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



ASDA-A+

DELTA ASDA-A+ AC Servo System



AC Servo System

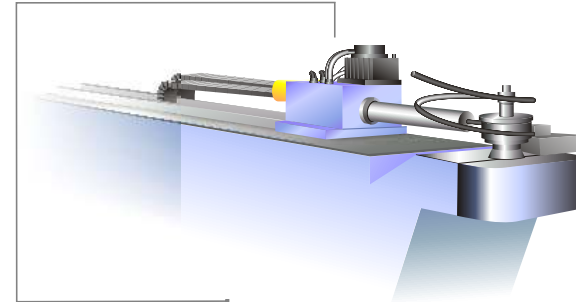
Applications

ASDA-A+

Motion



ASDA-A+ series features encoder with 20-bit resolution (1,280,000p/rev), which perfectly offers more accurate control for the machine tool industry (e.g. the spindle in CNC machine tool, carving machine, injection molding machine, double column type machining center) requiring highly accurate processing. In addition, for equipment requiring high torque output (e.g. winding machine, tube bending machine, packaging and feeding machine), ASDA-A+ series offers high torque from 3kW to 7.5kW (19.1 N.M. ~ 47.74 N.M.).

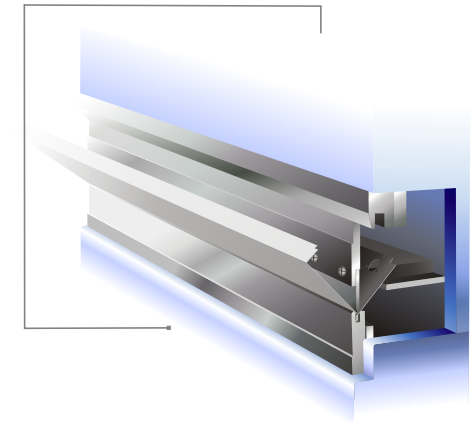


In Tube Bending Machine

In controlling the tube bending, ASDA-A+ series is able to operate stably at high-speed, conduct highly accurate positioning and extend the life of the machine.

In Bending Machine

ASDA-A+ series is able to offer accurate in-dept control and high stability, which not only reduces the low yield in the cutting but also enhances the safety and productivity. Beside, ASDA-A+ series also equals energy-saving, low power consumption and high efficiency.



In Spring Machine

ASDA-A+ series used for driving will not be restricted by the cam of the machine but can conduct processing in different directions for achieving complicated molding. The shortened installation time can further enhance the productivity, and the high resolution is able to ensure the high accuracy.

AC Servo System

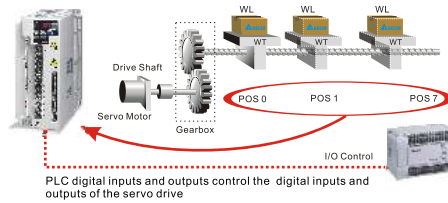
ASDA-A+

Features

Functional Characteristics

New-generation, high horsepower ASDA-A+ series not only follows the features of the existing Delta servo products, but also provides the functions which are particularly for industries requiring high torque output and high resolution.

- ◆ Built-in Position/Speed/Torque modes.
- ◆ Easy internal single-axis position control.
- ◆ Feed step control mode (control of cutting). 27 positions can be easily controlled and implemented through the parameter settings and by working with digital inputs/outputs and Modbus communication protocol.
- ◆ Support Modbus communication (RS-485/RS-422/RS-232)
- ◆ Provide high-speed line receiver pulse input (Max. 4MHz)
- ◆ Enhance encoder resolution to 20bit (1280000 p/rev)



Excellent Performance

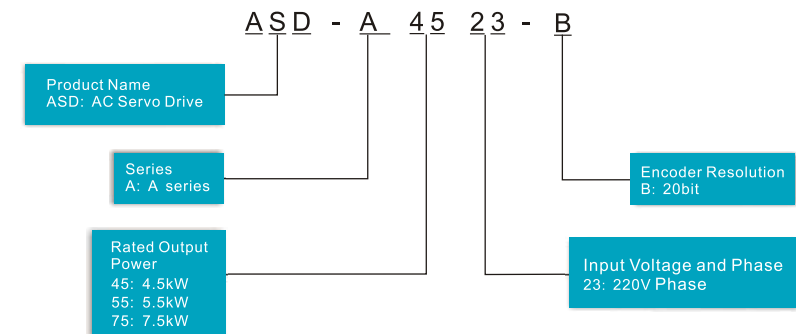
- ◆ Motor settling time below 1msec
- ◆ Speed responsiveness characteristic: 550Hz
- ◆ Great stability and performance at low speed: less than 0.5% error at 1rpm per rotation

