

13mm Coreless Brushless DC Motor (With Planetary Gearbox) Product Catalog

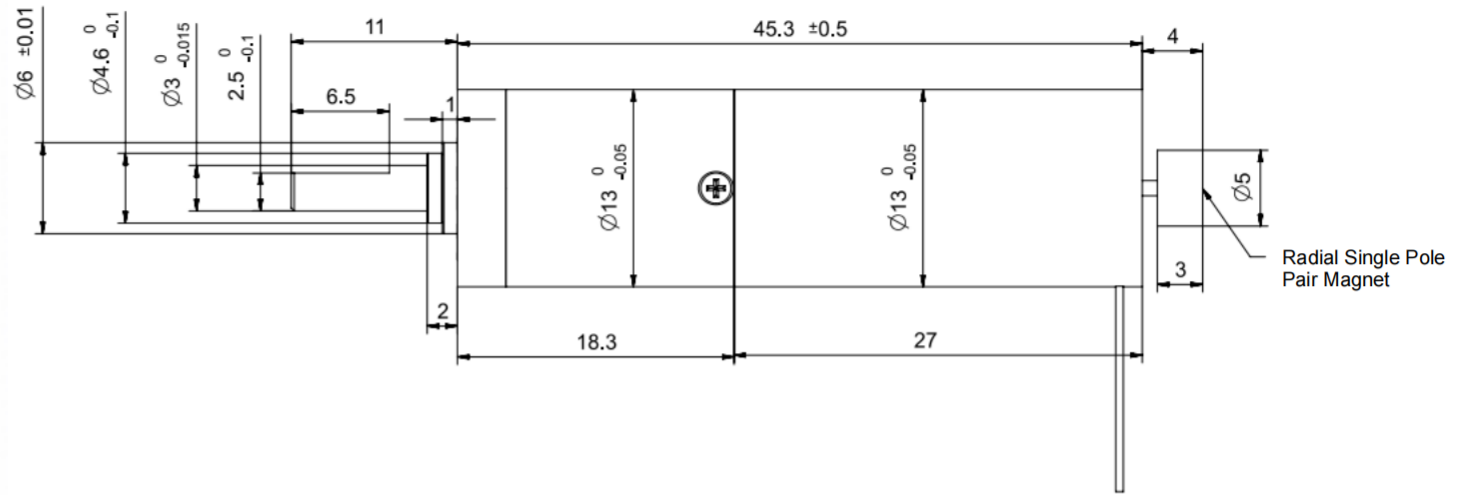
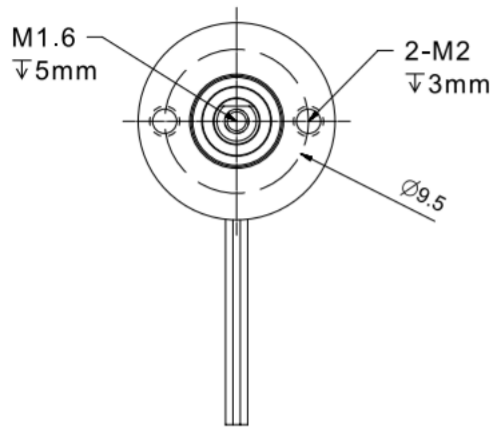
Mainstream Models	Recommended Pairing Sets
PG10K28-KW1317+LG13175K20 (Page 10)	PG13K100-KW1317+MA1024+PG13K25-KW1317-SG04+MA1024 +PG10K28-KW1317+LG04M20Z (Page4+5+8)
PG10K28-KW1317+LG04M20Z (Page 7)	
TSL-PG10K28-KW1317+ LG04M20Z (Page 8)	

Contact

Web: micromotorpro.com

Email: inquiry@micromotorpro.com

Tel: +86 18318138408



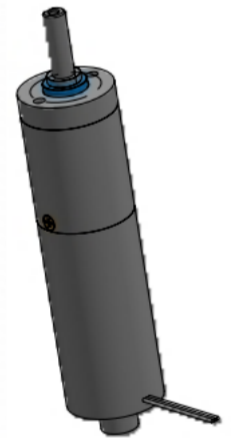
Coreless Brushless Motor

Wiring Sequence: PIN1-3

pin1 - U (White)

pin2 - V (Yellow)

pin3 - W (Blue)



Motor Performance Parameters:

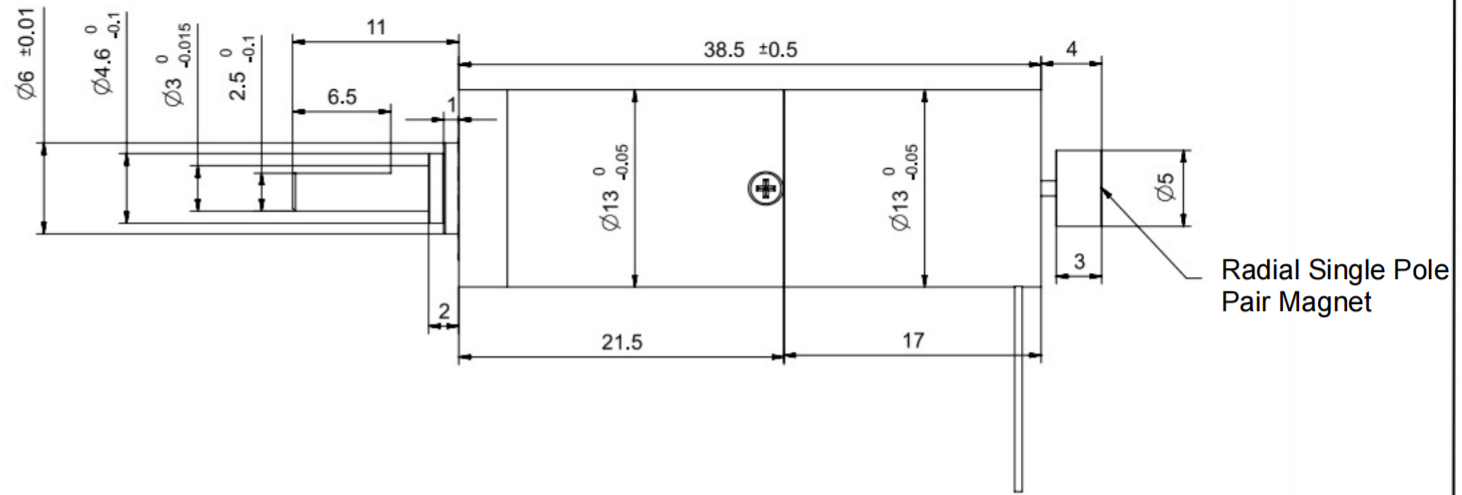
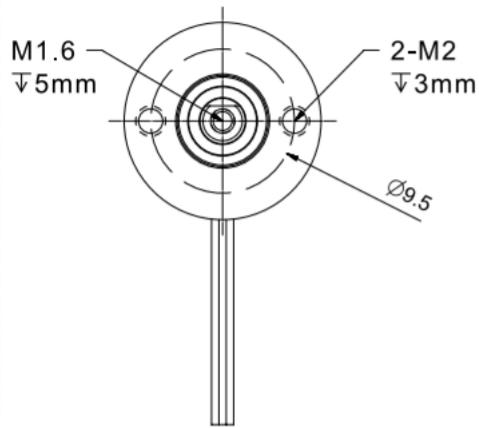
Motor Type: Coreless Brushless Motor

