Specification

规格书

Customer Name :
客户名称 _____

Customer P/N :
客户品号 _____

Dakeqi P/N :
大可奇型号 MH53*58*20A

Sending Date:
供货日期 _____

☐ **Technical Reference** 技术参考 ■ **Sample** 样品 ☐ **Mass Product** 量产供货

Customer approval 客户审核			**Dakeqi approval** 大可奇审核		
Approval 核准	**Audit** 确认	**Confirmation** 制作	**Approval** 核准	**Audit** 确认	**Confirmation** 制作

☐ **Qualified** 接受 ☐ **Disqualified** 不接受

Date: 日期:

Contactless elevator button with concave structure
内凹式的免触摸电梯按钮

1.GENERAL DESCRIPTION(描述):

This specification is suitable for Contactless elevator button with concave structure
本规格书适应于内凹式的免触摸电梯按钮

2.ELECTRICAL SPECIFICATION(电气性能)

the maximum range of input voltage：10-33V DC / 5V DC

最大DC输入电压范围：10-33V DC / 5V DC

DC rated input voltage：12-30V DC / 5V DC

直流额定输入电压：12-30V DC / 5V DC

Maximum input current：0.06A（@12V DC）

最大输入电流：0.06A（@12V DC）

Input standby power：0.5W Max (@24V DC)

输入待机功率：0.5W Max (@24V DC)

3.APPLICABLE SCENARIO (适用场景)

Working temperature：-5~40℃

工作温度：-5~40℃

Storage temperature：-20~60℃

储存温度：-20~60℃

Applicable scenario：Indoor

适用场景：室内

Fire rating：V-0

防火等级：V-0

4. RELIABILITY AND QUALITY CONTROL(可靠性和质量控制)

4.1MTBF(平均故障间隔时间)

When the power supply is under normal operation within the limits of this specification the MTBF shall be at least **50,000** hours at 25℃（Test the SMPS solus）.

室温25℃时,在规格要求的范围内正常使用该无接触式电梯按钮控制器时,平均故障间隔时间大于**50,000**小时（仅无接触式电梯按钮控制器测试）。

4.2High temperature and high humiditytest(高温高湿测试)

At the environment of the high temperature 40±2℃, relative humidity 85%,need working 24hours.

在高温40±2℃,相对湿度为85%,的环境下工作24小时。

4.3High temperature test(高温测试)

4.3.1High temperature store(高温存储)

At the environment of the high temperature **60±2℃**,Relative Humidity**85%**,deposit **18** hours then put the unit at room temperature,After**2** hours the unit can working and could not have split, deformation.

存放在高温**60±2℃**, 相对湿度**85%**,下**18**个小时，再放在室温下2小时后能正常工作，无接触式电梯按钮控制器功能正常，外观无变形等。

4.3.2 High temperature working(高温运行)

At the environment of the high temperature **40±2℃**working **4** hours，the unit could not have split, deformation.

在温度为 **40±2**℃的环境下连续工作**4**个小时后，免触摸式电梯按钮控制器功能正常，外观无变形等。

4.4 Low temperature(低温测试)

4.4.1Low temperature store(低温存储)

At the environment of the low temperature **-20±2℃**,deposit **18** hours then put the unit at room temperature, the unit can working and could not have split, deformation.

存放在低温**-20±2**℃下**18**个小时，再放在室温下能正常工作，免触摸式电梯按钮控制器功能正常，外观无变形等。

4.4.2Low temperature working(低温运行)

At the environment of the low temperature **-5±2℃** working **4** hours，the unit could not have split, deformation.

在温度为**-5±2℃**的环境下连续工作**4**个小时后，无接触式电梯按钮控制器功能正常，外观无变形等。

4.5High low temperature cycling(高低温循环）

The unit at Vin=24V DC，need at the **-5±2℃** working **1hour** then rise the temperature**十5℃/min** to the **40±2℃**,let the unit working then down the temperature**一5℃/min** to **-5±2℃**。Working **1hour**, Repeat**20 times** .

