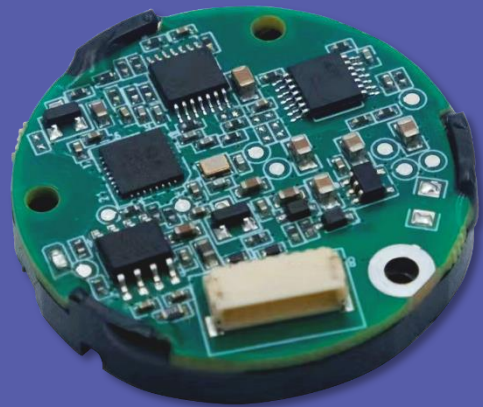


# Split Reflective Multi-Turn Absolute Encoder GROA35-M16S20Bit-SY-C-5V SPECIFICATION

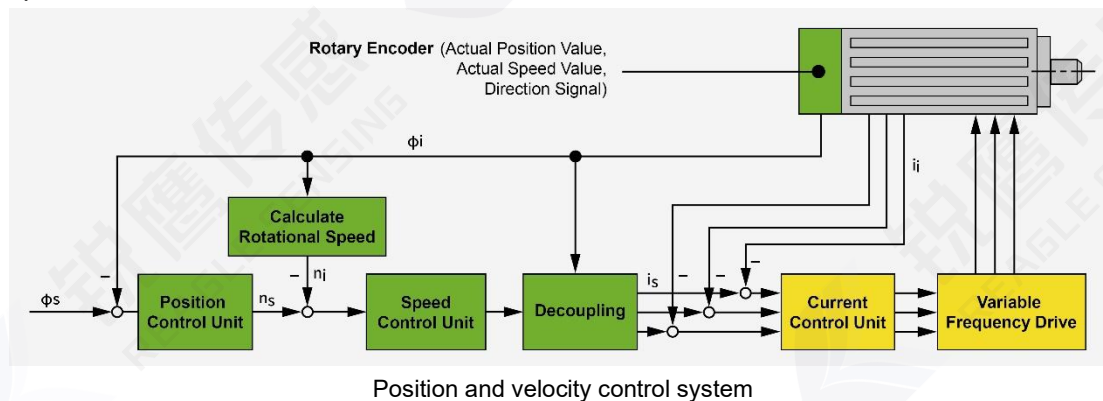


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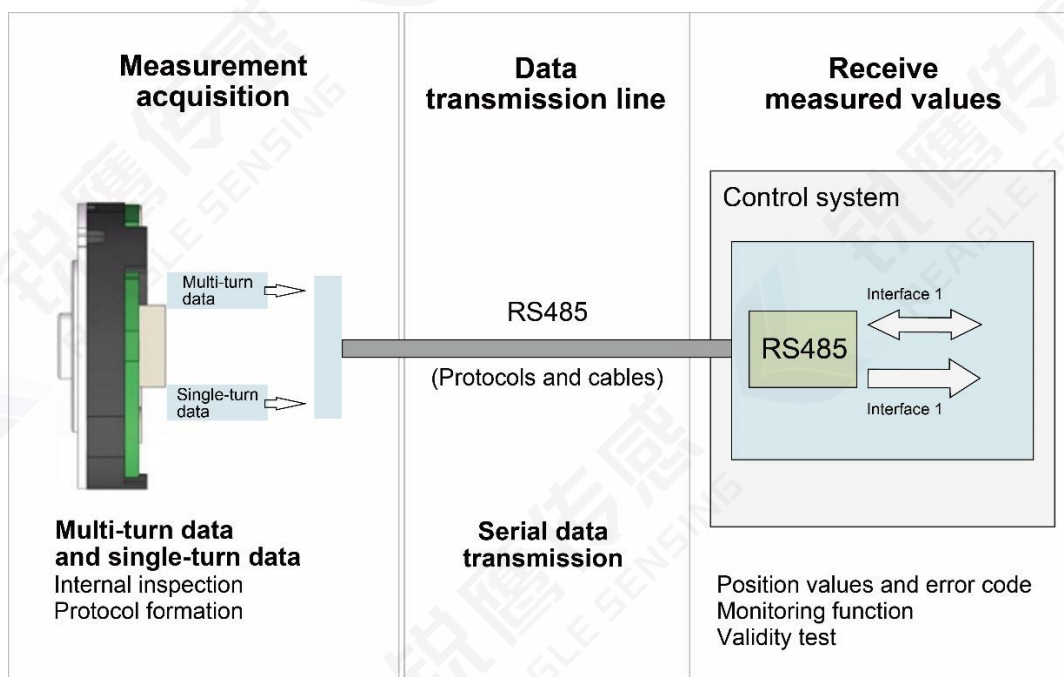
## 1. Summary Info

