

ZHAOWEI

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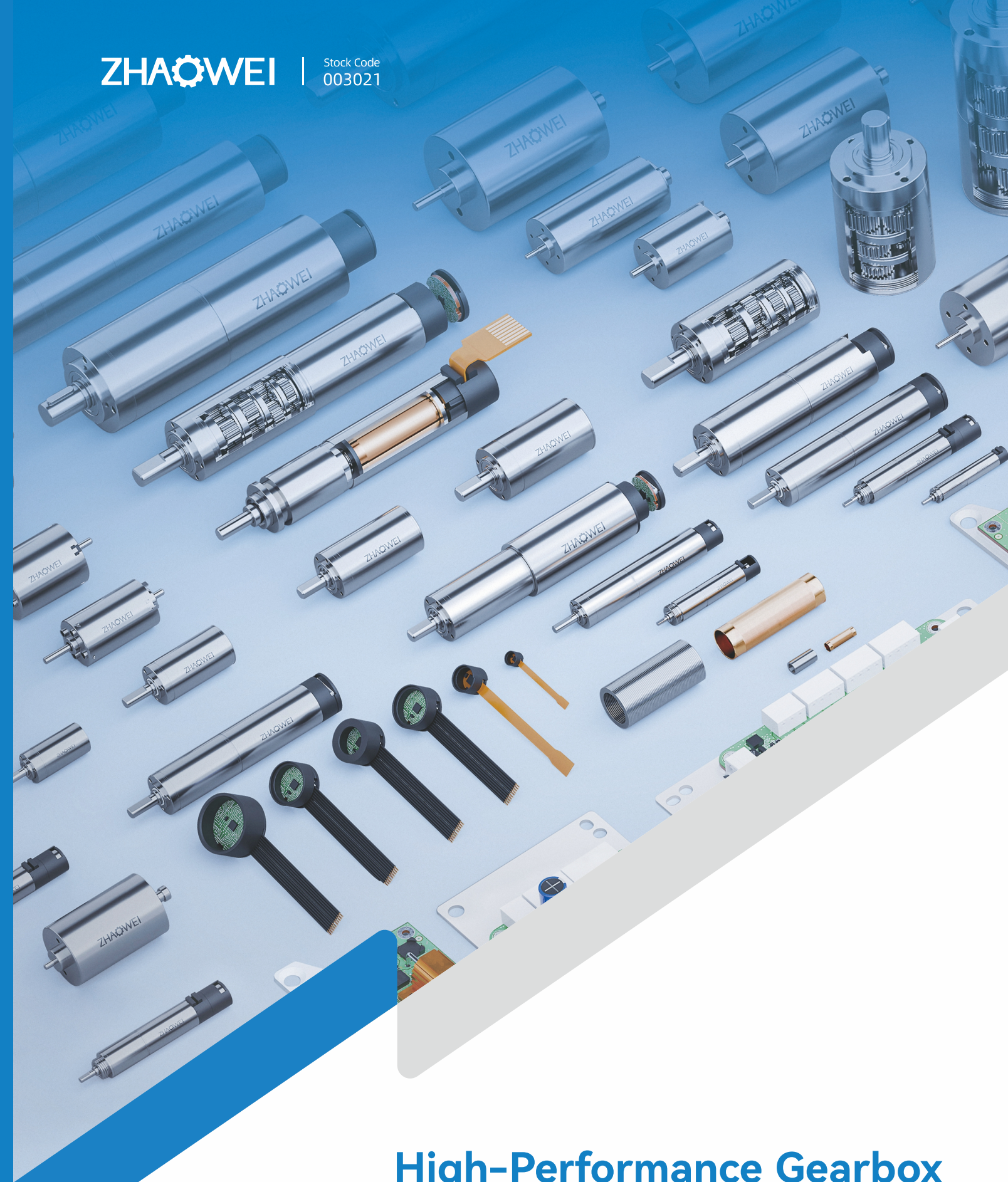
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High-Performance Gearbox

Committed to progress in the field of micro-drives to create
a smarter and better life.





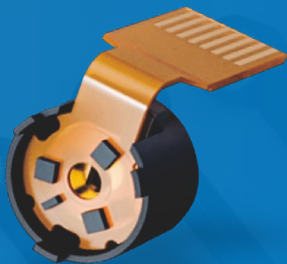
SMD Planetary Gearbox

The ZHAOWEI SMD planetary gearbox features high-precision gears, offering quiet operation, lightweight and compact design, and minimal backlash.



MC Brushless Coreless Motor

The ZHAOWEI MC brushless coreless motor delivers rapid acceleration, reduced operating noise, and minimal vibration compared to traditional motors.



CB-ST Encoder

The ZHAOWEI CB-ST series encoder, paired with high-performance motors and gearboxes, ensures precise control and high-speed operation.

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High-Performance Motor --8 Advantages

High-Precision Positioning

Achieve instantaneous halting at a designated position during high-speed rotation, while enabling unidirectional continuous rotational positioning at low speeds.

High Efficiency

Delivering exceptional power output and dynamic performance with maximum efficiency, providing robust support for diverse application scenarios.

Robust Overload Capacity

Engineered to withstand both instantaneous and continuous load conditions without compromising performance or stability.

Long-Lasting Operation

Designed for long-term operation without sacrificing reliability or stability, ensuring an extended service life.

Ultra-Low Noise

Operates with minimal sound, creating a quieter and more comfortable environment for users.

Instantaneous Response

Quickly and precisely responds to control signals, seamlessly adjusting operational states.

Silky-Smooth Gearbox Performance

Low frictional resistance between gear surfaces reduces vibration, shock, wear, and noise, ensuring smooth operation.

Wide Speed Regulation Range

Exceeding the range offered by brushless DC motors and variable frequency asynchronous AC motors, enabling a broad spectrum of speed control.

Various Applications



Medical Implant Devices

The drive mechanisms for medical implants prioritize patient safety, reliability, and stability throughout the product's lifecycle, as well as compatibility with other medical technologies. With years of expertise in developing miniature drive systems for medical applications, ZHAOWEI is poised to drive innovation in the field of medical implant devices.

Φ6mm



Medical Tools

The rapid advancement of medical technology has resulted in tools that are becoming increasingly smaller and more sophisticated. Leveraging decades of experience in designing and manufacturing miniature drive systems, ZHAOWEI is committed to delivering premium micro drive solutions for global medical device manufacturers.



Φ8mm



Pick-and-Place Machines

Precision and motion control are critical in pick-and-place machines. ZHAOWEI's high-performance motors, featuring rapid response, high accuracy, and reliability, are perfectly suited to the demands of this industry, ensuring precise control and efficient operations during assembly processes.



Φ10mm



Robotic Dexterous Hands

Robotic dexterous hands aim to replicate the agility and precision of human hand movements, which require high-performance, precise drive systems. ZHAOWEI's high-power-density motors, with outstanding energy conversion efficiency, rapid response, smooth operation, and compact size, are ideally suited to the demands of dexterous robotic hands.



Φ10mm



Needle-Free Injection Systems

Needle-free injection technology necessitates precise control over dosage, speed, and injection depth. ZHAOWEI's compact, reliable high-performance motors, combined with low-noise gearboxes and encoders, ensure efficient, reliable, and comfortable needle-free injection systems.



Φ26mm



Oil Drilling

Modern innovations play a pivotal role in oil extraction, where equipment must endure high temperatures, pressure, and intense vibrations. These demanding conditions call for reliable material quality and performance. ZHAOWEI's drive systems, with their superior performance and dependability, hold great potential as ideal solutions for oil extraction processes.

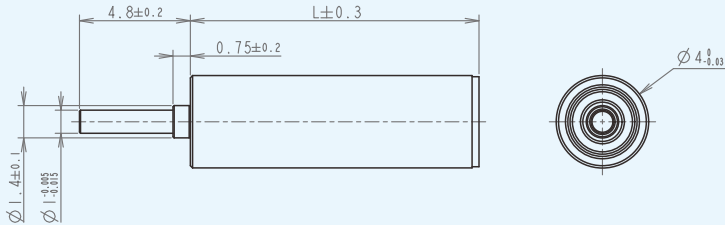


Φ26mm



ZWSMD004004

Φ4mm Planetary Gearbox



Gearbox Technical Data				
Number of stages	1	2	3	4
Max. continuous torque (Nm)	0.001	0.002	0.006	0.015
Max. intermittent torque (Nm)	0.002	0.003	0.008	0.02
Reduction Ratio	4.8	23.0	110.6	531.0
Outer Diameter (mm)	4	4	4	4
Gearbox Length L1(mm)	7.7	9.3	10.9	12.5
Max. efficiency (%)	87	76	70	65
Recommended temperature range (°C)	-40~+80	-40~+80	-40~+80	-40~+80
Max. Weight (G)	1	1.2	1.3	1.5
Max. continuous transmittable power (W)	0.15	0.17	0.12	0.08
Max. intermittent transmittable power (W)	0.2	0.21	0.15	0.10
Average backlash no load (")	5	5	5	5
Max. axial load (dynamic) (N)	5	5	5	5
Max. radial load (4mm from flange) (N)	3	3	4	4
Bearing at output	ball bearing	ball bearing	ball bearing	ball bearing
Axial play (mm)	0~0.1	0~0.1	0~0.1	0~0.1

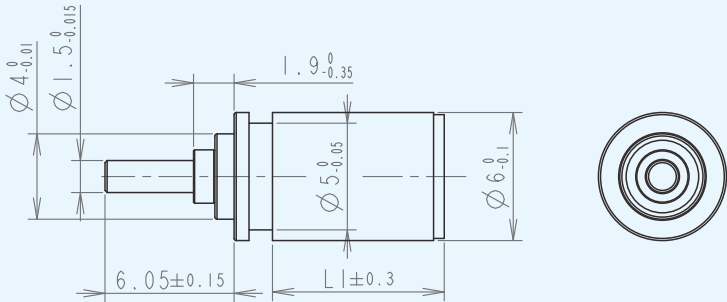
* Note: Data above does not include the motor. Specifications can be customized per customer requirements.

Modular assembly					
Integrated Product	Part No.	Number of stages			
		1	2	3	4
		Length(mm)			
DC Motor	0408 Φ4mm graphite brush	15.8	17.4	19.0	20.6
	04012 Φ4mm graphite brush	20.0	21.6	23.2	24.8
Brushless Motor	MC0409 Φ4mm brushless coreless motor	16.2	17.8	19.4	21.0
Encoder	/				

Product Specifications											
PART NO.	Rated Voltage (V)	No-Load Data		Load Speed (rpm)	Load Data		Overall Length (mm)	Gearbox Rated Allowable Torque (NM)	Gearbox Intermittent Allowable Torque (NM)	Reduction Ratio	Gearbox Length L1(mm)
		No-Load Speed (rpm)	No-Load Current (mA max)		Load Current (mA Max)	Torque (N.m)					
ZWSMD004004-4.8-X	5	9375	140	6250	180	0.0002	16.2	0.001	0.002	4.8	7.7
ZWSMD004004-23-X	5	1957	140	1304	180	0.0003	17.8	0.002	0.003	23.0	9.3
ZWSMD004004-111-X	5	407	140	271	180	0.0015	19.4	0.006	0.008	110.6	10.9
ZWSMD004004-531-X	5	85	140	57	180	0.0069	21.0	0.015	0.02	530.8	12.5

ZWSMD006006

Φ6mm Planetary Gearbox



Gearbox Technical Data					
Number of stages	1	2	3	4	5
Max. continuous torque (Nm)	0.002	0.005	0.01	0.03	0.03
Max. intermittent torque (Nm)	0.005	0.01	0.02	0.06	0.06
Reduction Ratio	3.9	15	57	221	854
Outer Diameter (mm)	6	6	6	6	6
Gearbox Length L1(mm)	5.8	8.2	10.6	13	15.4
Max. efficiency (%)	83	69	57	65	47
Recommended temperature range (°C)	-30~+85	-30~+85	-30~+85	-30~+85	-30~+85
Max. Weight (G)	1.7	2.1	2.5	2.9	3.3
Max. continuous transmittable power (W)	0.63	0.39	0.2	0.15	0.04
Max. intermittent transmittable power (W)	0.79	0.49	0.25	0.18	0.05
Average backlash no load (")	1.8	2	2.2	2.5	2.8
Max. axial load (dynamic) (N)	5	5	5	5	5
Max. radial load (4mm from flange) (N)	5	6	7	8	8
Bearing at output	ball bearing	ball bearing	ball bearing	ball bearing	ball bearing
Axial play (mm)	0~0.1	0~0.1	0~0.1	0~0.1	0~0.1

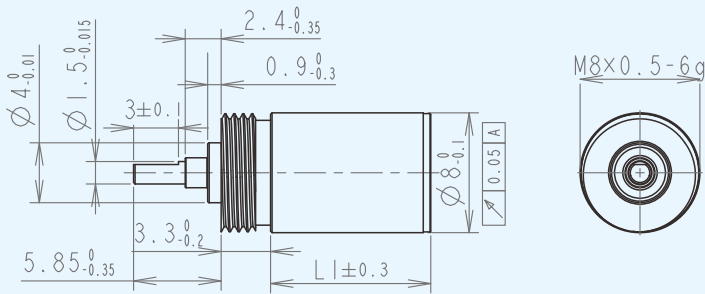
* Note: Data above does not include the motor. Specifications can be customized per customer requirements.

