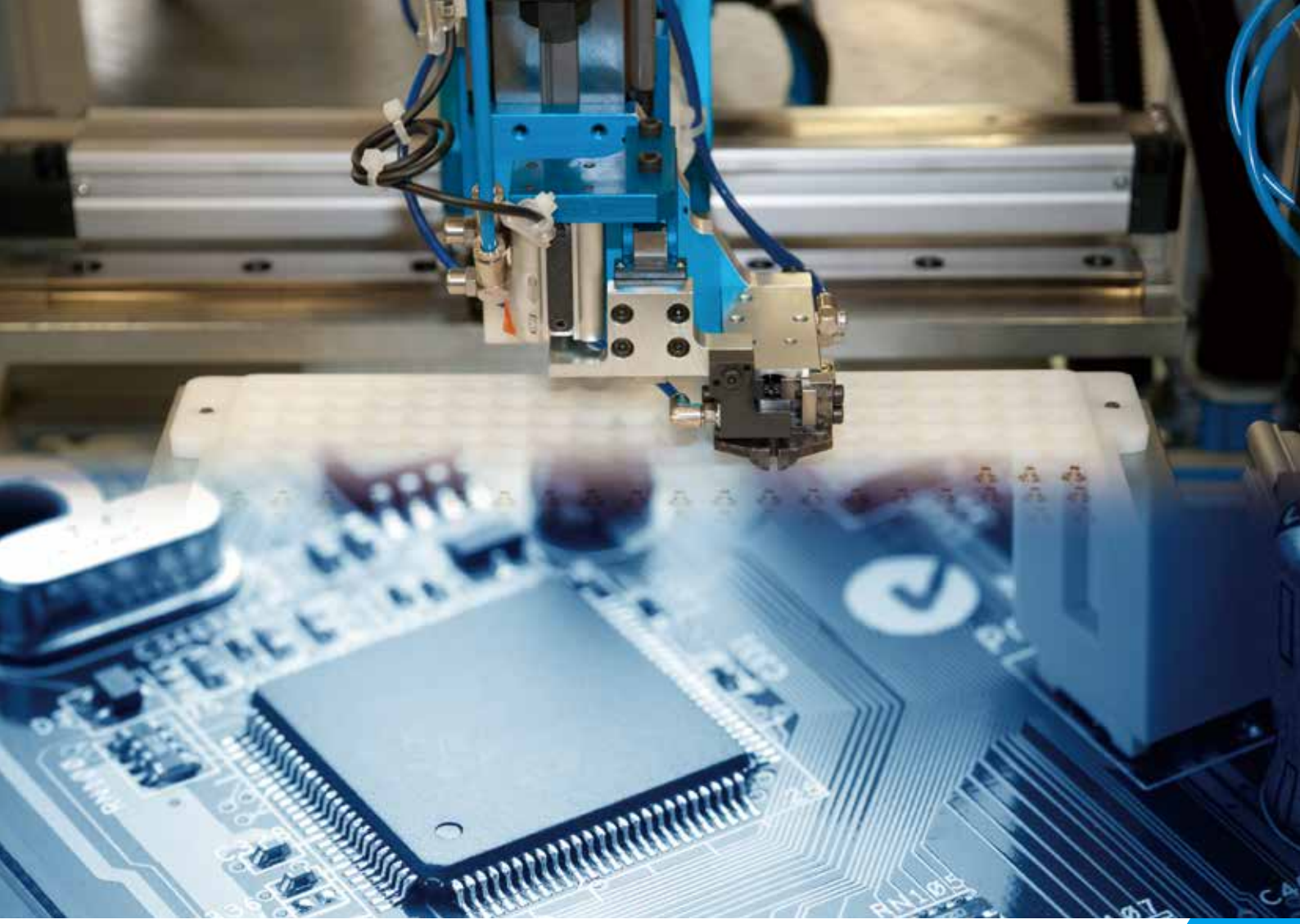


Automation for a Changing World

Delta AC Servo Drive & Motor
ASDA-A2R Series

www.deltaww.com

DELTA

Smarter. Greener. Together.

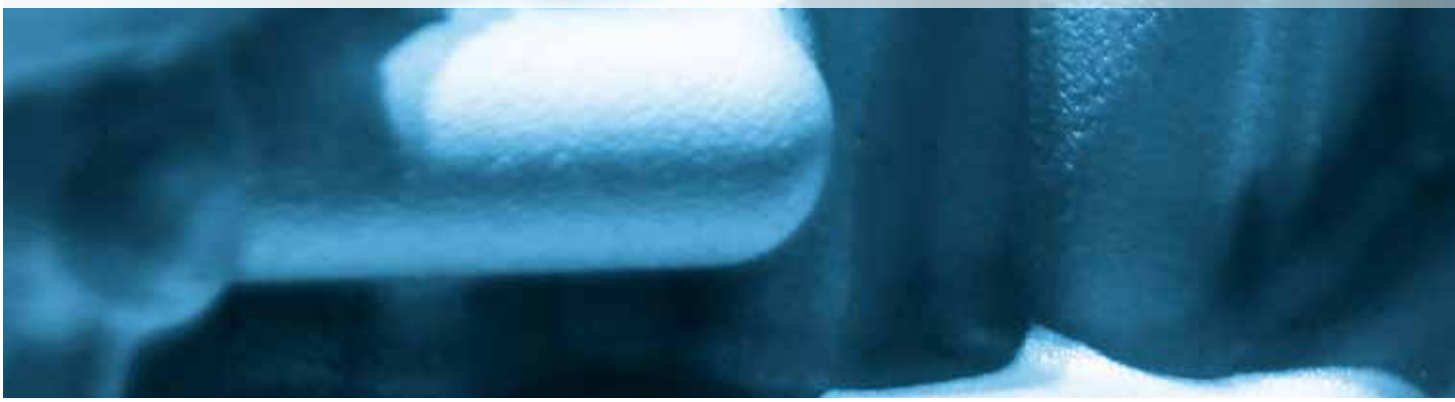
A High Precision Direct Linear Motion Drive System for Backlash Free Motion Control

The ASDA-A2R Series is an innovative and high precision linear motion drive system that directly drives linear motors and optimally performs the tasks 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 servo system and provides the same functions such as high frequency response, auto notch filters, vibration and resonance suppression, flexible position register control PR mode, and supports DMCNET and CANopen communication interfaces. In addition, it also offers built-in electronic cam (E-CAM) that make the ASDA-A2R harmonize diverse linear motion control and robust servo drive to satisfy high precision requirements and increase productivity.

The ASDA-A2R provides more choices and drives not only Delta's but also other brands of linear motors and rotary permanent magnet synchronous servo motors. Connecting to an optional 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, and divided into high resolution signals to greatly reduce noise and distortion for offering accurate signal transmission that is essential for rapid and optimum communications.

Excellent performance, good stability, high reliability and flexibility are the features of Delta's ASDA-A2R Series linear motion drive system.



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ASDA-A2R Series Features

System Operation with High Flexibility:

Connecting Various Kinds of Linear Motors and Servo Motors

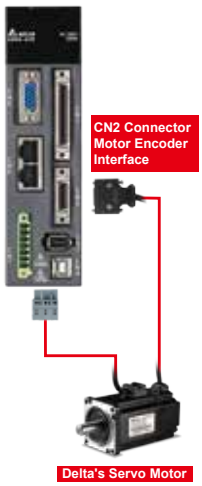
- Support for Delta's permanent-magnet synchronous linear motors and servo (rotary) motors.
- Support for other brands of permanent-magnet synchronous linear motors and servo (rotary) motors.

ECMA Series Servo Motors

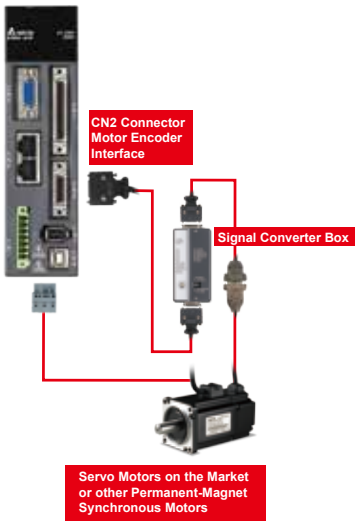
ECML Series Linear Motors

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

1. Using Delta's ECMA Series servo motor.

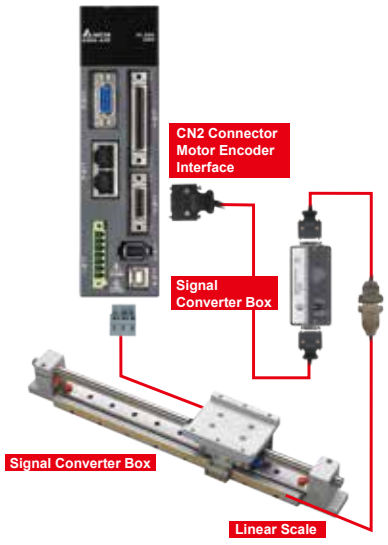


2. When not using Delta's servo motor and if the encoder signals are sinewave, the sine wave can be converted into communication signals by Delta's Signal Converter Box through the CN2 connector for the use of Delta's ASDA-A2R servo system.

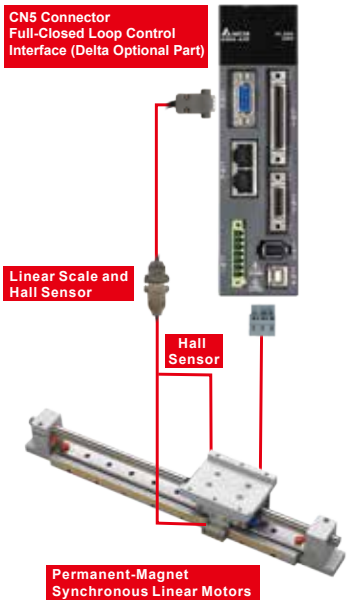


3. When not using Delta's servo motor and if the encoder signals are square wave, the square wave can be converted into communication signals directly through the CN5 connector for the use of Delta's ASDA-A2R servo system.

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.



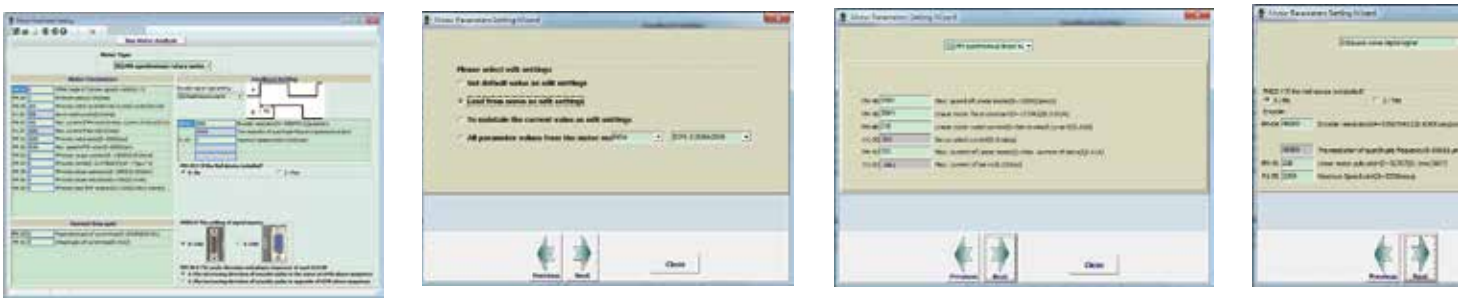
Satisfying Customers' High Speed Communication Requirements: The ASD-IF-EN0A20 Signal Converter Box (optional)

- 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

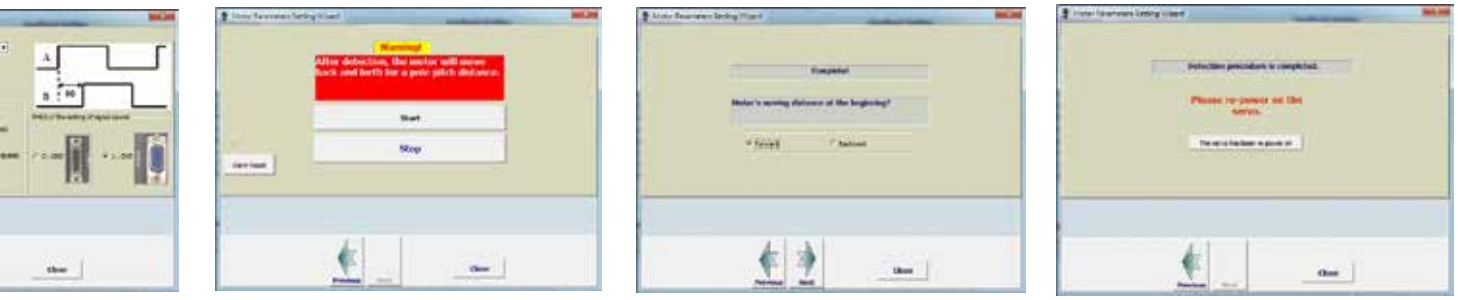
- Detects related electrical circuit parameters such as motor inductance and resistance.
- Provides motor current loop parameters for motor auto-tuning.
- Measures initial conditions on the magnetic field amplification and corrects phase sequence and deviation values of Hall sensor unit
- Detects and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

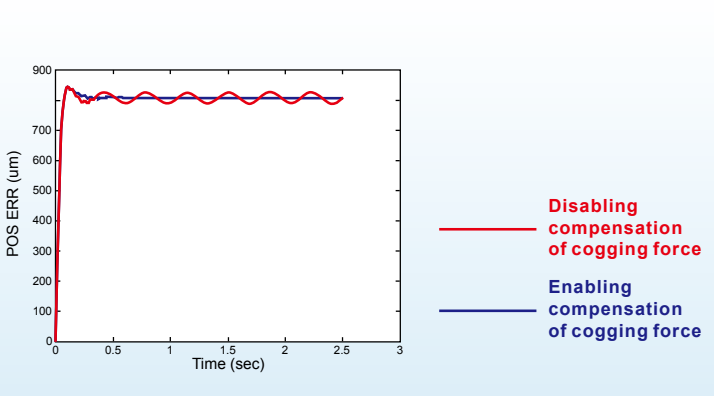
Accurate Positioning and Initiation without a Hall Sensor

- 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.