This manual primarily describes how to use the split optical absolute series GROA35 Multi -turn encoder from Reagle Sensing. This product is mainly used in servo-driven control systems, providing the feedback information required for accurate position and speed control units.



The performance of the encoder has a decisive impact on the essential characteristics of the motor, such as:

- Positioning accuracy
- Speed stability
- Bandwidth, determining the response speed to drive command signals and resistance to interference
- Motor size
- Noise



RS485 Communication Encoder

## 2. Technical Specifications

Model	GROA35-M16S20Bit-SY-C-5V
Resolution	1048576 (20bit) ,22-bit and 24-bit selectable
Auxiliary Functions	Fault Warning * Electromagnetic Environment Warning
Communication Interface	RS485
Communication frequency	≤16kHz
Baud rate	2.5Mbps
Input shaft allowable deviation	Axial:-                      Axial play: <math>\pm 0.15\text{mm}</math> Radial:-                      Radial play: <math>\leq 0.01\text{mm}</math> perpendicularity between the stator mounting surface and the shaft axis: 0.05mm perpendicularity between the end face of the shaft and the shaft axis: 0.01mm
Main shaft speed	≤6000rpm
shaft diameter	straight shaft $\varnothing 6$
Rotor angular acceleration	≤80000rad/s <sup>2</sup>
Vibration	Between 10 and 55Hz, maintain amplitude of 1.5mm. Between 55 and 2000Hz, acceleration is 98m/s <sup>2</sup> . 2 hours per axis for XYZ, totaling 6 hours.
Mechanical shock	Shock acceleration of 980m/s <sup>2</sup> , 11 milliseconds. 3 impacts per direction, totaling 18 impacts.
Operating Temperature	-20°C~ 95°C
Relative Humidity	≤90% (40°C/21 days, based on EN 60068-2-78); No condensation
Enclosure Protection Rating	— (Motor Rear Case Protection)