ASDA-Soft Servo Software

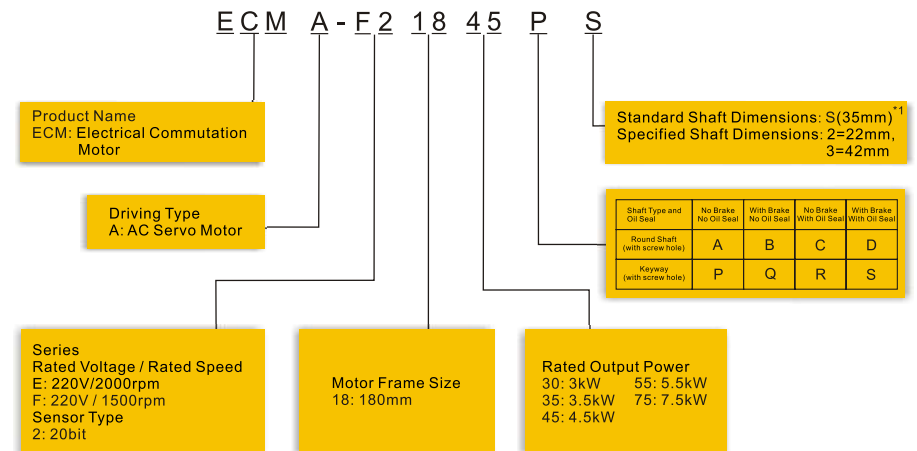
New version of ASDA-A-Soft servo software has a better interface and is built-in with more functions, greatly enhancing the handiness of the software and considerably shortening the time for the users to get used to ASDA-Soft.



Servo Drive ASDA-A+ Series



Servo Motor ECMA Series



	Servo Drive	Servo Motor
4500W	ASD-A4523-B	ECMA-E21835RD ECMA-F21830□S ² ECMA-F21845□S
5500W ^{*3}	ASD-A5523-B	ECMA-F21855□S
7500W ^{*3}	ASD-A7523-B	ECMA-F21875□S

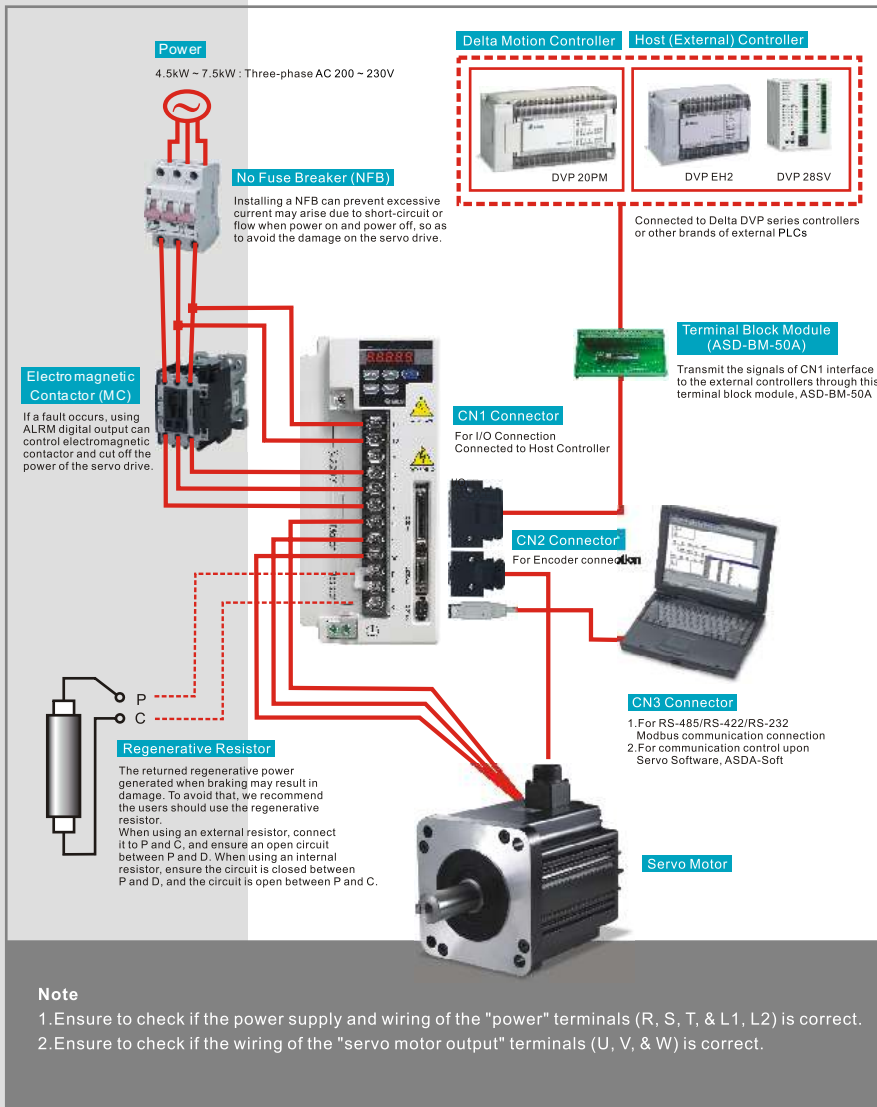
^{*1} For the detailed dimensions explanation, please refer to "Medium and High Inertia Servo Motor Dimensions (ECMA Series)" on page 15.
^{*2} The boxes (□) in the model names are for optional configurations (brake, shaft type and oil seal).
^{*3} To be available soon.

