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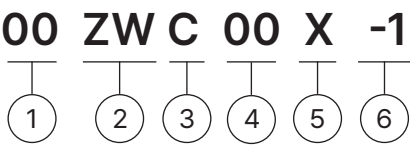
Frameless Motor

1. The modular design of the stator and rotor, along with optimized slot ratios, improves the motor's torque density.
2. The rotor has a large inner bore space, and the stator is designed for embedded installation by the customer, facilitating personalized design including mounting structures and cooling systems, offering greater flexibility for custom systems.
3. The optimized slot-pole combination reduces motor cogging torque, ensuring smooth motor operation.
4. The structure is compact and highly integrated.



Part number construction	H-2
25mm	H-3
38mm	H-5
50mm	H-7
70 mm	H-10
85 mm	H-13
115mm	H-16

Part Number Construction



① Motor Size

Motor Size (mm)	25	38	50	70	85	115
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② Product Name

ZW = Slotted Brushless DC Motor

③ Motor Shape

C = Circular type

④ Motor Length

Unit : mm

when the length involves decimal points, use "_" instead

⑤ Motor Casing

X = Coreless

⑥ Customer Sequence Number

Example

Part Number	50ZWC15X-001
Description	50mm frame size Round frameless torque motor Body length: 15mm Coreless type Customization number 001

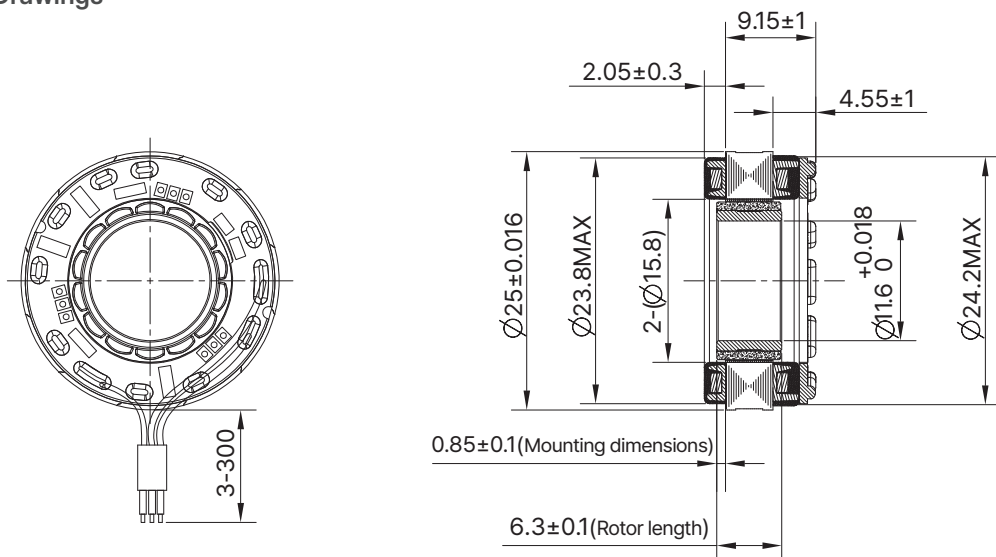
25mm Series

Motor Characteristics

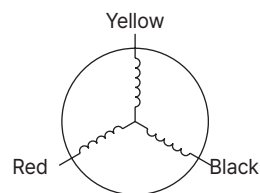
Motor part number	25ZWC10X-1	
Stator outer diameter	mm	25 (±0.016)
Rotor inner diameter	mm	11.6 (+0.018)
Number of slots	-	12
Pole pairs	-	7
Phase-to-phase resistance	Ω	0.42
Phase-to-phase inductance	mH	0.123
Winding connection method	-	Star connection
Insulation class	-	F
Duty type	-	S2
Feedback method	-	/
Commutation angle	-	120°
Insulation strength (Withstand voltage)	-	600VAC/1s/3mA
Insulation resistance	-	50MΩ/500VDC
Stator weight	g	20
Rotor weight	g	3.2
No-load speed	RPM	26000
No-load current	A	0.65(REF)
Rated voltage	VDC	24
Rated power	W	70
Rated torque	N·m	0.032
Rated speed	RPM	22650
Rated current	A	3.8
Torque constant	Nm/A	0.009
Back-EMF constant (effective value)	Vrms/Krpm	0.65
Peak torque	N·m	0.105
Peak current	A	13.0
Rotor inertia	g·cm ²	1.47

25mm Series

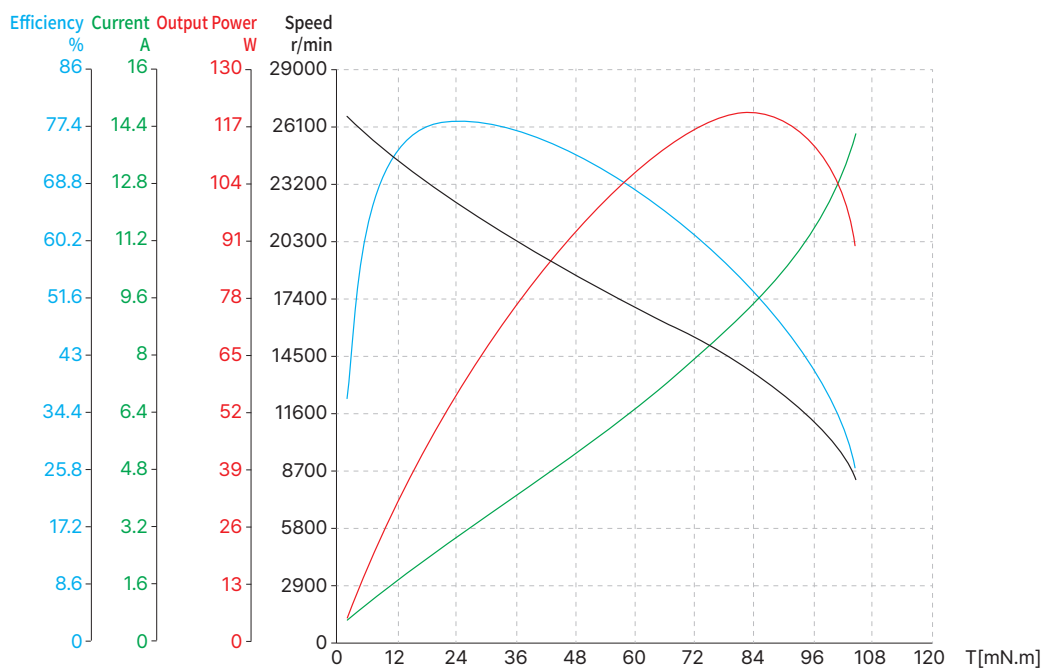
Dimensional Drawings



Lead-out type	Lead-out color	Function
UL1332 AWG20	Yellow	U phase
	Red	V phase
	Black	W phase



