

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

受控文件

鸣志电器(太仓)有限公司

规格 Specifications		Values	Tolerance	Unit
1. 定额 Rating				
1.1	额定电压 Nominal voltage	24		V dc
1.2	电机极数 Number of poles	2		
1.3	相数 Number of phases	3		
1.4	转子惯量 Rotor inertia	3.64	Typical	gcm <sup>2</sup>
1.5	绝缘等级 Insulation class	F (155°C)		
1.6	使用温度范围 Ambient temperatue	-40~+100		°C

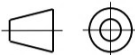

2. 固有特性 Intrinsic parameters				
2.1	速度常数 Speed constant	770	±10%	rpm/V
2.2	转矩常数 Torque constant	12.4	Typical	mNm/A
2.3	速度/转矩斜率 Speed/torque gradient	58	Typical	rpm/mNm
2.4	机械时间常数 Mechanical time constant	2.23	Typical	ms
2.5	机壳-环境热阻 Thermal resistance housing-ambient	9	Typical	K/W
2.6	绕组-机壳热阻 Thermal resistance winding-housing	1.75	Typical	K/W
2.7	电机热时间常数 Thermal time constant motor	510	Typical	s
2.8	绕组热时间常数 Thermal time constant winding	5.26	Typical	s

3. 机械参数 Mechanical data				
3.1	轴承类型 Bearings type	Ball bearing		
3.2	最大允许转速 Max. speed	30000		rpm
3.3	轴向间隙 Axial play	0~0.14		mm
3.4	径向间隙 Radial play	preload		
3.5	最大轴向负载 Max. axial load (dynamic)	3.5		N
3.6	最大允许安装力 Max. force for press fits (static) (静态, 轴支撑 static, shaft supported)	53		N
3.7	最大径向负载 Max. radial load [mm from flange]	15[5]		N

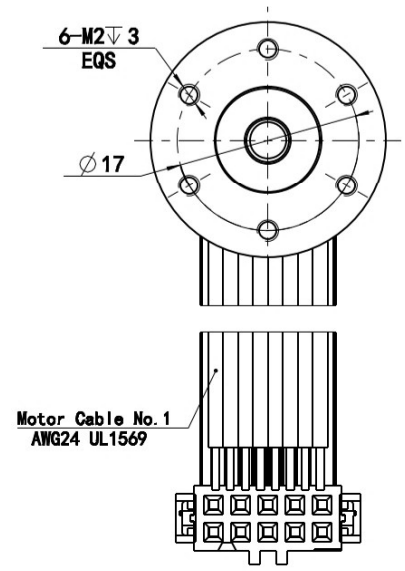
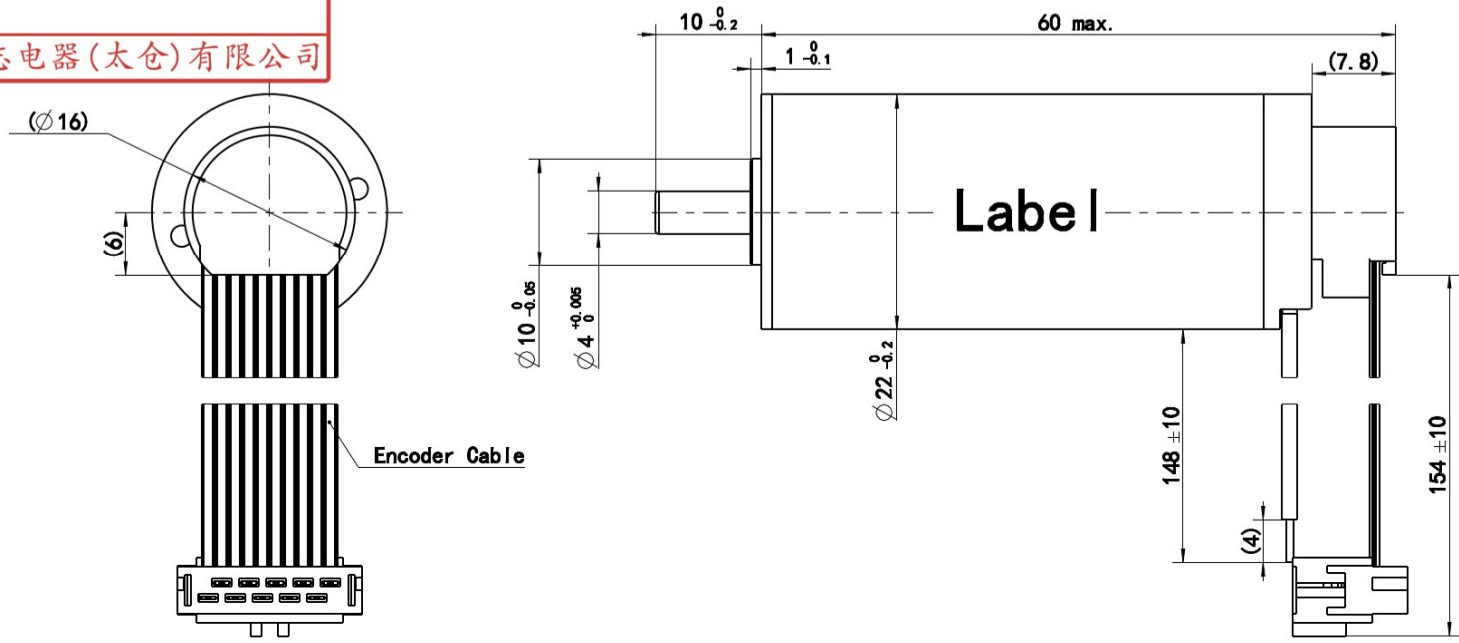
规格 Specifications		Values	Tolerance	Unit
4. 常规特性 General Date				
4.1	空载转速 No load speed	19200	±10%	rpm
4.2	空载电流 No load current	326	±50%	mA
4.3	最大连续转矩 Max. continious torque	32.4	Typical	mNm
4.4	最大连续电流 Max. continious current	2.94	Typical	A
4.5	名义转速 Nominal speed	17320	Typical	rpm
4.6	额定转矩 Rated torque	21.6	Typical	mNm
4.7	额定电流 Rated current	1.67	±10%	A
4.8	额定转速 Rated speed	15800	±10%	rpm
4.9	最大效率 Maximun efficiency	85.9	Typical	%
4.10	堵转转矩 Stall torque	316.6	Typical	mNm
4.11	堵转电流 Stall current	25.53	Typical	A
4.12	相间电阻 Terminal resistance phase to phase	0.94	±8%	Ω
4.13	相间电感 Terminal inductance phase to phase	104	Typical	μH
4.14	电机质量 Weight	124	±5%	g