### 3. Electrical Parameters

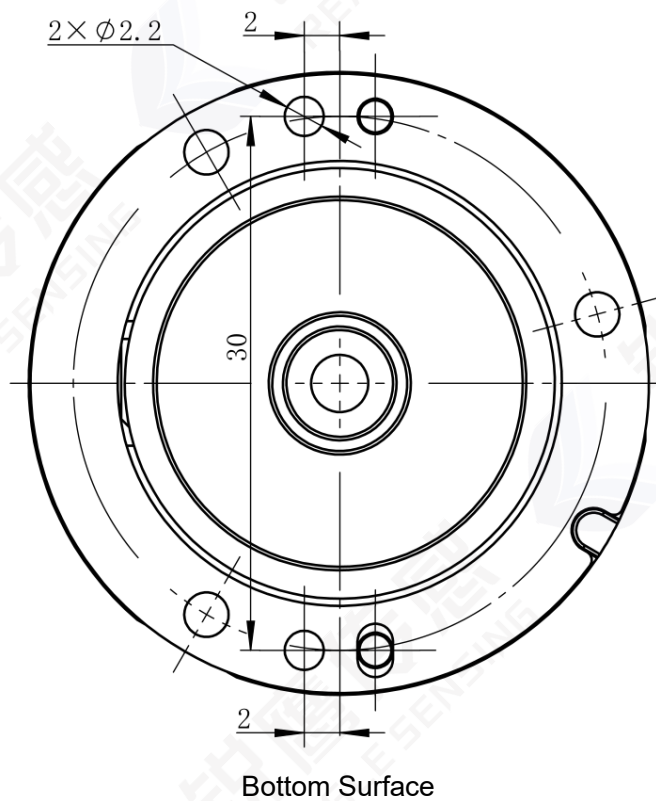
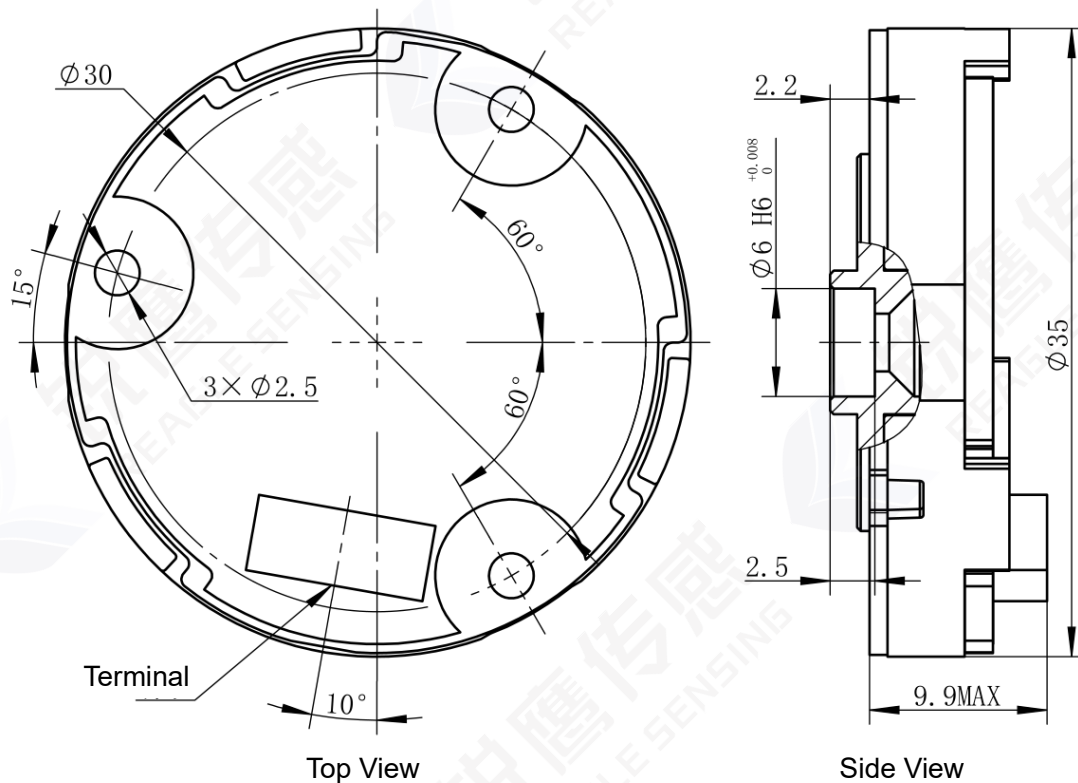
Items		T=25°C		
		Min.	Typ.	Max.
Main power supply voltage		4.75 V	5V	5.25V
Main power supply Current (Typ)		--	110mA	--
Battery voltage		--	3.6V DC	--
Battery fault voltage		--	3.0V	--
Mode transition voltage	Main power supply switches to low-power mode	--	4.2V	--
	Low-power mode transition to main power supply mode	--	4.3V	--
Differential Level	High	3.5V	--	--
	Low	--	--	1.7V
Edge Change Time		--	--	100ns
Insulation resistance		50MΩ	--	--

