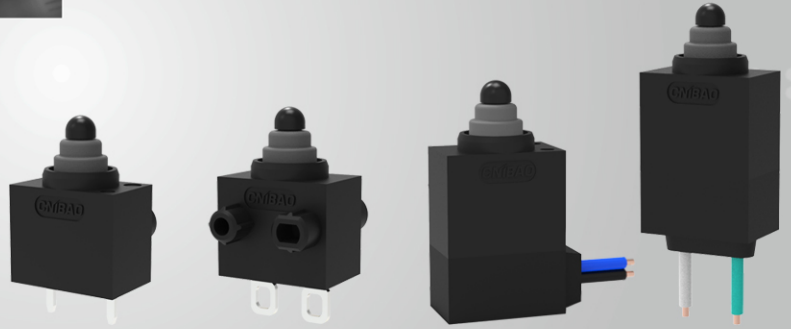


MAG SERIES 1



IP67 Waterproof Micro switch

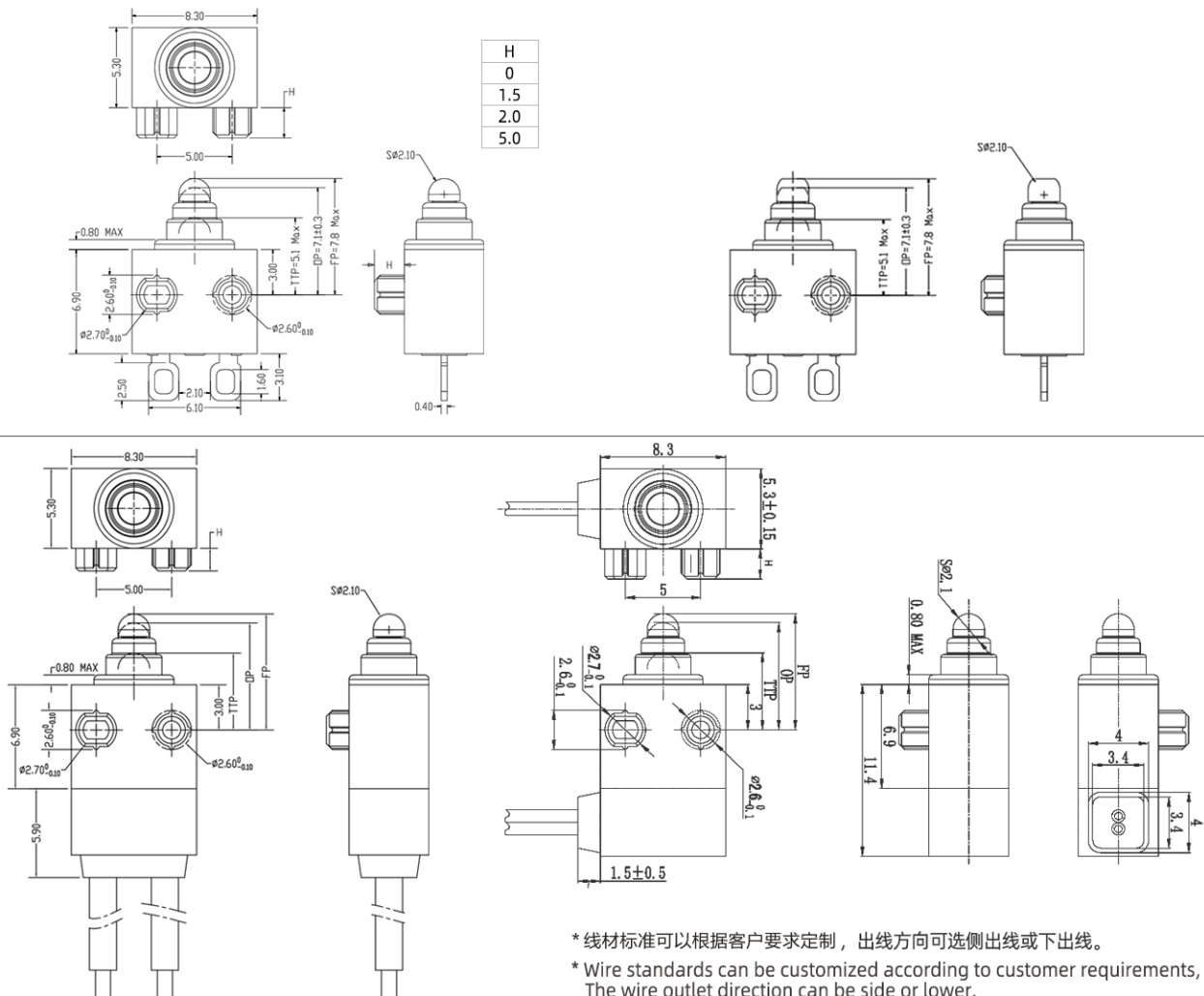
特点 FEATURE

- 防水(IP67)设计 · Designed For Waterproof IP67
- 体型小巧、紧凑 · Small Compact Size
- 寿命长、可靠性高 · Long Life and High Reliability
- 滑动式夹仔结构 · Slide Structure
- 接线端子种类齐全 · Complete Variety of Wiring Terminal