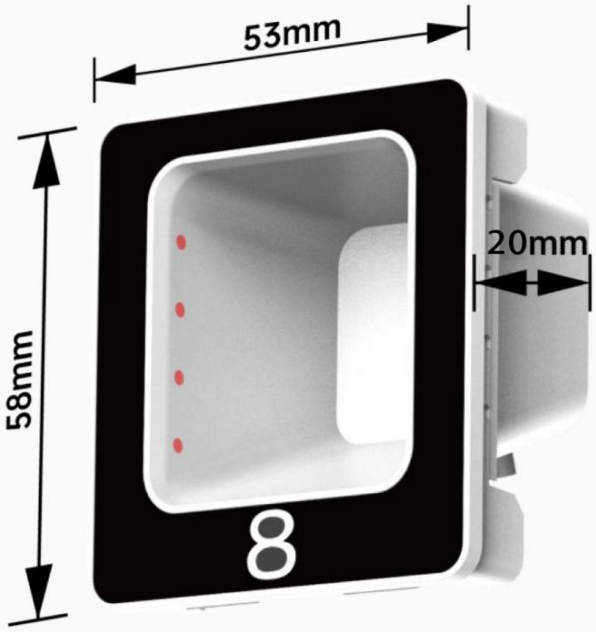
电源输入为24V DC 电压，在**-5±2℃**运行**1小时**，将温度以**十5℃/分钟**的速率调节到**40±2℃**，运行1小时，再以**一5℃/分钟**的速率调节到**-5±2℃**运行1h，循环**20**次。

4.6 Vibration test（振动测试）

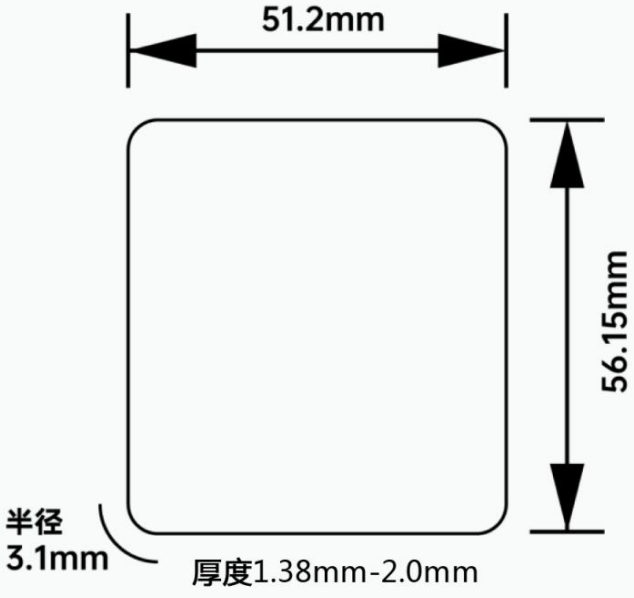
In the direction of X, Y, and Z for1hour(Total 3hours) for each at acceleration 1G, amplitude 0.35mm,the frequency 10-55-10Hz, and the repetition cycle is1minute, Satisfy the electric performance and the externals structure without abnormality.

