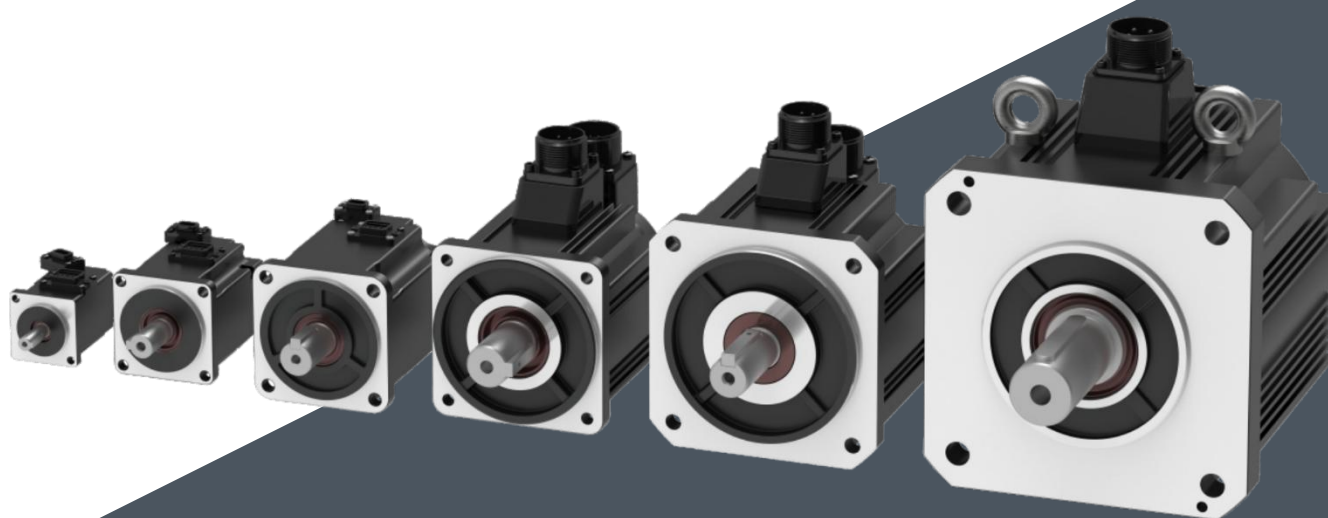


Operation Manual

Astraada SRV-65
Small-power AC Servo Motor



Contents

Contents.....	2
1 Safety precautions.....	4
1.1 Safety declaration.....	4
1.2 Safety level definition	4
1.3 Personnel requirements	4
1.4 Safety guidelines	4
1.5 Warning symbols	7
2 Motor model selection	8
3 Common terms	9
3.1 Duty	9
3.2 Ingress protection (IP) rating	10
3.3 Rated parameters.....	11
4 Product overview	12
4.1 Product features	12
4.2 Motor nameplate.....	12
4.3 Motor naming	12
4.4 Product component.....	13
4.4.1 Components for frame size 40 motor	13
4.4.2 Components for frame size 60 motor	13
4.4.3 Components for frame size 80 motor	13
4.4.4 Terminals for frame sizes 40–80 motors	14
4.4.5 Components for frame size 130 motor	14
4.4.6 Components for frame size 180 motor	14
5 General specifications	15
5.1 Mechanical characteristics.....	15
5.2 Derating characteristics	15
5.2.1 Derating due to altitude.....	15
5.2.2 Derating due to temperature	16
5.2.3 Derating due to heat dissipation	16
6 Small-power servo motor.....	19
6.1 Frame size 40	19

6.1.1 Motor parameters and dimensions	19
6.1.2 External characteristic curve	20
6.2 Frame size 60	20
6.2.1 Motor parameters and dimensions	20
6.2.2 External characteristic curve	21
6.3 Frame size 80	22
6.3.1 Motor parameters and dimensions	22
6.3.2 External characteristic curve	23
6.4 Frame size 130	24
6.4.1 Motor parameters and dimensions	24
6.4.2 External characteristic curve	25
6.5 Frame size 180	26
6.5.1 Motor parameters and dimensions	26
6.5.2 External characteristic curve	27
7 Motor terminal description	29
7.1 40/60/80 frame terminal	29
7.2 130/180 frame terminal	31
8 Installation instructions	32
8.1 Unpacking inspection	32
8.2 Mechanical installation	32
8.2.1 Preparing	32
8.2.2 Installation direction	36
8.2.3 Installation space and dimensions	36
8.2.4 Mounting method	37
8.3 Electrical installation	38
8.3.1 Connection to the drive	38
8.3.2 Connection to the encoder	38
8.4 Check after installation	39
9 Common faults	40
10 Certification categories and standards	42
10.1 CE certification	42
10.2 UL certification	42
10.3 Energy efficiency certification	42

1 Safety precautions

1.1 Safety declaration

Read this manual carefully and follow all safety precautions before moving, installing, wiring, operating and servicing the product. Otherwise, equipment damage or physical injury or death may be caused.

We shall not be liable or responsible for any injury or equipment damage caused due to failure to follow the safety precautions.

1.2 Safety level definition

Safety level	Description
	Severe personal injury or even death can result if related requirements are not followed.
	Personal injury or equipment damage can result if related requirements are not followed.

1.3 Personnel requirements

Trained and qualified professionals: People operating the equipment must have received professional electrical and safety training and obtained the certificates, and must be familiar with all steps and requirements of equipment installing, commissioning, running and maintaining and capable to prevent any emergencies according to experiences.

1.4 Safety guidelines

Unpacking inspection	
	- Ensure that the packaging of the servo motor product is intact, with no damage, rust, moisture, dampness, or deformation. - Please handle with care when unpacking and retrieving the motor to avoid any collisions and damage to the motor. - After opening the packaging box, confirm that the machine is undamaged or unbroken, that all components are complete, and that the nameplate and label on the product body match the ordered model.

Delivery	
	• Ensure that the motor is securely installed during transportation to prevent accidental falls. • Do not transport motor products with items that could cause damage. • Before handling large motor products, check the fixed lifting position of the motor and ensure the safety of the lifting equipment during the handling process. • Do not move the motor by pulling the cables or the shaft.

Installation	
	• Read this manual carefully before installation and strictly follow all safety precautions. • Ensure that the mechanical strength of the installation location is sufficient to support the weight of the equipment. • Please check for any abnormalities in the motor mounting holes before installation. • Do not disassemble any components or parts of the motor. If any modifications are needed, please contact a professional. • When performing installation work, cover the product to prevent metal shavings and foreign objects from entering the motor, which could affect its safety.

Wiring	
	• Ensure that the overcurrent protector, leakage current protector and emergency device are installed. After wiring is completed, their effectiveness must be verified. • Ensure that the AC power supply voltage matches the rated voltage of the servo motor. • Do not place the power cables and encoder cables in a strong magnetic field environment. • Ensure that the equipment and products have good grounding.
	• Before wiring, check the integrity of the power cables. Do not use power cables that are damaged or exposed. • Ensure that the drive is correctly wired to the motor.

Check before power-on	
	- Ensure that the product wiring connections are correct. - Ensure that there are no personnel lingering around the drive, motor, and related equipment. - Ensure that the key is securely fixed. If there is no coupling to secure the key, remove the key to prevent it from flying out during motor operation.
	Ensure that the emergency stop switch is properly connected to the drive.

Running	
	- De-couple the motor load and run the motor independently during the trial operation to avoid accidents. - Do not touch conductive parts directly while in operation. - Do not connect any external cables (especially those related to electricity) to the enclosure or short connect the external cables. - If you need to rewire the motor, disconnect the power and wait for 15 minutes before proceeding.
	- Set the corresponding parameters before operation, otherwise the motor may run abnormally or beyond the expectation because of the load. - The motor housing heat sink can reach high temperatures during operation. Do not touch the motor housing heat sink.

Maintenance and repair	
	- Non-professional personnel are strictly prohibited from installing, wiring, maintaining, inspecting, or replacing components of the equipment. - For maintenance, repair, and component replacement of the motor, please contact a qualified technician. - Maintenance of the equipment is strictly prohibited while it is powered on.

Scrapping	
	The components inside the motor contain heavy metals. Please follow the relevant national regulations and standards for the disposal of equipment and products. After disposal, the motor must be treated as industrial waste.

1.5 Warning symbols

To ensure safe operation, please strictly adhere to the safety labels affixed to the equipment. Do not damage or remove the safety labels. The warning symbols are as follows:

Warning symbols	Description
	Caution: high temperature on the motor surface!
	Caution: risk of electric shock!
	Do not strike the motor shaft extension!

2 Motor model selection

Frame size	Output power	Motor model	Brake	Encoder	Rated voltage	Compatible drive		
40	0.05kW	AS65MTR2C50-A	-	23-bit multi-turn optical encoder	1PH/3PH 220V	AS65SRV20C4-*		
	0.05kW	AS65MTB2C50-A	Electromagnetic brake					
	0.1kW	AS65MTR21C0-A	-					
	0.1kW	AS65MTB21C0-A	Electromagnetic brake					
60	0.2kW	AS65MTR20C2-A	-	23-bit multi-turn optical encoder				
	0.2kW	AS65MTB20C2-A	Electromagnetic brake					
	0.4kW	AS65MTR20C4-A	-					
	0.4kW	AS65MTB20C4-A	Electromagnetic brake					
80	0.75kW	AS65MTR20C7-A	-	23-bit multi-turn optical encoder	1PH/3PH 220V	AS65SRV21C0-*		
	0.75kW	AS65MTB20C7-A	Electromagnetic brake					
	1kW	AS65MTR21C0-AS	-					
	1kW	AS65MTB21C0-AS	Electromagnetic brake					
130	1kW	AS65MTR21C0-A	-	23-bit multi-turn optical encoder	1PH/3PH 220V	AS65SRV21C0-*		
	1kW	AS65MTB21C0-A	Electromagnetic brake					
	1.5kW	AS65MTR21C5-A	-	23-bit multi-turn optical encoder	1PH/3PH 220V	AS65SRV21C5-*		
	1.5kW	AS65MTB21C5-A	Electromagnetic brake					
	2kW	AS65MTR22C0-A	-					
	2kW	AS65MTB22C0-A	Electromagnetic brake					
180	3kW	AS65MTR43C0-A	-	23-bit multi-turn optical encoder	3PH 380V	AS65SRV44C4-*		
	3kW	AS65MTB43C0-A	Electromagnetic brake					
	4.4kW	AS65MTR44C4-A	-					
	4.4kW	AS65MTB44C4-A	Electromagnetic brake					
	5.5kW	AS65MTR45C5-A	-			AS65SRV45C5-*		
	5.5kW	AS65MTB45C5-A	Electromagnetic brake					
	7.5kW	AS65MTR47C5-A	-				AS65SRV47C5-*	
	7.5kW	AS65MTB47C5-A	Electromagnetic brake					

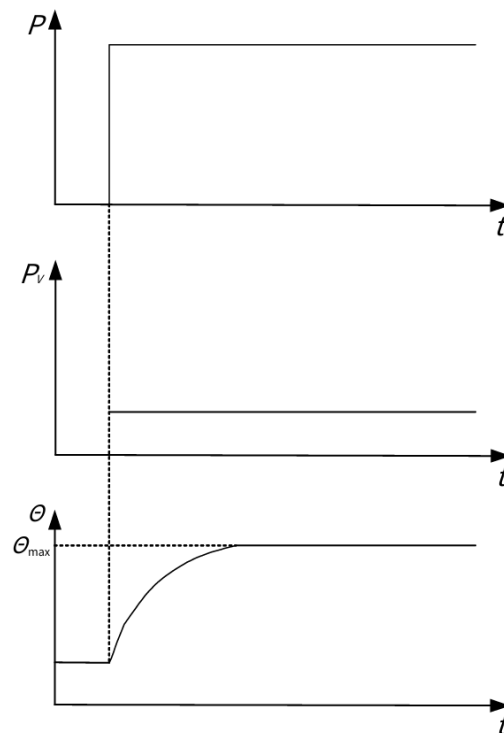
3 Common terms

3.1 Duty

A description of a series of load conditions that the motor experiences, including starting, electrical braking, no-load, shutdown, power interruption, as well as their duration and sequence. The duty complies with GB755.

