

Product Overview

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Before using the servo drive, pay attention to the description for the components of the servo set, nameplate, and model type. You can find a suitable servo motor for your servo drive in the table in Section 1.3.

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1.1 Components of the servo set

A complete servo set includes:

- (1) A servo drive and a servo motor.
- (2) A UVW motor power cable: one end (the U, V, and W wires) connects to the servo drive and the other end to the motor (optional purchase).
- (3) A yellow / green ground wire: connects to the ground terminal of the servo drive (optional purchase).
- (4) An encoder cable: one end connects to the encoder and the other end to the CN2 on the servo drive (optional purchase).
- (5) A 26-pin connector for CN1 (optional purchase for -F, -M, -E, and B3A-P models).
- (6) A 44-pin connector for CN1 (optional purchase for -L models).
- (7) A 6-pin connector for CN2 (optional purchase).
- (8) An RJ45 connector for CN3 or CN6, which is used for general (RS-485) and high-speed (CANopen, EtherCAT, DMCNET, PROFINET) communication (optional purchase).
- (9) A 4-pin connector for CN4 (Mini USB connector) (optional purchase).
- (10) An STO connector for CN10 (only applicable on B3A models).
- (11) Power supply for the servo drive:

Model	Control circuit	Main circuit
All series	L _{1C} , L _{2C} terminal block	R, S, T terminal block

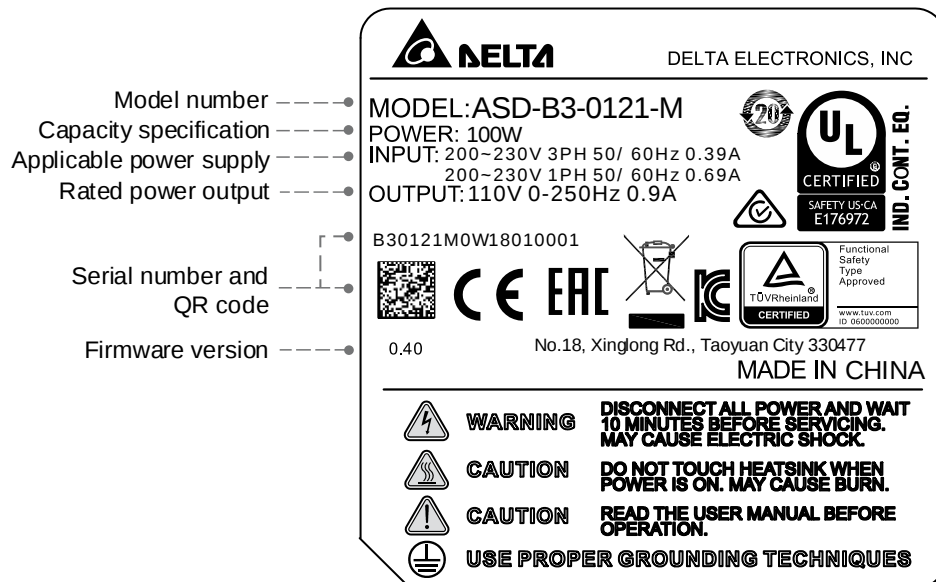
- (12) One metal piece for short-circuiting the terminal block.
- (13) An installation instruction sheet.

1.2 Model overview

1.2.1 Nameplate information

ASDA-B3 series servo drive

■ Nameplate information



■ Serial number

B30121M0 W 18 01 0001

(1) (2) (3) (4) (5)

- (1) Model number
- (2) Manufacturing plant (T: Taoyuan; W: Wujiang)
- (3) Year of production (18: year 2018)
- (4) Week of production (from 1 to 52)
- (5) Production sequence in a week (starting from 0001)

ECM-A3 / ECM-B3 series servo motor

■ Nameplate information

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Model number

Applicable power supply

Rated output

QR code and serial number

MODEL: ECM-A3H-CY0602RS0

INPUT: VAC 110 A1.45 Ins.A

OUTPUT: r/min 3000 N.m 0.64 kW 0.2

No.18, Xinglong Rd.,
Taoyuan City 330477
ABCYB1JBW14230024

AC SERVO MOTOR

Delta Electronics, Inc.