Modular assembly					
Integrated Product	Part No.	Number of stages			
		1	2	3	4
		Length(mm)			
DC Motor	/				
Brushless Motor	MO0623 Φ6mm brushless coreless motor	28	30	33	35
Encoder	CB-ST-6	Magnetic Encoder			

Product Specifications											
PART NO.	Rated Voltage (V)	No-Load Data		Load Data			Overall Length (mm)	Gearbox Rated Allowable Torque (NM)	Gearbox Intermittent Allowable Torque (NM)	Reduction Ratio	Gearbox Length L1(mm)
		No-Load Speed (rpm)	No-Load Current (mA max)	Load Speed (rpm)	Load Current (mA Max)	Torque (N.m)					
ZWSMD006006-04-X	12	16437	150	12133	350	0.002	28.8	0.002	0.005	3.9	5.8
ZWSMD006006-15-X	12	4261	150	3146	355	0.005	31.2	0.005	0.01	14.9	8.2
ZWSMD006006-57-X	12	1105	160	816	360	0.010	33.6	0.01	0.02	57.4	10.6
ZWSMD006006-221-X	12	286	170	211	365	0.030	36	0.03	0.06	221.3	13
ZWSMD006006-854-X	12	74	180	55	370	0.030	38.4	0.03	0.06	853.7	15.4

ZWSMD008008

Φ8mm Planetary Gearbox



Gearbox Technical Data					
Number of stages	1	2	3	4	5
Max. continuous torque (Nm)	0.01	0.02	0.06	0.08	0.1
Max. intermittent torque (Nm)	0.015	0.03	0.09	0.12	0.15
Reduction Ratio	4	16, 36	64, 216	256, 1296	1024
Outer Diameter (mm)	8	8	8	8	8
Gearbox Length L1(mm)	5.5	8.1	10.7	13.3	15.9
Max. efficiency (%)	90	81	73	65	59
Recommended temperature range (°C)	-30~+85	-30~+85	-30~+85	-30~+85	-30~+85
Max. Weight (G)	2.6	3.2	3.8	4.4	5
Max. continuous transmittable power (W)	0.84	0.52	0.39	0.13	0.04
Max. intermittent transmittable power (W)	1.05	0.65	0.49	0.16	0.05
Average backlash no load (")	1.8	2	2.2	2.5	3
Max. axial load (dynamic) (N)	5	5	5	5	5
Max. radial load (4mm from flange) (N)	5	6	7	8	8
Bearing at output	ball bearing	ball bearing	ball bearing	ball bearing	ball bearing
Axial play (mm)	0~0.1	0~0.1	0~0.1	0~0.1	0~0.1

* Note: Data above does not include the motor. Specifications can be customized per customer requirements.

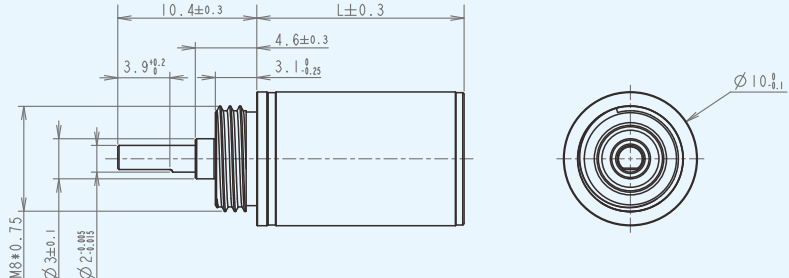
Modular assembly						
Integrated Product	Part No.	Number of stages				
		1	2	3	4	5
		Length(mm)				
DC Motor	MP0816 Φ8mm graphite brush	22.5	25.1	27.7	30.3	32.9
Brushless Motor	MO0832 Φ8mm coreless brushless motor	37.50	40.10	42.70	45.30	47.90
	MC0824 Φ8mm coreless brushless motor	29.50	32.10	34.70	37.30	39.90
Encoder	CB-ST-8	Magnetic Encoder				

Product Specifications											
PART NO.	Rated Voltage (V)	No-Load Data		Load Data			Overall Length (mm)	Gearbox Rated Allowable Torque (NM)	Gearbox Intermittent Allowable Torque (NM)	Reduction Ratio	Gearbox Length L1(mm)
		No-Load Speed (rpm)	No-Load Current (mA max)	Load Speed (rpm)	Load Current (A Max)	Torque (N.m)					
ZWSMD008008-04-X	12	9625	120	6375	0.55	0.01	29.5	0.01	0.015	4	5.5
ZWSMD008008-16-X	12	2406	130	1594	0.6	0.03	32.1	0.02	0.03	16	8.1
ZWSMD008008-36-X	12	1069	130	708	0.6	0.01		0.008	0.012	36	
ZWSMD008008-64-X	12	602	140	398	0.6	0.06	34.7	0.06	0.09	64	10.7
ZWSMD008008-216-X	12	178	140	118	0.6	0.02		0.02	0.03	216	
ZWSMD008008-256-X	12	150	150	100	0.65	0.08	37.3	0.08	0.12	256	13.3
ZWSMD008008-1296-X	12	30	150	20	0.65	0.04		0.04	0.06	1296	
ZWSMD008008-1024-X	12	38	160	25	0.7	0.10	39.9	0.1	0.15	1024	15.9

*The specifications above are for reference only. Changes may occur without prior notice. For specific requirements, please contact customer service.

ZWSMD010010

Φ10mm Planetary Gearbox



Gearbox Technical Data					
Number of stages	1	2	3	4	5
Max. continuous torque (Nm)	0.01	0.03	0.1	0.15	0.15
Max. intermittent torque (Nm)	0.02	0.05	0.15	0.2	0.2
Reduction Ratio	4	16	64	256	1024
Outer Diameter (mm)	10	10	10	10	10
Gearbox Length L1(mm)	8.6	12.1	15.5	18.5	21.9
Max. efficiency (%)	90	80	70	60	55
Recommended temperature range (°C)	-40~+100	-40~+100	-40~+100	-40~+100	-40~+100
Max. Weight (G)	6.6	7	7.6	8.1	8.6
Max. continuous transmittable power (W)	1.6	1.2	1	0.4	0.1
Max. intermittent transmittable power (W)	2	1.5	1.3	0.5	0.13
Average backlash no load (")	1.5	1.8	2	2.2	2.5
Max. axial load (dynamic) (N)	5	5	5	5	5
Max. radial load (4mm from flange) (N)	5	10	15	20	25
Bearing at output	ball bearing	ball bearing	ball bearing	ball bearing	ball bearing
Axial play (mm)	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1

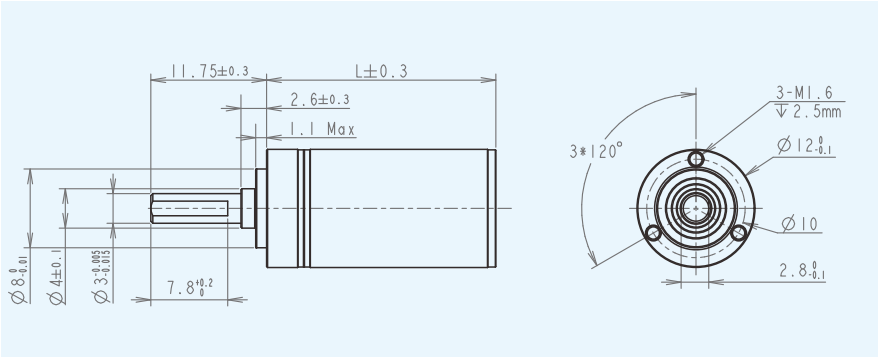
* Note: Data above does not include the motor. Specifications can be customized per customer requirements.

Modular assembly						
Integrated Product	Part No.	Number of stages				
		1	2	3	4	5
		Length(mm)				
DC Motor	1015 Φ10mm graphite brush	23.6	27.1	30.5	33.5	36.9
	1020 Φ10mm graphite brush	29.3	32.8	36.2	39.2	42.6
Brushless Motor	1026 Φ10mm coreless brushless motor	36.6	40.1	43.5	46.5	49.9
Encoder	CB-ST-10	Magnetic Encoder				

Product Specifications											
PART NO.	Rated Voltage (V)	No-Load Data		Load Data			Overall Length (mm)	Gearbox Rated Allowable Torque (NM)	Gearbox Intermittent Allowable Torque (NM)	Reduction Ratio	Gearbox Length L1(mm)
		No-Load Speed (rpm)	No-Load Current (mA max)	Load Speed (rpm)	Load Current (A Max)	Torque (N.m)					
ZWSMD010010-4-X	12	9167	120	7361	1	0.005	36.6	0.01	0.02	4	8.6
ZWSMD010010-5-X	12	6226	120	5000	1	0.007				5	
ZWSMD010010-16-X	12	2063	120	1656	1	0.019	40.1	0.03	0.05	16	12.1
ZWSMD010010-20-X	12	1650	120	1325	1	0.024				20	
ZWSMD010010-25-X	12	1320	120	1060	1	0.030				25	
ZWSMD010010-64-X	12	516	120	414	1	0.067	43.5	0.1	0.15	64	15.5
ZWSMD010010-80-X	12	413	120	331	1	0.084				80	
ZWSMD010010-100-X	12	330	120	265	1	0.105				100	
ZWSMD010010-125-X	12	264	120	212	1	0.131				125	
ZWSMD010010-256-X	12	129	120	116	0.8	0.150	46.5	0.15	0.2	256	18.5
ZWSMD010010-320-X	12	103	120	95	0.8	0.150				320	
ZWSMD010010-400-X	12	83	120	78	0.8	0.150				400	
ZWSMD010010-500-X	12	66	120	63	0.8	0.150				500	
ZWSMD010010-625-X	12	53	120	51	0.8	0.150				625	
ZWSMD010010-1024-X	12	32	120	31	0.8	0.150	49.9	0.15	0.2	1024	21.9
ZWSMD010010-1280-X	12	26	120	25	0.8	0.150				1280	
ZWSMD010010-1600-X	12	21	120	20	0.8	0.150				1600	
ZWSMD010010-2000-X	12	17	120	16	0.8	0.150				2000	
ZWSMD010010-2500-X	12	13	120	13	0.8	0.150				2500	
ZWSMD010010-3125-X	12	11	120	10	0.8	0.150				3125	

ZWSMD012012

Φ12mm Planetary Gearbox



Gearbox Technical Data			
Number of stages	2	3	4
Max. continuous torque (Nm)	0.25	0.3	0.35
Max. intermittent torque (Nm)	0.3	0.38	0.41
Reduction Ratio	16, 21, 26, 28, 35	62, 83, 103, 111, 138, 150, 172, 186, 231	243, 326, 406, 439, 546, 590, 679, 734, 794, 913, 987, 1135, 1227, 1526
Outer Diameter (mm)	12	12	12
Gearbox Length L1(mm)	17.5	23.3	27.8
Max. efficiency (%)	75	65	55
Recommended temperature range (°C)	-40~+100	-40~+100	-40~+100
Max. Weight (G)	12.4	15.5	18.6
Max. continuous transmittable power (W)	2.2	1.1	0.6
Max. intermittent transmittable power (W)	2.8	1.4	0.8
Average backlash no load (")	1.5	1.8	2.1
Max. axial load (dynamic) (N)	20	20	20
Max. radial load (4mm from flange) (N)	45	60	60
Bearing at output	ball bearing	ball bearing	ball bearing
Axial play (mm)	< 0.1	< 0.1	< 0.1

* Note: Data above does not include the motor. Specifications can be customized per customer requirements.