AC Servo System

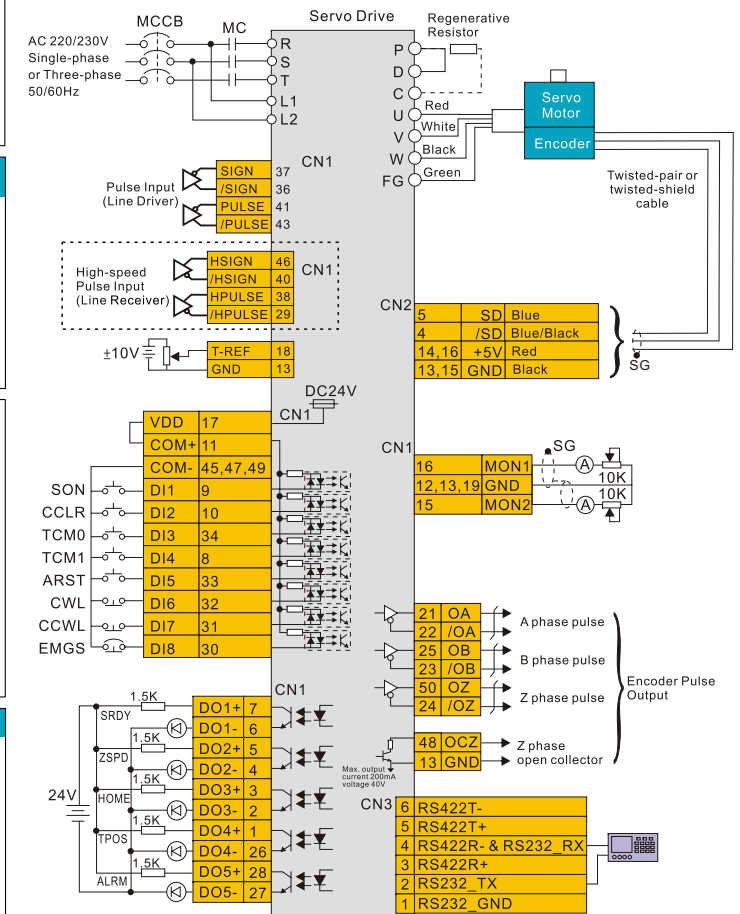
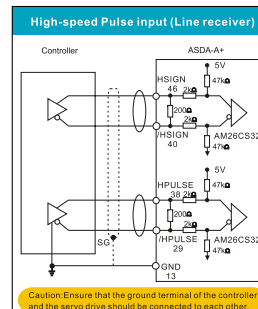
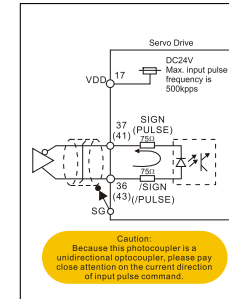
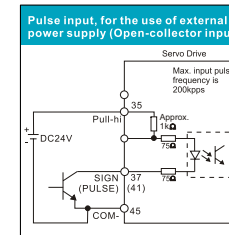
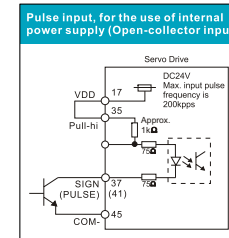
System Configuration and Standard Connections