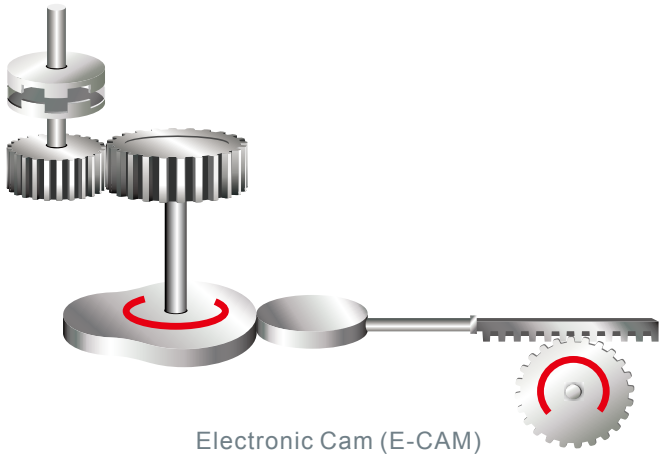
ASDA-A2R Series Features

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

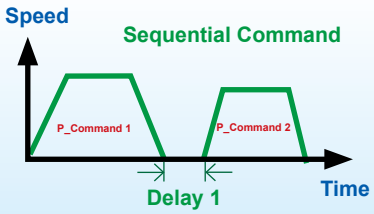
- 720 points max. for E-CAM outline.
- Smooth interpolation between points can be completed automatically to yield flexible programming.
- ASDA-Soft configuration software provides an E-CAM profile editing function for easy tuning and adjustment.
- Easy to use for flying shear, rotary cut, and other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



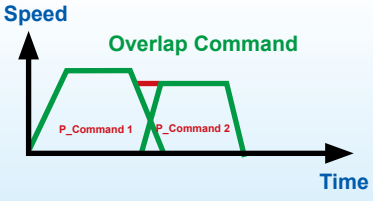
Electronic Cam (E-CAM)

Versatile PR Mode

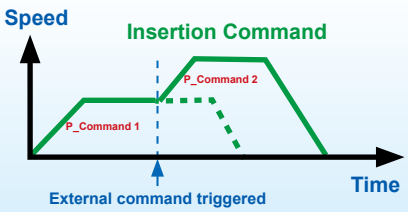
- ASDA-Soft configuration software offers a parameters editing function for different procedures planning.
- In PR mode, 64 procedures can be applied for multiple axes to enhance the ability of multiple points and continuous position control.
- Motion profile such as target position, speed command, acceleration 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

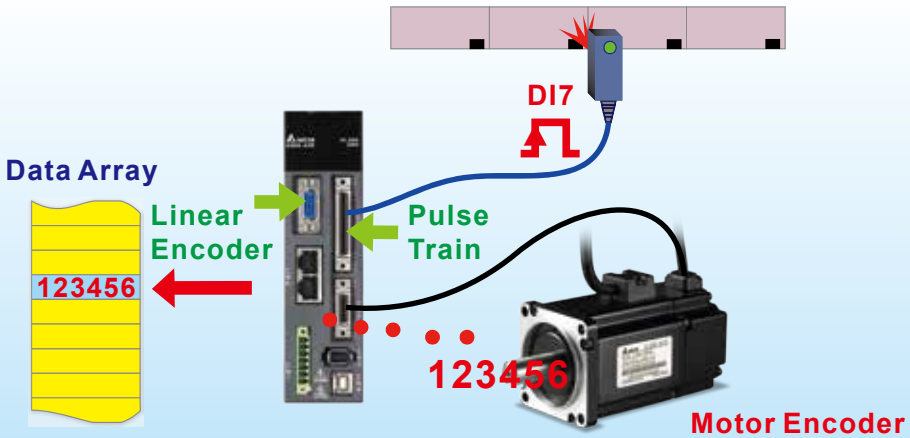
High-speed Position Latch Function (Capture)

- 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.

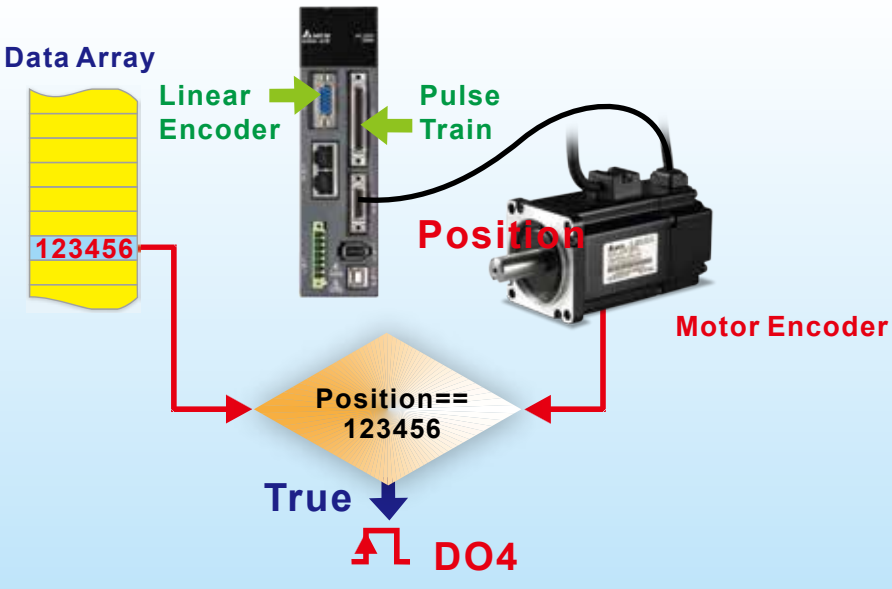
High-speed Position Detection Function (Compare)

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

When DI7 is triggered, the latched position is recorded in Data Array.



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

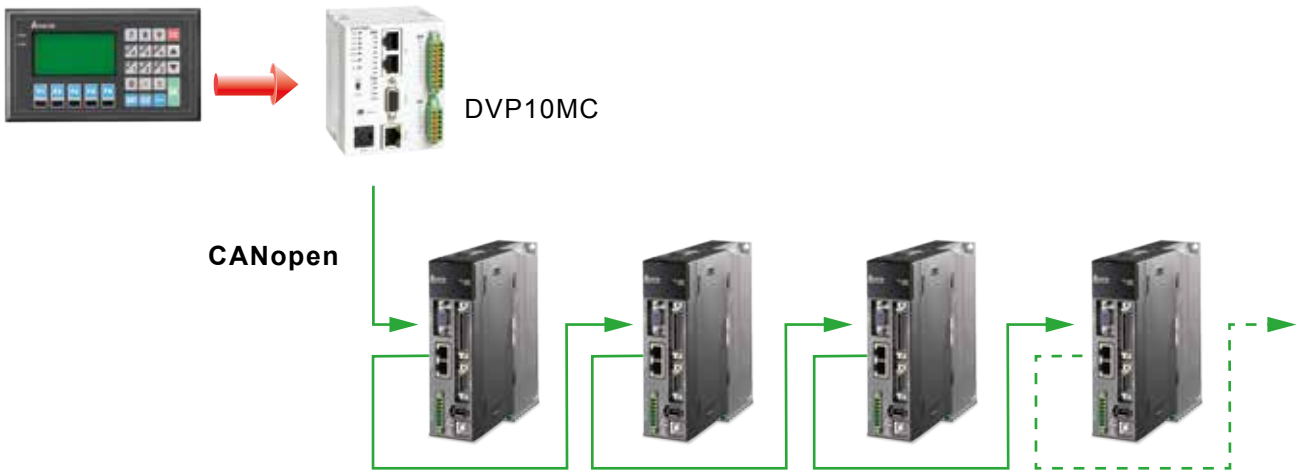


ASDA-A2R Series Features

Realization of Fieldbus Control System (Supports CANopen)

- 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



Maximum 127 servo systems working on the same bus

Product Line-up

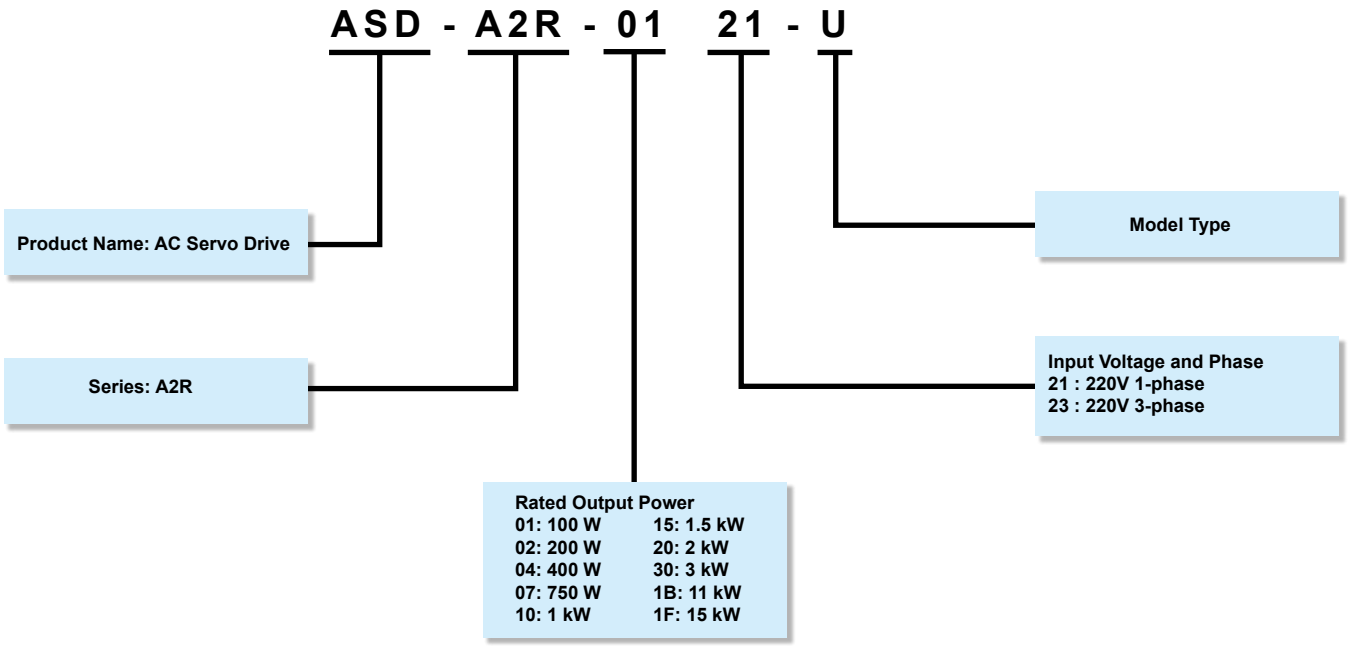
Servo Drives								
	100W	200W	400W	750W	1.0kW	1.5kW	2.0kW	3.0kW
	ASD-A2R-0121-□	ASD-A2R-0221-□	ASD-A2R-0421-□	ASD-A2R-0721-□	ASD-A2R-1021-□	ASD-A2R-1521-□	ASD-A2R-2023-□	ASD-A2R-3023-□
Permanent-magnet Synchronous Servo (Rotary) Motors								
	ECMA-C△0401□S ECMA-C1040F□S	ECMA-C△0602□S	ECMA-C△0604□S 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	–	–	–	–

NOTE

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 names 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 Name Explanation

ASDA-A2R Series Servo Drive



Model Type

	Type	RS-485 (CN3)	Full-Closed Control (CN5)*1	Extension Port for Digital Input (CN7)	CANpen	DMCNET	Analog Voltage Control	Pulse Input Port	PR Parameters*2	E-CAM*3
Standard Model	L	○	○	X	X	X	○	○	○	X
	U	○	○	○	X	X	○	○	○	○
Network Model	F	○	○	X	X	○	X	X	○	X
	M	○	○	X	○	X	○	○	○	○

NOTE

1. In PR mode, only A2R-F supports full-closed control function.
2. When applying communication mode (A2R-F, A2R-M models), PR parameters can be read and written through DMCNET only.
3. E-CAM function can only be used in PR mode

