

IMS20B Series Medium-Power Liquid-Cooled Servo Motor

User Manual



Preface

Overview

Thank you for purchasing the IMS20B series medium-power liquid-cooled servo motor.

IMS20B series medium-power liquid-cooled servo motor is a newly developed servo motor product by INVT, covering a power range of 6.4kW–90kW with frame sizes of 200 and 263. Featuring a liquid-cooled housing, it can share the cooling circuit with the host equipment. The windings feature integrated KTY84 temperature sensors to ensure stable motor thermal performance. It also offers various inertia configurations and speed ranges, and different types of encoders can be configured according to customer requirements.

This product is suitable for the general automation industry, working with servo drives to achieve fast and precise position control, speed control, and torque control.

This manual provides product information, specifications, dimensions, and other relevant details about the motor. If you have any questions, please contact our technical support.

Readers

Personnel with electrical professional knowledge (such as qualified electrical engineers or personnel with equivalent knowledge).

Change history

The manual is subject to change irregularly without prior notice due to product version upgrades or other reasons.

Version	Release date	Change description
V1.0	July 2026	First release.

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1 Safety precautions

1.1 Safety declaration

Read this manual carefully and strictly follow all safety precautions herein before moving, installing, wiring, operating and servicing the product. Failure to follow these precautions may result in personal injury, equipment damage, or even death.

We shall not be liable or responsible for any personal 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: Personnel operating this equipment must be professionally trained in electrical safety and qualified for the task. They must be familiar with the procedures and requirements for installation, commissioning, operation, and maintenance, and be capable of identifying and preventing potential hazards and emergency situations.

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 collisions and damage. - After unpacking, 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.
Transportation	
	- Ensure that the motor is securely fastened during transportation to prevent accidental dropping. - Do not transport motor products with items that could cause damage. - Before handling a large motor, check the designated lifting points and ensure that the lifting equipment is safe and reliable. - 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 installation structure is capable of supporting the weight of the equipment. ● Inspect the motor mounting holes for any abnormalities before installation. ● Do not disassemble any motor components or parts. Contact qualified personnel if modifications are required. ● When performing installation work, cover the product to prevent metal shavings and foreign objects from entering the motor, which could affect its safe operation.

Wiring	
	● Ensure that the overcurrent protector, leakage current protector and emergency device are installed. After wiring is completed, verify that all protective devices are functioning properly. ● 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 damaged cables or cables with exposed cores. ● Ensure that the drive is correctly wired to the motor.

Check before power-on	
	● Ensure that the product wiring are correct. ● Ensure that there are no personnel lingering around the drive, motor, and related equipment. ● Ensure that the parallel key is securely fixed. If the parallel key is not secured by a coupling, remove it to prevent it from flying out during motor operation.
	● Ensure that the emergency stop switch is properly connected to the drive.

Running	
	● For safety during motor trial runs, disconnect the motor from the load and perform the trial run on the motor individually. ● Do not touch conductive parts directly while in operation. ● Never 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.
	● Correctly set all relevant parameters before operation. Incorrect parameter settings may cause abnormal operation or unexpected motion due to load conditions. ● The motor housing heat sink can reach high temperatures during operation. Do not touch to prevent burns.

Maintenance and repair	
	● Non-professional personnel are strictly prohibited from performing installation, wiring, maintenance, inspection, or component replacement. ● 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	
	Internal motor components contain heavy metals. Upon decommissioning, dispose of the motor strictly in accordance with applicable national laws and regulations, and treat it 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
	High temperature on the motor surface!
	Risk of electric shock!
	Do not strike the motor shaft extension!

2 Motor model selection

Frame size	Rated power (kW)	Motor model	Encoder	Matched electro-hydraulic servo model*	Matched general AC servo model	
200	6.4	IMS20B-20M64C15C-4-R7Y-A	Resolver	MH860C-S018TF7	SV-DA200-4R4-4-XX	
	6.4	IMS20B-20M64C15C-4-P9Y-A	23-bit multi-turn optical encoder			
	6.4	IMS20B-20M64C15C-4-P94Y-A	23-bit multi-turn optical encoder			
	7.3	IMS20B-20M73C17C-4-R7Y-A	Resolver		SV-DA200-5R5-4-XX	
	7.3	IMS20B-20M73C17C-4-P94Y-A	23-bit multi-turn optical encoder			
	7.3	IMS20B-20M73C17C-4-P9Y-A	23-bit multi-turn optical encoder			
	9.4	IMS20B-20M94C20C-4-R7Y-A	Resolver			
	9.4	IMS20B-20M94C20C-4-P9Y-A	23-bit multi-turn optical encoder			
	9.4	IMS20B-20M94C20C-4-P94Y-A	23-bit multi-turn optical encoder			
	9.7	IMS20B-20M97C15C-4-R7Y-A	Resolver			
	9.7	IMS20B-20M97C15C-4-P9Y-A	23-bit multi-turn optical encoder			
	9.7	IMS20B-20M97C15C-4-P94Y-A	23-bit multi-turn optical encoder			
	11	IMS20B-20M11D17C-4-R7Y-A	Resolver	MH860C-S025TF7		SV-DA200-7R5-4-XX
	11	IMS20B-20M11D17C-4-P9Y-A	23-bit multi-turn optical encoder			
	11	IMS20B-20M11D17C-4-P94Y-A	23-bit multi-turn optical encoder			
	14.2	IMS20B-20M14D20C-4-R7Y-A	Resolver			
	14.2	IMS20B-20M14D20C-4-P9Y-A	23-bit multi-turn optical encoder			
	14.2	IMS20B-20M14D20C-4-P94Y-A	23-bit multi-turn optical encoder			
	12.9	IMS20B-20M13D15C-4-R7Y-A	Resolver			
	12.9	IMS20B-20M13D15C-4-P9Y-A	23-bit multi-turn optical encoder			
	12.9	IMS20B-20M13D15C-4-P94Y-A	23-bit multi-turn optical encoder			
	14.6	IMS20B-20M15D17C-4-R7Y-A	Resolver			
	14.6	IMS20B-20M15D17C-4-P9Y-A	23-bit multi-turn optical encoder			
	14.6	IMS20B-20M15D17C-4-P94Y-A	23-bit multi-turn optical encoder			
	18.8	IMS20B-20M19D20C-4-R7Y-A	Resolver	MH860C-S032TF7		
	18.8	IMS20B-20M19D20C-4-P9Y-A	23-bit multi-turn optical encoder			
	18.8	IMS20B-20M19D20C-4-P94Y-A	23-bit multi-turn optical encoder			

Frame size	Rated power (kW)	Motor model	Encoder	Matched electro-hydraulic servo model*	Matched general AC servo model	
200	16.2	IMS20B-20M16D15C-4-R7Y-A	Resolver	MH860C-S032TF7	SV-DA200-7R5-4-XX	
	16.2	IMS20B-20M16D15C-4-P9Y-A	23-bit multi-turn optical encoder			
	16.2	IMS20B-20M16D15C-4-P94Y-A	23-bit multi-turn optical encoder			
	18.3	IMS20B-20M18D17C-4-R7Y-A	Resolver			
	18.3	IMS20B-20M18D17C-4-P9Y-A	23-bit multi-turn optical encoder			
	18.3	IMS20B-20M18D17C-4-P94Y-A	23-bit multi-turn optical encoder			
	22.6	IMS20B-20M23D20C-4-R7Y-A	Resolver	MH860C-S045TF7	SV-DA200-011-4-XX	
	22.6	IMS20B-20M23D20C-4-P9Y-A	23-bit multi-turn optical encoder			
	22.6	IMS20B-20M23D20C-4-P94Y-A	23-bit multi-turn optical encoder			
	19.3	IMS20B-20M19D15C-4-R7Y-A	Resolver	MH860C-S038TF7		
	19.3	IMS20B-20M19D15C-4-P9Y-A	23-bit multi-turn optical encoder			
	19.3	IMS20B-20M19D15C-4-P94Y-A	23-bit multi-turn optical encoder			
	21.9	IMS20B-20M22D17C-4-R7Y-A	Resolver			
	21.9	IMS20B-20M22D17C-4-P9Y-A	23-bit multi-turn optical encoder			
	21.9	IMS20B-20M22D17C-4-P94Y-A	23-bit multi-turn optical encoder			
	26.4	IMS20B-20M26D20C-4-R7Y-A	Resolver	MH860C-S060TF7		SV-DA200-015-4-XX
	26.4	IMS20B-20M26D20C-4-P9Y-A	23-bit multi-turn optical encoder			
	26.4	IMS20B-20M26D20C-4-P94Y-A	23-bit multi-turn optical encoder			
	22.6	IMS20B-20M23D15C-4-R7Y-A	Resolver	MH860C-S045TF7	SV-DA200-011-4-XX	
	22.6	IMS20B-20M23D15C-4-P9Y-A	23-bit multi-turn optical encoder			
	22.6	IMS20B-20M23D15C-4-P94Y-A	23-bit multi-turn optical encoder			
	25.6	IMS20B-20M26D17C-4-R7Y-A	Resolver		SV-DA200-015-4-XX	
	25.6	IMS20B-20M26D17C-4-P9Y-A	23-bit multi-turn optical encoder			
	25.6	IMS20B-20M26D17C-4-P94Y-A	23-bit multi-turn optical encoder			
	32	IMS20B-20M32D20C-4-R7Y-A	Resolver	MH860C-S060TF7		
	32	IMS20B-20M32D20C-4-P9Y-A	23-bit multi-turn optical encoder			
	32	IMS20B-20M32D20C-4-P94Y-A	23-bit multi-turn optical encoder			
	25.8	IMS20B-20M26D15C-4-R7Y-A	Resolver	MH860C-S045TF7		
25.8	IMS20B-20M26D15C-4-P9Y-A	23-bit multi-turn optical encoder				
29.2	IMS20B-20M29D17C-4-R7Y-A	Resolver	MH860C-S060TF7			
29.2	IMS20B-20M29D17C-4-P9Y-A	23-bit multi-turn optical encoder				

