



Automation for a Changing World

# Delta AC Servo Drive & Motor ASDA-A3 Series

# Delta High-end Servo System ASDA-A3

More Responsive, Better Accuracy and  
Remarkable Robust Control





## Cutting-edge Specifications

---

- 3.1 kHz bandwidth
- 24-bit absolute type encoder
- High speed motor with 6000 r/min and 350 % peak torque
- Motor with high or low inertia rotor
- Low cogging torque motors
- Supports a variety of motors
- Full-closed loop control function



## System Tuning and Safety Functions

---

- System diagnosis function
- Low frequency vibration suppression function
- Auto-tuning function
- Advanced notch filters
- Safe Torque Off (STO) function



## Motion Inside

---

- Advanced motion commands
- Built-in camming functions
- Capture and compare functions



## Energy-Saving and Compact Size Design

---

- DC-bus sharing feature
- Thinner size servo drives
- Smaller size servo motors



## Smart and Intuitive Software Interface

---

- Tree-view index window
- Graphical interface for parameter settings
- Auto-tuning wizard for gains
- Advanced gain tuning interface
- System analysis in Bode Plot
- Oscilloscope function
- Graphical programming interface of PR mode



## Ordering Information

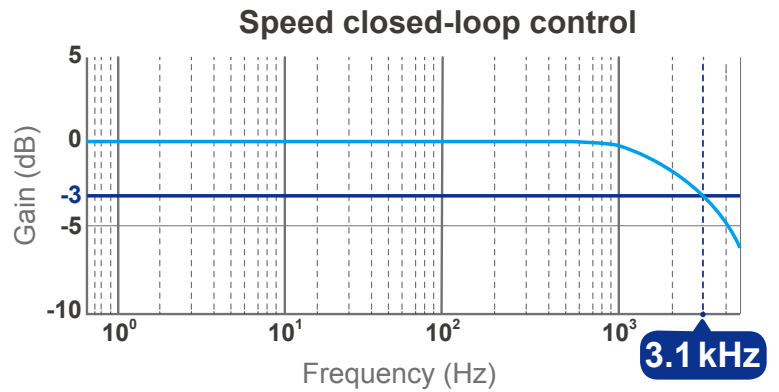
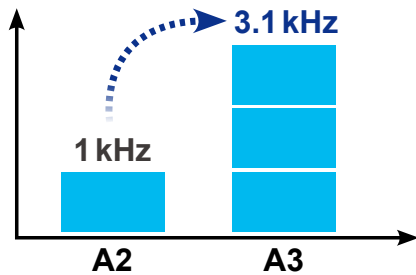
---

- Product Line-up
- Model Explanation
- Servo Motor Features
- Servo Motor Specifications
- Servo Motor Dimensions
- Wiring
- Part Names and Functions
- ASDA-Soft Configuration Software
- Optional Accessories
- Servo Drive Specifications
- Servo Drive Dimensions
- Optional Cables and Connectors
- Servo Drive Accessories Combinations

# Cutting-edge Specifications

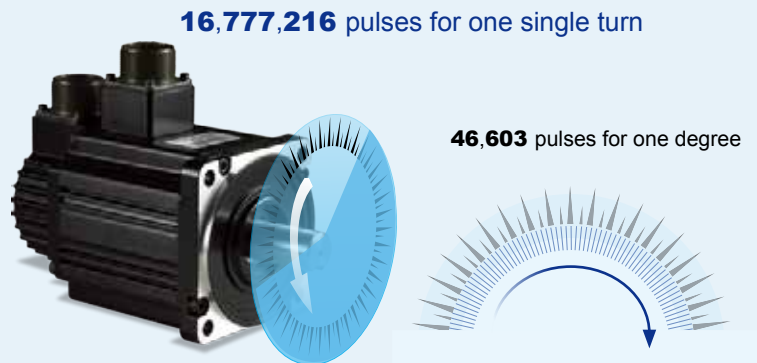
## 3.1 kHz Bandwidth

- ▶ Higher responsiveness and shorter settling time could increase productivity



## 24-bit Absolute Type Encoder

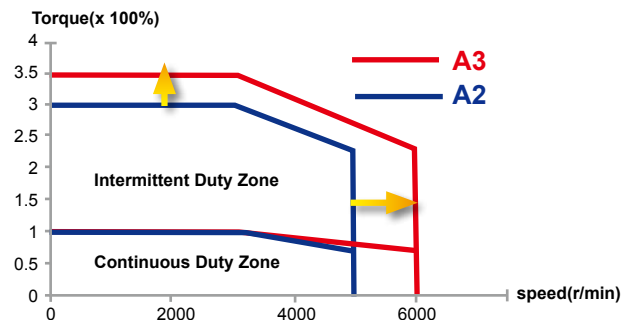
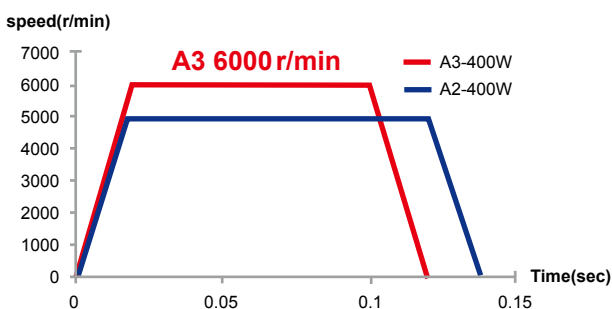
- ▶ The positioning precision is enhanced by the 16,777,216 pulses/turn encoder
- ▶ The speed variance in low speed is reduced.
- ▶ Absolute type encoder helps to keep motor's position when power is off



## High speed motor with 6000 r/min and 350 % peak torque

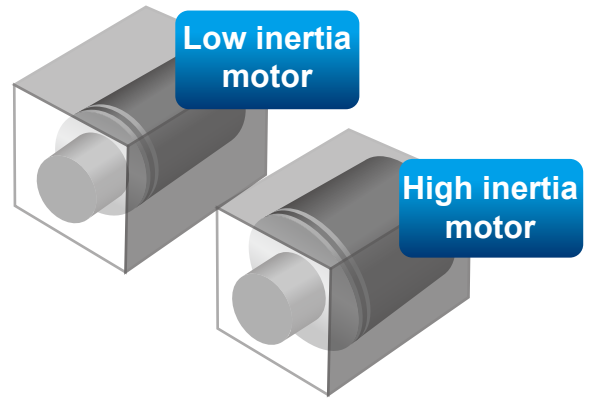
- ▶ A3 motor can accelerate and decelerate faster with its design

- ▶ This specification is available for motor frame size 40 mm, 60 mm and 80mm



## Motor with high or low inertia rotor

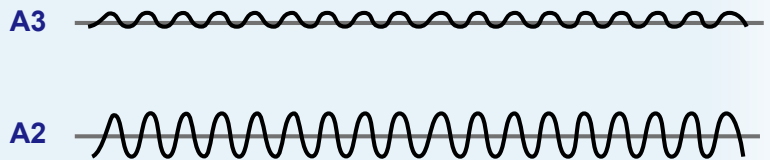
- ▶ For application requiring stable rotating speed and better disturbance resistant capability, a high inertia motor is more suitable, such as machine tools
- ▶ For application like reciprocating motion and fast positioning request, a low inertia motor can be used, such as electronic manufacturing machines



## Low Cogging Torque Motor

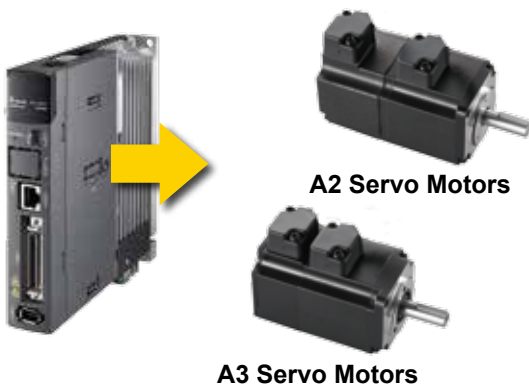
- ▶ Cogging torque of the ECM-A3 motor is only 1.5% of the rated torque, which brings smoother operating speed and increases the stability when machining at low speed

Cogging Torque (under 1.5%)



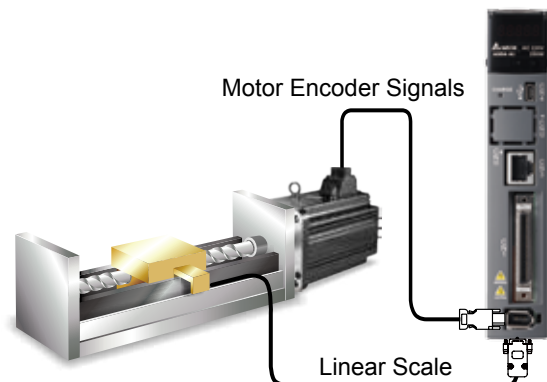
## Supports a Variety of Servo Motors

- ▶ Backward compatibility design for motor to meet future replacement
- ▶ ASDA-A3 drive can support both A2 (ECMA) and A3 (ECM-A3) series motors



## Full-Closed Loop Control

- ▶ To ensure the positioning accuracy at the end and eliminate the effect of transmission backlash, full-closed loop control function is an effective solution



# System Tuning and Safety Functions

## System Diagnosis Function

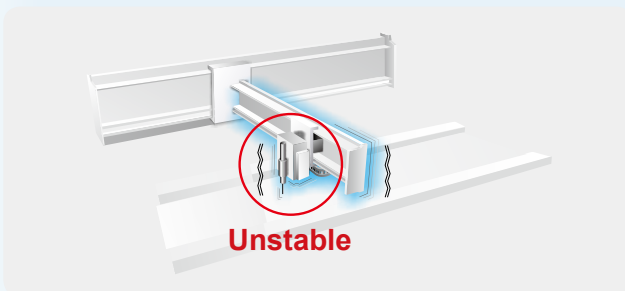
- ▶ The rigidity of a machine is known through a mathematical model
- ▶ The consistency of the machine's batch installation can be checked
- ▶ By comparing the data from different time span, the wear condition of a machine can be acquired



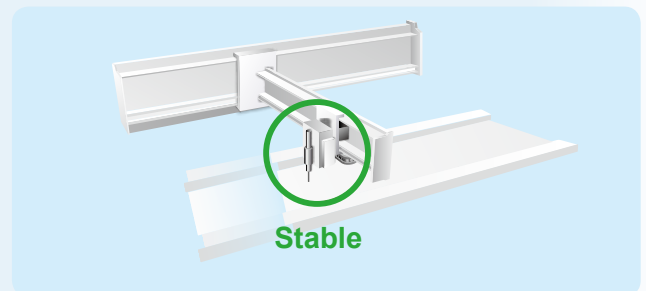
## Low Frequency Vibration Suppression Function

- ▶ Vibration elimination algorithm is different from command filter and used as a creative algorithm on ASDA-A3
- ▶ The vibration can be eliminated without slowing down its response
- ▶ In addition to vibration elimination algorithm, the two command filters for low frequency vibration are included

Without Vibration Suppression

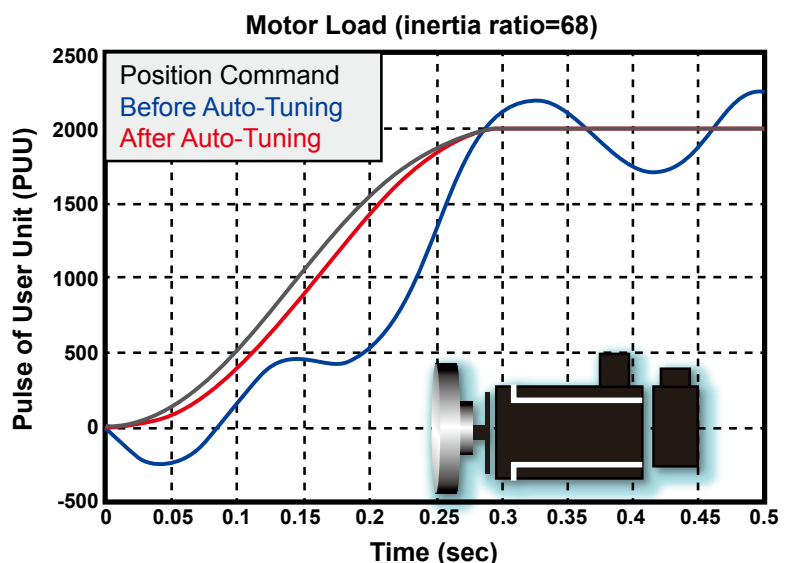


Delta Vibration Suppression



## Auto-Tuning Function

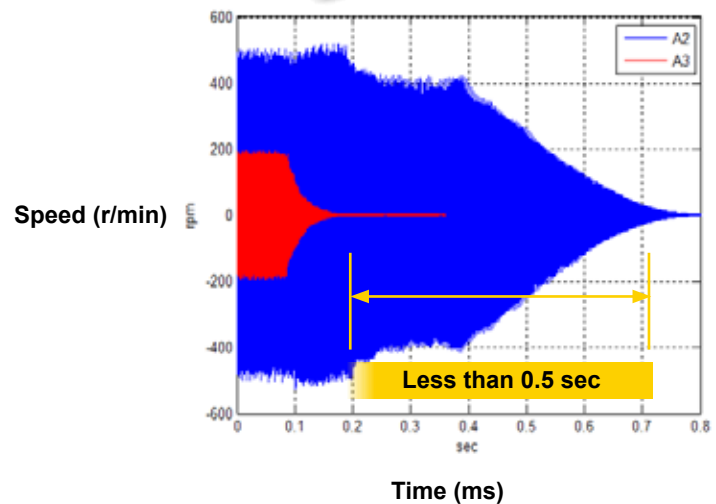
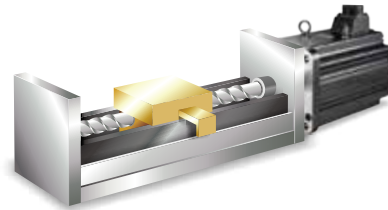
- ▶ Lower the barrier for users to use servo systems
- ▶ This function will optimize the machine performance with less tuning effort
- ▶ It can be done via panel keypad or software



## Advanced Notch Filter

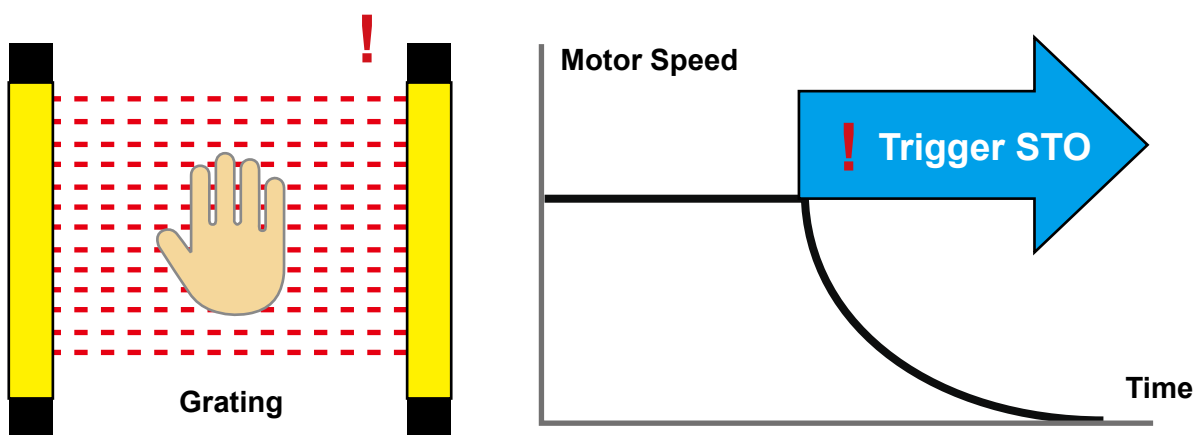
- ▶ There are 5 sets of notch filters with tunable bandwidth and up to 5000 Hz band for ASDA-A3
- ▶ Those filters can search resonance and set the attenuation level automatically
- ▶ With shorter search time for resonance, the machine is less likely to be damaged

## Test Machine Layout



## Safe Torque Off (STO) Function \*note : will be certified

- ▶ Built-in STO (Safe Torque Off) function
- ▶ The motor power will be cut-off when STO is activated

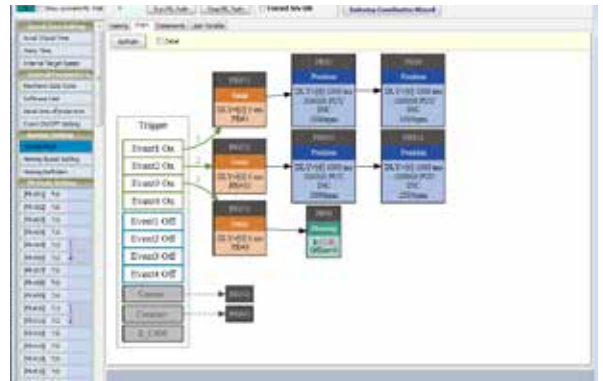


# Motion Inside



## Motion Inside

- ▶ 99 sophisticated motion commands and segments allowed
- ▶ Arithmetic operation and condition jump commands are added
- ▶ Graphical user interface offers simple setup and programming
- ▶ General motion functions like homing, position and speed commands are available
- ▶ Superimposition, blending and on-the-fly change motion commands are provided



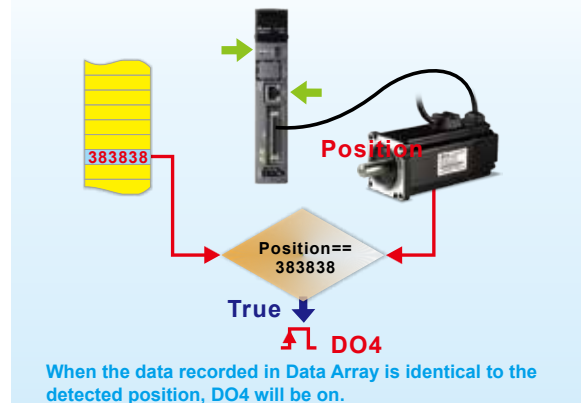
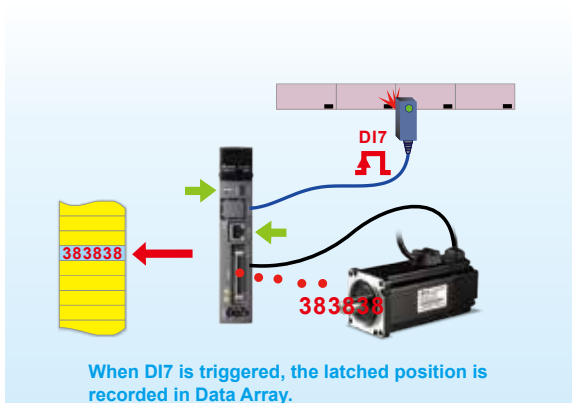
## Built-in Camming Functions

- ▶ E-CAM functions for flying shear and rotary cut are well configured
- ▶ There are maximum 720 points in one cam profile or contour with interpolation smooth algorithm
- ▶ Useful E-CAM phase secure and adjustment functions are easy to apply
- ▶ Many successful applications from ASDA-A2 are available for reference



## Capture and Compare Functions

- ▶ It is only 5  $\mu$ s response time to latch the position or pulse count after receiving the activated DI single.
- ▶ The high-speed DO will response when assigned position or count value is reached after 5  $\mu$ s response time



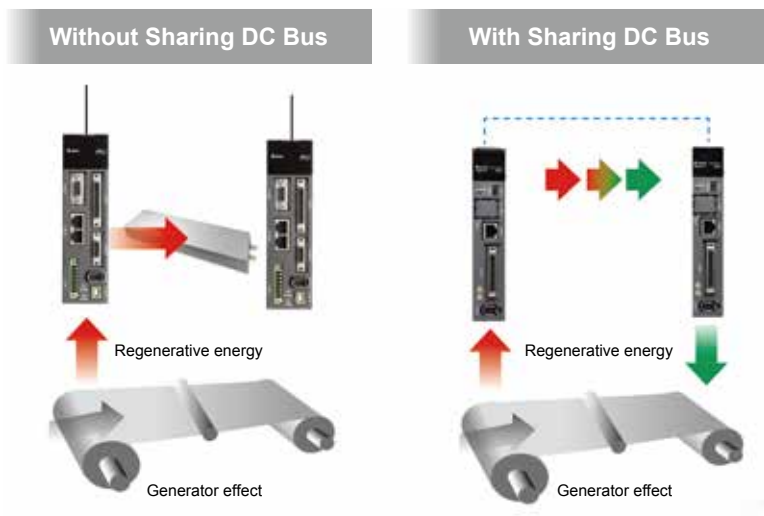


# Energy-Saving and Compact Size Design



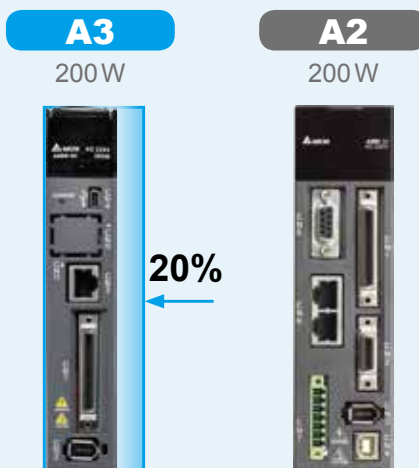
## DC-bus Sharing Feature

- ▶ The regenerative energy will be collected to DC-bus for other axes to increase energy efficiency
- ▶ Smaller resistor installed is possible for the system, which can save cost and installation space