1. Operating Voltage: 12V
2. No-load Speed: 25000 ± 10% RPM
3. No-load Current: ≤ 0.4A
4. Load Speed: 20000 ± 10% RPM
5. Load Torque: ≥ 60 g·cm
6. Load Current: ≤ 0.8A
7. Stall Torque: > 100 g·cm
8. Pole Pairs: 2
9. Operating Temperature: -40~85°C
10. Noise: ≤ 45 dB
11. Maximum Motor Efficiency: 75%

Gear Motor Performance Parameters:

1. Operating Voltage: 12V
2. No-load Speed: 200 ± 10% RPM
3. No-load Current: ≤ 0.5A
4. Load Speed: 80 ± 10% RPM
5. Load Torque: ≥ 0.4 N·m
6. Load Current: ≤ 1A
7. Operating Temperature: -40~80°C
8. Gear Ratio: 1:125
9. Noise: ≤ 55 dB
10. Gearbox Material: Solid Steel (Machined)

设计		第一视觉画法 	13mm Planetary Gearbox + 13mm Coreless Brushless Motor (Product Type)
审核			TSL-PG13K125-KW1327 (Product Model)
批准		未注线性与角度尺寸公差: GB/T 1804-m eqv ISO 2768-1:m	Tsinglin Micro Motors Limited
日期	2025.08.08		



Coreless Brushless Motor

Wiring Sequence: PIN1-3

pin1 - U (White)

pin2 - V (Yellow)

pin3 - W (Blue)



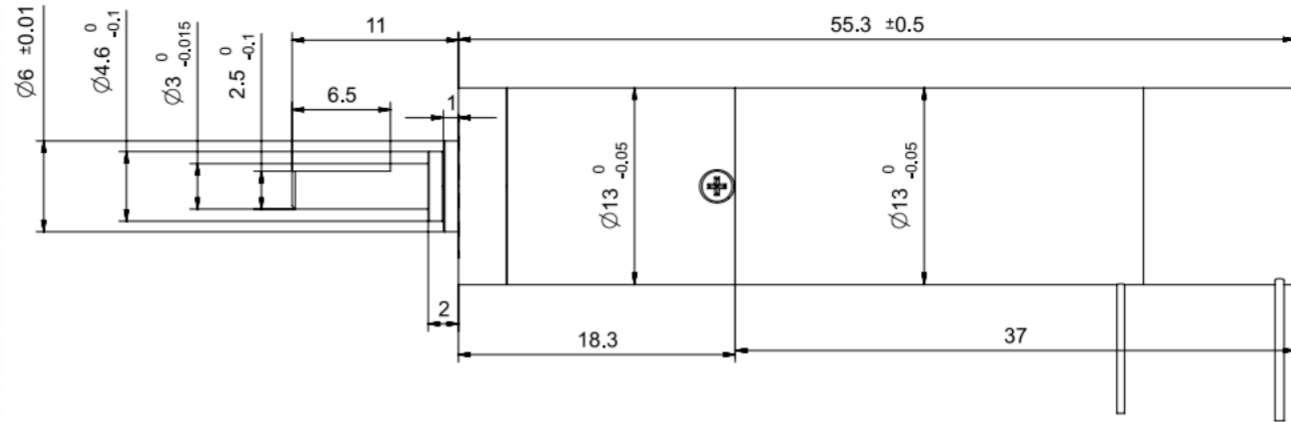
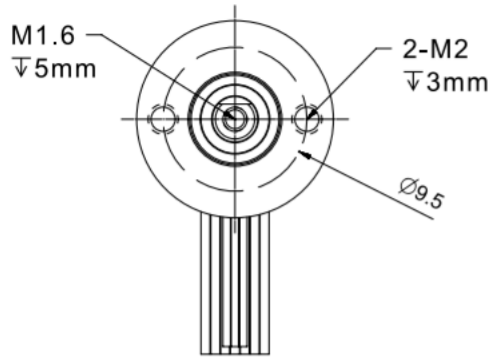
Motor Performance Parameters:

1. Motor Type: Coreless Brushless Motor
2. Operating Voltage: 12V
3. No-load Speed: 25000 ± 10% RPM
4. No-load Current: ≤ 0.4A
5. Load Speed: 20000 ± 10% RPM
6. Load Torque: ≥ 40 g·cm
7. Load Current: ≤ 0.8A
8. Stall Torque: > 100 g·cm
9. Pole Pairs: 2
10. Operating Temperature: -40~85°C
11. Noise: ≤ 45 dB
12. Maximum Motor Efficiency: 75%

Gear Motor Performance Parameters:

1. Operating Voltage: 12V
2. No-load Speed: 90 ± 10% RPM
3. No-load Current: ≤ 0.5A
4. Load Speed: 80 ± 10% RPM
5. Load Torque: ≥ 0.7 N·m
6. Load Current: ≤ 1A
7. Operating Temperature: -40~80°C
8. Gear Ratio: 1:256
9. Noise: ≤ 55 dB
10. Gearbox Material: Solid Steel (Machined)

设计		第一视觉画法 	13mm Planetary Gearbox + 13mm Coreless Brushless Motor (Product Type)
审核			TSL-PG13K256-KW1317 (Product Model)
批准		未注线性与角度尺寸公差: GB/T 1804-m eqv ISO 2768-1:m	Tsinglin Micro Motors Limited
日期	2025.08.08		



Brushless Coreless Motor

Wiring Sequence: PIN1-3

pin1 - U (White)

pin2 - V (Yellow)

pin3 - W (Blue)

Encoder Wiring Sequence: PIN1-5

pin1 - GND (Black)

pin2 - VCC (Red)

pin3 - A+ (Single-ended) (Yellow)

pin4 - B+ (Single-ended) (Green)

pin5 - Z+ (Single-ended) (Blue)