S1 duty: Continuous duty

Operate under a constant load until reaching thermal stability, as shown in the following figure.



- P : Load
- P_v : Electrical losses
- Θ : Temperature
- $\Theta_{\max}$: Reach the maximum temperature
- t : Time

3.2 Ingress protection (IP) rating

The motor ingress protection rating is represented by a code that contains 2 letters and 2 digits. Including:

- IP (Ingress Protection): The code letters indicate the protection levels against the contact and ingress of solid objects and water.
- First digit: 0 to 6, indicates the level of protection provided by the enclosure against contact with persons and against ingress of solid objects inside the enclosure.
- Second digit: 0 to 8, indicates the level of protection against harmful effects due to the ingress of water into the enclosure.

IP rating	First digit	Meaning	Second digit	Meaning
IP	0	No protection at all	0	No protection at all.
	1	Protection against solid objects with a diameter greater than 50mm	1	Protection against vertical water drops.
	2	Protection against solid objects with a diameter greater than 12mm	2	Protection against vertical water drops at an angle of up to 15o.
	3	Protection against solid objects with a diameter greater than 2.5mm	3	Protection against sprayed water at an angle of up to 60o.
	4	Protection against solid objects with a diameter greater than 1mm	4	Protection against the splashing of water from any direction.
	5	Protection against the ingress of dust in such an amount that it will not interfere with the operation of the equipment	5	Protection against the water jets from any direction.
	6	Total protection against the ingress of any dust	6	Protection against powerful water jets from any direction.
	-	-	7	Protection against the ingress of water under defined conditions of pressure and time.
	-	-	8	Protection against long periods of immersion under the conditions specified by the manufacturer.

3.3 Rated parameters

Terms	Description
Rated power	The continuous operating power of the motor under specified conditions. Special duty type needs to be specified.
Rated speed	The rotational speed of the motor when it outputs the rated power at rated voltage and rated frequency.
Rated torque	The output torque of the motor when it reaches thermal steady state at rated power and rated speed.
Rated current	The current of the motor when it operates under rated conditions and reaches thermal steady state.

4 Product overview

4.1 Product features

- Comprehensive motor model: Involves 40 to 180 frame size motors, with a power range of 0.05kW to 7.5kW.
- Excellent motor performance: The motor has strong overload capacity.
- High control precision: The motor includes a 17-bit absolute encoder and a 23-bit absolute encoder.

*20-bit mechanical absolute (safety function), 23-bit mechanical absolute, and 26-bit absolute encoders are under planning.

4.2 Motor nameplate



Note: "No. 1010409" in the nameplate indicates the motor model code (motor code for short). Enter this code to the servo parameter P0.00, which is a long parameter and can be set through the keypad. For details, see Step 8 "Set long parameters (with 6 digits at least)" in "Operation flowchart" in section 5.2.1 "Display". Incorrect setting may cause abnormal running of the servo system or even a major fault to the drive and motor

4.3 Motor naming

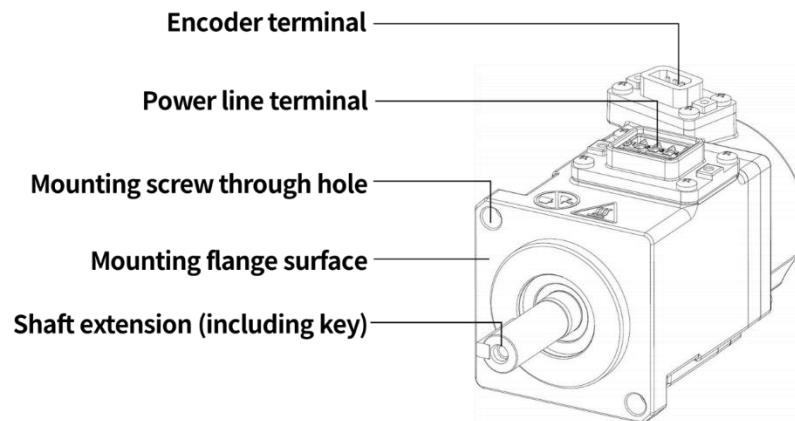
AS65 MTR 2 0C4 -A

① ② ③ ④ ⑤ ⑥

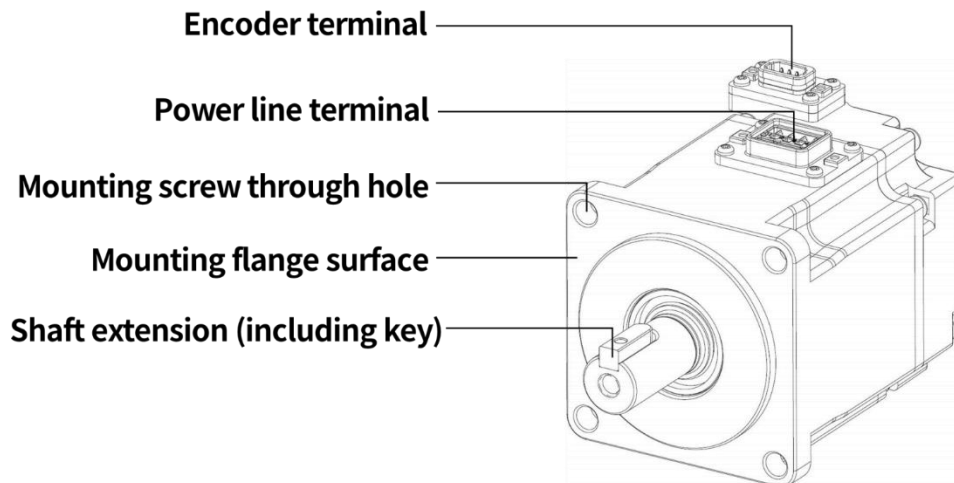
No.	Description	Example
①	Product series	AS64: SRV-64 series AS65: SRV-65 series
②	Product category	MT: servo motor
③	Brake	R: No brake B: Permanent magnet brake
④	Voltage class	2: 1 x 220VAC 4: 3 x 400VAC
⑤	Power class	C50: 50W 1C5: 1.5kW 0C1: 100W 2C0: 2kW 0C2: 200W 3C0: 3kW 0C4: 400W 4C4: 4.4kW 0C7: 750W 5C5: 5.5kW 1C0: 1kW 7C5: 7.5kW
⑦	Encoder type	A: absolute 23-bit

4.4 Product component

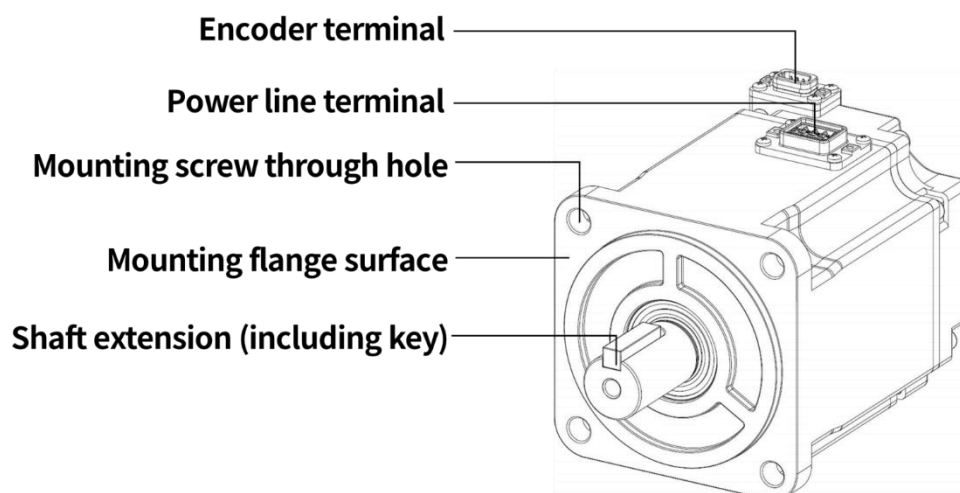
4.4.1 Components for frame size 40 motor