MADE IN CHINA

■ Serial number

AB	CY	B1	J	B	W	14	23	00	24	
(1)	(2)	(3)	(4)	(5)						
(1) Model number					(2) Manufacturing plant (T: Taoyuan; W: Wujiang)					
					(3) Year of production (14: year 2014)					
					(4) Week of production (from 1 to 52)					
					(5) Production sequence in a week (starting from 0001)					

Note: the rated voltage written in the servo motor specifications indicates the input voltage for the servo drive. The servo motor uses the certified voltage as the rated input voltage for operation, so the applicable power supply for 220V series servo motor is 110V, and the applicable power supply for 400V series servo motor is 220V.

1.2.2 Model explanation

ASDA-B3 servo drive

ASD – B3 – 04 21 – M
 (1) (2) (3) (4) (5)

- (1) Product name
ASD: AC Servo Drive

- (2) Series
B3: B3 series
B3A: B3A series

- (3) Rated power output

Code	Specification	Code	Specification	Code	Specification
01	100 W	10	1.0 kW	45	4.5 kW
02	200 W	15	1.5 kW	55	5.5 kW
04	400 W	20	2.0 kW	75	7.5 kW
07	750 W	30	3.0 kW	-	-

- (4) Input voltage and phase
21: 220V, single- / three-phase
23: 220V, three-phase
43: 400V, three-phase

- (5) Model type
B3 series

Connector	Function	L	M	F	E
CN1	Number of DIs / DOs	9 / 6	4 / 2	4 / 2	4 / 2
	Analog voltage input / output	2 / 2	2 / 2	2 / 2	2 / 2
	Pulse input (Pulse / Sign)	✓	-	-	-
	Pulse output (OA / OB / OZ)	✓	✓	✓	✓
	OCZ signal	✓	-	-	-
	High-speed Capture DI (PR)	DI7	DI3	DI3	-
	Touch Probe (EtherCAT)	-	-	-	DI1, DI2
	Number of CN1 pins	44	26	26	26
CN3	Communication function	RS-485	CANopen	-	-
CN4	Communication function (to PC)	Mini USB	Mini USB	Mini USB	Mini USB
CN6	Bus communication	-	-	DMCNET	EtherCAT
-	STO	-	-	-	-
-	Dynamic brake	-	-	-	-
-	PR mode	✓	✓	✓	✓
-	Absolute function	✓	✓	✓	✓

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B3A series

Connector	Function	L	M	F	E	P
CN1	Number of DIs / DOs	9 / 6	4 / 2	4 / 2	4 / 2	6 / 3
	Analog voltage input / output	2 / 2	2 / 2	2 / 2	2 / 2	-
	Pulse input (Pulse / Sign)	✓	✓	✓	✓	-
	Pulse output (OA / OB / OZ)	✓	✓	✓	✓	✓
	OCZ signal	✓	-	-	-	-
	High-speed Capture DI (PR)	DI7	DI3	DI3	-	DI3
	Touch Probe (EtherCAT)	-	-	-	DI1, DI2	-
	Number of CN1 pins	44	26	26	26	26
CN3	Communication function	RS-485	CANopen RS-485	-	-	-
CN4	Communication function (to PC)	Mini USB	Mini USB	Mini USB	Mini USB	Mini USB
CN6	Bus communication	-	-	DMCNET	EtherCAT	PROFINET
CN10	STO	✓	✓	✓	✓	✓
-	Dynamic brake	✓	✓	✓	✓	✓
-	PR mode	✓	✓	✓	✓	✓
-	Absolute function	✓	✓	✓	✓	✓

Note: the model codes listed here are only for demonstration of the naming convention; some combinations of the model codes are not available. Contact the distributors for the models available for purchase.