Frame size	Rated power (kW)	Motor model	Encoder	Matched electro-hydraulic servo model*	Matched general AC servo model
200	35.8	IMS20B-20M36D20C-4-R7Y-A	Resolver	MH860C-S075TF7	SV-DA200-015-4-XX
	35.8	IMS20B-20M36D20C-4-P9Y-A	23-bit multi-turn optical encoder		
263	28.3	IMS20B-26M28D15C-4-R7Y-A	Resolver	MH860C-S060TF7	SV-DA200-015-4-XX
	28.3	IMS20B-26M28D15C-4-P9Y-A	23-bit multi-turn optical encoder		
	28.3	IMS20B-26M28D15C-4-P94Y-A	23-bit multi-turn optical encoder		
	32.0	IMS20B-26M32D17C-4-R7Y-A	Resolver		
	32.0	IMS20B-26M32D17C-4-P9Y-A	23-bit multi-turn optical encoder		
	32.0	IMS20B-26M32D17C-4-P94Y-A	23-bit multi-turn optical encoder		
	44.0	IMS20B-26M44D20C-4-R7Y-A	Resolver	MH860C-S092TF7	SV-DA200-022-4-XX
	44.0	IMS20B-26M44D20C-4-P9Y-A	23-bit multi-turn optical encoder		
	44.0	IMS20B-26M44D20C-4-P94Y-A	23-bit multi-turn optical encoder		
	35.3	IMS20B-26M35D15C-4-R7Y-A	Resolver	MH860C-S075TF7	SV-DA200-015-4-XX
	35.3	IMS20B-26M35D15C-4-P9Y-A	23-bit multi-turn optical encoder		
	40.1	IMS20B-26M40D17C-4-R7Y-A	Resolver		SV-DA200-022-4-XX
	40.1	IMS20B-26M40D17C-4-P9Y-A	23-bit multi-turn optical encoder		
	53.4	IMS20B-26M53D20C-4-R7Y-A	Resolver	MH860C-S092TF7	
	53.4	IMS20B-26M53D20C-4-P9Y-A	23-bit multi-turn optical encoder		
	40.1	IMS20B-26M40D15C-4-R7Y-A	Resolver	MH860C-S075TF7	
	40.1	IMS20B-26M40D15C-4-P9Y-A	23-bit multi-turn optical encoder		
	45.4	IMS20B-26M45D17C-4-R7Y-A	Resolver	MH860C-S092TF7	
	45.4	IMS20B-26M45D17C-4-P9Y-A	23-bit multi-turn optical encoder		
	59.7	IMS20B-26M60D20C-4-R7Y-A	Resolver	MH860C-S115TF7	SV-DA200-037-4-XX
	59.7	IMS20B-26M60D20C-4-P9Y-A	23-bit multi-turn optical encoder		
	45.5	IMS20B-26M46D15C-4-R7Y-A	Resolver	MH860C-S092TF7	SV-DA200-022-4-XX
	45.5	IMS20B-26M46D15C-4-P9Y-A	23-bit multi-turn optical encoder		
	51.6	IMS20B-26M52D17C-4-R7Y-A	Resolver		
	51.6	IMS20B-26M52D17C-4-P9Y-A	23-bit multi-turn optical encoder		
	67.0	IMS20B-26M67D20C-4-R7Y-A	Resolver	MH860C-S115TF7	SV-DA200-037-4-XX
	67.0	IMS20B-26M67D20C-4-P9Y-A	23-bit multi-turn optical encoder		
	51.0	IMS20B-26M51D15C-4-R7Y-A	Resolver	MH860C-S092TF7	SV-DA200-022-4-XX
	51.0	IMS20B-26M51D15C-4-P9Y-A	23-bit multi-turn optical encoder		
	57.9	IMS20B-26M58D17C-4-R7Y-A	Resolver	MH860C-S115TF7	SV-DA200-037-4-XX
	57.9	IMS20B-26M58D17C-4-P9Y-A	23-bit multi-turn optical encoder		

Frame size	Rated power (kW)	Motor model	Encoder	Matched electro-hydraulic servo model*	Matched general AC servo model
263	75.4	IMS20B-26M75D20C-4-R7Y-A	Resolver	MH860C-S150TF7	SV-DA200-045-4-XX
	75.4	IMS20B-26M75D20C-4-P9Y-A	23-bit multi-turn optical encoder		
	55.8	IMS20B-26M56D15C-4-R7Y-A	Resolver	MH860C-S115TF7	SV-DA200-037-4-XX
	55.8	IMS20B-26M56D15C-4-P9Y-A	23-bit multi-turn optical encoder		
	63.2	IMS20B-26M63D17C-4-R7Y-A	Resolver		
	63.2	IMS20B-26M63D17C-4-P9Y-A	23-bit multi-turn optical encoder		
	83.8	IMS20B-26M84D20C-4-R7Y-A	Resolver	MH860C-S150TF7	SV-DA200-045-4-XX
	83.8	IMS20B-26M84D20C-4-P9Y-A	23-bit multi-turn optical encoder		
	61.3	IMS20B-26M61D15C-4-R7Y-A	Resolver	MH860C-S115TF7	SV-DA200-037-4-XX
	61.3	IMS20B-26M61D15C-4-P9Y-A	23-bit multi-turn optical encoder		
	69.4	IMS20B-26M69D17C-4-R7Y-A	Resolver	MH860C-S150TF7	SV-DA200-045-4-XX
	69.4	IMS20B-26M69D17C-4-P9Y-A	23-bit multi-turn optical encoder		
	90.1	IMS20B-26M90D20C-4-R7Y-A	Resolver		SV-DA200-055-4-XX
	90.1	IMS20B-26M90D20C-4-P9Y-A	23-bit multi-turn optical encoder		

 **Note:** When selecting a 23-bit multi-turn optical encoder for an electro-hydraulic servo system, an additional optical encoder PG card must be optioned.

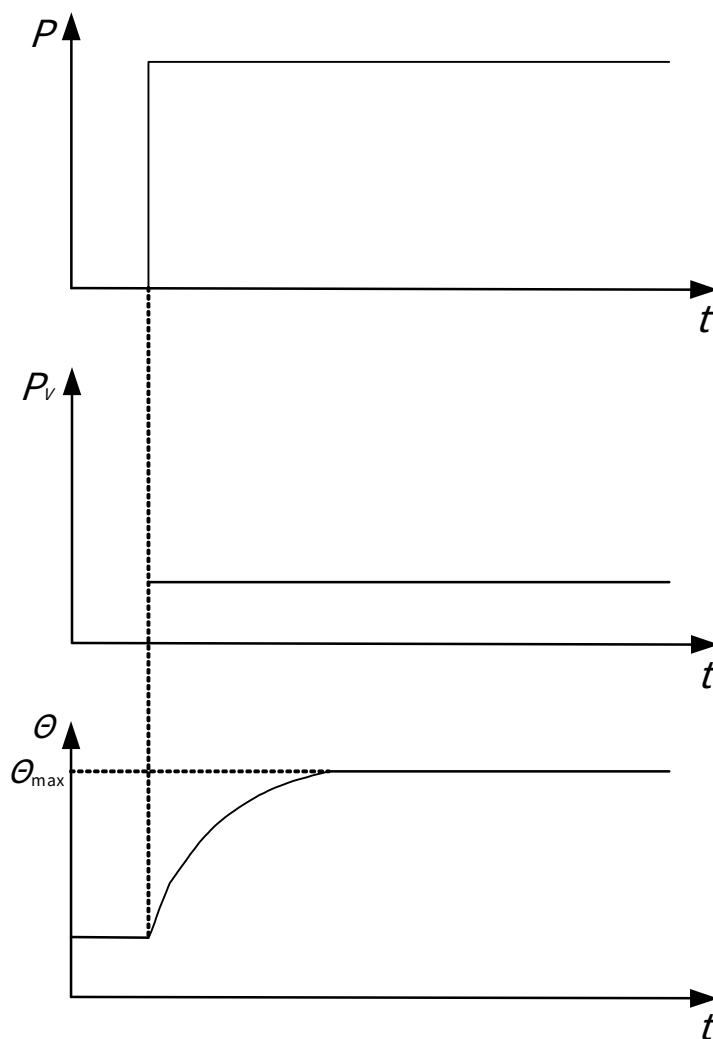
3 Common terms

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:

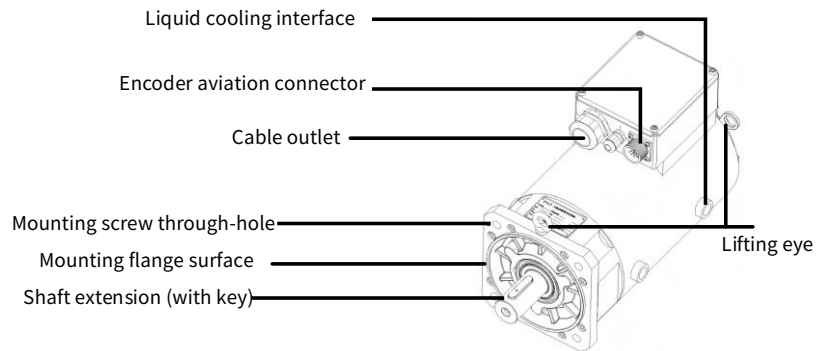
- IP (Ingress Protection): Letter code representing the degree of protection against the contact and ingress of solid foreign objects and water.
- First digit: 0 to 6, indicates the level of protection provided by the enclosure against contact with persons and against ingress of solid objects inside 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	Digit 1	Meaning	Digit 2	Meaning
IP	0	No protection at all	0	No protection at all
	1	Protection against solid objects with a diameter greater than 50 mm	1	Protection against vertical water drops
	2	Protection against solid objects with a diameter greater than 12 mm	2	Protection against vertical water drops at an angle of up to 15°
	3	Protection against solid objects with a diameter greater than 2.5 mm	3	Protection against sprayed water at an angle of up to 60°
	4	Protection against solid objects with a diameter greater than 1 mm	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.