4.4.2 Components for frame size 60 motor

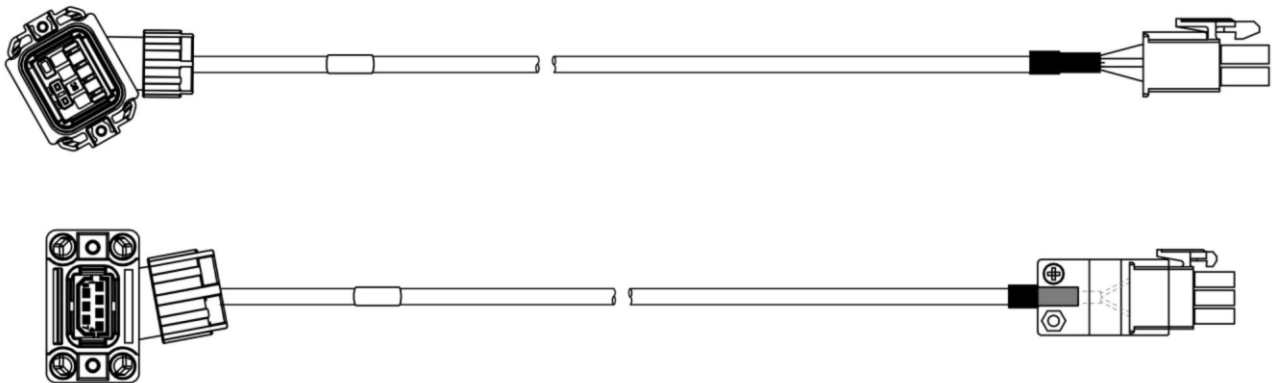


4.4.3 Components for frame size 80 motor

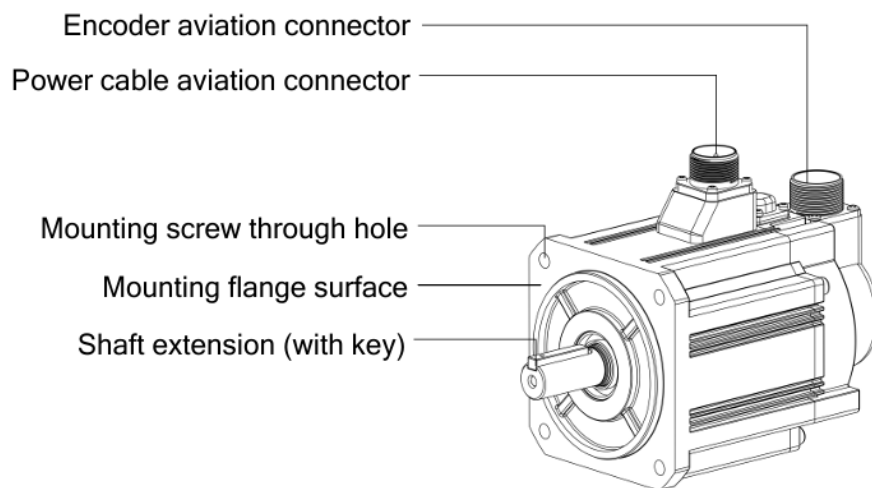


4.4.4 Terminals for frame sizes 40–80 motors

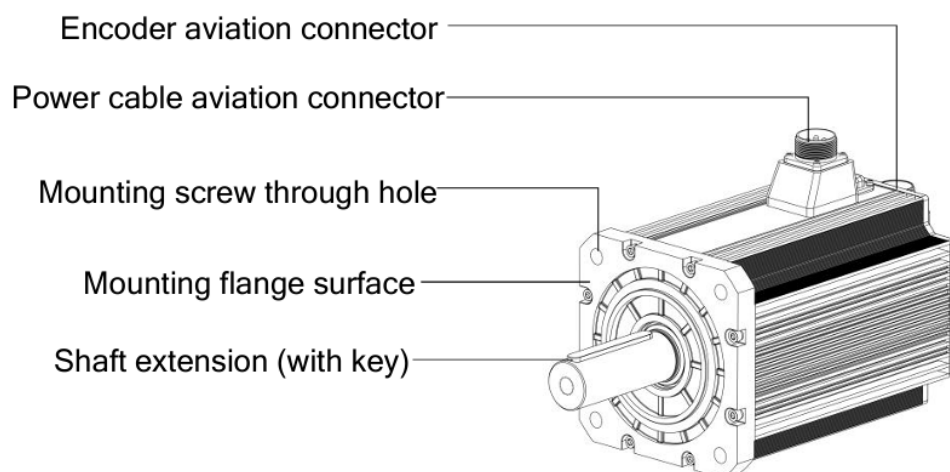
An AMP flying lead terminal block is available as an optional accessory. Its external appearance is shown in the following figure.



4.4.5 Components for frame size 130 motor



4.4.6 Components for frame size 180 motor



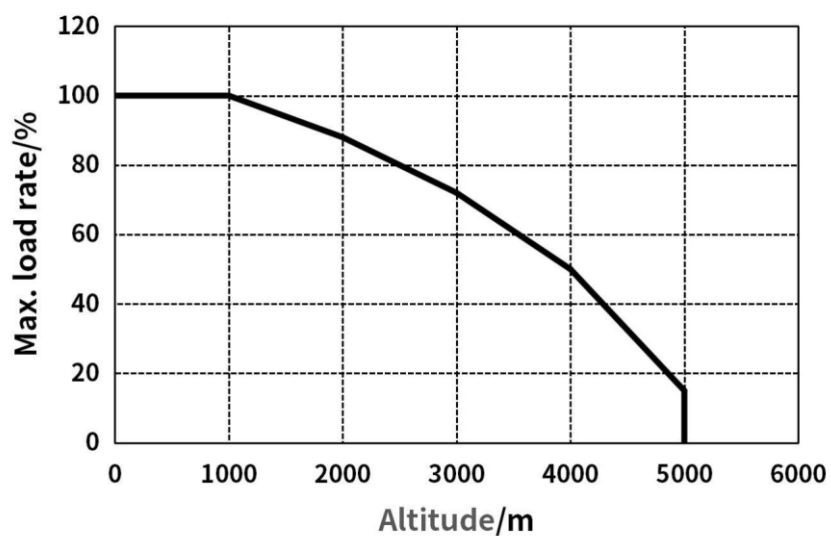
5 General specifications

5.1 Mechanical characteristics

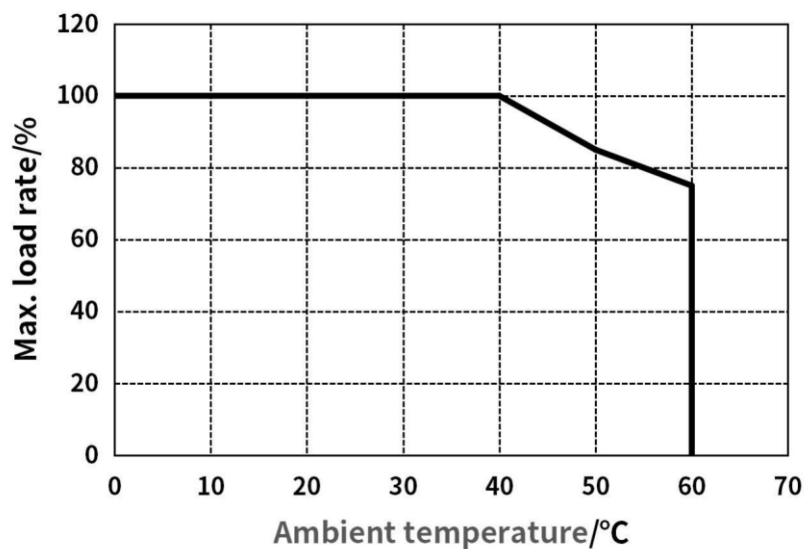
Item	Small-power servo motor
Duty	S1 continuous
Running environment temperature	-20°C–40°C
Storage temperature	-20°C–+60°C
Running environment humidity	20%–80% RH (no condensation)
Vibration	49m/s ²
Impact	490m/s ²
Exciting method	Permanent magnetic
Installation methods	IMB5 (flange-mounted)
Insulation class	F
Insulation resistance	DC500V, > 100MΩ
Insulation voltage	AC 1500V for 1 minute (220V class); AC 1800V for 1 minute (380V class)
Enclosure IP rating	Entire series meets IP67 (excluding the shaft extension).
Rotation direction	Under the forward command, the rotation appears counterclockwise (CCW) when viewed from the load side.
Altitude	Below 1000 meters. For altitudes above 1000 meters, please derate. For details, refer to the altitude derating curve.