ASDA-A+

System Configuration



Position (Pt) Control Mode



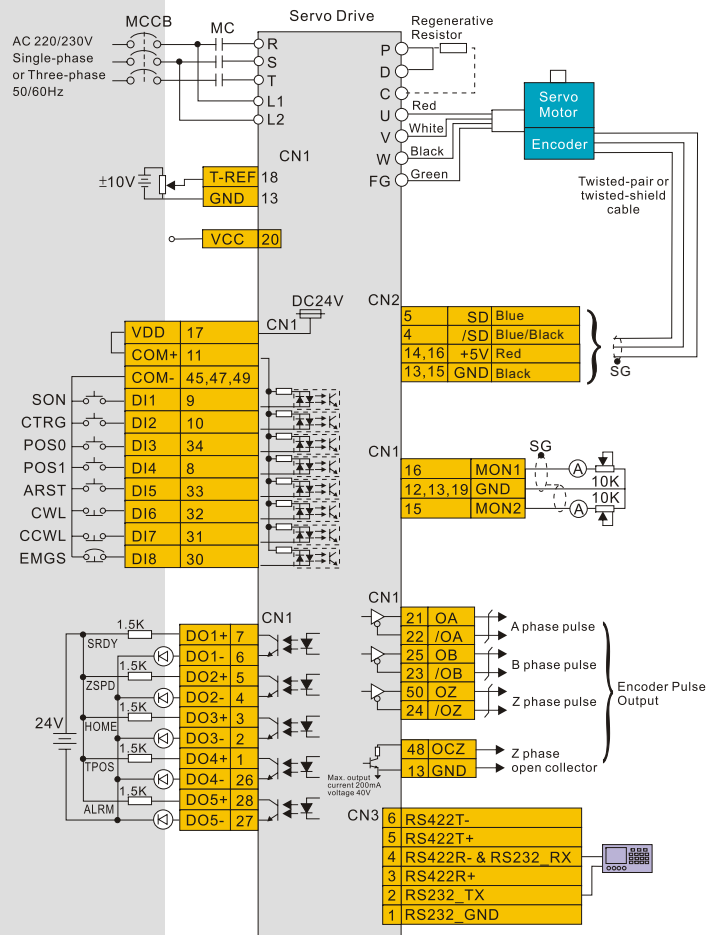


AC Servo System

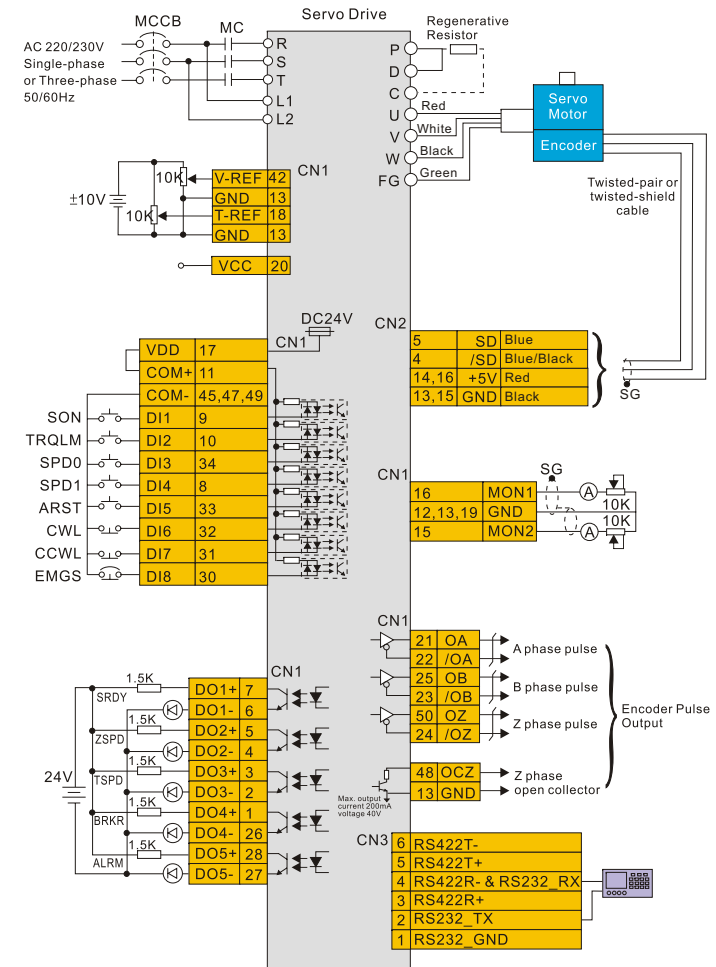
Standard Connections

ASDA-A+

Position (Pr) Control Mode



Speed (S) Control Mode

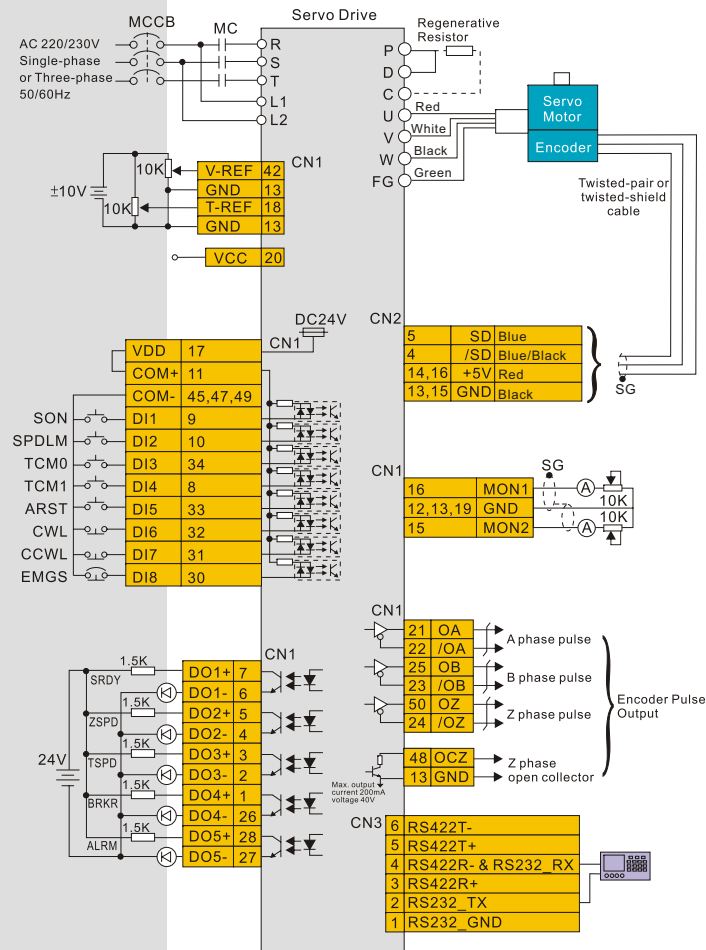


AC Servo System

Standard Connections and Specifications

ASDA-A+

Torque (T) Control Mode



Servo Drive Specifications (ASDA-A+ Series)

