TEAMWORK GLOBAL GROUP LTD

样 板 规 格 书

MODEL SPECIFICATION

客户名称 **Customer Name**	**SL0987A**		
项目编号 **Item Code**	**SL0987A-001(01)**		
文件编号/**Doc. No.**	**SLGC21010003A**		
品名/**Description**	永磁直流马达/ **P M DC motor**		
型号/**Model No.**	**GM24FMN30**		
作成/**Drawn**	审核/**Checked**	批准 **/Approved**	日期/**Date**
刘松帅			**2021-1-13**

客户确认栏 **CUSTOMERAPPROVAL**

型号 Model:**GM24FMN30**

1.工作条件 Standard Operating Conditions

No.	项　目 Items	规　格 Specification	检验工具 Test Method
1-1	工作电压 Rated Voltage	DC 12.0V	电压表 Millimeter
1-2	工作温度 Operating Temperature	-20℃~60℃	温度计 Thermometer
1-3	工作湿度 Operating Humidity	15%~90%	湿度计 Hygroscope
1-4	马达转向 Motor Rotation	CW（顺时针方向旋转）	手感 Handle
1-5	马达姿势 Motor Position	检查时水平 All position	手感 Handle
2.电机性能 Performance Of Motors			
(1)单体电机性能			
No.	项　目 Items	规　格 Specification	检验工具 Test Method
2-1	空载电流 No Load Current	40mA max	电流表 DC Power Supply
2-2	空载转速 No Load Speed	20000±10%rpm	转速表 Flash Speed Indicator
2-3	工作电压范围 Voltage range for use	DC:4.5V~12.0V	电压表 Millimeter
(2)整体减速箱性能			
2-4	速比 Gear Ratio	1/10	
2-5	空载电流 No Load Current	55mA max	电流表 DC Power Supply
2-6	空载转速 No Load Speed	2000±10%rpm	转速表 Flash Speed Indicator
2-7	马达转向 Motor Rotation	CCW	输出轴端视，逆时针旋转
2-8	噪音 Noise	≤52db	分贝仪 Decibels instrument
2-9	堵转电流 Stall Current	660mA MAX	电流表 DC Power Supply
2-10	堵转力矩 Stall torque	160g.cm	扭力计 Torque Measure
3.机械性能 Mechanical Characteristics			
No.	项　目 Items	规　格 Specification	检验工具 Test Method
3-1	轴向间隙 Shaft End Play	0.05-0.30mm	治具 Frock
3-2	安装尺寸 Outline Dimension	见外形图	治具和卡尺 Frock And Vernier Calipers
3-3	螺孔 Screw Size	M1.6	治具 Frock
3-4	轴伸尺寸 Outside Shaft Length	51mm	卡尺 Vernier Calipers
3-5	出轴直径 Dia.of Shaft	50*TR5 P=1.5	卡尺 Vernier Calipers