4.3 Product component (frame sizes 200 and 263)



5 General specifications

5.1 Mechanical characteristics

Item	Medium-power liquid-cooled servo motor
Duty	S1 continuous
Operating ambient temperature	-20°C–40°C (no freezing)
Storage temperature	-20°C–+60°C
Operating ambient humidity	20%–90% RH (no condensation)
Vibration resistance	25 m/s ²
Shock resistance	50 m/s ²
Excitation type	Permanent magnetic
Mounting method	IMB5
Insulation class	F
Insulation resistance	DC500 V, > 100 MΩ
Insulation voltage	AC 1800 V for 1 minute
Enclosure IP rating	IP55 (excluding shaft extension and cable ends)
Rotation direction	Counter-Clockwise (CCW) viewed from the load side under forward command
Altitude	Recommended altitude: Below 1000 m

5.2 Cooling method

Item	Medium-power liquid-cooled servo motor
Coolant	Hydraulic oil / distilled water
Recommended flow rate	Frame 200: 20 L/min Frame 263: 25 L/min
Coolant inlet temperature	≤40°C

6 Medium-power liquid-cooled servo motor

6.1 200-frame

6.1.1 Motor parameters

Model	Unit	IMS20B-20M*****-4-****-A								
		64C15C	73C17C	94C20C	97C15C	11D17C	14D20C	13D15C	15D17C	19D20C
Rated voltage	V	380								
Rated speed	rpm	1500	1700	2000	1500	1700	2000	1500	1700	2000
Rated power	kW	6.4	7.3	9.4	9.7	11	14.2	12.9	14.6	18.8
Rated frequency	Hz	100	113.3	133.3	100	113.3	133.3	100	113.3	133.3
Rated current	A	12.5	14.1	18.2	19.3	20.8	26.3	22.2	26.5	33.6
Rated torque	N · m	41	41	45	62	62	68	82	82	90
Peak torque at 0.5× rated speed	N · m	102	100	100	152	150	150	207	200	200
Peak current at 0.5× rated speed	A	30	33.4	34.6	38.5	43.8	52	52.5	59.5	68.5
Peak torque at rated speed	N · m	67	64	64	94	101	101	143	143	143
Peak current at rated speed	A	22.8	27.7	29.5	30	37.1	44.6	42	50.9	60.1
Peak speed	rpm	2500	2700	3000	2500	2700	3000	2500	2700	3000
Peak torque at peak speed	N · m	38	39	43	44	63	72	83	85	87
Peak current at peak speed	A	19.2	22.3	25.1	28.4	34.1	39.2	42	45.4	55.9
Torque constant	N · m/A	3.28	2.91	2.47	3.21	2.98	2.59	3.69	3.09	2.68
Line resistance	Ω	2.69	2.01	1.58	1.66	1.13	0.93	1.08	0.81	0.57
Back-emf constant	V/krpm	250.9	224	199.9	279.6	237.7	205	279.8	242.5	203.6
Rotation inertia	kg · cm ²	52 (64)	52 (64)	52 (64)	73 (85)	73 (85)	73 (85)	94 (106)	94 (106)	94 (106)
Motor weight	kg	38 (50)	38 (50)	38 (50)	43 (55)	43 (55)	43 (55)	48 (60)	48 (60)	48 (60)
Radial allowable load	N	1200								
Axial allowable load	N	250								

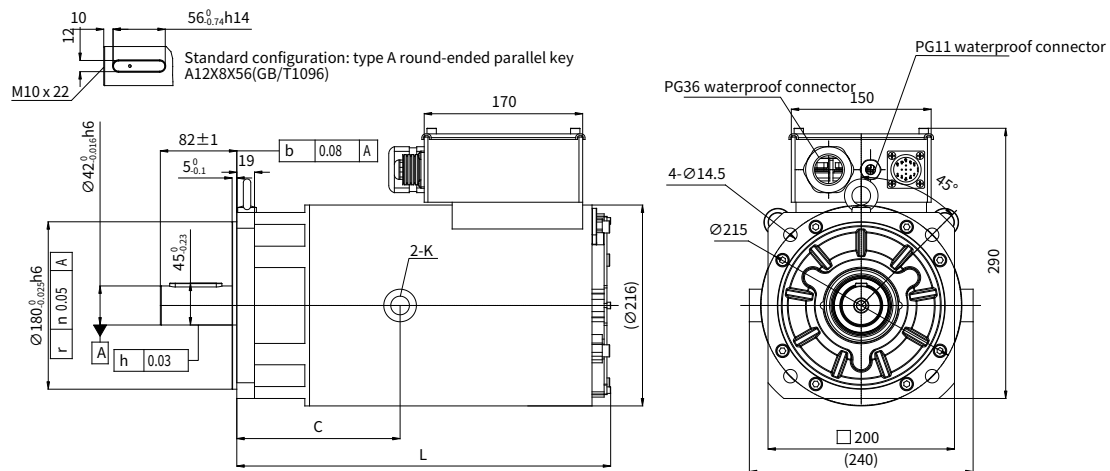
Model	Unit	IMS20B-20M*****-4-****-A								
		16D15C	18D17C	23D20C	19D15C	22D17C	26D20C	23D15C	26D17C	32D20C
Rated voltage	V	380								
Rated speed	rpm	1500	1700	2000	1500	1700	2000	1500	1700	2000
Rated power	kW	16.2	18.3	22.6	19.3	21.9	26.4	22.6	25.6	32
Rated frequency	Hz	100	113.3	133.3	100	113.3	133.3	100	113.3	133.3
Rated current	A	30.7	32.8	41.7	35.3	39.4	49.2	41.8	46	59.6

Model	Unit	IMS20B-20M*****-4-****-A								
		16D15C	18D17C	23D20C	19D15C	22D17C	26D20C	23D15C	26D17C	32D20C
Rated torque	N · m	103	103	108	123	123	126	144	144	153
Peak torque at 0.5× rated speed	N · m	260	250	250	308	300	300	374	350	350
Peak current at 0.5× rated speed	A	66.2	72.7	86	77.9	84.4	103	92.9	100.7	114.2
Peak torque at rated speed	N · m	165	173	174	207	226	203	245	256	235
Peak current at rated speed	A	50.4	60.1	72.1	60	74.5	84.2	72.1	89.1	95
Peak speed	rpm	2500	2700	3000	2500	2700	3000	2500	2700	3000
Peak torque at peak speed	N · m	92	104	108	116	138	125	85	155	158
Peak current at peak speed	A	50.4	60.1	71.5	59.8	73.4	83.7	71.8	84	95
Torque constant	N · m/A	3.36	3.14	2.59	3.48	3.12	2.56	3.44	3.13	2.57
Line resistance	Ω	0.8	0.61	0.45	0.62	0.45	0.35	0.49	0.38	0.29
Back-emf constant	V/krpm	266.6	233.3	209.8	279.9	237.9	206	272	240	207
Rotation inertia	kg · cm ²	115 (127)	115 (127)	115 (127)	135 (147)	135 (147)	135 (147)	156 (168)	156 (168)	156 (168)
Motor weight	kg	53 (65)	53 (65)	53 (65)	58 (70)	58 (70)	58 (70)	63 (75)	63 (75)	63 (75)
Radial allowable load	N	1200								
Axial allowable load	N	250								

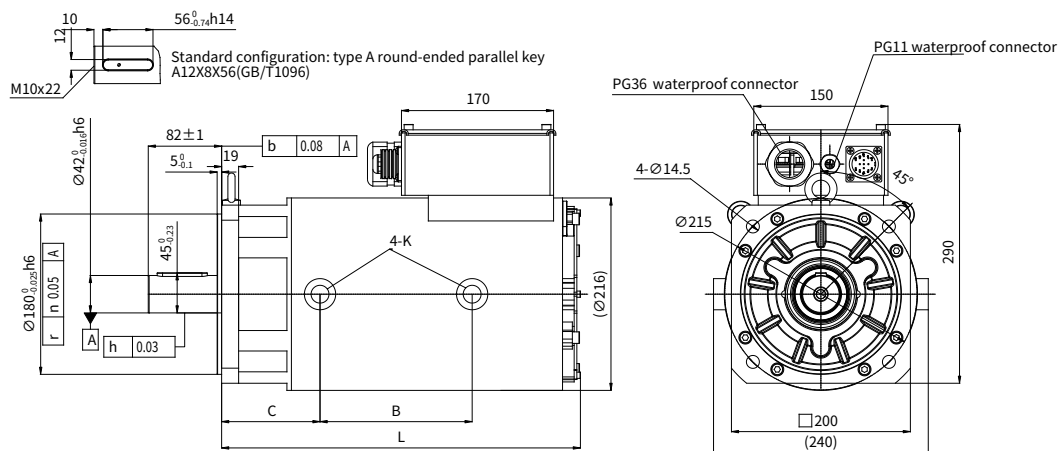
Model	Unit	IMS20B-20M*****-4-****-A		
		26D15C	29D17C	36D20C
Rated voltage	V	380		
Rated speed	rpm	1500	1700	2000
Rated power	kW	25.8	29.2	35.8
Rated frequency	Hz	100	113.3	133.3
Rated current	A	46.6	53.5	65.2
Rated torque	N · m	164	164	171
Peak torque at 0.5× rated speed	N · m	415	400	400
Peak current at 0.5× rated speed	A	103.9	109.3	136
Peak torque at rated speed	N · m	275	284	293
Peak current at rated speed	A	79.2	96.2	121
Peak speed	rpm	2500	2700	3000
Peak torque at peak speed	N · m	163	172	175
Peak current at peak speed	A	79.2	95.2	114
Torque constant	N · m/A	3.52	3.07	2.62
Line resistance	Ω	0.42	0.31	0.23
Back-emf constant	V/krpm	280.7	243.3	205.2
Rotation inertia	kg · cm ²	177	177	177
Motor weight	kg	68	68	68
Radial allowable load	N	1200		
Axial allowable load	N	250		

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

6.1.2 Motor dimensions



Product model	C(mm)	L(mm)	K
IMS20B-20M64C15C-4-****-A	115	261 (335)	Rc1/2
IMS20B-20M73C17C-4-****-A	115	261 (335)	Rc1/2
IMS20B-20M94C20C-4-****-A	115	261 (335)	Rc1/2