ASDA-A+ Series		4.5kW	5.5kW	7.5kW
		45	55	75
Power supply	Phase / Voltage	Three-phase 220VAC		
	Permissible Voltage Range	170 ~ 255VAC		
	Permissible Frequency Range	50 / 60Hz ±5%		
	Cooling System	Fan Cooling		
Encoder Resolution / Feedback Resolution		20bit (1280000 p/rev)		
Control of Main Circuit		SVPWM Control		
Tuning Modes		Auto / Manual		
Dynamic Brake		Built-in		
Position Control Mod	Max. Input Pulse Frequency	High-speed pulse input: 4MppsMax.500Kpps(Line receiver) / Max. 200Kpps (Open collector)		
	Pulse Type	Pulse + Direction, A phase + B phase, CCW pulse + CW pulse		
	Command Source	External pulse train / Internal parameters		
	Smoother Strategy	Low-pass and P-curve filter		
Electronic Gear		Electronic gear N/M multiple N: 1~32767, M: 1:32767(1/50<N/M<200)		
Torque Limit Operation		Set by parameters		
Feed Forward Compensation		Set by parameters		
Speed Control Mode	Analog Input Command	Voltage Range 0 ~ ±10 V _{DC}		
	Input Resistance	10K		
	Time Constant	2.2 s		
	Speed Control Range ¹	1:3000		
Command Source		External analog signal / Internal parameters		
Smoother Strategy		Low-pass and S-curve filter		
Torque Limit Operation		Set by parameters or via Analog input		
Responsiveness Characteristic		Maximum 550Hz		
Speed Fluctuation Rate ²		0.01% or less at load fluctuation 0 to 100% (at rated speed)		
		0.01% or less at power fluctuation ±10% (at rated speed)		
Speed Fluctuation Rate ²		0.01% or less at ambient temperature fluctuation 0°C to 50°C (at rated speed)		
Torque Control Mode	Analog Input Command	Voltage Range 0 ~ ±10 V _{DC}		
	Input Resistance	10K Ω		
	Time Constant	2.2 μs		
	Command Source	External analog signal / Internal parameters		
Smoother Strategy		Low-pass filter		
Speed Limit Operation		Parameter Setting or via Analog input		
Analog Monitor Output		Monitor signal can set by parameters (Output voltage range: ±8V)		
Digital Input/Output	Input	Servo On, Reset, Gain switching, Pulse clear, Zero speed CLAMP, Speed/Torque limit enabled, Emergency stop, Forward / Reverse inhibit limit, Position / Speed mode switching, Speed / Torque mode switching, Torque / Position mode switching, Feed step selection input, Feed step mode input, Auto run input, Electronic gear ratio (Numerator) selection		
	Output	Encoder signal output (A, B, Z Line Driver / Z Open collector)		
Protective Functions		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 warningServo warning activated, Internal position command completed		
Communication Interface		RS-232 / RS-485 / RS-422		
Environment	Installation Site	Indoor location (free from direct sunlight), no corrosive liquid and gas (far away from oil mist, flammable gas, dust)		
	Altitude	Altitude 1000m or lower above sea level		
	Atmospheric pressure	86kPa to 106kPa		
	Operating Temperature	0°C to 55°C (If operating temperature is above specified range, forced cooling will be required)		
	Storage Temperature	-20°C to 65°C (-4°C to 149°F)		
	Humidity	0 to 90% (non-condensing)		
	Vibration	9.80665m/s ² (1G) less than 20Hz, 5.88m/s ² (0.6G) 20 to 50Hz		
	IP Rating	IP20		
Power System		TN System ³		
Approvals		IEC / EN 61800-5-1		

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

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

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

⁴4. 5.5kW and 7.5kW servo drives will be available soon. The above specifications of 5.5kW and 7.5kW servo drives are for reference only.

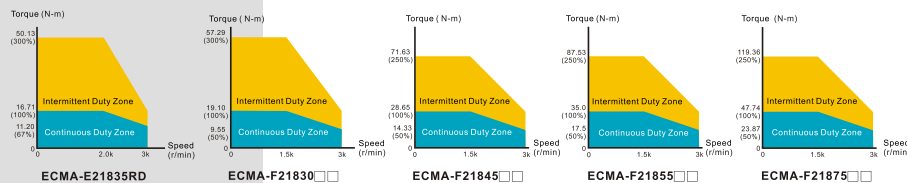
AC Servo System

ASDA-A+

Medium and High Inertia Servo Motor Specifications (ECMA Series)

Model: ECMA Series	E218		F218		
	35	30	45	55	75
Rated output power (kW)	3.5	3.0	4.5	5.5	7.5
Rated torque (N·m)	16.71	19.10	28.65	35.01	47.74
Maximum torque (N·m)	50.31	57.29	71.62	87.53	119.36
Rated speed (r/min)	2000		1500		
Maximum speed (r/min)			3000		
Rated current (A)	19.2	19.4	32.5	40.0	47.5
Maximum current (A)	57.6	58.2	81.3	100.0	118.8
Power rating (kW/s)	51	66.4	105.5	122.9	159.7
Rotor moment of inertia (kg·m ²)	54.80E-4	54.95E-4	77.75E-4	99.78 E-4	142.7 E-4
Mechanical time constant (ms)	1.08	1.28	0.92	0.96	0.63
Torque constant-KT (N·m/A)	0.87	0.98	0.88	0.88	1.01
Voltage constant-KE (mV/(r/min))	32	35.0	32.0	31.0	35.5
Armature resistance (Ohm)	0.052	0.077	0.032	0.025	0.015
Armature inductance (mH)	1.38	1.27	0.89	0.60	0.40
Electrical time constant (ms)	26.4	16.5	27.8	24.0	26.7
Insulation class	Class B (CE)				
Insulation resistance	100MΩ, DC 500V以上				
Insulation strength	AC 1500 V, 50 Hz, 60 seconds				
Weight (kg)	18.5	18.5	23.5	30.5	37.0
Max. radial shaft load (N)	1470	1470	1470	1764	1764
Max. thrust shaft load (N)	490	490	490	588	588
Vibration grade (μm)	15				
Operating temperature (°C)	0~40				
Storage temperature (°C)	-10~80				
Operating humidity	20~90%RH (non-condensing)				
Storage humidity	20~90%RH (non-condensing)				
Vibration capacity	2.5G				
IP rating	(IP65 (when both waterproof connectors and shaft seal installation (or selecting oil seal models, an oil seal is used to be fitted to the rotating shaft, making the connectors waterproof (IP65 applicable)) are used.))				
Approvals	IEC60034-1  				