5. 其他 Others				
5.1				
5.2				
5.3				
5.4				

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 第一角画法 First angle method 	批准 Approve			 moving in better ways 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.
			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	标准化 Standardize			
			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	工艺 Process Review			
				审核 Check			
A0	原始版本 Original revision	2023.01.31		设计 Design			
REV.	版本记录 REVISION RECORD	DATE	UNLESS OTHERWISE SPECIFIED	NAMES	SIGNATURE	DATE	Drawing No: 4611180000310 Rev. A0 SCALE: 1:1 Sheet 1 of 3

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线束相对于前盖安装孔角度偏差: ≤±30°  
Alignment of cable relative to front mounting holes: ≤±30°

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 <sub>hall</sub> 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

**MOONS'**

Motor No. ECU22048H24-S113

Encoder No. MA16-12B

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.

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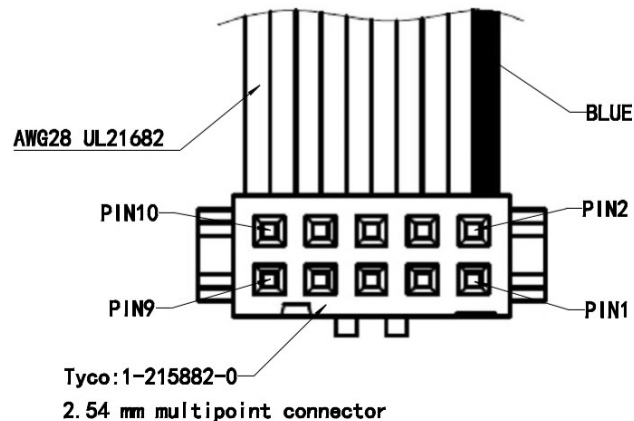
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受 控 文 件

编码器信息 Encoder Informations

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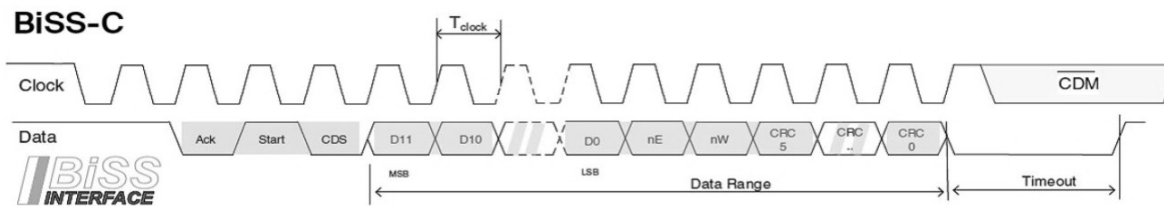
编码器参数 Encoder Parameter	
1	工作原理类型 Working principle Magnetic
2	信号记录类别 Signal record type Single-turn absolute
3	每圈步数 Steps per turn 4096
4	单圈分辨率 Single-turn resolution 12 Bit
5	时钟频率 Clock rate 0.05-10 MHz
6	超时时间 Time out 20 μs
7	信号通讯协议 Signal protocol BiSS-C
8	信号编码类别 Output code Binary



Connection of Encoder

Pin No.	信号/Signal
1	Data
2	VCC 4.5V-5.5V
3	GND
4	CLK
5	Do not connect (A)
6	Do not connect (A)
7	Do not connect (B)
8	Do not connect (B)
9	Do not connect (I)
10	Do not connect (I)

通讯帧结构 Communication frame structure



备注 Notes:

- 连接器引脚5~10不可施加电压，否则会损坏编码器；  
The encoder will be damaged if applying voltage to pins 5~10 of the connector.
- 不允许以编码器线束着力来提起电机。  
It is not allowed to lift the motor with the encoder cable.

Unit:mm  
 第一角画法  
 First angle method  
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 Geometrical tolerance for features without  
 individual tolerance indications  
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批准 Approve

标准化 Standardize

工艺 Process Review

审核 Check

设计 Design

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