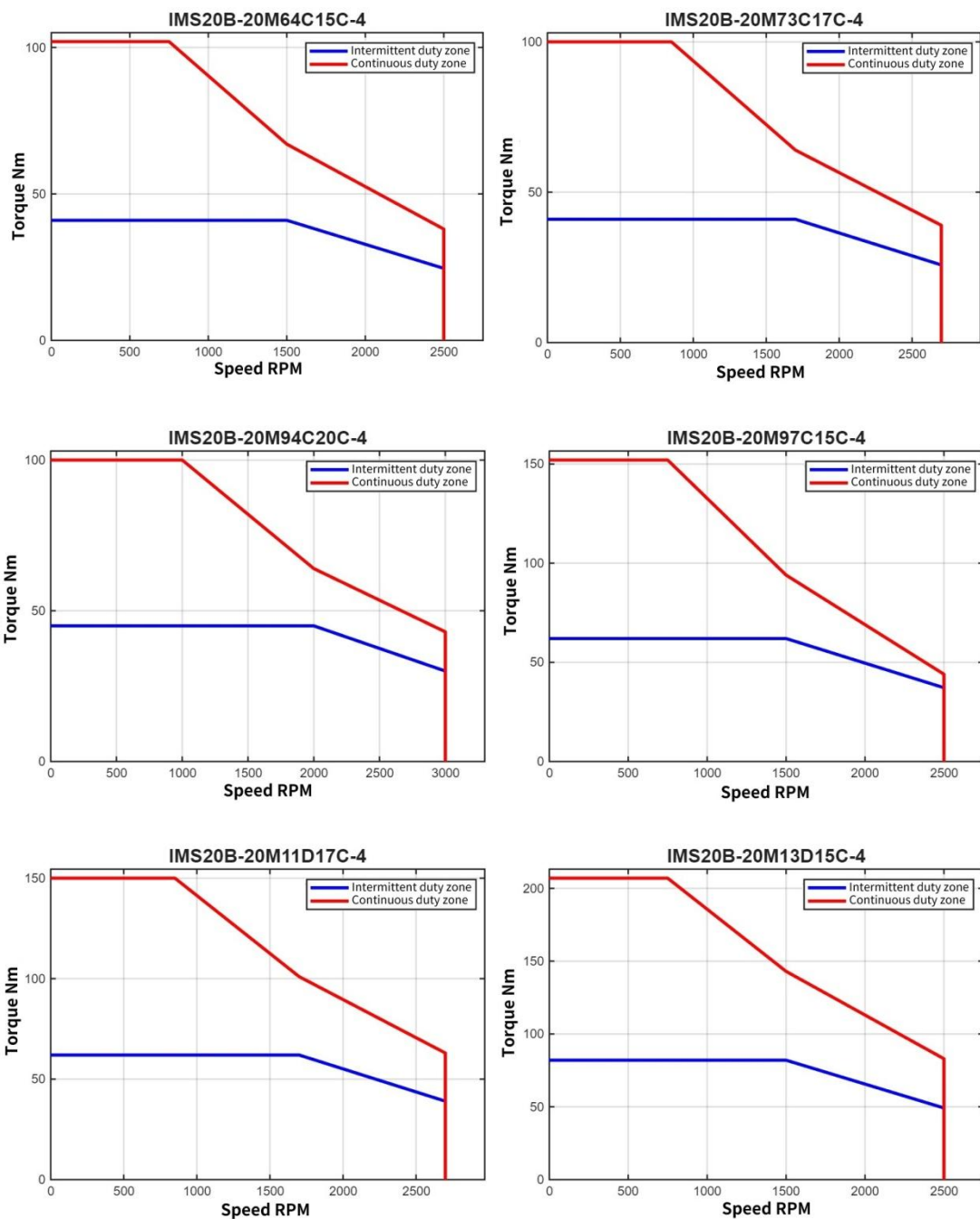


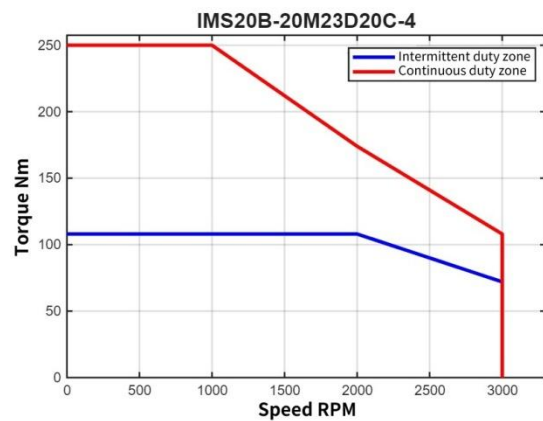
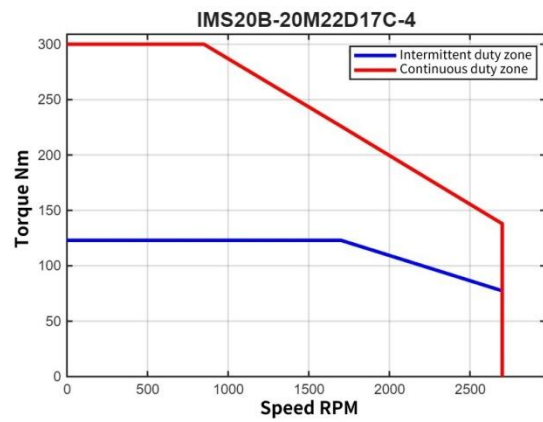
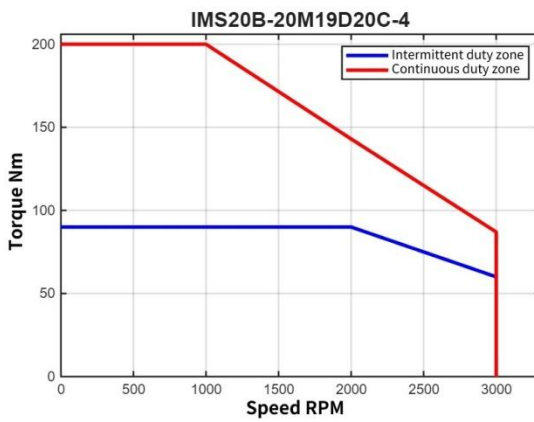
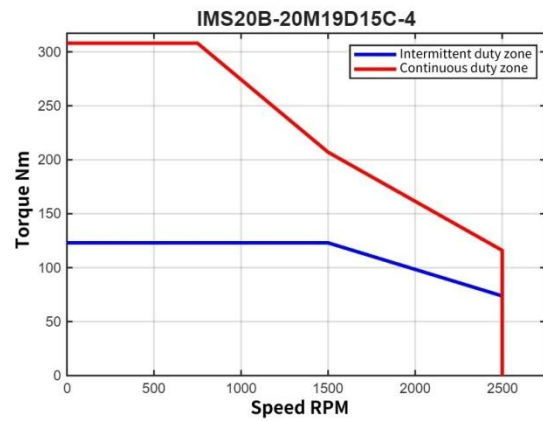
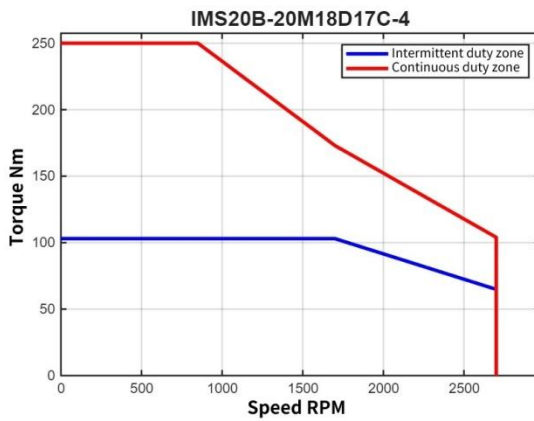
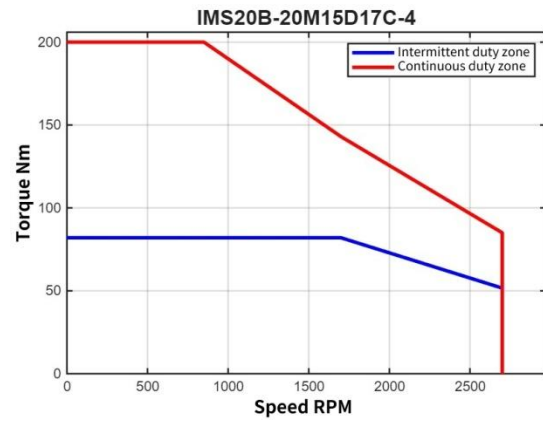
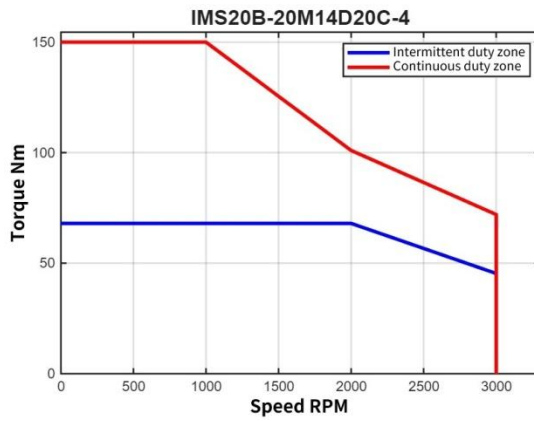
Product model	C(mm)	B(mm)	L(mm)	K
IMS20B-20M97C15C-4-****-A	110	58	289 (363)	Rc1/2
IMS20B-20M11D17C-4-****-A	110	58	289 (363)	Rc1/2
IMS20B-20M14D20C-4-****-A	110	58	289 (363)	Rc1/2
IMS20B-20M13D15C-4-****-A	110	86	317 (391)	Rc1/2
IMS20B-20M15D17C-4-****-A	110	86	317 (391)	Rc1/2
IMS20B-20M19D20C-4-****-A	110	86	317 (391)	Rc1/2
IMS20B-20M16D15C-4-****-A	110	114	345 (419)	Rc1/2
IMS20B-20M18D17C-4-****-A	110	114	345 (419)	Rc1/2
IMS20B-20M23D20C-4-****-A	110	114	345 (419)	Rc1/2
IMS20B-20M19D15C-4-****-A	110	142	373 (447)	Rc1/2
IMS20B-20M22D17C-4-****-A	110	142	373 (447)	Rc1/2
IMS20B-20M26D20C-4-****-A	110	142	373 (447)	Rc1/2