三个互相垂直的方向各振动1小时，（共3个小时），以每分钟的1倍频的速率，频率为 10Hz-50Hz-10Hz 振幅为0.35mm,安全电气性能和外壳没有异常。

5. PRODUCT SIZE(产品尺寸)



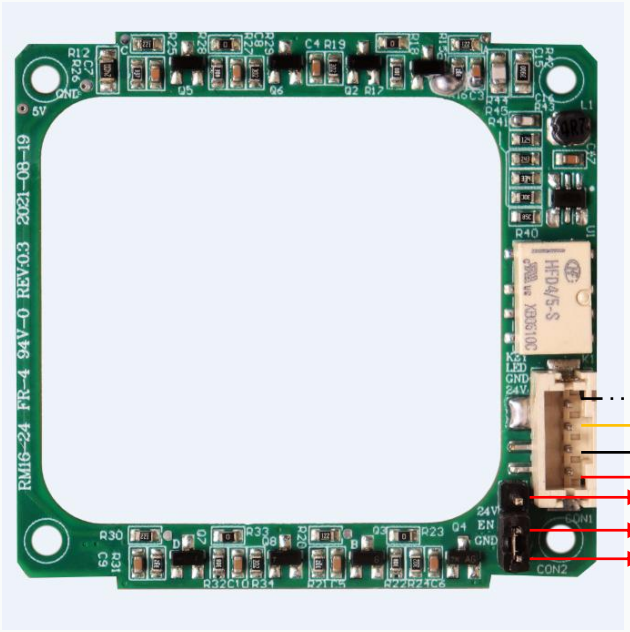
外壳尺寸

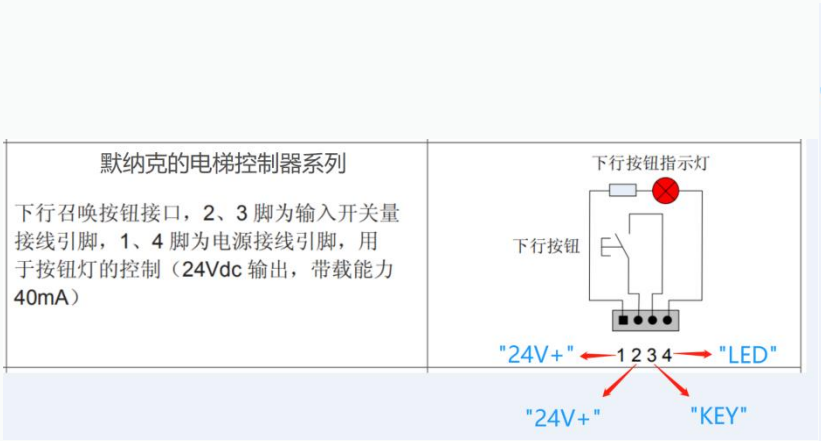


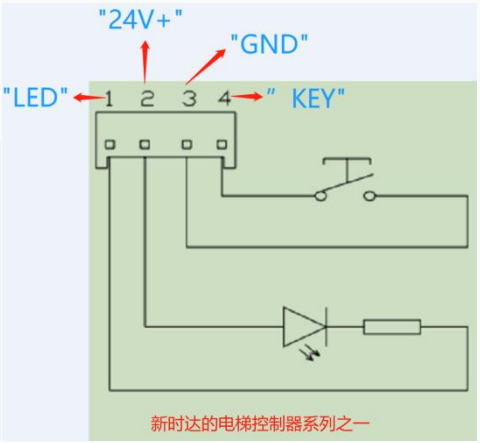
不锈钢开孔尺寸

6. OPERATING PRINCIPLE (工作原理)

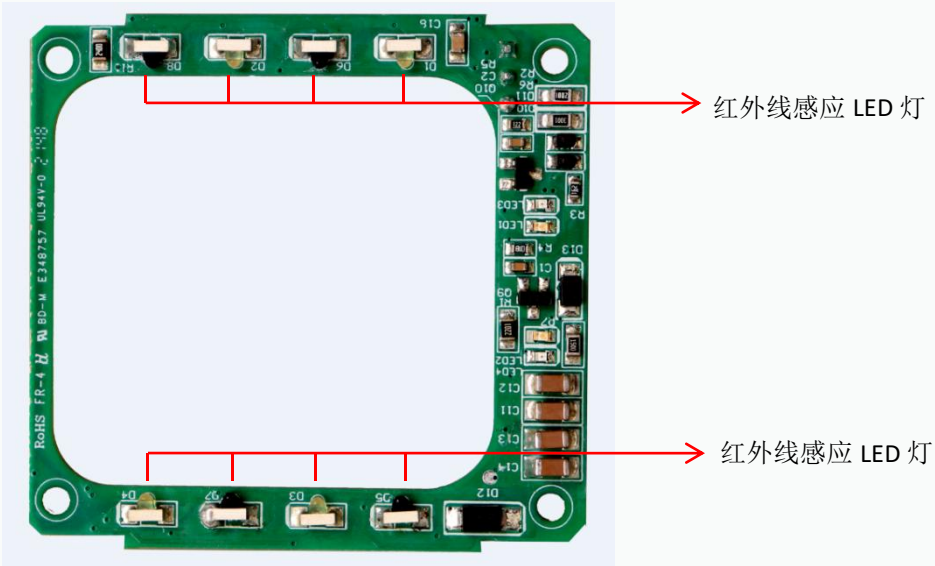
6.1. Structure chart结构图



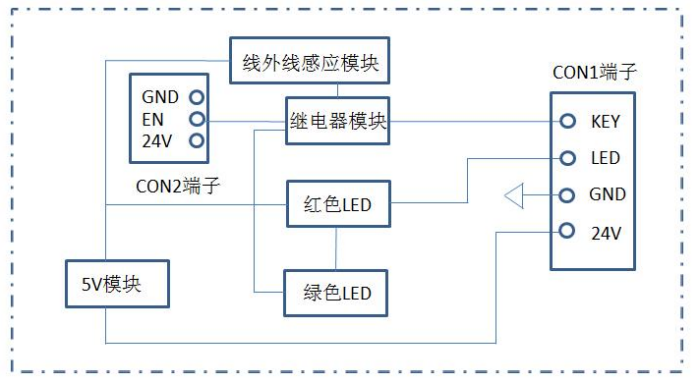




上图举例之一：所示的默纳克的电梯控制器的端口没有GND(负极)，所以我们需要把按钮的黑线(GND)连接到电梯主板上的任一直流负极(GND)，把按钮的红线(24V)连接到1脚或2脚。



6.2. Schematic diagram原理图



6.3. Operating principle工作原理

6.3.1. CON1 Terminal is connected：

CON1端子连接：

24V PIN：

24V PIN, input PIN, connected to the input DC voltage positive pole, can input rated voltage 12-30V DC；

24V pin，输入pin，连接输入直流电压正极，可输入额定电压12-30V DC；

GND PIN：

Connect the input DC voltage GND；

连接输入直流电压GND；

LED PIN：

LED PIN, connected to red LED control signal, control signal voltage requirements ≤0.5V, and can withstand 15mA current；

LED pin，连接红色LED 控制信号，控制信号电压要求≤0.5V，且可承受15mA电流；

KEY PIN：

KEY PIN is the output PIN. The output current is 0-50mA and the output voltage is 0-30VDC. The output voltage is controlled by the input voltage and CON2 terminal；

KEY pin，为输出pin，输出电流0-50mA,输出电压0-30V DC,输出电压由输入电压及CON2端子控制；

6.3.2. CON2 Terminal is connected：

CON2端子连接：

Assemble the short circuit breaker to control the KEY PIN output voltage of CON1 terminal.