Torque Performance Curves



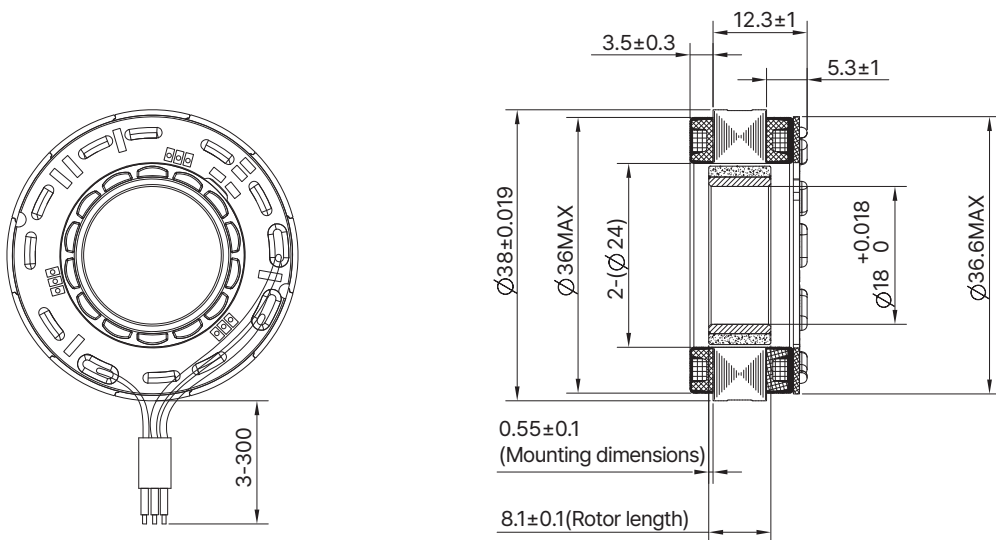
38mm Series

Motor Characteristics

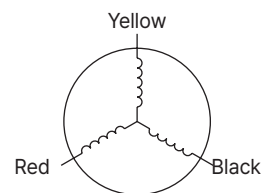
Motor part number	38ZWC15X-1	
Stator outer diameter	mm	38±0.019
Rotor inner diameter	mm	18+0.018
Number of slots	-	12
Pole pairs	-	7
Phase-to-phase resistance	Ω	0.8
Phase-to-phase inductance	mH	0.9
Winding connection method	-	Star connection
Insulation class	-	F
Duty type	-	S2
Feedback method	-	/
Commutation angle	-	120°
Insulation strength (Withstand voltage)	-	1200VAC/1s/3mA
Insulation resistance	-	50MΩ/500VDC
Stator weight	g	50
Rotor weight	g	10
No-load speed	RPM	13000
No-load current	A	0.6(REF)
Rated voltage	VDC	48
Rated power	W	110
Rated torque	N·m	0.1
Rated speed	RPM	10470
Rated current	A	2.75
Torque constant	Nm/A	0.035
Back-EMF constant (effective value)	Vrms/Krpm	2.6
Peak torque	N·m	0.32
Peak current	A	11
Rotor inertia	g·cm ²	10

38mm Series

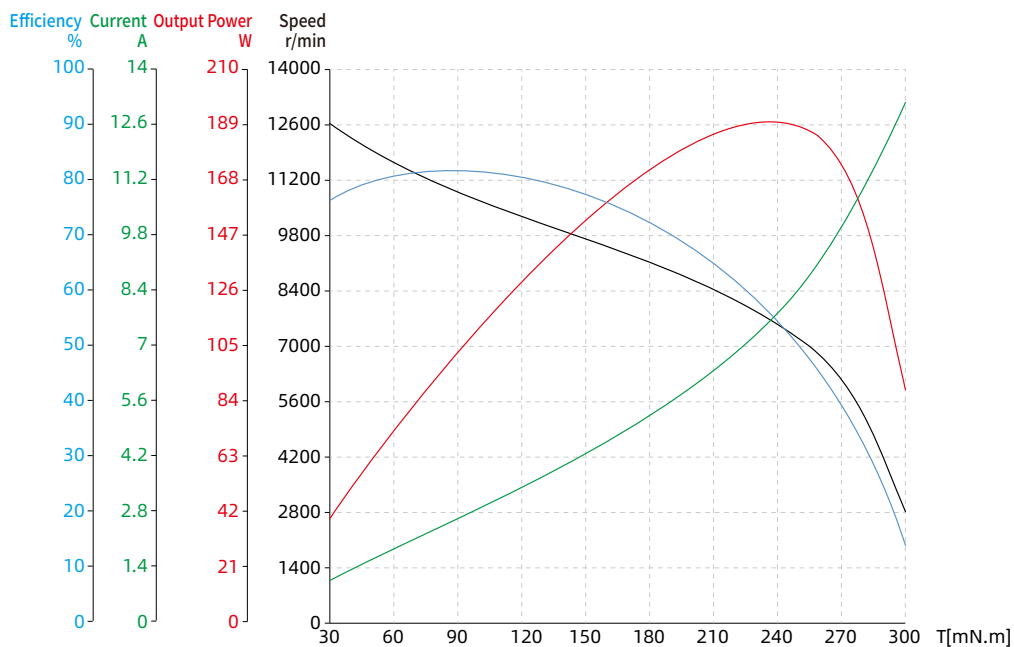
Dimensional Drawings



Lead-out type	Lead-out color	Function
UL1332 AWG20	Yellow	U phase
	Red	V phase
	Black	W phase