ECMA Series Servo Motor

ECM A - C1 06 02 E S

Product Name
ECM: Electronic Commutation Motor

Driving Type
A: AC Servo

Name of the Series
Rated Voltage / Rated Speed
C = 220V / 3,000 r/min;
E = 220V / 2,000 r/min;
F = 220V / 1,500 r/min;
G = 220V / 1,000 r/min;

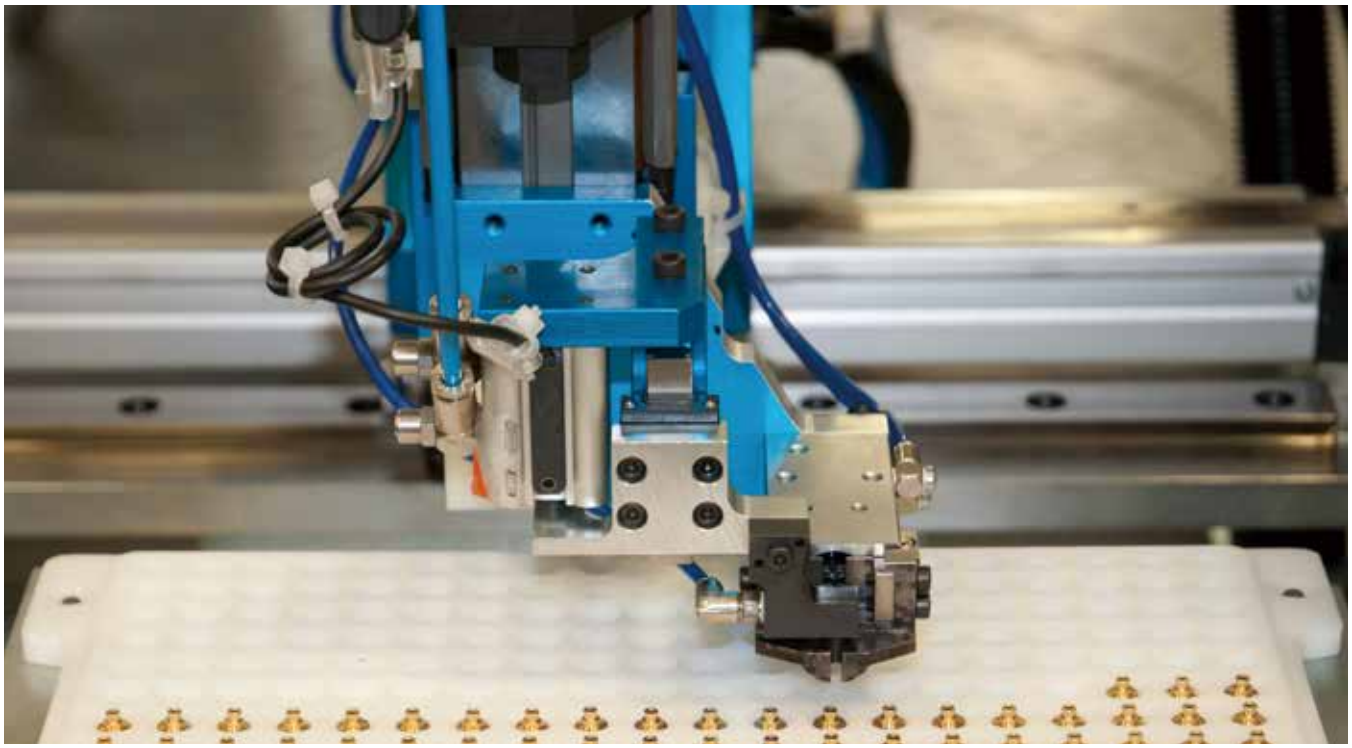
Encoder Type
1: Incremental, 20-bit
2: Incremental, 17-bit

Motor Frame Size
04: 40 mm 10: 100 mm
06: 60 mm 13: 130 mm
08: 80 mm 18: 180 mm
09: 86 mm

Rated Power Output
0F: 50 W 09: 900 W
01: 100 W 10: 1.0 kW
02: 200 W 13: 1.3 kW
03: 300 W 15: 1.5 kW
04: 400 W 18: 1.8 kW
05: 500 W 20: 2.0 kW
06: 600 W 30: 3.0 kW
07: 700 W 35: 3.5 kW
08: 850 W

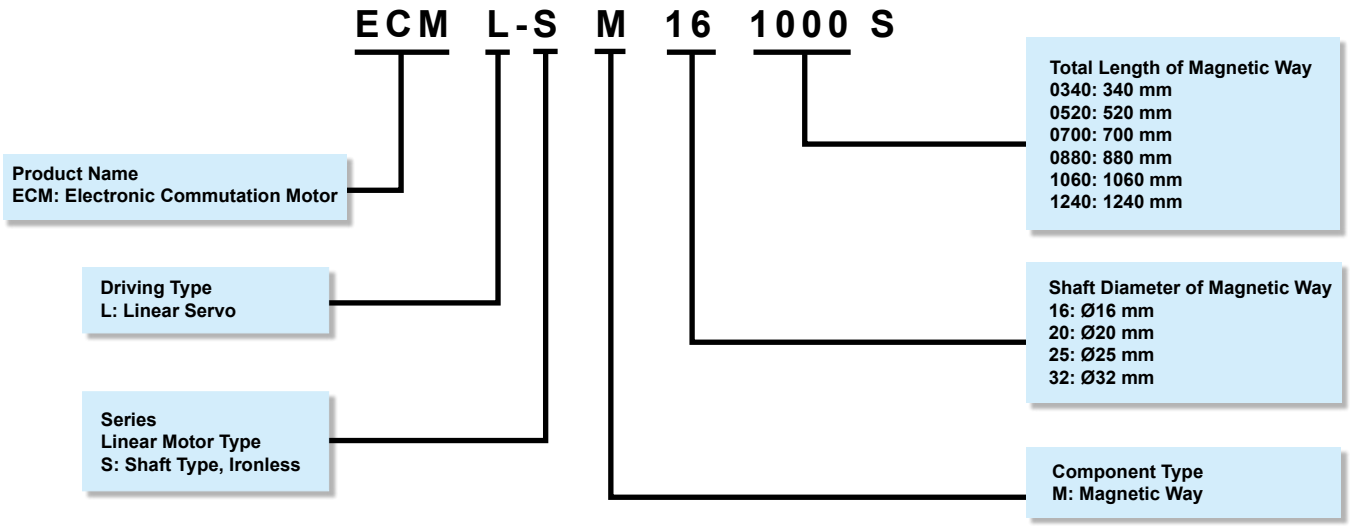
Type of Shaft Diameter and Oil Seal	w/o Brake w/o Oil Seal	With Brake w/o Oil Seal	w/o Brake With Oil Seal	With Brake With Oil Seal
Round Shaft (with fixed screw holes)	-	-	C	D
Keyway	E	F	-	-
Keyway (with fixed screw holes)	P	Q	R	S

S: Standard Shaft Diameter
H: High Inertia Model

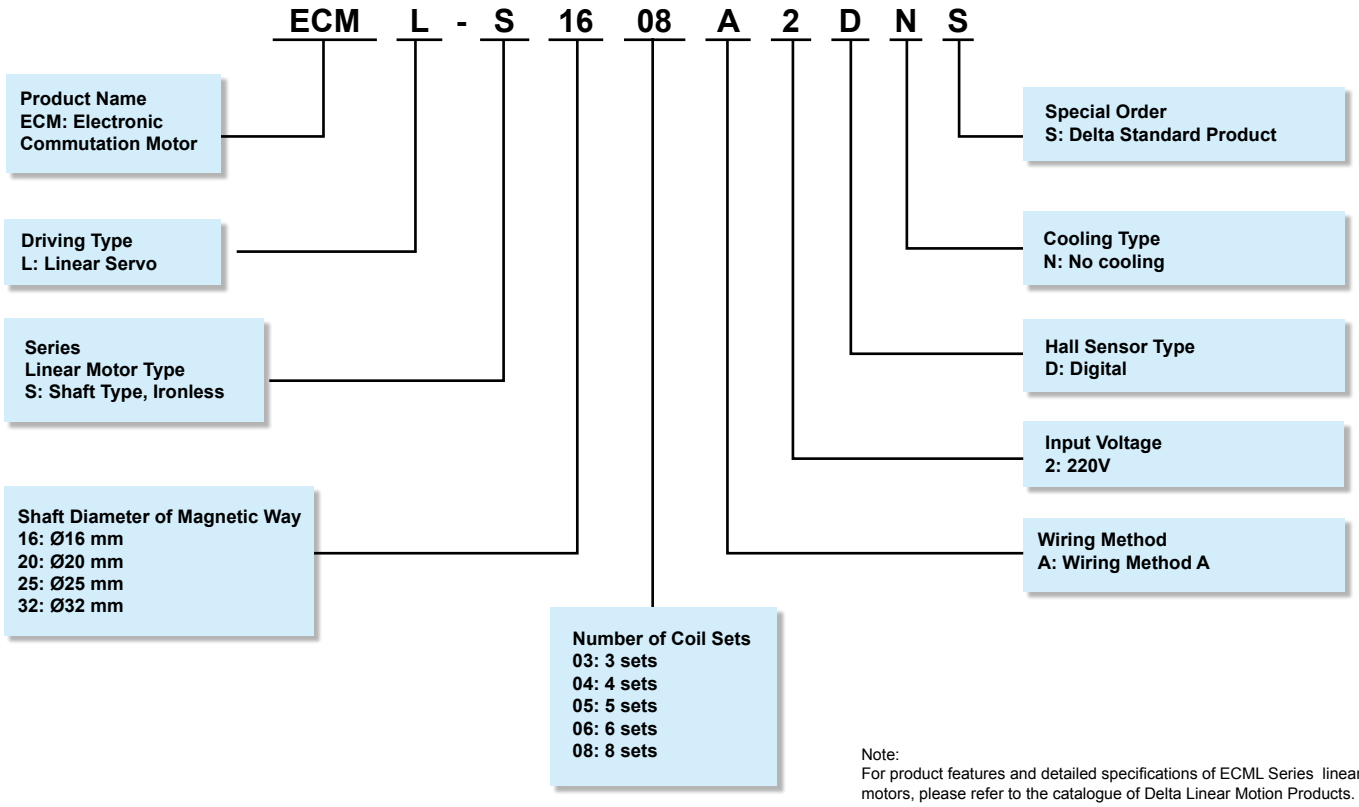


Model Name Explanation

ECML Series Linear Motor - Magnetic Way Model



ECML Series Linear Motor - Coil Assembly Model



Note:
For product features and detailed specifications of ECML Series linear motors, please refer to the catalogue of Delta Linear Motion Products.

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 3.5 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 0.477 N-m to 57.29 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 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 [Nt-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))										
Certification	CE c UL us										

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.

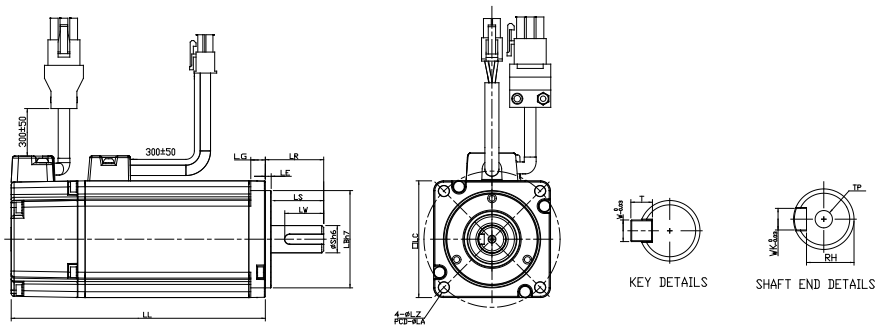
Medium/High inertia Series

ECMA	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 [Nt-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 (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))														
Certification	CE cULus														

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.