装配短路冒部件，控制CON1端子的KEY pin 输出电压。

6.3.3. Operating principle

工作原理：

6.3.3.1. Input voltage. 输入电压

The 24V and GND pin in CON1 are connected to the input DC voltage of 24Vdc, and the green LED on the contactless elevator button controller is on when it is static.

CON1 中的24V 、GND pin 接输入直流电压24V DC，静态时无接触式电梯按钮控制器上的绿色LED亮。

6.3.3.2. LED PIN operating principle .LED PIN工作原理

CON1 LED PIN connection low potential (≤0.5V), non-contact elevator button controller on the green LED light off, red LED light; In the elevator system, this low potential is provided by the elevator system and displays the elevator call command (column: The red LED on the 6th floor elevator button lights up when the 6th floor elevator button is triggered).

CON1 中的LED pin 连接低电位（≤0.5V），无接触式电梯按钮控制器上的绿色LED熄灭，红色LED亮；在电梯系统中，此低电位由电梯系统提供，显示电梯呼梯指令（举列：当触发6层楼电梯按钮时，6层楼电梯按钮上的红色LED会点亮）。

6.3.3.3. KEY PIN operating principle . KEY PIN工作原理

The KEY pin in CON1 is the output voltage signal, which is the elevator call signal and provided to the elevator system. The signal is low potential 0V(GND) or high potential (24V). Controlled by CON2, when the short circuit on CON2 is assembled on 24V and EN PIN, the KEY PIN outputs 24V high potential; KEY pin outputs low potential 0V(GND) when the short circuit on CON2 is mounted on GND and EN PIN.