Torque Performance Curves



50mm Series

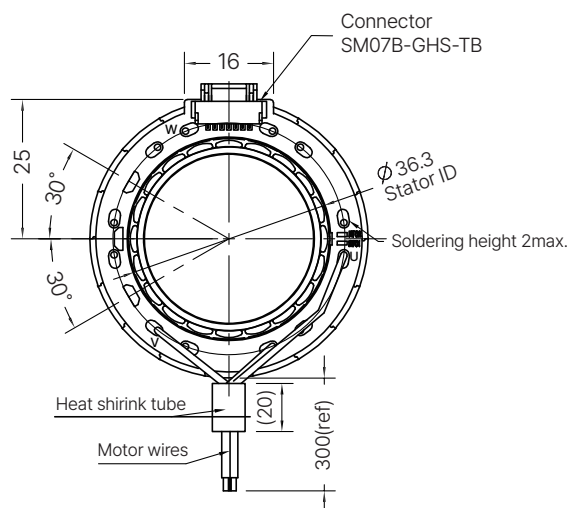
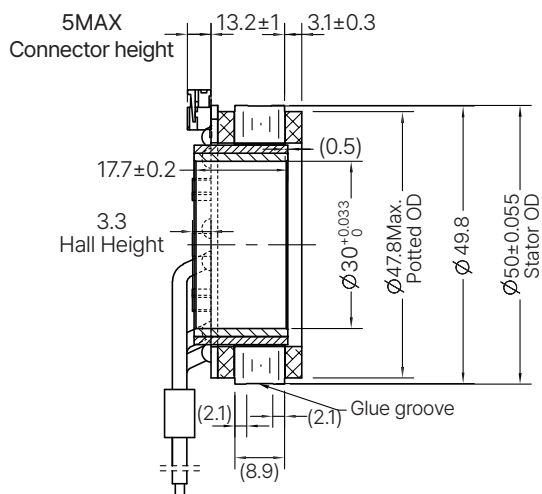
Motor Characteristics

Motor part number		50ZWC15X-1	50ZWC25X-1
Stator outer diameter	mm	50±0.031	50±0.031
Rotor inner diameter	mm	30+0.033	30+0.033
Overall length (L)	mm	13.2	19.5
Stack length (L1)	mm	8.9	15.2
Rotor length (L2)	mm	17.7±0.2	24±0.2
Number of slots	-	18	18
Pole pairs	-	10	10
Phase-to-phase resistance	Ω	0.62	0.6
Phase-to-phase inductance	mH	0.44	0.45
Winding connection method	-	Star connection	Star connection
Insulation class	-	F	F
Duty type	-	S2	S2
Feedback method	-	Hall sensor	Hall sensor
Commutation angle	-	120°	120°
Insulation strength (Withstand voltage)	-	500VAC/1mA/1s	500VAC/1mA/1s
Insulation resistance	-	100MΩ/500VDC	100MΩ/500VDC
Stator weight	g	77.5	124
Rotor weight	g	38	50
No-load speed	RPM	6400	5000
No-load current	A	0.4(REF)	1.1(REF)
Rated voltage	VDC	48	48
Rated power	W	168	219
Rated torque	N·m	0.3	0.51
Rated speed	RPM	5350	4100
Rated current	A	4.4	5.65
Torque constant	Nm/A	0.074	0.092
Back-EMF constant (effective value)	Vrms/Krpm	5.5	6.8
Peak torque	N·m	0.96	1.5
Peak current	A	10.7	16.1
Rotor inertia	g·cm ²	100	135

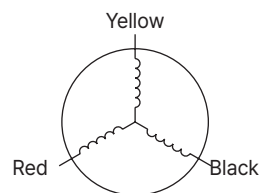
50mm Series

■ Dimensional Drawings

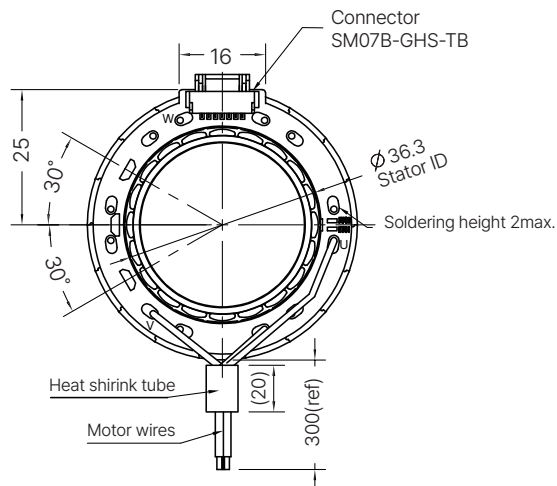
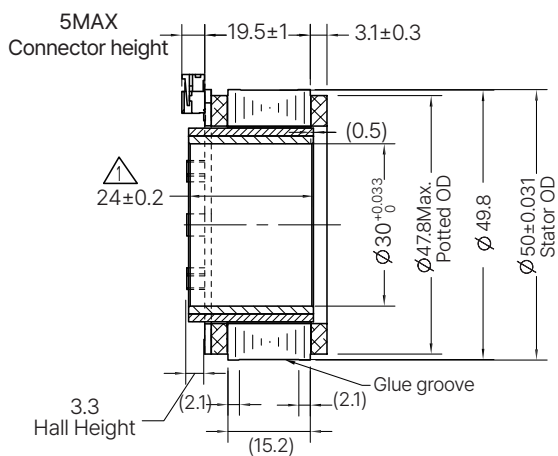
- 50ZWC15X-1



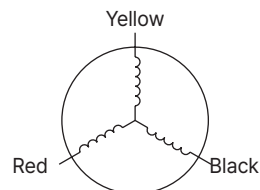
Lead-out type	Lead-out color	Function
UL1332 AWG20	Yellow	U phase
	Red	V phase
	Black	W phase