3.附件 Attachment

1） 电机外形图 Motor Outline Drawing

———————— END ————————

项目编号 Item Number	SL0987A-001(01)	样品单号 Sample Code	SM20201224-SA04

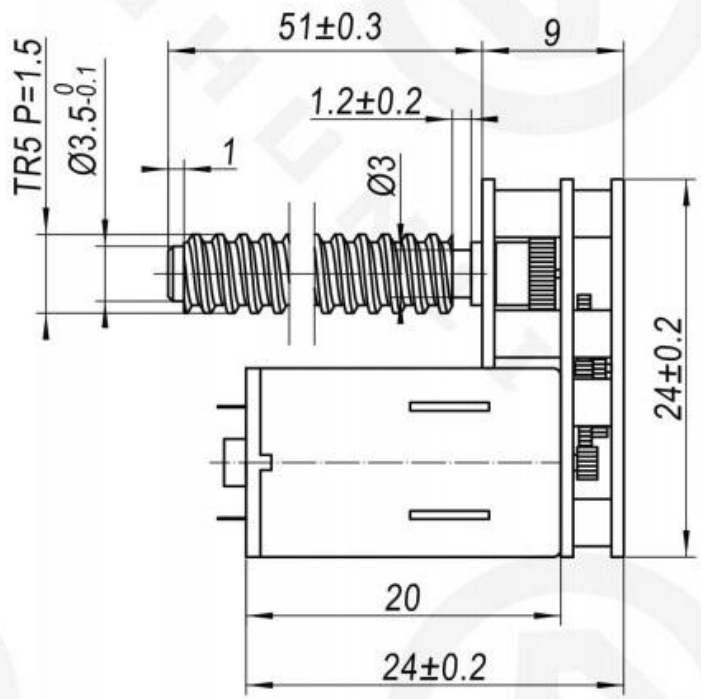
受控签章：

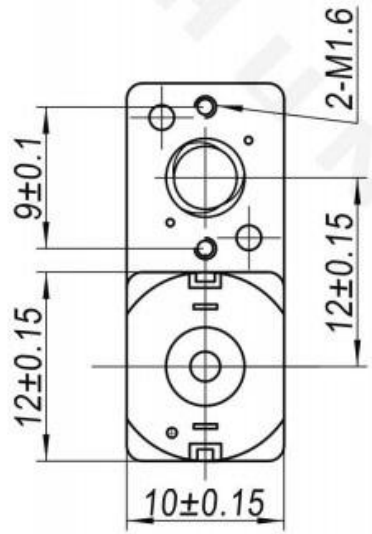
FORM-SSLENG-01

GM24FMN30直流减速电机

GEARED MOTOR	减速比 Gear Ratio	1:10
	额定电压 V Rated Voltage	12.0 V
	空载转速 RPM Free-load Speed	2000±10%
	空载电流 mA Free-load Current	55 Max
	额定转速 RPM Rated Speed	/
	额定电流 mA Roted Current	/
	额定扭矩 Kgf.cm Rated Torque	/
	堵转电流 mA Stall Current	≤660
	堵转扭矩 gf.cm Stall Torque	160 Min
	是否可堵转 Stall allowed or not	NO
	CW/CCW Direction	CCW
	噪音 dB Noise (L=300mm)	52 Max
MOTOR	驱动电机型号 Driving Motor Mold	N20
	电机空载转速 RPM Free-load Speed	20000±10%
	电机空载电流 mA Free-load Current	40 Max

备注：
Remarking





技术要求

1. 减速箱电机最大承载负载扭力不得超过额定负载扭力的150%；

历史版本	EUN#	更新内容及描述	日期
A	xxxxxx	初版发放	2021-1-13

SCALE 2:1	UNIT mm	UNSPECIFIED TOLERANCE: 0～6: ±0.1 >6～30: ±0.2 >30～120:±0.3 >120: ±0.5 ANGLES: ±30′
	SIZE A4	
DRAWN	MATERIAL	TITLE GM24FMN30 2000RPM 10K 样品电机外形参考简图
CHECKED	FINISH	SHEET 1 OF 1 REV A
APPROVED	WEIGHT	DWG NO. SL0987A-001(01)-OT

减速电机使用一般注意事项General Instructions for Use of Gear Motor

1、过负载及堵转(overload and stall)

马达在运行时，由于线圈和铁芯内部发生能量转换而发热，温度渐渐上升。负载在额定范围内，发生热量和散发热量平衡，不会烧坏线圈。但在过载及堵转的状态下会引起发热。运行时间长时，线圈铜线上的绝缘膜被溶解，使铜线之间短路，而烧毁马达(When the motor is running, the coil and the inner core will make the energy conversion and heat, which lead to the temperature increase. Within the rated load range, heat generation and heat radiation balance, so it will not burn the coil. However, in the state of overload and stall rotor will heat. When a long time running, the insulating film on the coil copper wire will be dissolved,so that the copper wire is short circuited, and the motor is burnt out)。

关于如何确认马达的额定负载范围值请参考电机性能曲线圈(About how to confirm the rated torque range of the motor please refer to the motor performance curve)

2、低速运行时(low speed running)

DC 马达的场合，若使用碳刷，旋转的整流子和碳刷摩擦，在整流子换向处产生电火花(In some DC motor applications case, if used carbon brush, rotating commutator will rub carbon brush . When reversing, commutator spark will be produced)。