### 4. Cable Definition

Cable color	Definition
Red	5V
Black	GND
Blue	485+
Yellow	485-
Brown	Battery +
White	Battery GND
Shielding mesh	PE

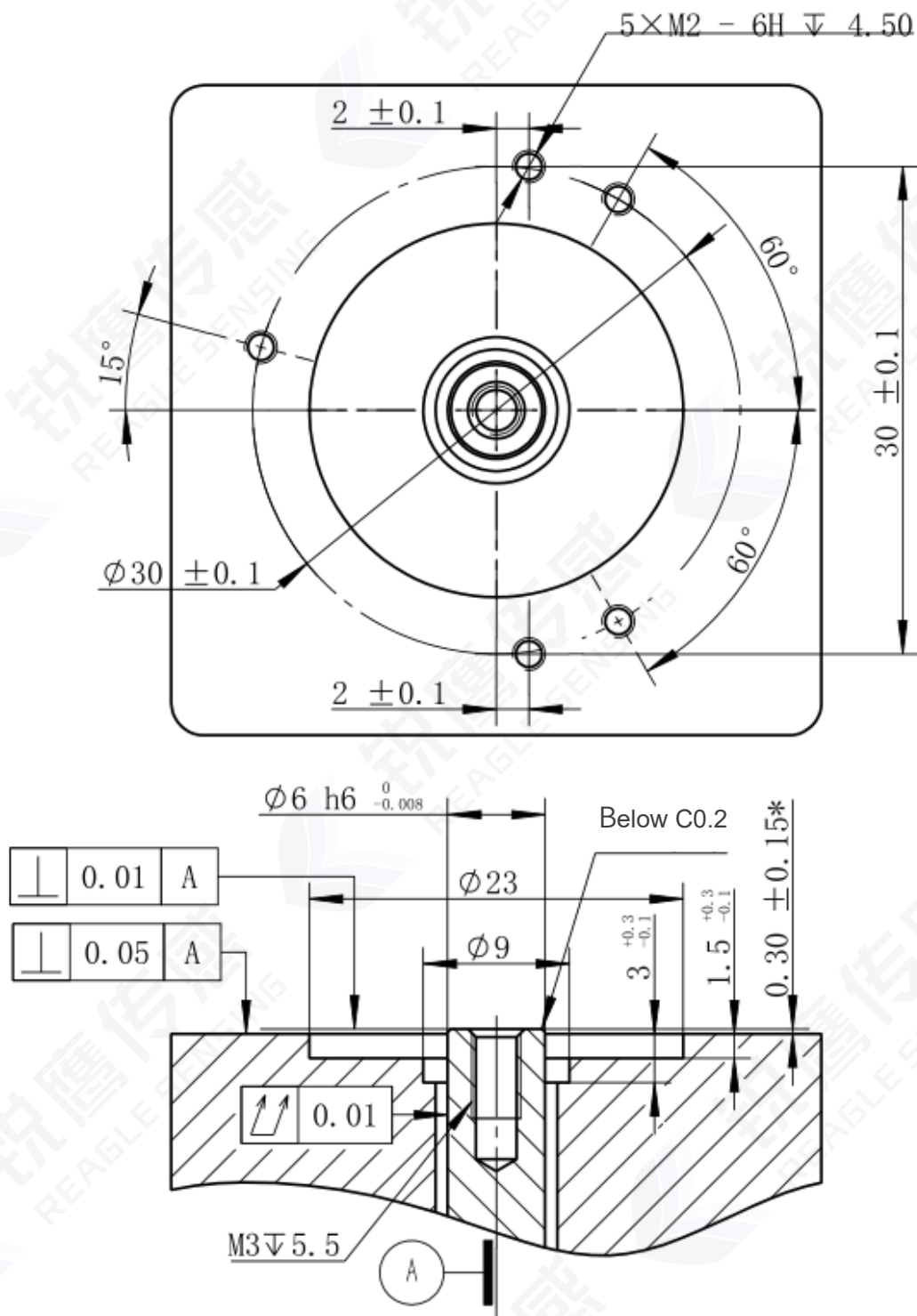
## 5. Mechanical Specifications

### ◇ Product Structure Dimension Diagram



