

受 控 文 件

直流无刷无齿槽电机规格书  
SLOTLESS BRUSHLESS DC MOTOR SPECIFICATIONS

鸣志电器(太仓)有限公司

| 规格 Specifications        |   | Values       | Tolerance | Unit    |
|--------------------------|---|--------------|-----------|---------|
| 1. 电机参数 Motor parameters |   |              |           |         |
| 1.1                      | 轴承类型 Bearings type of motor             | Ball bearing |           |         |
| 1.2                      | 电机极数 Number of poles                    | 2            |           |         |
| 1.3                      | 相数 Number of phases                     | 3            |           |         |
| 1.4                      | 绝缘等级 Insulation class                   | F (155°C)    |           |         |
| 1.5                      | 相间电阻 Terminal resistance phase to phase | 10.35        | ±8%       | Ω       |
| 1.6                      | 相间电感 Terminal inductance phase to phase | 315          | Typical   | μH      |
| 1.7                      | 速度常数 Speed constant                     | 1250         | ±10%      | rpm/V   |
| 1.8                      | 转矩常数 Torque constant                    | 7.64         | Typical   | mNm/A   |
| 1.9                      | 速度/转矩斜率 Speed/torque gradient           | 1694         | Typical   | rpm/mNm |

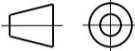

| 2. 齿轮箱参数 Gearhead data |  | Values             | Tolerance | Unit |
|------------------------|--|--------------------|-----------|------|
| 2.1                    | 齿轮箱类型 Type of gearhead                 | Planetary gearhead |           |      |
| 2.2                    | 轴承类型 Bearings type of gearhead         | Ball bearing       |           |      |
| 2.3                    | 名义减速比 Nominal reduction ratio          | 3.95               | Nominal   | X:1  |
| 2.4                    | 精确减速比 Absolute reduction ratio         | 75/19              |           |      |
| 2.5                    | 级数 Number of stages                    | 1                  |           |      |
| 2.6                    | 平均空载回差 Average backlash no load        | 1                  | Typical   | °    |
| 2.7                    | 旋转方向 Rotation direction(input/output)  | =                  |           |      |
| 2.8                    | 轴向间隙 Axial play                        | 0~0.1              |           | mm   |
| 2.9                    | 径向间隙 Radial play[mm from flange]       | ≤0.1[5]            |           | mm   |
| 2.10                   | 最大轴向负载 Max.axial load(dynamic)         | 20                 |           | N    |
| 2.11                   | 最大径向负载 Max.radial load[mm from flange] | 50[5]              |           | N    |
| 2.12                   | 最大允许安装力 Max.force for press fits       | 40                 |           | N    |

| 规格 Specifications              |                            | Values   | Tolerance | Unit |
|--------------------------------|----------------------------|----------|-----------|------|
| 3. 整机常规特性 Overall General Data |                            |          |           |      |
| 3.1                            | 额定电压 Nominal voltage       | 12       |           | V dc |
| 3.2                            | 空载转速 No load speed         | 3863     | ±10%      | rpm  |
| 3.3                            | 空载电流 No load current       | 48       | ±50%      | mA   |
| 3.4                            | 额定转矩 Rated torque          | 8.9      | Typical   | mNm  |
| 3.5                            | 额定电流 Rated current         | 0.323    | ±10%      | A    |
| 3.6                            | 额定转速 Rated speed           | 2308     | ±10%      | rpm  |
| 3.7                            | 最大效率 Maximun efficiency    | 57       | Typical   | %    |
| 3.8                            | 堵转转矩 Stall torque          | 0.032    | Typical   | Nm   |
| 3.9                            | 堵转电流 Stall current         | 1.16     | Typical   | A    |
| 3.10                           | 重量 Weight                  | 58       | ±5%       | g    |
| 3.11                           | 使用温度范围 Ambient temperature | -40~+100 |           | °C   |

| 4. 其他 Others |  |  |  |  |
|--------------|--|--|--|--|
| 4.1          |  |  |  |  |
| 4.2          |  |  |  |  |
| 4.3          |  |  |  |  |
| 4.4          |  |  |  |  |