- 50ZWC25X-1

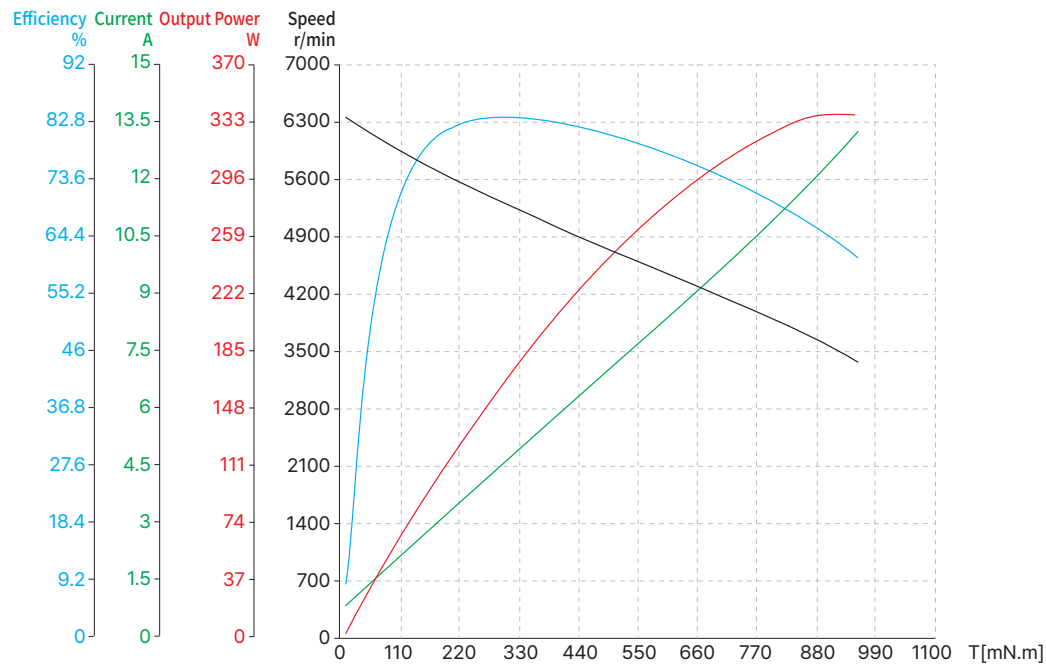


Lead-out type	Lead-out color	Function
UL1332 AWG20	Yellow	U phase
	Red	V phase
	Black	W phase

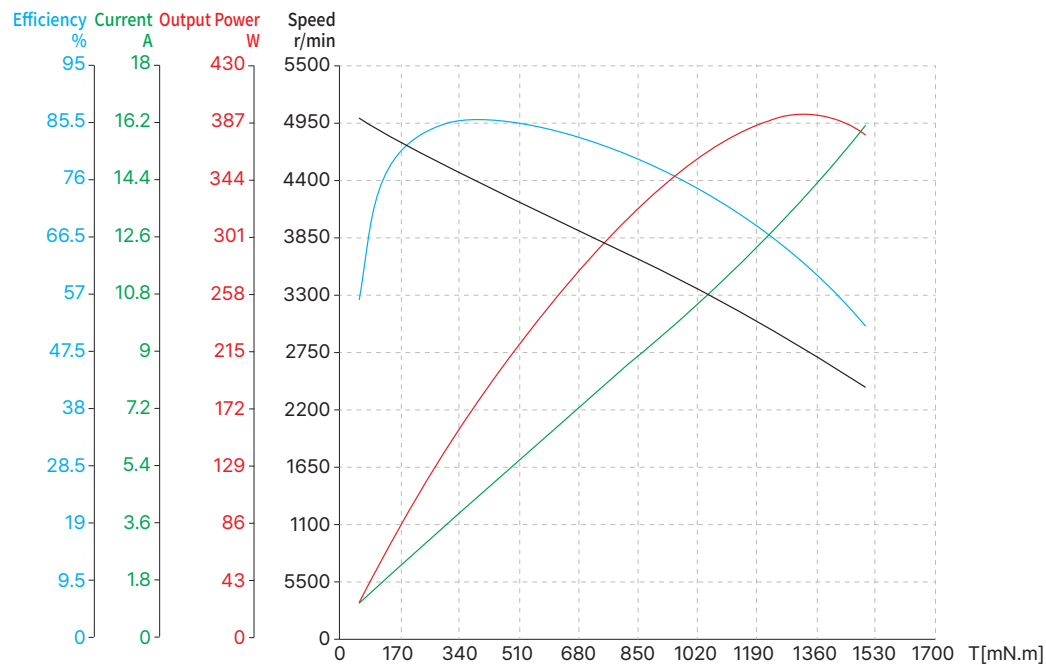


Torque Performance Curves

50ZWC15X-1



50ZWC25X-1



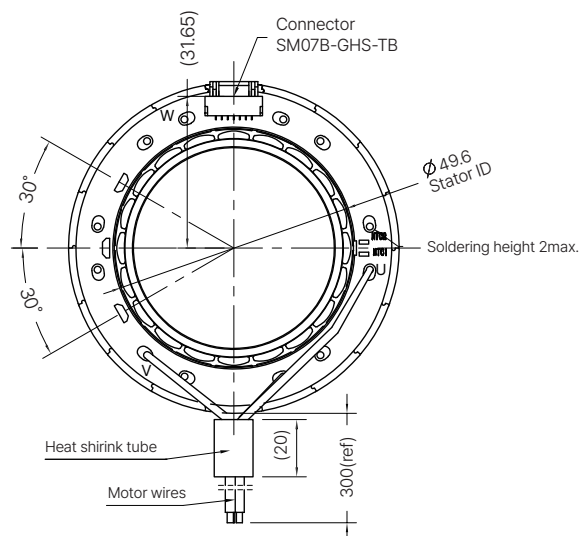
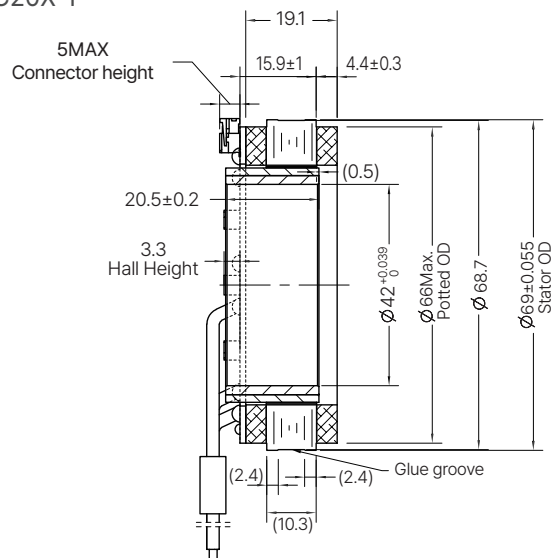
70mm Series