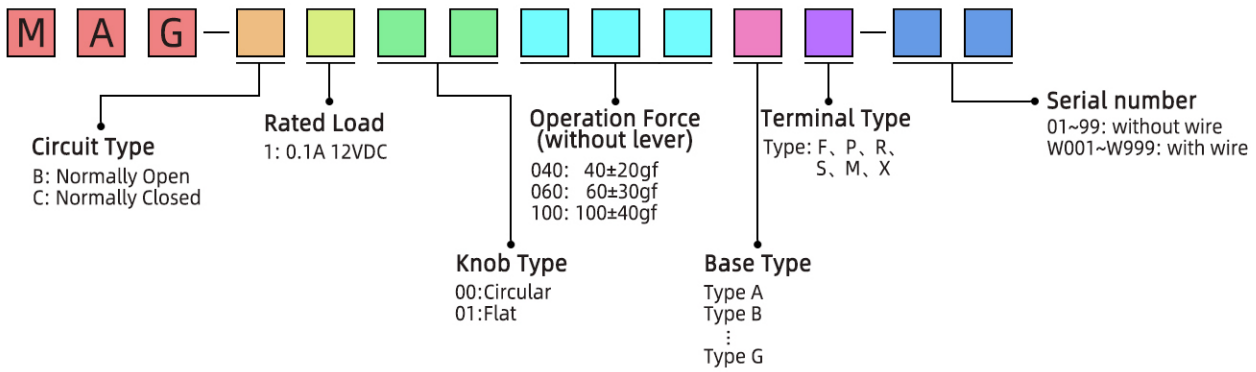
应用 APPLICATION

- 汽车 · Car
- 空调 · Air-Conditioner
- 通讯 · Communication
- 共享设备 · Sharing Device
- 玩具 · Toys