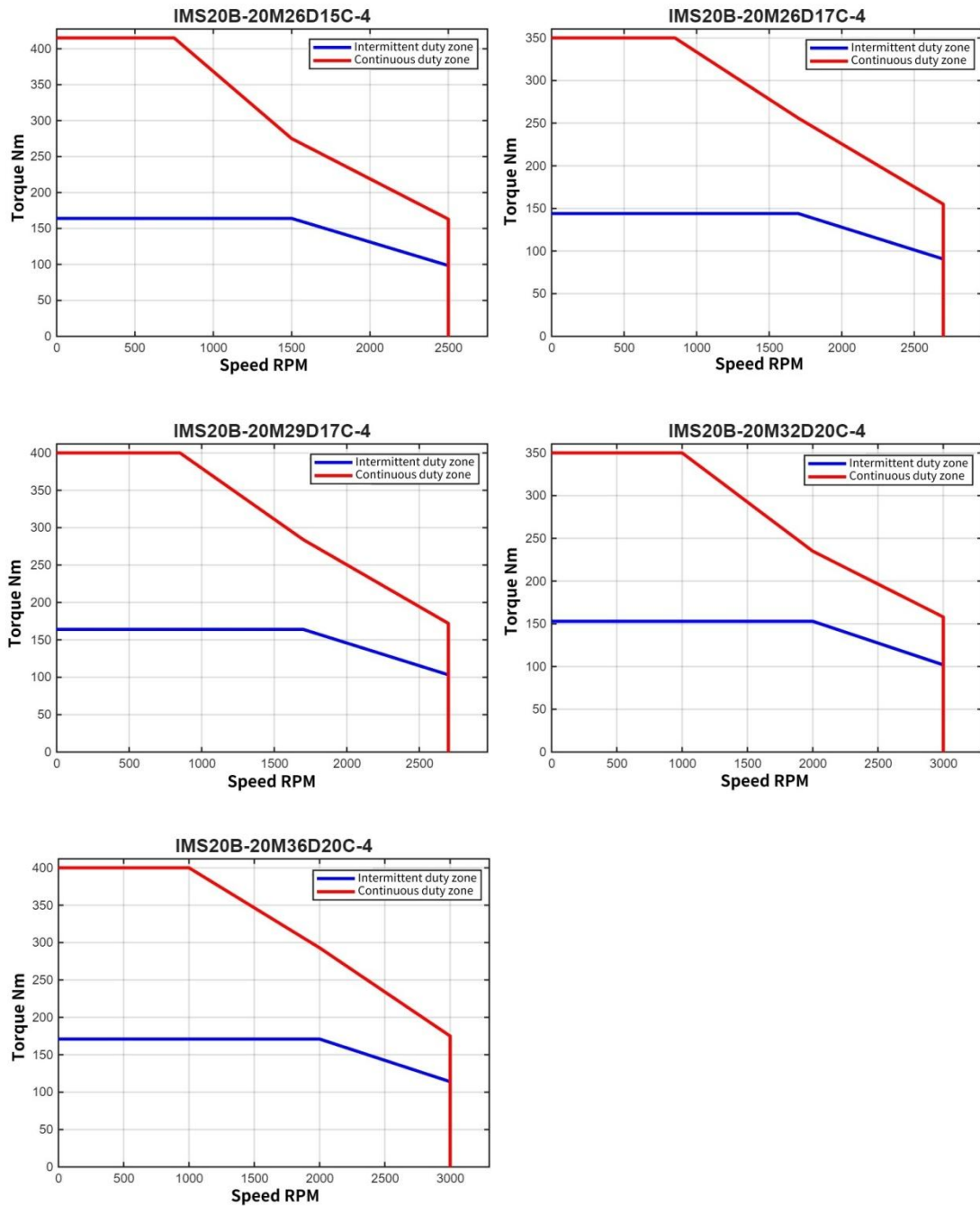
Product model	C(mm)	B(mm)	L(mm)	K
IMS20B-20M23D15C-4-****-A	110	170	401 (475)	Rc1/2
IMS20B-20M26D17C-4-****-A	110	170	401 (475)	Rc1/2
IMS20B-20M32D20C-4-****-A	110	170	401 (475)	Rc1/2
IMS20B-20M26D15C-4-****-A	110	198	429	Rc1/2
IMS20B-20M29D17C-4-****-A	110	198	429	Rc1/2
IMS20B-20M36D20C-4-****-A	110	198	429	Rc1/2

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

6.1.3 External characteristic curve







6.2 263-frame

6.2.1 Motor parameters

Model	Unit	IMS20B-26M*****-4-****-A								
		28D15C	32D17C	44D20C	35D15C	40D17C	53D20C	40D15C	45D17C	60D20C
Rated voltage	V	380								
Rated speed	rpm	1500	1700	2000	1500	1700	2000	1500	1700	2000
Rated power	kW	28.3	32	44	35.3	40.1	53.4	40.1	45.4	59.7
Rated frequency	Hz	100	113.3	133.3	100	113.3	133.3	100	113.3	133.3
Rated current	A	51	59	81.1	65.6	75.2	95.8	73.5	82.4	110.9

Model	Unit	IMS20B-26M*****-4-****-A								
		28D15C	32D17C	44D20C	35D15C	40D17C	53D20C	40D15C	45D17C	60D20C
Rated torque	N · m	180	180	210	225	225	255	255	255	285
Peak torque at 0.5× rated speed	N · m	450	450	525	563	563	638	638	638	713
Peak current at 0.5× rated speed	A	111.9	125.7	172.3	136.4	167.3	220.4	145.9	176.3	234.2
Peak torque at rated speed	N · m	348	342	323	400	429	423	410	471	427
Peak current at rated speed	A	108	116.9	139.9	125.9	155.9	188.9	117.5	163.1	192.4
Peak speed	rpm	2500	2700	3000	2500	2700	3000	2500	2700	3000
Peak torque at peak speed	N · m	193	193	193	228	227	252	245	270	275
Peak current at peak speed	A	102	93.2	96.1	113.9	109.1	125.9	117.5	132.5	156.3
Torque constant	N · m/A	3.53	3.05	2.59	3.43	2.99	2.66	3.47	3.09	2.57
Line resistance	Ω	0.273	0.2	0.17	0.228	0.15	0.13	0.213	0.14	0.11
Counter-emf constant	V/krpm	261.7	224.3	214.3	276.5	230.4	202.9	295.2	241.5	210.9
Rotation inertia	kg · cm ²	297 (315)	297 (315)	297 (315)	351	351	351	406	406	406
Motor weight	kg	98 (118)	98 (118)	98 (118)	110	110	110	122	122	122
Radial allowable load	N	1500								
Axial allowable load	N	500								

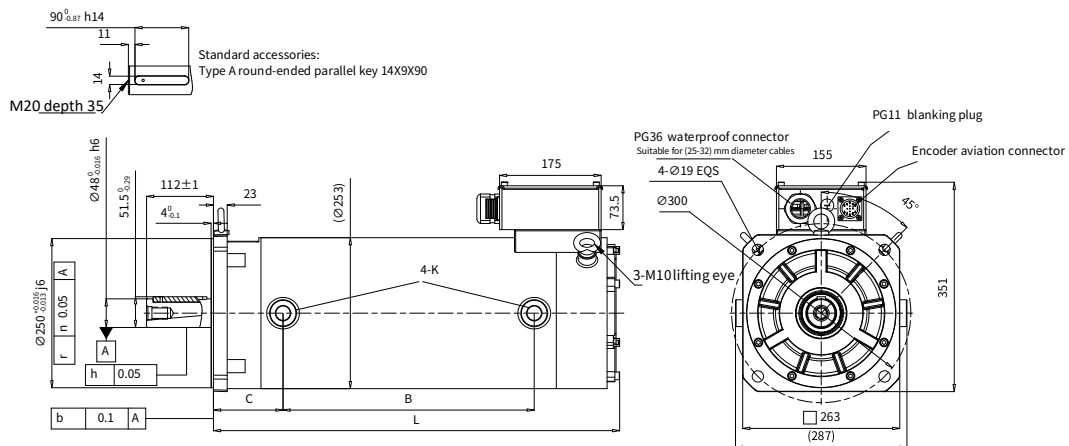
Model	Unit	IMS20B-26M*****-4-****-A								
		46D15C	52D17C	67D20C	51D15C	58D17C	75D20C	56D15C	63D17C	84D20C
Rated voltage	V	380								
Rated speed	rpm	1500	1700	2000	1500	1700	2000	1500	1700	2000
Rated power	kW	45.5	51.6	67	51	57.9	75.4	55.8	63.2	83.8
Rated frequency	Hz	100	113.3	133.3	100	113.3	133.3	100	113.3	133.3
Rated current	A	83.5	92.7	120.3	91.8	102.9	141.6	99	110.7	148.5
Rated torque	N · m	290	290	320	325	325	360	355	355	400
Peak torque at 0.5× rated speed	N · m	725	725	800	813	813	900	888	888	1000
Peak current at 0.5× rated speed	A	176.3	193.3	250.9	190.5	219.7	299.9	214.3	257.2	353.6
Peak torque at rated speed	N · m	541	544	536	588	622	540	654	727	798
Peak current at rated speed	A	170.9	186.7	228.4	168.3	209.3	228.1	181.1	237.6	335.9
Peak speed	rpm	2500	2700	3000	2500	2700	3000	2500	2700	3000
Peak torque at peak speed	N · m	290	320	333	346	386	407	378	445	474
Peak current at peak speed	A	170.9	151.7	201.6	156.3	183.2	212.9	169.7	222.8	265.2

Model	Unit	IMS20B-26M*****-4-****-A								
		46D15C	52D17C	67D20C	51D15C	58D17C	75D20C	56D15C	63D17C	84D20C
Torque constant	N · m/A	3.47	3.13	2.66	3.54	3.16	2.54	3.59	3.21	2.69
Line resistance	Ω	0.156	0.12	0.1	0.135	0.1	0.08	0.113	0.084	0.059
Counter-emf constant	V/krpm	276.4	245.7	218.4	276.8	242.2	203.2	261.9	224.5	191.2
Rotation inertia	kg · cm ²	461	461	461	515	515	515	574	574	574
Motor weight	kg	134	134	134	146	146	146	158	158	158
Radial allowable load	N	1500								
Axial allowable load	N	500								

Model	Unit	IMS20B-26M*****-4-****-A		
		61D15C	69D17C	90D20C
Rated voltage	V	380		
Rated speed	rpm	1500	1700	2000
Rated power	kW	61.3	69.4	90.1
Rated frequency	Hz	100	113.3	133.3
Rated current	A	111.4	124.2	158.4
Rated torque	N · m	390	390	430
Peak torque at 0.5× rated speed	N · m	975	975	1075
Peak current at 0.5× rated speed	A	218.6	248.3	347.7
Peak torque at rated speed	N · m	667	679	757
Peak current at rated speed	A	194.5	217.8	316.8
Peak speed	rpm	2500	2700	3000
Peak torque at peak speed	N · m	385	425	474
Peak current at peak speed	A	194.5	217.8	257.4
Torque constant	N · m/A	3.50	3.14	2.71
Line resistance	Ω	0.123	0.09	0.063
Counter-emf constant	V/krpm	289.9	248.5	207.1
Rotation inertia	kg · cm ²	629	629	629
Motor weight	kg	170	170	170
Radial allowable load	N	1500		
Axial allowable load	N	500		