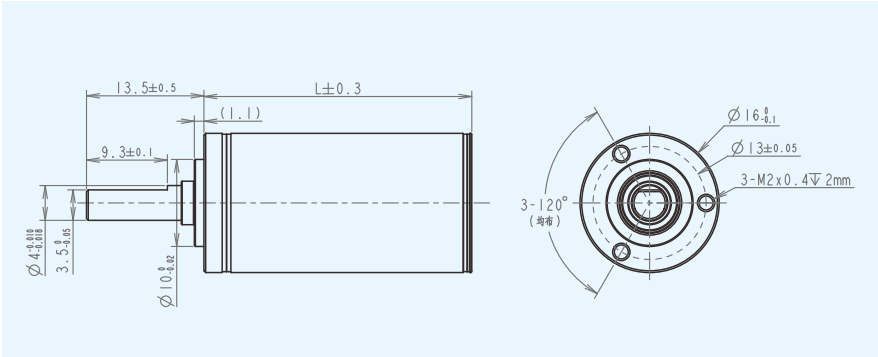
Modular assembly		Number of stages		
Integrated Product	Part No.	2	3	4
		Length(mm)		
DC Motor	1220 Φ12mm graphite brush	37.5	43.3	47.8
	1228 Φ12mm graphite brush	45.7	51.5	56.0
Brushless Motor	1226 Φ12mm coreless brushless motor	43.6	49.4	53.9
	1232 Φ12mm coreless brushless motor	49.5	55.3	59.8
Encoder	CB-ST-8	Magnetic Encoder		

Product Specifications											
PART NO.	Rated Voltage (V)	No-Load Data		Load Data			Overall Length (mm)	Gearbox Rated Allowable Torque (NM)	Gearbox Intermittent Allowable Torque (NM)	Reduction Ratio	Gearbox Length L1(mm)
		No-Load Speed (rpm)	No-Load Current (mA max)	Load Speed (rpm)	Load Current (A Max)	Torque (N.m)					
ZWSMD012012-16-X	12	1836	117	1284	1	0.034	43.5	0.25	0.3	16	17.5
ZWSMD012012-21-X	12	1365	117	955	1	0.042				21	
ZWSMD012012-26-X	12	1098	117	768	1	0.052				26	
ZWSMD012012-28-X	12	1015	117	710	1	0.056				28	
ZWSMD012012-35-X	12	816	117	571	1	0.070				35	
ZWSMD012012-62-X	12	465	117	325	1	0.100				62	
ZWSMD012012-83-X	12	346	117	242	1	0.134	49.3	0.3	0.38	83	23.3
ZWSMD012012-103-X	12	278	117	195	1	0.167				103	
ZWSMD012012-111-X	12	257	117	180	1	0.181				111	
ZWSMD012012-138-X	12	207	117	145	1	0.225				138	
ZWSMD012012-150-X	12	191	117	134	1	0.243				150	
ZWSMD012012-172-X	12	166	117	116	1	0.279				172	
ZWSMD012012-186-X	12	154	117	108	1	0.302				186	
ZWSMD012012-231-X	12	124	117	89	1	0.350				231	
ZWSMD012012-243-X	12	118	117	80	0.8	0.350				243	
ZWSMD012012-326-X	12	88	117	67	0.8	0.350				326	
ZWSMD012012-406-X	12	70	117	57	0.8	0.350				406	
ZWSMD012012-439-X	12	65	117	54	0.8	0.350				439	
ZWSMD012012-546-X	12	52	117	45	0.8	0.350	546				
ZWSMD012012-590-X	12	48	117	42	0.8	0.350	590				
ZWSMD012012-679-X	12	42	117	38	0.8	0.350	679				
ZWSMD012012-734-X	12	39	117	35	0.8	0.350	734				
ZWSMD012012-794-X	12	36	117	33	0.8	0.350	794				
ZWSMD012012-913-X	12	31	117	29	0.8	0.350	913				
ZWSMD012012-987-X	12	29	117	27	0.8	0.350	987				
ZWSMD012012-1135-X	12	25	117	23	0.8	0.350	1135				
ZWSMD012012-1227-X	12	23	117	21	0.8	0.350	1227				
ZWSMD012012-1526-X	12	19	117	18	0.8	0.350	1526				

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ZWSMD016016

Φ16mm Planetary Gearbox



Gearbox Technical Data			
Number of stages	2	3	4
Max. continuous torque (Nm)	0.55	0.8	0.9
Max. intermittent torque (Nm)	0.7	1	1.1
Reduction Ratio	16, 21, 26, 28, 35, 44	62, 83, 103, 111, 138, 150, 172, 186, 231	243, 326, 406, 439, 546, 590, 679, 734, 794, 913, 987, 1135, 1227, 1526
Outer Diameter (mm)	16	16	16
Gearbox Length L1(mm)	25.8	30.8	35.7
Max. efficiency (%)	80	70	60
Recommended temperature range (°C)	-30~+100	-30~+100	-30~+100
Max. Weight (G)	32.8	36.8	40.8
Max. continuous transmittable power (W)	8	4	1.5
Max. intermittent transmittable power (W)	10	4.4	1.5
Average backlash no load (")	0.5	0.5	0.5
Max. axial load (dynamic) (N)	30	30	30
Max. radial load (4mm from flange) (N)	80	90	90
Bearing at output	ball bearing	ball bearing	ball bearing
Axial play (mm)	0~0.1	0~0.1	0~0.1

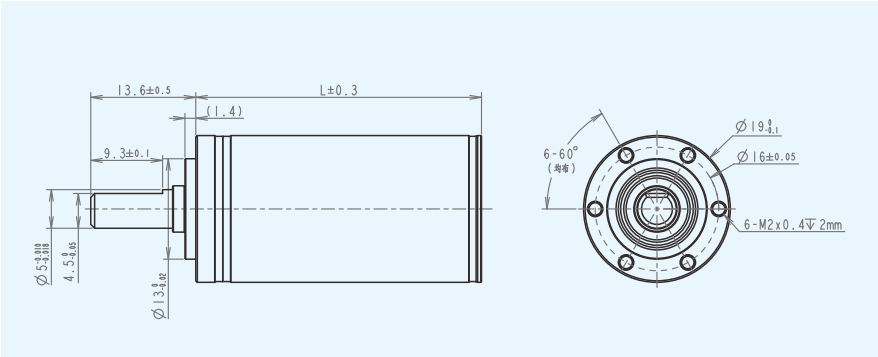
* Note: Data above does not include the motor. Specifications can be customized per customer requirements.

Modular assembly		Number of stages		
Integrated Product	Part No.	2	3	4
		Length(mm)		
DC Motor	1625 Graphite brush	50.8	55.8	60.7
Brushless Motor	MC1636 Brushless	53.8	58.8	63.7
Encoder	CB-ST-16	Magnetic Encoder		

PART NO.	Rated Voltage (V)	No-Load Data		Load Data			Overall Length (mm)	Gearbox Rated Allowable Torque (NM)	Gearbox Intermittent Allowable Torque (NM)	Reduction Ratio	Gearbox Length L1(mm)
		No-Load Speed (rpm)	No-Load Current (mA max)	Load Speed (rpm)	Load Current (A Max)	Torque (N.m)					
ZWSMD016016-16	24	3000	150	2500	1.15	0.055	53.8	0.55	0.7	16	25.8
ZWSMD016016-21	24	2286	150	1905	1.15	0.072				21	
ZWSMD016016-26	24	1846	150	1538	1.15	0.089				26	
ZWSMD016016-28	24	1714	150	1429	1.15	0.096				28	
ZWSMD016016-35	24	1371	150	1143	1.15	0.120				35	
ZWSMD016016-44	24	1091	150	909	1.15	0.151				44	
ZWSMD016016-62	24	774	170	645	1.2	0.213	58.8	0.8	1	62	30.8
ZWSMD016016-83	24	578	170	482	1.2	0.286				83	
ZWSMD016016-103	24	466	170	388	1.2	0.354				103	
ZWSMD016016-111	24	432	170	360	1.2	0.382				111	
ZWSMD016016-138	24	348	170	290	1.2	0.475				138	
ZWSMD016016-150	24	320	170	267	1.2	0.516				150	
ZWSMD016016-172	24	279	170	233	1.2	0.592				172	
ZWSMD016016-186	24	258	170	215	1.2	0.640				186	
ZWSMD016016-231	24	208	170	173	1.2	0.795				231	
ZWSMD016016-243	24	198	190	165	1.25	1.100	63.7	0.9	1.1	243	35.7
ZWSMD016016-326	24	147	190	123	1.25	1.100				326	
ZWSMD016016-406	24	118	190	99	1.25	1.100				406	
ZWSMD016016-439	24	109	190	91	1.25	1.100				439	
ZWSMD016016-546	24	88	190	73	1.25	1.100				546	
ZWSMD016016-590	24	81	190	68	1.25	1.100				590	
ZWSMD016016-679	24	71	190	59	1.25	1.100				679	
ZWSMD016016-734	24	65	190	54	1.25	1.100				734	
ZWSMD016016-794	24	60	190	50	1.25	1.100				794	
ZWSMD016016-913	24	53	190	44	1.25	1.100				913	
ZWSMD016016-987	24	49	190	41	1.25	1.100				987	
ZWSMD016016-1135	24	42	190	35	1.25	1.100				1135	
ZWSMD016016-1227	24	39	190	33	1.25	1.100				1227	
ZWSMD016016-1526	24	31	190	26	1.25	1.100				1526	

ZWSMD019019

Φ19mm Planetary Gearbox



Gearbox Technical Data			
Number of stages	2	3	4
Max. continuous torque (Nm)	0.9	1.6	2
Max. intermittent torque (Nm)	1.15	2	2.5
Reduction Ratio	16, 21, 26, 28, 35	62, 83, 103, 111, 138, 150, 172, 186, 231	243, 326, 406, 439, 546, 590, 679, 734, 794, 913, 987, 1135, 1227, 1526
Outer Diameter (mm)	19	19	19
Gearbox Length L1(mm)	29.9	37	41
Max. efficiency (%)	80	70	60
Recommended temperature range (°C)	-30~+100	-30~+100	-30~+100
Max. Weight (G)	40.2	60.2	62.2
Max. continuous transmittable power (W)	15	7	2
Max. intermittent transmittable power (W)	19	9	3
Average backlash no load (")	0.7	0.7	0.7
Max. axial load (dynamic) (N)	40	40	40
Max. radial load (4mm from flange) (N)	100	120	120
Bearing at output	ball bearing	ball bearing	ball bearing
Axial play (mm)	0~0.1	0~0.1	0~0.1

* Note: Data above does not include the motor. Specifications can be customized per customer requirements.

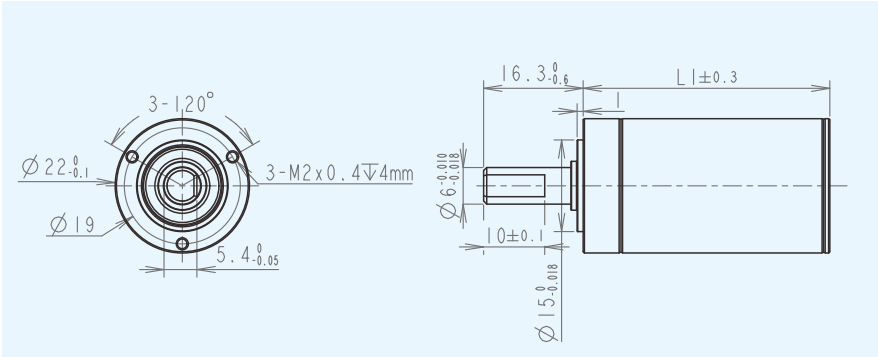
Modular assembly				
Integrated Product	Part No.	Number of stages		
		2	3	4
DC Motor	MP1931 Φ 19mm Graphite brush	60.9	68.0	72.0
	1625 Graphite brush	54.9	62.0	66.0
Brushless Motor	2248 Brushless	77.9	85.0	89.0
Encoder	CB-ST-16	Magnetic Encoder		

PART NO.	Rated Voltage (V)	No-Load Data		Load Data			Overall Length (mm)	Gearbox Rated Allowable Torque (NM)	Gearbox Intermittent Allowable Torque (NM)	Reduction Ratio	Gearbox Length L1(mm)
		No-Load Speed (rpm)	No-Load Current (mA max)	Load Speed (rpm)	Load Current (A Max)	Torque (N.m)					
ZWSMD019019-16	12	513	200	331	1.5	0.126	60.9	0.9	1.15	16	29.9
ZWSMD019019-21	12	390	200	252	1.5	0.165				21	
ZWSMD019019-26	12	315	200	204	1.5	0.204				26	
ZWSMD019019-28	12	293	200	189	1.5	0.220				28	
ZWSMD019019-35	12	234	200	151	1.5	0.275				35	
ZWSMD019019-44	12	186	200	120	1.5	0.345	68	1.6	2	44	37
ZWSMD019019-62	12	132	250	85	1.6	0.426				62	
ZWSMD019019-83	12	99	250	64	1.6	0.570				83	
ZWSMD019019-103	12	80	250	51	1.6	0.707				103	
ZWSMD019019-111	12	74	250	48	1.6	0.762				111	
ZWSMD019019-138	12	59	250	38	1.6	0.948				138	
ZWSMD019019-150	12	55	250	35	1.6	1.030				150	
ZWSMD019019-172	12	48	250	31	1.6	1.181				172	
ZWSMD019019-186	12	44	250	28	1.6	1.277				186	
ZWSMD019019-231	12	35	250	23	1.6	1.586				231	
ZWSMD019019-243	12	34	250	22	1.6	1.600				243	
ZWSMD019019-326	12	25	300	16	1.7	2.500	72	2	2.5	326	41
ZWSMD019019-406	12	20	300	13	1.7	2.500				406	
ZWSMD019019-439	12	19	300	12	1.7	2.500				439	
ZWSMD019019-546	12	15	300	10	1.7	2.500				546	
ZWSMD019019-590	12	14	300	9	1.7	2.500				590	
ZWSMD019019-679	12	12	300	8	1.7	2.500				679	
ZWSMD019019-734	12	11	300	7	1.7	2.500				734	
ZWSMD019019-794	12	10	300	7	1.7	2.500				794	
ZWSMD019019-913	12	9	300	6	1.7	2.500				913	
ZWSMD019019-987	12	8	300	5	1.7	2.500				987	
ZWSMD019019-1135	12	7	300	5	1.7	2.500				1135	
ZWSMD019019-1227	12	7	300	4	1.7	2.500				1227	
ZWSMD019019-1526	12	5	300	3	1.7	2.500				1526	