ECM-B3 series servo motor

ECM - B 3 M - C 2 06 04 R S 1
 (1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11)

(1) Product name

ECM: electronically commutated motor

(2) Servo type

B: general type servo motor

(3) Series

3: 3rd series

(4) Inertia

H: high inertia

M: medium inertia

L: low inertia

(5) Rated voltage and speed

C: 220V and 3,000 rpm

E: 220V and 2,000 rpm

F: 220V and 1,500 rpm

J: 400V and 3,000 rpm

K: 400V and 2,000 rpm

L: 400V and 1,500 rpm

(6) Encoder type

A: 24-bit absolute optical encoder

(resolution of single turn: 24-bit; number of revolutions: 16-bit)

2: 24-bit incremental optical encoder (single-turn absolute)

P: 17-bit absolute magnetic encoder

(resolution of single turn: 17-bit; number of revolutions: 16-bit)

M: 17-bit incremental magnetic encoder (single-turn absolute)

Note: number of revolutions means the maximum number of turns the encoder can record.

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(7) Motor frame size

Code	Specification	Code	Specification
04	40 mm	10	100 mm
06	60 mm	13	130 mm
08	80 mm	18	180 mm

(8) Rated power output

Code	Specification	Code	Specification
01	100 W	15	1.5 kW
02	200 W	18	1.8 kW
04	400 W	20	2.0 kW
07	750 W	30	3.0 kW
08	850 W	45	4.5 kW
10	1.0 kW	55	5.5 kW
13	1.3 kW	75	7.5 kW

(9) Shaft type and oil seal

	w/o brake, with oil seal	with brake, with oil seal
Keyway (with fixed screw holes)	R	S

(10) Shaft diameter and connector type

S: standard shaft diameter and standard connectors

7: special shaft diameter (14 mm)^{*1} and standard connectors

J: standard shaft diameter and CHOGORI connectors (IP67)

K: special shaft diameter (14 mm)^{*1} and CHOGORI connectors (IP67)

3: standard shaft diameter (42 mm)^{*2} and standard connectors

B: standard shaft diameter and bulkhead connectors

Note:

1. Special shaft diameter (14 mm) is only available for F80 400 W models.

2. Standard shaft diameter (42 mm) is only available for F180 5.5 kW and 7.5 kW models.

(11) Special code

1: standard products

Note: the model codes listed here are only for demonstration of the naming convention; some combinations of the model codes are not available. Contact the distributors for the models available for purchase.

ECM-A3 series servo motor

ECM - A 3 L - C 2 06 04 R S 1
 (1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11)

(1) Product name

ECM: electronically commutated motor

(2) Servo type

A: high-precision servo motor

(3) Series

3: 3rd series

(4) Inertia

H: high inertia

L: low inertia

(5) Rated voltage and speed

C: 220V and 3,000 rpm

(6) Encoder type

Y: 24-bit absolute optical encoder

(resolution of single turn: 24-bit; number of revolutions: 16-bit)

1: 24-bit incremental optical encoder (single-turn absolute)

A: 24-bit absolute optical encoder

(resolution of single turn: 24-bit; number of revolutions: 16-bit)

2: 24-bit incremental optical encoder (single-turn absolute)

Note: number of revolutions means the maximum number of turns the encoder can record.

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(7) Motor frame size

Code	Specification	Code	Specification
04	40 mm	08	80 mm
06	60 mm	-	-

(8) Rated power output

Code	Specification	Code	Specification
0F	50 W	04	400 W
01	100 W	07	750 W
02	200 W	-	-

(9) Shaft type and oil seal

	w/o brake, with oil seal	with brake, with oil seal
Keyway (with fixed screw holes)	R	S

(10) Shaft diameter and connector type

S: standard shaft diameter and standard connectors

7: special shaft diameter (14 mm)* and standard connectors

J: standard shaft diameter and CHOGORI connectors (IP67)

K: special shaft diameter (14 mm)* and CHOGORI connectors (IP67)

Note: special shaft diameter is available for F80 400 W models.