Motor Characteristics

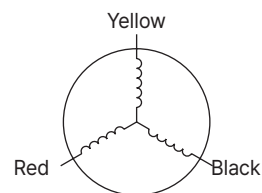
Motor part number		70ZWC20X-1	70ZWC25X-1
Stator outer diameter	mm	69±0.037	69±0.037
Rotor inner diameter	mm	42±0.039	42±0.039
Overall length (L)	mm	15.9	21.5
Stack length (L1)	mm	10.3	15.9
Rotor length (L2)	mm	20.5±0.2	26±0.2
Number of slots	-	18	18
Pole pairs	-	10	10
Phase-to-phase resistance	Ω	0.32	0.22
Phase-to-phase inductance	mH	0.52	0.35
Winding connection method	-	Star connection	Star connection
Insulation class	-	F	F
Duty type	-	S2	S2
Feedback method	-	Hall sensor	Hall sensor
Commutation angle	-	120°	120°
Insulation strength (Withstand voltage)	-	500VAC/1mA/1s	500VAC/1mA/1s
Insulation resistance	-	100MΩ/500VDC	100MΩ/500VDC
Stator weight	g	167.5	224
Rotor weight	g	72	90
No-load speed	RPM	4350	4400
No-load current	A	0.5(REF)	1.3(REF)
Rated voltage	VDC	48	48
Rated power	W	216	456
Rated torque	N·m	0.55	1.3
Rated speed	RPM	3750	3350
Rated current	A	5.4	11.4
Torque constant	Nm/A	0.109	0.13
Back-EMF constant (effective value)	Vrms/Krpm	8.1	9.6
Peak torque	N·m	1.65	2.6
Peak current	A	14.2	21
Rotor inertia	g·cm ²	358	455

■ Dimensional Drawings

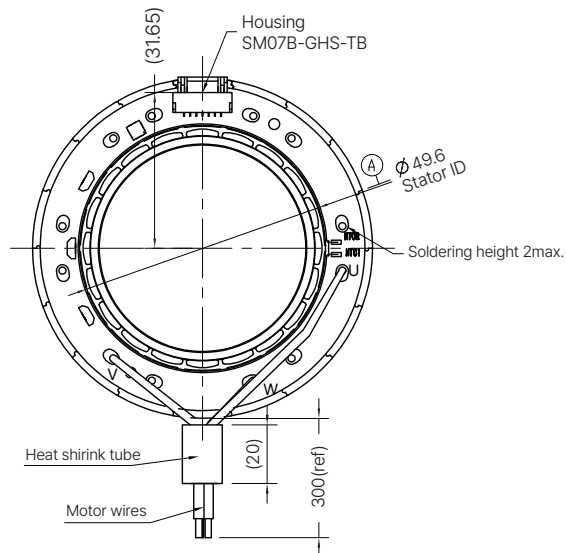
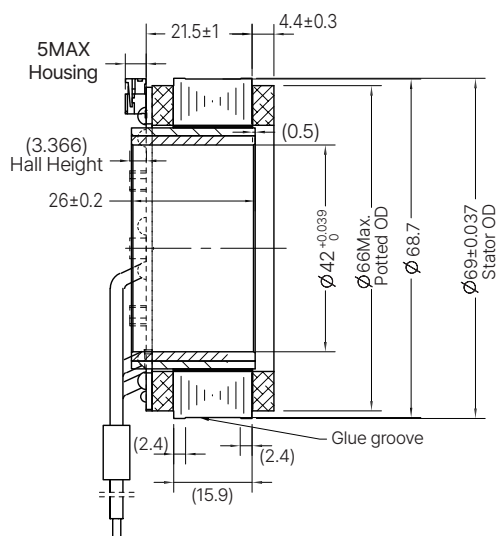
- 70ZWC20X-1



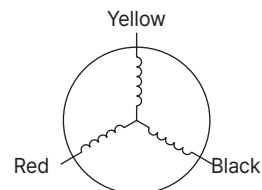
Lead-out type	Lead-out color	Function
UL1332 AWG20	Yellow	U phase
	Red	V phase
	Black	W phase



- 70ZWC25X-1



Lead-out type	Lead-out color	Function
UL1332 AWG18	Yellow	U phase
	Red	V phase
	Black	W phase

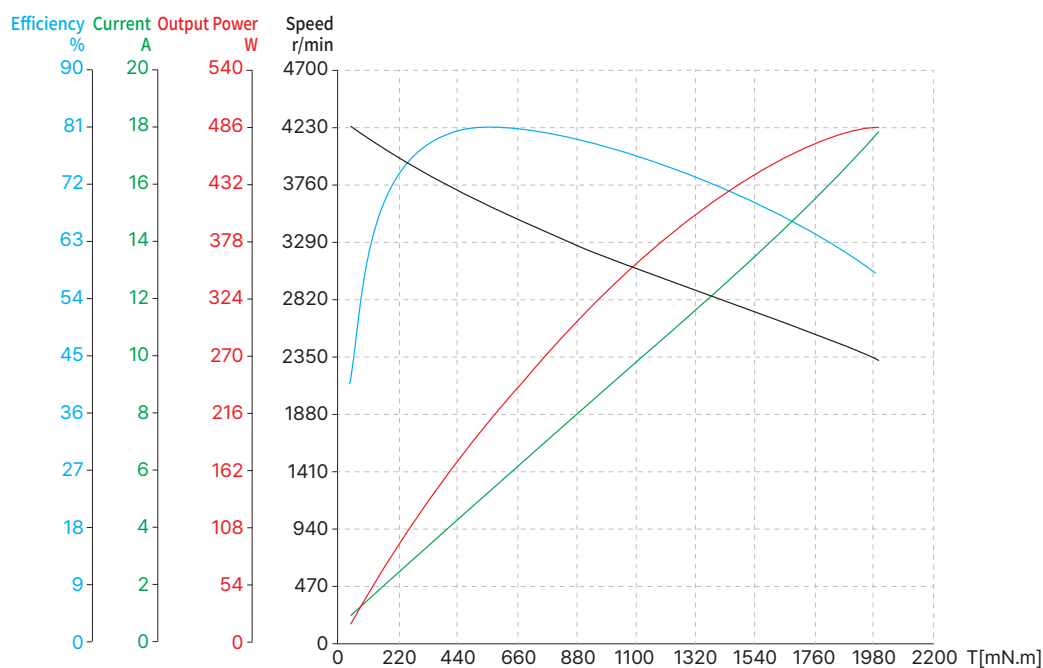


Note : All drawings are 1st Angle Projection - ISO Compliant (3D models available)