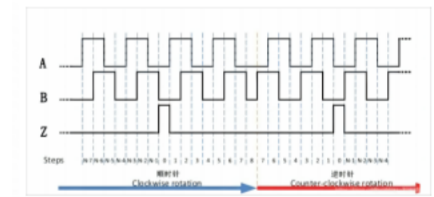
Note: Magnetic encoder, digital output, 3 channels, 1024 PPR

Motor Performance Parameters:

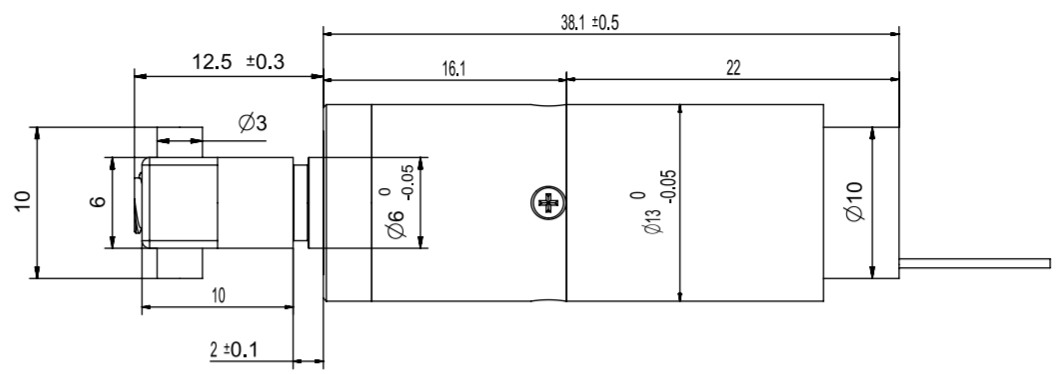
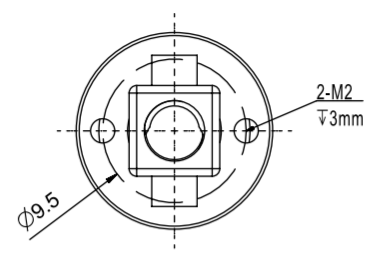
- 1.Motor Type: Brushless Coreless Motor
- 2.Operating Voltage: 12V
- 3.No-load Speed: 25000 ±10% RPM
- 4.No-load Current: ≤0.4A
- 5.Load Speed: 20000 ±10% RPM
- 6.Load Torque: ≥60 g·cm
- 7.Load Current: ≤0.8A
- 8.Stall Torque: >100 g·cm
- 9.Pole Pairs: 2
- 10.Operating Temperature: -40~85°C
- 11.Noise: ≤45 dB
- 12.Maximum Motor Efficiency: 75%

Gear Motor Performance Parameters:

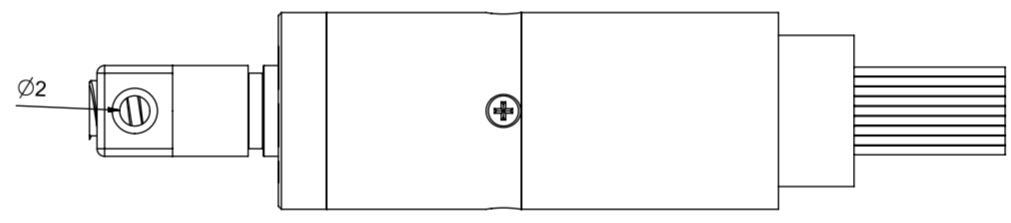
- 1.Operating Voltage: 12V
- 2.No-load Speed: 200 ±10% RPM
- 3.No-load Current: ≤0.5A
- 4.Load Speed: 80 ±10% RPM
- 5.Load Torque: ≥0.4 N·m
- 6.Load Current: ≤1A
- 7.Operating Temperature: -40~80°C
- 8.Gear Ratio: 1:125
- 9.Noise: ≤55 dB
- 10.Gearbox Material: Solid Steel (Machined)



设计		第一视觉画法 	13mm Planetary Gearbox + 13mm Coreless Brushless Motor+Magnetic Encoder (Product Type)
审核			TSL-PG13K125-KW1327+MA1024 (Product Model)
批准		未注线性与角度尺寸公差: GB\T1804-m eqv ISO 2768-l:m	Tsinglin Micro Motors Limited
日期	2025.12.22		



Lower lead screw nut, lead 2, diameter 4mm



Motor Performance Parameters:

- Motor Type: Coreless Brushless Motor
- Operating Voltage: 12V
- No-load Speed: 25000 ± 10% RPM
- No-load Current: ≤ 0.2A
- Load Speed: 18000 ± 10% RPM
- Load Torque: ≥ 15g.cm
- Load Current: ≤ 0.8A
- Stall Torque: ≥ 100g.cm
- Pole Pairs: 2 Pole Pairs
- Operating Temperature: -40-85°C
- Noise: ≤ 45DB
- Motor Maximum Efficiency: 75%

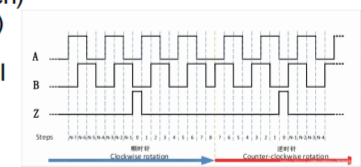
Gearmotor Performance Parameters:

- Operating Voltage: 12V
- No-load Speed: 1000 ± 10% RPM
- No-load Current: ≤ 0.3A
- Load Speed: 720 ± 10% RPM
- Load Torque: ≥ 220g.cm
- Load Current: ≤ 1A
- Operating Temperature: -40-85°C
- Reduction Ratio: 1:25
- Noise: ≤ 55DB
- Gearbox Material: Pure Steel (Machined)
- Geared motors should not be subjected to frequent impacts or stalling during operation.

Coreless Brushless Motor
Wiring Sequence: PIN1-3
 pin1 - U (White)
 pin2 - V (Yellow)
 pin3 - W (Blue)