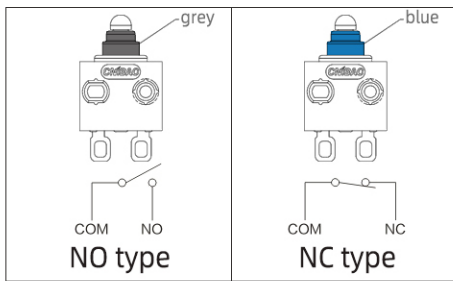
外形尺寸图 OUTLINE DRAWING



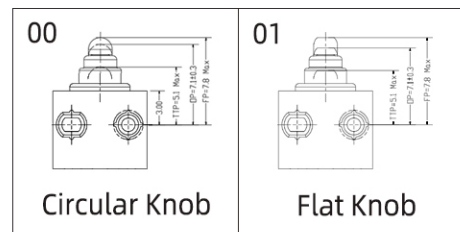
订货型号指引 ORDERING INSTRUCTION



● 电路形式 Circuit type

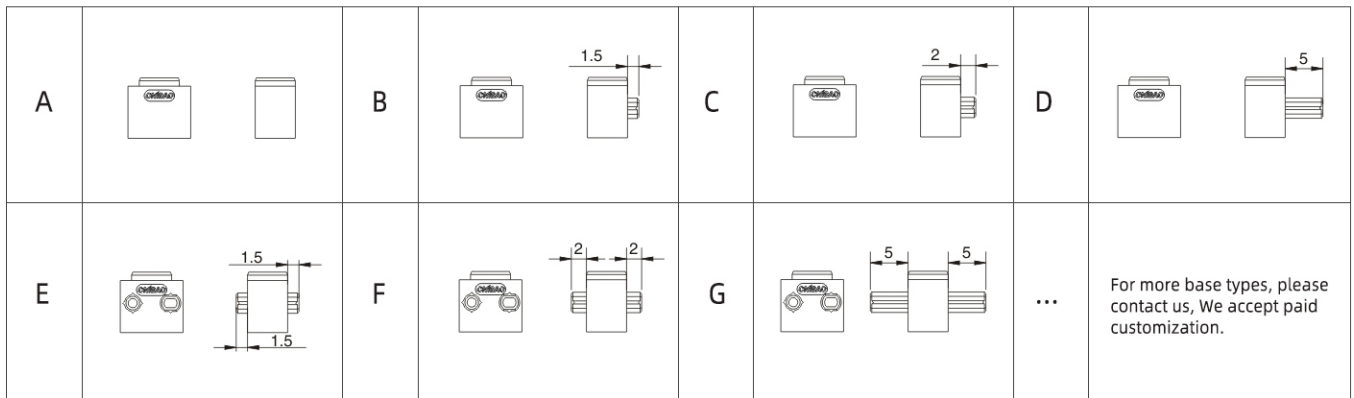


● 按钮类型 Knob Type

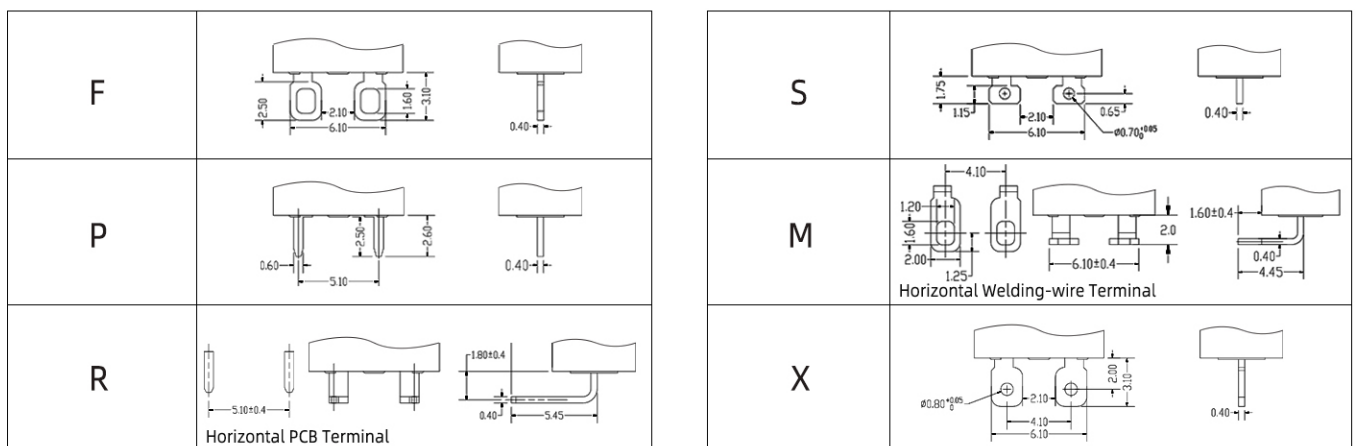


The height and travel of the two knobs are consistent, the difference is appearance only. Among them, the circular knob is Standard parts.

● 外壳类型 Base type

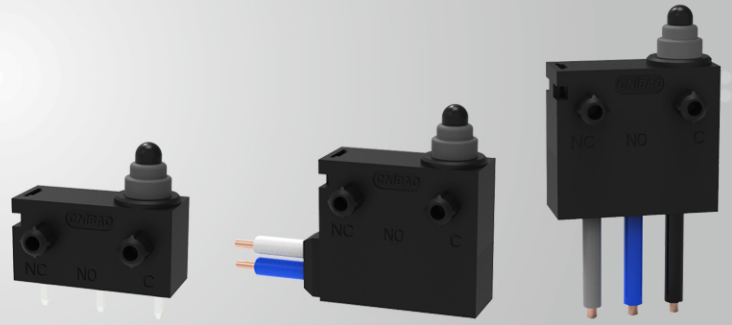


● 端子类型 Terminal type



※ For more terminal types, please contact us, We accept paid customization.