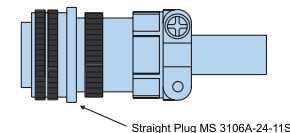
Medium and High Inertial Servo Motor Speed-Torque Curves



Note
5.5kW and 7.5kW servo motors will be available soon. The above specifications of 5.5kW and 7.5kW servo motors are for reference only.

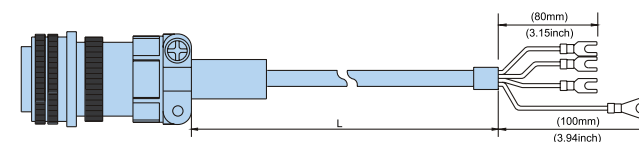
Power Connector

ASD-CAPW2000
CLAMP : MS3057-16A



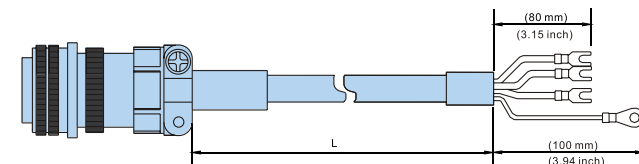
Power Cable

ASD-CAPW2203 / 2205
(for 3kW servo motor)



Item	Part No.	Straight	mm	inc
1	ASD-CAPW2203	MS 3106A-24-11S	3000 ± 100	118 ± 4
2	ASD-CAPW2205	MS 3106A-24-11S	5000 ± 100	197 ± 4

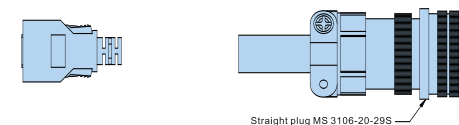
ASD-CAPW3203/3205
(for 4.5kW servo motor)



Item	Part No.	Straight	mm	inc
1	ASD-CAPW3203	MS 3106A-24-11S	3000 ± 100	118 ± 4
2	ASD-CAPW3205	MS 3106A-24-11S	5000 ± 100	197 ± 4

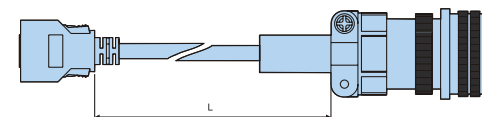
Encoder Connector

ASD-CAEN1000



Encoder Cable

ASD-CAEN1003 / 1005



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

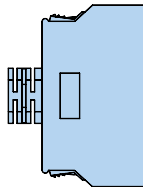
AC Servo System

ASDA-A+

Accessories

I/O Signal Connector

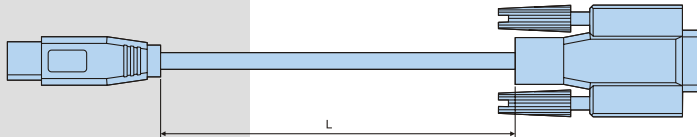
ASD-CNSC0050



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

Communication Cable(for PC)

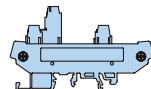
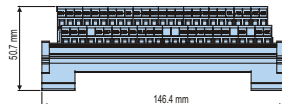
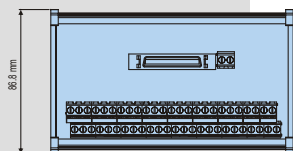
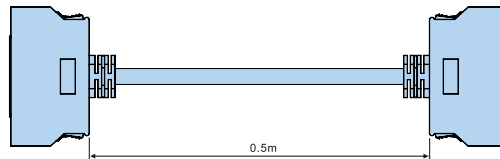
ASD-CARS0003



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

Terminal Block

ASD-BM-50A



4.5kW Servo Drive and 3.5kW Medium Inertia Servo Motor

Servo Drive	ASD-A4523-B	
Medium Inertia Servo Motor	ECMA-E21835RD	
Cable	Without Brake	
	3M	5M
	Motor Power Cable ASD-CAPW2203	Motor Power Cable ASD-CAPW2205
	Encoder Cable ASD-CAEN1003	Encoder Cable ASD-CAEN1005
Connector	Power Connector ASD-CAPW2000	
	Encoder Connector ASD-CAEN1000	

