


Chapter 10 Specifications

10.1 Specifications of Servo Drives (ASDA-B2 Series)


Model: ASDA-B2 Series		100W	200W	400W	750W	1kW	1.5kW	2kW	3kW	
		01	02	04	07	10	15	20	30	
Power Supply	Phase / Voltage	Three-phase: 170 - 255VAC, 50/60Hz ± 5% Single-phase: 200 - 255VAC, 50/60Hz ± 5%						Three-phase: 170 - 255VAC, 50/60Hz ± 5%		
	Continuous Output Current	0.9 Arms	1.55 Arms	2.6 Arms	5.1 Arms	7.3 Arms	8.3 Arms	13.4 Arms	19.4 Arms	
Cooling System		Natural Air Circulation				Fan Cooling				
Encoder Resolution / Feedback Resolution		17-bit (160000 p/rev)								
Control of Main Circuit		SVPWM Control								
Tuning Modes		Auto / Manual								
Dynamic Brake		-				Built-in				
Position Control Mode	Max. Input Pulse Frequency	Line driver: Max. 500Kpps (low speed)/ Max.4Mpps(high speed) Open collector: Max. 200Kpps								
	Pulse Type	Pulse + Direction, A phase + B phase, CCW pulse + CW pulse								
	Command Source	External pulse train / Internal parameters								
	Smoothing Strategy	Low-pass filter								
	Electronic Gear	Electronic gear N/M multiple N: 1 - (2 ²⁶ -1)/M:1 - (2 ³¹ -1) 1/50 < N/M < 25600								
	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	10KΩ							
		Time Constant	2.2 us							
	Speed Control Range*1	1:5000								
	Command Source	External analog signal / Internal parameters								
	Smoothing Strategy	Low-pass and S-curve filter								
	Torque Limit Operation	Set by parameters or via Analog input								
	Responsiveness Characteristic	Maximum 550Hz								
	Speed Fluctuation Rate*2 (at rated speed)	0.01% or less at load fluctuation 0 to 100%								
		0.01% or less at power fluctuation ±10%								
0.01% or less at ambient temperature fluctuation 0°C to 50°C										

Model: ASD-B2 Series			100W	200W	400W	750W	1kW	1.5kW	2kW	3kW	
			01	02	04	07	10	15	20	30	
Torque Control Mode	Analog Input Command	Voltage Range	0 ~ ±10 V _{DC}								
		Input Resistance	10KΩ								
		Time Constant	2.2 us								
	Command Source		External analog signal / Internal parameters								
	Smoothing 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 Inputs/Outputs	Inputs		Servo On, Reset, Gain switching, Pulse clear, Zero speed CLAMP, Command input reverse control, Speed/Torque limit enabled, Speed command selection, Position / Speed mode switching, Speed / Torque mode switching, Torque / Position mode switching, Emergency stop, Forward / Reverse inhibit limit, Forward / Reverse operation torque limit, Forward / Reverse JOG input, Electronic gear ratio (Numerator) selection and Pulse inhibit input								
	Outputs		Encoder signal output (A, B, Z Line Driver / 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, Output overload warning, Servo warning activated								
Protective Functions			Overcurrent, Overvoltage, Undervoltage, Motor overheated, Overload, Overspeed, Excessive deviation, Regeneration error, Abnormal pulse control command, Encoder error, Adjustment error, Emergency stop activated, Reverse/ Forward limit switch error, IGBT temperature error, Serial communication error, Input power phase loss, Serial communication time out, terminals with short circuit protection (U, V, W, CN1, CN2, CN3 terminals)								
Communication Interface			RS-232 / RS-485								
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 (32°F to 131°F) (If operating temperature is above specified range, forced cooling will be required)								
	Storage Temperature		-20°C ~ 65°C								
	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 ⁴								
Standards/Requirement			IEC/EN 61800-5-1, UL 508C 								