CON1 中的KEY pin 为输出电压信号，此信号为电梯呼梯信号，提供给电梯系统。此信号为低电位0V（GND）或者高电位（24V）；由CON2 控制，当CON2上的短路冒装配在24V和EN pin上时，KEY pin输出24V高电位；当CON2上的短路冒装配在GND和EN pin上时，KEY pin输出低电位0V（GND）。

6.3.3.4. Working principle of infrared sensor module .

红外线感应模块工作原理

The output voltage signal of the KEY pin in CON1 is controlled by the infrared sensor module. When there is no shield in the infrared sensor area, the KEY pin has no output voltage signal. When the infrared ray is blocked by a shield in the infrared sensor area, the KEY pin has an output voltage signal.

CON1 中的KEY pin 输出电压信号受红外线感应模块控制，当红外线感应区没有遮挡物时，KEY pin 没有输出电压信号；当红外线感应区有遮挡物遮挡住红外线光线时，KEY pin 有输出电压信号。

7. Terminal product structure drawing

终端产品结构图：

实装照片

8. Matters needing attention（注意事项）

8.1. Interface connection determinatio接口连接判定

8.1.1 Note connect the elevator button according to the elevator system connection standard；

注意按照电梯系统给出的电梯按钮连接标准进行连接；

8.1.2 By disassembling the original elevator button and looking at the PCBA circuit, we can easily distinguish the definition of each pin of the elevator button；

通过拆解原有的电梯按钮，查看其中的PCBA线路，我们就可以轻易区分：电梯按钮的各个引脚的定义；

8.1.3 Determine the polarity of the input 24DC voltage；

输入24VDC电压极性判定；

Use original elevator button on the elevator system under the condition of normal work, don't press the button, the multimeter measure each pin connector voltage, when the multimeter display voltage is 24 v (different brand elevator systems this voltage value will have a deviation), maintaining the current measuring pin, press the test button, at the same time observe the multimeter measurement value have change, such as no change,In this case, the red pen of the multimeter is DC24V+, and the black pen

is DC24- (GND).If there is any change, the measuring pin is not DC24 input PIN. Continue measuring.

使用原装电梯按钮的电梯系统在正常工作的条件下，不按压按钮，用万用表量测连接器各pin电压，当万用表显示电压为24V时（不同品牌电梯系统此电压值会有偏差），维持当前量测pin脚，按压被测试按钮，同时观查万用表量测值有无变化，如没有变化，则此时万用表红色表笔为DC24V+，黑色表笔为DC24-（GND）；如有变化，则量测pin不是DC24输入Pin，继续测量。

8.1.4 LED PIN、KEY pin Determine；

LED pin 、KEY pin 判定；

State 1状态1：

Use a multimeter to connect the black pen to 24V- (GND), and the red pen to measure the other two pin pins except 24V+. If the voltage of a PIN pin is 0V and the voltage of a PIN pin is 15-24V, press the button and measure the voltage changes of two pin pins at the same time. For example, the 0V voltage PIN changes to 24V.When the 15-24V voltage PIN changes to ≤0.3V, it can be determined that the 15-24V voltage PIN is LED, the 0V voltage PIN is KEY, and the elevator call signal voltage is high level 24V. The short circuit of contactless elevator button CON2 needs to be assembled on EN+24V PIN pin；

用万用表黑色表笔接24V-（GND），红色表笔量测除24V+的另外两个pin脚，若一个pin脚电压为0V，一个pin脚电压为15-24V，则按压按钮，同时分别测量两个pin脚电压变化，如0V电压pin变为24V，15-24V电压pin变为≤0.3V，可判定15-24V电压的这个pin为LED ，0V电压的这个pin为KEY，电梯呼梯信号电压为高电平24V，无接触式电梯按钮CON2 的短路冒需要装配在EN+24V pin针上;