Dimensions of ECMA Series Servo Motors

Motor Frame Size: 86 or below



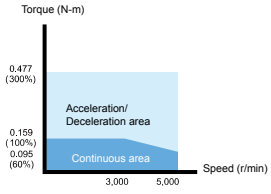
Units: mm

Model	C1040F □ S	C △ 0401 □ S	C △ 0602 □ S	C △ 0604 □ S	C △ 0604 □ H	C △ 0804 □ 7	C △ 0807 □ S	C △ 0807 □ H	C △ 0907 □ S	C △ 0910 □ S
LC	40	40	60	60	60	80	80	80	86	86
LZ	4.5	4.5	5.5	5.5	5.5	6.6	6.6	6.6	6.6	6.6
LA	46	46	70	70	70	90	90	90	100	100
S	8 ($^{+0}_{-0.009}$)	8 ($^{+0}_{-0.009}$)	14 ($^{+0}_{-0.011}$)	14 ($^{+0}_{-0.011}$)	14 ($^{+0}_{-0.011}$)	14 ($^{+0}_{-0.011}$)	19 ($^{+0}_{-0.013}$)	19 ($^{+0}_{-0.013}$)	16 ($^{+0}_{-0.011}$)	16 ($^{+0}_{-0.011}$)
LB	30 ($^{+0}_{-0.021}$)	30 ($^{+0}_{-0.021}$)	50 ($^{+0}_{-0.025}$)	50 ($^{+0}_{-0.025}$)	50 ($^{+0}_{-0.025}$)	70 ($^{+0}_{-0.030}$)	70 ($^{+0}_{-0.030}$)	70 ($^{+0}_{-0.030}$)	80 ($^{+0}_{-0.030}$)	80 ($^{+0}_{-0.030}$)
LL(without brake)	79.1	100.6	105.5	130.7	145.8	112.3	138.3	154.8	130.2	153.2
LL (with brake)	--	136.8	141.6	166.8	176.37	152.8	178	187.8	161.3	184.3
LS	20	20	27	27	27	27	32	32	30	30
LR	25	25	30	30	30	30	35	35	35	35
LE	2.5	2.5	3	3	3	3	3	3	3	3
LG	5	5	7.5	7.5	7.5	8	8	8	8	8
LW	16	16	20	20	20	20	25	25	20	20
RH	6.2	6.2	11	11	11	11	15.5	15.5	13	13
WK	3	3	5	5	5	5	6	6	5	5
W	3	3	5	5	5	5	6	6	5	5
T	3	3	5	5	5	5	6	6	5	5
TP	M3 Depth 8	M3 Depth 8	M4 Depth 15	M4 Depth 15	M4 Depth 15	M4 Depth 15	M6 Depth 20	M6 Depth 20	M5 Depth 15	M5 Depth 15

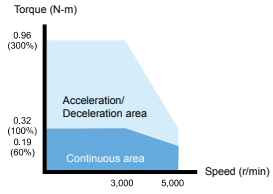
NOTE

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).

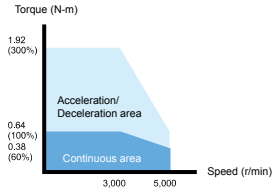
Torque Features (T-N Curve)



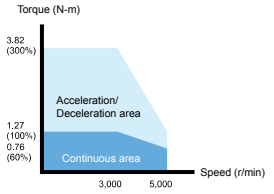
ECMA-C1040F □ S



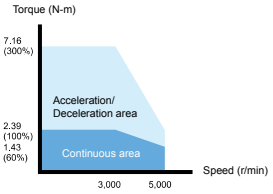
ECMA-C △ 0401 □ S



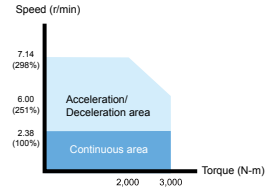
ECMA-C △ 0602 □ S



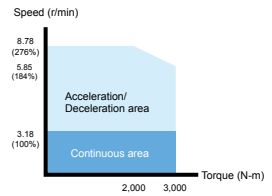
ECMA-C △ 0604 □ S
ECMA-C △ 0604 □ H
ECMA-C △ 0804 □ 7



ECMA-C △ 0807 □ S
ECMA-C △ 0807 □ H

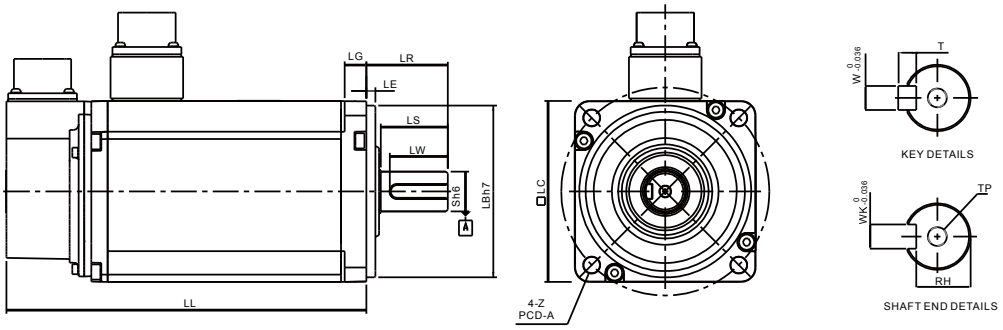


ECMA-C △ 0907 □ S



ECMA-C △ 0910 □ S

Motor Frame Size: 100 ~ 130



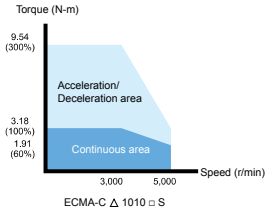
Units: mm

Model	C △ 1010 □ S	C △ 1020 □ S	C △ 1330 □ 4	E △ 1305 □ S	E △ 1310 □ S	E △ 1315 □ S	E △ 1320 □ S
LC	100	100	130	130	130	130	130
LZ	9	9	9	9	9	9	9
LA	115	115	145	145	145	145	145
S	22 ($^{+0}_{-0.013}$)	22 ($^{+0}_{-0.013}$)	24 ($^{+0}_{-0.013}$)	22 ($^{+0}_{-0.013}$)	22 ($^{+0}_{-0.013}$)	22 ($^{+0}_{-0.013}$)	22 ($^{+0}_{-0.013}$)
LB	95 ($^{+0}_{-0.035}$)	95 ($^{+0}_{-0.035}$)	110 ($^{+0}_{-0.035}$)	110 ($^{+0}_{-0.035}$)	110 ($^{+0}_{-0.035}$)	110 ($^{+0}_{-0.035}$)	110 ($^{+0}_{-0.035}$)
LL (without brake)	153.3	199	187.5	147.5	147.5	167.5	187.5
LL (with brake)	192.5	226	216	183.5	183.5	202	216
LS	37	37	47	47	47	47	47
LR	45	45	55	55	55	55	55
LE	5	5	6	6	6	6	6
LG	12	12	11.5	11.5	11.5	11.5	11.5
LW	32	32	36	36	36	36	36
RH	18	18	20	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	M6 Depth 20	M6 Depth 20	M6 Depth 20	M6 Depth 20	M6 Depth 20	M6 Depth 20	M6 Depth 20

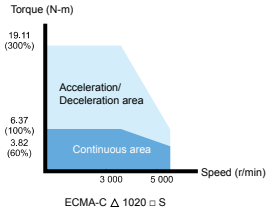
NOTE

1) Dimensions are in millimeters.
2) Dimensions 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).

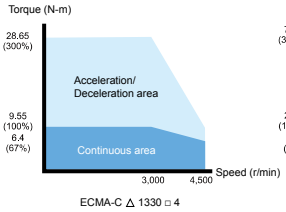
Torque Features (T-N Curve)



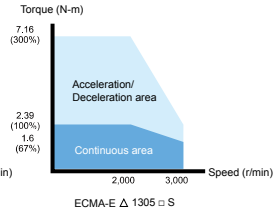
ECMA-C △ 1010 □ S



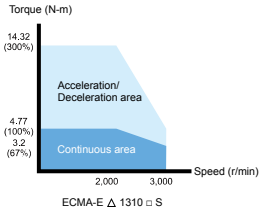
ECMA-C △ 1020 □ S



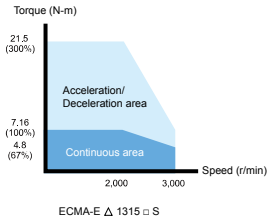
ECMA-C △ 1330 □ 4



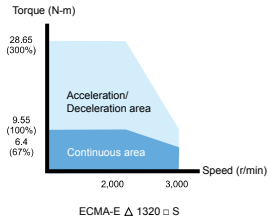
ECMA-E △ 1305 □ S



ECMA-E △ 1310 □ S



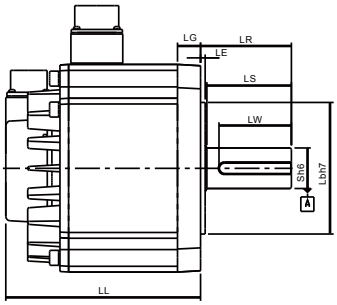
ECMA-E △ 1315 □ S

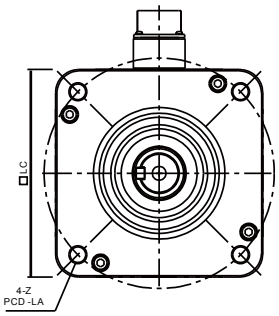


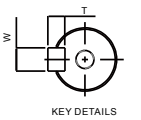
ECMA-E △ 1320 □ S

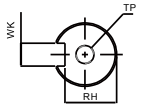
Dimensions of ECMA Series Servo Motors

Motor Frame Size: 100 ~ 130









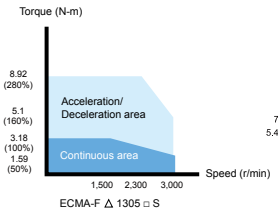
Units: mm

Model	F △ 1305 □ S	F △ 1308 □ S	F △ 1313 □ S	F △ 1318 □ S	G △ 1303 □ S	G △ 1306 □ S	G △ 1309 □ S
LC	130	130	130	130	130	130	130
LZ	9	9	9	9	9	9	9
LA	145	145	145	145	145	145	145
S	22 ($^{+0}_{-0.013}$)	22 ($^{+0}_{-0.013}$)	22 ($^{+0}_{-0.013}$)	22 ($^{+0}_{-0.013}$)	22 ($^{+0}_{-0.013}$)	22 ($^{+0}_{-0.013}$)	22 ($^{+0}_{-0.013}$)
LB	110 ($^{+0}_{-0.035}$)	110 ($^{+0}_{-0.035}$)	110 ($^{+0}_{-0.035}$)	110 ($^{+0}_{-0.035}$)	110 ($^{+0}_{-0.035}$)	110 ($^{+0}_{-0.035}$)	110 ($^{+0}_{-0.035}$)
LL(without brake)	139.5	152.5	187.5	202	147.5	147.5	163.5
LL (with brake)	168	181	216	230.7	183.5	183.5	198
LS	47	47	47	47	47	47	47
LR	55	55	55	55	55	55	55
LE	6	6	6	6	6	6	6
LG	11.5	11.5	11.5	11.5	11.5	11.5	11.5
LW	36	36	36	36	36	36	36
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	M6 Depth 20	M6 Depth 20	M6 Depth 20	M6 Depth 20	M6 Depth 20	M6 Depth 20	M6 Depth 20

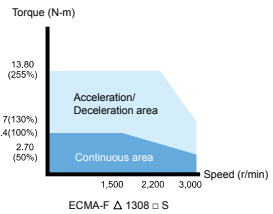
NOTE

1) Dimensions are in millimeters.
2) Dimensions 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).

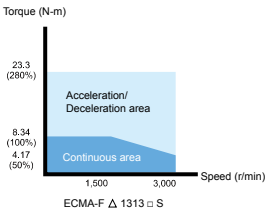
Torque Features (T-N Curve)



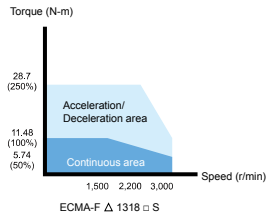
ECMA-F △ 1305 □ S



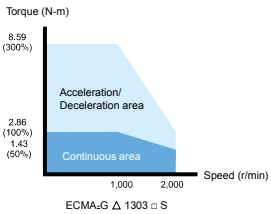
ECMA-F △ 1308 □ S



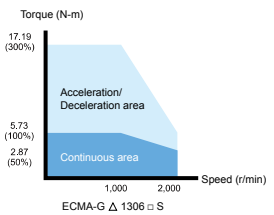
ECMA-F △ 1313 □ S



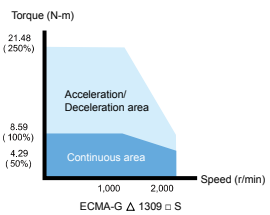
ECMA-F △ 1318 □ S



ECMA-G △ 1303 □ S

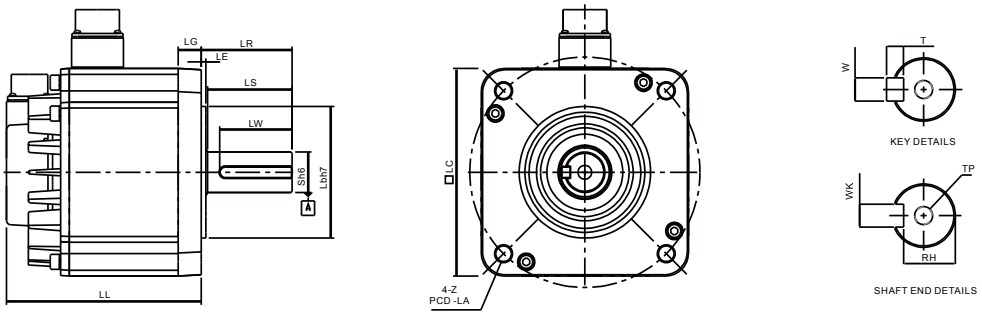


ECMA-G △ 1306 □ S



ECMA-G △ 1309 □ S

Motor Frame Size: 180 or above



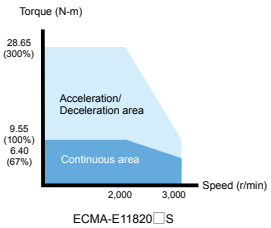
Units: mm

Model	E △ 1820 □ S	E △ 1830 □ S	F △ 1830 □ S	E △ 1835 □ S
LC	180	180	180	180
LZ	13.5	13.5	13.5	13.5
LA	200	200	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 ($^{+0}_{-0.035}$)	114.3 ($^{+0}_{-0.035}$)	114.3 ($^{+0}_{-0.035}$)
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	10	10	10
W	10	10	10	10
T	8	8	8	8
TP	M12 Depth 25	M12 Depth 25	M12 Depth 25	M12 Depth 25

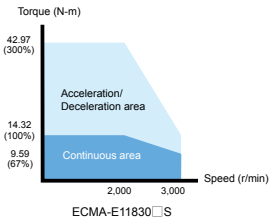
NOTE

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).