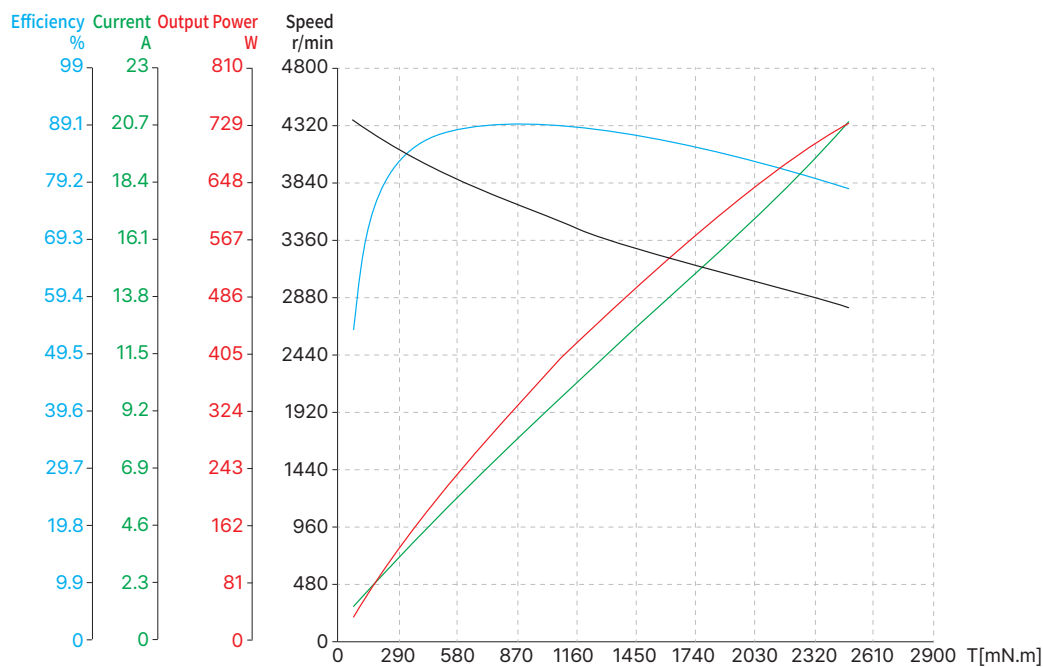
70mm Series

Torque Performance Curves

70ZWC20X-1



70ZWC25X-1



85mm Series

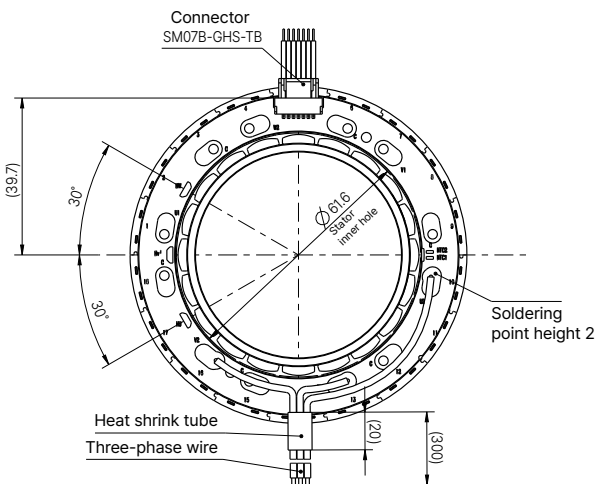
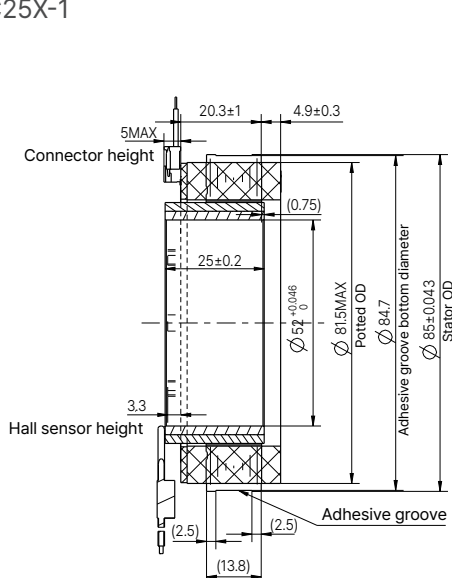
Motor Characteristics

Motor part number		85ZWC25X-1	85ZWC35X-1
Stator outer diameter	mm	85±0.043	85±0.043
Rotor inner diameter	mm	52±0.046	52±0.046
Overall length (L)	mm	20.3	30.1
Stack length (L1)	mm	13.8	23.6
Rotor length (L2)	mm	25±0.2	35±0.2
Number of slots	-	18	18
Pole pairs	-	10	10
Phase-to-phase resistance	Ω	0.14	0.06
Phase-to-phase inductance	mH	0.34	0.12
Winding connection method	-	Star connection	Star connection
Insulation class	-	F	F
Duty type	-	S2	S2
Feedback method	-	Hall sensor	Hall sensor
Commutation angle	-	120°	120°
Insulation strength (Withstand voltage)	-	500VAC/1mA/1s	500VAC/1mA/1s
Insulation resistance	-	100MΩ/500VDC	100MΩ/500VDC
Stator weight	g	315	460
Rotor weight	g	135	189
No-load speed	RPM	3650	4700
No-load current	A	0.6(REF)	2.4(REF)
Rated voltage	VDC	48	48
Rated power	W	422	827
Rated torque	N·m	1.3	2
Rated speed	RPM	3100	3950
Rated current	A	10.3	20.6
Torque constant	Nm/A	0.16	0.117
Back-EMF constant (effective value)	Vrms/Krpm	9.7	8.66
Peak torque	N·m	3.9	6
Peak current	A	27	62
Rotor inertia	g·cm ²	1086	1520