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ZWSMD022022

Φ22mm Planetary Gearbox



Gearbox Technical Data					
Number of stages	1	2	3	4	5
Max. continuous torque (Nm)	1	2.9	4.3	5.5	5.2
Max. intermittent torque (Nm)	1.25	3.6	5.3	6.5	6.5
Reduction Ratio	3.71	9.7, 14	43, 66	94, 112, 134, 159, 190, 246	415, 592, 989, 1526
Outer Diameter (mm)	22	22	22	22	22
Gearbox Length L1(mm)	24.3	32.8	40.4	46.5	52.6
Max. efficiency (%)	96	92	90	87	83
Recommended temperature range (°C)	-30~+85	-30~+85	-30~+85	-30~+85	-30~+85
Max. Weight (G)	53	65	76	88	102
Max. continuous transmittable power (W)	66	36	20	11	6
Max. intermittent transmittable power (W)	82.5	45	25	14	7
Average backlash no load (")	0.5	0.5	0.5	.0.5	0.5
Max. axial load (dynamic) (N)	80	80	80	80	80
Max. radial load (4mm from flange) (N)	100	145	150	150	150
Bearing at output	ball bearing	ball bearing	ball bearing	ball bearing	ball bearing
Axial play (mm)	0~0.1	0~0.1	0~0.1	0~0.1	0~0.1

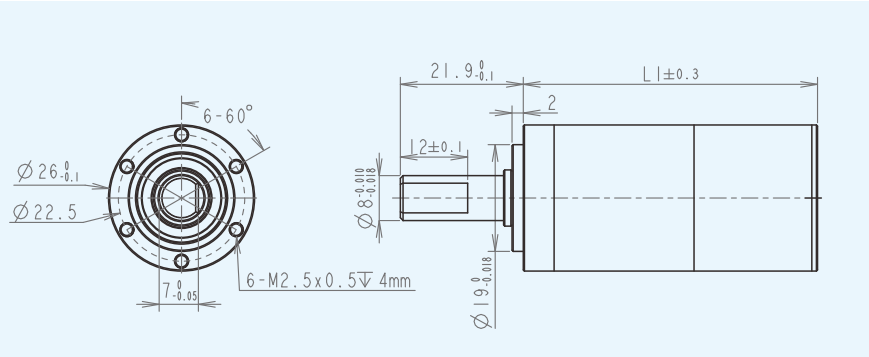
* Note: Data above does not include the motor. Specifications can be customized per customer requirements.

Modular assembly					
Integrated Product	Part No.	Number of stages			
		1	2	3	4
DC Motor	MP1931 Φ19mm graphite brush	56.1	64.6	72.2	78.3
	MP2238 Φ22mm graphite brush	62.5	71	78.6	84.7
Brushless Motor	MO1925 Φ19mm outer rotor brushless motor	49.3	57.8	65.4	71.5
	MC2232 Φ22mm corelss brushless motor	56.3	64.8	72.4	78.5
	MC2250 Φ22mm corelss brushless motor	74.3	82.8	90.4	96.5
Encoder	CB-ST-16	Magnetic Encoder			

PART NO.	Rated Voltage (V)	No-Load Data		Load Data			Overall Length (mm)	Gearbox Rated Allowable Torque (NM)	Gearbox Intermittent Allowable Torque (NM)	Reduction Ratio	Gearbox Length L1(mm)
		No-Load Speed (rpm)	No-Load Current (mA max)	Load Speed (rpm)	Load Current (A Max)	Torque (N.m)					
ZWSMD022022-3.71	24	1914	150	1482	1	0.06	56.3	1	1.25	3.71	24.3
ZWSMD022022-9.7	24	732	200	567	1.2	0.14	64.8	2.9	3.6	9.7	32.8
ZWSMD022022-14	24	507	200	393	1.2	0.20				14	
ZWSMD022022-43	24	165	250	128	1.5	0.60				43	
ZWSMD022022-66	24	108	250	83	1.5	0.92	72.4	4.3	5.3	66	40.4
ZWSMD022022-94	24	76	300	59	1.8	1.27				94	
ZWSMD022022-112	24	63	300	49	1.8	1.51				112	
ZWSMD022022-134	24	53	300	41	1.8	1.81				134	
ZWSMD022022-159	24	45	300	35	1.8	2.14				159	
ZWSMD022022-190	24	37	300	29	1.8	2.56	78.5	5.5	6.5	190	46.5
ZWSMD022022-246	24	29	300	22	1.8	3.32				246	
ZWSMD022022-415	24	17	350	13	2.2	5.34				415	
ZWSMD022022-592	24	12	350	9	2.2	7.62				592	
ZWSMD022022-989	24	7	350	6	2.2	12.72				989	
ZWSMD022022-1526	24	5	350	4	2.2	19.63	84.6	5.2	6.5	1526	52.6

ZWSMD026026

Φ26mm Planetary Gearbox



Gearbox Technical Data				
Number of stages	2	3	4	
Max. continuous torque (Nm)	3	5	6.3	
Max. intermittent torque (Nm)	4	7	8	
Reduction Ratio	16, 21, 26, 28, 35	62,83, 103,111, 138,150, 172,186, 231	243, 326, 406, 439, 546, 590, 679, 734, 794, 913, 987, 1135, 1227, 1526	
Outer Diameter (mm)	26	26	26	
Gearbox Length L1(mm)	35.9	44.9	52.4	
Max. efficiency (%)	92	90	87	
Recommended temperature range (°C)	-30~+85	-30~+85	-30~+85	
Max. Weight (G)	120	132	145	
Max. continuous transmittable power (W)	60	30	15	
Max. intermittent transmittable power (W)	75	40	20	
Average backlash no load (")	0.5	0.5	0.5	
Max. axial load (dynamic) (N)	110	110	110	
Max. radial load (4mm from flange) (N)	180	180	180	
Bearing at output	ball bearing	ball bearing	ball bearing	
Axial play (mm)	0~0.1	0~0.1	0~0.1	

* Note: Data above does not include the motor. Specifications can be customized per customer requirements.

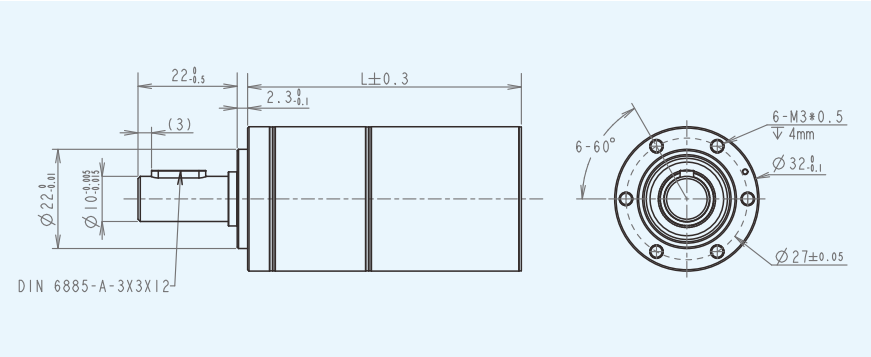
Modular assembly				
Integrated Product	Part No.	Number of stages		
		2	3	4
DC Motor	MP2238 Φ22mm graphite brush	74.10	83.10	90.60
	MP2430 Φ24mm graphite brush	67.10	76.10	83.60
	MP2543 Φ25mm coreless carbon brush	79.40	88.40	95.90
	MP2554 Φ24mm coreless carbon brush	79.40	88.40	95.90
Brushless Motor	MC2453 Φ24mm coreless brushless	88.90	97.90	105.40
Encoder	CB-ST-22	Magnetic Encoder		

Product Specifications										
PART NO.	Rated Voltage (V)	No-Load Data		Load Data			Overall Length (mm)	Gearbox Rated Allowable Torque (NM)	Gearbox Intermittent Allowable Torque (NM)	Reduction Ratio
		No-Load Speed (rpm)	No-Load Current (mA Max)	Load Speed (rpm)	Load Current (A Max)	Torque (N.m)				
ZWSMD026026-16-X	24	813	460	747	3	0.3	88.9	3	4	16
ZWSMD026026-21-X	24	619	460	569	3	0.4				21
ZWSMD026026-26-X	24	500	460	460	3	0.5				26
ZWSMD026026-28-X	24	464	460	427	3	0.5				28
ZWSMD026026-35-X	24	371	460	341	3	0.6				35
ZWSMD026026-62-X	24	210	580	193	3.5	1.1	97.9	5	7	62
ZWSMD026026-83-X	24	157	580	144	3.5	1.5				83
ZWSMD026026-103-X	24	126	580	116	3.5	1.9				103
ZWSMD026026-111-X	24	117	580	108	3.5	2.0				111
ZWSMD026026-138-X	24	94	580	87	3.5	2.5				138
ZWSMD026026-150-X	24	87	580	80	3.5	2.7				150
ZWSMD026026-172-X	24	76	580	69	3.5	3.1				172
ZWSMD026026-186-X	24	70	580	64	3.5	3.3				186
ZWSMD026026-231-X	24	56	580	52	3.5	4.2				231
ZWSMD026026-243-X	24	53	700	49	4	4.2				243
ZWSMD026026-326-X	24	40	700	37	4	5.7	105.4	6.3	8	326
ZWSMD026026-406-X	24	32	700	29	4	7.1				406
ZWSMD026026-439-X	24	30	700	27	4	7.6				439
ZWSMD026026-546-X	24	24	700	22	4	9.5				546
ZWSMD026026-590-X	24	22	700	20	4	10.3				590
ZWSMD026026-679-X	24	19	700	18	4	11.8				679
ZWSMD026026-734-X	24	18	700	16	4	12.8				734
ZWSMD026026-794-X	24	16	700	15	4	13.8				794
ZWSMD026026-913-X	24	14	700	13	4	15.9				913
ZWSMD026026-987-X	24	13	700	12	4	17.2				987
ZWSMD026026-1135-X	24	11	700	11	4	19.7				1135
ZWSMD026026-1227-X	24	11	700	10	4	21.3				1227
ZWSMD026026-1526-X	24	9	700	8	4	26.6				1526

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ZWSMD032032

Φ32mm Planetary Gearbox



Gearbox Technical Data				
Number of stages	1	2	3	4
Max. continuous torque (Nm)	2.20	4.80	10.40	12.60
Max. intermittent torque (Nm)	2.70	6.00	13.00	16.00
Reduction Ratio	3.9, 5.3	16, 21, 26, 28, 35	62, 83, 103, 111, 138, 150, 172, 186, 231	243, 326, 406, 439, 546, 590, 679, 734, 794, 913, 987, 1135, 1227, 1526
Outer Diameter (mm)	32	32	32	32
Gearbox Length L1(mm)	32.0	47.0	62.0	77.0
Max. efficiency (%)	96	93	90	87
Recommended temperature range (°C)	-40~+100	-40~+100	-40~+100	-40~+100
Max. Weight (G)	167	231	287	350
Max. continuous transmittable power (W)	242	160	70	25
Max. intermittent transmittable power (W)	300	160	85	30
Average backlash no load (")	0.4	0.7	0.8	0.8
Max. axial load (dynamic) (N)	110	110	110	110
Max. radial load (4mm from flange) (N)	150	200	250	250
Bearing at output	ball bearing	ball bearing	ball bearing	ball bearing
Axial play (mm)	0~0.1	0~0.1	0~0.1	0~0.1

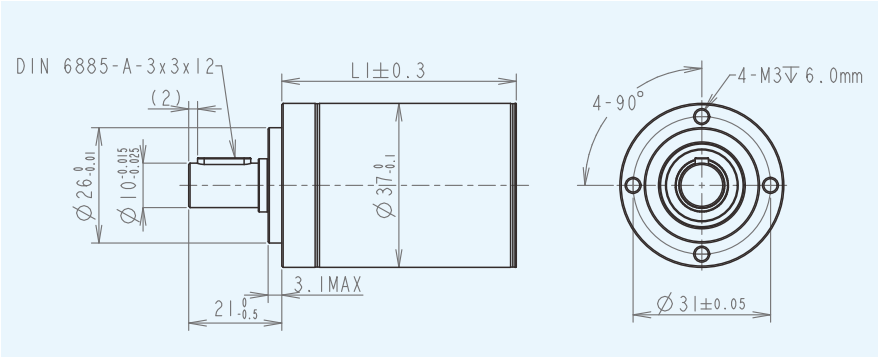
* Note: Data above does not include the motor. Specifications can be customized per customer requirements.