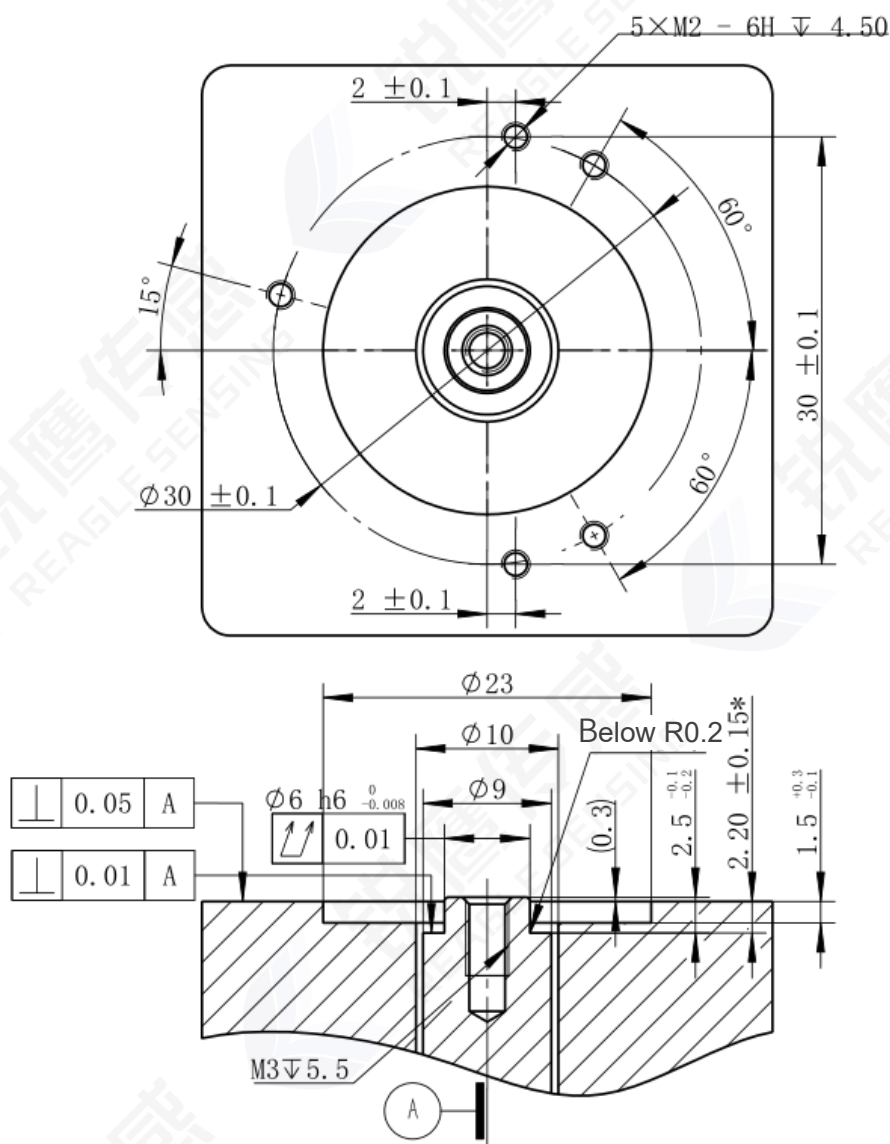
◇ Recommended Installation Dimensions

1. Straight Shaft Installation



\* When the axial dimension tolerance is not met, shims should be used for adjustment. The motor shaft axial play must be within  $\pm 0.15$ .