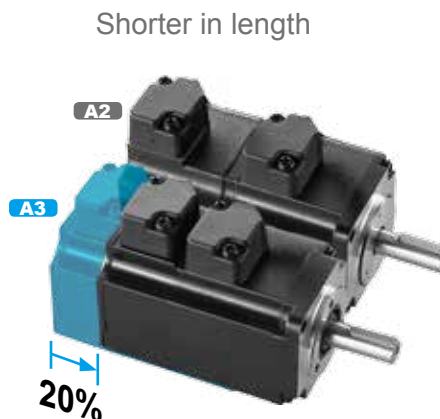
## Thinner Size Servo Drive

- ▶ ASDA-A3 is 20% smaller than A2 on dimensions, which requires less installation space



## Smaller Size Servo Motor

- ▶ ASDA-A3 series servo motor is 20% shorter than A2's

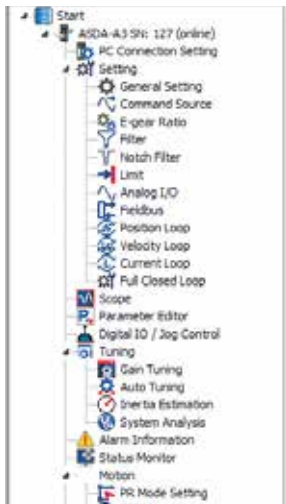


# User-Friendly Software



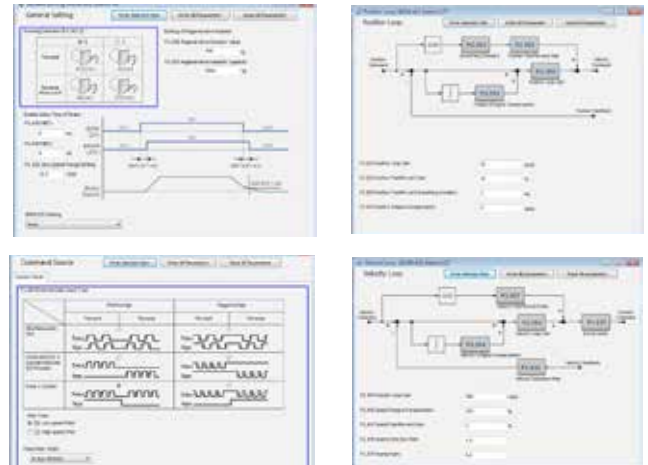
## Tree-View Index Window

- ▶ Well organized list and collapsible menu help to access functions easily



## Graphical Interface for Parameter Settings

- ▶ Intuitive user interface provides set up functions and parameters without manual findings



## Auto-Tuning Wizard for Gains

- ▶ Provides step by step guiding wizard for users to tune a servo



## Advanced Gain Tuning Interface

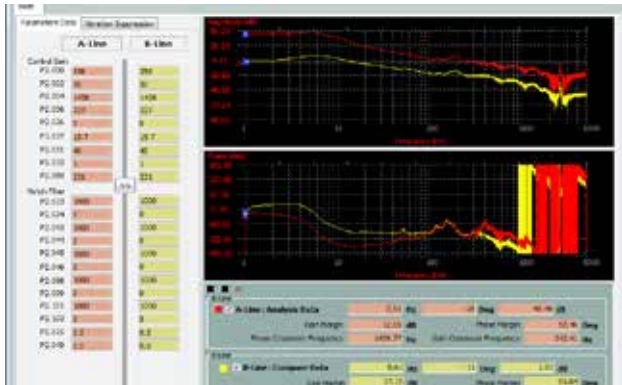
- ▶ The servo gains can be easily fine-tuned for better performance with its well-designed tuning modes



## System Analysis in Bode Plot

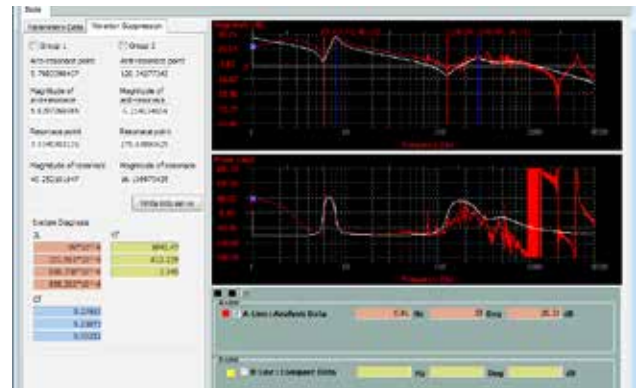
### Speed Open-Loop Mode

Checks the bode plot to know the margin for stability for properly tuned system



### System Module Mode

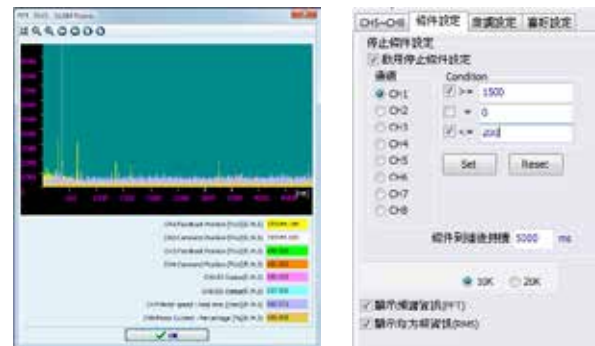
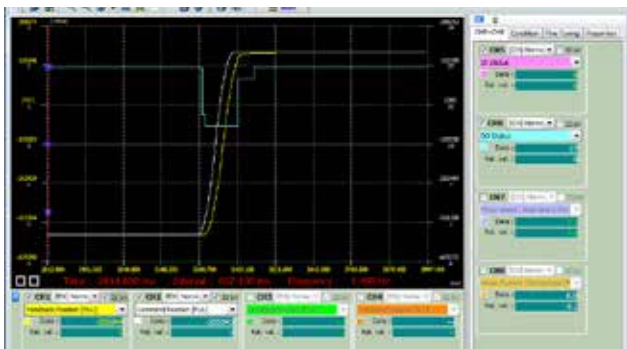
The machine rigidity can be judged from the bode plot in this mode



## Oscilloscope Function

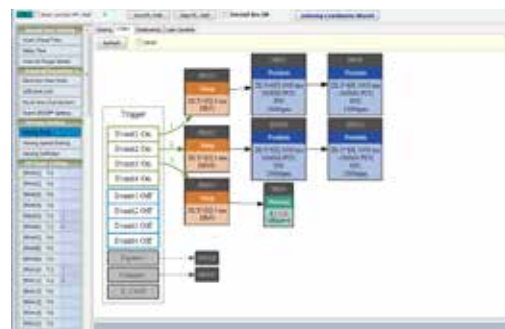
- ▶ The channel configurations for applying the PC scope include:
  - 8 channels with 16-bit data size and 10 kHz sampling rate
  - 4 channels with 32-bit data size and 10 kHz sampling rate
  - 4 channels with 16 bit data size and 20 kHz sampling rate

- ▶ Offers FFT (Fast Fourier Transform) function for checking its signal spectrum
- ▶ The RMS value can be calculated by selecting the period of a signal
- ▶ The conditions of start-to-record and stop-recording can be configured



## Graphical Programming Interface of PR mode

- ▶ This tool easily allow users to write and trace programs including Jump instructions



# Ordering Information

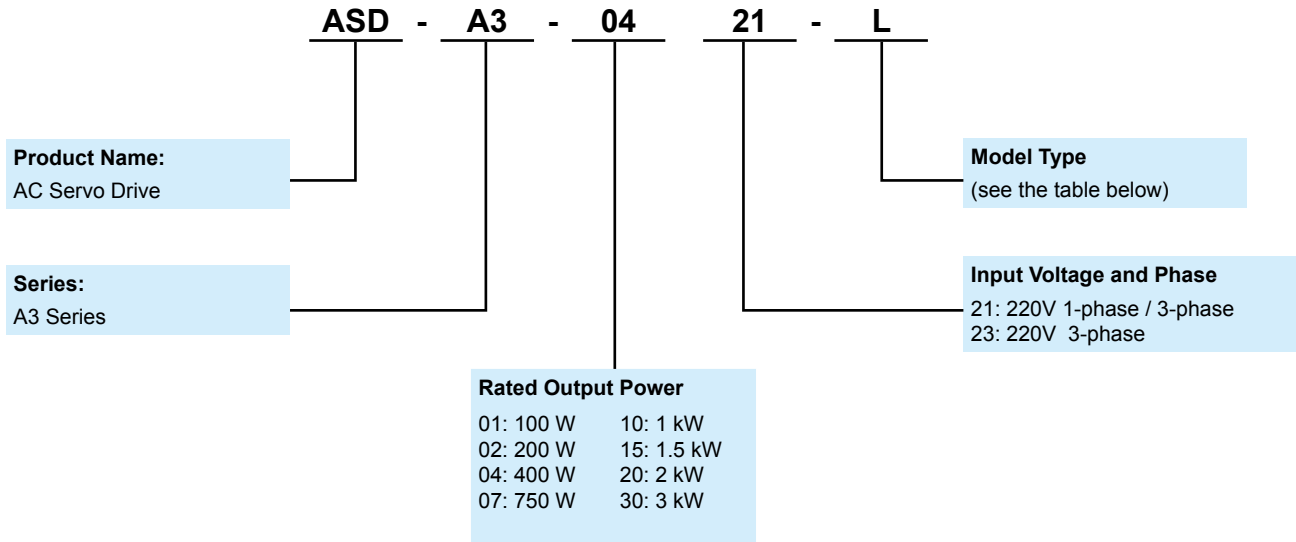
## Product Line Up

Servo Motors							Servo Drives		
Motor Series	Phase	Rated Output Power (W)	Model Name	Rated current (Arms)	Max. current (A)	Model Name	Continuous Output Current (Arms)	Max. Instantaneous Current (A)	
Low Inertia	ECM-A3L 3000 r/min	1-phase / 3-phase	50	ECM-A3L-C <sup>1</sup> 040F <sup>2</sup> S1	0.67	2.62	ASD-A3-0121	0.9	3.54
			100	ECM-A3L-C <sup>1</sup> 0401 <sup>2</sup> S1	0.89	3.5			
			200	ECM-A3L-C <sup>1</sup> 0602 <sup>2</sup> S1	1.45	5.0			
			400	ECM-A3L-C <sup>1</sup> 0604 <sup>2</sup> S1	2.65	8.5			
			400	ECM-A3L-C <sup>1</sup> 0804 <sup>2</sup> 71	2.6	8.6			
			750	ECM-A3L-C <sup>1</sup> 0807 <sup>2</sup> S1	5.1	15.9			
Medium-High Inertia	ECMC-C 3000 r/min	1-phase / 3-phase	1000	ECMC-CW1010 <sup>2</sup> S	7.3	21.9	ASD-A3-1021	7.3	24.75
	ECMC-E 2000 r/min		1000	ECMC-EW1310 <sup>2</sup> S	5.6	16.8			
		1500	ECMC-EW1315 <sup>2</sup> S	8.3	24.9	ASD-A3-1521	8.3	35.36	
		2000	ECMC-EW1320 <sup>2</sup> S	11.01	33.0	ASD-A3-2023	13.4	53.03	
		2000	ECMC-EW1820 <sup>2</sup> S	11.22	33.7				
		3000	ECMC-EW1830 <sup>2</sup> S	16.1	48.3				
	ECMC-F 1500 r/min	3-phase	3000	ECMC-FW1830 <sup>2</sup> S	19.4	58.2	ASD-A3-3023	19.4	70.71
High Inertia	ECM-A3H 3000 r/min	1-phase / 3-phase	50	ECM-A3H-C <sup>1</sup> 040F <sup>2</sup> S1	0.67	2.68	ASD-A3-0121	0.9	3.54
			100	ECM-A3H-C <sup>1</sup> 0401 <sup>2</sup> S1	0.89	3.52			
			200	ECM-A3H-C <sup>1</sup> 0602 <sup>2</sup> S1	1.45	5.4			
			400	ECM-A3H-C <sup>1</sup> 0604 <sup>2</sup> S1	2.65	9.9			
			400	ECM-A3H-C <sup>1</sup> 0804 <sup>2</sup> 71	2.6	9.4			
			750	ECM-A3H-C <sup>1</sup> 0807 <sup>2</sup> S1	4.5	16.6			
	ECMC-F 1500 r/min	1-phase / 3-phase	850	ECMC-FW1308 <sup>2</sup> S	7.1	19.4	ASD-A3-1021	7.3	24.75
			1300	ECMC-FW1313 <sup>2</sup> S	12.6	38.6	ASD-A3-1523	13.4	53.03
			1800	ECMC-FW1318 <sup>2</sup> S	13	36	ASD-A3-2023	13.4	53.03

Note: In servo motor model names, <sup>1</sup> signifies encoder type, <sup>2</sup> signifies brake or keyway/oil seal.

# Model Explanation

## ASDA-A3 Series Servo Drives



Type	PT Mode Pulse Train	PR Mode	RS-485	CANopen	DMCNET	EtherCAT	Full-closed Loop Control	Analog Voltage Control	E-CAM	STO
L	○	○	○	X	X	X	○	○	X	X
M	○	○	○	○	X	X	○	○	○	○
F	X	○	X	X	○	X	○	X	○	X
E*	X	○	X	X	X	○	○	X	○	○

Note: Models with a \* mark are the ones to be launched.



# Model Explanation

## ECM-A3 Series Servo Motors

**ECM - A 3 H - C Y 06 04 R S 1**

**Product Name**  
ECM: Electrical Commutation Motor

**Driving Type**  
A: AC Servo Motor

**Generation**  
3: A3 Series

**Inertia**  
H: High inertia  
L: Low inertia

**Series Rated Voltage / Rated Speed**  
C: Rated Voltage 220 V ·  
Rated Speed 3,000 r/min

**Encoder Type**  
Y: 24-bit Absolute Encoder (Nikon)  
Single-turn: 24-bit  
Multi-turn: 16-bit  
4: 24-bit Single-turn Absolute Encoder (Nikon)  
G: 16-bit Single-turn Absolute Magnetic Encoder  
1: 24-bit Single-turn Absolute Encoder (Delta)

**Motor Frame Size**  
04: 40 mm  
06: 60 mm  
08: 80 mm

**Special digit**  
1: standard product

**Shaft size**  
S: Standard  
7: special (14 mm)

Shaft 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 screw hole)	-	-	C*	D*
Keyway (with screw hole)	P*	Q*	R	S

**Rated Output Power**  
0F: 50 W  
01: 100 W  
02: 200 W  
04: 400 W  
07: 750 W

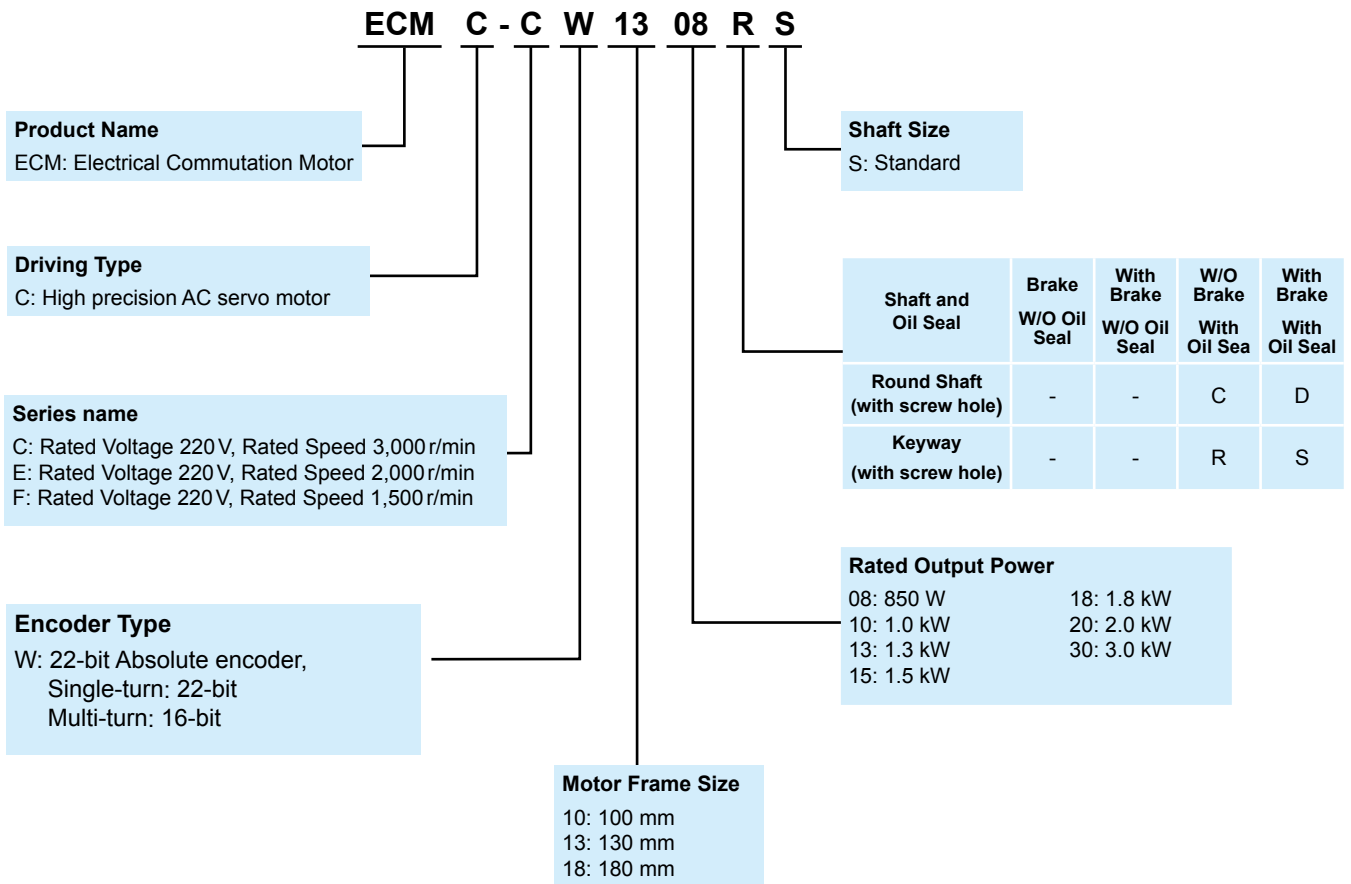
Note: Note: Models with a \* mark are the ones to be launched

Note: Note: Models with a \* mark are the ones to be launched



# Model Explanation

## ECMC Series Servo Motors



## Servo Motor Features

The ECM-A3 Series AC Servo Motor, a high-precision permanent magnet AC servo motor, can be used with the ASDA-A3 AC Servo Drives of 200 ~ 230 V which power is selectable from of 50 W ~ 750 W. Motor frame sizes offer 40 mm, 60 mm and 80 mm. Two motor models are available, the ECM-A3H high inertia and the ECM-A3L low inertia which rated speed is 3000 r/min and the Max. speed is 6000 r/min. The Max. torque of the ECM-A3H is 0.557 N-m ~ 8.36 N-m and that of ECM-A3L is 0.557 N-m ~ 7.17 N-m.

The ECMC Series AC Servo Motor, a high precision permanent magnet AC servo motor, can also be applied with the ASDA-A3 220 V Series AC Servo Drive which power range is 850 W ~ 3 kW. The available frame sizes are 100 mm, 130 mm, and 180 mm. Selectable rated torque are 1000 r/min, 2000 r/min, and 3000 r/m while the Max. speed is 3000 r/min and 5000 r/min. And the Max. torque is from 9.54 N-m to 57.3 N-m.


The ECM-A3 and the ECMC Series AC Servo Motors provide optional devices, brakes and oil seals, as well as two shaft types, round shaft and keyway.