Modular assembly				
Integrated Product	Part No.	Number of stages		
		1	2	3
DC Motor	Φ30mm graphite brush	74	87.50	103.50
		102	115.50	131.50
Brushless Motor	Φ32mm corelss brushless motor	102	115.50	131.50
Encoder	CB-ST-16	Magnetic Encoder		

Product Specifications											
PART NO.	Rated Voltage (V)	No-Load Data		Load Data			Overall Length (mm)	Gearbox Rated Allowable Torque (NM)	Gearbox Intermittent Allowable Torque (NM)	Reduction Ratio	Gearbox Length L1(mm)
		No-Load Speed (rpm)	No-Load Current (mA max)	Load Speed (rpm)	Load Current (A Max)	Torque (N.m)					
ZWSMD032032-3.9-X	24.0	1286	150	1051	1.0	0.097	74.0	2.2	2.7	3.9	32.0
ZWSMD032032-5.3-X	24.0	1068	150	774	1.0	0.132				5.3	
ZWSMD032032-16-X	24.0	363	150	263	1.0	0.377				16	
ZWSMD032032-21-X	24.0	270	150	196	1.0	0.507	87.5	4.8	6.0	21	45.5
ZWSMD032032-26-X	24.0	217	150	157	1.0	0.630				26	
ZWSMD032032-28-X	24.0	201	150	146	1.0	0.681				28	
ZWSMD032032-35-X	24.0	162	150	117	1.0	0.847				35	
ZWSMD032032-62-X	24.0	92	150	67	1.0	1.439				62	
ZWSMD032032-83-X	24.0	68	150	50	1.0	1.935	103.5	10.4	13.0	83	61.5
ZWSMD032032-103-X	24.0	55	150	40	1.0	2.406				103	
ZWSMD032032-111-X	24.0	51	150	37	1.0	2.602				111	
ZWSMD032032-138-X	24.0	41	150	30	1.0	3.236				138	
ZWSMD032032-150-X	24.0	38	150	27	1.0	3.500				150	
ZWSMD032032-172-X	24.0	33	150	24	1.0	4.023				172	
ZWSMD032032-186-X	24.0	30	150	22	1.0	4.351				186	
ZWSMD032032-231-X	24.0	25	150	18	1.0	5.410				231	
ZWSMD032032-243-X	24.0	23	150	17	1.0	5.490				243	
ZWSMD032032-326-X	24.0	17	150	13	1.0	7.383	326				
ZWSMD032032-406-X	24.0	14	150	10	1.0	9.180	406				
ZWSMD032032-439-X	24.0	13	150	9	1.0	9.929	439				
ZWSMD032032-546-X	24.0	10	150	8	1.0	12.345	546				
ZWSMD032032-590-X	24.0	10	150	8	1.0	12.600	590				
ZWSMD032032-679-X	24.0	8	150	7	1.0	12.600	679				
ZWSMD032032-734-X	24.0	8	150	7	1.0	12.600	734				
ZWSMD032032-794-X	24.0	7	150	6	1.0	12.600	794				
ZWSMD032032-913-X	24.0	6	150	5	1.0	12.600	913				
ZWSMD032032-987-X	24.0	6	150	5	1.0	12.600	987				
ZWSMD032032-1135-X	24.0	5	150	4	1.0	12.600	1135				
ZWSMD032032-1227-X	24.0	5	150	4	1.0	12.600	1227				
ZWSMD032032-1526-X	24.0	4	150	3	1.0	12.600	1526				

ZWSMD038038

Φ38mm Planetary Gearbox



Gearbox Technical Data			
Number of stages	1	2	3
Max. continuous torque (Nm)	2.3	5.4	9.3
Max. intermittent torque (Nm)	2.9	6.8	11.6
Reduction Ratio	3.9	16, 26	62, 83, 103, 111, 138, 150, 172, 186, 231
Outer Diameter (mm)	37	37	37
Gearbox Length L1(mm)	32.3	45.4	52.9
Max. efficiency (%)	96	93	90
Recommended temperature range (°C)	-40~+100	-40~+100	-40~+100
Max. Weight (G)	240	320	420
Max. continuous transmittable power (W)	185	90	45
Max. intermittent transmittable power (W)	230	115	60
Average backlash no load (")	0.5	0.5	0.5
Max. axial load (dynamic) (N)	240	240	240
Max. radial load (4mm from flange) (N)	200	250	250
Bearing at output	ball bearing	ball bearing	ball bearing
Axial play (mm)	0~0.1	0~0.1	0~0.1

* Note: Data above does not include the motor. Specifications can be customized per customer requirements.

Modular assembly

Integrated Product	Part No.	Number of stages		
		1	2	3
		Length(mm)		
DC Motor	3571 Φ35mm coreless brushed	103.3	116.4	123.9
	3857 Φ38mm graphite brush	89.3	102.4	109.9
Brushless Motor	3657 Φ36mm brushless motor	89.3	102.4	109.9
Encoder	CB-ST-22	Magnetic Encoder		

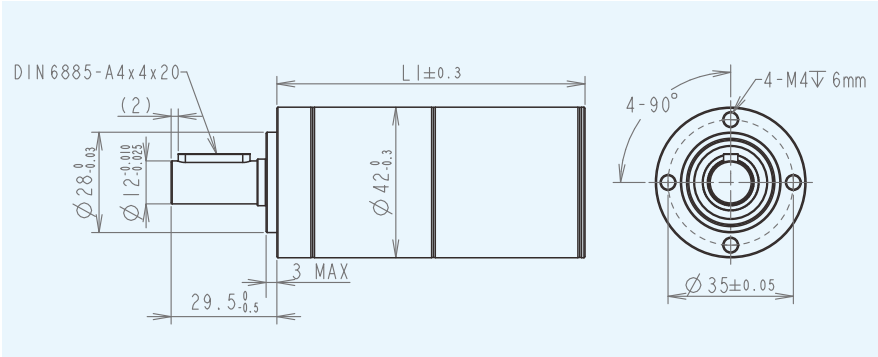
Product Specifications

PART NO.	Rated Voltage (V)	No-Load Data		Load Data			Overall Length (mm)	Gearbox Rated Allowable Torque (NM)	Gearbox Intermittent Allowable Torque (NM)	Reduction Ratio	Gearbox Length L1(mm)
		No-Load Speed (rpm)	No-Load Current (mA max)	Load Speed (rpm)	Load Current (A Max)	Torque (N.m)					
ZWSMD038038-3.9-X	24	2085	600	1836	4	0.5	103.3	2.3	2.9	3.9	32.3
ZWSMD038038-16-X	24	508	600	448	4.5	1.8	116.4	5.4	6.8	16	45.4
ZWSMD038038-26-X	24	313	600	275	4.5	3.0				26	
ZWSMD038038-62-X	24	131	700	115	5	6.9				62	
ZWSMD038038-83-X	24	98	700	86	5	9.2				83	
ZWSMD038038-103-X	24	79	700	70	5	11.4	123.9	9.3	11.6	103	52.9
ZWSMD038038-111-X	24	73	700	65	5	12.3				111	
ZWSMD038038-138-X	24	59	700	52	5	15.3				138	
ZWSMD038038-150-X	24	54	700	48	5	16.7				150	
ZWSMD038038-172-X	24	47	700	42	5	19.1				172	
ZWSMD038038-186-X	24	44	700	38	5	20.7				186	
ZWSMD038038-231-X	24	35	700	31	5	25.7				231	

*The specifications above are for reference only. Changes may occur without prior notice. For specific requirements, please contact customer service.

ZWSMD042042

Φ42mm Planetary Gearbox



Gearbox Technical Data				
Number of stages	1	2	3	4
Max. continuous torque (Nm)	4.5	18	32	35
Max. intermittent torque (Nm)	7	24	46	50
Reduction Ratio	3.9, 5.3	16, 21, 26, 28, 35	62, 83, 103, 111, 138, 150, 172, 186, 231	243, 326, 406, 439, 546, 590, 679,734, 794, 913, 987, 1135, 1227, 1526
Outer Diameter (mm)	42	42	42	42
Gearbox Length L1(mm)	47.8	66.4	86	104.5
Max. efficiency (%)	96	93	90	87
Recommended temperature range (°C)	-40~+100	-40~+100	-40~+100	-40~+100
Max. Weight (G)	400	540	660	800
Max. continuous transmittable power (W)	650	460	200	40
Max. intermittent transmittable power (W)	820	580	250	50
Average backlash no load (")	0.5	0.5	0.5	0.5
Max. axial load (dynamic) (N)	200	200	200	200
Max. radial load (4mm from flange) (N)	350	525	750	750
Bearing at output	ball bearing	ball bearing	ball bearing	ball bearing
Axial play (mm)	0~0.1	0~0.1	0~0.1	0~0.1

* Note: Data above does not include the motor. Specifications can be customized per customer requirements.

Modular assembly

Integrated Product	Part No.	Number of stages			
		1	2	3	4
		Length(mm)			
DC Motor	3571 Φ35mm coreless brushed	118.8	137.4	157	175.5
Brushless Motor	4088 Φ40mm corelss brushless motor	135.8	154.4	174	192.5
	4260 Φ42mm brushless motor	107.8	126.4	146	164.5
Encoder	CB-ST-22	Magnetic Encoder			

Product Specifications

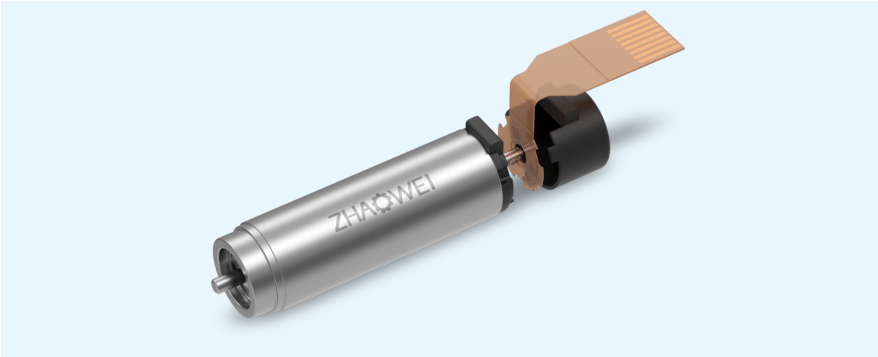
PART NO.	Rated Voltage (V)	No-Load Data		Load Data			Overall Length (mm)	Gearbox Rated Allowable Torque (NM)	Gearbox Intermittent Allowable Torque (NM)	Reduction Ratio	Gearbox Length L1(mm)
		No-Load Speed (rpm)	No-Load Current (mA max)	Load Speed (rpm)	Load Current (A Max)	Torque (N.m)					
ZWSMD042042-3.9-X	24	2085	600	1836	9	0.5	118.8	4.5	7	3.9	47.8
ZWSMD042042-5.3-X	24	1534	600	1351	9	0.6				5.3	
ZWSMD042042-16-X	24	508	600	448	9	1.8				16	
ZWSMD042042-21-X	24	387	600	341	9	2.4				21	
ZWSMD042042-26-X	24	313	600	275	9	3.0	138	18	24	26	67
ZWSMD042042-28-X	24	290	600	256	9	3.2				28	
ZWSMD042042-35-X	24	232	600	205	9	4.0				35	
ZWSMD042042-62-X	24	131	700	115	9.5	6.9				62	
ZWSMD042042-83-X	24	98	700	86	9.5	9.2	157	32	46	83	86
ZWSMD042042-103-X	24	79	700	70	9.5	11.4				103	
ZWSMD042042-111-X	24	73	700	65	9.5	12.3				111	
ZWSMD042042-138-X	24	59	700	52	9.5	15.3				138	
ZWSMD042042-150-X	24	54	700	48	9.5	16.7				150	
ZWSMD042042-172-X	24	47	700	42	9.5	19.1				172	
ZWSMD042042-186-X	24	44	700	38	9.5	20.7				186	
ZWSMD042042-231-X	24	35	700	31	9.5	25.7				231	
ZWSMD042042-243-X	24	33	800	29	10	26.4	175.5	35	50	243	104.5
ZWSMD042042-326-X	24	25	800	22	10	35.4				326	
ZWSMD042042-406-X	24	20	800	18	10	44.1				406	
ZWSMD042042-439-X	24	19	800	16	10	47.7				439	
ZWSMD042042-546-X	24	15	800	13	10	59.3				546	
ZWSMD042042-590-X	24	14	800	12	10	64.1				590	
ZWSMD042042-679-X	24	12	800	11	10	73.8				679	
ZWSMD042042-734-X	24	11	800	10	10	79.8				734	
ZWSMD042042-794-X	24	10	800	9	10	86.3				794	
ZWSMD042042-913-X	24	9	800	8	10	99.2				913	
ZWSMD042042-987-X	24	8	800	7	10	107.3				987	
ZWSMD042042-1135-X	24	7	800	6	10	123.4				1135	
ZWSMD042042-1227-X	24	7	800	6	10	133.4				1227	
ZWSMD042042-1526-X	24	5	800	5	10	165.8				1526	