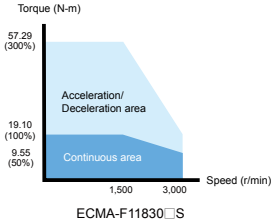
Torque Features (T-N Curve)



ECMA-E11820□S



ECMA-E11830□S



ECMA-F11830□S

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. (ASD-A2R-*-U models only)

• 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⊕ and C , and ensure an open circuit between P⊕ and D.
2. When using an internal resistor, ensure the circuit is closed between P⊕ and D, and the circuit is open between P⊕ 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⊕ and ⊖ , and ensure an open circuit between P⊕ and D, and P⊕ 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 ±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⊕ and ⊖ .

● 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.

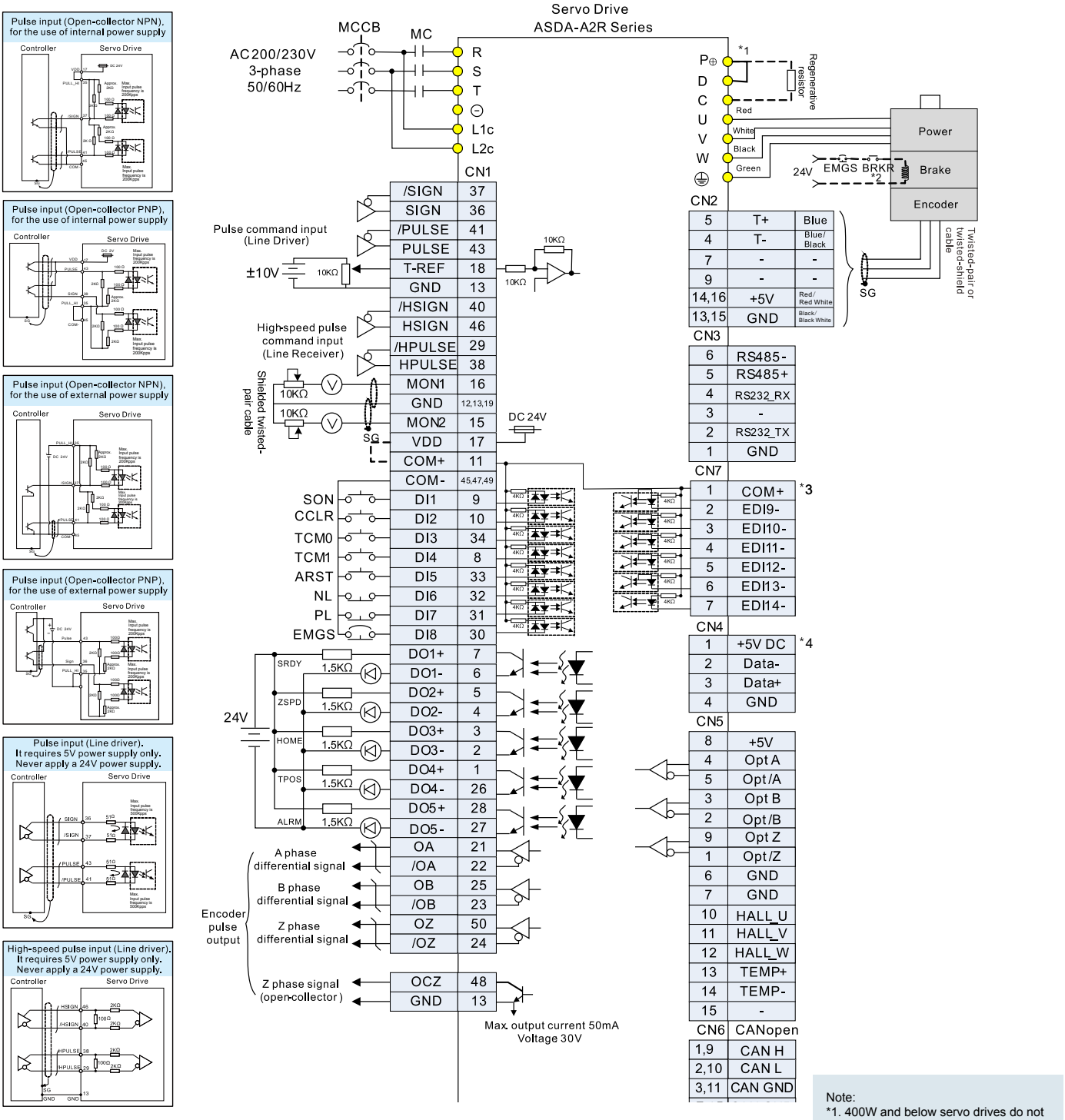
● Heatsink

■ Used to secure servo drive and for heat dissipation.

Please note:
*This is a Delta optional part.

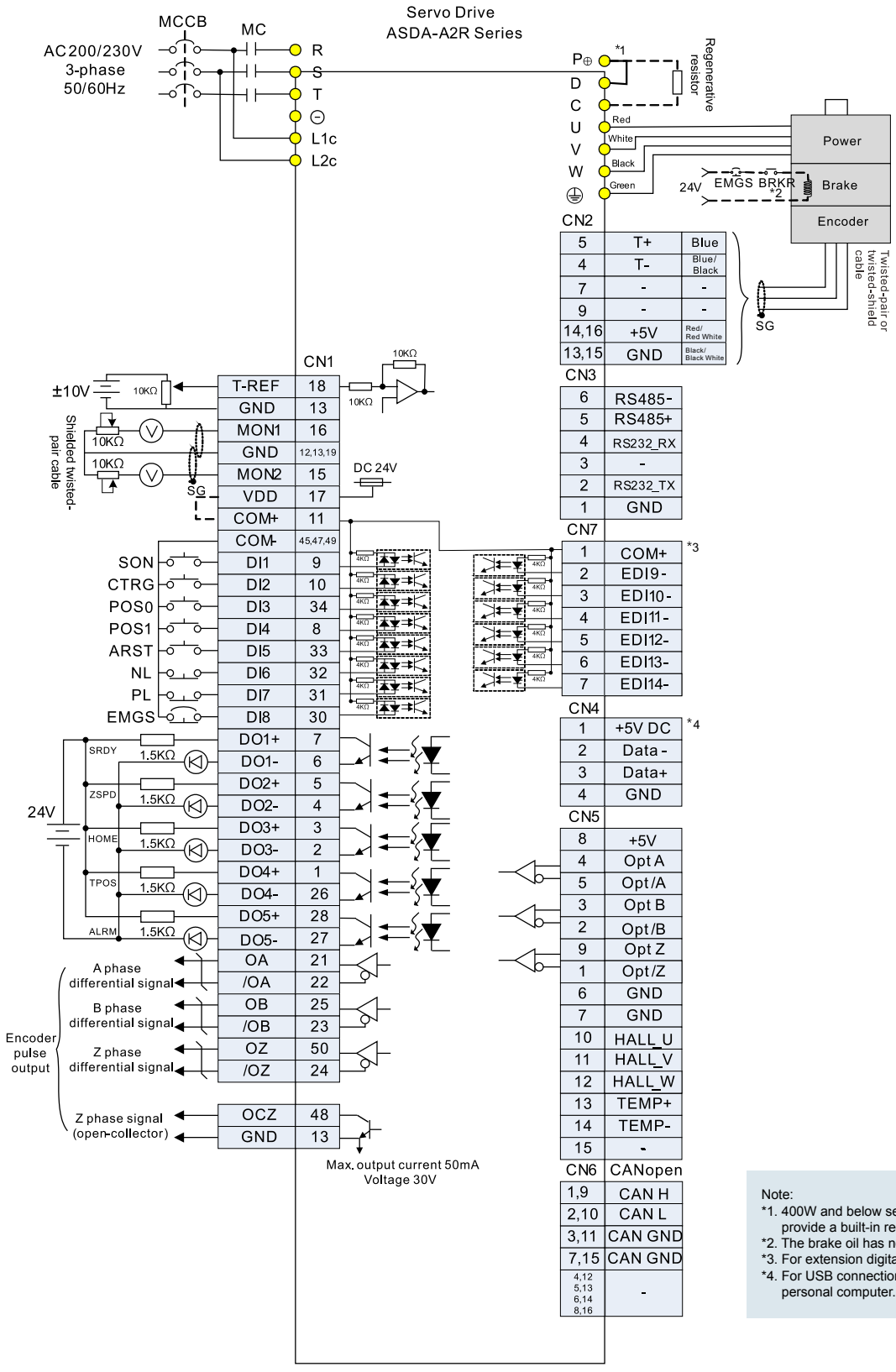
Wiring

Position (PT) Mode Standard Wiring



Note:
*1. 400W and below servo drives do not provide a built-in regenerative resistor.
*2. The brake oil has no polarity.
*3. For extension digital inputs (optional).
*4. For USB connection. It connects to a personal computer.

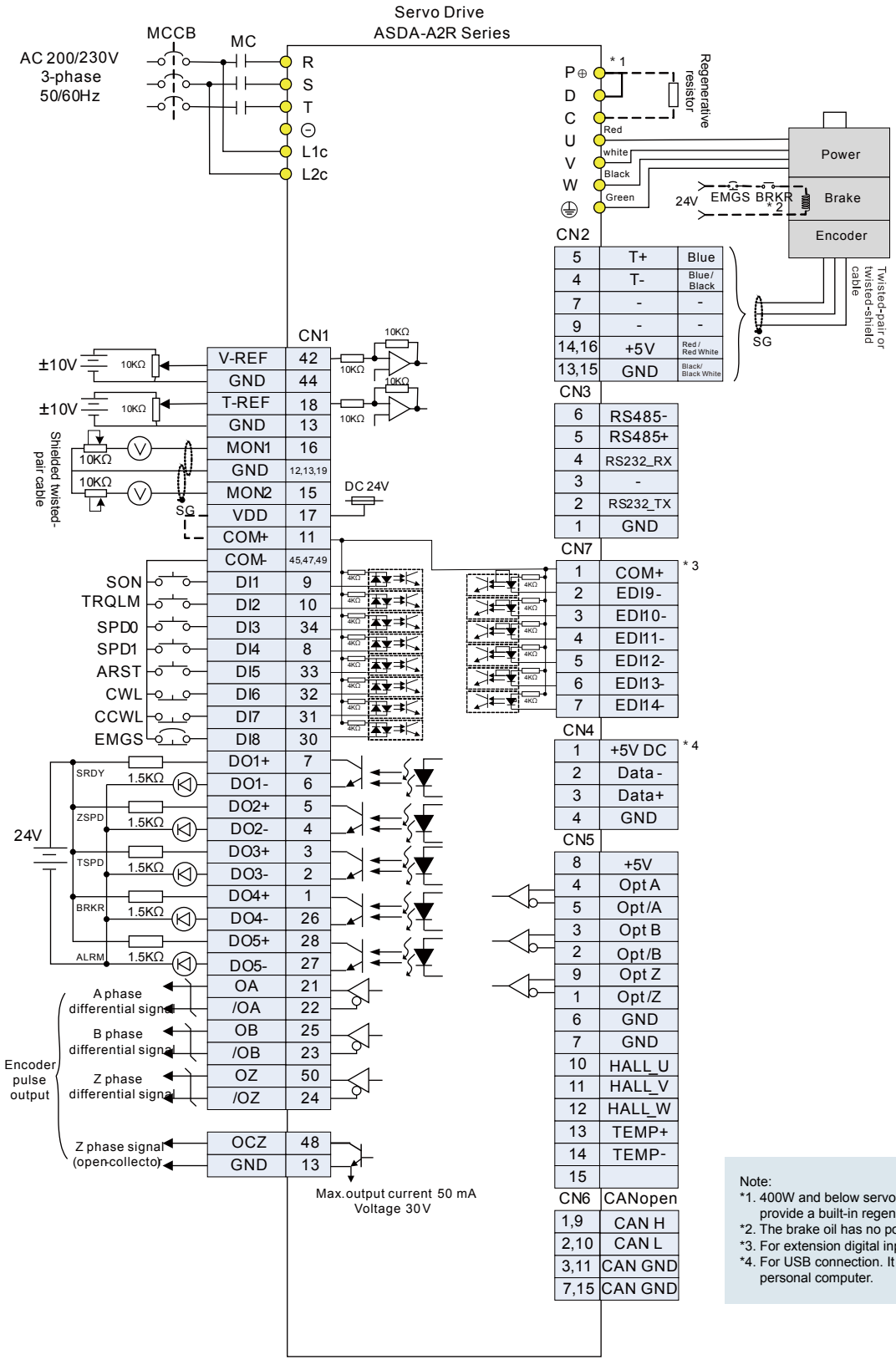
Position (PR) Control Mode (for Internal Procedure Control)



Note:
*1. 400W and below servo drives do not provide a built-in regenerative resistor.
*2. The brake oil has no polarity.
*3. For extension digital inputs (optional).
*4. For USB connection. It connects to a personal computer.