4.5kW Servo Drive and 3kW Medium and High Inertia Servo Motor

Servo Drive	ASD-A4523-B	
Medium and High Inertia Servo Motor	ECMA-F21830 S	
Cable	Without Brake	
	3M	5M
	Motor Power Cable ASD-CAPW2203	Motor Power Cable ASD-CAPW2205
	Encoder Cable ASD-CAEN1003	Encoder Cable ASD-CAEN1005
Connector	Power Connector ASD-CAPW2000	
	Encoder Connector ASD-CAEN1000	

4.5kW Servo Drive and 4.5kW Medium and High Inertia Servo Motor

Servo Drive	ASD-A4523-B	
Medium and High Inertia Servo Motor	ECMA-F21845 S	
Cable	Without Brake	
	3M	5M
	Motor Power Cable ASD-CAPW3203	Motor Power Cable ASD-CAPW3205
	Encoder Cable ASD-CAEN1003	Encoder Cable ASD-CAEN1005
Connector	Power Connector ASD-CAPW2000	
	Encoder Connector ASD-CAEN1000	

Regenerative Resistor Specifications

Servo Drive (kW)	Recommended Specifications for Built-in Regenerative Resistor		Recommended Specifications for External Regenerative Resistor	Min. Allowable Resistance (Ohm)
	Resistance (P1-52)	Capacity (P1-53)		
4.5kW	20 Ω	100W	12 Ω 4.5KW	10 Ω

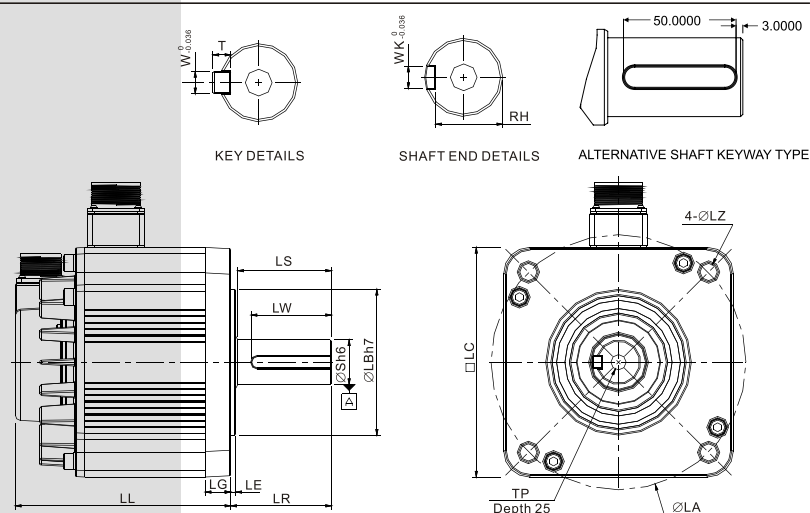
Note:
1. When the fault, ALE05 (Regeneration Error) occurs, please increase the regenerative resistor capacity.
2. When combining multiple small-capacity regenerative resistors in parallel to increase the regenerative resistor capacity, make sure that the total resistance value of the regenerative resistors should be lower than the minimum allowable resistance listed in the above table.

AC Servo System

ASDA-A+

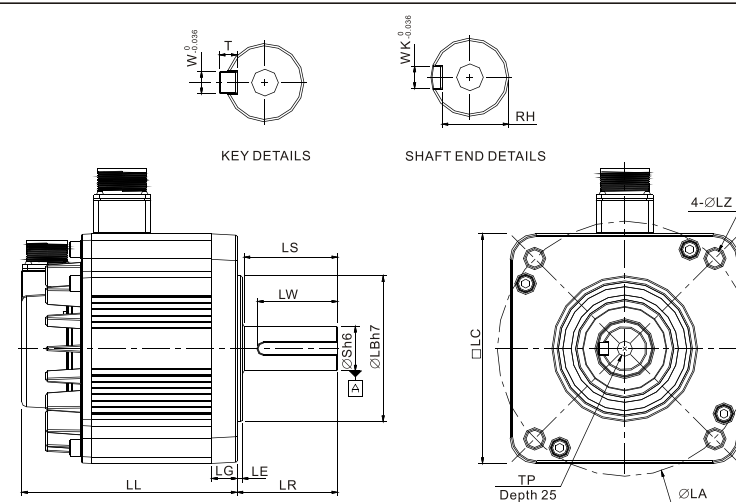
Dimensions

Medium Inertia Servo Motor Dimensions (ECMA Series)



	ECMA-E21835RD
LC	180
LZ	13.5
LA	200
S	35
LB	114.3
LL	202.1
LR	65
LE	4
LG	20
LW	50
RH	30
WK	10
W	10
T	8
TP	M8
Weight (without brake)	18.5(41)

Medium and High Inertia Servo Motor Dimensions (ECMA Series)



	ECMA-F21830~S	ECMA-F21845~S	ECMA-F21855~S	ECMA-F21875~S
LC	180	180	180	180
LZ	13.5	13.5	13.5	13.5
LA	200	200	200	200
S	35	35	42	42
LB	114.3	114.3	114.3	114.3
LL	202.1	235.3	279.7	342.0
LR	79	79	113	113
LE	4	4	4	4
LG	20	20	20	20
LW	63	63	90	90
RH	30	30	37	37
WK	10	10	12	12
W	10	10	12	12
T	8	8	8	8
TP	M12	M12	M16	M16
Weight (without brake)	18.5(41)	23.5(52)	30.5(67)	37(82)