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

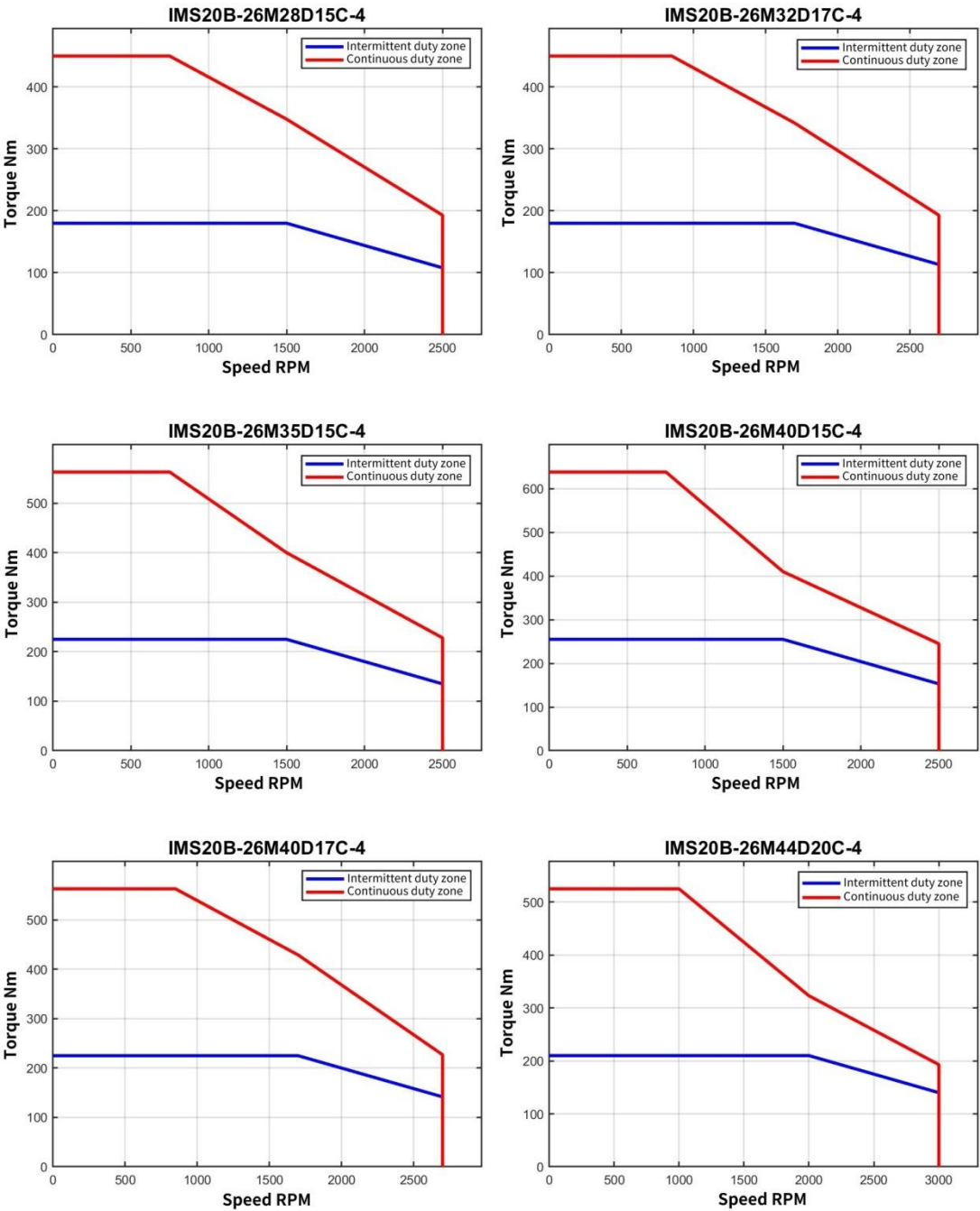
6.2.2 Motor dimensions

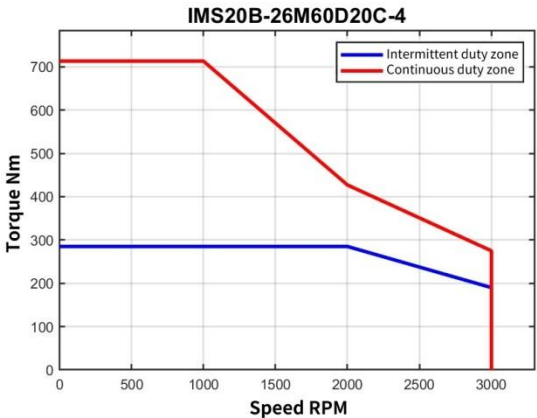
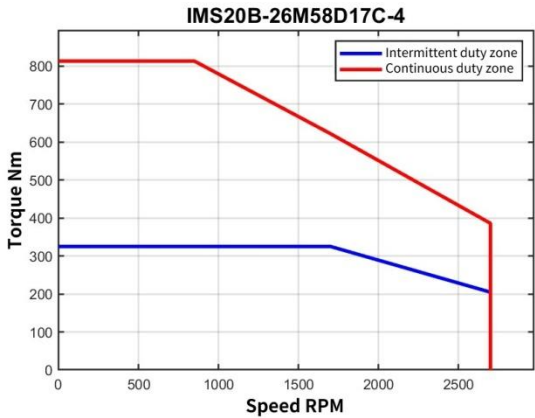
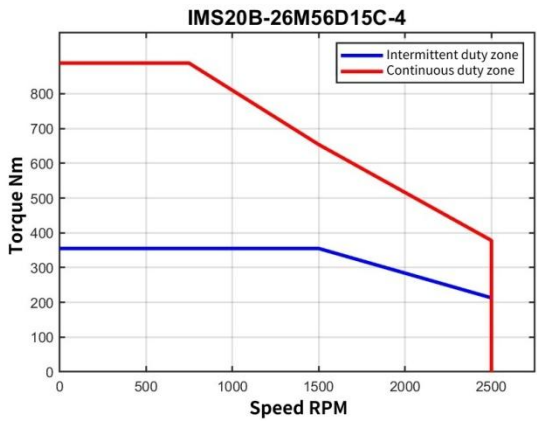
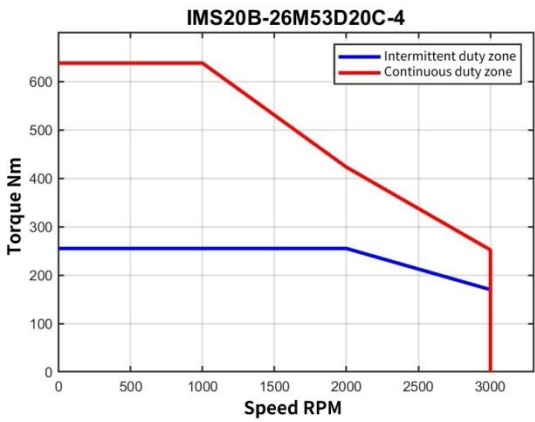
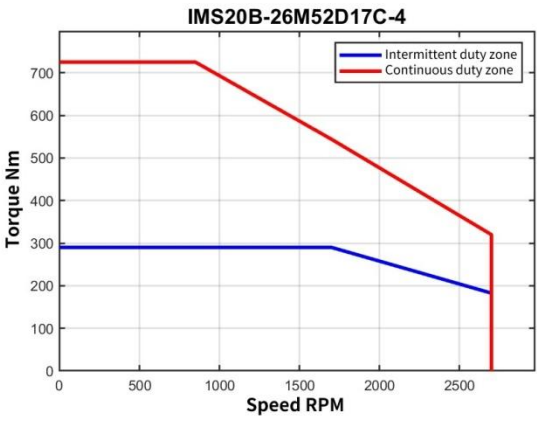
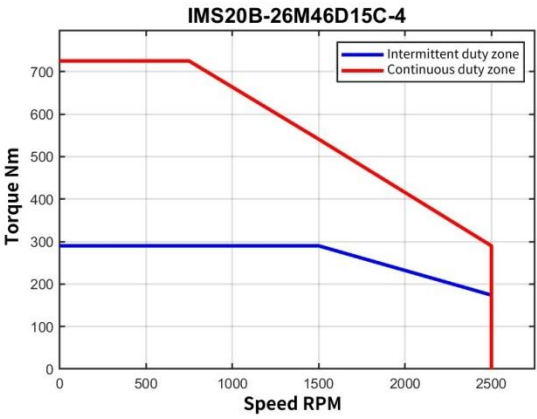
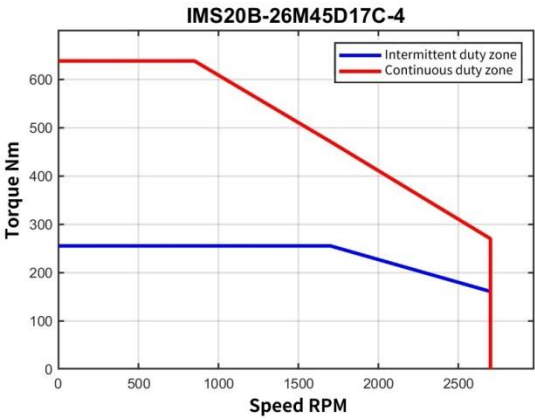