## 2. Stepped Shaft Installation



\* When the axial dimension tolerance is not met, shims should be used for adjustment. The motor shaft axial movement must be within  $\pm 0.15$

## 6. Communication Specifications

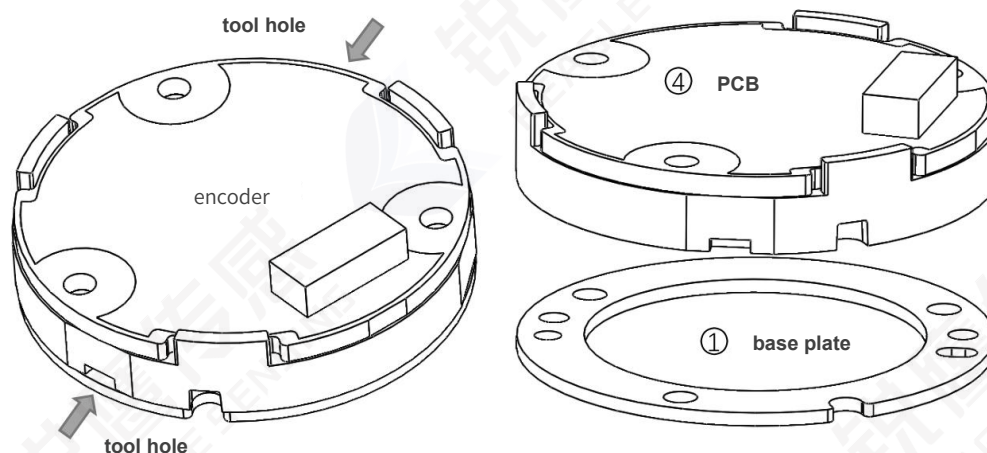
### 6.1 Installation Accessories

- Flat Head Screwdriver
- Cross Head Torque Screwdriver
- Metric 1.5mm Hexagon Torque Wrench



## 6.2 Installation Sequence

### 6.2.1 Base Plate Removal and Installation



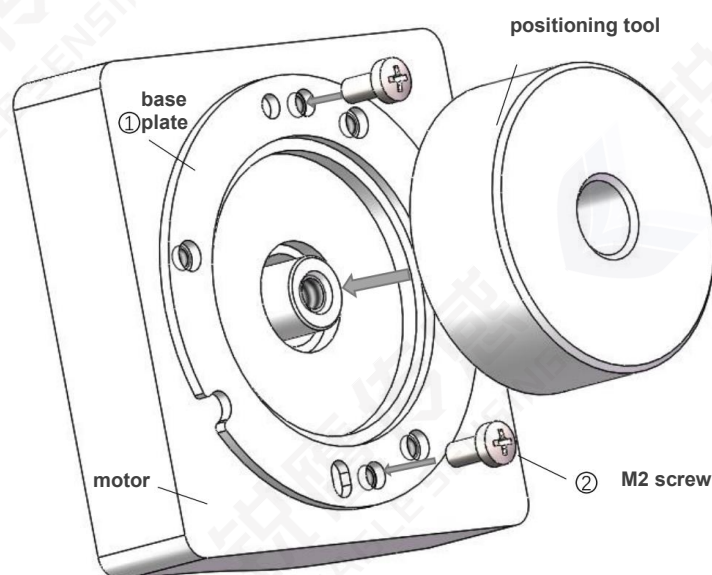
1) Clean the encoder body mounting surface of the motor using alcohol or similar substances.

2) Separate the encoder base plate① from the encoder body, using the side tool holes if possible.

3) Mount the base plate onto the motor from above, ensuring that the five mounting holes on the motor end align with those on the base plate.