MC0623-01

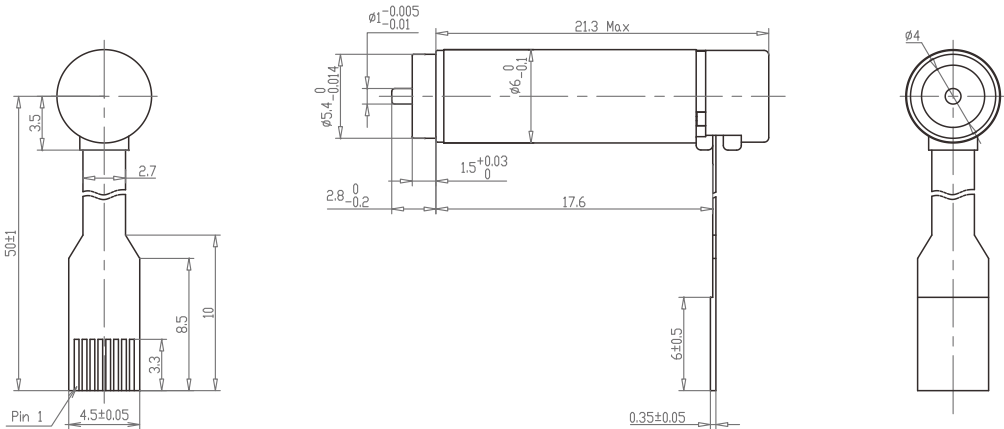
Φ6mm Brushless Coreless Motor

Key Features

- Two magnetic pole
- 2W
- 46800rpm
- 0.4mNm



Dimensional Drawing



Motor Data (Rated)	
Rated voltage (V)	12
No-Load Speed (rpm)	63400 ± 10%
No-Load Current (A)	37 ± 50%
Rated speed (rpm)	46800 ± 10%
Rated torque (mNm)	0.4
Rated current(A)	0.256 ± 50%
Stall torque(mNm)	1.5 ± 7%
Stall current(A)	0.85 ± 20%
Max. efficiency(%)	63 ± 7%

Motor Constant (Rated)	
Phase-to-Phase Resistance (Ω)	14.4 ± 10%
Phase-to-Phase inductance (mH)	0.1 ± 10%
Torque constant (mNm/A)	1.73 ± 20%
Speed constant (rpm/V)	5523 ± 20%
Speed/torque gradient (rpm/mNm)	45972 ± 20%
Mechanical time constant (ms)	2.84 ± 20%
Rotor inertia (gcm²)	0.007 ± 20%

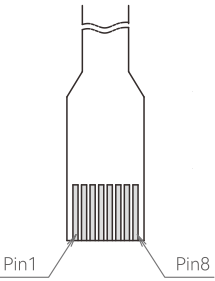
Thermal Data	
Thermal resistance housing-ambient (K/W)	67.9
Thermal resistance winding-housing (K/W)	15.2
Thermal time constant winding (s)	1.54
Thermal time constant motor (s)	71.5
Ambient temperature (°C)	-20 ~ +100
Max. winding temperature (°C)	125

Mechanical Data (Ball Bearing)	
Max. allowable speed (rpm)	100 000
Max. axial play (mm)	< 0.15 N 0 > 0.15 N 0.06 (max)
Radial play	preloaded
Max. axial load dynamic(N)	0.1
Max. force for press fits (static) (N)	10
Max. radial load (2 mm from flange) (N)	2

Note: Specifications can be customized per customer requirements.

Terminal Type	
Molex 52745-0897 52207-0460	
FCI SFV8R-2STBE1HLF SFW4R-2STGE1LF	

Note: Specifications can be customized per customer requirements.

Terminal Definition	
	pin 1 Motor Winding 1 pin 2 Motor Winding 2 pin 3 Motor Winding 3 pin 4 VHall (3.3-24 VDC) pin 5 Grounding pin 6 Hall sensor 1 pin 7 Hall sensor 2 pin 8 Hall sensor 3

MC0824-01

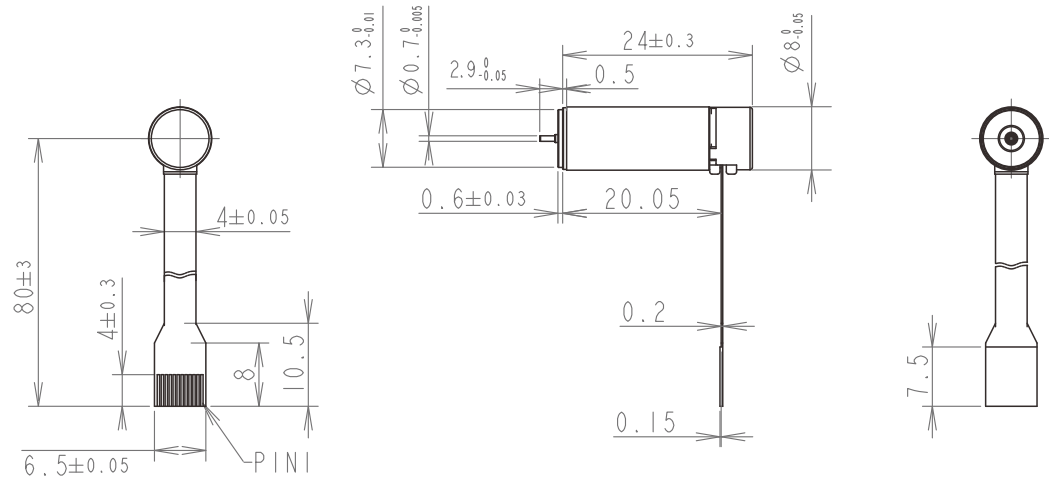
Φ8mm Brushless Coreless Motor

Key Features

- Two magnetic pole
- 5.8W
- 25500rpm
- 0.85mNm



Dimensional Drawing



Motor Data (Rated)	
Rated voltage (V)	12
No-Load Speed (rpm)	38500 ± 10%
No-Load Current (A)	70 ± 50%
Rated speed (rpm)	25500 ± 10%
Rated torque (mNm)	0.85
Rated current(A)	0.5 ± 50%
Stall torque(mNm)	3.5 ± 7%
Stall current(A)	1.65 ± 20%
Max. efficiency(%)	67 ± 7%

Motor Constant (Rated)	
Phase-to-Phase Resistance (Ω)	8.4 ± 10%
Phase-to-Phase inductance (mH)	0.05 ± 10%
Torque constant (mNm/A)	2.22 ± 20%
Speed constant (rpm/V)	3155 ± 20%
Speed/torque gradient (rpm/mNm)	11000 ± 20%
Mechanical time constant (ms)	2.87 ± 20%
Rotor inertia (gcm²)	0.024 ± 20%

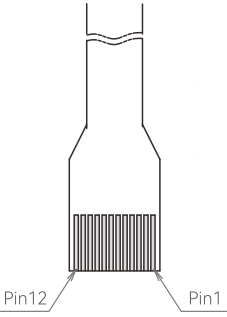
Thermal Data	
Thermal resistance housing-ambient (K/W)	56.6
Thermal resistance winding-housing (K/W)	11.5
Thermal time constant winding (s)	3.7
Thermal time constant motor (s)	120
Ambient temperature (°C)	-20 ~ +100
Max. winding temperature (°C)	125

Mechanical Data (Ball Bearing)	
Max. allowable speed (rpm)	40 000
Max. axial play (mm)	< 0.15 N 0 > 0.15 N 0.06 (max)
Radial play	preloaded
Max. axial load dynamic(N)	2
Max. force for press fits (static) (N)	10
Max. radial load (2 mm from flange) (N)	5

Note: Specifications can be customized per customer requirements.

Terminal Type	
Molex 52745-1297	

Note: Specifications can be customized per customer requirements.

Terminal Definition	
	pin 1 Motor Winding 3 pin 2 Motor Winding 2 pin 3 Motor Winding 1 pin 4 Grounding pin 5 VHall (3.3-24 VDC) pin 6 Hall sensor 3 pin 7 Hall sensor 2 pin 8 Hall sensor 1 pin 9 None pin 10 None pin 11 None pin 12 None

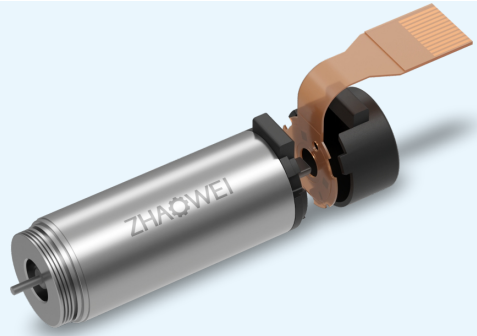
*The specifications above are for reference only. Changes may occur without prior notice. For specific requirements, please contact customer service.

MC1028-01

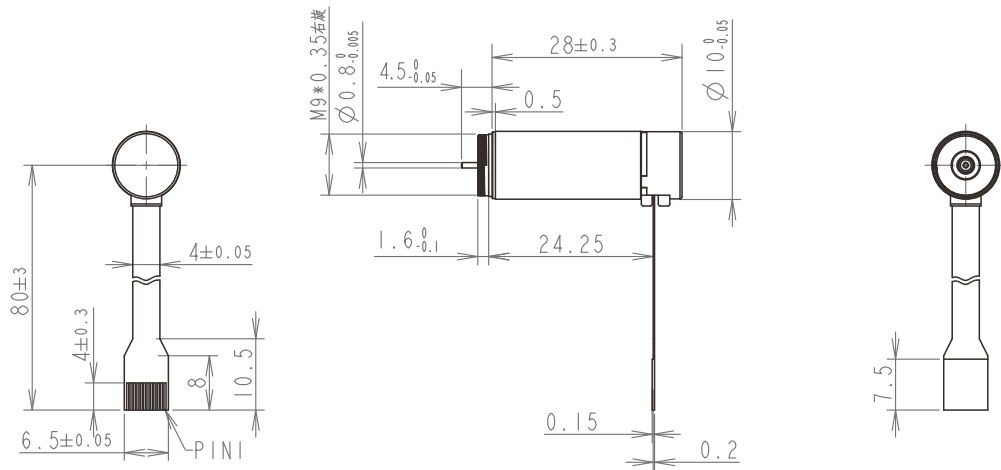
Φ10mm Brushless Coreless Motor

Key Features

- Two magnetic pole
- 8.7W
- 26500rpm
- 1.5mNm



Dimensional Drawing



Motor Data (Rated)	
Rated voltage (V)	12
No-Load Speed (rpm)	33000 ± 10%
No-Load Current (A)	80 ± 50%
Rated speed (rpm)	26500 ± 10%
Rated torque (mNm)	1.5
Rated current(A)	0.7 ± 50%
Stall torque(mNm)	9 ± 7%
Stall current(A)	2.75 ± 20%
Max. efficiency(%)	71 ± 7%

Motor Constant (Rated)	
Phase-to-Phase Resistance (Ω)	$4.75 \pm 10\%$
Phase-to-Phase inductance (mH)	$0.026 \pm 10\%$
Torque constant (mNm/A)	$3.37 \pm 20\%$
Speed constant (rpm/V)	$3747 \pm 20\%$
Speed/torque gradient (rpm/mNm)	$3667 \pm 20\%$
Mechanical time constant (ms)	$3.56 \pm 20\%$
Rotor inertia (gcm^2)	$0.092 \pm 20\%$

Thermal Data	
Thermal resistance housing-ambient (K/W)	42.6
Thermal resistance winding-housing (K/W)	7.2
Thermal time constant winding (s)	4.2
Thermal time constant motor (s)	156
Ambient temperature (°C)	-20 ~ +100
Max. winding temperature (°C)	125

Mechanical Data (Ball Bearing)	
Max. allowable speed (rpm)	40 000
Max. axial play (mm)	< 0.15 N 0 > 0.15 N 0.06 (max)
Radial play	preloaded
Max. axial load dynamic(N)	2
Max. force for press fits (static) (N)	10
Max. radial load (2 mm from flange) (N)	5

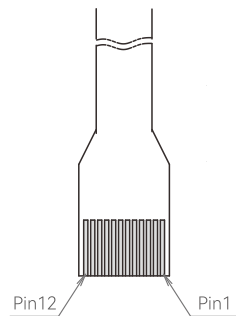
Note: Specifications can be customized per customer requirements.