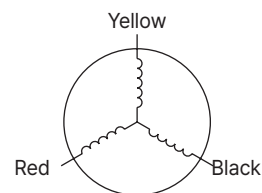
85mm Series

Dimensional Drawings

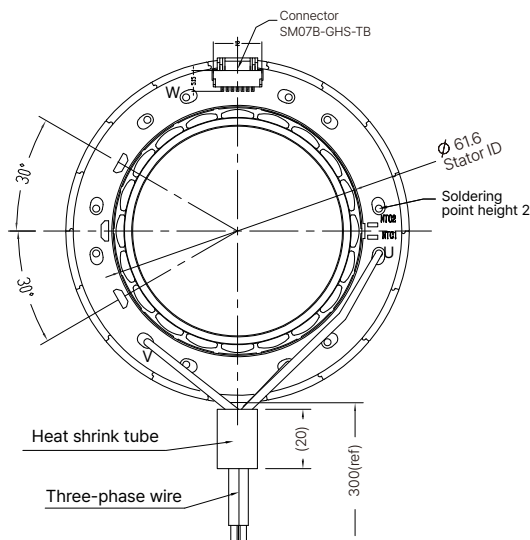
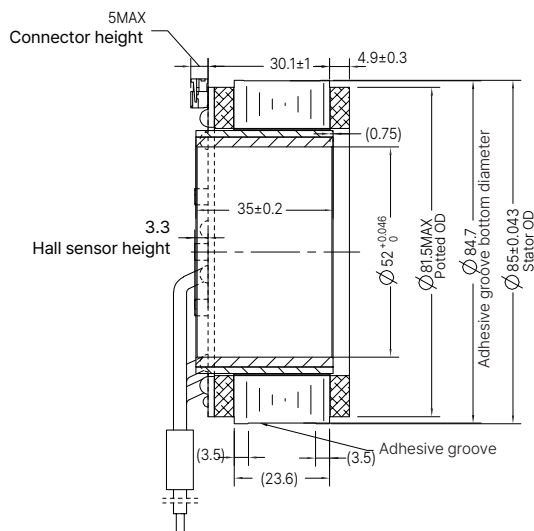
85ZWC25X-1



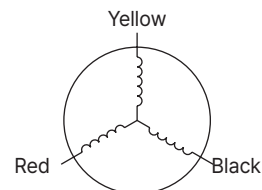
Lead-out type	Lead-out color	Function
UL1332 AWG16	Yellow	U phase
	Red	V phase
	Black	W phase



85ZWC35X-1



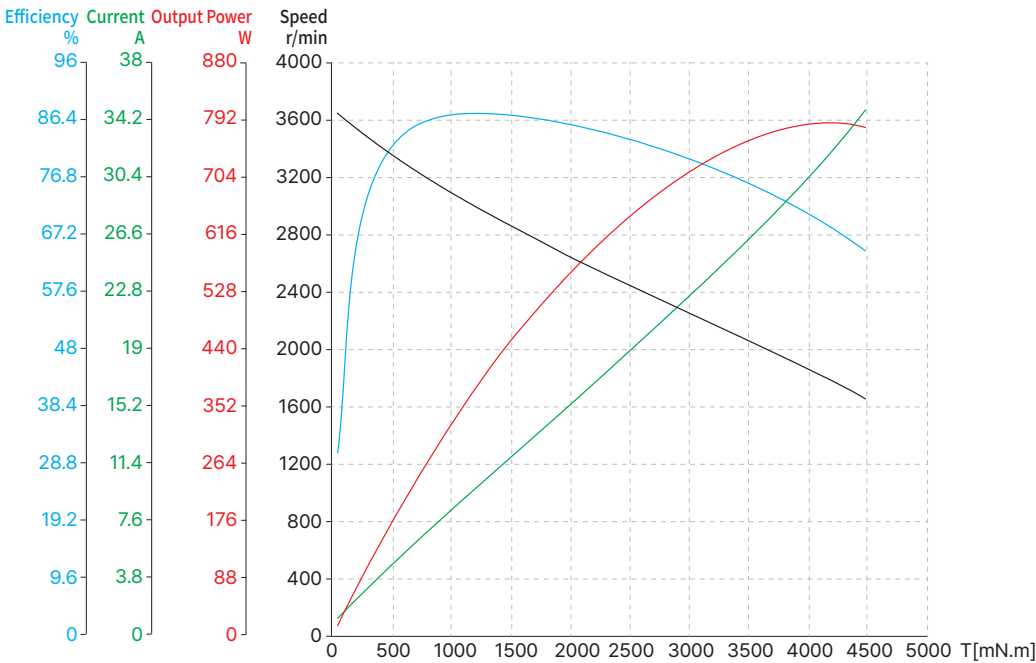
Lead-out type	Lead-out color	Function
UL1332 AWG16	Yellow	U phase
	Red	V phase
	Black	W phase