# Servo Motor Specifications

## Servo Motor Specifications Low Inertia Series- ECM-A3L

ECM-A3L Series	C104		C106		C108	
	0F	01	02	04	04	07
Rated output power (kW)	0.05	0.1	0.2	0.4	0.4	0.75
Rated torque (N-m) <sup>*1</sup>	0.159	0.32	0.64	1.27	1.27	2.39
Maximum torque (N-m)	0.557	1.12	1.92	3.82	3.82	7.17
Rated speed (r/min)	3000					
Maximum speed (r/min)	6000					
Rated current (A)	0.67	0.89	1.45	2.65	2.6	5.1
Maximum current (A)	2.62	3.5	5.0	8.5	8.6	15.9
Power rating (kW/s)	10.9	25.3	45.51	107.5	45.4	111.4
Rotor moment of inertia (x10 <sup>-4</sup> kg-m <sup>2</sup> )(Without a brake)	0.0231	0.0405	0.09	0.15	0.355	0.513
Mechanical time constant (ms)	1.31	0.817	0.64	0.41	0.68	0.405
Torque constant (N-m/A)	0.237	0.36	0.44	0.48	0.49	0.469
Voltage constant-KE (mV/(r/min))	9.28	13.6	16.4	18.0	17.9	17
Armature resistance (Ohm)	11.9	9.47	4.9	2.27	1.6	0.6
Armature inductance (mH)	18.6	16.2	18.52	10.27	10.6	4.6
Electrical time constant (ms)	1.56	1.71	3.78	4.52	6.63	7.67
Insulation class	Class A (UL), Class B (CE)					
Insulation resistance	100 MΩ · DC 500V above					
Insulation strength	1.8k VAC · 1 sec					
Weight (kg)(without brake)	0.38	0.5	1.1	1.4	2.05	2.8
Weight (kg)(with brake)	0.68	0.8	1.6	1.9	2.85	3.6
Max. radial shaft load (N)	78	78	245	245	392	392
Max. thrust shaft load (N)	54	54	74	74	147	147
Power rating (kW/s)(with brake)	10.3	24.5	37.24	89.6	41	95.4
Rotor moment of inertia (x10 <sup>-4</sup> kg-m <sup>2</sup> )(with brake)	0.0246	0.0418	0.12	0.18	0.393	0.599
Mechanical time constant (ms)(with brake)	1.39	0.894	0.88	0.47	0.75	0.47
Brake holding torque [Nt-m (min)] <sup>2</sup>	0.32	0.32	1.3	1.3	2.5	2.5
Brake power consumption (at 20°C)[W]	7.3	7.3	7.2	7.2	8.4	8.4
Brake release time [ms (Max)]	5	5	20	20	20	20
Brake pull-in time [ms (Max)]	25	25	50	50	70	70
Vibration grade (μm)	16					
Operating temperature (°C)	0°C to 40°C					
Storage temperature (°C)	-10°C to 80°C					
Operating humidity	20 to 90%RH (non-condensing)					
Storage humidity	20 to 90%RH (non-condensing)					
Vibration capacity	2.5G					
IP Rating	IP65 (when waterproof connectors are used, or when an oil seal is used to be fitted to the rotating shaft (an oil seal model is used))					
Approvals						

Note:

1. The rated torque is the permissible continuous torque at the operation temperature of 0~40°C when the following heat sink is applied:


ECM-A3: \_04/06/ 08 : 250 mm x 250mm x 6mm

Material type: Aluminum- F60, F80

2. The built-in brake of the servo motor is for calmping the shaft. Never use it for decelerating or stopping the motor

# Servo Motor Specifications

## High Inertia Series- ECM-A3H

ECM-A3H Series	C104		C106		C108	
	0F	01	02	04	04	07
Rated output power (kW)	0.05	0.1	0.2	0.4	0.4	0.75
Rated torque (N-m) <sup>1</sup>	0.159	0.32	0.64	1.27	1.27	2.39
Maximum torque (N-m)	0.557	1.12	2.24	4.45	4.44	8.36
Rated speed (r/min)	3000					
Maximum speed (r/min)	6000					
Rated current (A)	0.67	0.9	1.45	2.65	2.6	4.5
Maximum current (A)	2.68	3.52	5.4	9.9	9.4	16.6
Power rating (kW/s)	5.89	13.8	16.4	35.8	17.5	37.8
Rotor moment of inertia (x10 <sup>-4</sup> kg-m <sup>2</sup> )(Without a brake)	0.043	0.0742	0.25	0.45	0.92	1.51
Mechanical time constant (ms)	2.49	1.38	1.37	0.96	1.31	0.91
Torque constant (N-m/A)	0.237	0.356	0.44	0.48	0.49	0.53
Voltage constant-KE (mV/(r/min))	9.54	13.2	16.4	17.2	17.9	18.7
Armature resistance (Ohm)	12.5	8.34	3.8	1.68	1.19	0.57
Armature inductance (mH)	13.3	11	8.15	4.03	4.2	2.2
Electrical time constant (ms)	1.07	1.32	2.14	2.40	3.53	3.86
Insulation class	Class A (UL), Class B (CE)					
Insulation resistance	100 MΩ · DC 500V above					
Insulation strength	1.8k VAC · 1 sec					
Weight (kg)(without brake)	0.38	0.5	1.1	1.4	2.05	2.8
Weight (kg)(with brake)	0.68	0.8	1.6	1.9	2.85	3.6
Max. radial shaft load (N)	78	78	245	245	392	392
Max. thrust shaft load (N)	54	54	74	74	147	147
Power rating (kW/s)(with brake)	5.68	13.6	15.17	34.32	15.1	34.4
Rotor moment of inertia (x10 <sup>-4</sup> kg-m <sup>2</sup> )(with brake)	0.0446	0.0755	0.28	0.48	1.07	1.66
Mechanical time constant (ms)(with brake)	2.58	1.4	1.52	1.01	1.53	1
Brake holding torque [Nt-m (min)] <sup>2</sup>	0.32	0.32	1.3	1.3	2.5	2.5
Brake power consumption (at 20°C)[W]	7.3	7.3	7.2	7.2	8.4	8.4
Brake release time [ms (Max)]	5	5	20	20	20	20
Brake pull-in time [ms (Max)]	25	25	50	50	70	70
Vibration grade (μm)	15					
Operating temperature (°C)	0°C to 40°C					
Storage temperature (°C)	-10°C to 80°C					
Operating humidity	20 to 90%RH (non-condensing)					
Storage humidity	20 to 90%RH (non-condensing)					
Vibration capacity	2.5G					
IP Rating	IP65 (when waterproof connectors are used, or when an oil seal is used to be fitted to the rotating shaft (an oil seal model is used))					
Approvals						

Note:

1. The rated torque is the permissible continuous torque at the operation temperature of 0~40 °C when the following heat sink is applied:


ECM-A3:\_\_\_04/06/ 08 : 250 mm x 250mm x 6mm

Material type: Aluminum- F60, F80

2. The built-in brake of the servo motor is for clamping the shaft. Never use it for decelerating or stopping the motor

# Servo Motor Specifications

## Medium Inertia ECMC Series- Frame Sizes 100~180 mm


ECMC Series	C110		E113		E118		F118
	10	10	15	20	20	30	30
Rated output power (kW)	1.0	1.0	1.5	2.0	2.0	3.0	3.0
Rated torque (N-m) <sup>1</sup>	3.18	4.77	7.16	9.55	9.55	14.32	19.10
Maximum torque (N-m)	9.54	14.3	21.5	28.7	28.7	43	57.3
Rated speed (r/min)	3000	2000		2000		1500	
Maximum speed (r/min)	5000	3000		3000		3000	
Rated current (A)	7.3	5.6	8.3	11.01	11.2	16.1	19.4
Maximum current (A)	21.9	16.8	24.9	33	33.7	48.3	58.2
Power rating (kW/s)	38.1	27.1	45.9	62.5	26.3	37.3	66.4
Rotor moment of inertia (x10 <sup>-4</sup> kg-m <sup>2</sup> )(Without a brake)	2.65	8.41	11.2	14.6	34.7	55	55
Mechanical time constant (ms)	0.74	1.51	1.10	0.96	1.62	1.06	1.28
Torque constant (N-m/A)	0.44	0.85	0.87	0.87	0.85	0.89	0.98
Voltage constant-KE (mV/(r/min))	16.8	31.9	31.8	31.8	31.4	32.0	35
Armature resistance (Ohm)	0.20	0.47	0.26	0.174	0.119	0.052	0.077
Armature inductance (mH)	1.81	5.99	4.01	2.76	2.84	1.38	1.27
Electrical time constant (ms)	9.3	12.9	15.3	15.9	23.9	26.4	16.5
Insulation class	Class A (UL), Class B (CE)						
Insulation resistance	100 MΩ · DC 500 V above						
Insulation strength	1.8k VAC · 1sec						
Weight (kg)(without brake)	4.3	7.0	7.5	7.8	13.5	18.5	18.5
Weight (kg)(with brake)	4.7	8.4	8.9	9.2	17.5	22.5	22.5
Max. radial shaft load (N)	490			1176		1470	
Max. thrust shaft load (N)	98					490	
Power rating (kW/s)(with brake)	30.4	24.9	43.1	57.4	24.1	35.9	63.9
Rotor moment of inertia (x10 <sup>-4</sup> kg-m <sup>2</sup> )(with brake)	3.33	9.14	11.9	15.9	37.8	57.1	57.1
Mechanical time constant (ms)(with brake)	0.93	1.64	1.19	1.05	1.77	1.10	1.33
Brake holding torque [N·m (min)] <sup>2</sup>	8		10		25		
Brake power consumption (at 20°C)[W]	18.7		19		20.4		
Brake release time [ms (Max)]	10						
Brake pull-in time [ms (Max)]	70						
Vibration grade (μm)	V15						
Operating temperature (°C)	0°C ~ 40°C (32°F ~ 104°F)						
Storage temperature (°C)	-10°C ~ 80°C (-14°F ~ 176°F)						
Operating humidity	20 to 90%RH (non-condensing)						
Storage humidity	20 to 90%RH (non-condensing)						
Vibration capacity	2.5G						
IP Rating	IP65 (when waterproof connectors are used, or when an oil seal is used to be fitted to the rotating shaft (an oil seal model is used))						
Approvals							

Note:  
 1. □ in the servo model name signifies encoder type.  
 2. The rated torque is the permissible continuous torque at the operation temperature of 0~40 °C when the following heat sink is applied:  
 ECMC-\_\_10 : 300 mm x 300 mm x 12 mm  
 ECMC-\_\_13 : 400 mm x 400 mm x 20 mm  
 ECMC-\_\_18 : 550 mm x 550 mm x 30 mm  
 Material type: Aluminum- F60, F80  
 3. The built-in brake of the servo motor is for calmping the shaft. Never use it for decelerating or stopping the motor



# Servo Motor Specifications

## High Inertia ECMC Series-Frame Sizes 130 mm

ECMC Series	F13		
	08	13	18
Rated output power (kW)	0.85	1.3	1.8
Rated torque (N-m) <sup>1</sup>	5.41	8.34	11.48
Maximum torque (N-m)	13.8	23.3	28.7
Rated speed (r/min)	1500		
Maximum speed (r/min)	3000		
Rated current (A)	7.1	12.6	13
Maximum current (A)	19.4	38.6	36
Power rating (kW/s)	21.52	34.78	53
Rotor moment of inertia (x10 <sup>-4</sup> kg-m <sup>2</sup> )(Without a brake)	13.6	20	24.9
Mechanical time constant (ms)	2.43	1.62	1.7
Torque constant-KT (N-m/A)	0.76	0.66	0.88
Voltage constant-KE (mV/(r/min))	29.2	24.2	32.2
Armature resistance (Ohm)	0.38	0.124	0.185
Armature inductance (mH)	4.77	1.7	2.6
Electrical time constant (ms)	12.6	13.7	14.1
Insulation class	Class A (UL), Class B (CE)		
Insulation resistance	100 MΩ · DC 500V above		
Insulation strength	1.8k VAC · 1 sec		
Weight (kg)(without brake)	8.6	9.4	10.5
Weight (kg)(with brake)	10	10.8	11.9
Max. radial shaft load (N)	490		
Max. thrust shaft load (N)	98		
Power rating (kW/s)(with brake)	19.8	32.7	50.3
Rotor moment of inertia (x10 <sup>-4</sup> kg-m <sup>2</sup> )(with brake)	14.8	21.3	26.2
Mechanical time constant (ms)(with brake)	2.65	1.73	1.79
Brake holding torque [Nt-m (min)] <sup>2</sup>	10		
Brake power consumption (at 20°C)[W]	19		
Brake release time [ms (Max)]	10		
Brake pull-in time [ms (Max)]	70		
Vibration grade (μm)	V15		
Operating temperature (°C)	0°C ~ 40°C (32°F ~ 104°F)		
Storage temperature (°C)	-10°C ~ 80°C (-14°F ~ 176°F)		
Operating humidity	20 ~ 90%RH (non-condensing)		
Storage humidity	20 ~ 90%RH (non-condensing)		
Vibration capacity	2.5 G		
IP Rating	IP65 (when waterproof connectors are used, or when an oil seal is used to be fitted to the rotating shaft (an oil seal model is used))		
Approvals			

Note:

1. □ In the servo model name signifies encoder type.

2. The rated torque is the permissible continuous torque at the operation temperature of 0~40 °C when the following heat sink is applied:

ECMC-\_\_10 : 300 mm x 300 mm x 12 mm

ECMC-\_\_13 : 400 mm x 400 mm x 20 mm

ECMC-\_\_18 : 550 mm x 550 mm x 30 mm

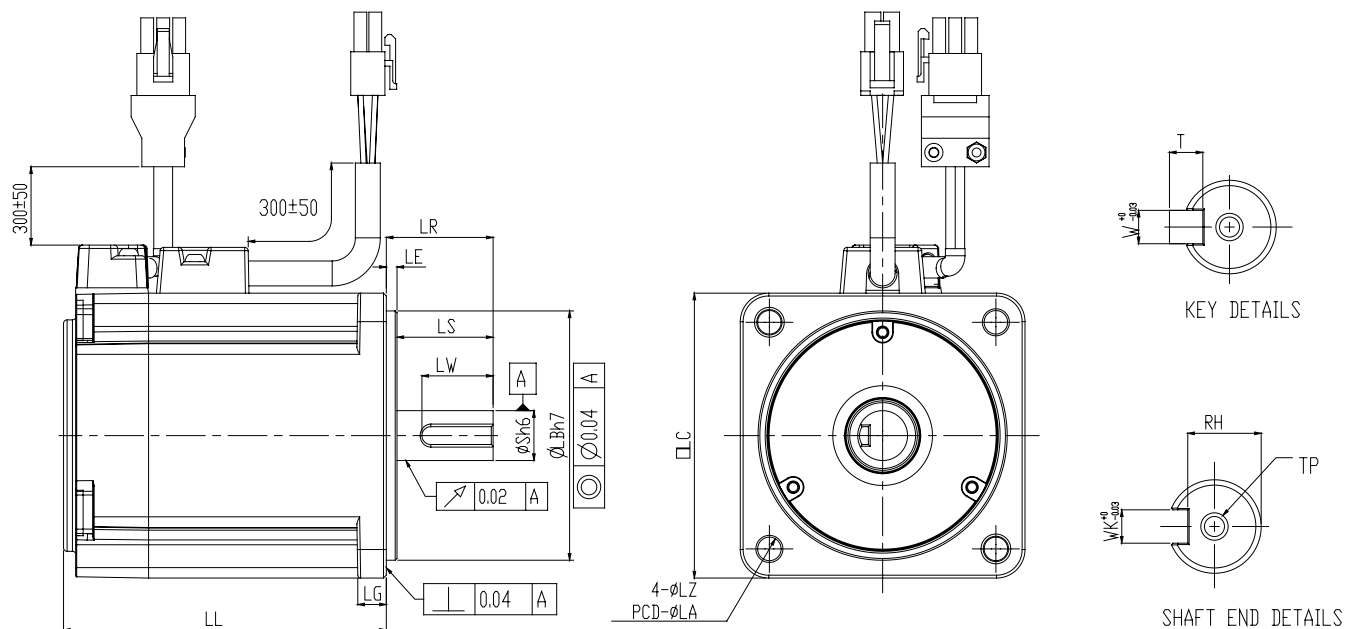
Material type: Aluminum- F100, F130, F180

3. The built-in brake of the servo motor is for calmping the shaft. Never use it for decelerating or stopping the motor

# Servo Motor Dimensions

## ECM-A3 Series

### Frame Size 80 mm and Below



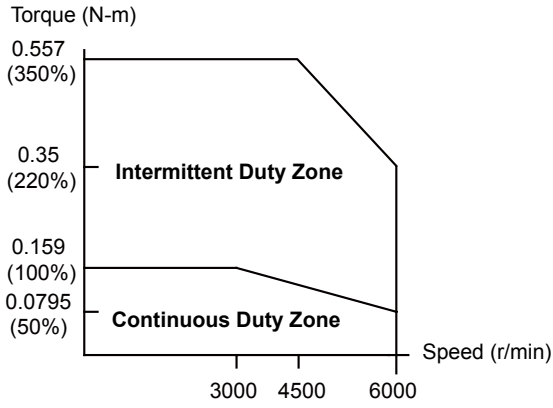
Units: mm

Model	C □ 040F □ S □	C □ 0401 □ S □	C □ 0602 □ S □	C □ 0604 □ S □	C □ 0804 □ 7 □	C □ 0807 □ S □
LC	40	40	60	60	80	80
LZ	4.5	4.5	5.5	5.5	6.6	6.6
LA	46	46	70	70	90	90
S	8 $(\begin{smallmatrix} +0 \\ -0.009 \end{smallmatrix})$	8 $(\begin{smallmatrix} +0 \\ -0.009 \end{smallmatrix})$	14 $(\begin{smallmatrix} +0 \\ -0.011 \end{smallmatrix})$	14 $(\begin{smallmatrix} +0 \\ -0.011 \end{smallmatrix})$	14 $(\begin{smallmatrix} +0 \\ -0.011 \end{smallmatrix})$	19 $(\begin{smallmatrix} +0 \\ -0.013 \end{smallmatrix})$
LB	30 $(\begin{smallmatrix} +0 \\ -0.021 \end{smallmatrix})$	30 $(\begin{smallmatrix} +0 \\ -0.021 \end{smallmatrix})$	50 $(\begin{smallmatrix} +0 \\ -0.025 \end{smallmatrix})$	50 $(\begin{smallmatrix} +0 \\ -0.025 \end{smallmatrix})$	70 $(\begin{smallmatrix} +0 \\ -0.03 \end{smallmatrix})$	70 $(\begin{smallmatrix} +0 \\ -0.03 \end{smallmatrix})$
LL(with out brake)	70.6	85.3	84	106	93.7	115.8
LL(with brake)	105.4	120.1	117.6	139.7	131.2	153.2
LS	21.5	22.5	27	27	27	37
LR	25	25	30	30	30	40
LE	2.5	2.5	3	3	3	3
LG	5	5	7.5	7.5	8	8
LW	16	16	20	20	20	25
RH	6.2	6.2	11	11	11	15.5
WK	3	3	5	5	5	6
W	3	3	5	5	5	6
T	3	3	5	5	5	6
TP	M3 Depth 6	M3 Depth 6	M4 Depth 8	M4 Depth 8	M4 Depth 8	M6 Depth 10

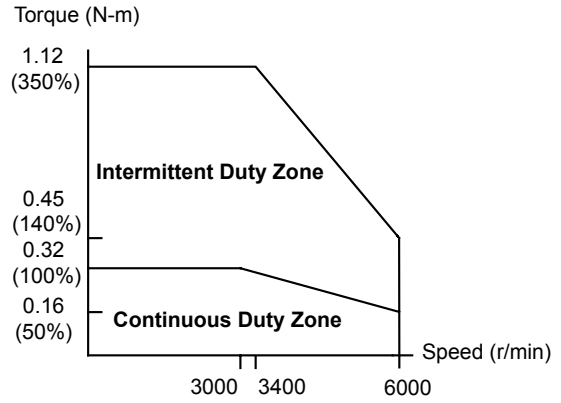
Note: Note: In servo motor model names, □ signifies encoder type, □ signifies shaft diameter and oil seal, and □ signifies special code