5.2 Derating characteristics

5.2.1 Derating due to altitude

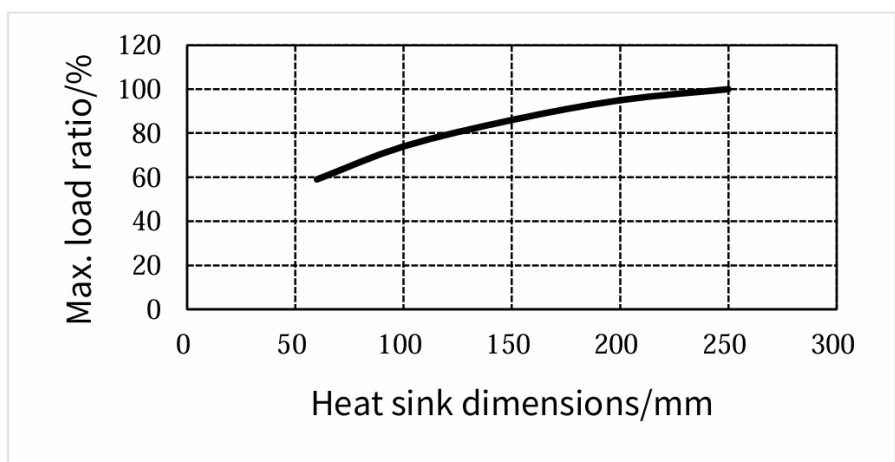


5.2.2 Derating due to temperature

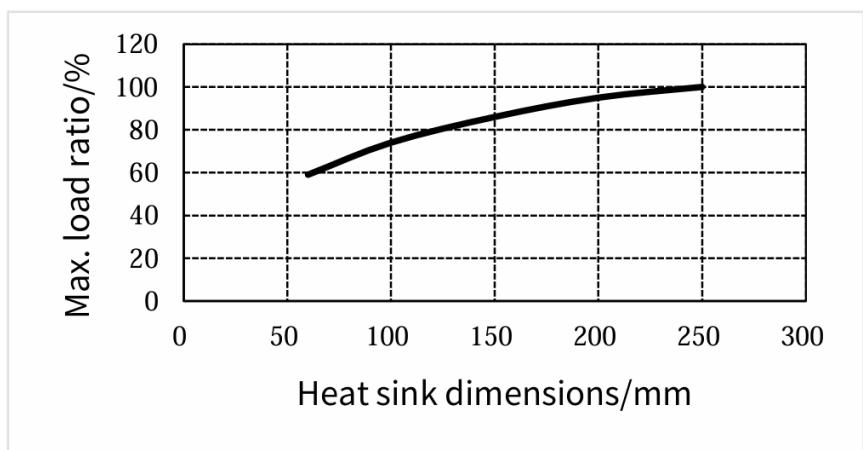


5.2.3 Derating due to heat dissipation

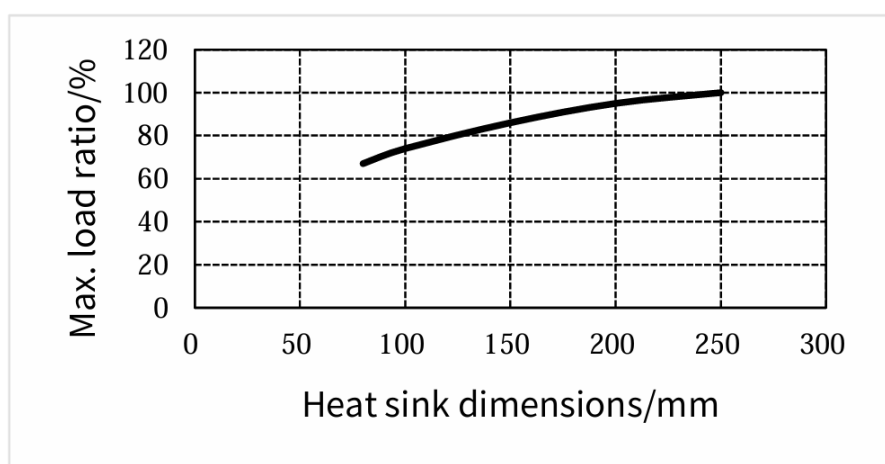
5.2.3.1 Frame size 40



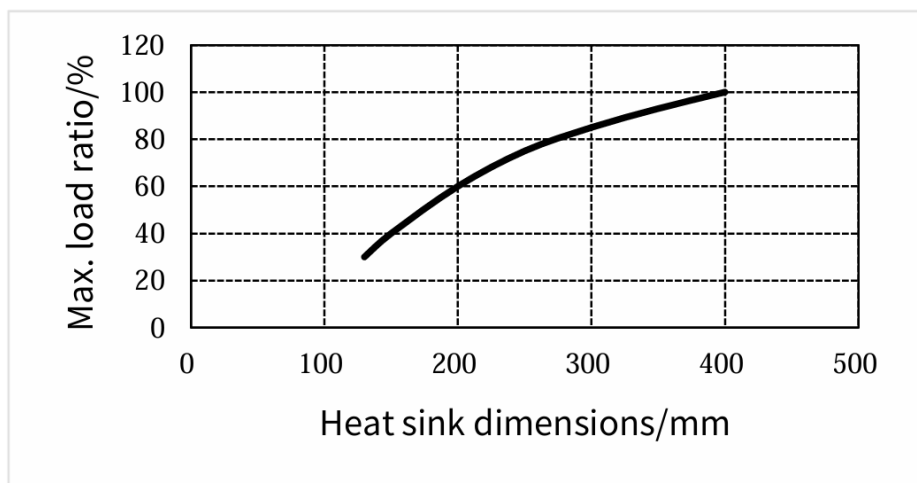
5.2.3.2 Frame size 60

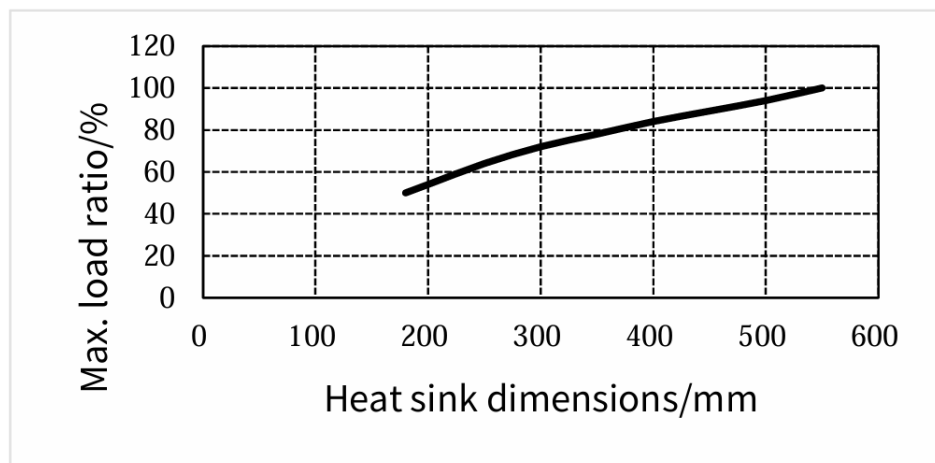


5.2.3.3 Frame size 80



5.2.3.4 Frame size 130



5.2.3.5 Frame size 180

6 Small-power servo motor

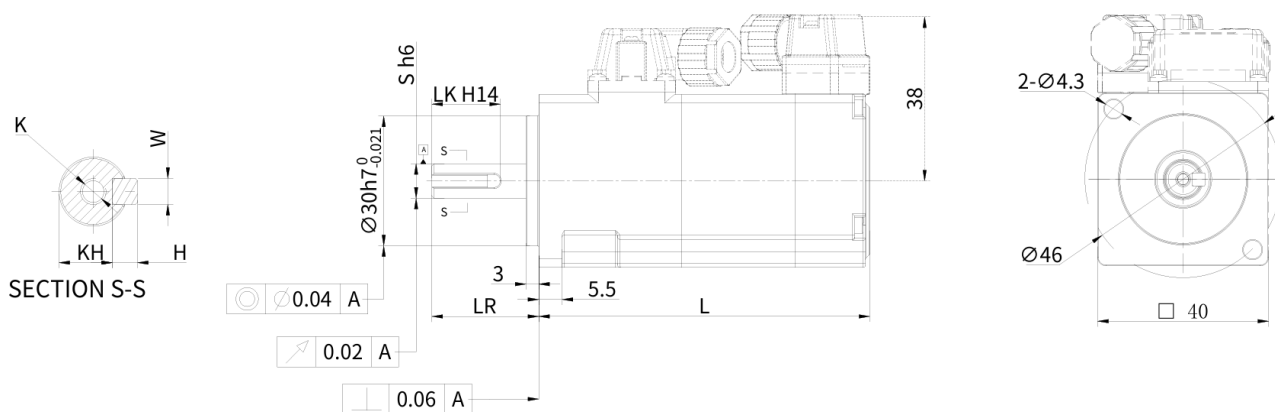
6.1 Frame size 40

6.1.1 Motor parameters and dimensions

Product model	Rated voltage (V)	Frame size (mm)	Running frequency (Hz)	Rated power (kW)	Rated torque (N·m)	Peak torque (N·m)	Rated speed (rpm)	Max. speed (rpm)	Rated current (A)	Peak current (A)	Inertia value (kg·cm ²)	Motor weight (kg)
AS65MTR2C50-A (AS65MTB2C50-A)	220	40	250	0.05	0.16	0.56	3000	7000	1.2	5.3	0.034 (0.037)	0.4 (0.45)
AS65MTR20C1-A (AS65MTB20C1-A)	220	40	250	0.1	0.32	1.12	3000	7000	1.2	4.8	0.064 (0.067)	0.5 (0.55)

 **Note:** The data in parentheses refers to the brake motor specifications.

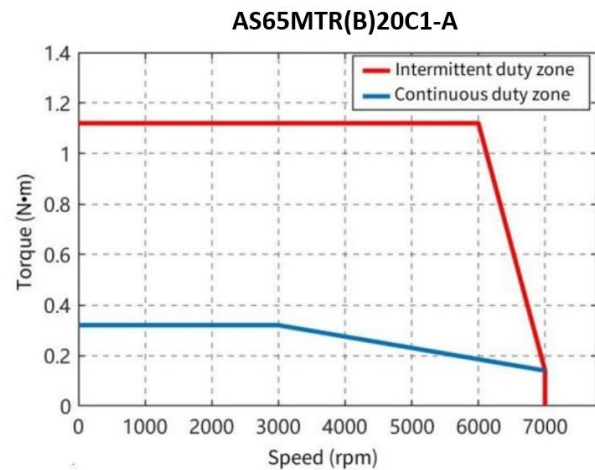
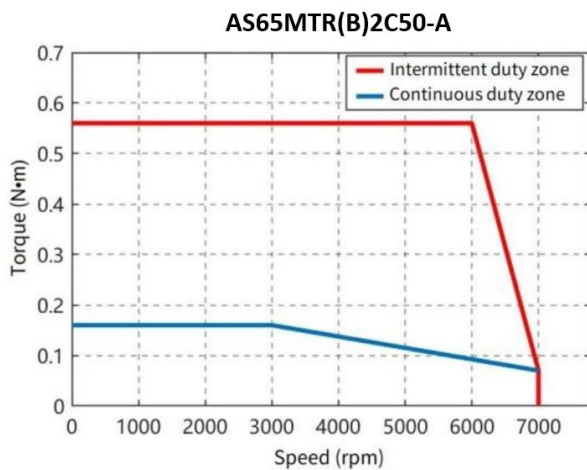
Brake parameter									Allowable load	
Holding torque (N·m)	Resistance (Ω)	Supply voltage (DC V)	Rated power (W)	Pick-up voltage (V)	Drop-out voltage (V)	Pick-up time (ms)	Drop-out time (ms)	Rotational backlash (.)	Radial allowable load (N)	Axial allowable load (N)
0.32	72±7%	24±10%	8	<16.8	>1.5	<50	<20	<1	78	54



Product model	Body length L (mm)	Shaft extension LR (mm)	Shaft diameter S (mm)	Key width W (mm)	Key length LK (mm)	Key height H (mm)	KH (mm)	Keyway K (mm)
AS65MTR2C50-A (AS65MTB2C50-A)	53.5 (77.5)	25	8	3	16	3	6.2	M3, depth 7
AS65MTR20C1-A (AS65MTB20C1-A)	66 (90)	25	8	3	16	3	6.2	M3, depth 7

 **Note:** The data in parentheses refers to the brake motor specifications.

6.1.2 External characteristic curve



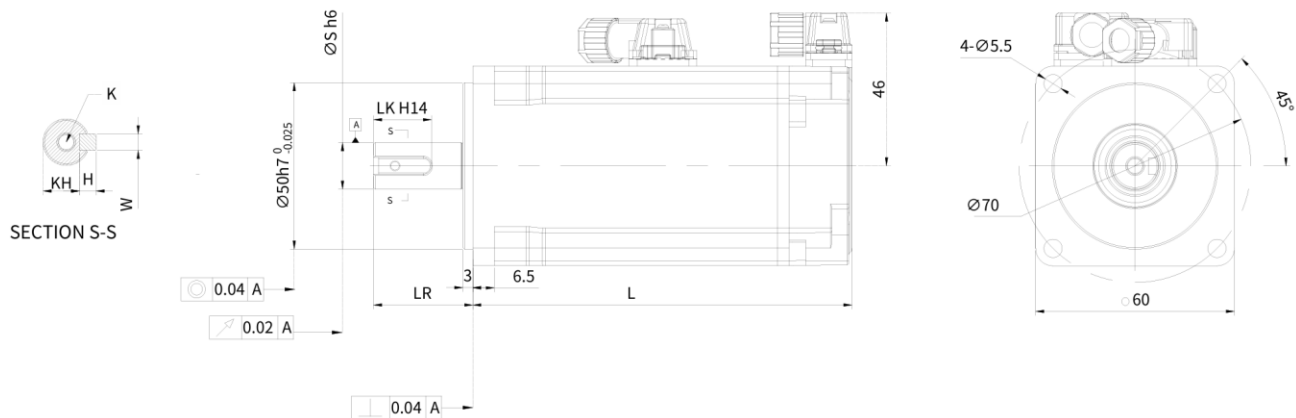
6.2 Frame size 60

6.2.1 Motor parameters and dimensions

Product model	Rated voltage (V)	Frame size (mm)	Running frequency (Hz)	Rated power (kW)	Rated torque (N · m)	Peak torque (N · m)	Rated speed (rpm)	Max. speed (rpm)	Rated current (A)	Peak current (A)	Inertia value (kg · cm ²)	Motor weight (kg)
AS65MTR20C2-A (AS65MTB20C2-A)	220	60	250	0.2	0.64	2.24	3000	7000	1.4	4.6	0.28 (0.31)	0.765 (1.03)
AS65MTR20C4-A (AS65MTB20C4-A)	220	60	250	0.4	1.27	4.45	3000	7000	1.6	5.3	0.5 (0.53)	1.135 (1.4)