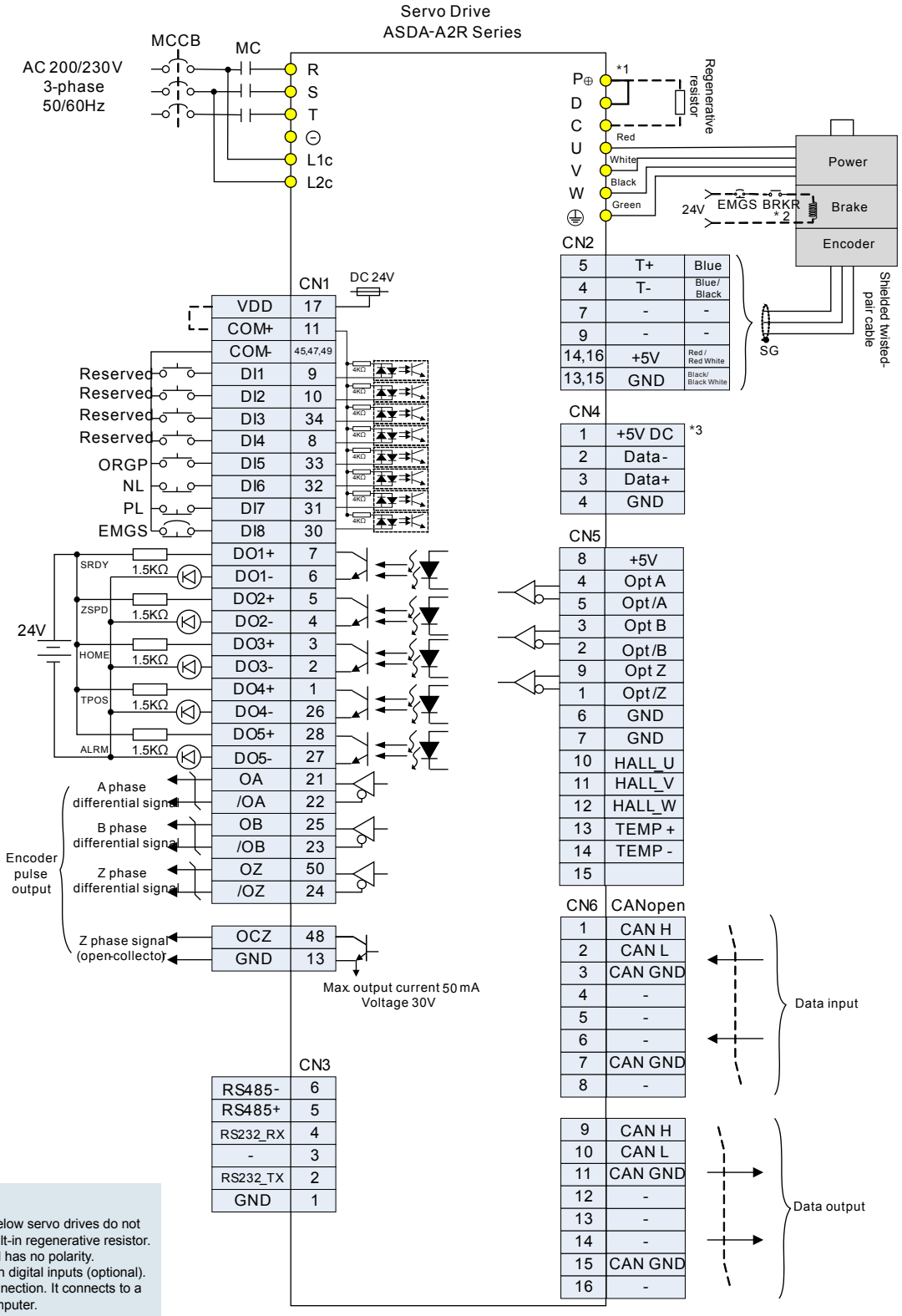
Wiring

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



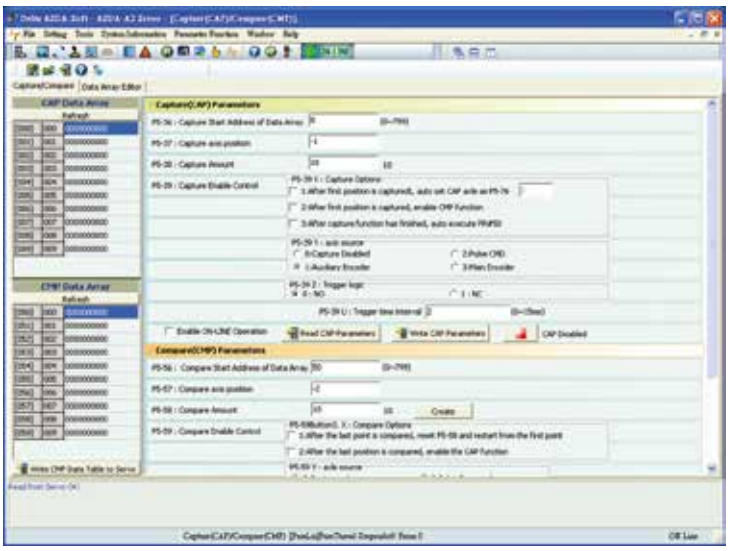
Note:
*1. 400W and below servo drives do not provide a built-in regenerative resistor.
*2. The brake oil has no polarity.
*3. For extension digital inputs (optional).
*4. For USB connection. It connects to a personal computer.

CANopen Communication Mode

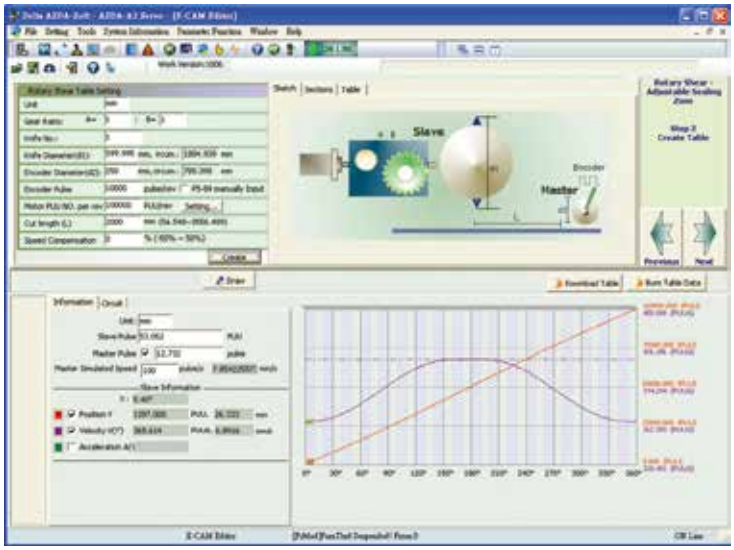


Note:
*1. 400W and below servo drives do not provide a built-in regenerative resistor.
*2. The brake oil has no polarity.
*3. For extension digital inputs (optional).
*4. For USB connection. It connects to a personal computer.

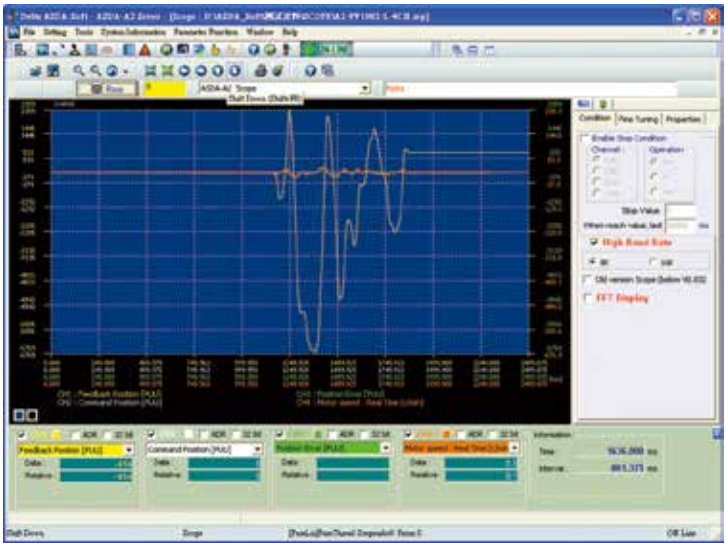
ASDA-Soft Configuration Software



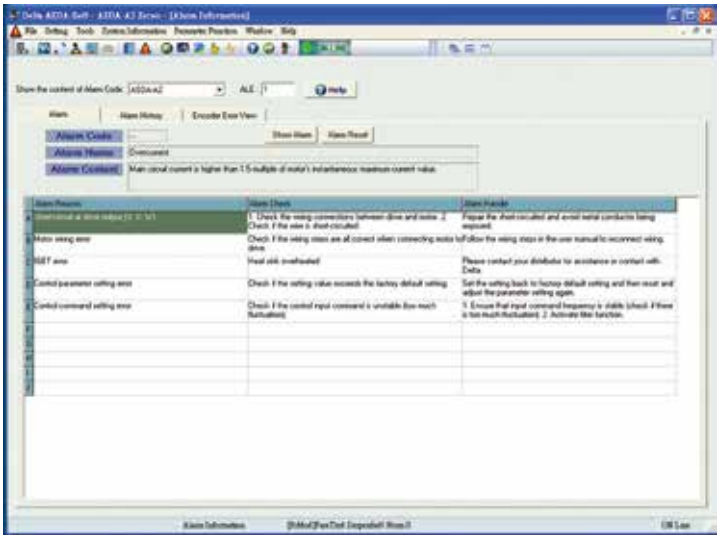
- Strong CAPTURE and COMPARE functions for position latch and detection help you complete system configuration quickly.



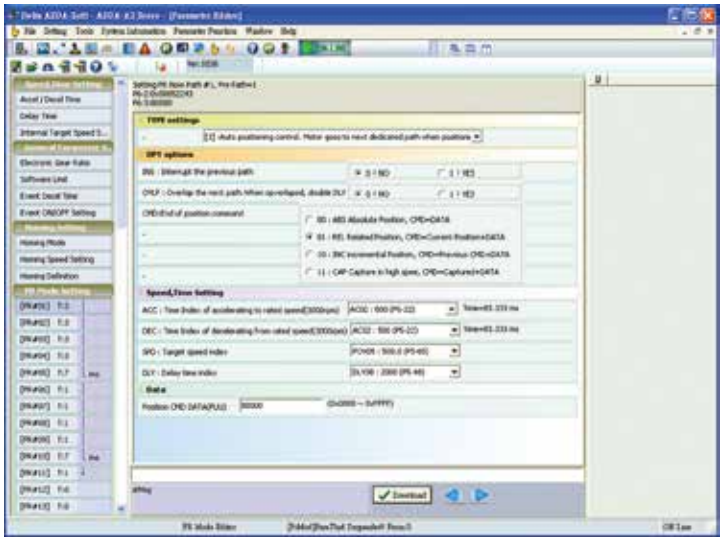
- User-friendly E-CAM editing interface is provided for designing E-CAM outlines and curves freely. In addition, quick settings for flying shear and rotary cut applications are offered.



- 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.

• CN1 I/O connector

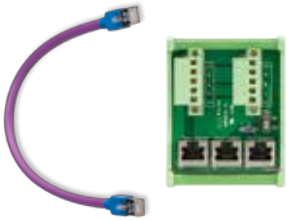
■ Delta Part Number: ASD-IF-SC5020

• 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.

SCSI 20-pin

SCSI 26-pin

• 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.