(11) Special code

1: standard products

Z: special code of C208073S5. Refer to the note in Section A.3.5.

Note: the model codes listed here are only for demonstration of the naming conventions; some combinations of the model codes are not available. Contact the distributors for the models available for purchase.

1.3 ASDA-B3 servo drive and motor

1.3.1 220V models

ECM-A3 series servo motor:

Servo motor							Servo drive
Inertia	Rated / Max. speed	Power	Output (W)	Model number	Rated torque (N·m)	Max. torque (N·m)	Model number
Low inertia	3000 / 6000 rpm	Single- / three-phase	50	ECM-A3L-C2040F345	0.159	0.557	ASD-B31-0121-2
			100	ECM-A3L-C20401345	0.32	1.12	
			200	ECM-A3L-C20602345	0.64	2.24	ASD-B31-0221-2
			400	ECM-A3L-C20604345	1.27	4.45	ASD-B31-0421-2
			400	ECM-A3L-C20804345	1.27	4.44	
			750	ECM-A3L-C20807345	2.39	6.45	ASD-B31-0721-2
					2.39	8.36	ASD-B31-1021-2
High inertia	3000 / 6000 rpm	Single- / three-phase	50	ECM-A3H-C2040F345	0.159	0.557	ASD-B31-0121-2
			100	ECM-A3H-C20401345	0.32	1.12	
			200	ECM-A3H-C20602345	0.64	2.24	ASD-B31-0221-2
			400	ECM-A3H-C20604345	1.27	4.45	ASD-B31-0421-2
			400	ECM-A3H-C20804345	1.27	4.44	
			750	ECM-A3H-C20807345	2.39	7.23	ASD-B31-0721-2
					2.39	8.36	ASD-B31-1021-2

Note:

1. In the servo motor model number, 2 represents the encoder type, 3 represents the brake or keyway / oil seal type, 4 represents the shaft diameter and connector type, and 5 represents the special code.
2. In the servo drive model number, 1 represents the product series and 2 represents the model type.
3. B3 and B3A series support all the motors listed in the preceding table.

ECM-B3 series servo motor:

Servo motor							Servo drive			
Inertia	Rated / Max. speed	Power	Output (W)	Model number	Rated torque (N·m)	Max. torque (N·m)	Model number			
Low inertia	3000 / 6000 rpm	Single- / three-phase	100	ECM-B3L-C ^② 0401 ^{③④⑤}	0.32	1.12	ASD-B3 ^① -0121- ^②			
Medium inertia			200	ECM-B3M-C ^② 0602 ^{③④⑤}	0.64	2.24	ASD-B3 ^① -0221- ^②			
			400	ECM-B3M-C ^② 0604 ^{③④⑤}	1.27	4.45	ASD-B3 ^① -0421- ^②			
			400	ECM-B3M-C ^② 0804 ^{③④⑤}	1.27	4.45				
			750	ECM-B3M-C ^② 0807 ^{③④⑤}	2.4	7.61	ASD-B3 ^① -0721- ^②			
					2.4	8.4	ASD-B3 ^① -1021- ^②			
			1000	ECM-B3M-C ^② 0810 ^{③④⑤}	3.18	11.13	ASD-B3 ^① -1021- ^②			
			1000	ECM-B3M-C ^② 1010 ^{③④⑤}	3.18	9.54	ASD-B3 ^① -1021- ^②			
			1500	ECM-B3M-C ^② 1015 ^{③④⑤}	4.77	14.3	ASD-B3 ^① -1521- ^②			
			2000	ECM-B3M-C ^② 1020 ^{③④⑤}	6.37	19.1	ASD-B3 ^① -2023- ^②			
			2000 / 3000 rpm	1000	ECM-B3M-E ^② 1310 ^{③④⑤}	4.77	14.3	ASD-B3 ^① -1021- ^②		
				1500	ECM-B3M-E ^② 1315 ^{③④⑤}	7.16	19.93	ASD-B3 ^① -1521- ^②		
						7.16	21.48	ASD-B3 ^① -2023- ^②		
				2000	ECM-B3M-E ^② 1320 ^{③④⑤}	9.55	28.65	ASD-B3 ^① -2023- ^②		
						9.55	28.65			
				3000	ECM-B3M-F ^② 1830 ^{③④⑤}	19.1	57.29	ASD-B3 ^① -3023- ^②		
			High inertia	3000 / 6700 rpm	Single- / three-phase	200	ECM-B3H-C ^② 0602 ^{③④⑤}	0.64	2.43	ASD-B3 ^① -0221- ^②
						400	ECM-B3H-C ^② 0604 ^{③④⑤}	1.27	4.83	ASD-B3 ^① -0421- ^②
750	ECM-B3H-C ^② 0807 ^{③④⑤}	2.4				7.86	ASD-B3 ^① -0721- ^②			
		2.4				9.12	ASD-B3 ^① -1021- ^②			
1500 / 4000 rpm	Single- / three-phase	850		ECM-B3H-F ^② 1308 ^{③④⑤}	5.39	16.17	ASD-B3 ^① -1021- ^②			
		1300		ECM-B3H-F ^② 1313 ^{③④⑤}	8.34	25.02	ASD-B3 ^① -1521- ^②			
	Three-phase	1800		ECM-B3H-F ^② 1318 ^{③④⑤}	11.5	34.5	ASD-B3 ^① -2023- ^②			