 **Note:** The data in parentheses refers to the brake motor specifications.

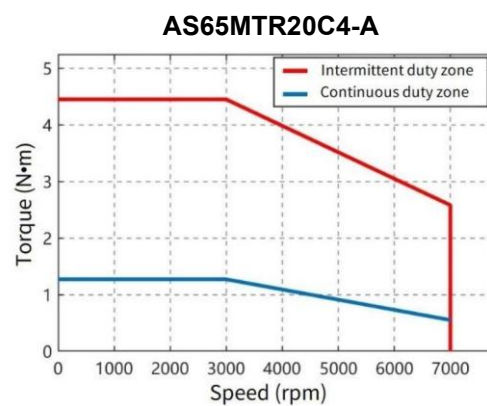
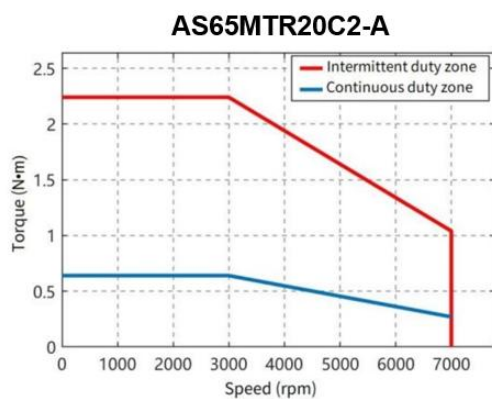
Brake parameter									Allowable load	
Holding torque (N·m)	Resistor (Ω)	Supply voltage (DCV)	Rated power (W)	Pick-up voltage (V)	Drop-out voltage (V)	Pick-up time (ms)	Drop-out time (ms)	Rotational backlash (.)	Radial allowable load (N)	Axial allowable load (N)
1.3	76.8±7%	24±10%	7.5	<16.8	0.5–8	<60	<20	<0.5	245	74



Product model	Body length L (mm)	Shaft extension LR (mm)	Shaft diameter S (mm)	Key width W (mm)	Key length LK (mm)	Key height H (mm)	KH (mm)	Keyway K (mm)
AS65MTR20C2-A (AS65MTB20C2-A)	73 (95.5)	30	14	5	17.5	5	11	M5, depth 12
AS65MTR20C4-A (AS65MTB20C4-A)	92.5 (114.5)	30	14	5	17.5	5	11	M5, depth 12

Note: The data in parentheses refers to the brake motor specifications.

6.2.2 External characteristic curve



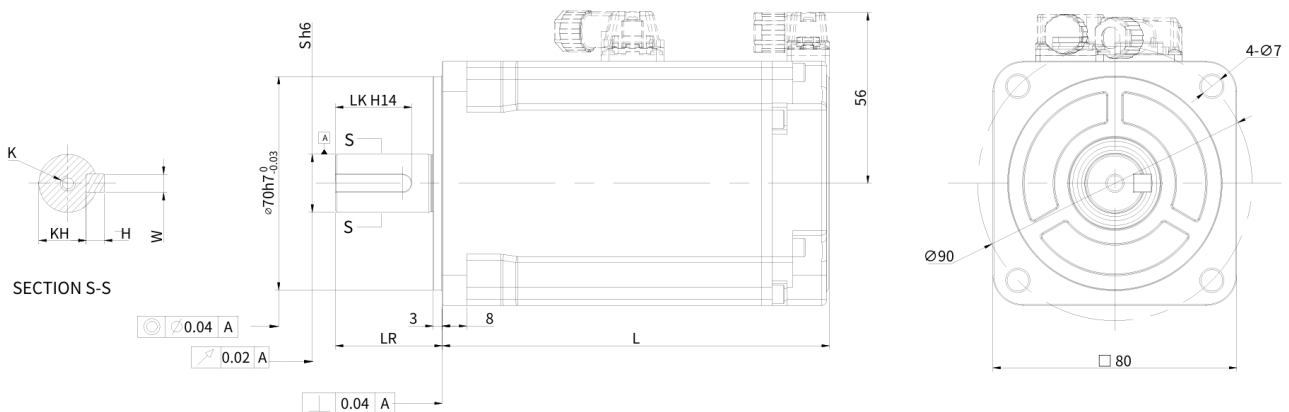
6.3 Frame size 80

6.3.1 Motor parameters and dimensions

Product model	Rated voltage (V)	Frame size (mm)	Running frequency (Hz)	Rated power (kW)	Rated torque (N·m)	Peak torque (N·m)	Rated speed (rpm)	Max. speed (rpm)	Rated current (A)	Peak current (A)	Inertia value (kg·cm ²)	Motor weight (kg)
AS65MTR20C7-A (AS65MTB20C7-A)	220	80	250	0.75	2.39	8.36	3000	7000	4.8	16	1.7 (1.74)	2.14 (2.7)
AS65MTR21C0-AS (AS65MTB21C0-AS)	220	80	250	1	3.18	11.14	3000	7000	5.5	19	2.2 (2.24)	2.62 (3.18)

 **Note:** The data in parentheses refers to the brake motor specifications.

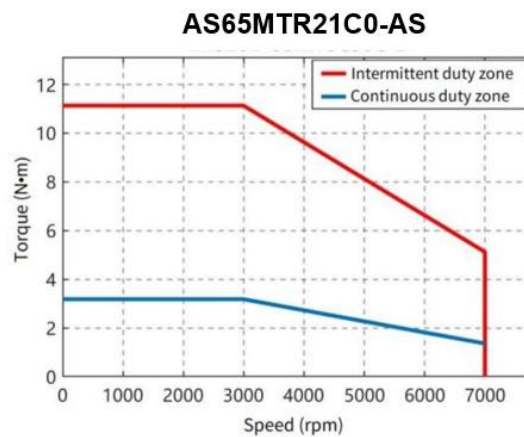
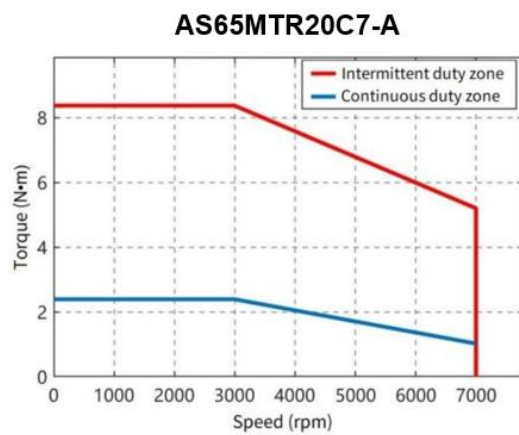
Brake parameter									Allowable load	
Holding torque (N·m)	Resistor (Ω)	Supply voltage (DCV)	Rated power (W)	Pick-up voltage (V)	Drop-out voltage (V)	Pick-up time (ms)	Drop-out time (ms)	Rotational backlash (.)	Radial allowable load (N)	Axial allowable load (N)
3.2	50±7%	24±10%	11.5	<16.8	>1.5	<60	<40	<0.5	392	147



Product model	Body length L (mm)	Shaft extension LR (mm)	Shaft diameter S (mm)	Key width W (mm)	Key length LK (mm)	Key height H (mm)	KH (mm)	Keyway K (mm)
AS65MTR20C7-A (AS65MTB20C7-A)	96.8 (127)	35	19	6	25	6	15.5	M6, depth 12
AS65MTR21C0-AS (AS65MTB21C0-AS)	110.8 (141)	35	19	6	25	6	15.5	M6, depth 12

 **Note:** The data in parentheses refers to the brake motor specifications.

6.3.2 External characteristic curv



6.4 Frame size 130

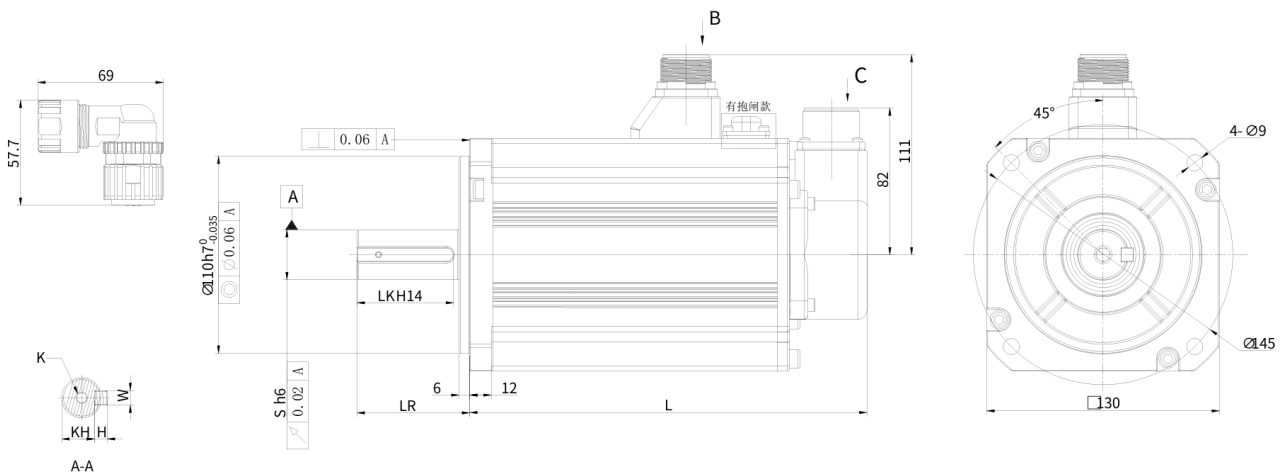
6.4.1 Motor parameters and dimensions

Product model	Rated voltage (V)	Frame size (mm)	Running frequency (Hz)	Rated power (kW)	Rated torque (N·m)	Peak torque (N·m)	Rated speed (rpm)	Max. speed (rpm)	Rated current (A)	Peak current (A)	Inertia value (kg·cm ²)	Motor weight (kg)
AS65MTR21C0-A (AS65MTB21C0-A)	220	130	167	1	4.8	14.3	2000	4500	5.4	16.9	6.3 (7.95)	4.4 (6)
AS65MTR21C5-A (AS65MTB21C5-A)	220	130	167	1.5	7.2	21.5	2000	4500	7.6	22.2	9.1 (10.8)	5.6 (7.2)
AS65MTR41C5-A (AS65MTB41C5-A)	380	130	167	1.5	7.2	21.5	2000	4500	4.8	13.4	9.1 (10.8)	5.6 (7.2)
AS65MTR22C0-A (AS65MTB22C0-A)	220	130	167	2	9.6	28.7	2000	4500	9	27.8	12.9 (14.6)	6.9 (8.5)
AS65MTR42C0-A (AS65MTB42C0-A)	380	130	167	2	9.6	28.7	2000	4500	5.6	15.9	12.9 (14.6)	6.9 (8.5)

 **Note:** The data in parentheses refers to the brake motor specifications.

Brake parameter									Allowable load	
Holding torque (N·m)	Resistor (Ω)	Supply voltage (DCV)	Rated power (W)	Pick-up voltage (V)	Drop-out voltage (V)	Pick-up time (ms)	Drop-out time (ms)	Rotational backlash (.)	Radial allowable load (N)	Axial allowable load (N)
20	25±7%	24±10%	23	<18	>1.5	<100	<40	<0.5	565 (1176)	196 (392)