Servo Drive ASDA-A2R Specifications

220V Series

ASDA-A2R Series			100 W	200 W	400 W	750 W
			01	02	04	07
Power Supply	Phase / Voltage		Three-phase / Single-phase 220 V_{AC}			
	Permissible Voltage Range		1-phase / 3-phase 200 ~ 230 V_{AC}, -15% ~ 10%			
	Input Current(3PH) (Units: Arms)		0.39	1.11	1.86	3.66
	Input Current(1PH) (Units: Arms)		0.69	1.92	3.22	6.78
	Continuous Output Current (Units: Arms)		0.9	1.55	2.6	5.1
	Max. Output Current (Units: Arms)		7.07	10.61	10.61	14.14
Cooling System			Natural Air Circulation			Fan Cooling
Encoder Resolution / Feedback Resolution			20-bit (1280000 p/rev)			
Control of Main Circuit			SVPWM(Space Vector Pulse Width Modulation) Control			
Tuning Modes			Auto / Manual			
Regenerative Resistor			None		Built-in	
Position Control Mode	Max. Input Pulse Frequency (Only for Non-DMCNET mode)		Max. 500 Kpps / 4Mpps (Line driver), Max. 200Kpps (Open collector)			
	Pulse Type (Only for Non-DMCNET mode)		Pulse + Direction, A phase + B phase, CCW pulse + CW pulse			
	Command Source		External pulse train (PT mode) (Only for Non-DMCNET mode) / Internal parameters (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			
Speed Control Mode	Analog Input Command (Only for Non-DMCNET mode)	Voltage Range	0 ~ ±10 V_{DC}			
		Input Resistance	10 KΩ			
		Time Constant	2.2 μs			
	Speed Control Range *1		1: 5000			
	Command Source		External analog signal (Only for Non-DMCNET mode) / Internal parameters			
	Smoothing Strategy		Low-pass and S-curve filter			
	Torque Limit Operation		Set by parameters or via analog input (Only for Non-DMCNET mode)			
	Frequency Response Characteristic		Maximum 1 kHz			
	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 0ºC to 50ºC ambient temperature fluctuation			
Torque Control Mode	Analog Input Command (Only for Non-DMCNET mode)	Voltage Range	0 ~ ±10 V_{DC}			
		Input Resistance	10 KΩ			
		Time Constant	2.2 μs			
	Command Source		External analog signal (Only for Non-DMCNET mode) / Internal parameters			
	Smoothing Strategy		Low-pass filter			
	Speed Limit Operation		Set by parameters or via analog input (Only for Non-DMCNET mode)			
Analog Monitor Output			Monitor signal can be 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 (E-CAM), Forward / Reverse JOG input, Event trigger PR command, Electronic gear ratio (Numerator) selection and Pulse inhibit input * Please note that the above digital signals and inputs are available only for Non-DMCNET mode. In DMCNET mode, it is recommended to write digital inputs into the servo drives through DMCNET communication, and the digital inputs should be used for Emergency Stop, Forward / Reverse Inhibit limit and Reference "Home" sensor only.			
	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 / DMCNET			
Environment	Installation Site		Indoor location (free from direct sunlight), no corrosive liquid and gas (far away from oil mist, flammable gas, dust)			
	Altitude		Altitude 1000 m or lower above sea level			
	Atmospheric Pressure		86 kPa ~ 106 kPa			
	Operating Temperature		0ºC ~ 55ºC (If operating temperature is above 45 ºC, forced cooling will be required)			
	Storage Temperature		-20 ºC ~ 65 ºC			
	Humidity		0 ~ 90% RH (non-condensing)			
	Vibration		9.80665 m/s (1G) less than 20 Hz, 5.88 m/s (0.6G) 20 to 50 Hz			
	IP Rating		IP20			
	Power System		TN System*3			
	Approvals		IEC/EN 61800-5-1, UL 508C, C-tick			

Footnote:

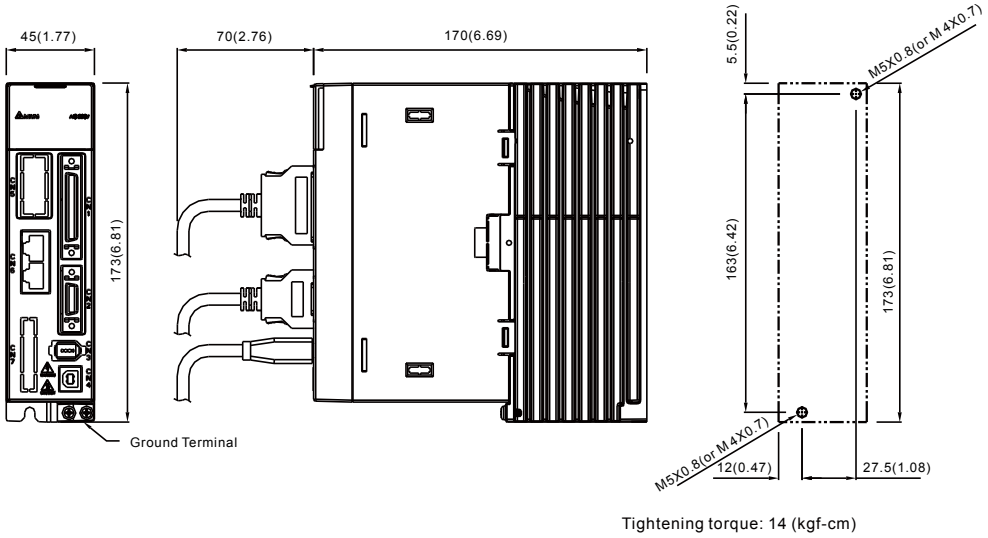
*1. Rated rotation speed: When full load, speed ratio is defined as the minimum speed (the motor will not pause).
*2. When command is rated rotation speed, the speed fluctuation rate is defined as: (Empty load rotation speed Full load rotation speed) / Rated rotation speed
*3. TN system: A power distribution system having one point directly earthed, the exposed conductive parts of the installation being connected to that points by protective earth conductor.

Dimensions of ASDA-A2R Servo Drives

220V Series

100W / 200W / 400W

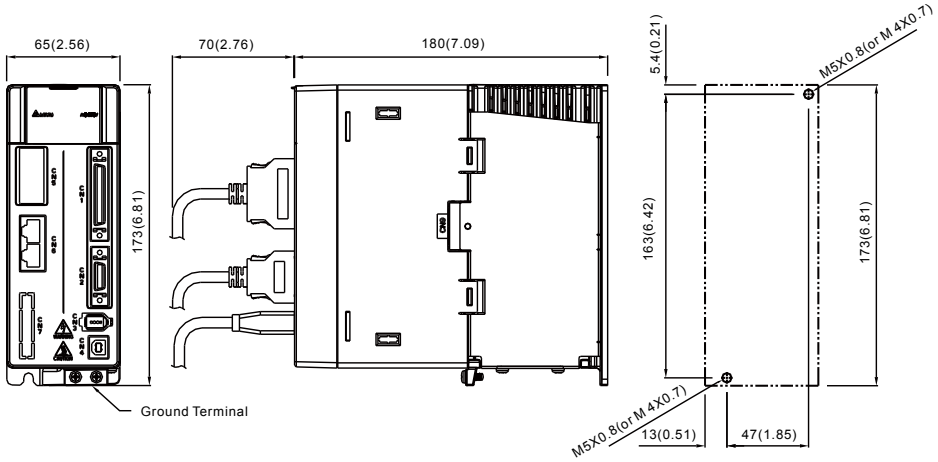
Weight
1.5 (3.3)



Tightening torque: 14 (kgf-cm)

750W / 1.0kW / 1.5kW

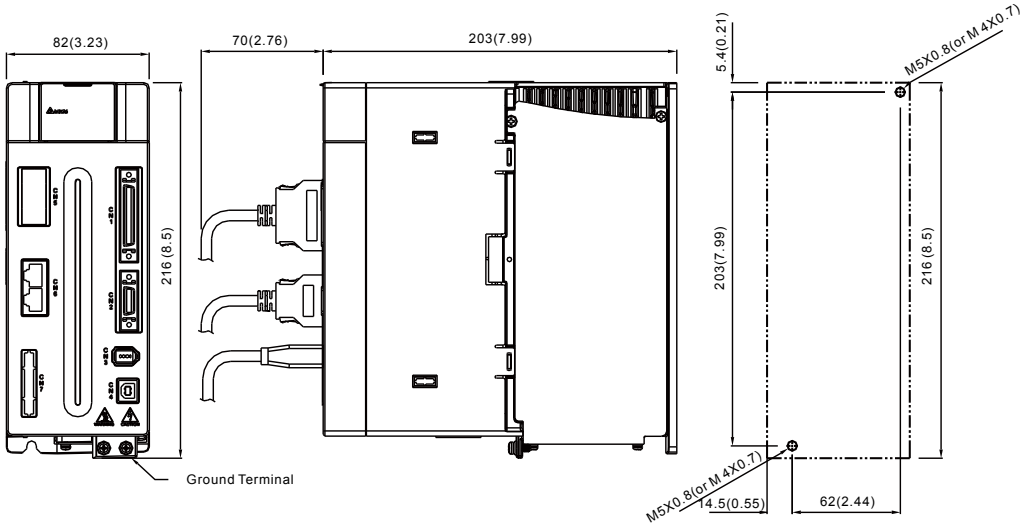
Weight
2.0 (4.4)



Tightening torque: 14 (kgf-cm)

2.0kW / 3.0kW

Weight
2.89 (6.36)



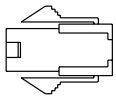
Tightening torque: 14 (kgf-cm)

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

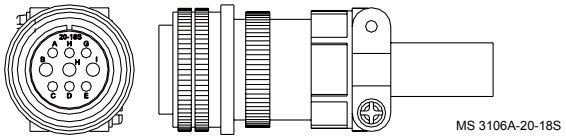
Optional Accessories

• Power Connectors

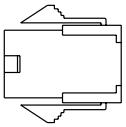
ASDBCAPW0000



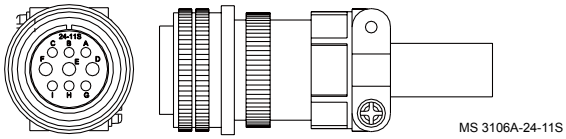
ASD-CAPW1000



ASDBCAPW0100

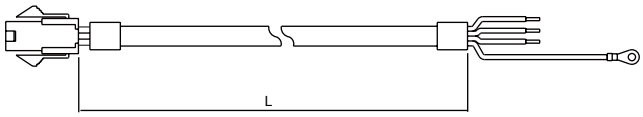


ASD-CAPW2000



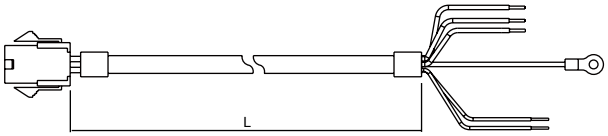
• Power Cables

ASD-ABPW0003, ASD-ABPW0005



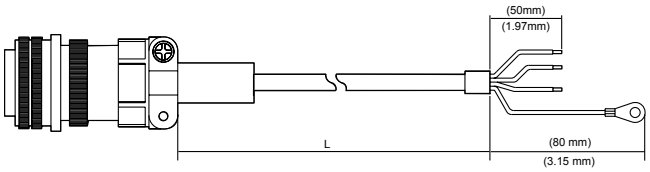
Item	Part No.	L	
		mm	inch
1	ASD-ABPW0003	3000 ± 100	118 ± 4
2	ASD-ABPW0005	5000 ± 100	197 ± 4

ASD-ABPW0103, ASD-ABPW0105



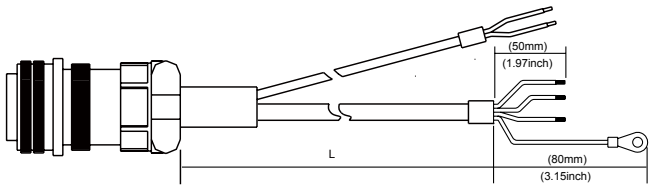
Item	Part No.	L	
		mm	inch
1	ASD-ABPW0103	3000 ± 100	118 ± 4
2	ASD-ABPW0105	5000 ± 100	197 ± 4

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

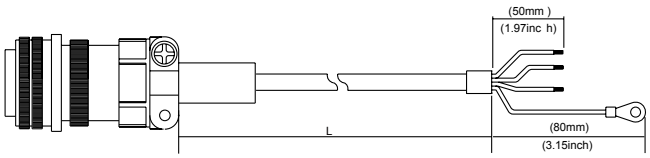
ASD-A2PW1103, ASD-A2PW1105



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

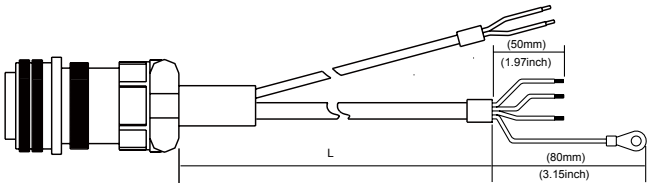
• Power Cables

ASD-A2PW1003, ASD-A2PW1005



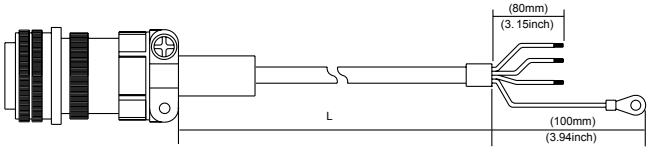
Item	Part No.	Straight	L	
			mm	inch
1	ASD-A2PW1003	3106A-20-18S	3000 ± 100	118 ± 4
2	ASD-A2PW1005	3106A-20-18S	5000 ± 100	197 ± 4

ASD-A2PW1103, ASD-A2PW1105



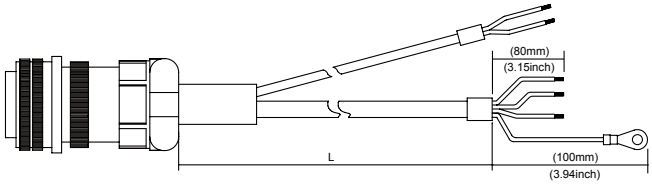
Item	Part No.	Straight	L	
			mm	inch
1	ASD-A2PW1103	3106A-20-18S	3000 ± 100	118 ± 4
2	ASD-A2PW1105	3106A-20-18S	5000 ± 100	197 ± 4