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

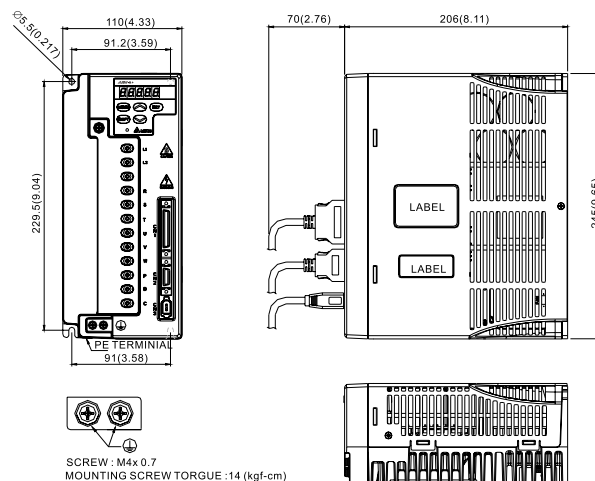
NOTE 1) Dimensions are in millimeters ; Weights are in kilograms (kg) and (pounds (lbs)).
2) Dimensions and weights of the servo motors may be revised without prior notice.
3) The boxes () in the model names are for optional configurations (brake, shaft type and oil seal).
4) 5.5kW and 7.5kW servo motors will be available soon. The above dimensions and weights of 5.5kW and 7.5kW servo motors are for reference only.

AC Servo System

Dimensions

ASDA-A+

Servo Drive Dimension (ASDA-A+ Series) ASD-A4523-B (4.5kW)



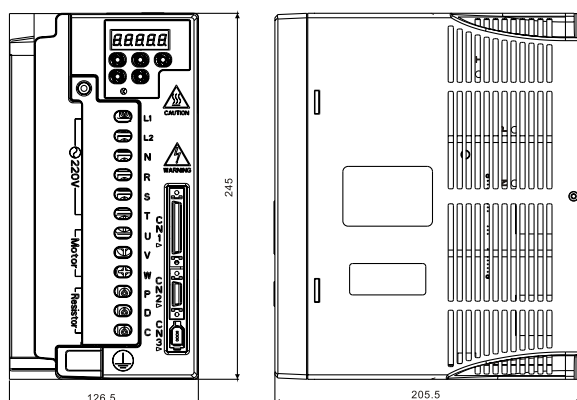
Weight

3.0 (6.6)



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

Servo Drive Dimension (ASDA-A+ Series) ASD-A5523-B (5.5kW)



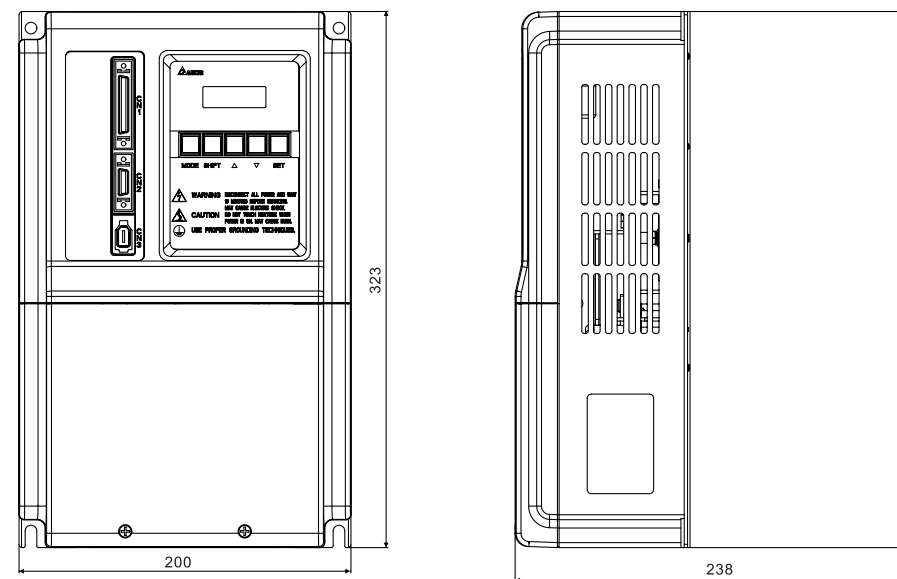
Weight

5.5 (12)



NOTE 1) Dimensions are in millimeters; Weights are in kilograms (kg) and (pounds (lbs)).
2) Dimensions and weights of the servo drives may be revised without prior notice.
3) 5.5kW AC servo drive will be available soon. The above dimensions of the 5.5kW AC servo drive are for reference only.

Servo Drive Dimension (ASDA-A+ Series) ASD-A7523-B (7.5kW)



Weight

8 (17.6)



NOTE 1) Dimensions are in millimeters; Weights are in kilograms (kg) and (pounds (lbs)).
2) Dimensions and weights of the servo drives may be revised without prior notice.
3) 7.5kW AC servo drive will be available soon. The above dimensions of the 7.5kW AC servo drive are for reference only.