# Speed-Torque Curves (T-N Curves)

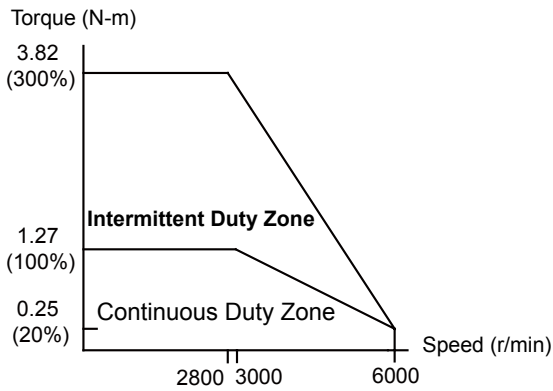
## ECM-A3 Torque Features



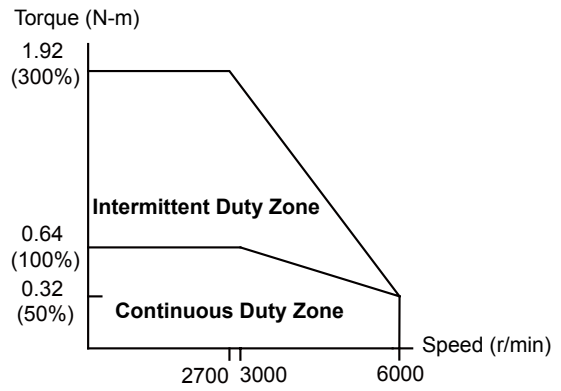
ECM-A3L-CΔ04F□S1



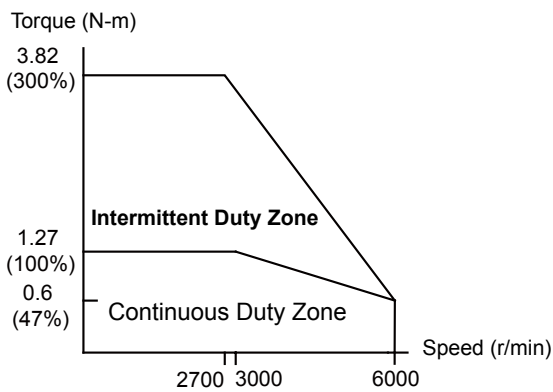
ECM-A3L-CΔ401□S1



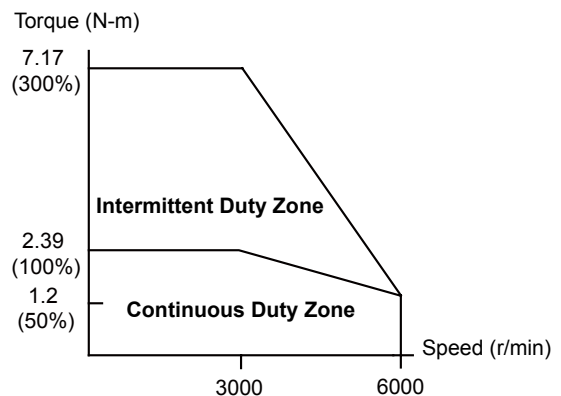
ECM-A3L-CΔ0604□S1



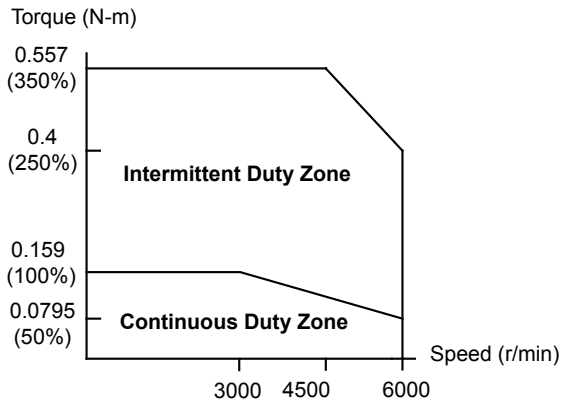
ECM-A3L-CΔ0602□S1



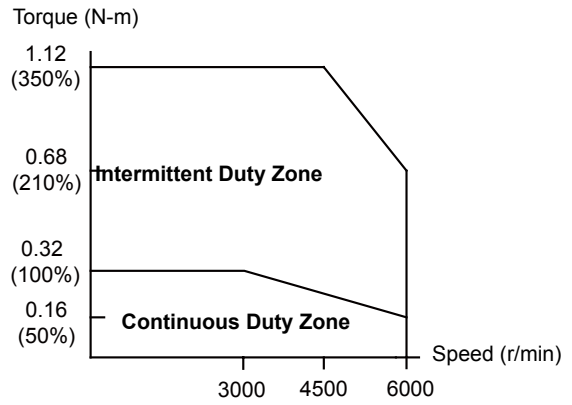
ECM-A3L-CΔ0804□S1



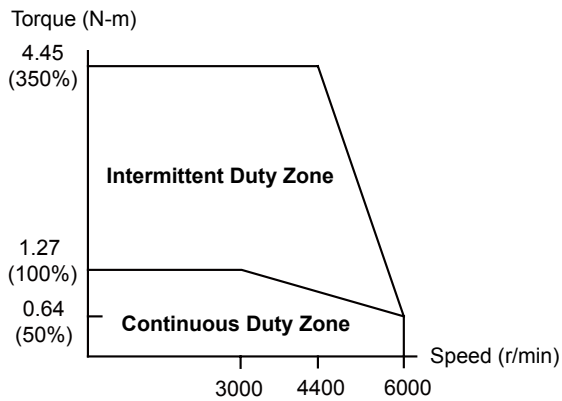
ECM-A3L-CΔ0807□S1



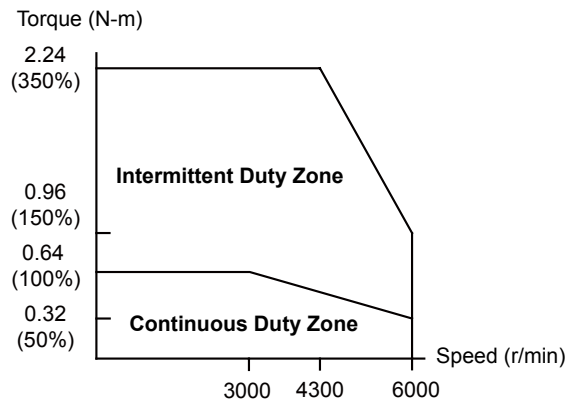
ECM-A3H-CΔ040F□S1



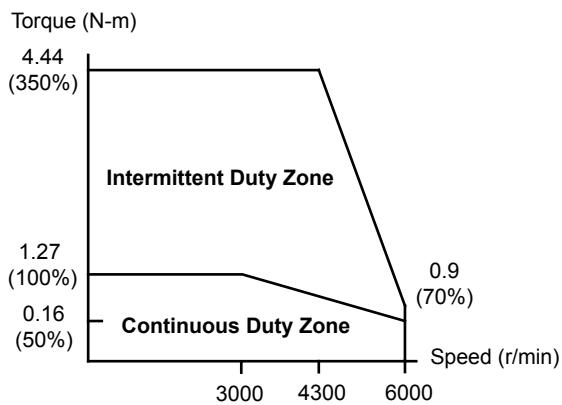
ECM-A3H-CΔ0401□S1



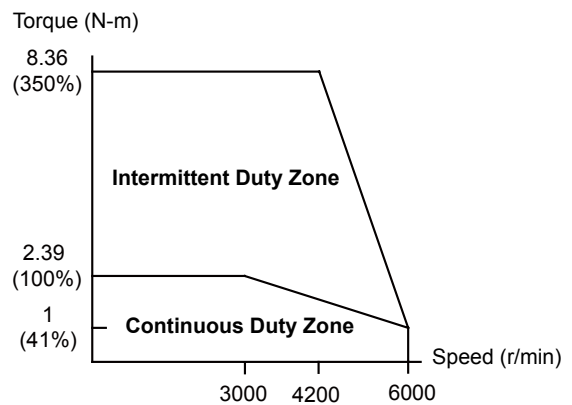
ECM-A3H-CΔ0604□S1



ECM-A3H-CΔ0602□S1



ECM-A3H-CΔ0804□S1

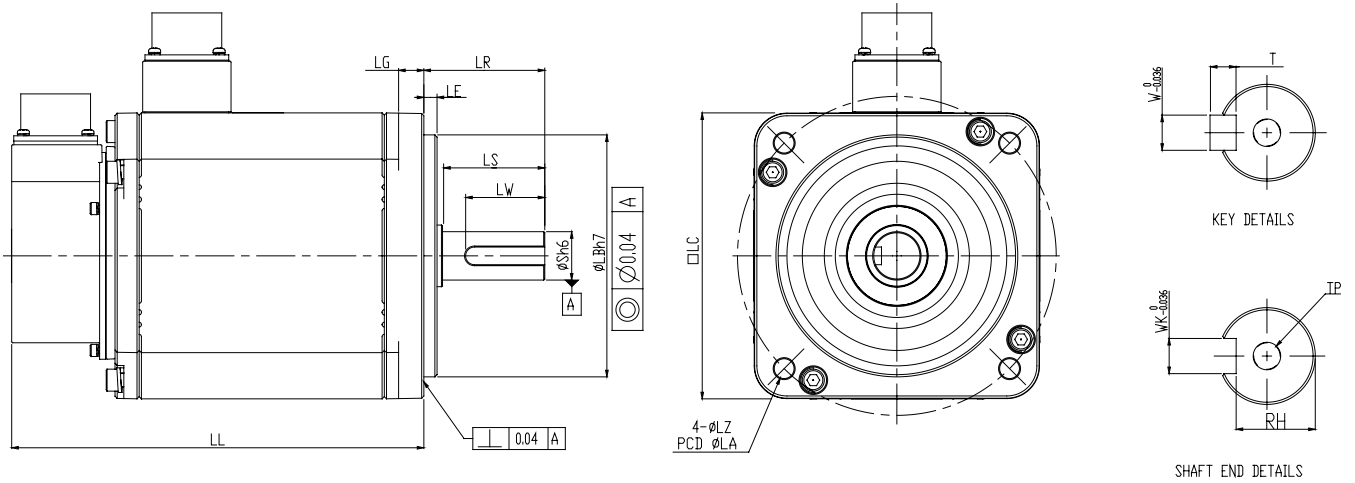


ECM-A3H-CΔ0807□S1

# Servo Motor Dimensions

## ECMC Series

### Frame Sizes 100 / 130 mm



Units: mm

Model	C □ 1010 □ S	E □ 1310 □ S	E □ 1315 □ S	E □ 1320 □ S	F □ 1308 □ S	F □ 1313 □ S	F □ 1318 □ S
LC	100	130	130	130	130	130	130
LZ	9	9	9	9	9	9	9
LA	115	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	95 ( $^{+0}_{-0.035}$ )	110 ( $^{+0}_{-0.035}$ )	110 ( $^{+0}_{-0.035}$ )	110 ( $^{+0}_{-0.035}$ )	110 ( $^{+0}_{-0.035}$ )	110 ( $^{+0}_{-0.035}$ )	110 ( $^{+0}_{-0.035}$ )
LL(with out brake)	153.3	147.5	167.5	187.5	152.5	187.5	202
LL(with brake)	192.5	183.5	202	216	181	216	230.7
LS	37	47	47	47	47	47	47
LR	45	55	55	55	55	55	55
LE	5	6	6	6	6	6	6
LG	12	11.5	11.5	11.5	11.5	11.5	11.5
LW	32	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

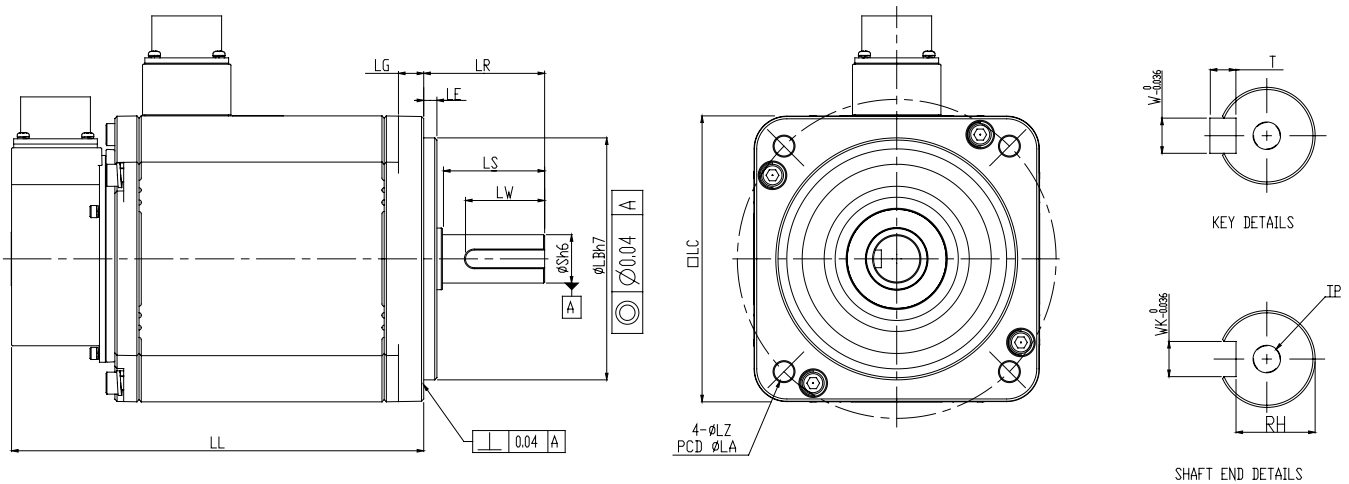
Note: Note: In servo motor model names, □ signifies encoder type, □ signifies shaft diameter and oil seal, and □ signifies special code



# Servo Motor Dimensions

## ECMC Series

### Frame Size 180 mm



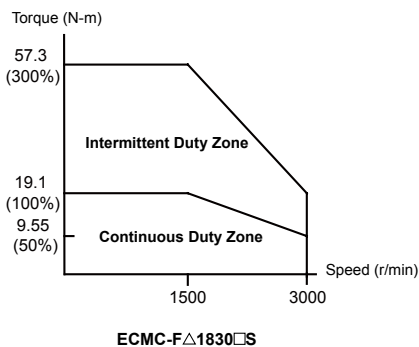
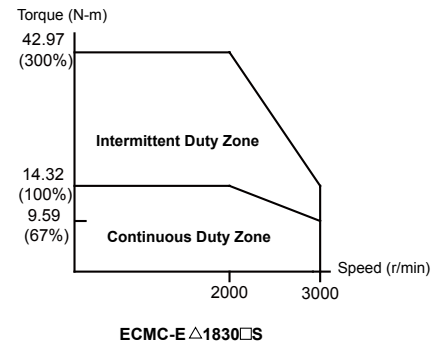
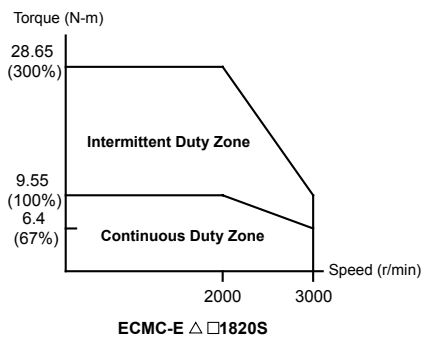
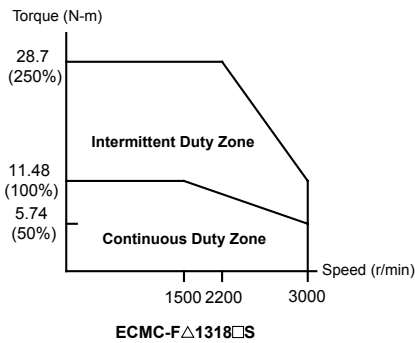
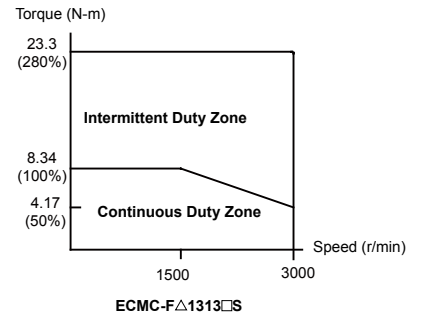
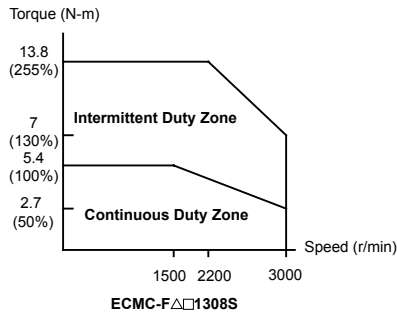
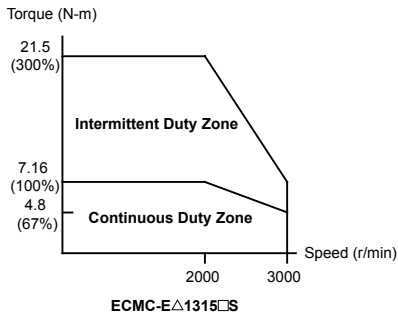
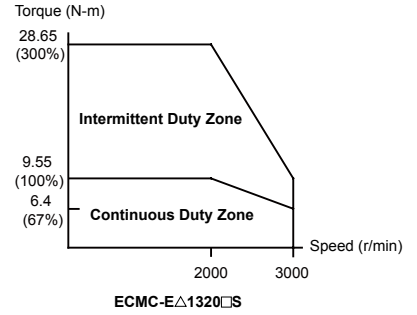
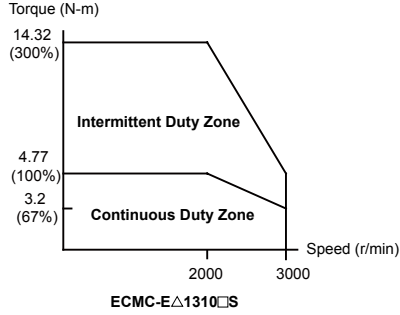
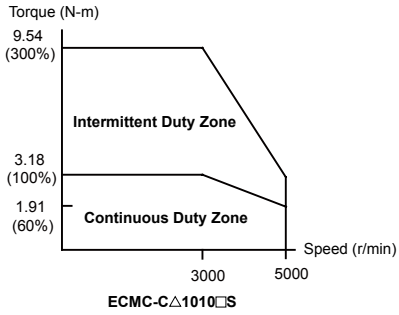
Units: mm

Model	E □ 1820 □ □	E □ 1830 □ □	F □ 1830 □ □
LC	180	180	180
LZ	13.5	13.5	13.5
LA	200	200	200
S	35 <sup>+0</sup> / <sub>-0.016</sub>	35 <sup>+0</sup> / <sub>-0.016</sub>	35 <sup>+0</sup> / <sub>-0.016</sub>
LB	114.3 <sup>+0</sup> / <sub>-0.035</sub>	114.3 <sup>+0</sup> / <sub>-0.035</sub>	114.3 <sup>+0</sup> / <sub>-0.035</sub>
LL(with out brake)	169	202.1	202.1
LL(with brake)	203.1	235.3	235.3
LS	73	73	73
LR	79	79	79
LE	4	4	4
LG	20	20	20
LW	63	63	63
RH	30	30	30
WK	10	10	10
W	10	10	10
T	8	8	8
TP	M12 Depth 25	M12 Depth 25	M12 Depth 25

Note: In servo motor model names, □ signifies encoder type, □ signifies shaft diameter and oil seal, and □ signifies special code

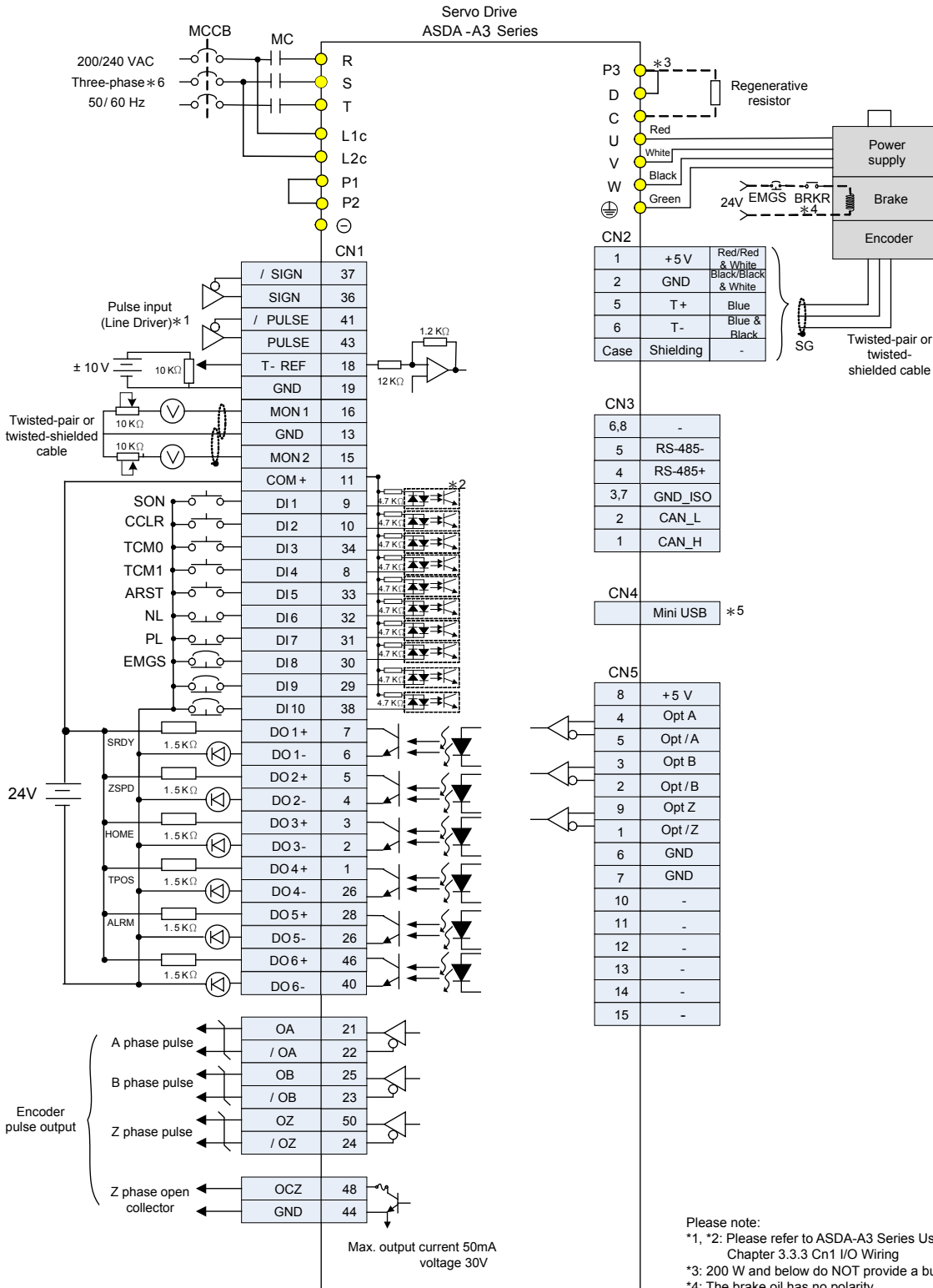
# Speed-Torque Curves (T-N Curves)