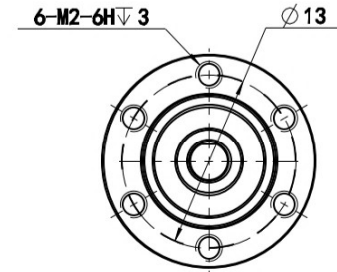
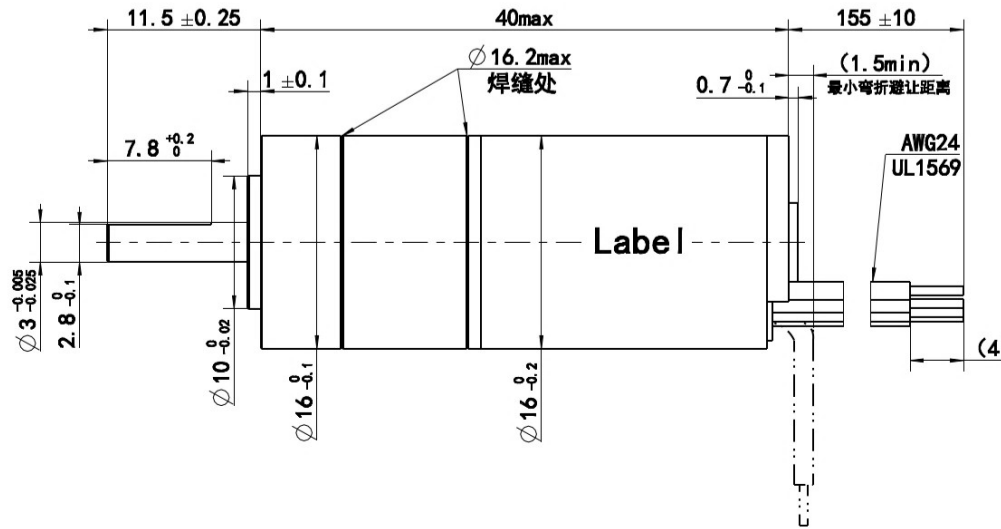
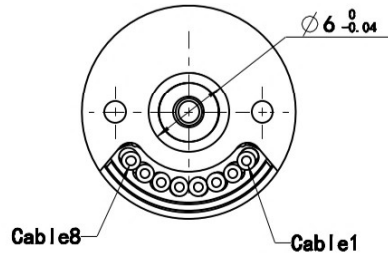
备注 Notes:

- 所有参数均在20°C给定。大部分参数随温度变化。  
All parameters are given at 20°C. Most of parameters will vary with temperature.
- 当电机固定在导热支架上时，热阻通常可降低50%。  
The thermal resistance can be typically decreased of 50% when motor is fixed on a thermally conductive support.
- 电机电气安全标准符合<GB/T 21418中6.6介电性能>的要求。  
The electrical safety standard of the motor shall meet the requirements of <GB/T21418 6.6 Dielectric properties>.

|      |                        |            |  |                   |           |      |   |
|------|------------------------|------------|--|-------------------|-----------|------|---|
|      |                        |            | Unit:mm<br>第一角画法<br>First angle method<br>       | 批准 Approve        |           |      |  <p>This document is released for information only. Its reproduction in whole or in part or its dissemination to third parties is prohibited. All trademarks and registered trademarks appearing on this document are the property of their respective owners.</p> |
|      |                        |            | 未注线性与角度尺寸公差<br>Tolerances for linear and angular dimensions without individual tolerance indications<br>GB/T 1804-m eqv ISO 2768-1:m | 标准化 Standardize   |           |      |   |
|      |                        |            | 未注形状与位置尺寸公差<br>Geometrical tolerance for features without individual tolerance indications<br>GB/T 1184-K eqv ISO 2768-2:K           | 工艺 Process Review |           |      |   |
|      |                        |            |  | 审核 Check          |           |      |   |
| A0   | 原始版本 Original revision | 2023.04.20 |  | 设计 Design         |           |      |   |
| REV. | 版本记录 REVISION RECORD   | DATE       | UNLESS OTHERWISE SPECIFIED   | NAMES             | SIGNATURE | DATE |   |

受控文件

鸣志电器(太仓)有限公司



线束相对于前盖安装孔角度偏差:  $\leq \pm 30^\circ$   
Alignment of cable relative to front mounting holes:  $\leq \pm 30^\circ$

Connection of Motor

| Cable No. | 信号/Signal           | 颜色/Color |
|-----------|---------------------|----------|
| 1         | U                   | 棕/brown  |
| 2         | V                   | 红/red    |
| 3         | W                   | 橙/orange |
| 4         | $V_{hall}$ 3~24 VDC | 黄/yellow |
| 5         | GND                 | 绿/green  |
| 6         | Hall 1              | 蓝/blue   |
| 7         | Hall 2              | 紫/voilet |
| 8         | Hall 3              | 灰/grey   |

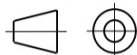
铭牌 Label Detail

Motor No. ECU16024H12-S104  
Gearbox No. PG16M-0004  
Work order: XXXXXXXX YYYY  
Serial No. QR Code

备注/Note:  
1. 铭牌用激光标刻在电机机壳表面, 目视水平居中;  
The label is laser engraved on the motor housing in middle.  
2. 二维码为含整机型号、生产工单号和序列号。  
The QR code includes motor model No., work order and serial No.

Unit:mm

第一角画法  
First angle method



未注线性与角度尺寸公差  
Tolerances for linear and angular dimensions  
without individual tolerance indications  
GB/T 1804-m eqv ISO 2768-1:m

未注形状与位置尺寸公差  
Geometrical tolerance for features without  
individual tolerance indications  
GB/T 1184-K eqv ISO 2768-2:K

批准 Approve

标准化 Standardize

工艺 Process Review

审核 Check

设计 Design

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REV. A0 原始版本 Original revision

2023. 04. 20

版本记录 REVISION RECORD

DATE

UNLESS OTHERWISE SPECIFIED

NAMES

SIGNATURE

DATE

Drawing No: 4611180000863

Rev. A0

SCALE: 2.5:1 Sheet 2 of 2