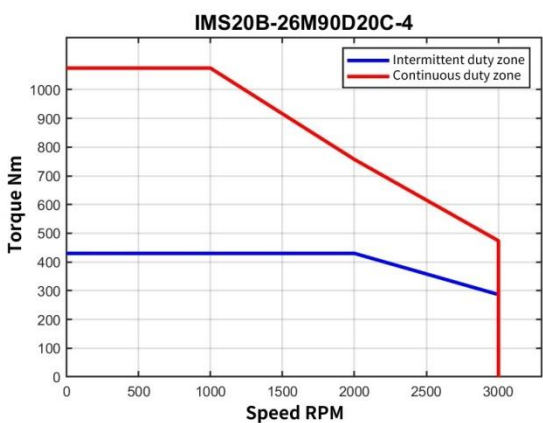
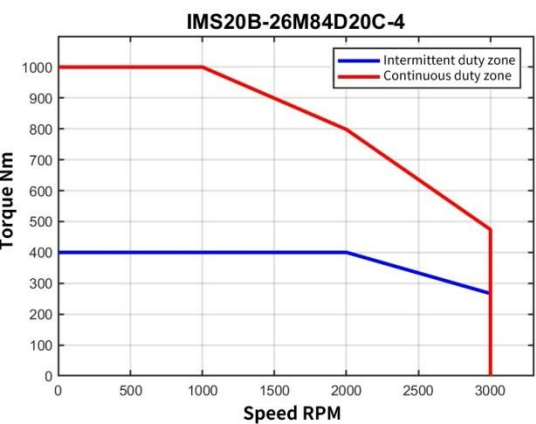
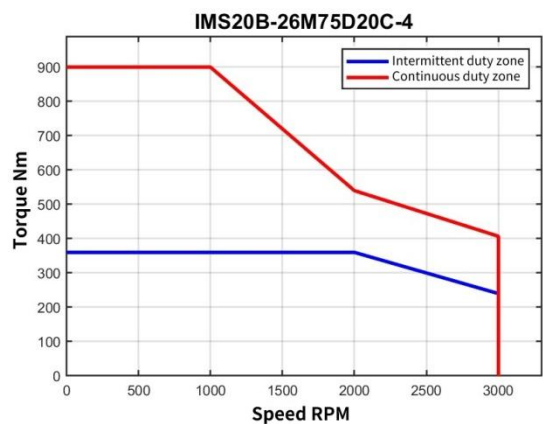
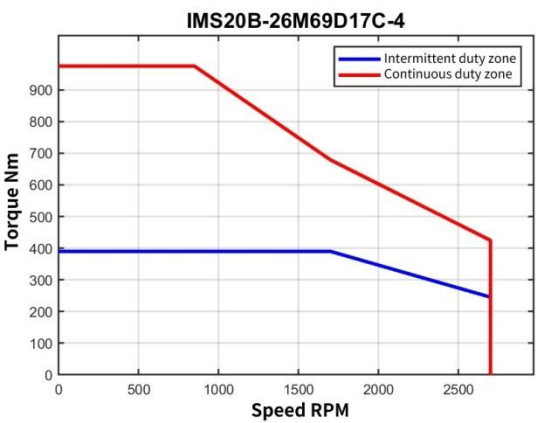
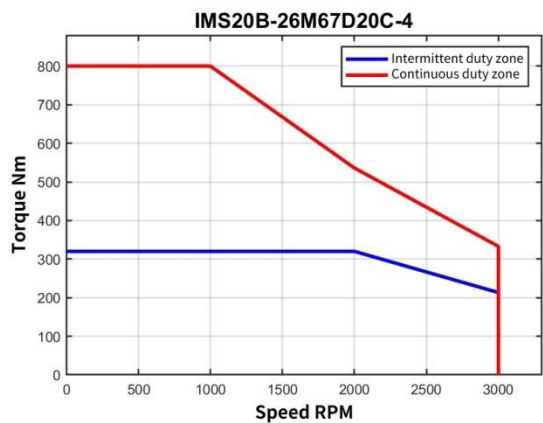
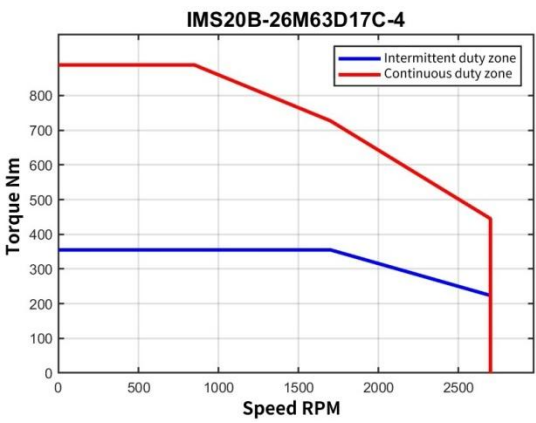
Product model	C(mm)	B(mm)	L(mm)	K
IMS20B-26M28D15C-4-****-A	116.5	180.5	440 (525)	Rc1/2
IMS20B-26M32D17C-4-****-A	116.5	180.5	440 (525)	Rc1/2
IMS20B-26M44D20C-4-****-A	116.5	180.5	440 (525)	Rc1/2
IMS20B-26M35D15C-4-****-A	116.5	220.5	480	Rc1/2
IMS20B-26M40D17C-4-****-A	116.5	220.5	480	Rc1/2
IMS20B-26M53D20C-4-****-A	116.5	220.5	480	Rc1/2
IMS20B-26M40D15C-4-****-A	116.5	260.5	520	Rc1/2
IMS20B-26M45D17C-4-****-A	116.5	260.5	520	Rc1/2
IMS20B-26M60D20C-4-****-A	116.5	260.5	520	Rc1/2
IMS20B-26M46D15C-4-****-A	116.5	300.5	560	Rc 3/4
IMS20B-26M52D17C-4-****-A	116.5	300.5	560	Rc 3/4
IMS20B-26M67D20C-4-****-A	116.5	300.5	560	Rc 3/4
IMS20B-26M51D15C-4-****-A	116.5	340.5	600	Rc 3/4
IMS20B-26M58D17C-4-****-A	116.5	340.5	600	Rc 3/4
IMS20B-26M75D20C-4-****-A	116.5	340.5	600	Rc 3/4
IMS20B-26M56D15C-4-****-A	116.5	380.5	640	Rc 3/4
IMS20B-26M63D17C-4-****-A	116.5	380.5	640	Rc 3/4
IMS20B-26M84D20C-4-****-A	116.5	380.5	640	Rc 3/4
IMS20B-26M61D15C-4-****-A	116.5	420.5	680	Rc 3/4
IMS20B-26M69D17C-4-****-A	116.5	420.5	680	Rc 3/4
IMS20B-26M90D20C-4-****-A	116.5	420.5	680	Rc 3/4

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

6.2.3 External characteristic curve

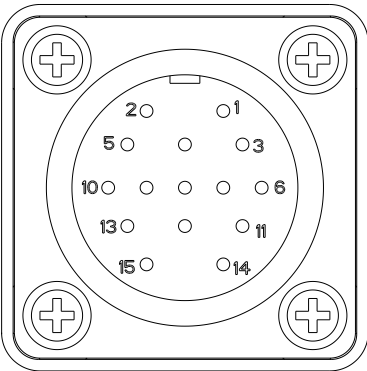






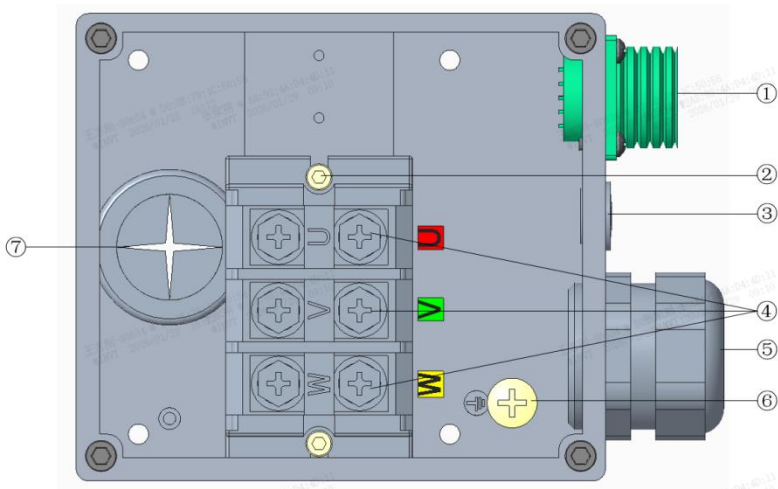
7 Motor terminal and junction box description

7.1 Encoder terminal



Pin No.	1	2	3	4	5	6	7	8	9
Pin definition for 23-bit single/multi-turn absolute encoder	PE+	SD+	SD-	5 V	GND	VB_5V	VB_GND	KTY84-130+	KTY84-130-
Pin definition for 12-bit resolver	PE	Ref+	Ref-	Cos-	Cos+	Sin+	Sin-	KTY84-130+	KTY84-130-

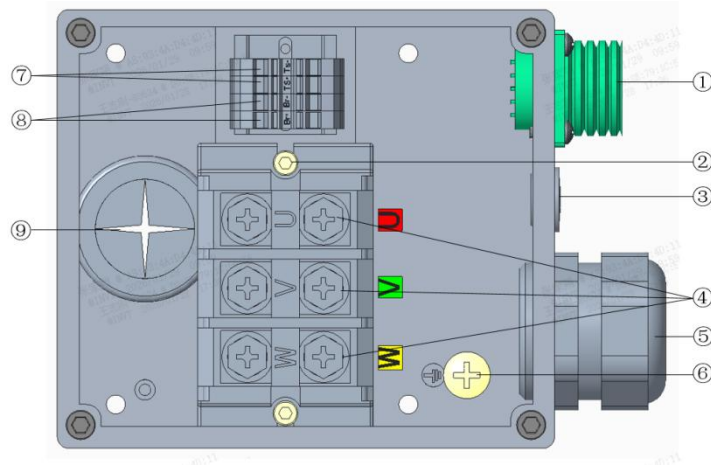
7.2 Standard terminal box component



No.	Component name
①	YD28 aviation connector
②	2-M5 hex socket screw

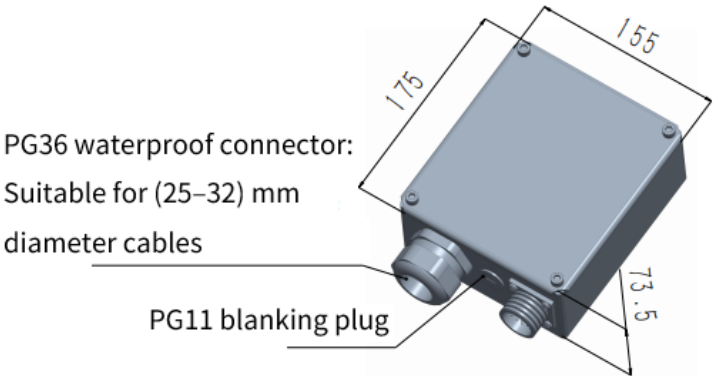
No.	Component name
③	PG11 blanking plug
④	M8 bolts for U/V/W power cables
⑤	PG36 water-proof connector
⑥	M8 bolt connecting terminal box to housing/grounding mark
⑦	Motor outlet hole sealing ring (Avoid dropping small parts or foreign objects)