## ECMC Torque Features



# Wiring

## Position (PT) Control Mode (for pulse command input)



Please note:

\*1, \*2: Please refer to ASDA-A3 Series User Manual, Chapter 3.3.3 Cn1 I/O Wiring

\*3: 200 W and below do NOT provide a built-in regenerative resistor

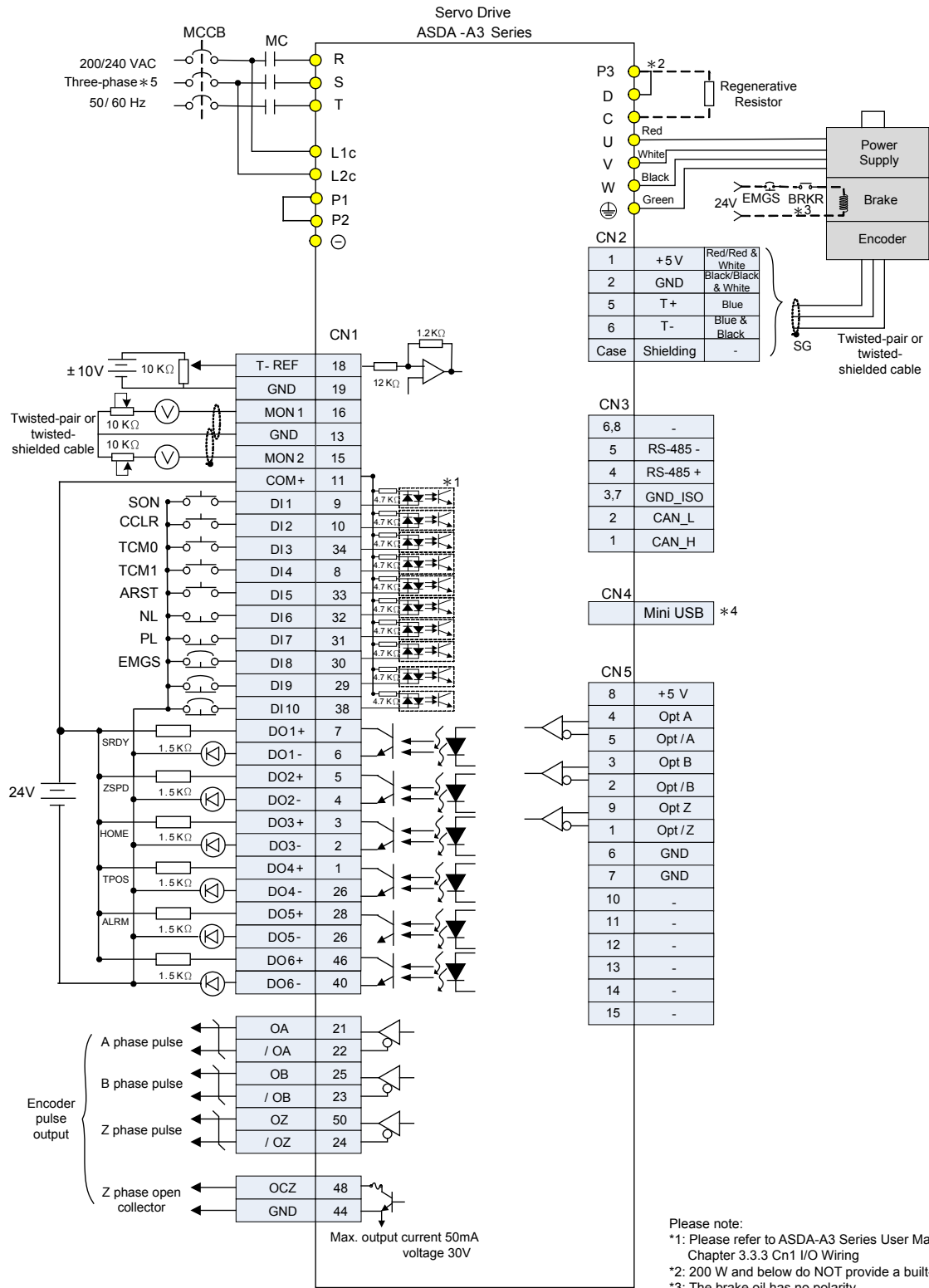
\*4: The brake oil has no polarity

\*5: Connect to Mini-USB of PC

\*6: Single-phase connections are for servo drives 1.5kW and below only.

# Wiring

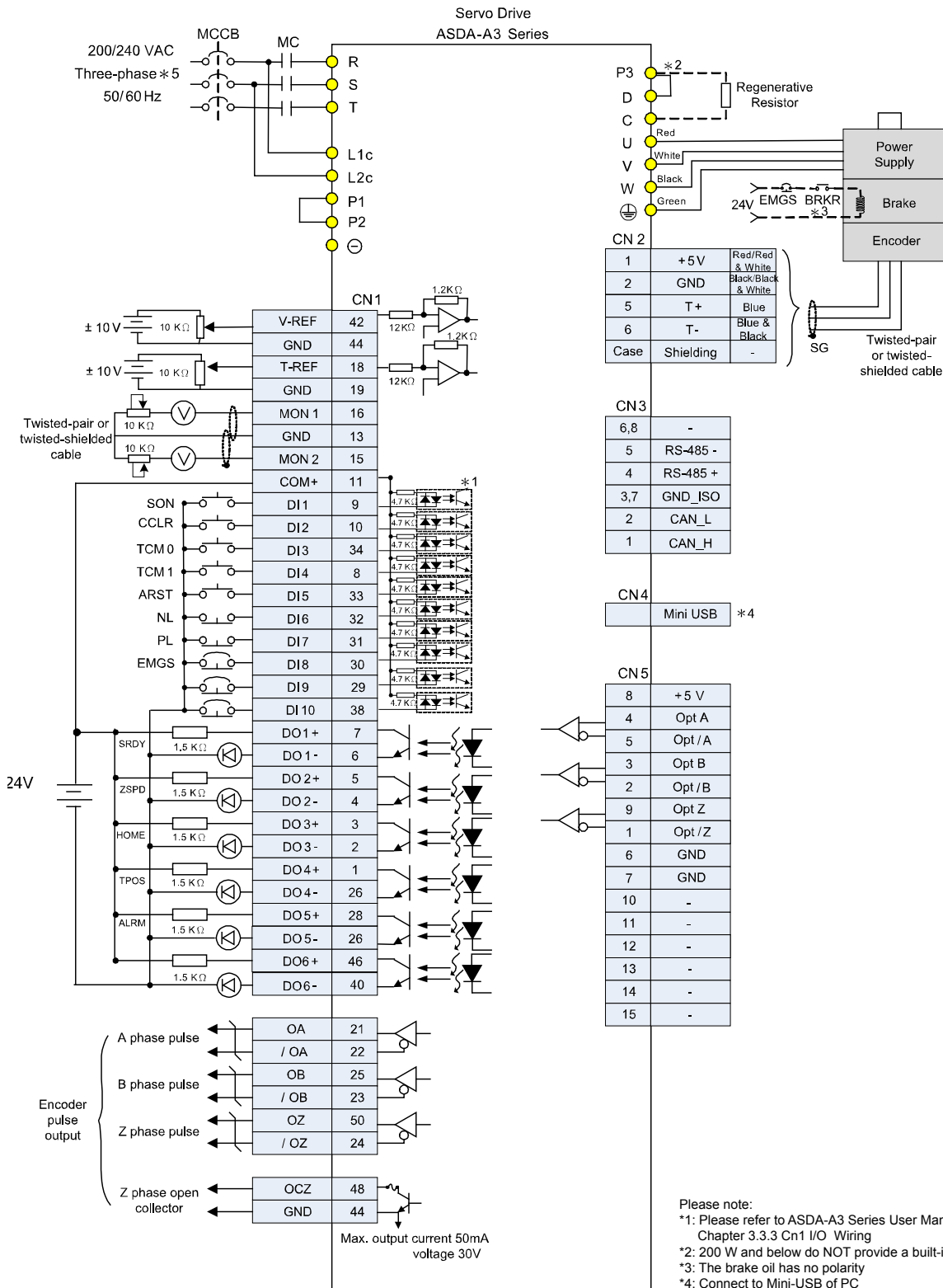
## Position (PR) Control Mode (for Internal Procedure Control)



- Please note:
- \*1: Please refer to ASDA-A3 Series User Manual, Chapter 3.3.3 Cn1 I/O Wiring
  - \*2: 200 W and below do NOT provide a built-in regenerative resistor
  - \*3: The brake oil has no polarity
  - \*4: Connect to Mini-USB of PC
  - \*5: Single-phase connections are for servo drives 1.5kW and below only

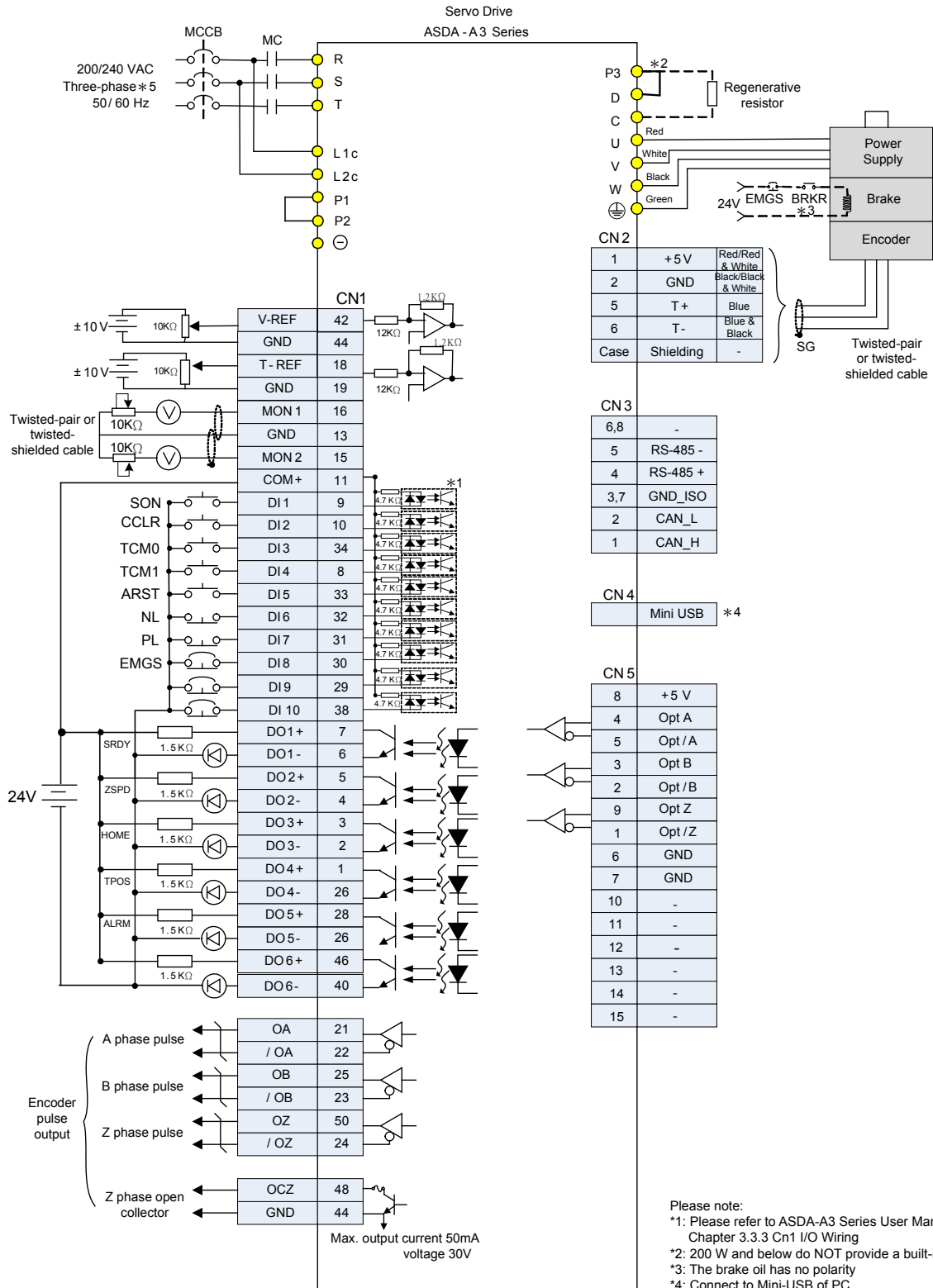
# Wiring

## Torque (T) Mode Standard Wiring (for Analog Voltage Input and Internal Parameter Setting)



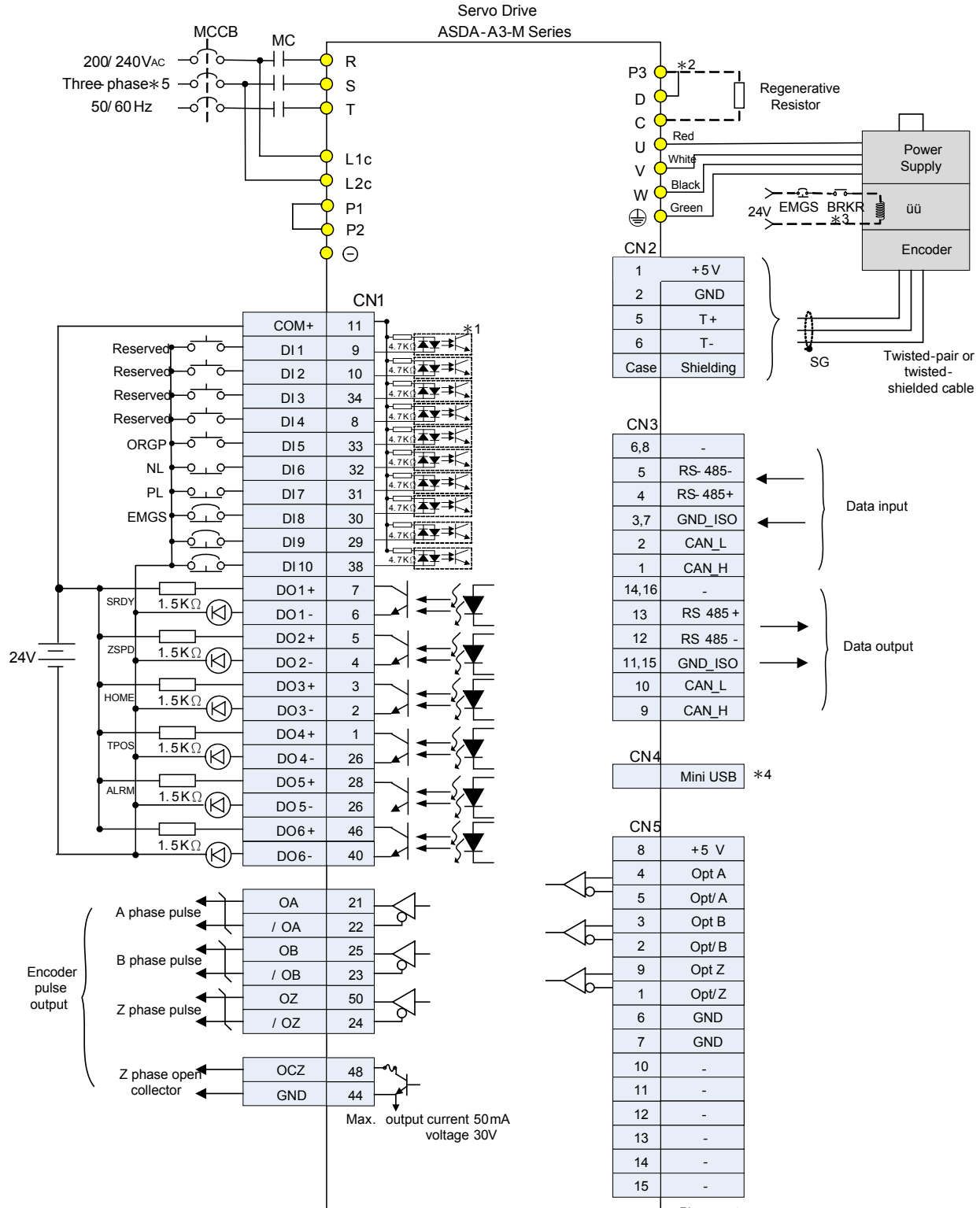
# Wiring

## Speed (S) Mode (for Analog Voltage Input and Internal Parameter Setting)



# Wiring

## Communication mode (CANopen)



Please note:

\*1: Please refer to ASDA-A3 Series User Manual, Chapter 3.3.3 Cn1 I/O Wiring

\*2: 200 W and below do NOT provide a built-in regenerative resistor

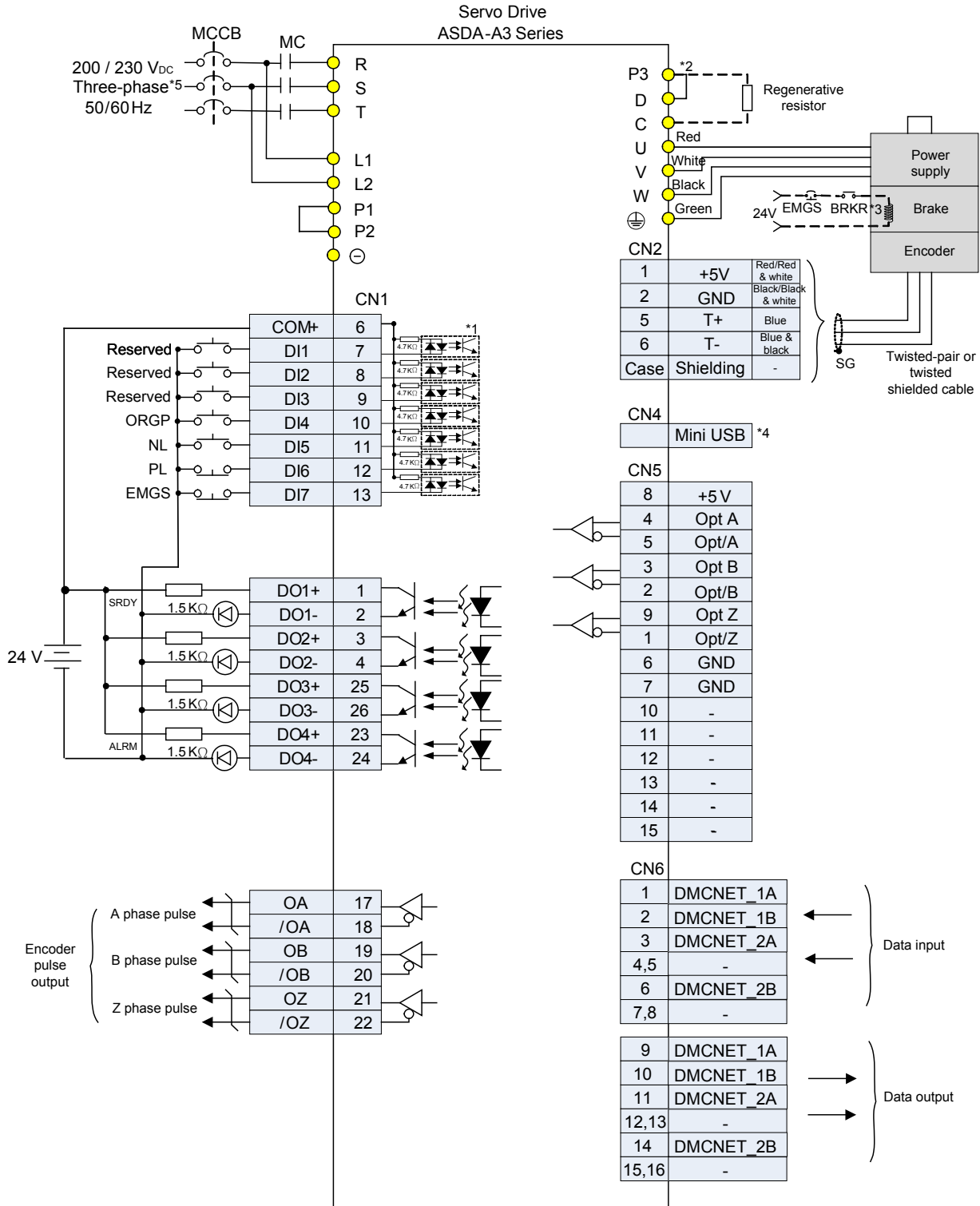
\*3: The brake oil has no polarity

\*4: Connect to Mini-USB of PC

\*5: Single-phase connections are for servo drives 1.5kW and below only

# Wiring

## Communication mode (DMCNET)



Please note:

\*1: Please refer to ASDA-A3 Series User Manual, Chapter 3.3.3 Cn1 I/O Wiring

\*2: 200 W and below do NOT provide a built-in regenerative resistor

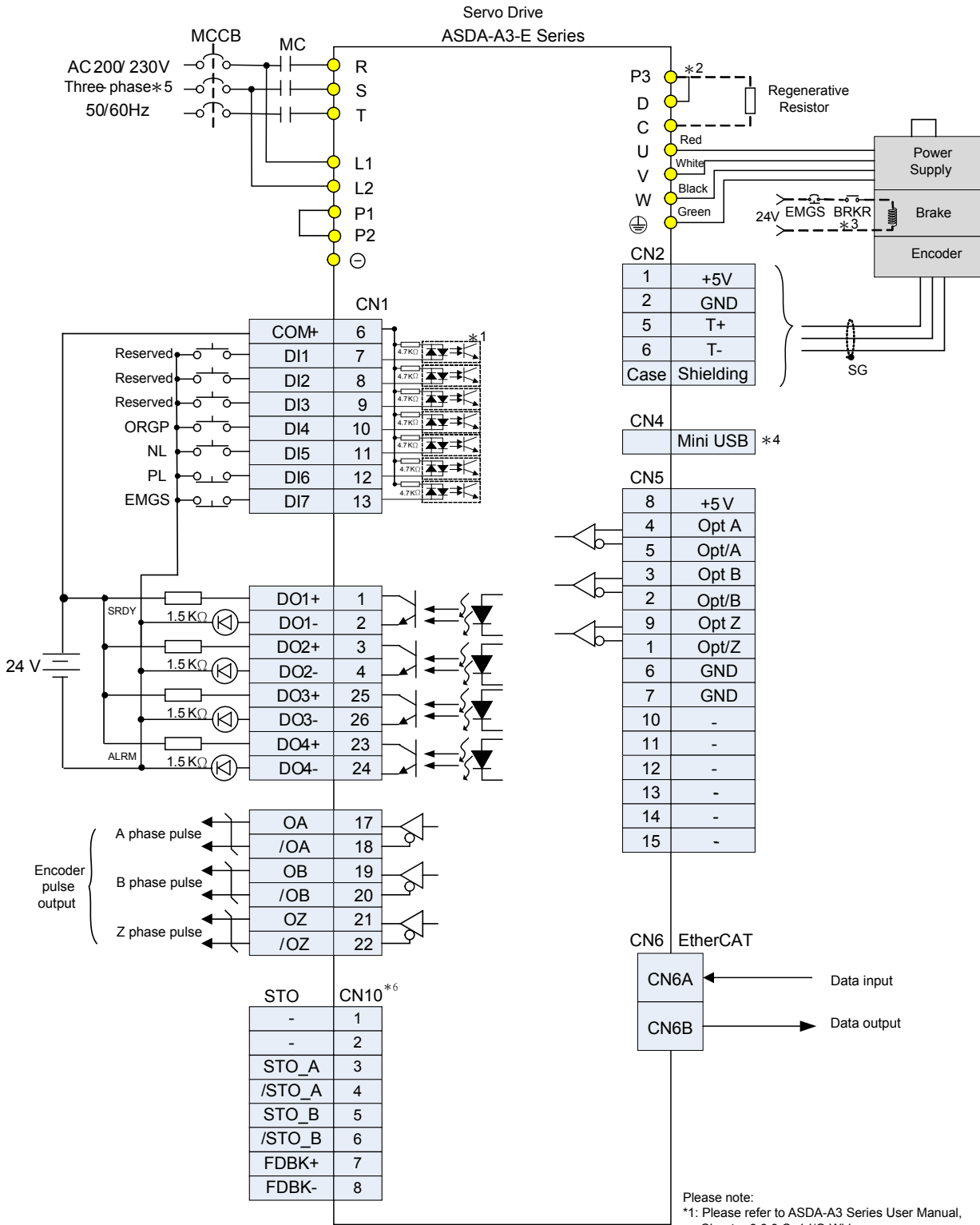
\*3: The brake oil has no polarity

\*4: Connect to Mini-USB of PC

\*5: Single-phase connections are for servo drives 1.5kW and below only



# Communication mode (EtherCAT)



Please note:  
 \*1: Please refer to ASDA-A3 Series User Manual, Chapter 3.3.3 Cn1 I/O Wiring  
 \*2: 200 W and below do NOT provide a built-in regenerative resistor  
 \*3: The brake oil has no polarity  
 \*4: Connect to Mini-USB of PC  
 \*5: Single-phase connections are for servo drives 1.5kW and below only



# Part Names and Functions

- **Control Circuit Input Terminal (L1, L2)**

- L1 and L2 are used to connect 200~230 VAC, 50/60 Hz single-phase power supply

- **DC Reactor (P1, P2)**

- Without DC reactor: Short circuit P1 and P2
- With DC reactor: connect to P1 and P2

- **Main Circuit Input Terminal (R,S,T)**

- R, S, T are used to connect to main circuit of the servo drive
- For 100 W ~ 1.5 kW servo drives: Used to connect 200 ~ 230 VAC, 50/60 Hz single- phase or 3-phase power supply
- For 2 kW ~ 3 kW servo drives: Used to connect 200-230 VAC, 50/60 Hz 3-phase power supply

- **STO (Safe Torque Off )**

\*Note: The STO function is applicable for the -M/-E models

- STO switch
- Connect to safety switch

- **PC Connection Port (CN4)**

- Used to connect PCs or notebooks for operating ASDA-SOFT software
- A mini-USB Type B port (Note: combine Delta's USB communication modules, see p.48 for reference)
- (Note: combine Delta's USB communication modules, see chapter on accessories for reference)

- **RS-485/ CANopen Communication Port Connector (CN3)**

- MODBUS communication control for RS-485
- CANopen communication control
- (Note: CANopen series with two communication ports, see p.31 for reference)

- **I / O Connector (CN1)**

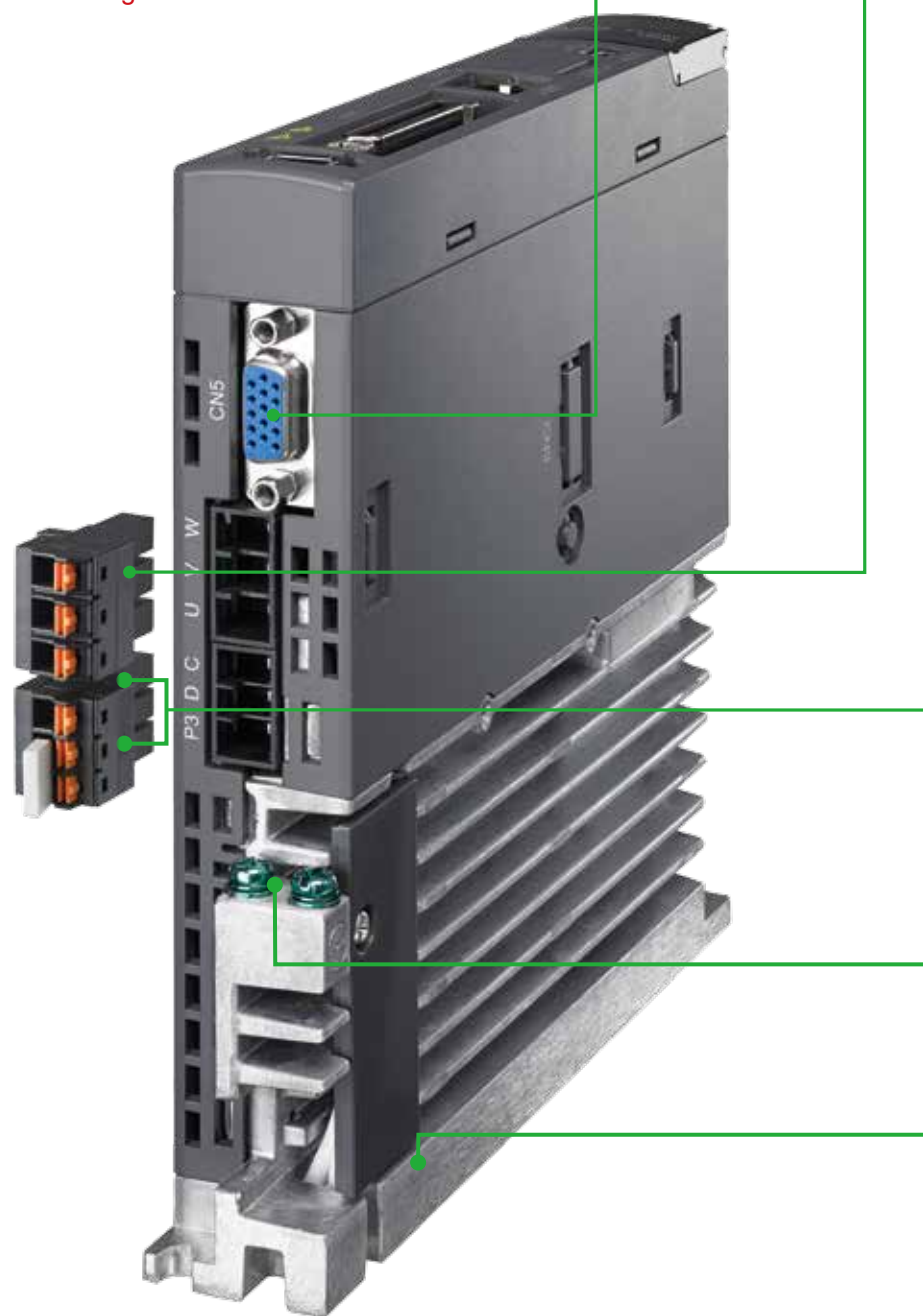
- Used to connect Delta's PLC products or other NC controllers

- **Encoder Connector (CN2)**

- Used to connect the encoder of the servo motor

- **Extension Module (CN9)**





- **Full-Closed Loop Control Terminal (CN5)**
  - Used to connect external linear scale or encoder for receiving A,B,Z phase signals
- **Servo Motor Output (UVW)**
  - Used to connect servo motor terminal U, V, W. Never connect the output terminal to main circuit power as the AC drive may be damaged beyond repair if incorrect cable are connected to the output terminals
- **Braking Resistor Terminal (P3 DC)**
  - Adopt internal resistor: Ensure the circuit is closed between P3 and D, and the circuit is open between P3 and C (Note: Please refer to table of regenerative resistor specifications for the models with a built-in regenerative resistor from ASDA-A3 User Manual Chapter 2 Selecting Regenerative Resistors)
  - Adopt external resistor: Connect it to P3 and C, and ensure an open circuit between P3 and D
  - When using an external braking unit, connect it to P2 and ensure an open circuit between P3 and D, and P3 and C
- **Ground Terminal**
  - Used to connect grounding wire of power supply and servo motor
- **Heat sink**
  - Used to secure the servo drive and for heat dissipation

# ASDA-Soft Configuration Software



## Auto-Tuning Function

- Step-to-step guide on using the auto tuning function
- Flow chart of the setting procedure and tuning progress
- Compare the tuning results (before & after)
- Downloadable gain parameters



## Advanced Tuning Function

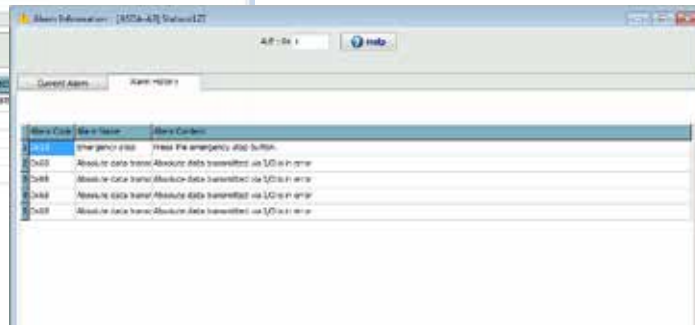
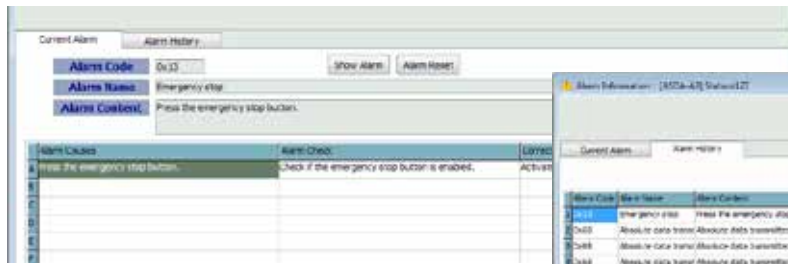
- Four tuning modes available
- Manual mode: All gains tuned manually, which is for those who has profound knowledge of servo gain adjustment
- Mode 1: For fine-tuning the bandwidth
- Mode 2: For fine-tuning the inertia and bandwidth
- Mode 3: For fine-tuning the inertia, bandwidth and command responsiveness



## System Module and Low Frequency Analysis

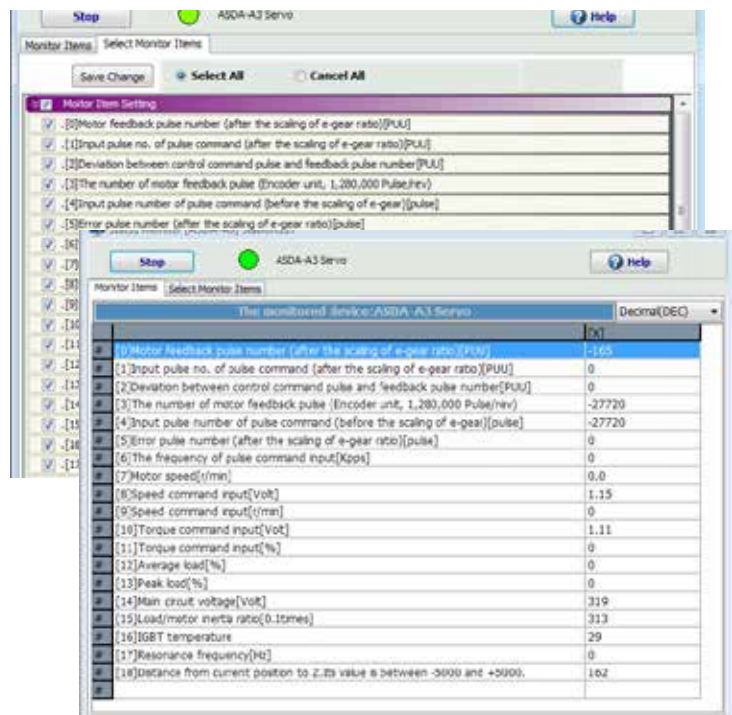
- Provide analysis on rigidity of the system
- Acquire the low-frequency resonance data and automatically set the relevant parameters to eliminate the vibration with just one click
- Collect data such as inertia, elasticity and viscous friction coefficient for knowing the mechanism's features and wear condition





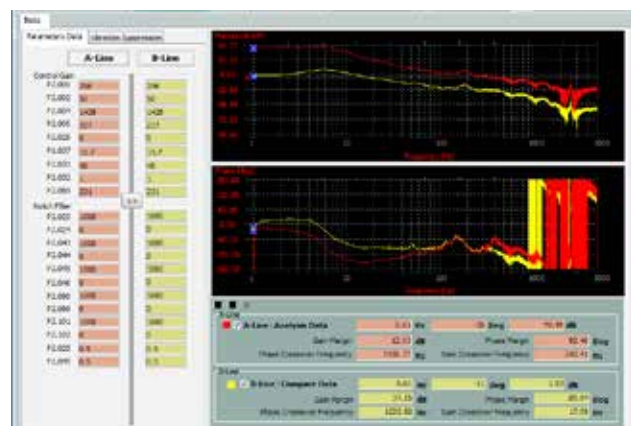
### Alarm Information

- Display current alarm and alarm log
- Provide simple corrective actions for quick troubleshooting



### Condition Monitoring

- Real-time display of servo motor operation status via the monitoring list



### Speed Open-Loop Mode

- Acquire the gain condition for optimizing the equipment performance
- Check the system stability via monitoring the gain and phase margins

## Optional Accessories

- **Quick Connectors**

- Used for 100W to 3kW servo drives
- One operating lever is provided for wiring



- **Power Cables**

- 3 m and 5 m standard cables are available
- Two types are selectable: with brake and without brake



- **Encoder Cables**

- 3 m and 5 m standard cables are available





- **Regenerative Resistor**

- For selecting a regenerative resistor, please refer to ASDA-A3 User Manual, Chapter 2.9 Selecting Regenerative Resistor



- **USB Communication Cables (for PC)**



- USB Communication Cables (for PC)
- USB1.1 is equipped as standard



- **CANopen Accessories**

- Connect to Delta PLC CAN Master with TAP-CN03 distribution box
- CANopen communication cable is provided

# Servo Drive Specifications

ASDA-A3		100 W	200 W	400 W	750 W	1 kW	1.5 kW	2 kW	3 kW	
		01	02	04	07	10	15	20	30	
Power supply	Phase / Voltage	Single-phase / three-phase 220 VAC						Three-phase 220 VAC		
	Permissible Voltage Range	Single-phase / three-phase 200~230 VAC, -15%~10%						Three-phase 200~230 VAC, -15%~10%		
	Input Current(3PH) (Units: Arms)	0.67	1.34	2.67	5.01	6.68	10.02	13.36	20.05	
	Input Current(1PH) (Units: Arms)	1.16	2.31	4.63	8.68	11.57	17.36	-	-	
	Continuous Output Current (Units: Arms)	0.9	1.55	2.65	5.1	7.3	12.6	13.4	19.4	
Instantaneous Maximum Output Current (Units: Arms)		3.54	7.07	10.61	21.21	24.75	35.36	53.03	70.71	
Cooling System		Natural Air Circulation				Fan Cooling				
Drive resolution		24-bit (1677216 p/rev)								
Control of Main Circuit		SVPWM Control								
Tuning Modes		Auto / Manual								
Regenerative Resistor		None			Built-in					
Position Control Mode	Pulse Type (Only for Non-DMCNET mode)	Pulse + Direction, A phase + B + CW pulse								
	Max. Input Pulse Frequency (Only for Non-DMCNET mode)	Pulse + Direction: 4Mpps ; CCW pulse + CW pulse: 4Mpps ; A phase + B phase: Single phase 4Mpps ; Max. 200Kpps (Open collector)pps								
	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: 1~536870911, M: 1~2147483647 (1/4 < N/M < 262144)								
	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 <sub>DC</sub>							
		Resolution	15-bit							
		Input Resistance	1MΩ							
		Time Constant	25 μs							
	Speed Control Range <sup>**</sup>	1 : 6000								
	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 analog input (Only for Non-DMCNET mode)								
Torque Control Mode	Frequency Response Characteristic	Maximum 3.1kHz								
	Speed Accuracy <sup>**</sup>	0.01% or less at 0 to 100% load fluctuation								
		0.01% or less at ±10% power fluctuation								
		0.01% or less at 0°C to 50°C ambient temperature fluctuation								
Analog Monitor Output	Analog Input Command (Only for Non-DMCNET mode)	Voltage Range	0 ~ ±10 V <sub>DC</sub>							
		Input Resistance	1MΩ							
		Time Constant	25 μs							
	Command Source	External analog signal (Only for Non-DMCNET mode) / Internal parameters								
	Smoothing Strategy	Low-pass filter								
Speed Limit		Set by parameters or analog input (Only for Non-DMCNET mode)								
Analog Monitor Output		Monitor signal can set by parameters (Output voltage range: ±8V)								
Digital Inputs / Outputs	Inputs	Servo on, Reset, Gain switching, Pulse clear, Zero speed CLAMP, Command input reverse control, Command triggered, Speed/Torque limit enabled, Position command selection, Motor stop, Speed position selection, Position / Speed mode switching, Speed / Torque mode switching, Torque / Position mode switching, PT / PR command switching, Emergency stop, Forward / Reverse inhibit limit, Reference "Home" sensor, Forward / Reverse operation torque limit, Move to "Home", Electronic Cam (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-485 / CANopen / USB								
Environment	Installation Site		Indoor environment (free of direct sunlight), no corrosive liquid and gas (free of oil mist, flammable gas, or dust)							
	Altitude		Altitude 1000m or lower above sea level							
	Atmospheric Pressure		86kPa ~ 106kPa							
	Operating Temperature		0°C ~ 55°C (If operating temperature is above 45°C, forced cooling will be required)							
	Storage Temperature		-20 °C ~ 65 °C							
	Humidity		0 ~ 90% RH (non-condensing)							
	Vibration		9.80665 m/s <sup>2</sup> (1G) less than 20Hz, 5.88 m/s <sup>2</sup> (0.6G) 20 to 50Hz							
	IP Rating		IP20							
Power System		TN System <sup>*3,4</sup>								
Approvals		IEC/EN 61800-5-1 · UL 508C  								

Note: \*1. When it is with the 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: (free run speed - full load speed) / rated speed

\*3. 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.