MAG SERIES 2



IP67 Waterproof Micro switch

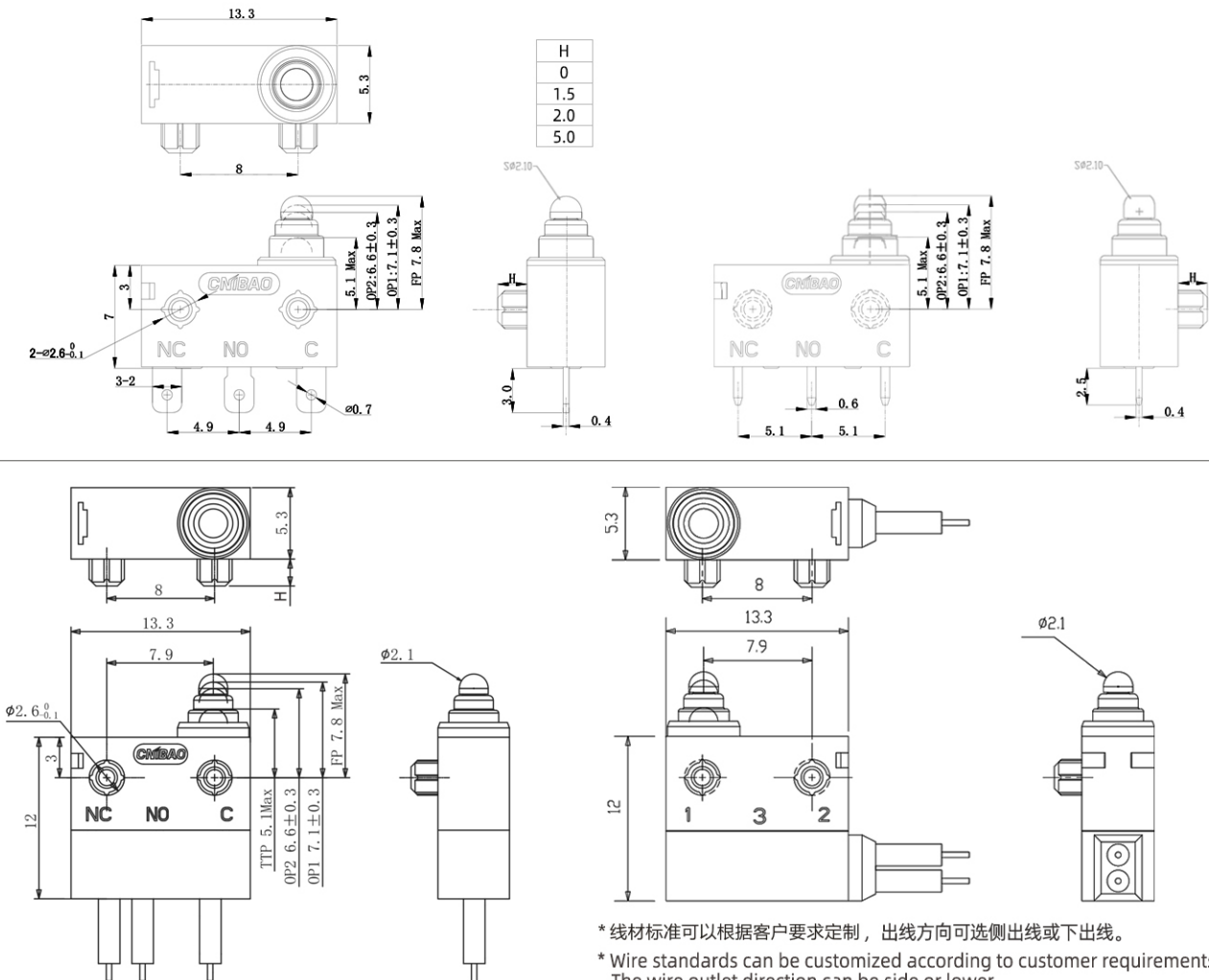
特点 FEATURE

- 防水(IP67)设计 · Designed For Waterproof IP67
- 体型小巧、紧凑 · Small Compact Size
- 寿命长、可靠性高 · Long Life and High Reliability
- 滑动式夹仔结构 · Slide Structure
- 接线端子种类齐全 · Complete Variety of Wiring Terminal

应用 APPLICATION

- 汽车 · Car
- 空调 · Air-Conditioner
- 通讯 · Communication
- 共享设备 · Sharing Device
- 玩具 · Toys