7.3 Terminal box components for brake motors



No.	Component name
①	YD28 aviation connector
②	2-M5 hex socket screw
③	PG11 blanking plug
④	M8 bolts for U/V/W power cables
⑤	PG36 water-proof connector
⑥	M8 bolt connecting terminal box to housing/grounding mark
⑦	Temperature control wire terminal block
⑧	Brake 24 V power supply terminal block
⑨	Motor outlet hole sealing ring (Avoid dropping small parts or foreign objects)

7.4 Terminal box dimension

Product model	Dimension drawings
IMS20B-20M64C15C-4-****-A	 PG36 waterproof connector: Suitable for (25–32) mm diameter cables PG11 blanking plug
IMS20B-20M73C17C-4-****-A	
IMS20B-20M94C20C-4-****-A	
IMS20B-20M97C15C-4-****-A	
IMS20B-20M11D17C-4-****-A	
IMS20B-20M14D20C-4-****-A	
IMS20B-20M13D15C-4-****-A	
IMS20B-20M15D17C-4-****-A	
IMS20B-20M19D20C-4-****-A	
IMS20B-20M16D15C-4-****-A	
IMS20B-20M18D17C-4-****-A	
IMS20B-20M23D20C-4-****-A	
IMS20B-20M19D15C-4-****-A	
IMS20B-20M22D17C-4-****-A	
IMS20B-20M26D20C-4-****-A	
IMS20B-20M23D15C-4-****-A	
IMS20B-20M26D17C-4-****-A	
IMS20B-20M32D20C-4-****-A	
IMS20B-20M26D15C-4-****-A	
IMS20B-20M29D17C-4-****-A	
IMS20B-20M36D20C-4-****-A	
IMS20B-26M28D15C-4-****-A	
IMS20B-26M32D17C-4-****-A	
IMS20B-26M44D20C-4-****-A	
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IMS20B-26M60D20C-4-****-A	
IMS20B-26M46D15C-4-****-A	
IMS20B-26M52D17C-4-****-A	
IMS20B-26M67D20C-4-****-A	
IMS20B-26M51D15C-4-****-A	
IMS20B-26M58D17C-4-****-A	
IMS20B-26M75D20C-4-****-A	
IMS20B-26M56D15C-4-****-A	
IMS20B-26M63D17C-4-****-A	
IMS20B-26M84D20C-4-****-A	
IMS20B-26M61D15C-4-****-A	
IMS20B-26M69D17C-4-****-A	
IMS20B-26M90D20C-4-****-A	

8 Installation instructions

8.1 Unpacking inspection

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

Inspect the packaging

Before unpacking, check whether the product package is intact—whether the package is damaged, dampened, soaked, or deformed. After opening the packaging box, check whether there are any water stains or other abnormalities inside.

Inspect the machine and components

After opening the packaging box, check whether the machine casing is damaged or cracked, and whether internal components are complete. Cross-check the nameplate and labels on the product body to verify that they match the ordered model.

8.2 Mechanical installation

8.2.1 Installation preparation

■ Safety instructions

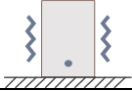
Only qualified personnel who have received training are allowed to perform the tasks described in this chapter. Please read the following preparations carefully before proceeding with the installation to ensure a smooth process and to avoid personal injury or equipment damage.

Item	Description
	- Please strictly observe the safety guidelines during operation. Before installation, make sure the motor power supply has been disconnected. If the motor is energized, wait at least 15 minutes after power-off and verify that the POWER indicator LED has completely turned off before proceeding with any operation. - The installation and design of the motor must strictly comply with local laws and regulations. Our company assumes no liability for any consequences resulting from non-compliant installation.

■ Installation environment and site

Environmental requirements

Environment	Requirement
Temperature 	- Refer to the mechanical specification requirements of the motor. - 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. - If the ambient temperature is too low, when powering on again after a long period of power loss, an external heating device must be added to eliminate internal freezing; otherwise, equipment damage may occur.

Environment	Requirement	
Humidity		- See section 5.1 Mechanical characteristics. - In environments with corrosive gases, the maximum relative humidity shall not exceed 60%.
Altitude		Lower than 1000 m
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.

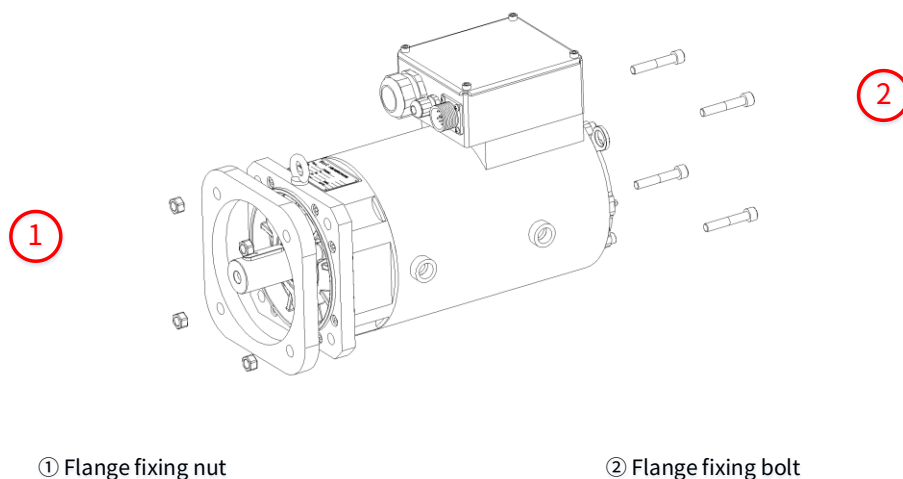
8.2.2 Installation method

The motor installation procedure is as follows:

Step 1 Clean the installation site and prepare all necessary tools and components.

Step 2 Inspect and confirm that all components are intact and undamaged, and that the motor shaft rotates smoothly and flexibly.

Step 3 Select an appropriate mounting method and ensure proper alignment of the drive centerlines.
Alignment deviation must not exceed the specified tolerance limit. Secure the motor using bolt press-in methods; hammering or hammering-in is strictly prohibited to prevent equipment damage.



① Flange fixing nut

② Flange fixing bolt

Note:

- Do not pull or drag the motor leads or output shaft when moving the motor. It is recommended to use the lifting lugs on both sides of the motor for hoisting and positioning.
- The standard mounting method is IMB5 (footless, flange-mounted). During installation, make sure that all mounting holes are securely locked using steel bolts and nuts with a strength grade of 8.8 or higher. In environments prone to corrosion, stainless steel bolts should be used; in high-vibration applications, anti-vibration washers should be fitted.
- When using a coupling for transmission, ensure that the motor shaft centerline is strictly aligned with the load shaft centerline.
- Do not strike or hammer the motor during assembly to avoid damage to the encoder or shafts.
- After installation, inspect all components item by item to verify that all fasteners are securely tightened before starting trial operation.
- The motor shaft surface is coated with anti-rust oil. Please wipe it clean prior to use.

8.3 Post-installation inspection checklist

After installation, please inspect each item listed in the table below:

Check item	Content	Confirmation
Ambient environment	Ambient temperature does not exceed 40°C.	☐
	RH is less than 90%.	☐
	Vibration acceleration is less than 0.5G (4.9 m/s ²).	☐
	No dust, corrosive gases, or oil contamination.	☐
	No foreign objects, such as tools, wire ends, or metal shavings, are stacked around the area.	☐
	No condensation or water droplets on the exterior of the device.	☐
Mechanical system	The motor installation location meets design and specification requirements.	☐
	The motor is securely mounted, and the connection between the shaft and the machine is reliable.	☐
	The motor and the machines are available to run.	☐
	Do not run the motor under negative load conditions.  Note: A negative load refers to an operating condition where the motor output torque direction is opposite to its rotational speed direction.	☐
Electrical wiring	All wiring complies with the standard wiring diagrams for each control mode in the Installation chapter.	☐
	The external terminal (SON) for servo enabling is set to OFF.	☐
	The cable stress is within the allowable range.	☐
	The motor is properly grounded.	☐

9 Common troubleshooting

Fault phenomenon	Possible cause	Solution
Motor does not run when powered on	The power supply cable is disconnected.	Check the wiring and ensure correct connections.
	The motor encoder cable is disconnected or there is a fault in the servo drive.	Check the encoder cable and servo drive output status.
	Motor overload prevents startup.	Reduce or remove the load, then restart.
Motor runaway upon power-on	The initial angle of the encoder is unidentified	Re-identify the encoder initial angle.
Abnormal motor noise	The motor current loop gain is too high and the power supply phase sequence is reversed.	Contact technical personnel to adjust the current loop gain parameters and check the power supply phase sequence.
	Improper oil seal installation.	Check the installation status of the oil seal or replace the oil seal.
	Brake pad friction.	Please contact your supplier or local INVT technical support.
	There is a foreign object inside the motor.	
	The bearing is damaged.	
Motor vibration during operation	Abnormal feedback from the motor encoder.	Check whether the shielding layer and grounding of the motor encoder cable are in good condition.
	The motor encoder is loose.	Please contact your supplier or local INVT technical support.
	Current loop gain mismatch.	Contact technical personnel to adjust the current loop gain parameters.
Reverse direction of rotation	Incorrect motor rotation direction setting.	Check the motor rotation direction setting of the servo drive.
Slow motor acceleration	Incorrect motor acceleration time setting.	Check the motor acceleration time setting of the servo drive.
	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 and ensure no obstructions around the motor.

10 Certification categories and standards

10.1 CE certification

Certification	Standard
EMC command 2014/30/EU	EN 61000-6-4:2019 EN 61000-6-4:2019
Low voltage directive (LVD) 2014/35/EU	EN 60034-1:2017

10.2 China Energy Label

Certification	Standard
China Energy Efficiency Certification	GB 30253-2024

Leading Smart Industry Shaping Net-Zero Future



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