

HM3512-42T Three-Axis Hollow Brushless Gimbal Motor

Product Specification with Mechanical Drawing

Company	Tsinglin Micro Motors Limited
Document No.	TMM-HM3512-42T-SPEC-EN
Revision	Rev. B
Date	2026-05-20
Product Model	HM3512-42T
Axis Set	YAW motor / ROLL motor / PITCH motor
Status	English specification for customer review

1. Product Description

HM3512-42T is a three-axis hollow-shaft brushless gimbal motor set for professional stabilizers, airborne gimbals, and compact motion-control assemblies. The set includes dedicated YAW, ROLL, and PITCH motors with axis-specific mechanical limits and a standardized pin-header interface.

2. Key Features

- Hollow-shaft BLDC structure for internal signal and power cable routing.
- Dedicated YAW / ROLL / PITCH motor configuration.
- Axis-specific rotation limits for stabilizer attitude control.
- Double-row 2.0 mm pitch 3P pin-header connection.
- Black electronic insulating adhesive on stator winding solder joints.
- Rear cover supplied as motor accessory for ROLL and PITCH axes; not pre-installed.

3. Main Specifications

Item	Specification
Product model	HM3512-42T
Motor type	Hollow-shaft brushless gimbal motor
Operating voltage	DC 7-25 V
Maximum operating power	38 W
Motor center temperature	< 80 deg C under maximum operating power condition
Mechanical noise	<= 90 dB, with background noise <= 36 dB
Pin interface	Double-row 2.0 mm pitch, 3P
Pin protrusion height	4 +0.5 / -0.7 mm above plastic part
Appearance color	Per customer order color or approved sample
Drawing scale	1:1 in the source drawing

4. Axis Configuration

Axis	Rotation Limit	Reference Weight	Structure / Notes
YAW	CCW approx. 140 deg; CW approx. 500 deg	Approx. 120 g	Hollow-shaft motor body; 3P pin-header interface.
ROLL	Total approx. 320 deg; CCW 95 deg; CW 225 deg	Approx. 127 g	Hollow-shaft bracket-type motor; rear cover supplied as accessory.
PITCH	Total approx. 320 deg; CCW 160 deg; CW 160 deg	Approx. 135 g	Hollow-shaft bracket-type motor; rear cover supplied as accessory.

5. Mechanical and Quality Requirements

Parameter	Requirement
End-face runout A	≤ 0.05 mm
Housing runout B	≤ 0.07 mm
Shaft pull-out force	≥ 10 kgf
Core-to-mounting-seat connection force	≥ 15 kgf
Rotor dynamic unbalance	≤ 80 mg
Axial clearance / backlash	Controlled according to supplementary project requirement
Stator winding solder area	Protected with black electronic insulating adhesive

6. Integration Notes

- All dimensions are in millimeters unless otherwise stated.
- The hollow center path supports internal cable routing through the motor axis.
- Final production shall follow the approved drawing, approved sample, purchase order, and supplementary technical agreement.
- Encoder mounting, matching housing, cable outlet, color, and axis-limit details can be customized by project requirement.

7. Application

Application Area	Typical Use
Professional imaging	Handheld stabilizers and camera gimbals
Aerial systems	Airborne gimbal assemblies and payload stabilization
Industrial systems	Compact stabilizing platforms and precision rotation modules

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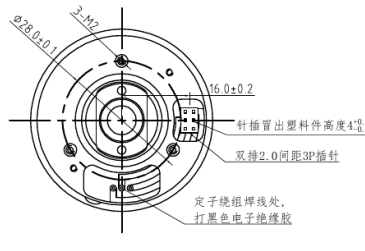
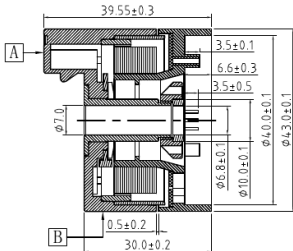
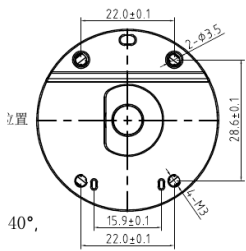
Technical Drawing / Concise Specification