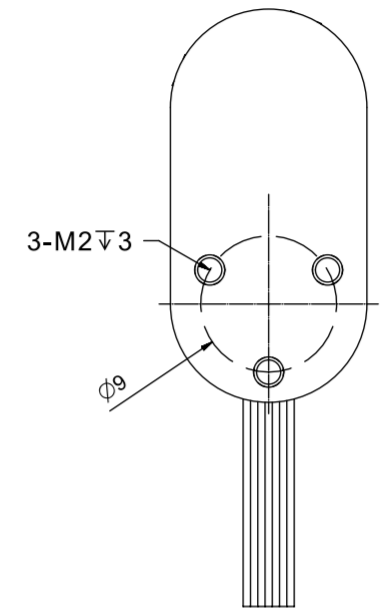
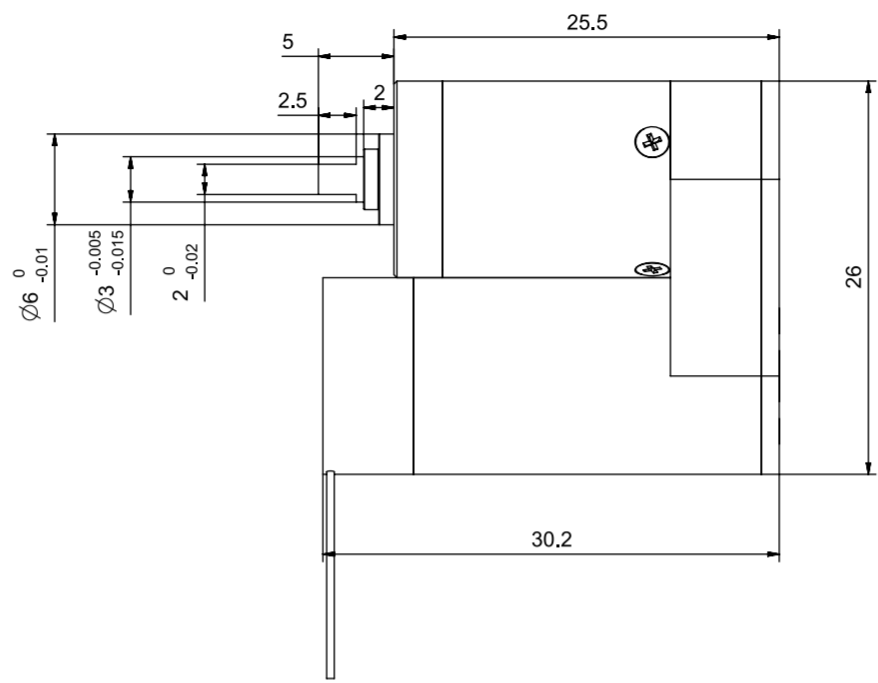
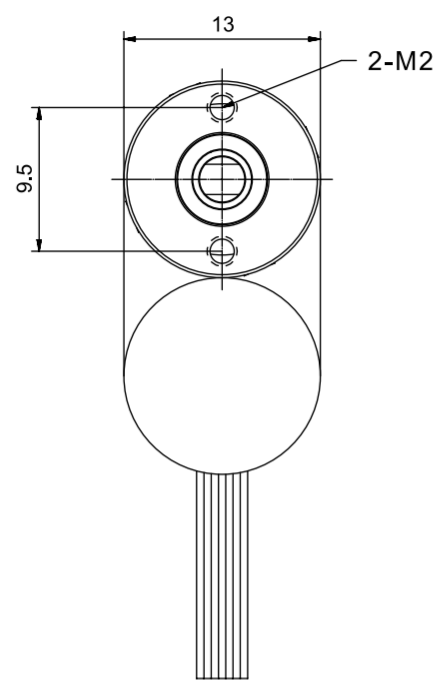
Encoder Wiring Sequence: PIN1-5
 pin1 - GND (Black)
 pin2 - VCC (Red)
 pin3 - A+ (Single-ended) (Yellow)
 pin4 - B+ (Single-ended) (Green)
 pin5 - Z+ (Single-ended) (Blue)

Note: Magnetic encoder, digital output, 3 channels, 1024 PPR



设计		第一视觉画法
审核		
批准		未注线性与角度尺寸公差： GB/T 1804-m eq v ISO 2768-1:m
日期	2025.11.05	

13mm Planetary Gearbox + 13mm Coreless Brushless Motor+T-type lead screw + Encoder (Product Type)
TSL-PG13K25-KW1317-SG04+MA1024 (Product Model)
Tsinglin Micro Motors Limited



Motor Performance Parameters:

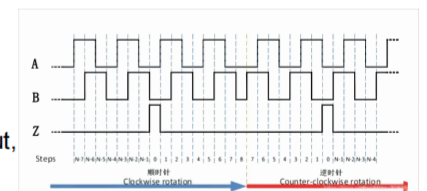
- Motor Type: Coreless Brushless Motor
- Operating Voltage: 12V
- No-load Speed: 25000±10%RPM
- No-load Current: ≤0.2A
- Load Speed: 18000±10%RPM
- Load Torque: ≥15g.cm
- Load Current: ≤0.8A
- Stall Torque: ≥100g.cm
- Pole Pairs: 2 Pole Pairs
- Operating Temperature: -40-85°C
- Weight: ≤30g
- Noise: ≤45DB
- Motor Maximum Efficiency: 75%

Gearmotor Performance Parameters:

- Operating Voltage: 12V
- No-load Speed: 250±10%RPM
- No-load Current: ≤0.3A
- Rated Speed: 180±10%RPM
- Rated Torque: ≥0.08NM
- Rated Current: ≤1A
- Stall Torque: ≥0.5 Nm
- Operating Temperature: -40-80°C
- Reduction Ratio: 1:100
- Noise: ≤55DB
- Gearbox Material: Pure Steel (Machined)

Coreless Brushless Motor
 Wiring Sequence: PIN1-3
 pin1 - U (White)
 pin2 - V (Yellow)
 pin3 - W (Blue)

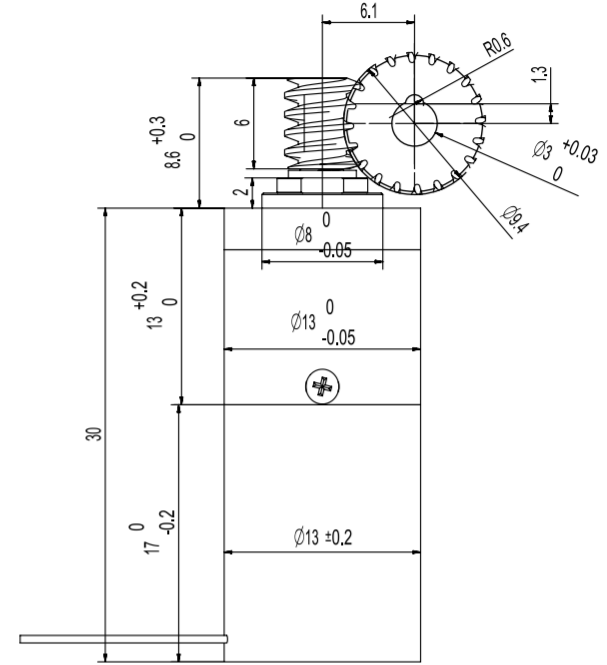
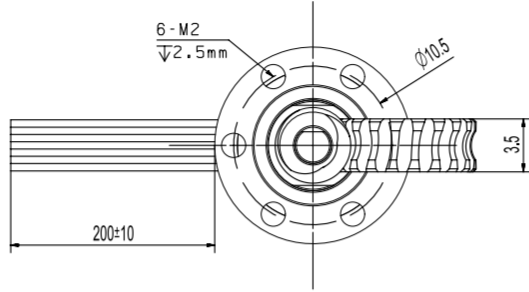
Encoder Wiring Sequence: PIN1-5
 pin1 - GND (Black)
 pin2 - VCC (Red)
 pin3 - A+ (Single-ended) (Yellow)
 pin4 - B+ (Single-ended) (Green)
 pin5 - Z+ (Single-ended) (Blue)
 Note: Magnetic encoder, digital output, 3 channels, 1024 PPR