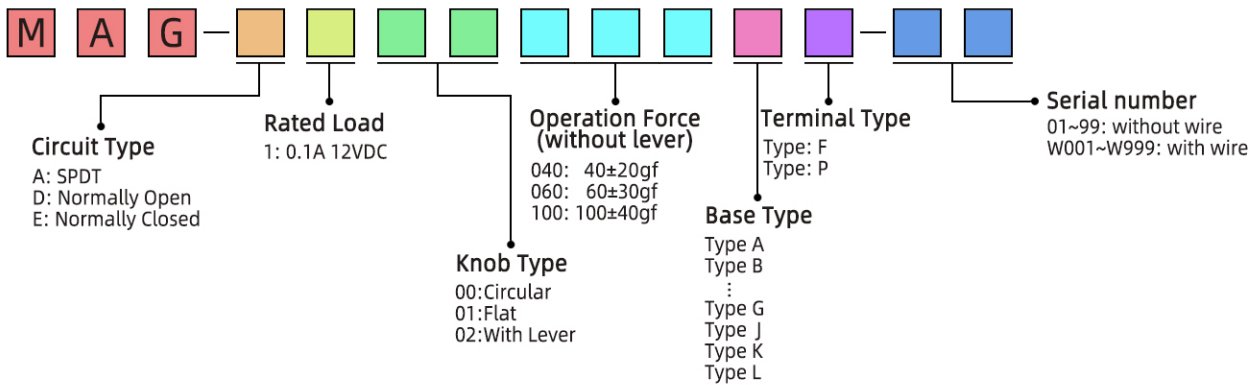
外形尺寸图 OUTLINE DRAWING



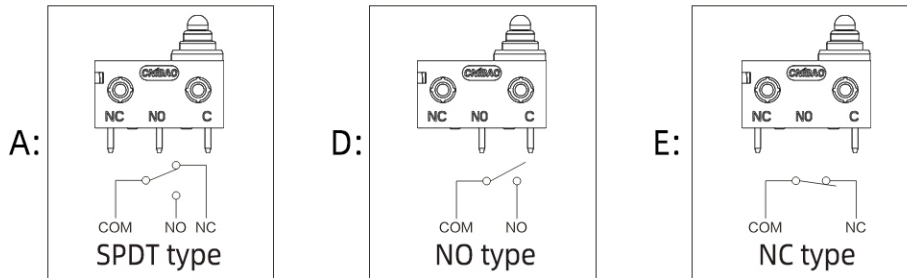
* 线材标准可以根据客户要求定制，出线方向可选侧出线或下出线。

* Wire standards can be customized according to customer requirements, The wire outlet direction can be side or lower.

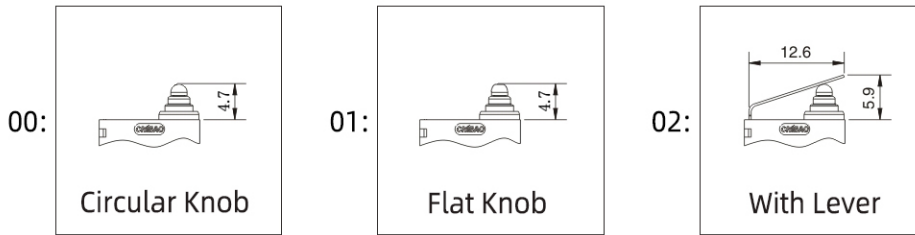
订货型号指引 ORDERING INSTRUCTION



● 电路形式 Circuit type

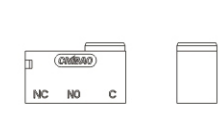
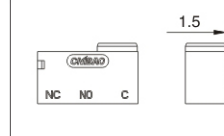

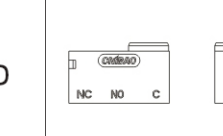
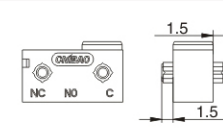
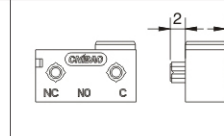
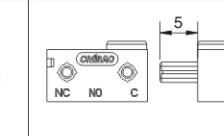
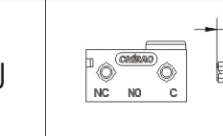
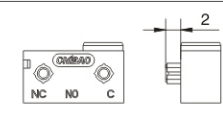
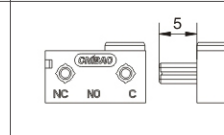


● 按钮类型 Knob Type

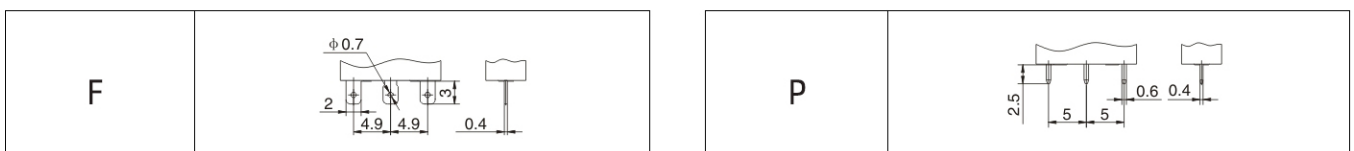


※ The height and travel of the two knobs are consistent, the difference is appearance only. Among them, the circular knob is Standard parts.