Outline View

YAW MOTOR

Limit angle:
CCW approx. 140 deg
CW approx. 500 deg

顺时针约500°



Reference Weight

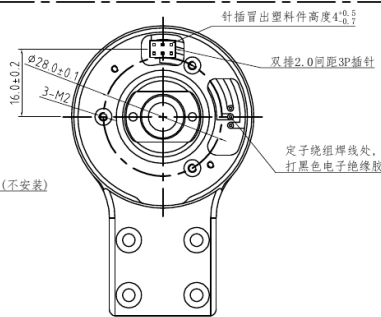
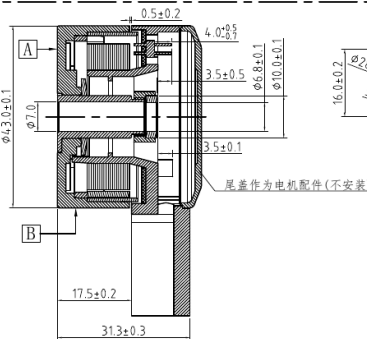
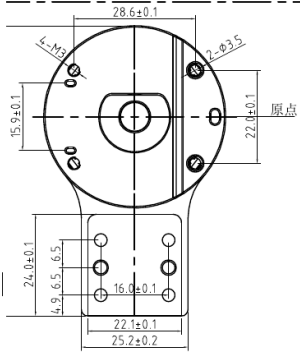
YAW: 120 g
ROLL: 127 g
PITCH: 135 g

Pins: Double-row
2.0 mm pitch, 3P

ROLL MOTOR

Rotation range: 320 deg
CCW 95 deg / CW 225 deg

逆时针转动320°

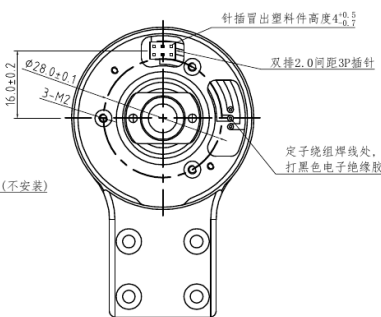
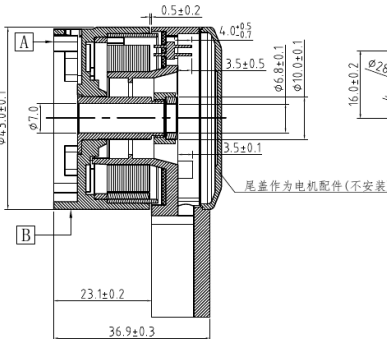
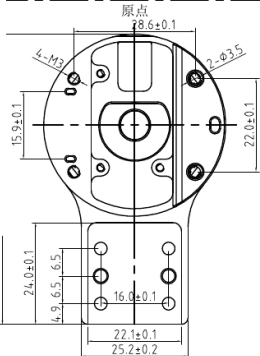


Shaft: Hollow
End cap supplied
as accessory

PITCH MOTOR

Rotation range: 320 deg
CCW/CW 160 deg each

320度
逆时针转动各160°



Model HM3512-42T

Scale 1:1

Voltage DC 7-25 V

Max Power 38 W

Max Temp. < 80 deg C

Noise <= 90 dB

Runout A/B <=0.05 / <=0.07

Tolerance X +/-0.2; X.X
+/-0.1; X.XX
+/-0.05

Notes: 1. End-face runout (A) <= 0.05 mm; 2. Housing runout (B) <= 0.07 mm; 3. Shaft pull-out force >= 10 kgf;
4. Core-to-mount connection force >= 15 kgf; 5. Rotor dynamic balance <= 80 mg; 6. Mechanical noise <= 90 dB;
7. Operating voltage: DC 7-25 V; 8. Maximum operating power: 38 W; motor center temperature < 80 deg C.

9. Ordering and Customization Information

Item	Available Option / Requirement
Model	HM3512-42T three-axis set
Axis selection	YAW / ROLL / PITCH set, or axis-specific configuration by project
Voltage range	DC 7-25 V
Color	Customer order color or approved sample
Integration	Encoder adaptation, matching housing, and cable-routing details by project
Documentation	Approved drawing, approved sample, and this English specification

10. Revision and Approval

Revision	Date	Description
Rev. B	2026-05-20	Concise English product specification with mechanical drawing page.

Item	Name / Signature	Date
Prepared by		
Checked by		
Approved by		
Customer Confirmed by		

Note: This specification is prepared for customer review. Manufacturing release requires written approval from Tsinglin Micro Motors Limited and the customer.