Note:

1. In the servo motor model number, ^② represents the encoder type, ^③ represents the brake or keyway / oil seal type, ^④ represents the shaft diameter and connector type, and ^⑤ represents the special code.
2. In the servo drive model number, ^① represents the product series and ^② represents the model type.
3. B3 and B3A series support all the motors listed in the preceding table.

1.3.2 400V models

ECM-B3 series servo motor:

Servo motor							Servo drive
Inertia	Rated / Max. speed	Power	Output (W)	Model number	Rated torque (N·m)	Max. torque (N·m)	Model number
Medium inertia	3000 / 6000 rpm	Three-phase	750	ECM-B3M-J ^② 0807 ^{③④⑤}	2.4	7.61	ASD-B3 ^① -1043- ^②
					2.4	8.4	ASD-B3 ^① -1543- ^②
			1000	ECM-B3M-J ^② 1010 ^{③④⑤}	3.18	7.4	ASD-B3 ^① -1043- ^②
					3.18	9.54	ASD-B3 ^① -1543- ^②
			1500	ECM-B3M-J ^② 1015 ^{③④⑤}	4.77	13.08	ASD-B3 ^① -1543- ^②
					4.77	14.3	ASD-B3 ^① -2043- ^②
	2000		ECM-B3M-J ^② 1020 ^{③④⑤}	6.37	19.1	ASD-B3 ^① -2043- ^②	
	2000 / 3000 rpm		1000	ECM-B3M-K ^② 1310 ^{③④⑤}	4.77	11.08	ASD-B3 ^① -1043- ^②
					4.77	14.3	ASD-B3 ^① -1543- ^②
			1500	ECM-B3M-K ^② 1315 ^{③④⑤}	7.16	17.78	ASD-B3 ^① -1543- ^②
					7.16	21.48	ASD-B3 ^① -2043- ^②
			2000	ECM-B3M-K ^② 1320 ^{③④⑤}	9.55	28.65	ASD-B3 ^① -2043- ^②
High inertia		1500 / 4000 rpm	850	ECM-B3H-L ^② 1308 ^{③④⑤}	5.39	11.55	ASD-B3 ^① -1043- ^②
	5.39				16.17	ASD-B3 ^① -1543- ^②	
	1300		ECM-B3H-L ^② 1313 ^{③④⑤}	8.34	22.14	ASD-B3 ^① -1543- ^②	
				8.34	25.02	ASD-B3 ^① -2043- ^②	
	1800		ECM-B3H-L ^② 1318 ^{③④⑤}	11.5	34.5	ASD-B3 ^① -2043- ^②	
Medium inertia	2000 / 3000 rpm	2000	ECM-B3M-K ^② 1820 ^{③④⑤}	9.55	28.65	ASD-B3 ^① -2043- ^②	
	1500 / 3000 rpm	3000	ECM-B3M-L ^② 1830 ^{③④⑤}	19.1	53.9	ASD-B3 ^① -3043- ^②	
				19.1	57.29	ASD-B3 ^① -4543- ^②	
	1500 / 4000 rpm	4500	ECM-B3M-L ^② 1845 ^{③④⑤}	28.65	71.6	ASD-B3 ^① -4543- ^②	
		5500	ECM-B3M-L ^② 1855 ^{③④⑤}	35.01	105	ASD-B3 ^① -5543- ^②	
		7500	ECM-B3M-L ^② 1875 ^{③④⑤}	47.75	119	ASD-B3 ^① -7543- ^②	