● 外壳类型 Base type

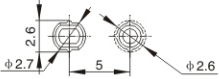

A		B		C		D	
E		F		G		J	
K		L		...	For more base types, please contact us, We accept paid customization.		

● 端子类型 Terminal type



※ For more terminal types, please contact us, We accept paid customization.

特性参数 PARAMETERS

额定负载/Rated Load	0.1A 12VDC; 50 μ A 5VDC; 20mA 12VDC	
防护等级/IP Grade	IP67	
初始接触电阻/Initial Contact Resistance	500m Ω Max (不带线束型号 Without wire)	
绝缘电阻/Insulation Resistance	100 M Ω Min	
抗电强度/Dielectric Strength	端子之间/Between Terminal	500VAC (50~60HZ)
	端子与外壳之间 Between Terminal and Base	1000VAC (50~60HZ)
环境温度/Working Temperature	40T85	
寿命/Service Life	电气/Electrical	300,000 Cycles
	机械/Mechanical	300,000 Cycles
安装尺寸/Hole For Mounting		

开关参数规格 SWITCH SPECIFICATION

● 一般特性 General

适用范围 Application Area:

该规格书指微动开关 (MAG系列) 的一般使用范围

This specification refers to the general use of micro switch MAG series

使用温度范围 Operation Temperature rating: -40°C to +85°C

相对湿度 Operation Relative Humidity: $\leq 96\%RH, +40^\circ C$

实验条件 Test conditions:

环境湿度 Ambient Temperature: 5~35°C

相对湿度 Relative Humidity: 45~85%

大气压力 Air Pressure: 86~106Kpa(860~1060mbar)

操作频率 Operation frequency:

带电气负载: 30次/分最大 30 operations/minute max(electrical)

机械操作: 30次/分最大 30 operations/minute max(mechanical)

● 外观结构及尺寸 Appearance, Configuration and Dimensions

外观: 产品外观良好, 无锈蚀、裂纹和镀层缺陷

Appearance: Product appearance and no rust, crack and coating defects

结构尺寸 Structur and Dimension: 参见产品图纸 See the outline drawing

标识 Sign: 参见产品图纸 See the outline drawing

通过的安规认证 Safety Certification: RoHS, REACH

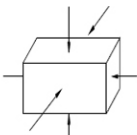
产品防护等级 Degree of protection: IP67(Except terminal)

● 电气性能 Electrical characteristic

项目 (Item)	标准 (Standard)	检测方法 (Test Method)
1 接触电阻 Contact Resistance	500m Ω Max	在1A 5VDC的条件下, 采用电压降法测量 Measured by a voltage drop method at 1A 5VDC 检测开关前, 请按动按键3次后检测接触电阻 before test contact resistance, please press the button 3 times
2 绝缘电阻 Insulation Resistance	100M Ω Min	在载流端子与外壳及非载流金属件之间, 在相互绝缘的所有端子之间加500V直流电, 持续时间1分钟 Apply 500 VDC for 1 min between terminals together and ground(at FP and TTP); Apply 500 VDC for 1 min between mutual insulation terminals(at FP and TTP);

项目 (Item)	标准 (Standard)	检测方法 (Test Method)
3 抗电强度 The electric strength	无击穿现象发生 NO breaking insulation	在相互绝缘的所有端子之间加载500VAC (50~60Hz, 漏电流10mA), 或端子与外壳及非载流金属件之间加载1000VAC (50~60Hz, 漏电流10mA), 持续时间60s 500VAC (50~60Hz, leakage current 10mA) is applied between non-connected terminals, or 1000V (50~60Hz, leakage current 10mA) between terminals and out casing, or between terminals and non-loaded metal parts, last for 60s.