10.2 Specifications of Servo Motors (ECMA Series)

Low Inertia Servo Motors

Model: ECMA Series	C204		C206		C208		C209		C210	
	01	02	04	04	07	07	10	10	20	
Rated output power (kW)	0.1	0.2	0.4	0.4	0.75	0.75	1.0	1.0	2.0	
Rated torque (N-m) ^{*1}	0.32	0.64	1.27	1.27	2.39	2.38	3.18	3.18	6.37	
Maximum torque (N-m)	0.96	1.92	3.82	3.82	7.16	7.14	8.78	9.54	19.11	
Rated speed (r/min)	3000									
Maximum speed (r/min)	5000				3000			5000		
Rated current (A)	0.90	1.55	2.60	2.60	5.10	3.66	4.25	7.30	12.05	
Maximum current (A)	2.70	4.65	7.80	7.74	15.3	11	12.37	21.9	36.15	
Power rating (kW/s) (without brake)	27.7	22.4	57.6	22.1	48.4	29.6	38.6	38.1	90.6	
Rotor moment of inertia ($\times 10^{-4}$ kg.m ²) (without brake)	0.037	0.177	0.277	0.68	1.13	1.93	2.62	2.65	4.45	
Mechanical time constant (ms) (without brake)	0.75	0.80	0.53	0.73	0.62	1.72	1.20	0.74	0.61	
Torque constant-KT (N-m/A)	0.36	0.41	0.49	0.49	0.47	0.65	0.75	0.43	0.53	
Voltage constant-KE (mV/(r/min))	13.6	16.0	17.4	18.5	17.2	27.5	24.2	16.8	19.2	
Armature resistance (Ohm)	9.30	2.79	1.55	0.93	0.42	1.34	0.897	0.20	0.13	
Armature inductance (mH)	24.0	12.07	6.71	7.39	3.53	7.55	5.7	1.81	1.50	
Electrical time constant (ms)	2.58	4.30	4.30	7.96	8.36	5.66	6.35	9.30	11.4	
Insulation class	Class A (UL), Class B (CE)									
Insulation resistance	>100M Ω , DC 500V									
Insulation strength	1500V AC, 60 seconds									
Weight (kg) (without brake)	0.5	1.2	1.6	2.1	3.0	2.9	3.8	4.3	6.2	
Weight (kg) (with brake)	0.8	1.5	2.0	2.9	3.8	3.69	5.5	4.7	7.2	
Max. radial shaft load (N)	78.4	196	196	245	245	245	245	490	490	
Max. thrust shaft load (N)	39.2	68	68	98	98	98	98	98	98	
Power rating (kW/s) (with brake)	25.6	21.3	53.8	22.1	48.4	29.3	37.9	30.4	82.0	
Rotor moment of inertia ($\times 10^{-4}$ kg.m ²) (with brake)	0.04	0.192	0.30	0.73	1.18	1.95	2.67	3.33	4.95	
Mechanical time constant (ms) (with brake)	0.81	0.85	0.57	0.78	0.65	1.74	1.22	0.93	0.66	
Brake holding torque [Nt-m (min)] ^{*2}	0.3	1.3	1.3	2.5	2.5	2.5	2.5	8.0	8.0	


Model: ECMA Series	C204		C206		C208		C209		C210	
	01	02	04	04	07	07	10	10	20	
Brake power consumption (at 20°C) [W]	7.2	6.5	6.5	8.2	8.2	8.2	8.2	18.5	18.5	
Brake release time [ms (Max)]	5	10	10	10	10	10	10	10	10	
Brake pull-in time [ms (Max)]	25	70	70	70	70	70	70	70	70	
Vibration grade (um)	15									
Operating temperature	0 ~ 40°C									
Storage temperature	-10 ~ 80 °C									
Operating humidity	20% to 90% RH (non-condensing)									
Storage humidity	20% to 90% RH (non-condensing)									
Vibration capacity	2.5G									
IP rating	IP65 (when waterproof connectors are used, or when an oil seal is used to be fitted to the rotating shaft (an oil seal model is used))									
Approvals										

Footnote:

- *1 Rate torque values are continuous permissible values at 0-40°C ambient temperature when attaching with the sizes of heatsinks listed below:
 ECMA_04 / 06 / 08 : 250mm x 250mm x 6mm
 ECMA_10 : 300mm x 300mm x 12mm
 ECMA_13 : 400mm x 400mm x 20mm
 ECMA_18 : 550mm x 550mm x 30mm
 Material type : Aluminum - F40, F60, F80, F100, F130, F180
- *2 The holding brake is used to hold the motor shaft, not for braking the rotation. Never use it for decelerating or stopping the machine.
- *3 For the specifications of the motors with rotary magnetic encoders, please refer to the specifications of the corresponding standard models.

 **NOTE**

- 1) Please refer to Section 1.2 for details about the model explanation.

Model: ECMA Series	E213				E218		F218	G213		
	05	10	15	20	20	30	30	03	06	09
Brake release time [ms (Max)]	10	10	10	10	10	10	10	10	10	10
Brake pull-in time [ms (Max)]	70	70	70	70	70	70	70	70	70	70
Vibration grade (um)	15									
Operating temperature	0 ~ 40°C									
Storage temperature	-10 ~ 80 °C									
Operating humidity	20% to 90% RH (non-condensing)									
Storage humidity	20% to 90% RH (non-condensing)									
Vibration capacity	2.5G									
IP rating	IP65 (when waterproof connectors are used, or when an oil seal is used to be fitted to the rotating shaft (an oil seal model is used))									
Approvals										

Footnote:

- *1 Rate torque values are continuous permissible values at 0-40°C ambient temperature when attaching with the sizes of heatsinks listed below:
 ECMA_04 / 06 / 08 : 250mm x 250mm x 6mm
 ECMA_10 : 300mm x 300mm x 12mm
 ECMA_13 : 400mm x 400mm x 20mm
 ECMA_18 : 550mm x 550mm x 30mm
 Material type : Aluminum - F40, F60, F80, F100, F130, F180
- *2 The holding brake is used to hold the motor shaft, not for braking the rotation. Never use it for decelerating or stopping the machine.
- *3 For the specifications of the motors with rotary magnetic encoders, please refer to the specifications of the corresponding standard models.

 **NOTE**

- 1) Please refer to Section 1.2 for details about the model explanation.