设计		第一视觉画法
审核		
批准		未注线性与角度尺寸公差： GB/T1804-m eq v ISO 2768-1:m
日期	2025.11.15	

13mm Planetary Gearbox + 13mm Coreless Brushless Motor + Encoder (Product Type)
TSL-PG13K100-KW1317+MA1024 (Inverted Module) (Product Model)
Tsinglin Micro Motors Limited

Worm and Worm Gear Parameter Table		
	Worm	Worm Gear
Module	0.4	
Number of Starts / Teeth	1	20
Pressure Angle	20°	20°
Addendum Circle Diameter	5	8.8
Pitch Circle Diameter	4.2	8
Lead Angle	Right-hand 5.44°	
Addendum Coefficient	1	1
Clearance Coefficient	0.25	0.25
Modification Coefficient	-	-
Material	SUS416	
Accuracy Grade	GB/T 10095-2001, Grade 8	



Motor Performance Specifications:

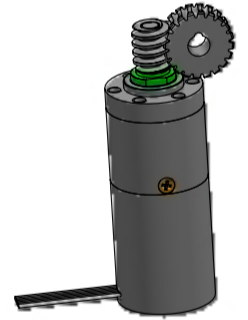
1. Motor Type: Coreless Brushless Motor
2. Operating Voltage: 12V
3. No-load Speed: 25,000 ± 10% RPM
4. No-load Current: ≤ 0.2 A
5. Load Speed: 18,000 ± 10% RPM
6. Load Torque: ≥ 15 g·cm
7. Load Current: ≤ 0.8 A
8. Stall Torque: ≥ 100 g·cm
9. Number of Pole Pairs: 2 pole pairs
10. Operating Temperature: -40 to 85°C
11. Weight: ≤ 30 g
12. Noise Level: ≤ 45 dB
13. Maximum Motor Efficiency: 75%

Reducer Motor Performance Specifications:

1. Operating Voltage: 12V
2. No-load Speed: 50 ± 10% RPM
3. No-load Current: ≤ 0.3 A
4. Load Speed: 35 ± 10% RPM
5. Load Torque: ≥ 0.4 N·m
6. Load Current: ≤ 1 A
7. Stall Torque: ≥ 3 N·m
8. Operating Temperature: -40 to 80°C
9. Gear Reduction Ratio: 1:500 (Planetary: 1:25, Worm Gear: 1:20)
10. Noise Level: ≤ 55 dB
11. Gearbox Material: Pure Copper (Machined)

**Coreless Brushless Motor
Hall Sensor Pin Assignment: PIN1-8**

- pin1 -U (Purple)
- pin2 -V (Brown)
- pin3 -W (White)
- pin4 -+5V (Red)
- pin5 -GND (Black)
- pin6 -HALL_U (Yellow)
- pin7 -HALL_V (Green)
- pin8 -HALL_W (Blue)



Design		First-Angle Projection Method	13 mm Planetary Gear Reducer + 13 mm Coreless Brushless Motor +Worm-Gear Gearbox (Product Type)
Review			
Approval		Unspecified Linear and Angular Dimension Tolerances: GB/T 1804-m eq v ISO 2768-1:m	TSL-13P1317RB-25+LG04M20Z (Product Model)
Date	2025.03.21		Tsinglin Micro Motors Limited

Worm and Worm Gear Parameter Table

	Worm	Worm Gear
Module	0.4	
Number of Starts/ Number of Teeth	1	20
Pressure Angle	20°	20°
Tip Diameter	5	8.8
Reference Diameter	4.2	8
Lead Angle	Right-hand 5.44°	
Worm Lead	1.257	-
Worm Pitch	1.257	-
Addendum Coefficient	1	1
Clearance Coefficient	0.25	0.25
Modification Coefficient	-	-
Transmission Center Distance	6.1	
Material	SUS416	20crmnti
Accuracy Class	GB/T 10095-2001 - Grade 8	

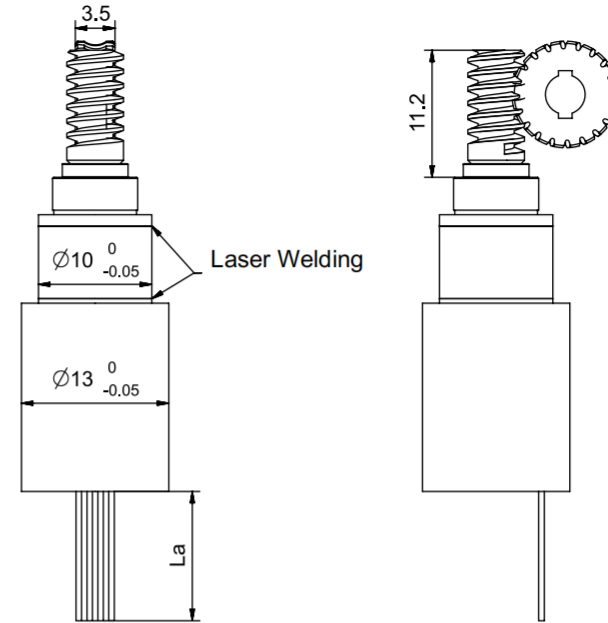
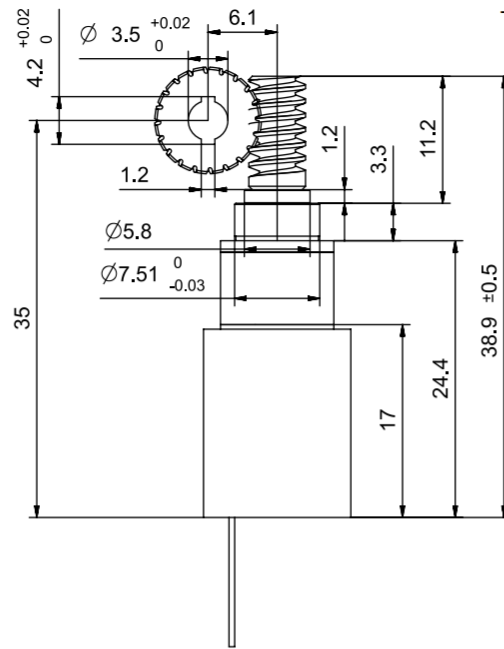
Motor Performance Parameters:

- Motor Type: Coreless Brushless Motor
- Operating Voltage: 12V
- No-load Speed: 30000 ±10% RPM
- No-load Current: ≤0.4A
- Rated Speed: 23000 ±10% RPM
- Rated Torque: ≥3mN.m
- Rated Current: ≤1.5A
- Pole Pairs: 2 Pole Pairs
- Operating Temperature: -40-85°C
- Noise: ≤45 DB
- Motor Maximum Efficiency: 75%

Gearmotor Performance Parameters:

- Operating Voltage: 12V
- No-load Speed: 50 ±10% RPM
- No-load Current: ≤0.4A
- Rated Speed: 40 ±10% RPM
- Rated Torque: ≥0.75NM
- Rated Current: ≤1.5A
- Peak Torque (2s): 1.5 N.m
- Peak Current: ≤2.5A
- Operating Temperature: -40-80°C
- Reduction Ratio: 1:560
(Planetary Stage 1:28, Worm and Worm Gear Stage 1:20)
- Worm and Worm Gear Self-locking Torque: ≥3 NM
- Noise: ≤55 DB
- Gearbox Material: Pure Steel (Machined)

-7-



FPC Harness Length La: 70mm

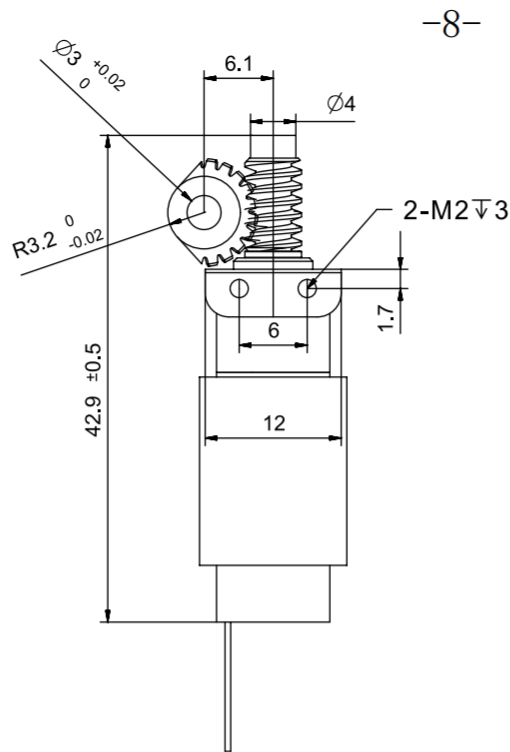


Coreless Brushless Motor:
 FPC: 0.5mm-12P
 Pin Assignment: PIN1-12
 pin1-HALL A
 pin2-HALL B
 pin3-HALL Z
 pin4-3.3V
 pin5-GND
 pin6+7-Motor U
 pin8+9-Motor V
 pin10+11-Motor W
 pin12-Temp. Ctrl.

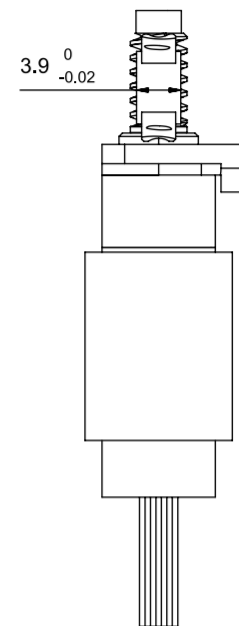
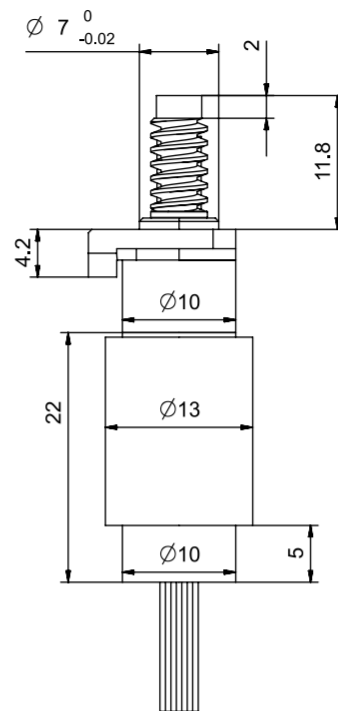
Design		First Angle Projection	10mm Planetary Gearbox+13mm Coreless Brushless Motor+Worm and Worm Gear Reducer Gearbox (Product Type)
Reviewed			
Approved		General tolerances for untoleranced linear and angular dimensions: GB/T 1804-m eqv ISO 2768-1:m	PG10K28-KW1317+LG04M20Z (Actuator 3) (Product Model)
Date	2026.01.20		Tsinglin Micro Motors Limited

Worm and Worm Gear Parameter Table

	Worm	Worm Gear
Module	0.4	
Pressure Angle	1	20
Tip Diameter	20°	20°
Reference Diameter	5	8.8
Lead Angle	4.2	8
Worm Lead	Right-hand 5.44°	
Worm Pitch	1.257	-
Addendum Coefficient	1	1
Clearance Coefficient	0.25	0.25
Modification Coefficient	-	-
Transmission Center Distance	6.1	
Material	SUS416	20crmnti
Accuracy Class	GB/T 10095-2001-8级	



-8-



Motor Performance Parameters:

1. Motor Type: Coreless Brushless Motor
2. Operating Voltage: 12V
3. No-load Speed: 25000±10%RPM
4. No-load Current: ≤0.4A
5. Load Speed: 18000±10%RPM
6. Load Torque: ≥15g.cm
7. Load Current: ≤1A
8. Stall Torque: ≥100g.cm
9. Pole Pairs: 2 Pole Pairs
10. Operating Temperature: -40-85°C
11. Weight: ≤30g
12. Noise: ≤45DB
13. Motor Maximum Efficiency: 75%

Gearmotor Performance Parameters:

1. Operating Voltage: 12V
2. No-load Speed: 45±10%RPM
3. No-load Current: ≤0.5A
4. Rated Speed: 30±10%RPM
5. Rated Torque: ≥2500g.cm
6. Rated Current: ≤1.2A
7. Operating Temperature: -40-80°C
8. Reduction Ratio: 1:560
(Planetary Stage 1: 28, Worm and Worm Gear Stage 1: 20)
9. Noise: ≤55DB
10. Gearbox Material: Pure Steel
(Machined)