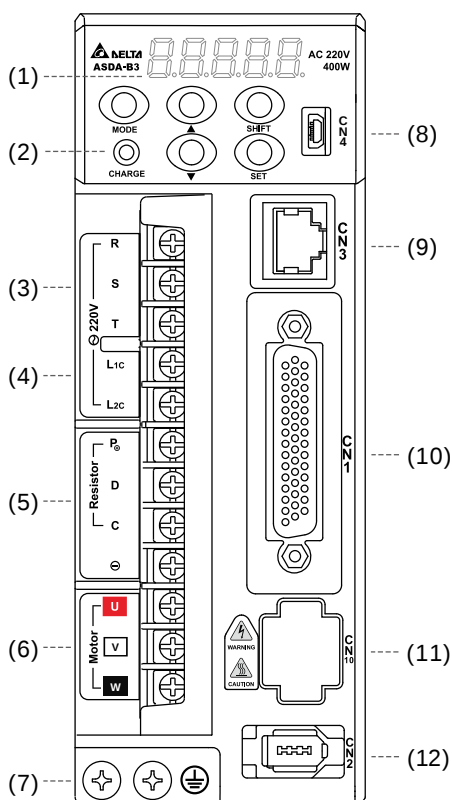
Note:

1. In the servo motor model number, ^② represents the encoder type, ^③ represents the brake or keyway / oil seal type, ^④ represents the shaft diameter and connector type, and ^⑤ represents the special code.
2. In the servo drive model number, ^① represents the product series and ^② represents the model type.
3. B3 and B3A series support all the motors listed in the preceding table.