\*4. Use a single-phase three-wire power systems for models of single-phase power

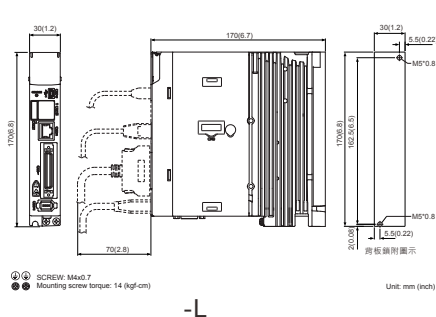


# Servo Drive Dimensions

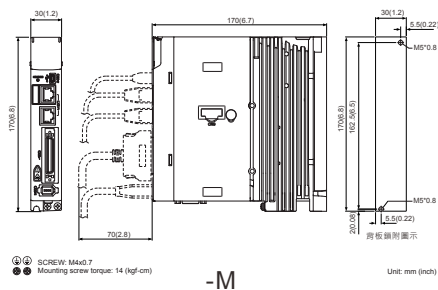
100W / 200W

Weight  
0.84 kg

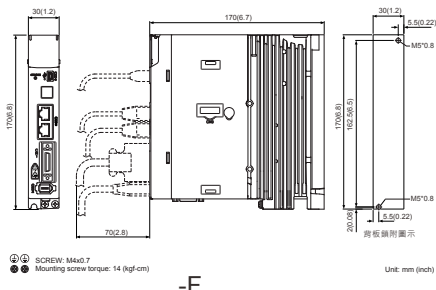
## Frame A



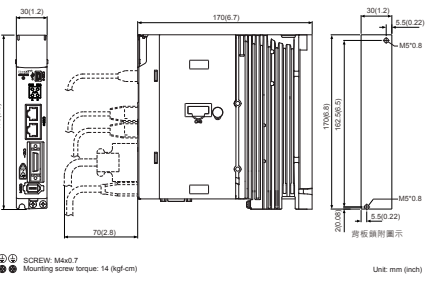
-L



-M



-F

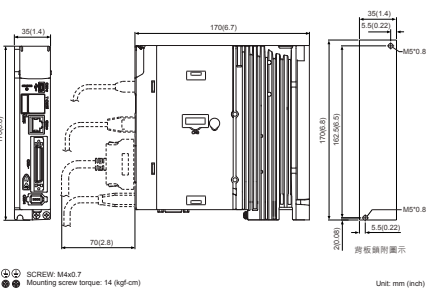


-E

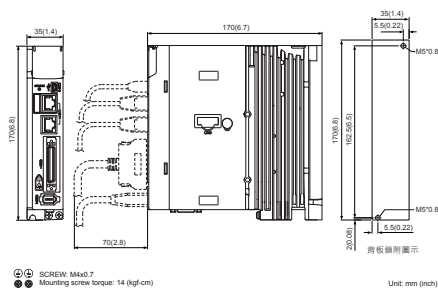
400W

Weight  
0.92kg

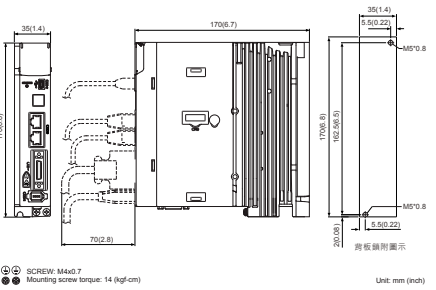
## Frame B



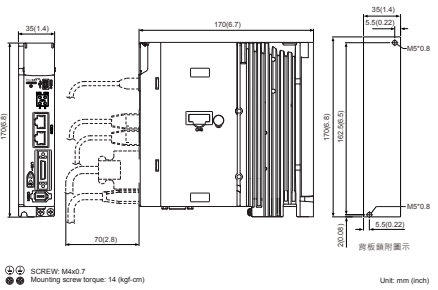
-L



-M



-E



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

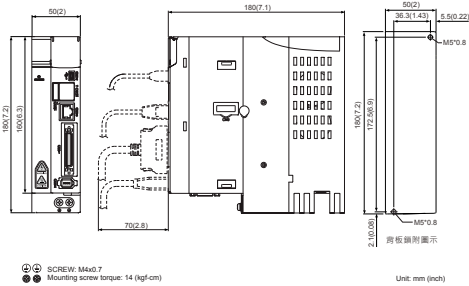
# Servo Drive Dimensions

## Frame C

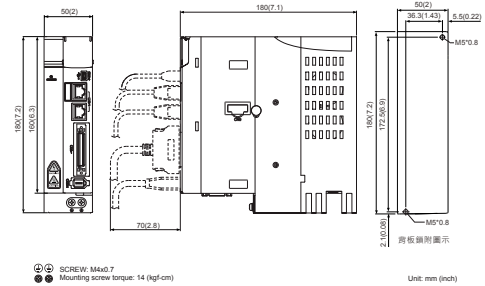
Unit: mm [inch]

750W / 1kW / 1.5kW

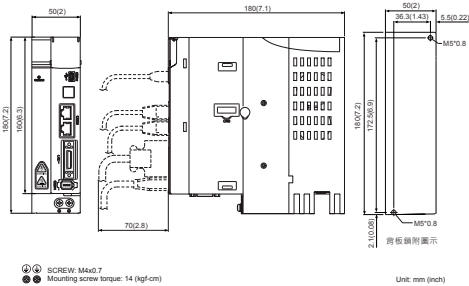
Weight  
1.3kg



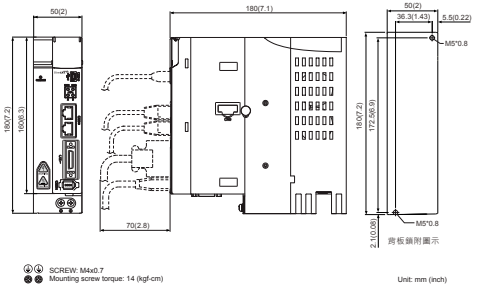
-L



-M



-F

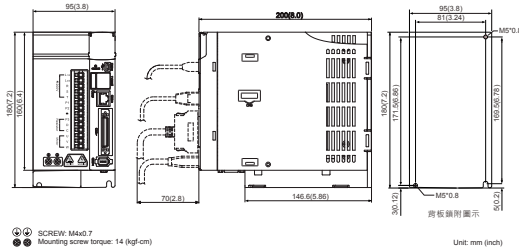


-E

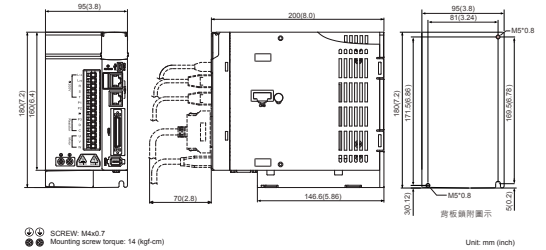
2kW / 3kW

Weight  
2.7kg

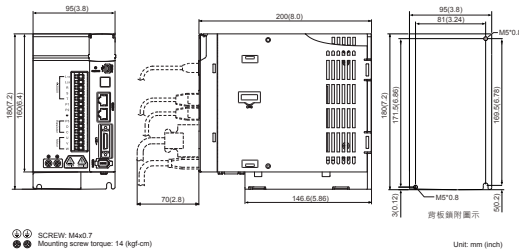
## Frame D



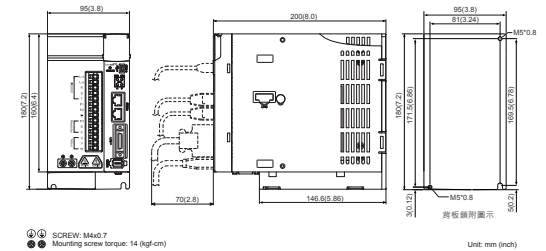
-L



-M



-F



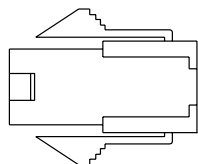
-E

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

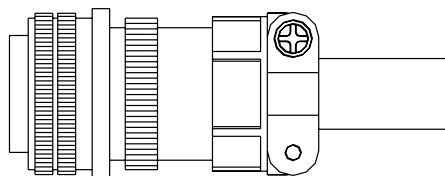
# Optional Cables and Connectors

## • Power Connectors

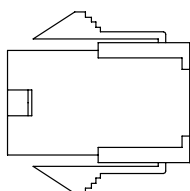
ASDBCAPW0000 (for 200V drives)



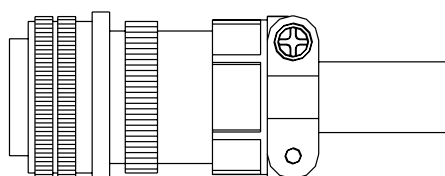
ASD-CAPW1000



ASDBCAPW0100 (for 200V drives, with brake cable)

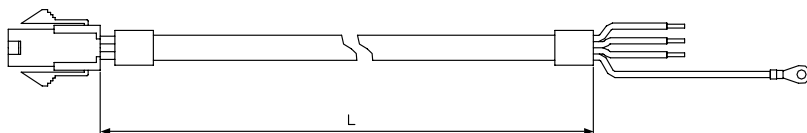


ASD-CAPW2000



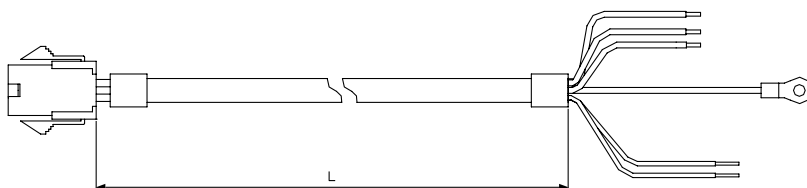
## • Power Cables

ACS3-CAPW1103, ACS3-CAPW1105 (for 200V drives)



Item	Part No.	L	
		mm	inch
1	ACS3-CAPW1103	3000 ± 100	118 ± 4
2	ACS3-CAPW1105	5000 ± 100	197 ± 4

ACS3-CAPW2103, ACS3-CAPW2105 (for 200V drives, with brake cable)

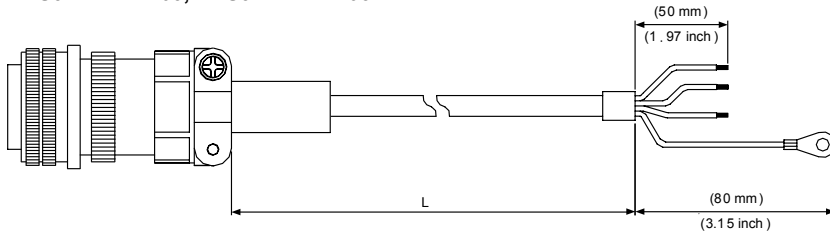


Item	Part No.	L	
		mm	inch
1	ACS3-CAPW2103	3000 ± 100	118 ± 4
2	ACS3-CAPW2105	5000 ± 100	197 ± 4

# Optional Cables and Connectors

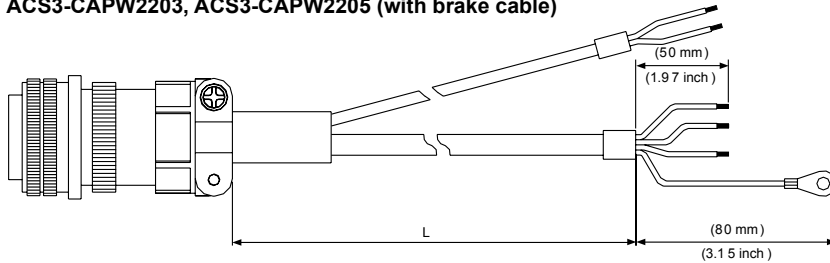
## • Power Cables

### ACS3-CAPW1203, ACS3-CAPW1205



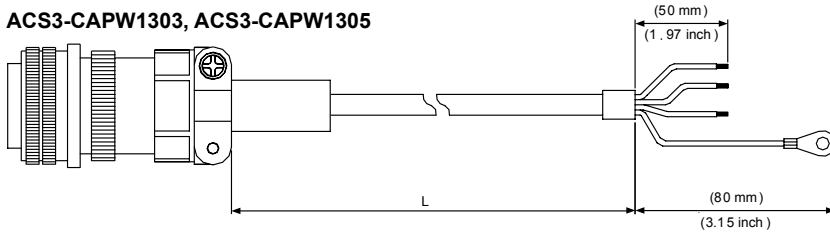
Item	Part No.	Straight	L	
			mm	inch
1	ACS3-CAPW1203	3106A-20-18S	3000 ± 100	118 ± 4
2	ACS3-CAPW1205	3106A-20-18S	5000 ± 100	197 ± 4

### ACS3-CAPW2203, ACS3-CAPW2205 (with brake cable)



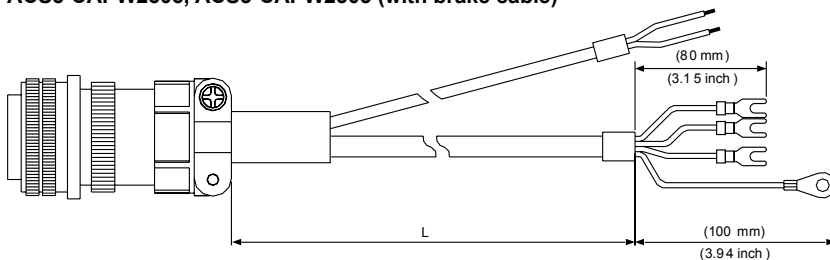
Item	Part No.	Straight	L	
			mm	inch
1	ACS3-CAPW2203	3106A-20-18S	3000 ± 100	118 ± 4
2	ACS3-CAPW2205	3106A-20-18S	5000 ± 100	197 ± 4

### ACS3-CAPW1303, ACS3-CAPW1305



Item	Part No.	Straight	L	
			mm	inch
1	ACS3-CAPW1303	3106A-20-18S	3000 ± 100	118 ± 4
2	ACS3-CAPW1305	3106A-20-18S	5000 ± 100	197 ± 4

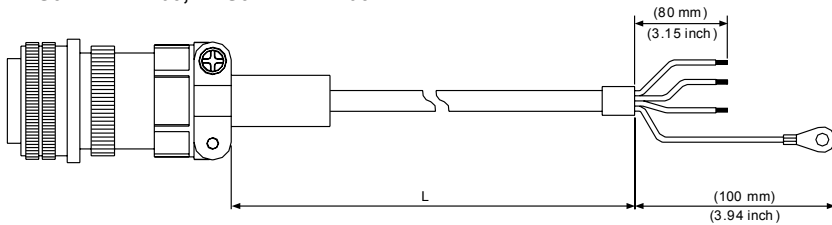
### ACS3-CAPW2303, ACS3-CAPW2305 (with brake cable)



Item	Part No.	Straight	L	
			mm	inch
1	ACS3-CAPW2303	3106A-20-18S	3000 ± 100	118 ± 4
2	ACS3-CAPW2305	3106A-20-18S	5000 ± 100	197 ± 4

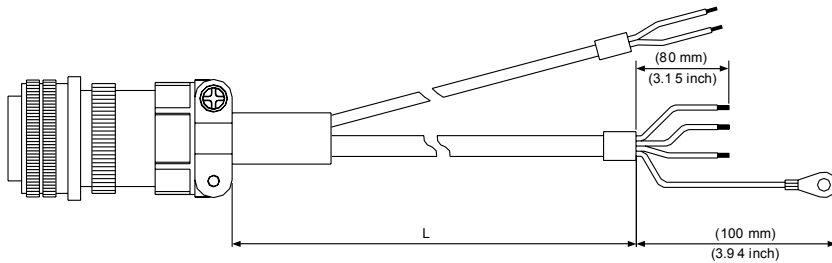
## • Power Cables

### ACS3-CAPW1403, ACS3-CAPW1405



Item	Part No.	Straight	L	
			mm	inch
1	ACS3-CAPW1403	3106A-24-11S	3000 ± 100	118 ± 4
2	ACS3-CAPW1405	3106A-24-11S	5000 ± 100	197 ± 4

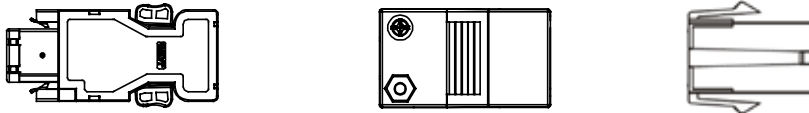
### ACS3-CAPW2403, ACS3-CAPW2405 (with brake cable)



Item	Part No.	Straight	L	
			mm	inch
1	ACS3-CAPW2403	3106A-24-11S	3000 ± 100	118 ± 4
2	ACS3-CAPW2405	3106A-24-11S	5000 ± 100	197 ± 4

## • Encoder Connectors

### ACS-CNEN1100

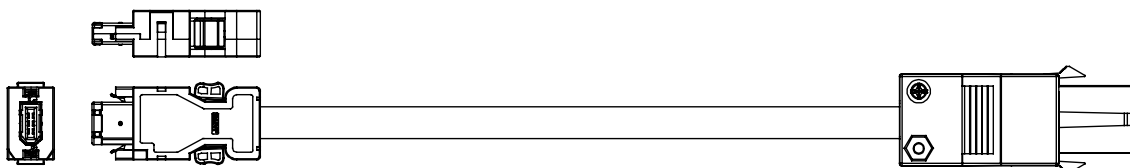


### ACS-CNEN3100



## • Incremental Encoder Cables

### ACS3-CAEN1003, ACS3-CAEN1005

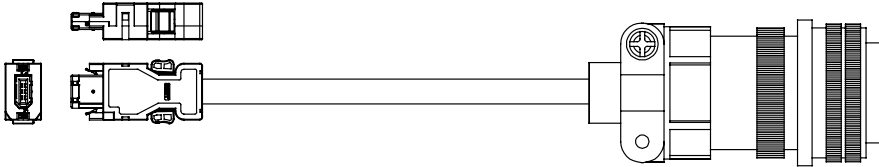


Item	Part No.	L	
		mm	inch
1	ACS3-CAEN1003	3000 ± 100	118 ± 4
2	ACS3-CAEN1005	5000 ± 100	197 ± 4