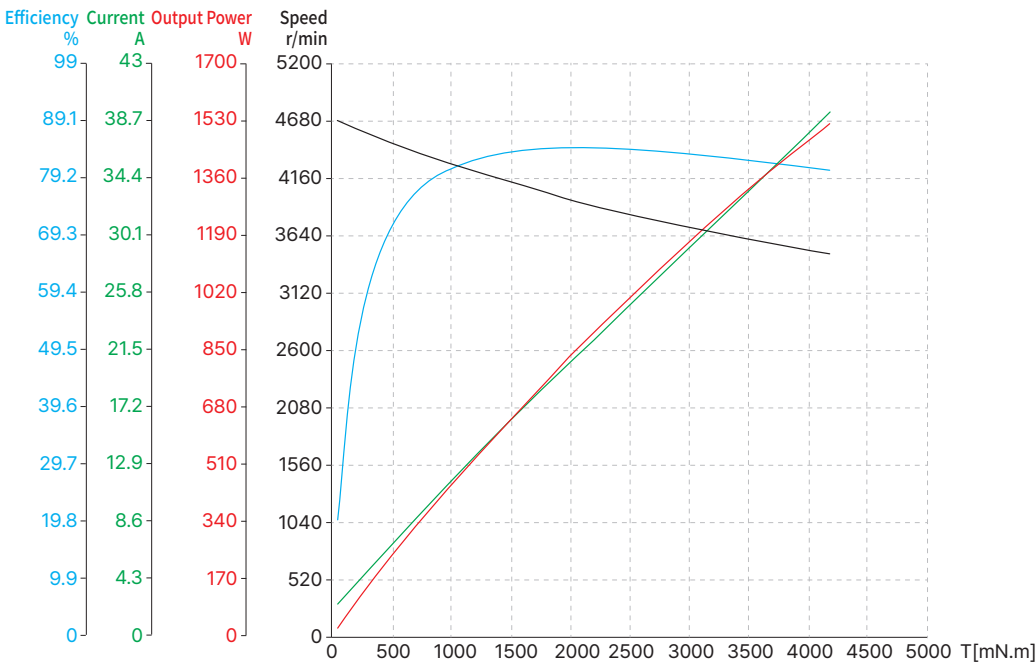
85mm Series

Torque Performance Curves

85ZWC25X-1



85ZWC35X-1

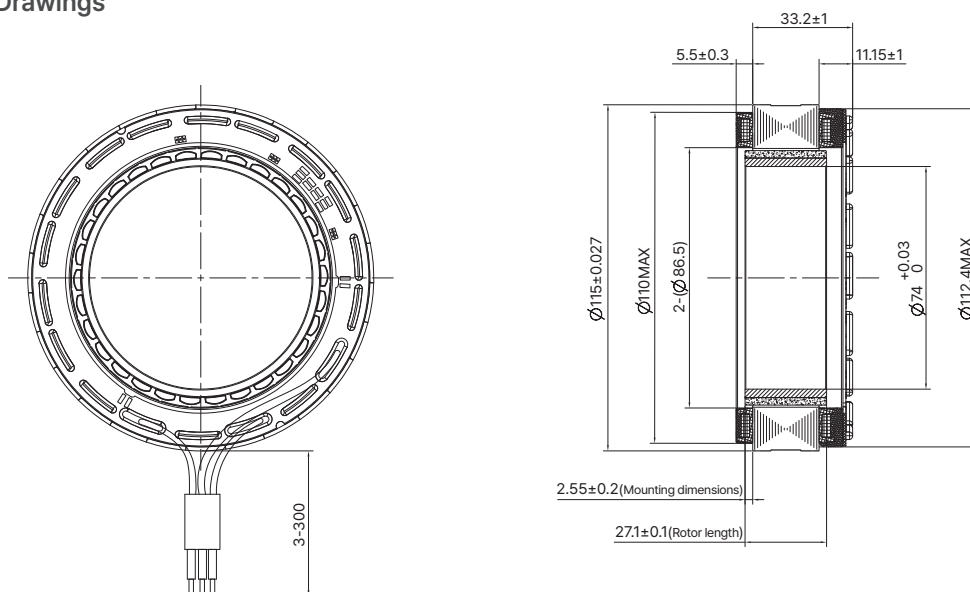


115mm Series

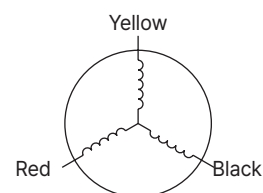
Motor Characteristics

Motor part number	115ZWC37X-1	
Stator outer diameter	mm	115±0.027
Rotor inner diameter	mm	74+0.03
Number of slots	-	27
Pole pairs	-	15
Phase-to-phase resistance	Ω	0.122
Phase-to-phase inductance	mH	0.477
Winding connection method	-	Star connection
Insulation class	-	F
Duty type	-	S2
Feedback method	-	Hall sensor
Commutation angle	-	120°
Insulation strength (Withstand voltage)	-	1200VAC/1s/3mA
Insulation resistance	-	50MΩ/500VDC
Stator weight	g	815
Rotor weight	g	245
No-load speed	RPM	1750
No-load current	A	1.8(REF)
Rated voltage	VDC	48
Rated power	W	570
Rated torque	N·m	3.9
Rated speed	RPM	1400
Rated current	A	14.1
Torque constant	Nm/A	0.281
Back-EMF constant (effective value)	Vrms/Krpm	20.8
Peak torque	N·m	12.7
Peak current	A	47
Rotor inertia	g·cm ²	3930

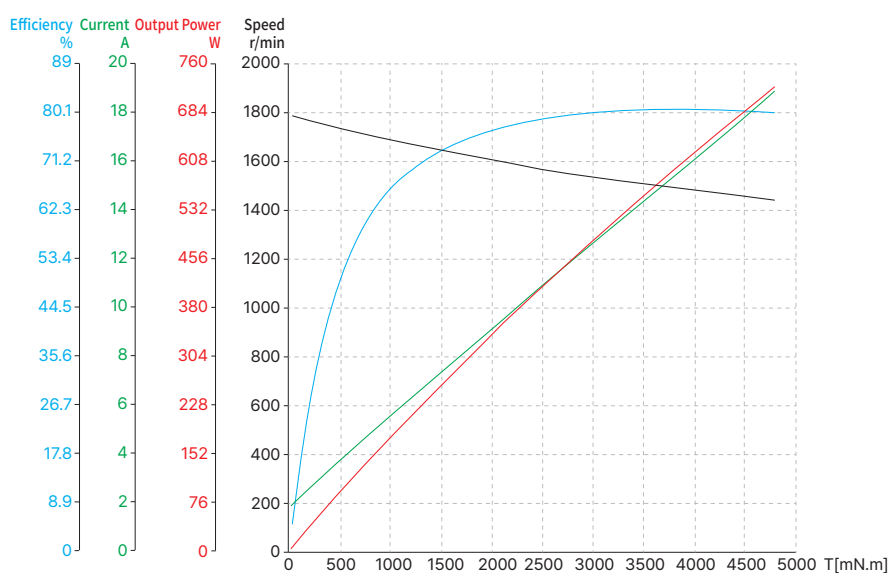
Dimensional Drawings



Lead-out type	Lead-out color	Function
UL1332 AWG14	Yellow	U phase
	Red	V phase
	Black	W phase



Torque Performance Curves



Note : All drawings are 1st Angle Projection - ISO Compliant (3D models available)