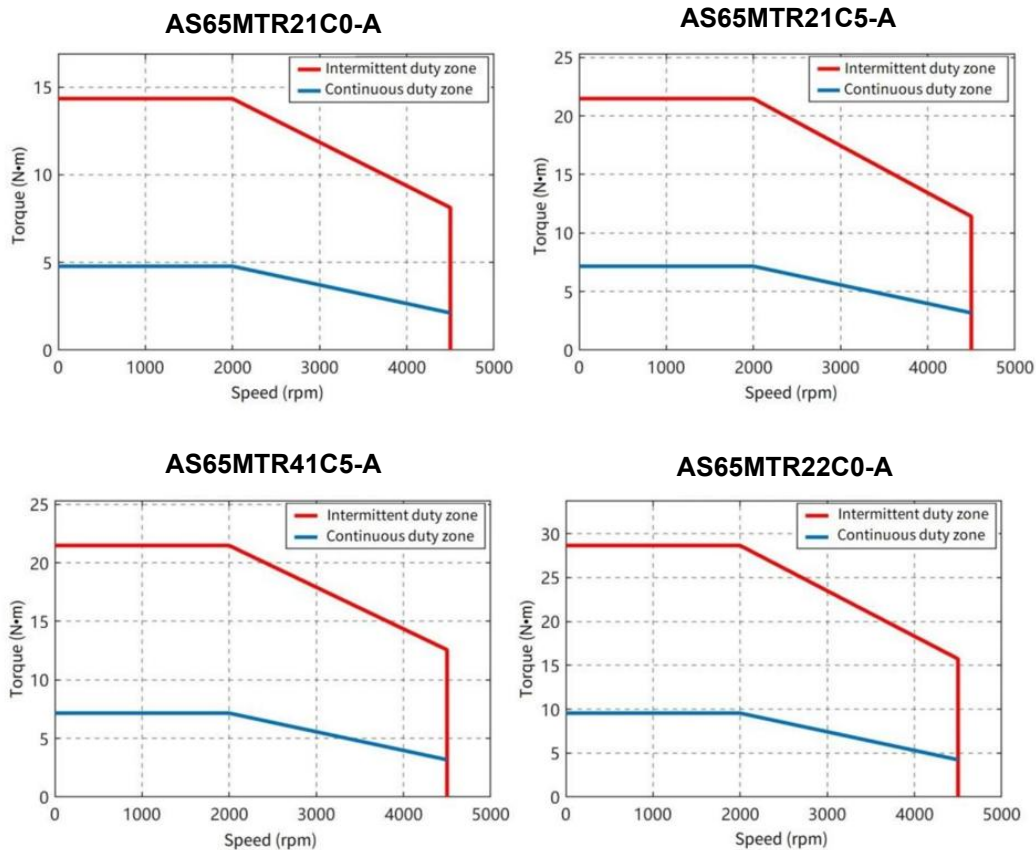
 **Note:** The data in parentheses is for motors of the IMS20B-13L series.

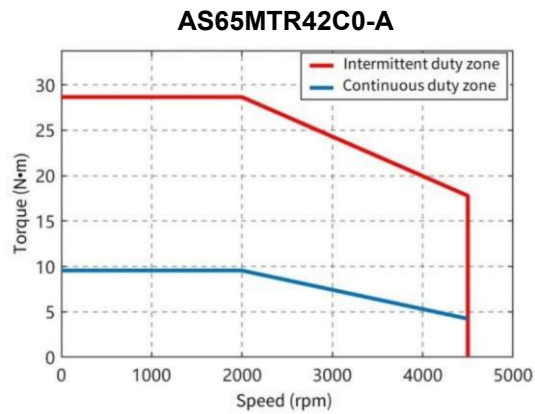


Product model	Body length L (mm)	Shaft extension LR (mm)	Shaft diameter S (mm)	Key width W (mm)	Key length LK (mm)	Key height H (mm)	KH (mm)	Keyway K (mm)
AS65MTR21C0-A (AS65MTB21C0-A)	130 (159)	55	22	8	45	7	18	M6, depth 22
AS65MTR21C5-A (AS65MTB21C5-A)	143 (172)	55	22	8	45	7	18	M6, depth 22
AS65MTR41C5-A (AS65MTB41C5-A)	143 (172)	55	22	8	45	7	18	M6, depth 22
AS65MTR22C0-A (AS65MTB22C0-A)	160 (189)	55	22	8	45	7	18	M6, depth 22
AS65MTR42C0-A (AS65MTB42C0-A)	160 (189)	55	22	8	45	7	18	M6, depth 22

 **Note:** The data in parentheses refers to the brake motor specifications.

6.4.2 External characteristic curve





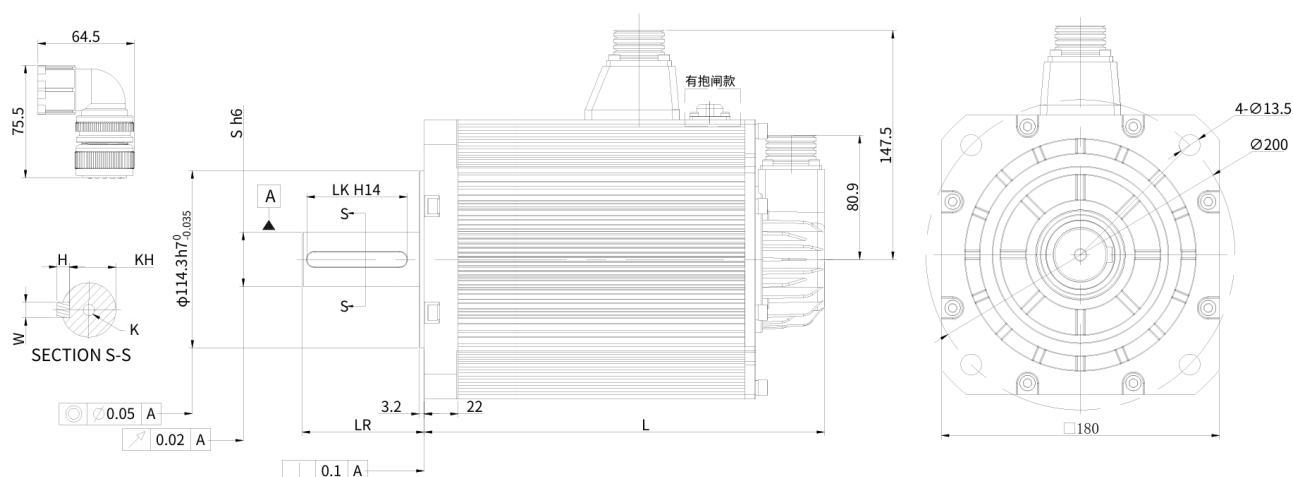
6.5 Frame size 180

6.5.1 Motor parameters and dimensions

Product model	Rated voltage (V)	Frame size (mm)	Running frequency (Hz)	Rated power (kW)	Rated torque (N·m)	Peak torque (N·m)	Rated speed (rpm)	Max. speed (rpm)	Rated current (A)	Peak current (A)	Inertia value (kg·cm ²)	Motor weight (kg)
AS65MTR43C0-A (AS65MTB43C0-A)	380	180	100	3	19.1	47.8	1500	4500	9.7	22	48.6 (49.3)	19.2 (21.2)
AS65MTR44C4-A (AS65MTB44C4-A)	380	180	100	4.4	28	70	1500	4500	13.5	29.8	65.2 (65.9)	23.2 (25.2)
AS65MTR45C5-A (AS65MTB45C5-A)	380	180	100	5.5	35	88.8	1500	4500	16.8	37.7	84 (84.7)	27.7 (29.7)
AS65MTR47C5-A (AS65MTB47C5-A)	380	180	100	7.5	47.8	119.5	1500	4500	20.9	46.4	107.4 (108.1)	34.7 (19.2)

 **Note:** The data in parentheses refers to the brake motor specifications.

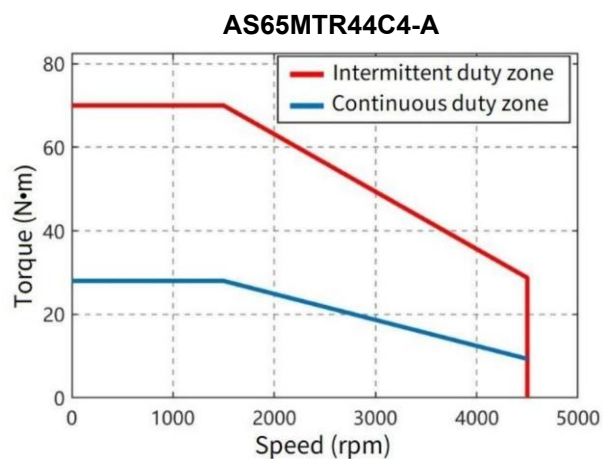
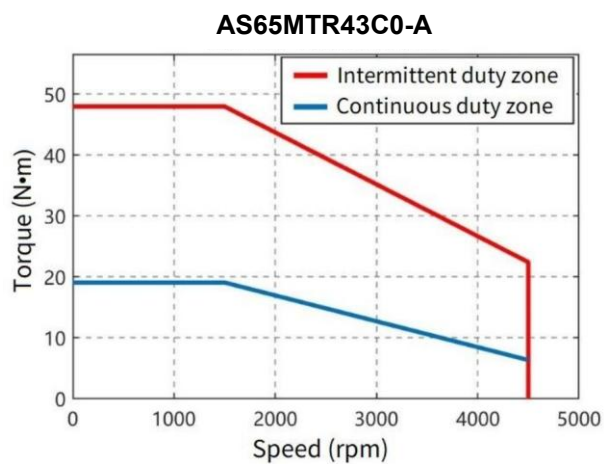
Brake parameter									Allowable load	
Holding torque (N·m)	Resistor (Ω)	Supply voltage (DC V)	Rated power (W)	Pick-up voltage (V)	Drop-out voltage (V)	Pick-up time (ms)	Drop-out time (ms)	Rotational backlash (,)	Radial allowable load (N)	Axial allowable load (N)
48	16±7%	24±10%	36	<18	>1.2	<150	<40	<1	1470	490

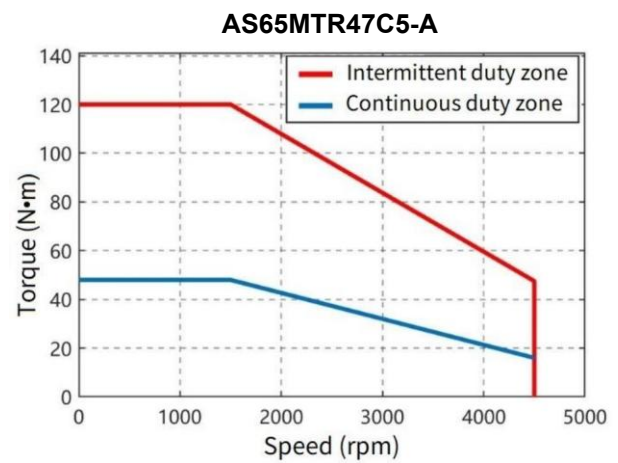
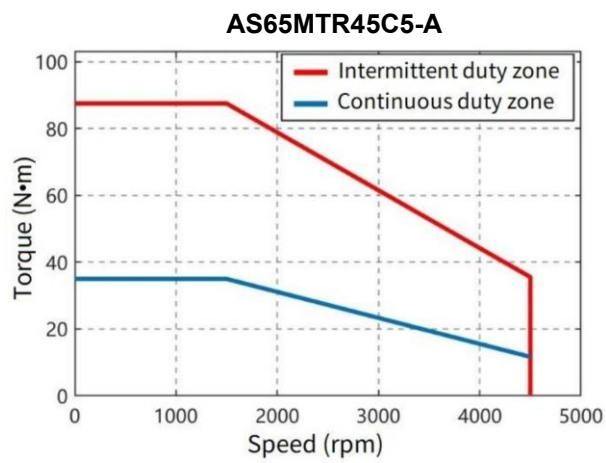


Product model	Body length L (mm)	Shaft extension LR (mm)	Shaft diameter S (mm)	Key width W (mm)	Key length LK (mm)	Key height H (mm)	KH (mm)	Keyway K (mm)
AS65MTR43C0-A (AS65MTB43C0-A)	223 (263)	79	35	10	65	8	30	M12, depth 25
AS65MTR44C4-A (AS65MTB44C4-A)	248 (288)	79	35	10	65	8	30	M12, depth 25
AS65MTR45C5-A (AS65MTB45C5-A)	273 (313)	113	42	12	98	8	37	M16, depth 32
AS65MTR47C5-A (AS65MTB47C5-A)	308 (348)	113	42	12	98	8	37	M16, depth 32

Note: The data in parentheses refers to the brake motor specifications.

