

# 直流无刷无齿槽电机规格书

## SLOTLESS BRUSHLESS DC MOTOR SPECIFICATIONS

受控文件

上海鸣志电器股份有限公司

规格 Specifications		Values	Tolerance	Unit
<b>1. 定额定 Rating</b>				
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

<b>2. 固有特性 Intrinsic parameters</b>				
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	2.36	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

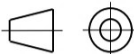
<b>3. 机械参数 Mechanical data</b>				
3.1	轴承类型 Bearings type	Ball bearing		
3.2	最大允许转速 Max. speed	40000		rpm
3.3	轴向间隙 Axial play	0~0.14		mm
3.4	径向间隙 Radial play	preload		
3.5	最大轴向负载 Max. axial load (dynamic)	3.5		N
3.6	最大允许安装力 Max. force for press fits (static) (静态, 轴支撑 static, shaft supported)	53		N
3.7	最大径向负载 Max. radial load [mm from flange]	15[5]		N

规格 Specifications		Values	Tolerance	Unit
<b>4. 常规特性 General Date</b>				
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. continiuous torque	32.5	Typical	mNm
4.4	最大连续电流 Max. continiuous current	2.94	Typical	A
4.5	名义转速 Nominal speed	17310	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	15835	±10%	rpm
4.9	最大效率 Maximun efficiency	86	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

<b>5. 其他 Others</b>				
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  
  
 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

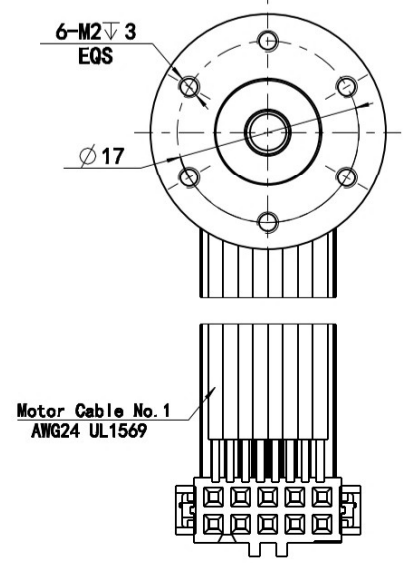
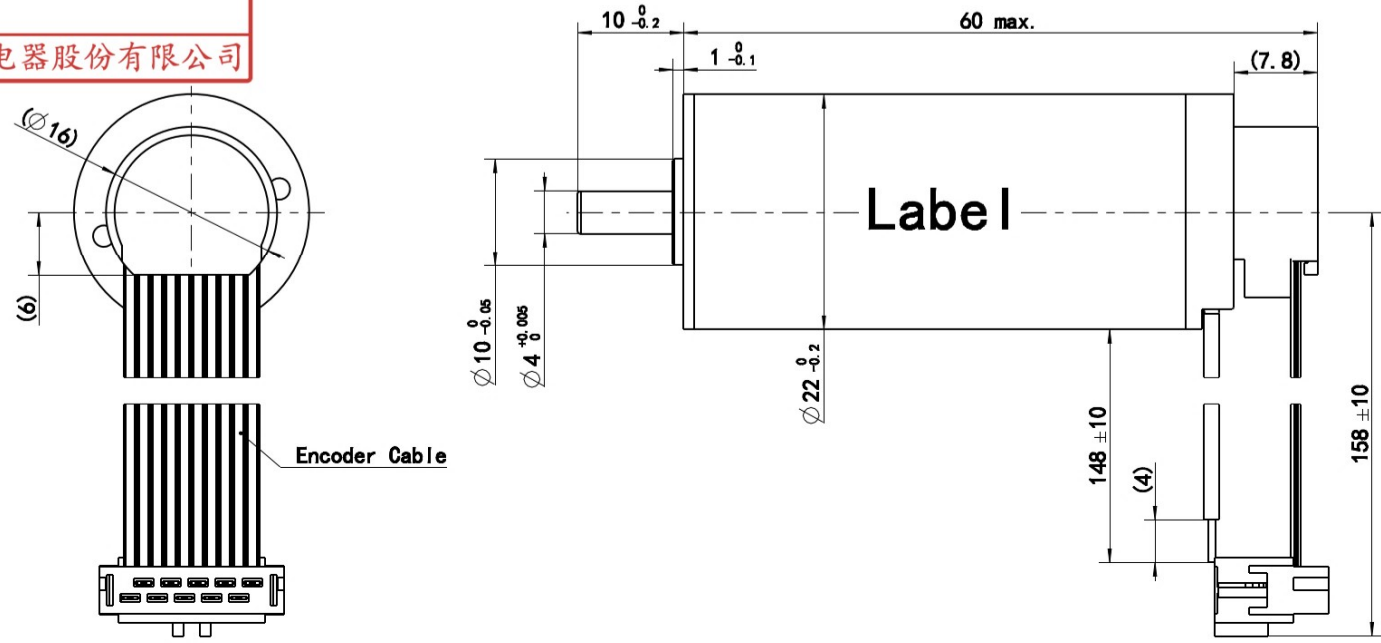
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A0	原始版本 Original revision	2021.12.14	UNLESS OTHERWISE SPECIFIED	NAMES	SIGNATURE	DATE	Drawing No: 4611180000309	Rev. A0	SCALE: 1:1	Sheet 1 of 3
REV.	版本记录 REVISION RECORD	DATE								