State 2 状态2：

Use a multimeter to connect the black pen to 24V- (GND), and the red pen to measure the other two PIN pins except 24V+. If the voltage of the two PINS is 15-24V, press the button and measure the voltage changes of the two PIN pins at the same time. For example, the voltage of the two pins becomes ≤0.3V.Then the pin with low voltage is connected to 24V-(GND). If the LED lights up and the elevator is called to the elevator, this PIN can be judged as KEY and the other PIN is LED.If the LED lights up and the elevator is not called, this PIN is LED and the other pin is KEY.The elevator call signal voltage is low level 0V (GND). The short circuit of contactless elevator button CON2 needs to be assembled on EN+GND pin;

用万用表黑色表笔接24V-（GND），红色表笔量测除24V+的另外两个pin脚，若两个pin电压都为15-24V，则按压按钮，同时分别测量两个pin脚电压变化，如两个pin的电压都变为≤0.3V，则将电压小的那个pin短接到24V-(GND)上，如LED点亮，电梯被呼梯，可判定此pin为KEY ，另一个pin为LED ；如LED点亮，电梯没有被呼梯，此pin为LED ，另一个pin为KEY ；电梯呼梯信号电压为低电平0V（GND），无接触式电梯按钮CON2 的短路冒需要装配在EN+GND pin针上;

State 3 状态3：

Use a multimeter to connect the black pen to 24V- (GND), and the red pen to measure the other two PIN pins except 24V+. If the voltage of a PIN is 15-24V and the voltage of a PIN is 3-15V, press the button and measure the voltage changes of the two PIN pins at the same time. For example, the voltage of the two PINS becomes ≤0.3V.Then connect the 15-24V voltage PIN to 24V-(GND). If the LED lights up and the elevator is not called, determine that the PIN is LED and the other pin is KEY.The

elevator call signal voltage is low level 0V (GND). The short circuit of contactless elevator button CON2 needs to be assembled on EN+GND pin.

用万用表黑色表笔接24V-（GND），红色表笔量测除24V+的另外两个pin脚，若一个pin电压为15-24V，一个pin电压为3-15V，则按压按钮，同时分别测量两个pin脚电压变化，如两个pin的电压都变为≤0.3V，再将15-24V电压pin短接到24V-(GND)上,如LED点亮，电梯没有被呼梯,判定此pin为LED ，另一个pin为KEY；电梯呼梯信号电压为低电平0V（GND），无接触式电梯按钮CON2 的短路冒需要装配在EN+GND pin针上。

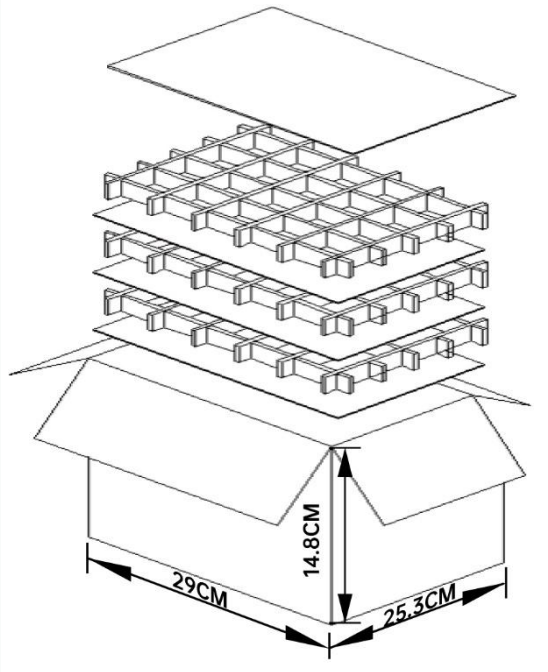
8.2. Matters needing attention注意事项

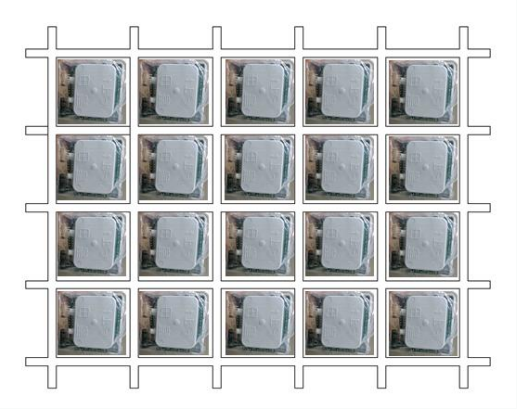
Before connecting the contactless elevator button controller, make sure the correct polarity of the connection wire is correct, otherwise there is a risk of damage to the elevator main control board.