# Optional Cables and Connectors

## • Incremental Encoder Cables

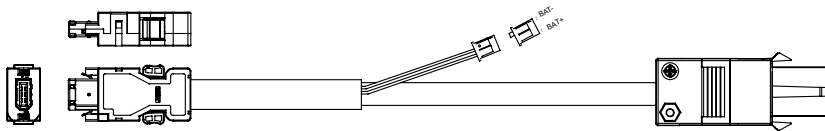
ACS3-CAEN3003, ACS3-CAEN3005



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

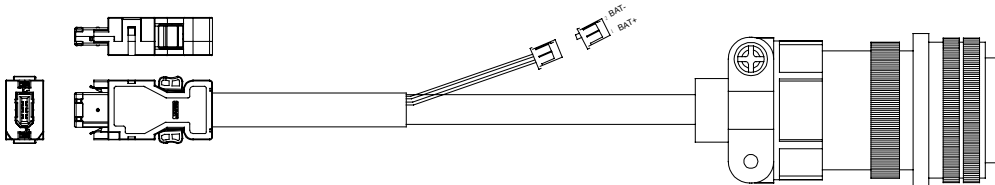
## • Absolute Encoder Cables

ACS3-CAEA1003 · ACS3-CAEA1005



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

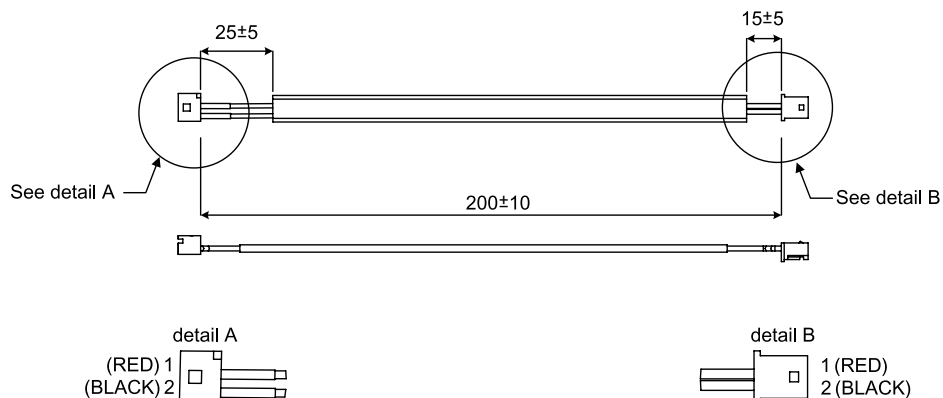
ACS3-CAEA3003 · ACS3-CAEA3005



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

## • Battery Box Cord AW (Connects to the battery side of the encoder cable) Units: mm

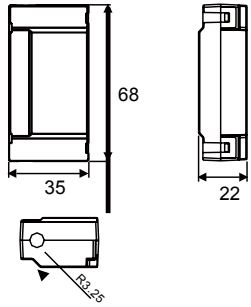
3864573700



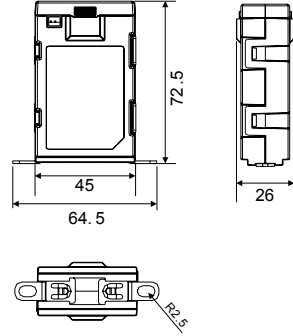
Unit:mm

• **Battery Boxes with batteries** Units: mm

Single Battery Box  
ASD-MDBT0100

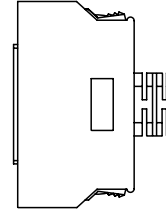


Dual Battery Box  
ASD-MDBT0200



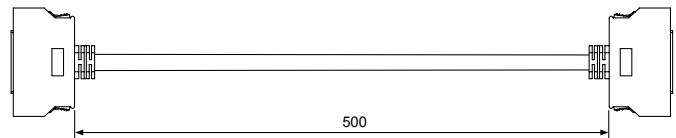
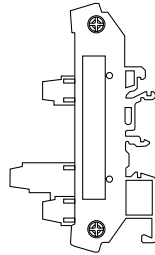
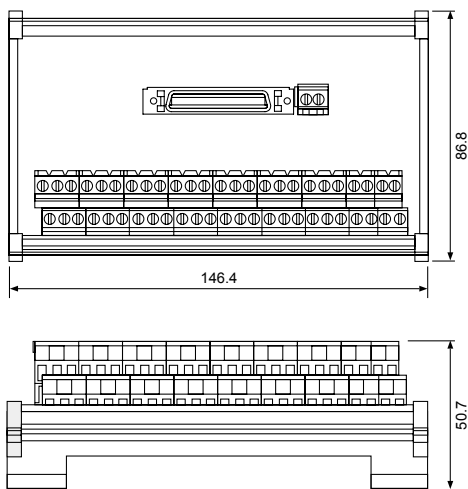
• **I/O Signal Connector (CN1)**

ACS3-CNADC150



• **Terminal Block Module**

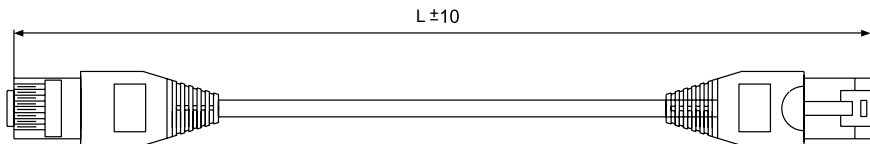
ACS3-MDTB5000



Unit: mm

• **CANopen Communication Cable**

UC-CMC030-01A, UC-CMC050-01A

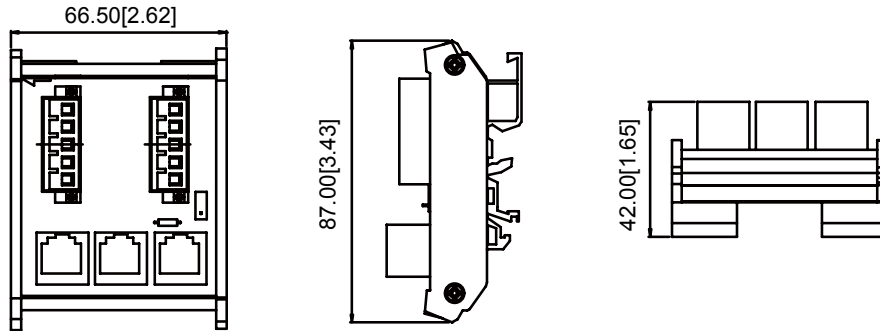


Item	Part No.	L	
		mm	inch
1	UC-CMC030-01A	300 ± 10	11 ± 0.4
2	UC-CMC050-01A	500 ± 10	19 ± 0.4

# Optional Cables and Connectors

## • CANopen Distribution Box Units: mm [inch]

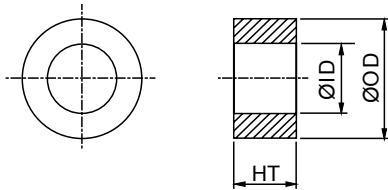
TAP-CN03



**NOTE** 1) More accessories for ASDA-A3 coming soon.  
2) Accessories images shown here may differ from actual product appearance.

## • Ferrite Rings

ASD-ACFC7K00

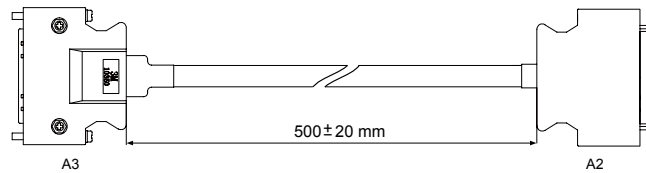


Part No.	Outer Diameter	Inner Diameter	height
ASD-ACFC7K00	68.0 ± 0.6	44.0 ± 0.6	13.5 ± 0.5

## • A3 / A2 Adapter Cable

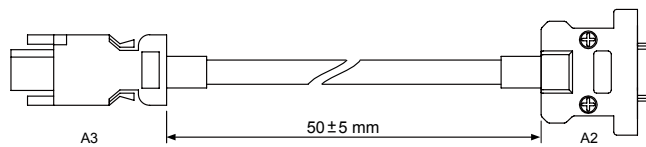
A3/A2 CN1 Adapter Cable

3081709800



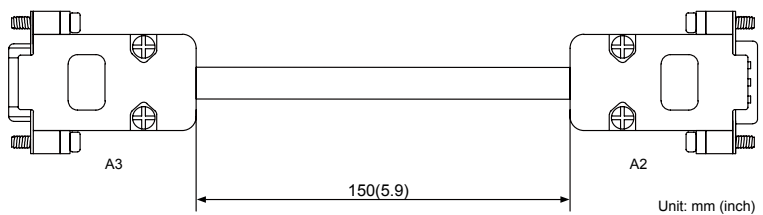
A3/A2 CN2 Adapter Cable

3081709600



A3/A2 CN5 Adapter Cable

3081709700

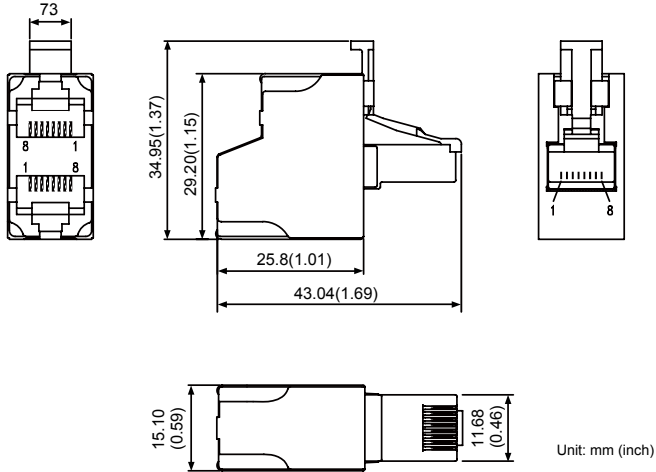


Unit: mm (inch)



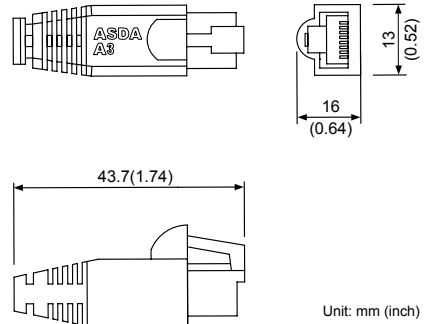
• **A3 CN3 RS-485 / CANOpen Tap**

ACS3-CNADC3RC



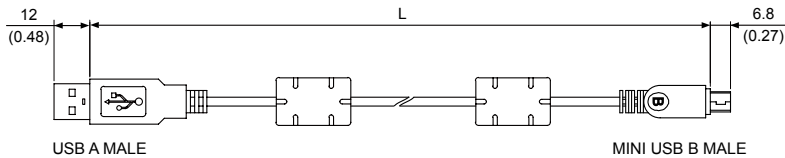
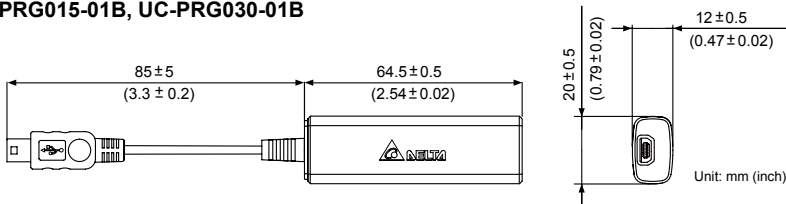
• **A3 CN3 RS-485 / CANOpen Termination Resistor**

ACS3-CNADC3TR



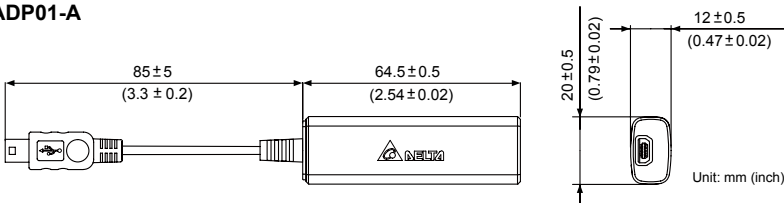
• **CN4 Mini USB Module**

UC-PRG015-01B, UC-PRG030-01B

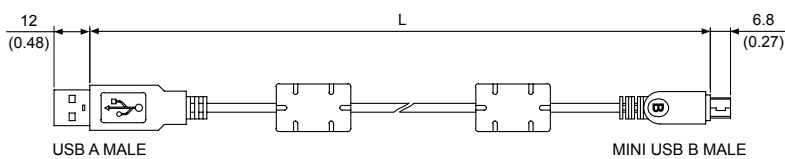


Item	Part No.	L	
		mm	inch
1	UC-PRG015-01B	1500 ± 100	59 ± 4
2	UC-PRG030-01B	3000 ± 100	118 ± 4

UC-ADP01-A



UC-PRG015-01A, UC-PRG030-01A



Item	Part No.	L	
		mm	inch
1	UC-PRG015-01A	1500 ± 100	59 ± 4
2	UC-PRG030-01A	3000 ± 100	118 ± 4

# Servo Drive Accessories Combinations

## 100W Servo Drive and 50W Low / High Inertia Servo Motor

Servo Ddrive	ASD-A3-0121-□
Servo Motor Model Name	ECM-A3L-C ① 040F ② S1 ECM-A3H-C ① 040F ② S1 ECM-A3L-C ① 0401 ② S1 ECM-A3H-C ① 0401 ② S1
Power Cable (Without Brake)	ACS3-CAPW110X
Power Connector (Without Brake)	ASDBCAPW0000
Power Cable (With Brake)	ACS3-CAPW210X
Power Connector (With Brake)	ASDBCAPW0100
Incremental Encoder Cable	ACS3-CAEN100X
Absolute Encoder Cable	ACS3-CAEA100X

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

## 750W Servo Drive and 750W Low / High Inertia Servo Motor

Servo Ddrive	ASD-A3-0721-□
Low Inertia Servo Motor	ECM-A3L-C ① 0807 ② S1 ECM-A3H-C ① 0807 ② S1
Power Cable (Without Brake)	ACS3-CAPW110X
Power Connector (Without Brake)	ASDBCAPW0000
Power Cable (With Brake)	ACS3-CAPW210X
Power Connector (With Brake)	ASDBCAPW0100
Incremental Encoder Cable	ACS3-CAEN100X
Absolute Encoder Cable	ACS3-CAEA100X

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

## 200W Servo Drive and 200W Low / High Inertia Servo Motor

Servo Ddrive	ASD-A3-0221-□
Servo Motor Model Name	ECM-A3L-C ① 0602 ② S1 ECM-A3H-C ① 0602 ② S1
Power Cable (Without Brake)	ACS3-CAPW110X
Power Connector (Without Brake)	ASDBCAPW0000
Power Cable (With Brake)	ACS3-CAPW210X
Power Connector (With Brake)	ASDBCAPW0100
Incremental Encoder Cable	ACS3-CAEN100X
Absolute Encoder Cable	ACS3-CAEA100X

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

## 1 kW/1kW Servo Drive and 1kW Medium Inertia Servo Motor and 850W High Inertia Servo Motor

Servo Ddrive	ASD-A3-1021-□
Medium Inertia Servo Motor	ECMC-CW1010 ② S ECMC-EW1310 ② S ECMC-FW1308 ② S
Power Cable (Without Brake)	ACS3-CAPW120X
Power Cable (With Brake)	ACS3-CAPW220X
Power Connector	ASD-CAPW1000
Incremental Encoder Cable	ACS3-CAEN300X
Absolute Encoder Cable	ACS3-CAEA300X

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

## 400W Servo Drive and 400W Low / High Inertia Servo Motor

Servo Ddrive	ASD-A3-0421-□
Servo Motor Model Name	ECM-A3L-C ① 0604 ② S1 ECM-A3H-C ① 0604 ② S1 ECM-A3L-C ① 0804 ② S1 ECM-A3H-C ① 0804 ② S1
Power Cable (Without Brake)	ACS3-CAPW110X
Power Connector (Without Brake)	ASDBCAPW0000
Power Cable (With Brake)	ACS3-CAPW210X
Power Connector (With Brake)	ASDBCAPW0100
Incremental Encoder Cable	ACS3-CAEN100X
Absolute Encoder Cable	ACS3-CAEA100X

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

## 1.5kW Servo Drive and 1.5kW Medium Inertia Servo Motor

Servo Ddrive	ASD-A3-1521-□
High Inertia Servo Motor	ECMC-EW1315 ② S
Power Cable (Without Brake)	ACS3-CAPW120X
Power Cable (With Brake)	ACS3-CAPW220X
Power Connector	ASD-CAPW1000
Incremental Encoder Cable	ACS3-CAEN300X
Absolute Encoder Cable	ACS3-CAEA300X

(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 and 1.3kW, 1.8kW High Inertia Servo Motor

Servo Drive	ASD-A3-2023 □
Low Inertia Servo Motor	ECMC-EW1320 [2] S ECMC-FW1313 [2] S ECMC-FW1318 [2] S
Power Cable (Without Brake)	ACS3-CAPW130X
Power Cable (With Brake)	ACS3-CAPW230X
Power Connector	ASD-CAPW1000
Incremental Encoder Cable	ACS3-CAEN300X
Absolute Encoder Cable	ACS3-CAEA300X

(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-A3-2023-□
High Inertia Servo Motor	ECMC-EW1820 [2] S
Power Cable (Without Brake)	ACS3-CAPW140X
Power Cable (With Brake)	ACS3-CAPW240X
Power Connector	ASD-CAPW2000
Incremental Encoder Cable	ACS3-CAEN300X
Absolute Encoder Cable	ACS3-CAEA300X

(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-A3-3023-□
High Inertia Servo Motor	ECMC-EW1830 [2] S ECMC-FW1830 [2] S
Power Cable (Without Brake)	ACS3-CAPW140X
Power Cable (With Brake)	ACS3-CAPW240X
Power Connector	ASD-CAPW2000
Incremental Encoder Cable	ACS3-CAEN300X
Absolute Encoder Cable	ACS3-CAEA300X

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

Note: In servo motor model names, [1] signifies encoder type, [2] signifies brake or keyway/oil seal.





Smarter. Greener. Together.

## Industrial Automation Headquarters

### Delta Electronics, Inc.

Taoyuan Technology Center  
No.18, Xinglong Rd., Taoyuan District,  
Taoyuan City 33068, Taiwan  
TEL: 886-3-362-6301 / FAX: 886-3-371-6301

## Asia

### Delta Electronics (Shanghai) Co., Ltd.

No.182 Minyu Rd., Pudong Shanghai, P.R.C.  
Post code : 201209  
TEL: 86-21-6872-3988 / FAX: 86-21-6872-3996  
Customer Service: 400-820-9595

### Delta Electronics (Japan), Inc.

Tokyo Office  
Industrial Automation Sales Department  
2-1-14 Shibadaimon, Minato-ku  
Tokyo, Japan 105-0012  
TEL: 81-3-5733-1155 / FAX: 81-3-5733-1255

### Delta Electronics (Korea), Inc.

Seoul Office  
1511, 219, Gasan Digital 1-Ro., Geumcheon-gu,  
Seoul, 08501 South Korea  
TEL: 82-2-515-5305 / FAX: 82-2-515-5302

### Delta Energy Systems (Singapore) Pte Ltd.

4 Kaki Bukit Avenue 1, #05-04, Singapore 417939  
TEL: 65-6747-5155 / FAX: 65-6744-9228

### Delta Electronics (India) Pvt. Ltd.

Plot No.43, Sector 35, HSIIDC Gurgaon,  
PIN 122001, Haryana, India  
TEL: 91-124-4874900 / FAX : 91-124-4874945

### Delta Electronics (Thailand) PCL.

909 Soi 9, Moo 4, Bangpoo Industrial Estate (E.P.Z),  
Pattana 1 Rd., T.Phraksa, A.Muang,  
Samutprakarn 10280, Thailand  
TEL: 66-2709-2800 / FAX : 662-709-2827

### Delta Energy Systems (Australia) Pty Ltd.

Unit 20-21/45 Normanby Rd., Nottling Hill Vic 3168, Australia  
TEL: 61-3-9543-3720

## Americas

### Delta Electronics (Americas) Ltd.

Raleigh Office  
P.O. Box 12173, 5101 Davis Drive,  
Research Triangle Park, NC 27709, U.S.A.  
TEL: 1-919-767-3813 / FAX: 1-919-767-3969

### Delta Greentech (Brasil) S/A

São Paulo Office  
Rua Itapeva, 26 – 3° Andar - Bela Vista  
CEP: 01332-000 – São Paulo – SP - Brasil  
TEL: 55-11-3530-8642 / 55-11-3530-8640

### Delta Electronics International Mexico S.A. de C.V.

Mexico Office  
Vía Dr. Gustavo Baz No. 2160, Colonia La Loma,  
54060 Tlalnepantla Estado de Mexico  
TEL: 52-55-2628-3015 #3050/3052

## EMEA

### Delta Electronics (Netherlands) BV

Eindhoven Office  
De Witbogt 20, 5652 AG Eindhoven, The Netherlands  
MAIL: Sales.IA.EMEA@deltaww.com  
MAIL: Sales.IA.Benelux@deltaww.com

### Delta Electronics (France) S.A.

ZI du bois Chaland 2 15 rue des Pyrénées,  
Lisses 91056 Evry Cedex, France  
MAIL: Sales.IA.FR@deltaww.com

### Delta Electronics Solutions (Spain) S.L.U

Ctra. De Villaverde a Vallecas, 265 1° Dcha Ed.  
Hormigueras – P.I. de Vallecas 28031 Madrid  
C/Llull, 321-329 (Edificio CINC) | 22@Barcelona, 08019 Barcelona  
MAIL: Sales.IA.Iberia@deltaww.com

### Delta Electronics (Italy) Srl

Ufficio di Milano Via Senigallia 18/2 20161 Milano (MI)  
Piazza Grazioli 18 00186 Roma, Italy  
MAIL: Sales.IA.Italy@deltaww.com

### Delta Electronics (Germany) GmbH

Coesterweg 45, D-59494 Soest, Germany  
MAIL: Sales.IA.DACH@deltaww.com

### Delta Energy Systems LLC (CIS)

Vereyskaya Plaza II, office 112 Vereyskaya str.  
17 121357 Moscow, Russia  
MAIL: Sales.IA.RU@deltaww.com

### Delta Greentech Ltd. (Turkiye)

Serifali Mevkii Barbaros Bulvari Soylesi Sok  
No 19 34775, Y.Dudullu-Umraniye/Istanbul  
MAIL: Sales.IA.Turkey@delta-emea.com

### Delta Energy Systems AG (Dubai BR)

P.O. Box 185668, Gate 7, 3rd Floor, Hamarain Centre,  
Dubai, United Arab Emirates  
MAIL: Sales.IA.MEA@deltaww.com