受 控 文 件

上海鸣志电器股份有限公司



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 <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



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	批准 Approve			
			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			
				设计 Design			
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受 控 文 件

编码器信息 Encoder Informations

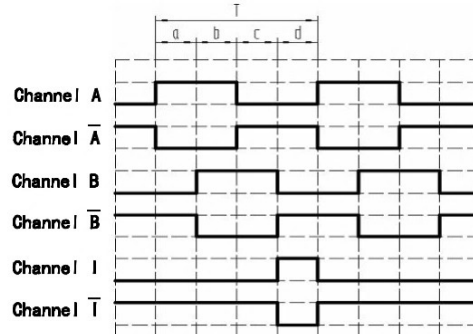
上海鸣志电器股份有限公司

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	Incremental
3	每圈线数 Lines per turn	1024
4	通道数量 Number of channels	3

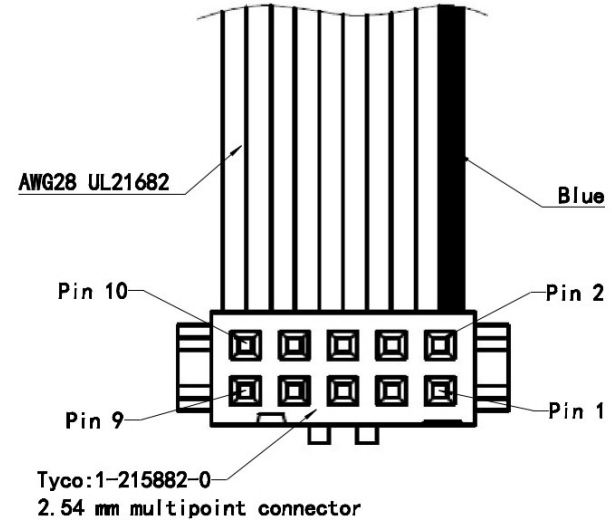
Connection of Encoder

Pin No.	信号/Signal
1	N.C
2	VCC 4.5V-5.5V
3	GND
4	N.C
5	Channel $\bar{A}$
6	Channel A
7	Channel $\bar{B}$
8	Channel B
9	Channel $\bar{T}$
10	Channel I

编码器输出信号/Encoder Output Signal



Direction of rotation: CW (view from shaft end);  
 a, b, c, d = 90° ± 45°;  
 Index is aligned with angle commutation zero



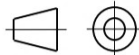
备注 Notes:

- 连接器引脚1和4不可施加电压，否则会损坏编码器；  
The encoder will be damaged if applying voltage to pin1 & pin4 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



未注线性与角度尺寸公差

Tolerances for linear and angular dimensions without individual tolerance indications  
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未注形状与位置尺寸公差

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