6.5.2 External characteristic curve





7 Motor terminal description

7.1 40/60/80 frame terminal

Figure 7-1 Encoder terminal outline (socket specification: SC-MC7M-A60G)

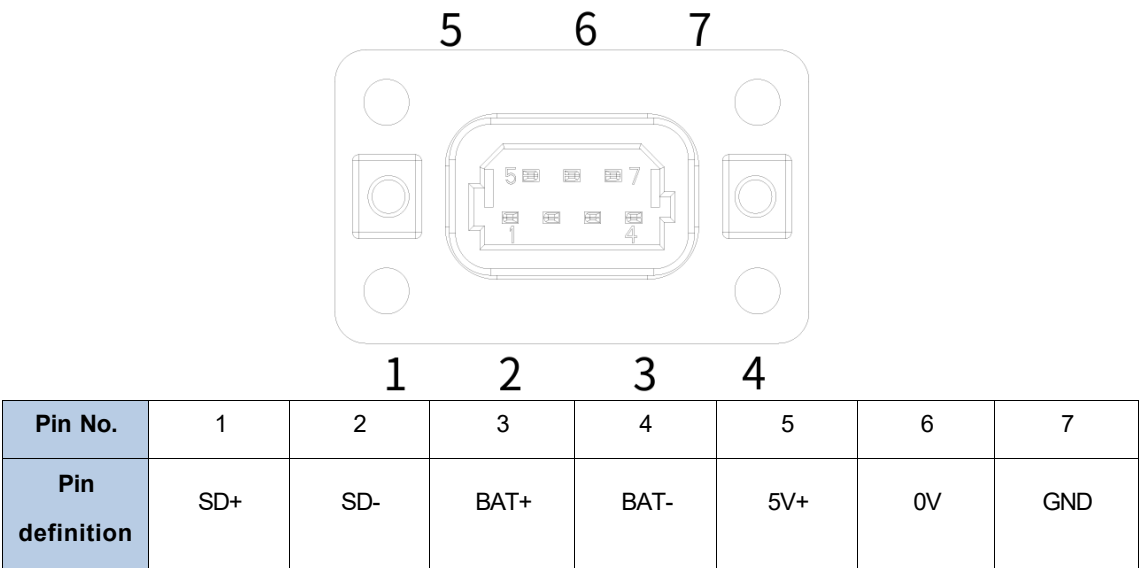


Figure 7-2 Outline of power cable terminal (with brake) (socket specification: SC-MC6P-AP2G)

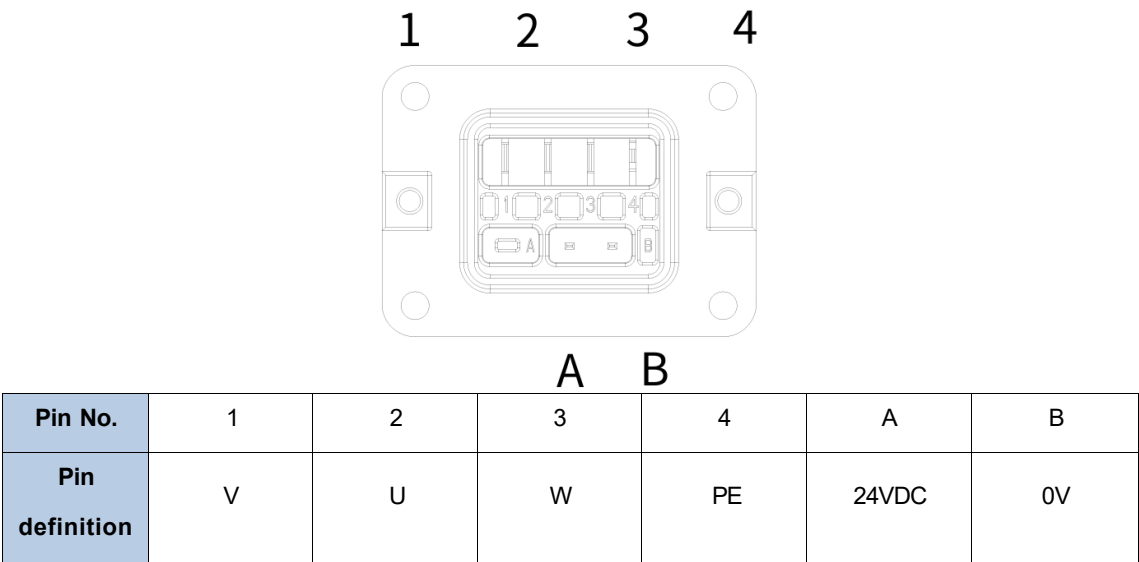
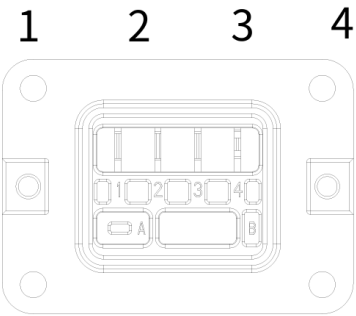


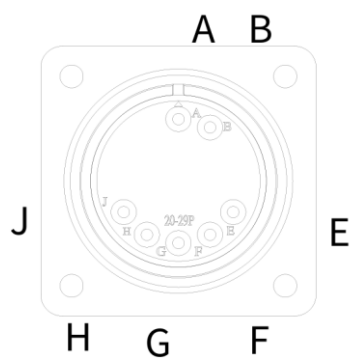
Figure 7-3 Outline of power cable terminal (without brake) (socket specification: SC-MC6P-AP2G)



Pin No.	1	2	3	4
Pin definition	V	U	W	PE

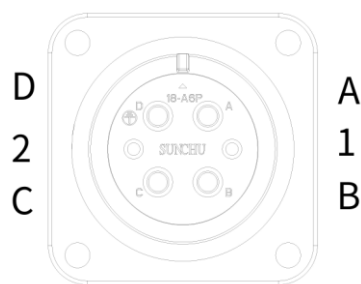
7.2 130/180 frame terminal

Figure 7-4 Outline of encoder terminals for frame sizes 100/130/180 (socket specification: CMS3102A20)



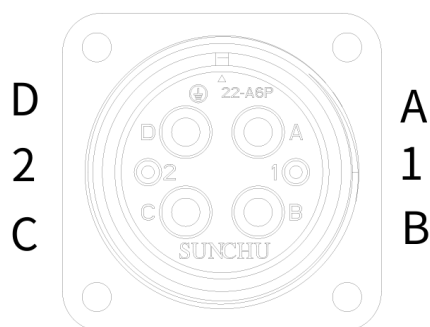
Pin No.	A	B	E	F	G	H	J
Pin definition	SD+	SD-	VB+	VB-	+5V	GND	PE

Figure 7-5 Outline of power terminal (with brake) for frame sizes 100/130 (socket specification: CMS05A18)



Pin No.	A	B	C	D	1	2
Pin definition	W	V	U	PE	24VDC	0V

Figure 7-6 Outline of power terminal (with brake) for frame size 180 (socket specification: CMS3102A22)



Pin No.	A	B	C	D	1	2
Pin definition	W	V	U	PE	24VDC	0V

8 Installation instructions

8.1 Unpacking inspection

After receiving the product, please perform the following checks to ensure the safe use of the product.

■ Inspecting the packaging

Before unpacking, check whether the product package is intact—whether the package is damaged, dampened, soaked, or deformed. After unpacking, check whether the interior surface of the packing box is abnormal, for example, in wet condition.

■ Inspecting the machine and its components

After unpacking, check whether the equipment enclosure is damaged or cracked, whether the parts inside the packing box are complete, and whether the nameplate and label on the product body are consistent with the model ordered.

8.2 Mechanical installation

8.2.1 Preparing

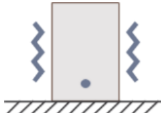
8.2.1.1 Safety instructions

Only qualified personnel who have received training are allowed to perform the tasks described in this chapter. Please read the following installation preparations carefully before proceeding with the installation to ensure a smooth process and to avoid personal injury or equipment damage.

Item	Description
	Carry out operations according to the safety instructions. Ensure the motor power has been disconnected before installation. If the motor has been powered on, disconnect the drive and wait for at least 15 minutes, and ensure the POWER indicator is off before proceeding to the next step. The motor installation must be designed and done according to applicable local laws and regulations. We do not assume any liability whatsoever for any equipment installation which breaches local laws or regulations.

8.2.1.2 Installation environment and site

■ Environment requirements

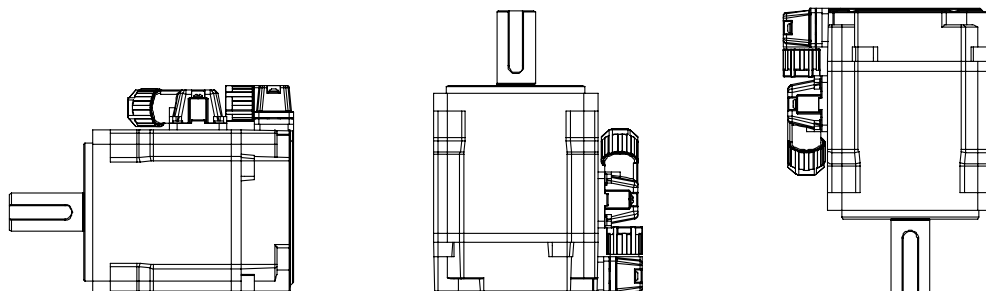
Environment	Requirement	
Temperature		- Refer to the motor mechanical characteristics description. - There is no sudden temperature change. - When the equipment is installed in a closed space, such as control cabinet, use a cooling fan or air conditioner for cooling when necessary. - When the temperature is too low, if you want to use the equipment that has been idled for a long time, install an external heating device before the use to eliminate the freeze inside the equipment. Otherwise, the equipment may be damaged.
Humidity		- See section 5.1 Mechanical characteristics. - The max. RH cannot exceed 60% in the environment with corrosive gases.
Altitude		- Lower than 1000m - When the altitude exceeds 1000m, please derate according to the altitude derating curve. - When the altitude exceeds 3000m, consult our local dealer or office for details.
Vibration		See section 5.1 Mechanical characteristics.