Coreless Brushless Motor

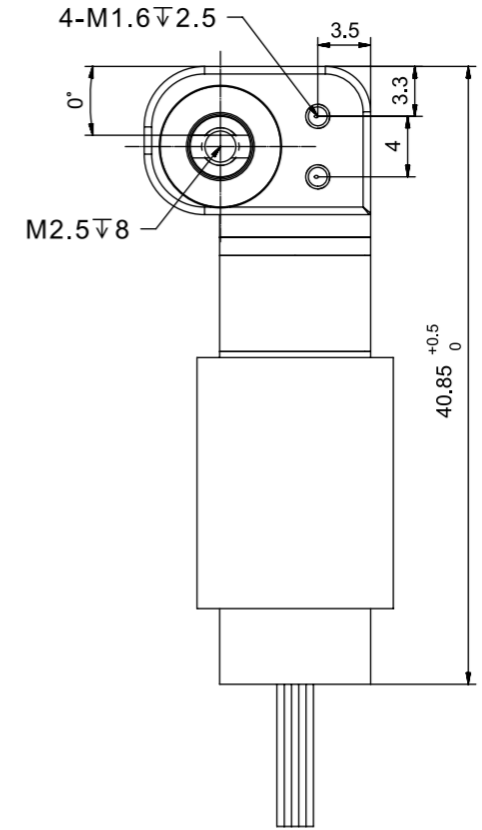
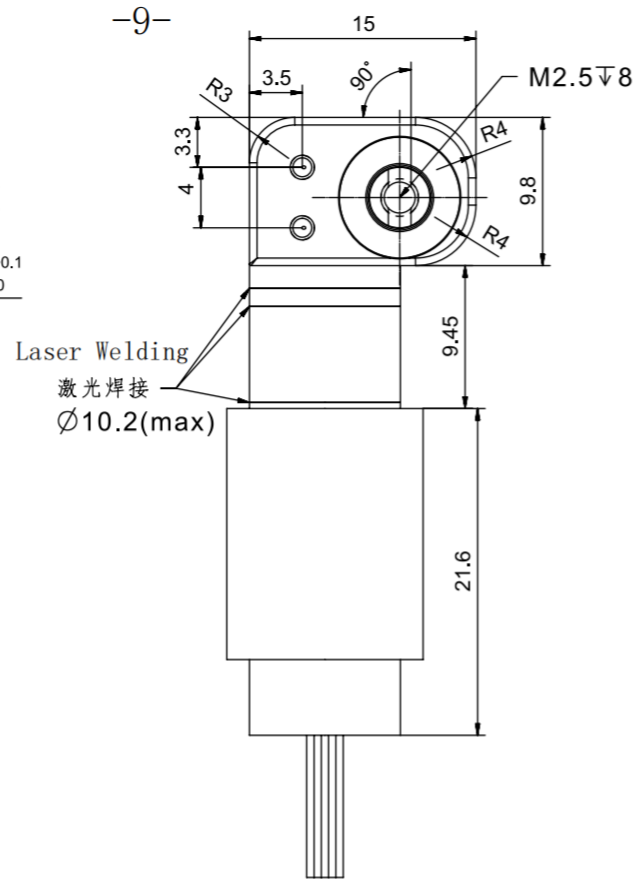
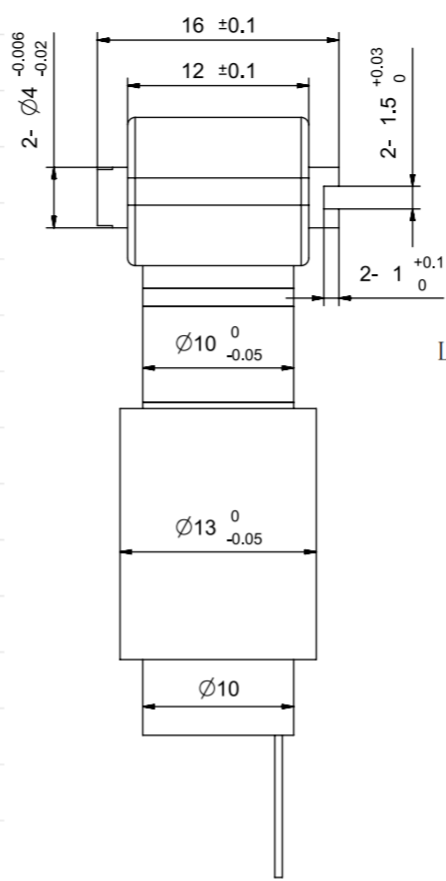
Wiring Sequence: PIN1-3

- pin1 - U
- pin2 - V
- pin3 - W

设计		第一视觉画法 	10mm Planetary Gearbox + 13mm Coreless Brushless Motor+Worm Gear Reducer + Drive (Product Type)
审核			TSL-PG10K28-KW1317+LG04M20Z (Module) (Product Model)
批准		未注线性与角度尺寸公差： GB/T 1804-m eqv ISO 2768-1:m	Tsinglin Micro Motors Limited
日期	2025.11.22		

Worm and Worm Gear Parameter Table

Parameter	Worm	Worm Gear
Module	0.3	
Number of Threads / Teeth	1	20
Pressure Angle	20° C	20° C
Addendum Circle Diameter	4.5	6.6
Pitch Circle Diameter	3.9	6
Lead Angle	Right-hand 4.51°	
Worm Lead	0.942	-
Worm Pitch	0.942	-
Addendum Coefficient	1	1
Clearance Coefficient	0.25	0.25
Modification Coefficient	-	-
Center Distance	4.95	
Material	20 crmnti	
Accuracy Grade	GB/T 10095-2001 Grade 8	



Motor Performance Parameters

- Motor Type: Coreless Brushless Motor (BLDC)
- Operating Voltage: 12V
- No-Load Speed: 25000 ± 10% RPM
- No-Load Current: ≤ 0.4A
- Rated Speed / Load Speed: 18000 ± 10% RPM
- Rated Torque / Load Torque: ≥ 15 g.cm
- Rated Current / Load Current: ≤ 1A
- Stall Torque: ≥ 100 g.cm
- Number of Pole Pairs: 2 Pole Pairs (4 Poles)
- Operating Temperature: -40 to 85°C
- Acoustic Noise: ≤ 45dB
- Maximum Efficiency: 75%