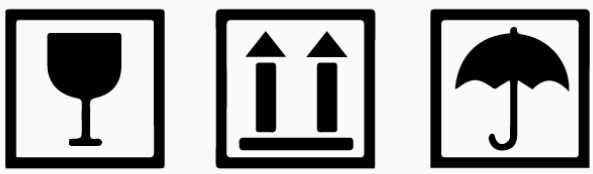
连接无接触式电梯按钮控制器前，一定要确定连接线的正确极性，否则会有损坏电梯主控板的风险。

9. Packaging（包装）

Quantity数量： 60PCS







产品：无接触式按钮

数量：60个

批号：

规格：29x25.3x14.8CM

10.Comparison of similar products（类似产品对比）

序号	类型	优点	缺点
1	Traditional buttons/switches 传统按钮/开关	We are used to, stable performance 大家习惯、性能稳定	Need to touch 需要接触
2	Voice control 语音控制	Very convenient and can be controlled from a few meters away. 非常方便、几米远就能控制。	Easily disturbed by ambient sounds、And easy to misjudge、People cannot control the machine by voice at the same time 呼喊的时候容易被周围的声音干扰、也容易误判、不能同时呼喊控制。
3	Gesture control、body sensing、 It can be triggered at distances as small as 2CM 手势控制、人体感应、微距接近感应(2 厘米)	More convenient、close to induction. 比较方便、 接近就能感应。	It is not suitable for keyboard groups with high stability requirements、people or objects passing by are prone to trigger by mistake、and may fail if people wear black or dark gloves. 无法适用于稳定性要求高的键盘组、人或物体路过容易发生误触发、如果人们戴上黑色或者深色的手套则可能失效。
4	Mobile app Control 手机应用控制	Feel more advanced、young people like. 感觉比较高级、年轻人喜欢。	Applications need to be installed、There are many operation steps、Old people and children may not understand、Non-smart phones cannot be used、The compatibility of different brands of elevators is difficult.

			需要安装应用程序、操作步骤多、老人小孩可能不懂、非智能手机无法使用、不同品牌电梯的兼容难度大。
5	Air screen control 空气屏控制	It feels a little advanced 比较先进	Expensive, occupying the space of the elevator car、need to stand at the right Angle to see、 some people will go dizzy、 If we install one on every floor, the total price is too high、More floors need to turn pages. 贵、占用了电梯轿厢的空间、需要站对角度才能看到、有部分人会眩晕、因为太贵了所以无法更换楼道里的电梯按钮、楼层多了需要翻页。
6	Contactless elevator button with concave structure 内凹式的免触摸电梯按钮	No change in user habits 、 strong anti-interference ability、 difficult to be mistakenly touched 、 low cost 、 waterproof outer surface.没有改变用户习惯、抗干扰能力强、很难被误触、成本低、外表面防水。	Need to re-cut holes in the stainless steel panel、 or need to replace the stainless steel panel. 需要在不锈钢板面板上重新开孔、 或者需要更换不锈钢面板。

11.0 RoHS&REACH

The Product must be certified under following international standards

本产品符合 RoHS《关于限制在电子电气设备中使用某些有害成分的指令》&REACH《化学品注册、评估、许可和限制》的要求。

12.0 Design Modification History List（设计变更履历）

Part No.（编号）：　　Model Name（型号）：MH53*58*38A

Item 编号	ECN No. 变更号	Details of the Modification 变更内容	Date 日期	Revisor 版本	Remark 备注
1		First release	2021.11.03	**A0**	
2		8. Matters needing attention 9. Packaging 10. Comparison of similar products 11. RoHS&REACH	2021.12.18	**A1**	
3		3. APPLICABLE SCENARIO（适用场景）	2022.09.09	**A2**	
4		8. PRODUCT SIZE(产品尺寸)	2023.08.25	**A3**	
5					
6					
7					