Terminal Type

Molx 52745-1297

Note: Specifications can be customized per customer requirements.

Terminal Definition



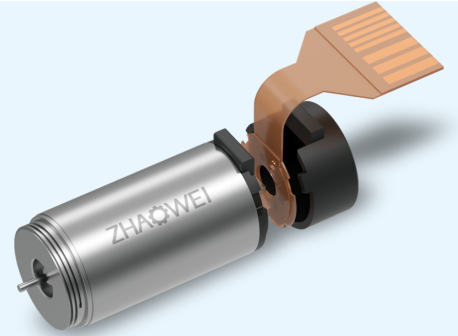
pin 1	Motor Winding 3
pin 2	Motor Winding 2
pin 3	Motor Winding 1
pin 4	Grounding
pin 5	VHall (3.3-24 VDC)
pin 6	Hall sensor 3
pin 7	Hall sensor 2
pin 8	Hall sensor 1
pin 9	None
pin 10	None
pin 11	None
pin 12	None

MC1226-01

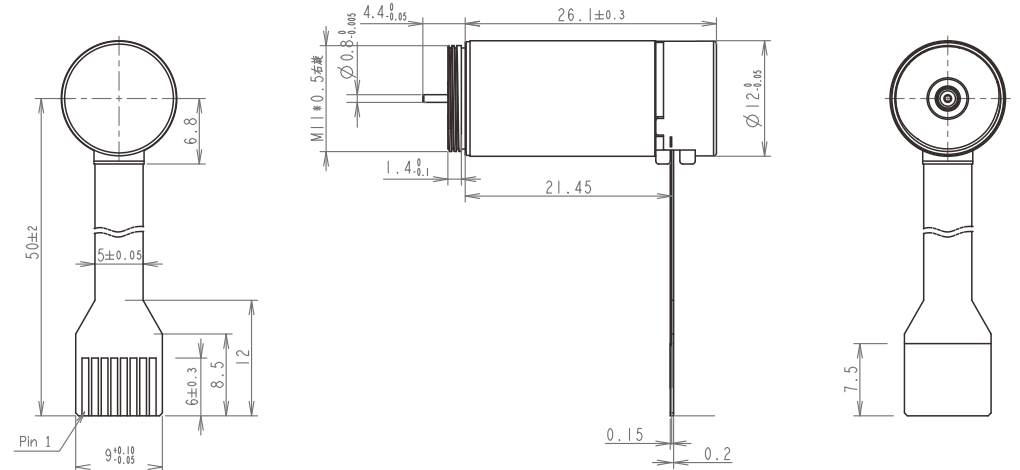
Φ12mm Brushless Coreless Motor

Key Features

- Two magnetic pole
- 9.9W
- 20970rpm
- 2.38mNm



Dimensional Drawing



Motor Data (Rated)	
Rated voltage (V)	12
No-Load Speed (rpm)	28600 ± 10%
No-Load Current (A)	78 ± 50%
Rated speed (rpm)	20970 ± 10%
Rated torque (mNm)	2.38
Rated current(A)	0.69 ± 50%
Stall torque(mNm)	8.9 ± 7%
Stall current(A)	2.38 ± 20%
Max. efficiency(%)	67 ± 7%

Motor Constant (Rated)	
Phase-to-Phase Resistance (Ω)	$5.3 \pm 10\%$
Phase-to-Phase inductance (mH)	$0.042 \pm 10\%$
Torque constant (mNm/A)	$3.87 \pm 20\%$
Speed constant (rpm/V)	$2383 \pm 20\%$
Speed/torque gradient (rpm/mNm)	$3213 \pm 20\%$
Mechanical time constant (ms)	$4.5 \pm 20\%$
Rotor inertia (gcm^2)	$0.138 \pm 20\%$

Thermal Data	
Thermal resistance housing-ambient (K/W)	38.6
Thermal resistance winding-housing (K/W)	7.5
Thermal time constant winding (s)	3.2
Thermal time constant motor (s)	210
Ambient temperature (°C)	-20 ~ +100
Max. winding temperature (°C)	125

Mechanical Data (Ball Bearing)	
Max. allowable speed (rpm)	40 000
Max. axial play (mm)	< 0.15 N 0 > 0.15 N 0.06 (max)
Radial play	preloaded
Max. axial load dynamic(N)	2
Max. force for press fits (static) (N)	10
Max. radial load (2 mm from flange) (N)	5

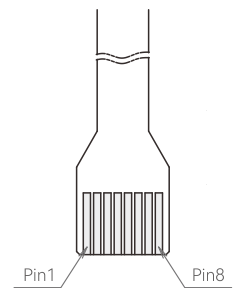
Note: Specifications can be customized per customer requirements.

Terminal Type

Molex 52745-1297

Note: Specifications can be customized per customer requirements.

Terminal Definition



pin 1	Motor Winding 1
pin 2	Motor Winding 2
pin 3	Motor Winding 3
pin 4	Grounding
pin 5	VHall (3.3-24 VDC)
pin 6	Hall sensor 1
pin 7	Hall sensor 2
pin 8	Hall sensor 3

MP1935-01

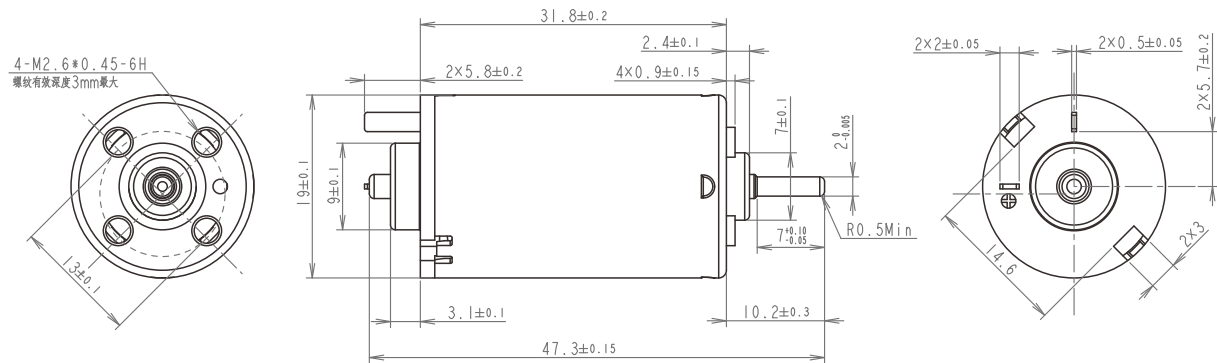
Φ19mm Graphite Brushed DC Motor

Key Features

- Four magnetic poles
- 4.5W
- 6700rpm
- 33mNm



Dimensional Drawing



Motor Data (Rated)

Rated voltage (V)	12
No-Load Speed (rpm)	8200 ± 10%
No-Load Current (A)	0.3 (Max)
Rated speed (rpm)	6700 ± 10%
Rated torque (mNm)	5.86
Rated current(A)	0.55 ± 10%
Stall torque(mNm)	33 ± 7%
Stall current(A)	2.6 ± 10%
Max. efficiency(%)	65

Motor Constant (Rated)

Phase-to-Phase Resistance (Ω)	4.5 ± 10%
Phase-to-Phase inductance (mH)	NA ± 10%
Torque constant (mNm/A)	13.1 ± 20%
Speed constant (rpm/V)	684 ± 20%
Speed/torque gradient (rpm/mNm)	243.5 ± 20%
Mechanical time constant (ms)	NA ± 20%
Rotor inertia (gcm ²)	4 ± 20%

Note: Specifications can be customized per customer requirements.

MP2238-01

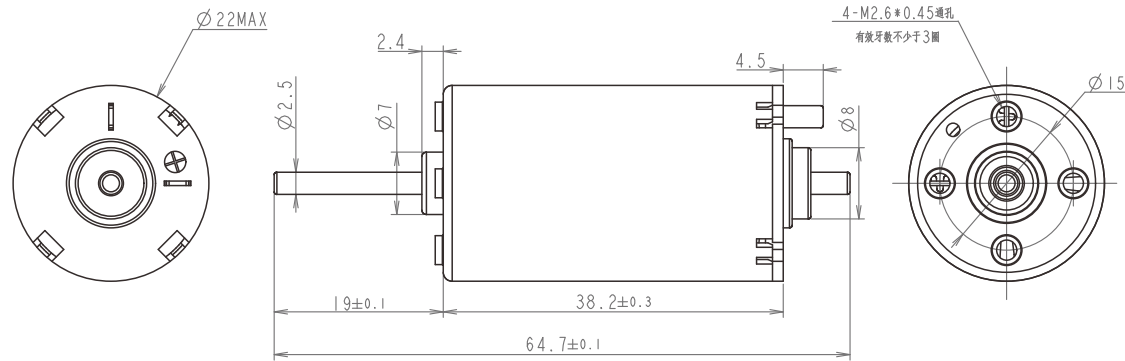
Φ22mm Graphite Brushed DC Motor

Key Features

- Four magnetic poles
- 11W
- 5300rpm
- 16.6mNm



Dimensional Drawing



Motor Data (Rated)

Rated voltage (V)	12
No-Load Speed (rpm)	6300 ± 10%
No-Load Current (A)	0.3 (Max)
Rated speed (rpm)	5300 ± 10%
Rated torque (mNm)	16.6
Rated current(A)	1.20 ± 10%
Stall torque(mNm)	99.5 ± 7%
Stall current(A)	6.0 ± 10%
Max. efficiency(%)	65

Motor Constant (Rated)

Phase-to-Phase Resistance (Ω)	2.0 ± 10%
Phase-to-Phase inductance (mH)	NA ± 10%
Torque constant (mNm/A)	18 ± 20%
Speed constant (rpm/V)	525 ± 20%
Speed/torque gradient (rpm/mNm)	63 ± 20%
Mechanical time constant (ms)	NA ± 20%
Rotor inertia (gcm ²)	10 ± 20%

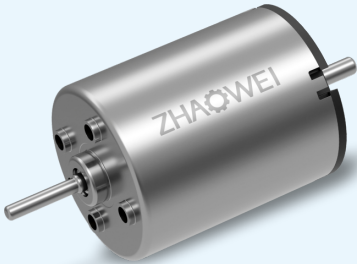
Note: Specifications can be customized per customer requirements.

MP2430-03

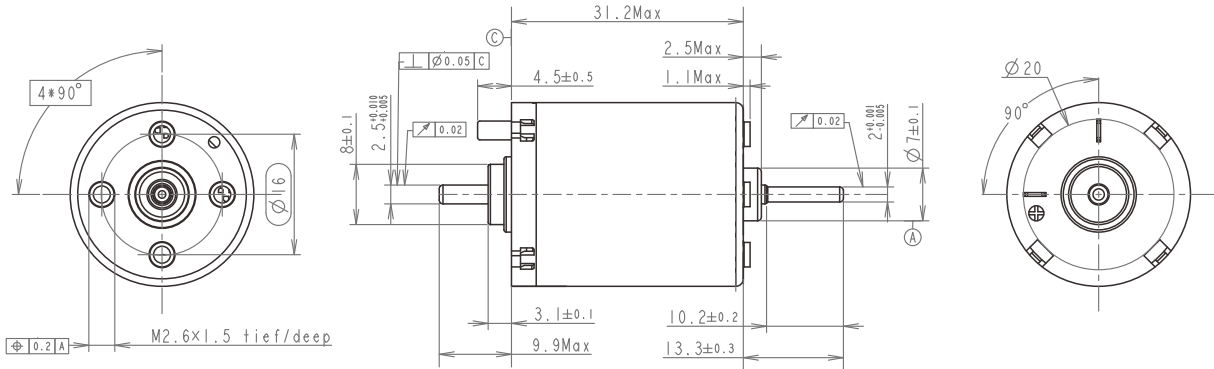
Φ24mm Graphite Brushed DC Motor

Key Features

- Four magnetic poles
- 11W
- 5100rpm
- 15.8mNm



Dimensional Drawing



Motor Data (Rated)		
Rated voltage (V)		12
No-Load Speed (rpm)		6200 ± 10%
No-Load Current (A)		0.4 (Max)
Rated speed (rpm)		5100 ± 10%
Rated torque (mNm)		15.8
Rated current(A)		1.2 ± 10%
Stall torque(mNm)		95 ± 7%
Stall current(A)		5.8 ± 10%
Max. efficiency(%)		65

Motor Constant (Rated)		
Phase-to-Phase Resistance (Ω)		2 ± 10%
Phase-to-Phase inductance (mH)		NA ± 10%
Torque constant (mNm/A)		18 ± 20%
Speed constant (rpm/V)		515 ± 20%
Speed/torque gradient (rpm/mNm)		65 ± 20%
Mechanical time constant (ms)		NA ± 20%
Rotor inertia (gcm ²)		10 ± 20%

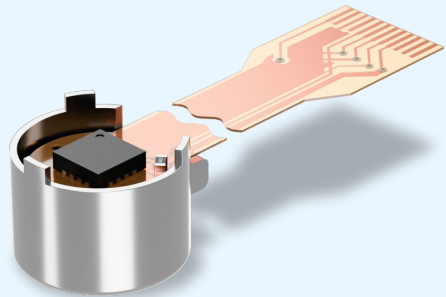
Note: Specifications can be customized per customer requirements.