1.4 Description of the drive interface

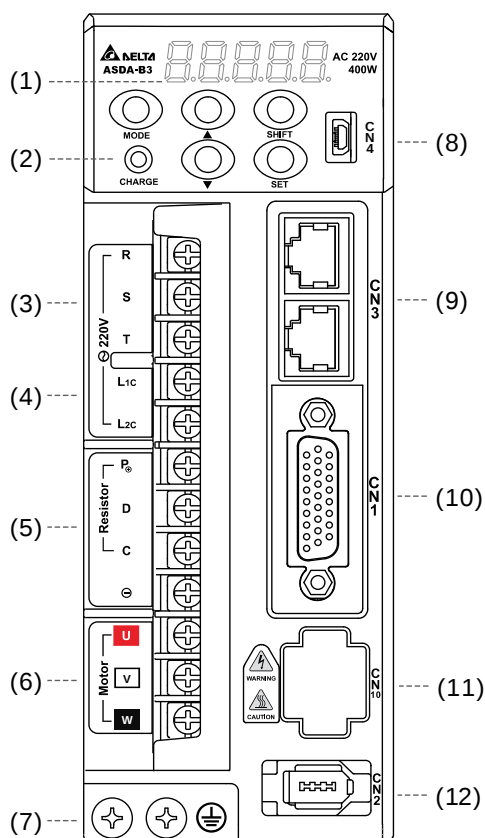
1.4.1 -L models

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No.	Name	Description
(1)	-	7-segment display.
(2)	CHARGE	Power indicator.
(3)	RST	Main circuit power input terminal. 220V models: connects to commercial power supply (200 - 230 V _{AC} , 50/60 Hz); 400V models: connects to commercial power supply (380 - 400 V _{AC} , 50/60 Hz).
(4)	L _{1c} , L _{2c}	Control circuit power input terminal. 220V models: connects to single-phase power supply (200 - 230 V _{AC} , 50/60 Hz); 400V models: connects to single-phase power supply (380 - 400 V _{AC} , 50/60 Hz).
(5)	Regenerative resistor	Connects to an external regenerative resistor, external power regenerative unit, or the built-in regenerative resistor.
(6)	UVW	Servo drive current output: connects to the motor power connector (U, V, W). Do not connect to the main circuit power. Incorrect wiring will cause damage to the servo drive.
(7)	Grounding screws	Connects to the ground wires for the power and servo motor.
(8)	CN4	Mini USB connector: connects to PC.
(9)	CN3	Modbus communication port.
(10)	CN1	I/O signal interface: connects to PLC or controls I/O.
(11)	CN10	STO connector: only supported by the B3A series.
(12)	CN2	Encoder connector: connects to the encoder.

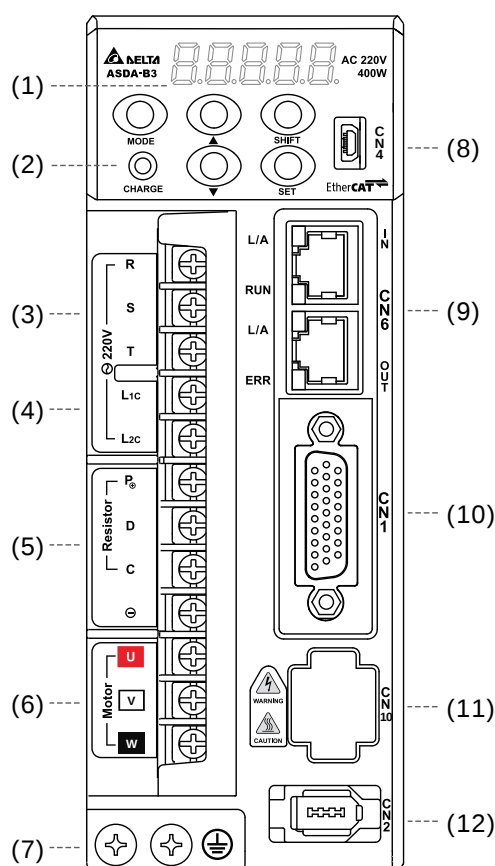
1.4.2 -M / -F models



No.	Name	Description
(1)	-	7-segment display.
(2)	CHARGE	Power indicator.
(3)	RST	Main circuit power input terminal. 220V models: connects to commercial power supply (200 - 230 V _{AC} , 50/60 Hz); 400V models: connects to commercial power supply (380 - 400 V _{AC} , 50/60 Hz).
(4)	L _{1C} , L _{2C}	Control circuit power input terminal. 220V models: connects to single-phase power supply (200 - 230 V _{AC} , 50/60 Hz); 400V models: connects to single-phase power supply (380 - 400 V _{AC} , 50/60 Hz).
(5)	Regenerative resistor	Connects to an external regenerative resistor, external power regenerative unit, or the built-in regenerative resistor.
(6)	UVW	Servo drive current output: connects to the motor power connector (U, V, W). Do not connect to the main circuit power. Incorrect wiring will cause damage to the servo drive.
(7)	Grounding screws	Connects to the ground wires for the power and servo motor.
(8)	CN4	Mini USB connector: connects to PC.
(9)	CN3 / CN6	CANopen (CN3) or DMCNET (CN6) high-speed communication ports.
(10)	CN1	I/O signal interface: connects to PLC or controls I/O.
(11)	CN10	STO connector: only supported by the B3A series.
(12)	CN2	Encoder connector: connects to the encoder.