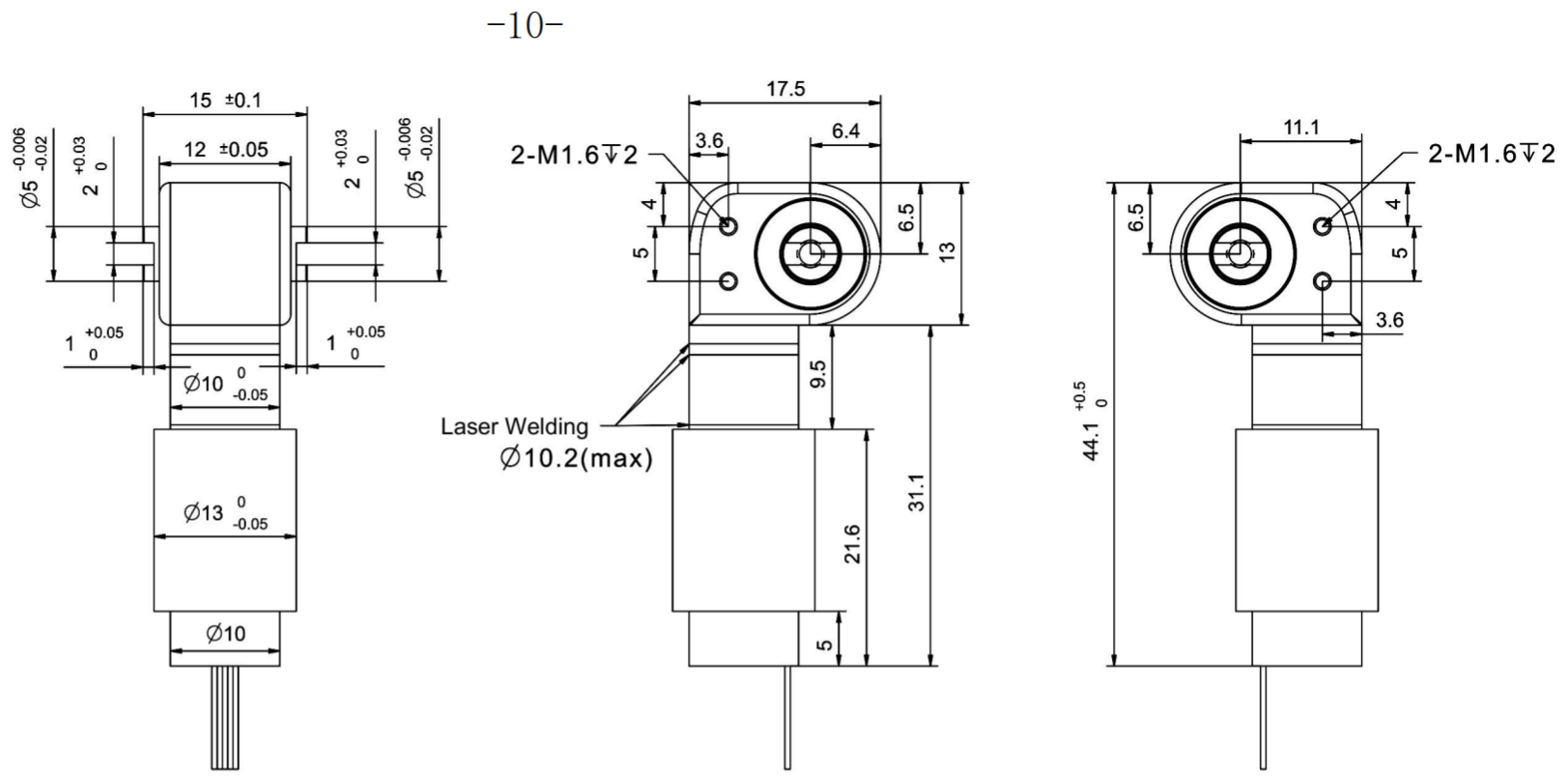
Geared Motor Performance Parameters

- Operating Voltage: 12V
- No-Load Speed: 45 ± 10% RPM
- No-Load Current: ≤ 0.5A
- Rated Speed: 30 ± 10% RPM
- Rated Torque: ≥ 2500 g.cm
- Rated Current: ≤ 1.2A
- Operating Temperature: -40 to 80°C
- Gear Ratio: 1:560
(Planetary stage 1:28, Worm stage 1:20)
- Acoustic Noise: ≤ 55dB
- Gearbox Material: Machined Steel
(Pure steel)

Encoder + Drive: Pin 1-4 Wires
 Pin 1: VDD (Power Supply)
 Pin 2: GND (Ground)
 Pin 3: RXD (Receive Data)
 Pin 4: TXD (Transmit Data)

设计		第一视觉画法 	10mm planetary gearbox + 13mm coreless brushless motor + integrated encoder and driver + worm gearbox (产品类型)
审核			PG10K28-KW1317+LG1598K20 (产品型号)
批准		未注线性与角度尺寸公差: GB/T1804-m eqv ISO 2768-1:m	Tsinglin Micro Motors Limited
日期			

Worm and Worm Gear Parameter Table		
	Worm	Worm Gear
Module	0.4	
Number of Starts/ Number of Teeth	1	20
Pressure Angle	20°	20°
Tip Diameter	5	8.8
Reference Diameter	4.2	8
Lead Angle	Right-hand 5.44°	
Worm Lead	1.257	-
Worm Pitch	1.257	-
Addendum Coefficient	1	1
Clearance Coefficient	0.25	0.25
Modification Coefficient	-	-
Transmission Center Distance	6.1	
Material	20crmnti	
Accuracy Class	GB/T 10095-2001 - Grade 8	



Motor Performance Parameters:

1. Motor Type: Coreless Brushless Motor
2. Operating Voltage: 12V
3. No-load Speed: 25000 ±10% RPM
4. No-load Current: ≤0.4A
5. Load Speed: 18000 ±10% RPM
6. Load Torque: ≥15 g.cm
7. Load Current: ≤1A
8. Stall Torque: ≥100 g.cm
9. Pole Pairs: 2 Pole Pairs
10. Operating Temperature: -40-85°C
11. Noise: ≤45 DB
12. Motor Maximum Efficiency: 75%

Gearmotor Performance Parameters:

1. Operating Voltage: 12V
2. No-load Speed: 45 ±10% RPM
3. No-load Current: ≤0.5A
4. Rated Speed: 30 ±10% RPM
5. Rated Torque: ≥2500 g.cm
6. Rated Current: ≤1.2A
7. Operating Temperature: -40-80°C
8. Reduction Ratio: 1:560
(Planetary Stage 1:28, Worm and Worm Gear Stage 1:20)
9. Noise: ≤55 DB
10. Gearbox Material: Pure Steel
(Machined)

Encoder + Driver: pin1-4 wire
 pin1:VDD
 pin2:GND
 pin3:RXD
 pin4:TXD

Design			10mm Planetary Gearbox+13mm Coreless Brushless Motor+Encoder-Driver Integrated Unit+Worm and Worm Gear Reducer Gearbox (Product Type)
Reviewed			PG10K28-KW1317+LG13175K20 (Product Model)
Approved		General tolerances for untoleranced linear and angular dimensions: GB/T 1804-m eqv ISO 2768-1:m	Tsinglin Micro Motors Limited
Date			