马达低速运行时，整流子和碳刷摩擦产生的碳粉在整流子槽中堆积，造成短路。烧坏马达和驱动器，请十分注意(At low speed running, toner produced by commutator and carbon brush will accumulate in commutator slot, which lead to a short circuit and burn out the motor and driver, please pay attention to it)

3、使用 PWM 控制时的电刷要比在额定电压（固定电压）状态下使用寿命更短。根据使用的频率，碳刷有可能很快磨损(Run the motor by PWM control, the brush has shorter life than it run at the rated voltage (fixed voltage) .According to the frequency of use, the carbon brush may soon wear)。

直流有刷电机的 PWM 控制频率一般为 10-20kHz,另需注意与马达部品频率相同时，会引起共振而发热(PWM control frequency of DC brush motor is generally 10-20kHz. Pay attention that if at the same frequency of motor parts, it will cause resonance and heat)

PWM 控制状态下，使用电解电容内藏马达时，在某一固定频率下马达可能会不转，请尽量使用压敏电阻内藏马达(When

at PWM control and use the motor with built-in electrolytic capacitors , the motor at a fixed frequency may not run, please try to use the motor with built-in varistors)

4、连续运行时的注意事项(notes of continuing running)

齿轮箱连续运行时，轴齿轮和片齿轮之间可能会发热而打滑，请尽可能使用断续运行方式(During the continuous operation of the gearbox, the shaft gear and the gear may heat and slip. Please try to use not-continuous running)

5、关于惯性和刹车(about inertia and brake)

马达断电后，转子由于惯性作用还会转动，这就是电机的惯性。如果要立即停止转动，在关掉电源后短路正负端子即可。使用这种刹车，是利用电机发电（反相电流）作用来实行。可能会电流一时增大而缩短电机寿命(When the motor is powered off, the rotor will rotate because of inertia. If you want to immediately stop the rotation, turn off the power supply and connect positive with negative terminals to make a short circuit .The way of this brake is realized by the use of motor power reverse current).Sudden increase the current may shorten the motor life)

6、端子焊接注意事项(notes of terminal welding)

在给电机端子焊接电源线路时，可能会因为焊接温度过高而破坏电机结构。焊接时请注意，铬铁温度不宜

超过 400℃，单次焊接时间不宜超过 1 秒，重复焊接次数不宜超过 3 次(When welding the power supply line to the motor terminal, it may damage the motor structure because of the high welding temperature. Please note that when welding iron temperature should not exceed 400 . Single welding time ℃ should not exceed 1s. Number of repeatedly welding should not exceed 3 times)

7、安装时注意事项(installation notes)

采用安装面螺丝锁定安装时，请注意螺丝锁入的长度，螺丝过长有可能会干涉齿轮箱或电机内部结构，影响电机的正常运转(When mounting screws on the surface to fix the installation, please pay attention to max allowable screw depth. If the screw is too long, it may interfere with the gearbox or the internal structure of the motor, affecting the normal operation of the motor)。

8、轴向压力(Axial force)

当齿轮出力轴头压入齿轮或者其它部品时，出力轴另一端需要有工具支撑，另一端不可支撑的情况下，压力不允许超出允许的轴向压力(When the gear output shaft heading into gear or other part, the other end need a tool to support.If without support, pressure cannot be beyond the allowable axial force.)

9：冲击与落下(Shock and Drop)

电机如果有受到落地等冲击,有可能造成内部部品的破坏,以及潜在的品质不良的出现。(Inner parts might be broken and potential defection might occur when other impacts on the motor happens such as dropping on the ground from high position.)

10：粘接剂的使用(The Use of Binding Material)

如果使用胶水等粘接剂时，不能让胶水附在出力轴的轴承以及齿轮上，有挥发性的胶水还有可能造成整流子的玷污，影响产品的正常使用(If binding material like glue is used during the assembly, please make sure it will not be added to the output shaft bearing and gears. For some volatile glue, it might also stain the commuatator which affect the motor performance.)

11：输出轴反向施力(The output shaft is applied in reverse)

不得在齿轮箱输出轴上施加力促使电机旋转，容易导致电机及减速箱致命性破坏(It is not allowed to apply force on the output shaft of gear box to make the motor rotate, which may easily lead to fatal damage of the motor and reduction box)