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

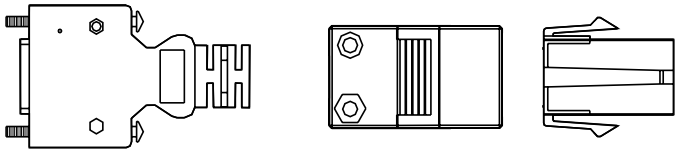
ASD-CAPW2103, ASD-CAPW2105



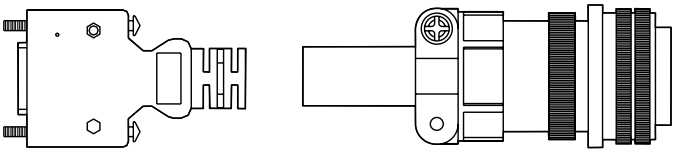
Item	Part No.	Straight	L	
			mm	inch
1	ASD-CAPW2103	3106A-24-11S	3000 ± 100	118 ± 4
2	ASD-CAPW2105	3106A-24-11S	5000 ± 100	197 ± 4

• Encoder Connectors

ASD-ABEN0000



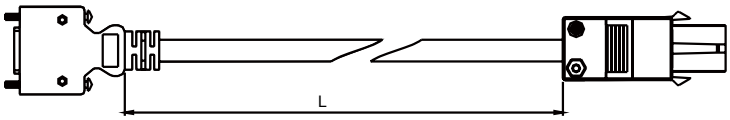
ASD-CAEN1000



Optional Accessories

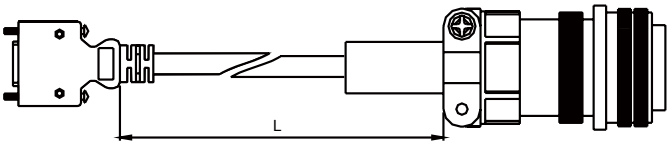
● Incremental Encoder Cables

ASD-ABEN0003, ASD-ABEN00005



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

ASD-CAEN1003, ASD-CAEN1005

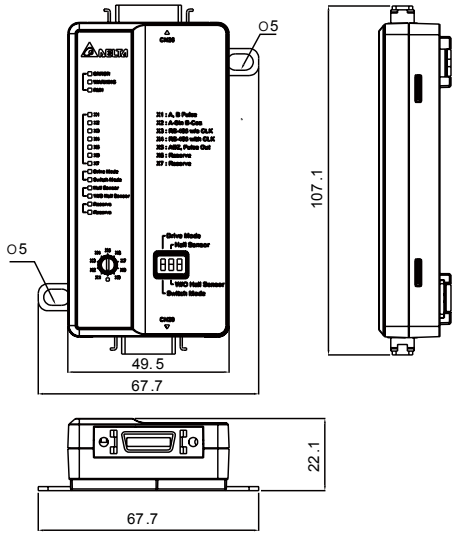


Item	Part No.	Straight	L	
			mm	inch
1	ASD-CAEN1003	3106A-20-29S	3000 ± 100	118 ± 4
2	ASD-CAEN1005	3106A-20-29S	5000 ± 100	197 ± 4

● ASD-IF-EN0A20 Signal Converter Box

Dimensions are in mm (in.)

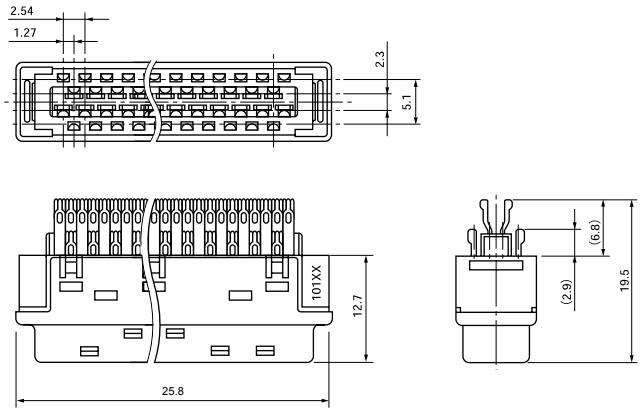
ASD-IF-EN0A20



● SCSI 26pin Connector

Dimensions are in mm (in.)

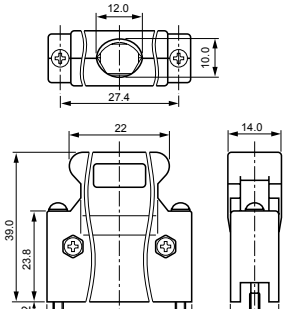
ASD-CNSC0026



● SCSI 20pin Connector

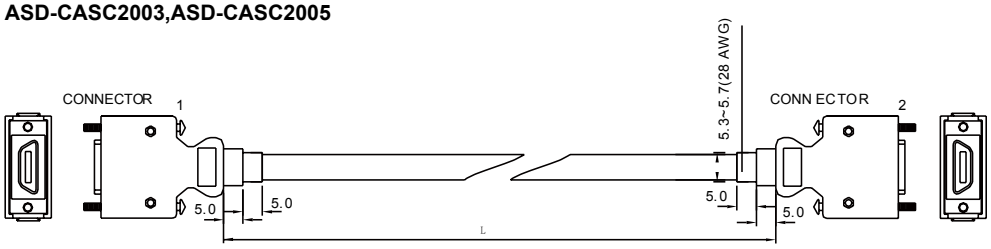
Dimensions are in mm (in.)

ASD-CNSC0020



• Absolute Encoder Cables

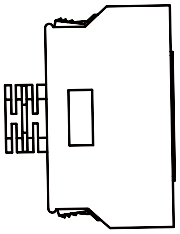
ASD-CASC2003,ASD-CASC2005



Item	Part No.	mm (AWG)	Type	L	
				mm	inch
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)

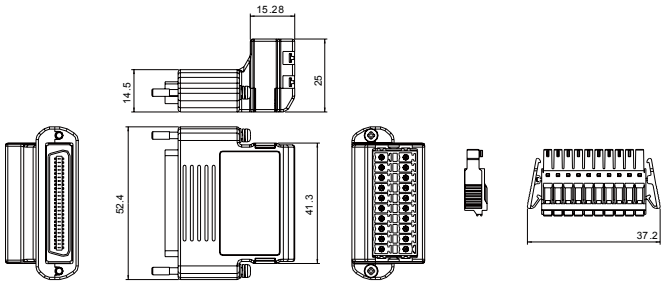
ASD-CNSC0050



• CN1 Connector

Dimensions are in mm (in.)

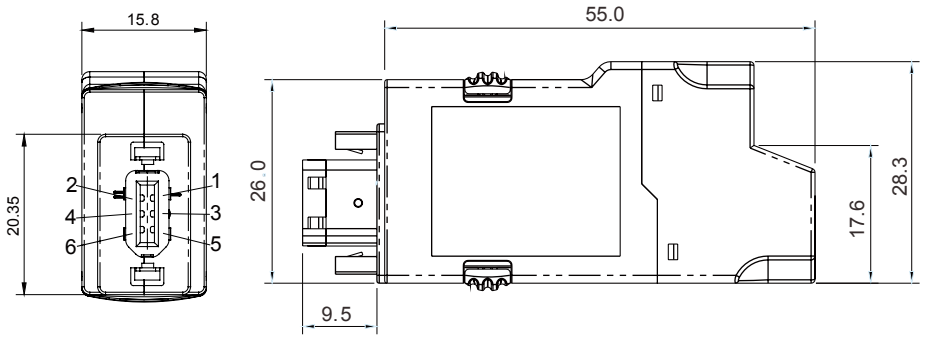
ASD-IF-SC5020



• RS-485 Connector

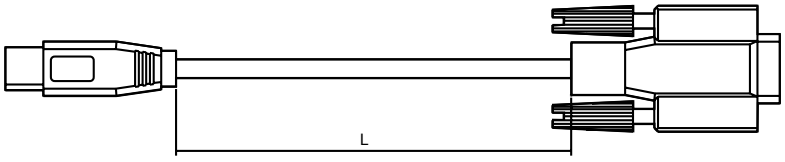
Dimensions are in mm (in.)

ASD-CNIE0B06



• RS-232 Communication Cable

ASD-CARS0003

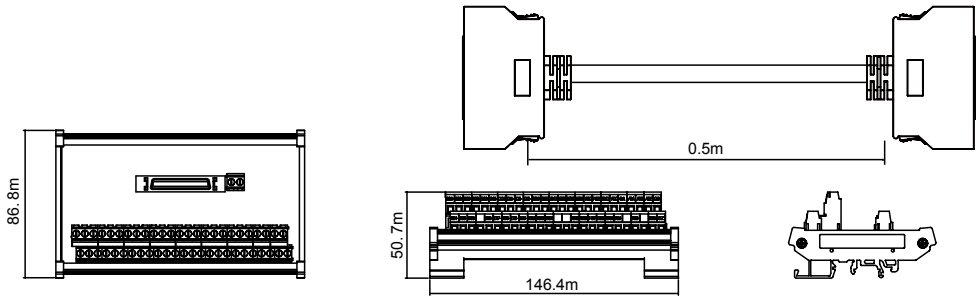


Item	Part No.	L	
		mm	inch
1	ASD-CARS0003	3000 ± 100	118 ± 4

Optional Accessories

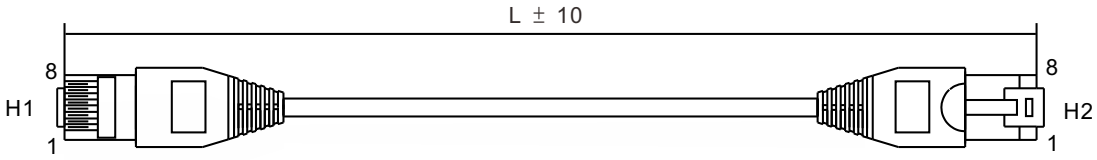
● Terminal Block Module Dimensions are in mm (in.)

ASD-BM-50A



● Terminal Block Module

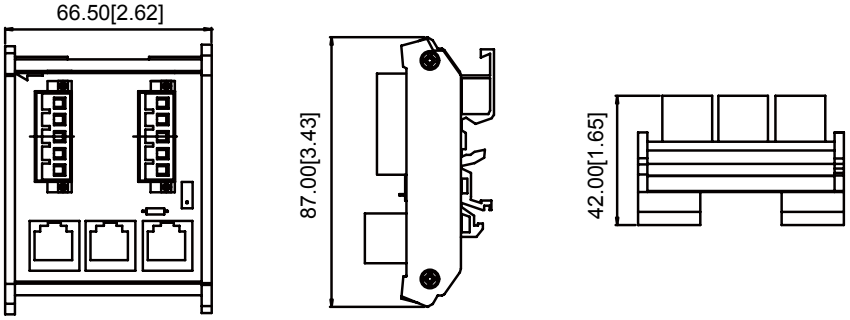
TAP-CB03, TAP-CB05



Item	Part No.	L	
		mm	inch
1	TAP-CB03	300±10	11±0.4
2	TAP-CB05	500±10	19±0.4

● CANopen Distribution Box Dimensions are in mm (in.)

TAP-CN03

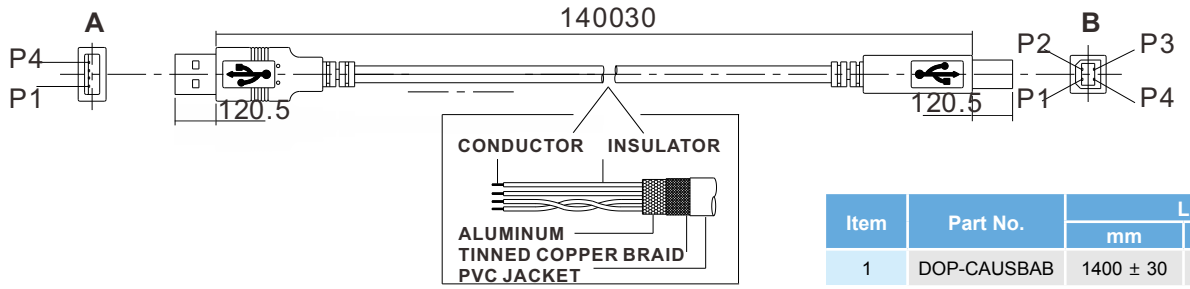


NOTE

1) More accessories for ASDA-A2R will be on the list.
2) Accessories images shown here may differ from the actual product.

• Communication Cable between Drive and Computer (for PC)

DOP-CAUSBAB



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

NOTE

1) More accessories for ASDA-A2R will be on the list.
2) Accessories images shown here may differ from the actual product.

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	

Servo Drive, Servo Motor and Accessories Combinations - Corresponding ECMA Rotary Motors

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

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

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

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

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

400W Servo Drive and 300W High Inertia Servo Motor

Servo Drive	ASD-A2R-0421-□
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

750W Servo Drive and 500W Medium-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

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

NOTE X=3 indicates that the cable length is 3m
X=5 indicates that the cable length is 5m

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

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

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

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

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

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

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

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

NOTE
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 - Corresponding ECMA Rotary Motors

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

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

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

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

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

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

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

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

NOTE
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-CNSC0050
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

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	-	-	30Ω
0.2	-	-	30Ω
0.4	40W	40W	30Ω
0.75	40W	60W	20Ω
1.0	40W	60W	20Ω
1.5	40W	60W	20Ω
2.0	20W	100W	10Ω
3.0	20W	100W	10Ω

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.

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