■ Site requirement

Site	Requirement	
Indoor		Without electromagnetic radiation sources and direct sunlight. Note: The motor must be installed in a clean and well-ventilated environment based on the housing IP rating.
		Without foreign objects such as oil mist, metal powder, conductive dust, and water.
		Without radioactive, corrosive, hazard, and combustible and explosive substances. Note: Do not install the motor onto combustible objects.

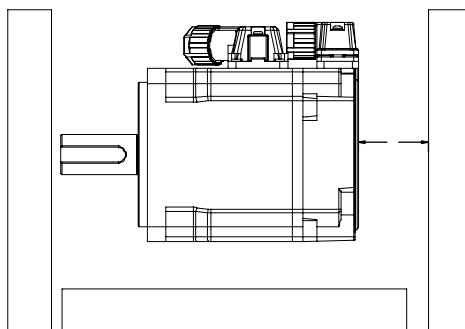
		● With low salt content.
--	---	--

8.2.2 Installation direction



Note: The motor can be mounted either horizontally or vertically. However, for vertical mounting, the bearing must face downwards. If the shaft extension is oriented upwards, there is a risk of oil ingress into the shaft seal.

8.2.3 Installation space and dimensions



Motor frame	Recommended dimensions for heat sink (mm)	A (mm)
40	250×250×8	25
60		30
80		35
100	400×400×20	35
130		55
180	550×550×30	79

Note: Please install the servo motor vertically and keep enough installation space for good ventilation and future maintenance. For on-site heat sink dimension adjustments, apply derating based on the heat sink derating curve.

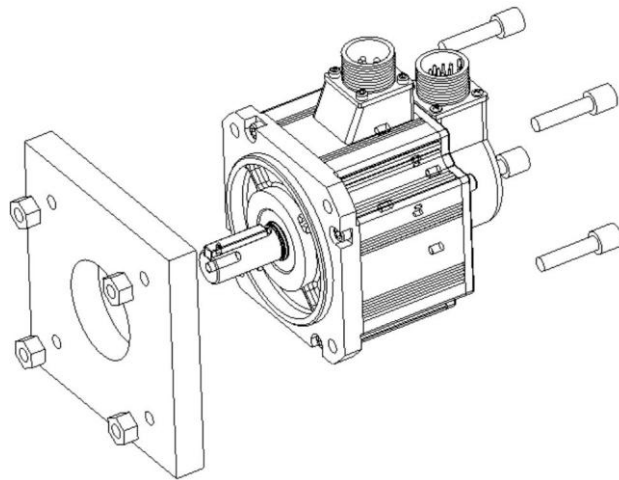
8.2.4 Mounting method

The installation procedures are as follows:

Step 1 Clear the installation area and prepare the necessary tools and components.

Step 2 Check and confirm that all components are in good condition and that the motor operates normally.

Step 3 Choose an appropriate installation method to ensure that the drive center axis is aligned and does not exceed the allowable tolerance range. Secure the motor using bolts, avoiding any striking to prevent damage.



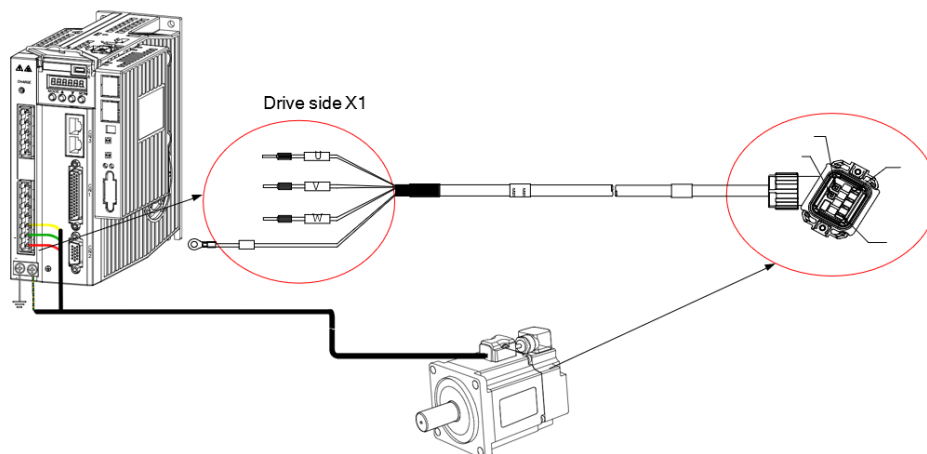
Note:

- During the handling of the motor, do not pull on the motor leads or output shaft.
- Do not strike or hammer during the motor assembly to avoid damage to the encoder or shafts.
- After installation, check each component individually, and only start trial operation after confirming that all connections are secure.
- Please wipe the slushing oil on the motor shaft before using.

8.3 Electrical installation

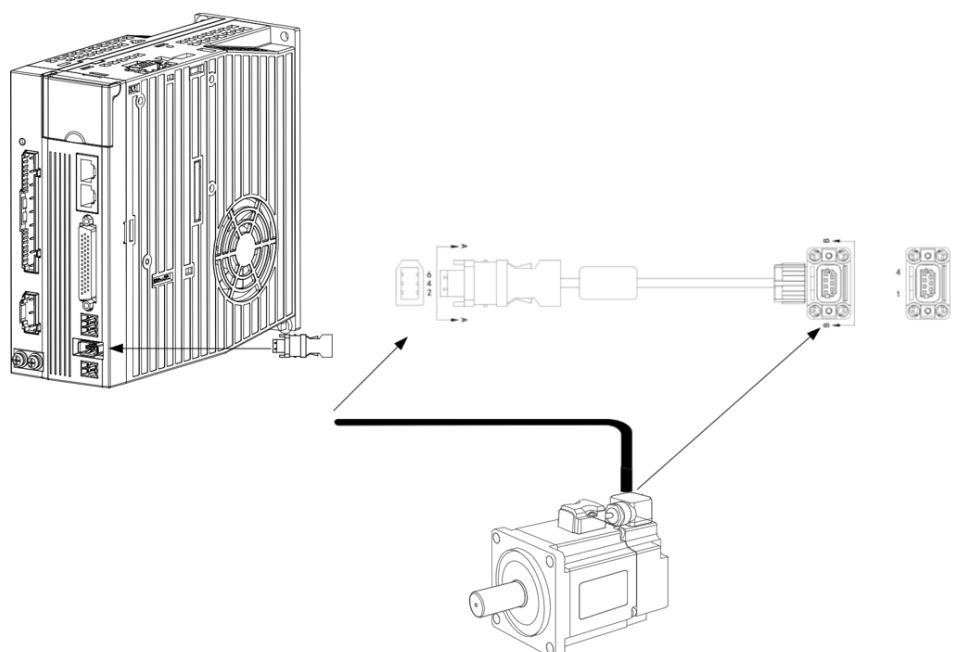
8.3.1 Connection to the drive

8.3.1.1 Direct plug-in connectio



8.3.2 Connection to the encoder

8.3.2.1 Direct plug-in connection



8.4 Check after installation

After installation, please conduct inspections in sequence according to the following table:

Check item	Content	Confirmation
Ambient environment	Ambient temperature is less than 40°C.	☐
	RH is less than 90%.	☐
	Vibration acceleration is less than 0.5G(4.9m/s ²).	☐
	No dust, corrosive gases, or oil contamination.	☐
	No tools or foreign objects (including cable ends, metal shavings, and other hazardous materials) are piled around.	☐
	No condensation or water droplets on the exterior of the machine.	☐
Mechanical parts	The motor installation location meets design and specification requirements.	☐
	The installation of the motor and the connection of shafts and mechanics are reliable.	☐
	The motor and the machines are available to run.	☐
	Do not run the motor at negative load.  Note: Negative load indicates that the direction of the output torque of the motor is contrary to the motor speed direction.	☐
Wiring parts	All wiring complies with the standard wiring shown in the installation section.	☐
	The external terminal (SON) for servo enabling is set to OFF.	☐
	The cable stress is within the designated range.	☐
	The motor is properly grounded.	☐

9 Common faults

Fault	Possible cause	Solution
Motor not operating when powered on	The power supply cable is disconnected.	Check the wiring and connect it correctly.
	The motor encoder cable is disconnected, and there is a fault in the servo drive.	Check the encoder cable and inspect the output of the servo drive.
	Motor overload prevents startup.	Reduce or remove the load, then restart.
Motor power-on overspeed	The initial angle of the encoder is not recognized.	Reinitialize the encoder initial angle.
Abnormal noise from motor	The motor current loop gain is too high and the power supply phase sequence is reversed.	Contact our technician to adjust the current loop gain value and check the power supply phase sequence.
	Poor installation of the oil seal.	Check the installation status of the oil seal or replace the oil seal.
	Friction occurring in the brake pads.	Please contact your supplier or our local technician for assistance.
	There is a foreign object inside the motor.	
	The bearing is damaged.	
Motor operation vibration	Abnormal feedback from the motor encoder.	Check whether the shielding and grounding of the motor encoder cable are in good condition.
	The motor encoder is loose.	Please contact your supplier or our local technician for assistance.
	Current loop gain mismatch.	Contact the technician to adjust the current loop gain value.
Reverse rotation direction	Incorrect motor rotation direction setting.	Check the rotation direction setting of the servo drive motor.
Slow motor acceleration	Incorrect motor acceleration time setting.	Check the acceleration time setting of the servo drive motor.
	Motor overload prevents startup.	Reduce or remove the load.
Motor overheating	The motor is operating under overload conditions.	Reduce the motor load.
	Abnormal motor heat dissipation.	Check that there are no obstructions around the motor.

Brake not responding when powered on	Brake wiring disconnection.	Check the brake connection wires.
	The brake is faulty.	Please contact ASTOR technical support personnel for assistance.
	Incorrect power supply voltage for the brake.	Check the output voltage of the brake power supply and use a compliant power supply.
Insufficient brake torque	The brake friction pads are worn out.	Replace the motor.

10 Certification categories and standards

10.1 CE certification

Certification	Standard
EMC directive 2014/30/EU	EN 61000-6-4:2019
Low voltage directive (LVD) 2014/35/EU	EN 60034-1:2010

10.2 UL certification

Certification	Standard
UL/cUL certification	UL 1004-1 UL 1004-6 CSA C22.2 No. 100

10.3 Energy efficiency certification

Certification	Standard
China Energy Efficiency Certification	GB 30253-2024