● 机械性能 Mechanical characteristic

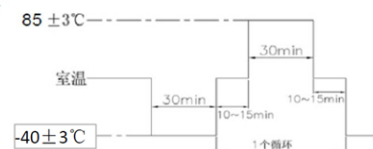
项目 (Item)	标准 (Standard)	实验方法 (Test Method)
1 冲击 Mechanical Shock	实验后: After test: -绝缘电阻: 50MΩ Min Insulation Resistance: 50MΩ Min -抗电强度应符合4.2的要求 The electric strength should accord with the requirement of 4.2 -应无明显外观损坏 Should be no significant damage appearance -操作力误差应在±10%之内 Operating force error should be within ±10% -开关外观及结构应无损伤 Switch appearance and structure should have no damage	据IEC60068-2-27:2008, 试件在下列条件下进行试验: Specimens tested under the condition of the following parameters: 1) 安装方向: 常规方法 installation direction: conventional methods 2) 加速度: 30 m/S ² (30G) Acceleration: 30 m/S ² (30 G) 3) 时间: 11ms Duration Time: 11ms 4) 实验方向: 图示6个方向 Test direction: here is 6 direction  5) 冲击次数: 每个方向3次 (共计18次) Number of shocks: three times in each direction (a total of 18)
2 可焊性 Weldability	超过90%的浸锡面积被焊料所覆盖 More than 90% of the immersion tin area covered by the solder	据IEC60068-2-20:2008, 试样在下列条件下进行试验: According to IEC60068-2-20, Specimens tested under the following conditions: (1)、焊料: 依IEC60068-2-20之规定 Solder: According to IEC60068-2-20 (2)、助焊剂: 依IEC60068-2-20 (松香助焊剂, 质量百分比为25%松香, 75%异丙醇或酒精溶液)。 Flux: According to IEC60068-2-20 (Rosin Flux, having a nominal composition of 25% and 75% isopropanol). (3)、焊接温度: 235±5℃ Soldering Temperature: 235±5℃ 焊接时间: 3±0.5s Immersing Time: 3±0.5s 焊剂浸渍时间: 室温下浸渍5-10s Flux immersing time: Shall be 5-10s in normal room temperature. (4)、浸渍深度: 接线端应浸到离开开关根部1.6mm处 Terminal should be impregnated to leave off the roots of 1.6 mm
3 耐焊接热 Welding heat resistant	实验后: After test: -无外观及功能损坏 No appearance and function damage -电气性能应符合电气性能要求 Electrical properties shall comply with the requirements of Electrical characteristic	据IEC60068-2-20, 在以下条件试验: According to IEC60068-2-20, Specimens tested under the following conditions: 焊接温度与时间 Soldering Temperature and time: 自动焊接: 260±5℃s, 5±1s Automatic welding: 260±5℃s, 5±1s 手工焊接: 350±10℃s, 3±1s Manual Soldering: 350±10℃s, 3±1s 浸渍深度: 接线端应浸到离开开关根部1.6mm处 Terminal should be impregnated to leave off the roots of 1.6 mm

● 寿命试验 Life test

项目 (Item)	标准 (Standard)	实验方法 (Test Method)
1 机械寿命 Mechanical life	实验后: After test: -绝缘电阻: 10MΩ Min Insulation Resistance: 10MΩ Min -接触电阻: 1Ω Max -Contact Resistance: 1Ω Max -抗电强度应符合要求 The electric strength should accord with the requirement	1、在不带负载的条件下, 以20~30次/分钟的操作频率在寿命试验设备上连续转换300,000次 Under the condition of without load, at the operating frequency of 20 ~ 30 cycles/min continuous transformation on life test equipment 300000 cycles 2、操作行程为按键下压到OT的2/3位置(防止过压现象) Operating stroke for buttons down the 2/3 OT (prevent overpressure phenomenon)
2 负载寿命 Load life	—开关外观及结构应无损坏 Switch appearance and structure should have no damage	开关接额定负载(额定负载参见产品图纸), 操作规定次数 To load the rated load(see drawing) on the switch, operating the corresponding number of load life.