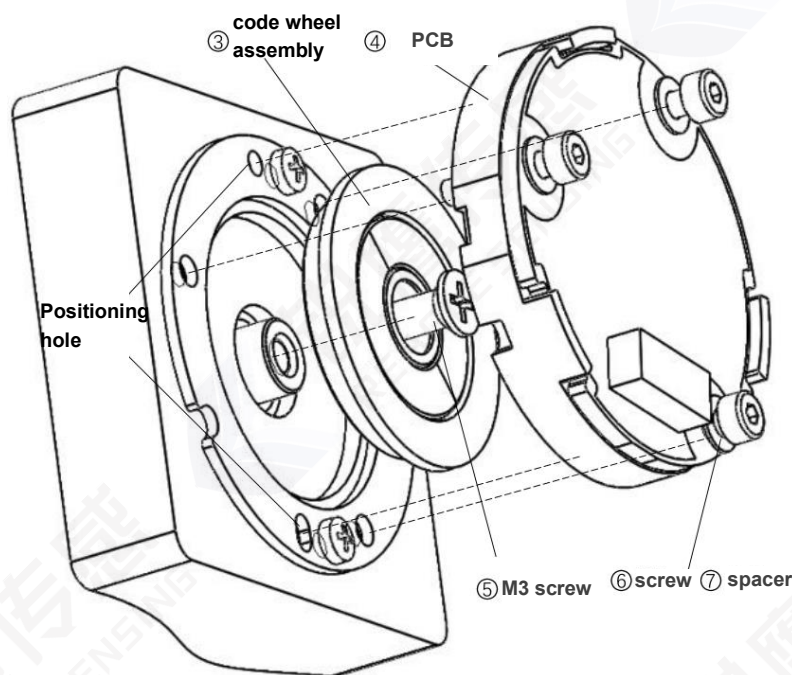
4) Insert the alignment tool into the motor shaft outer diameter and the base plate inner diameter, ensuring that the encoder base plate mounting surface is fully supported without any gaps.

5) Apply thread lock adhesive to the threaded bottoms of the two M2×4 cross-recessed pan head screws② and tighten them to 0.3 Nm (recommended) torque (at two locations). Remove the alignment tool.



### 6.2.2 Code wheel assembly and main body installation

- 1) Clean the motor shaft with alcohol or similar substances
- 2) Insert the code wheel assembly③into the motor shaft
- 3) Lock the motor shaft. While the motor shaft is fixed, apply thread locker to the front end of the M3×6 stainless steel cross-recessed countersunk screw ⑤, and tighten it with a torque of 0.6Nm (recommended).
- 4) From the top of the circuit board main body ④, align the positioning recess with the base plate ①, ensuring that the two positioning pins on the main body fit into the positioning holes on the base plate.
- 5) Apply thread locker to the threaded ends of the 3 M2×10 hexagonal cylindrical head screws ⑥. Install them with the small washers ⑦ onto the motor and tighten with a torque of 0.3Nm (recommended) at 3 locations.



### 6.2.3 Test

After the encoder is installed, the motor is mounted to the workstation, and the encoder cable is connected to the workstation. If the test passes, it indicates that the encoder installation is completely correct and the installation process is finished.

\* The encoder must undergo testing at the workstation to confirm its stability and reliability, ensuring secure installation.

#### 【Precautions】

1. This encoder has a split structure. The encoder shaft (within the code disk component) is separate from the main body of the encoder. When installing the encoder shaft onto the motor shaft, it needs to be exposed to the air. Please assemble it in a clean and dust-free environment.

2. Before installation, clean the motor shaft to remove oil and contaminants to prevent affecting the tightness of the encoder shaft and contaminating the code disk.
3. Avoid touching the code disk directly with your hands (use specialized tools to handle it). Fingerprints, oil, dust, and other contaminants can cause signal abnormalities.
4. After installation, check the cleanliness of the reflective code disk surface. If there is contamination, gently wipe it with a lint-free cloth dampened with alcohol. Be careful not to use excessive force or abrasive materials, as these may damage the code disk.

### Revision History

Date	Version Number	Modification Details or Changes	
		Location	Content
20220906	V0.1	/	New Version
20220906	V0.2	/	Add structural dimensions and installation instructions

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