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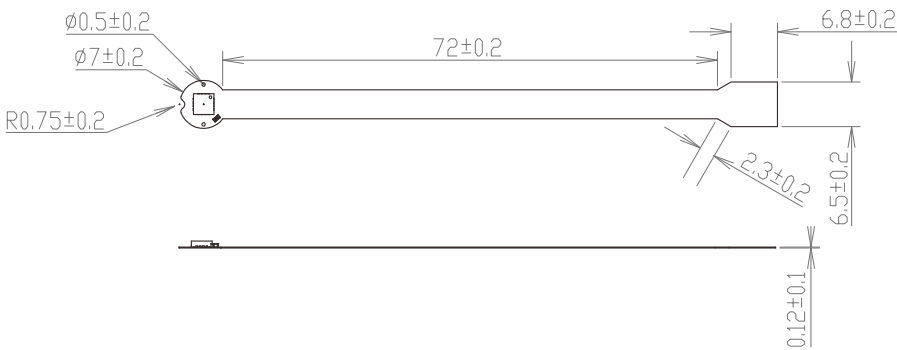
Φ8mm Magnetic encoder

Key Features

- 10mA
- 3.3—5V
- 55000rpm



Dimensional Drawing



Technical Data		
Pulses per revolution	N	1 ~ 1024
Signal output	Square wave	Single-ended ABZ
Supply voltage	UDD	3.3~5 V
Current consumption, typical	IDD	10mA
Index Pulse width	P0	180 ± 45°
Phase shift, channel A to B	Φ	90 ± 45°
Operating temperature range		-40 ~ 125℃
Accuracy, typ.		± 1
Hysteresis		0.088 °m

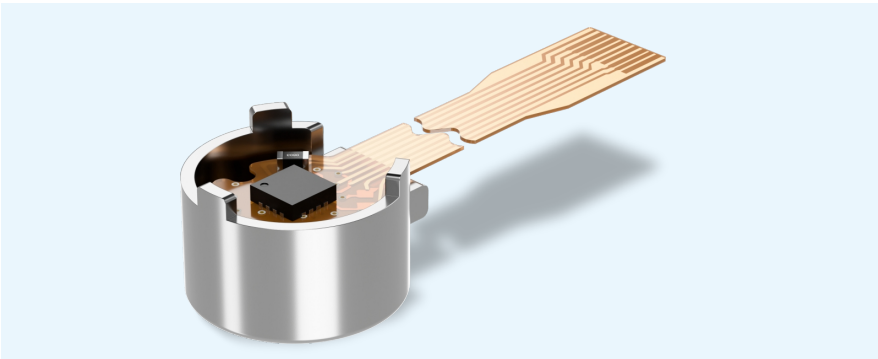
Pin Definition		
	PIN1: U	PIN7: VCC
	PIN2: U	PIN8: GND
	PIN3: V	PIN9: A
	PIN4: V	PIN10: B
	PIN5: W	PIN11: Z
	PIN6: W	PIN12: None

SM012012

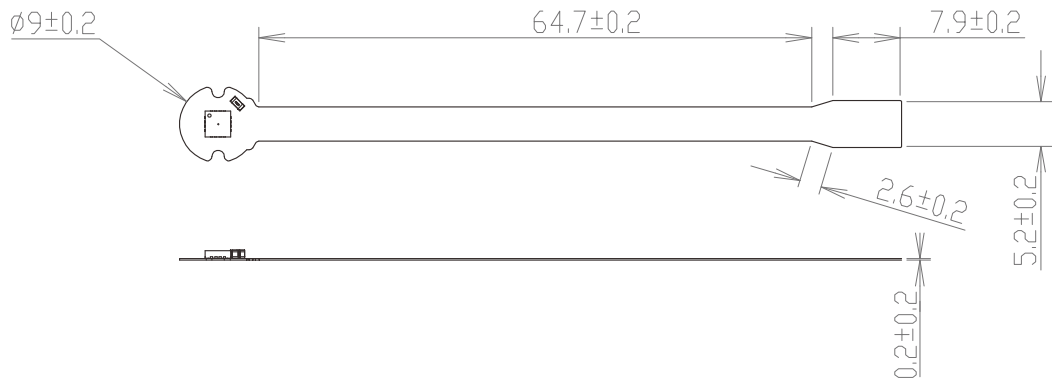
Φ12mm Magnetic encoder

Key Features

- 10mA
- 3.3—5V
- 55000rpm

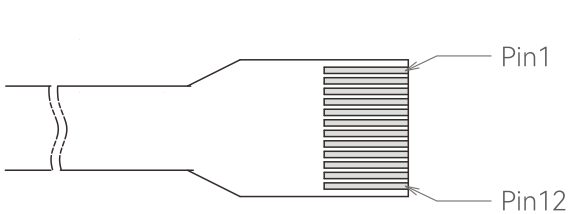


Dimensional Drawing



Technical Data		
Pulses per revolution	N	1 ~ 1024
Signal output	Square wave	Differential ABZ / UVW
		Single-ended ABZ
Supply voltage	UDD	3.3 ~ 5 V
Current consumption, typical	IDD	10mA
Index Pulse width	P0	180 ± 45°
Phase shift, channel A to B	Φ	90 ± 45°
Operating temperature range		-40~125°C
Accuracy, typ.		±1
Hysteresis		0.088 °m

Pin Definition



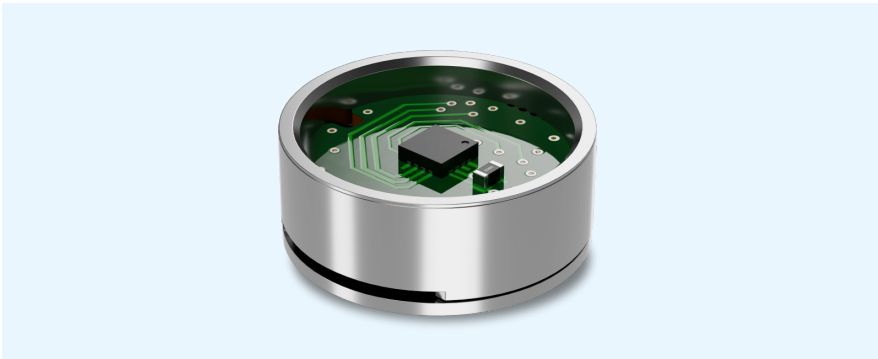
PIN1: U	PIN7: VCC
PIN2: U	PIN8: GND
PIN3: V	PIN9: A
PIN4: V	PIN10: B
PIN5: W	PIN11: Z
PIN6: W	PIN12: None

SM022022

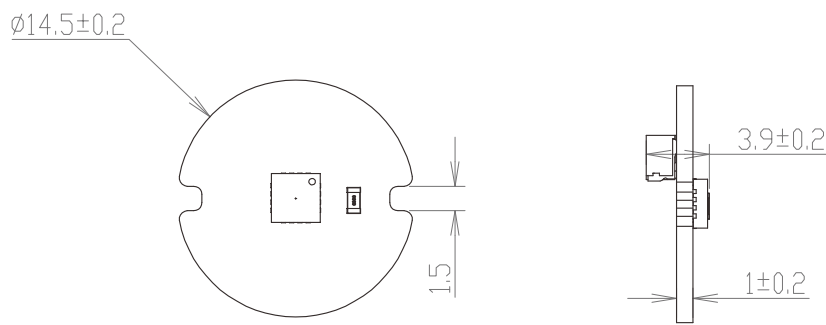
Φ22mm Magnetic encoder

Key Features

- 10mA
- 3.3—5V
- 55000rpm

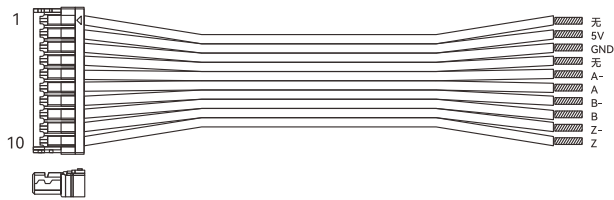


Dimensional Drawing



Technical Data		
Pulses per revolution	N	1 ~ 1024
Signal output	Square wave	Differential ABZ / UVW
		Single-ended ABZ
Supply voltage	UDD	3.3 ~ 5 V
Current consumption, typical	IDD	10mA
Index Pulse width	P0	180 ± 45°
Phase shift, channel A to B	Φ	90 ± 45°
Operating temperature range		-40 ~ 125°C
Accuracy, typ.		± 1
Hysteresis		0.088 °m

Pin Definition



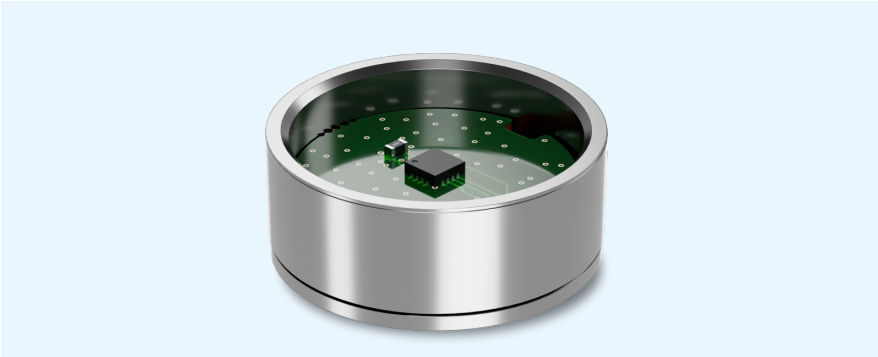
PIN1: None	PIN6: A
PIN2: VCC	PIN7: B-
PIN3: GND	PIN8: B
PIN4: None	PIN9: Z-
PIN5: A-	PIN10: Z

SM038038

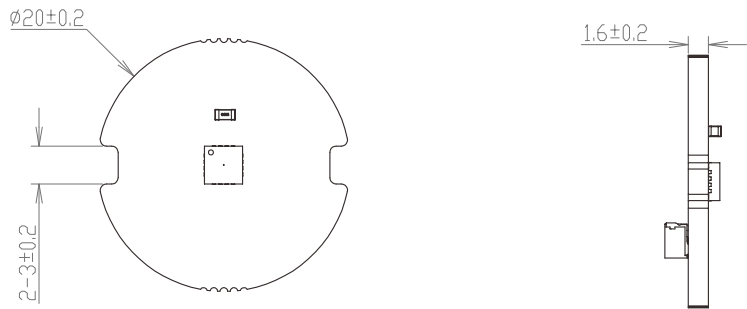
Φ38mm Magnetic encoder

Key Features

- 10mA
- 3.3—5V
- 55000rpm



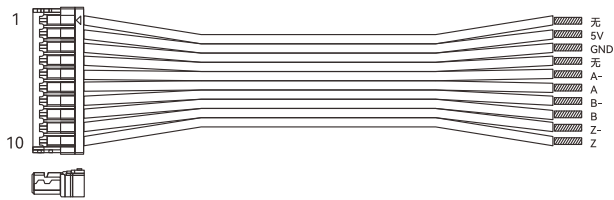
Dimensional Drawing



Technical Data

Pulses per revolution	N	1 ~ 1024
Signal output	Square wave	Differential ABZ / UVW
		Single-ended ABZ
Supply voltage	UDD	3.3~5 V
Current consumption, typical	IDD	10mA
Index Pulse width	P0	180 ± 45°
Phase shift, channel A to B	Φ	90 ± 45°
Operating temperature range		-40 ~ 125°C
Accuracy, typ.		± 1
Hysteresis		0.088 °m

Pin Definition



PIN1: None	PIN6: A
PIN2: VCC	PIN7: B-
PIN3: GND	PIN8: B
PIN4: None	PIN9: Z-
PIN5: A-	PIN10: Z

*The specifications above are for reference only. Changes may occur without prior notice. For specific requirements, please contact customer service.