● 耐候实验 Environmental test

项目 (Item)	标准 (Standard)	实验方法 (Test Method)
1 低温 Cold Proof	实验后: After test: -绝缘电阻: 50MΩ Min Insulation Resistance: 50MΩ Min -抗电强度应符合要求 -The electric strength should accord with the requirement -操作力误差应在±20%之内 Operating force error should be within ±20% -开关外观及结构应无损坏 Switch appearance and structure should have no damage	据IEC60068-2-1:2007, 试件在-40±3℃的温控箱内保持96小时, 然后在正常温度和湿度下恢复1小时, 并在此后1小时内对试品进行测量, 水滴应消失 According to IEC60068-2-1:2007, Specimen in - 40 ± 3 °C temperature control box to keep 96 hours, then recover under normal temperature and humidity for 1 hour, and after 1 hour to try to measure, water droplets should disappear
2 高温 Hot Proof		据IEC60068-2-2:2007, 试件在85±3℃的温控箱内保持96小时, 然后在正常温度和湿度下恢复1小时, 并在此后1小时内对试品进行测量, 水滴应消失 According to IEC60068-2-2:2007, Specimen in 85 ± 3 °C temperature control box to keep 96 hours, and then the recovery in the normal temperature and humidity for 1 hour, and after 1 hour to try to measure, water droplets should disappear
3 恒定湿热 Resistance to Humidity		据IEC60068-2-3: 2007, 试件在40±3℃, 90~95%RH的温控箱内保持96小时, 然后在正常温度和湿度下恢复1小时, 并在此后1小时内对试品进行测量, 水滴应消失 试件按下述实验条件试验5次, 然后在正常温度和湿度下恢复1小时, 并在此后1小时内对试品进行测量, 水滴应消失 According to IEC60068-2-3:2007, Specimen in 40 ± 3 °C and 90 ~ 95% RH temperature control box to keep 96 hours, and then the recovery in the normal temperature and humidity for 1 hour, and after 1 hour to try to measure, water droplets should disappear
4 温度转换 Temperature conversion		据IEC60068-2-12:2009, 试件按下述实验条件试验5次, 然后在正常温度和湿度下恢复1小时, 并在此后1小时内对试品进行测量, 水滴应消失 According to IEC60068-2-12:2009, at the following experimental condition test specimens for 5 times, then the recovery in the normal temperature and humidity for 1 hour, and after 1 hour to try to measure, water droplets should disappear



● 开关的储存 Storage of switches

1. 请避开产生污染气体、有机气体的区域(如燃气、取暖器附近)以及灰尘、潮湿等环境。

Please avoid areas that produce polluted gases, organic gases (such as gas, near heaters), dusty, humid environments, etc.

2. 保存温度湿度:温度5~35°C,湿度≤80%RH

Temperature & Humidity:Temp 5 ~ 35 °C and Hum 80% RH Max.

3. 开关储存期为6个月, 超过6个月需重新检查。

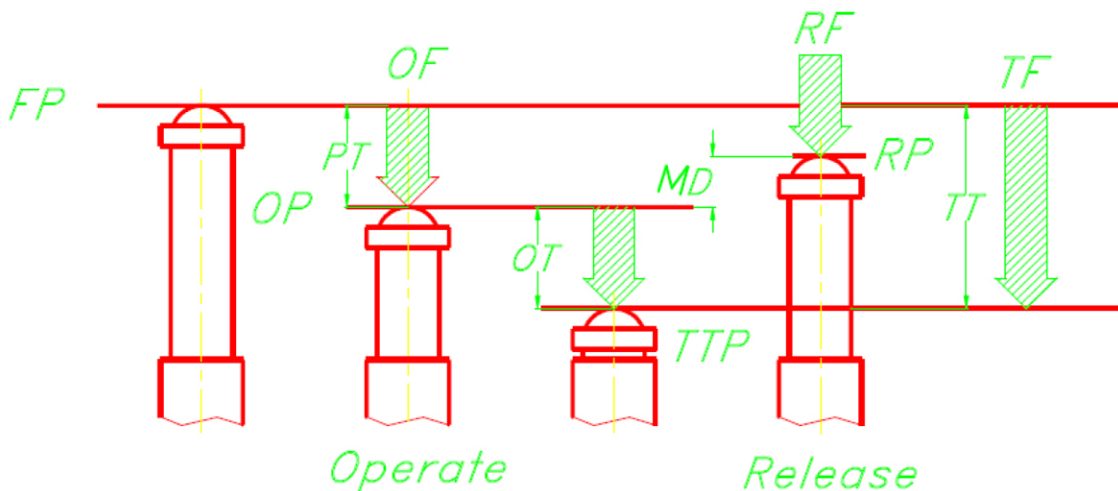
The storage period is 6 months, re-inspected over 6 months.

● 开关的使用 Use of switches

小心不要让开关跌落地面和受猛烈冲击, 这样可能使开关的内部元件损坏, 因开关的设计是适用于微小操作力的。

Be careful not to drop the switch to the ground and subject it to violent shocks which may damage the internal components of the switch because the switch is designed for small operating forces.

附注: 操作参数示意图(Note: operating parameters schematic diagram)



OF:操作力(Operating Force)

RF:回复力(Release Force)

TF:全行程力(Total Travel Force)

FP:自由位置(Free Position)

OP:动作位置(Operatiiong Position)

TTP:全行程位置(Total Travel Position)

RP:释放位置(Release Position)

PT:行程(Pre Travel)

OT:过行程(Over Travel)

MD:差动行程(Movement Differential Travel)

TT:全行程(Total Travel)