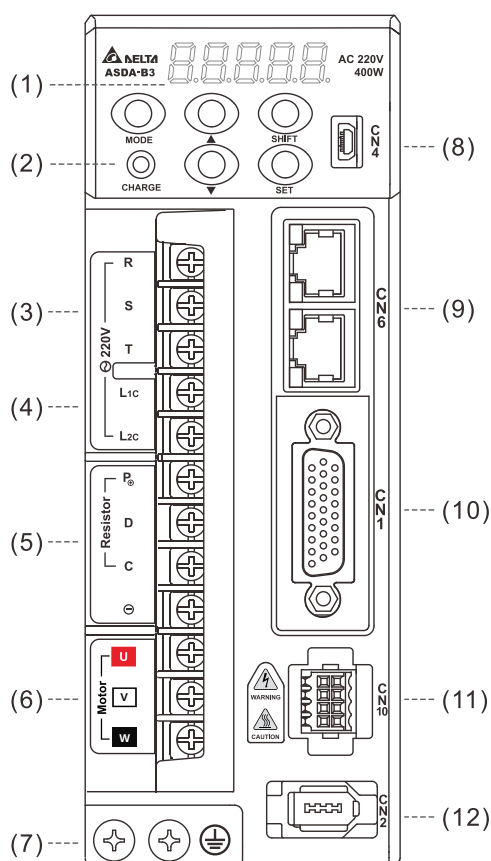
1.4.3 -E models

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No.	Name	Description
(1)	-	7-segment display.
(2)	CHARGE	Power indicator.
(3)	RST	Main circuit power input terminal. 220V models: connects to commercial power supply (200 - 230 V _{AC} , 50/60 Hz); 400V models: connects to commercial power supply (380 - 400 V _{AC} , 50/60 Hz).
(4)	L _{1C} , L _{2C}	Control circuit power input terminal. 220V models: connects to single-phase power supply (200 - 230 V _{AC} , 50/60 Hz); 400V models: connects to single-phase power supply (380 - 400 V _{AC} , 50/60 Hz).
(5)	Regenerative resistor	Connects to an external regenerative resistor, external power regenerative unit, or the built-in regenerative resistor.
(6)	UVW	Servo drive current output: connects to the motor power connector (U, V, W). Do not connect to the main circuit power. Incorrect wiring will cause damage to the servo drive.
(7)	Grounding screws	Connects to the ground wires for the power and servo motor.
(8)	CN4	Mini USB connector: connects to PC.
(9)	CN6	EtherCAT high-speed communication ports.
(10)	CN1	I/O signal interface: connects to PLC or controls I/O.
(11)	CN10	STO connector: only supported by the B3A series.
(12)	CN2	Encoder connector: connects to the encoder.

1.4.4 B3A-P models



No.	Name	Description
(1)	-	7-segment display.
(2)	CHARGE	Power indicator.
(3)	RST	Main circuit power input terminal. 220V models: connects to commercial power supply (200 - 230 V _{AC} , 50/60 Hz); 400V models: connects to commercial power supply (380 - 400 V _{AC} , 50/60 Hz).
(4)	L _{1C} , L _{2C}	Control circuit power input terminal. 220V models: connects to single-phase power supply (200 - 230 V _{AC} , 50/60 Hz); 400V models: connects to single-phase power supply (380 - 400 V _{AC} , 50/60 Hz).
(5)	Regenerative resistor	Connects to an external regenerative resistor, external power regenerative unit, or the built-in regenerative resistor.
(6)	UVW	Servo drive current output: connects to the motor power connector (U, V, W). Do not connect to the main circuit power. Incorrect wiring will cause damage to the servo drive.
(7)	Grounding screws	Connects to the ground wires for the power and servo motor.
(8)	CN4	Mini USB connector: connects to PC.
(9)	CN6	PROFINET high-speed communication ports.
(10)	CN1	I/O signal interface: connects to PLC or controls I/O.
(11)	CN10	STO connector: only supported by the B3A series.
(12)	CN2	Encoder connector: connects to the encoder.