

样品承认规格书

PART SHEET FOR APPROVAL

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供应商名称 Supplier::	无锡威达智能电子股份有限公司 Wuxi Weida Intelligent Electronics Co., Ltd.
产品名称: Part Description:	蓝牙语音遥控器 BT Remote
规格型号: Model No:	WH-7227_BLE
物料编码: Cust P/N:	110400721
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供应商确认 Supplier confirmation

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遥控器规格书

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一、遥控器测试条件及参数 Remote control test conditions and parameters

1、硬件要求 Hardware requirements

序号 Serial number	说明项目 Description item	技术规格 Technical specifications	备注 Remarks
1	按键数 Number of keys	15 键 15 keys	
2	遥控器尺寸 Remote control size	150*39*19mm	
3	按键自由高度 Free height of keys	≤2mm	
4	按键作用后高度 Height after key press	≥0.5mm	
5	按键作用力 Button force	160g±30gf	锅仔片
6	外壳塑胶材质 Shell plastic material	ABS 原料（无味、不掺回料），厚度≥2.0mm ABS raw material (odorless, no regrind), thickness ≥2.0mm	
7	外壳颜色 Shell color	塑胶本色，黑色 Plastic natural color, black	
8	丝印 Silk screen	耐酸耐醇耐磨 Acid and alcohol resistant	
9	PCB 电路板材质 PCB circuit board material	环氧玻纤基板（FR-4） Epoxy glass fiber substrate (FR-4)	
10	PCB 布线线宽及间距 PCB wiring line width and spacing	≥7mil	
11	表面涂敷处理 Surface coating treatment	详细见遥控器《外观及工艺要求》 For details, see the remote control "Appearance and Process Requirements"	
		表面应平整牢固，不允许有划痕，斑疵、流挂、脱落和破损 The surface should be flat and firm, no scratches, spots, sagging, shedding and damage are allowed	
12	电路板制作要求 Circuit board production requirements	所有印刷电路板均应防腐蚀 All printed circuit boards should be corrosion resistant	
		不允许有飞线 No flying leads allowed	
		焊点饱满，无虚焊、脱焊、连锡 Full solder joints, no false soldering, desoldering, or even tin	
13	按键要求 Button requirements	按键胶边缘结构需增加“防水墙”，以达到按键装配后，用手指扣时不能脱出胶壳按键孔；按键面定位过孔采用硅胶包塑胶设计，使整个硅胶按键面没有破孔，以保证长时间使用板面整洁，硅胶按键需偏硬 The edge structure of the button glue needs to add a "waterproof wall" to ensure that after the button is	

		assembled, the button hole of the plastic shell cannot be removed when you use your fingers to buckle; The surface of the board is clean and tidy when used for a long time, and the silicone keys need to be hard	
14	导电胶材质 Conductive glue material	必须使用硅胶原料（不加粉），并且没有刺激性气味 Must use silica gel raw material (no powder), and no pungent odor	
15	锅仔片 Metal dome	遥控器所有按键采用 metal dome 按键，并且寿命必须 ≥ 50 万次，连续按压测试次数 ≥ 30 万次，可恢复到原荷重 All buttons on the remote control adopt metal dome buttons, and their lifespan must be $\geq 500,000$ times, and the number of continuous pressing tests $\geq 300,000$ times can be restored to the original load	

2、产品规格 Product specifications

序号 Serial number	项目 Project	规格参数 Specifications	备注 Remarks
1	工作温度 Operating temperature	0~50°C	
2	相对湿度 Relative humidity	$\leq 95\%$	
3	大气压力 Atmospheric pressure	86~106Kpa	
4	环境照度 Environmental illumination	自然光或荧光灯 200±50LX Natural light or fluorescent light 200±50LX	
5	主控 MCU Master MCU	WNF171	
6	电路板材质 Circuit board material	FR-4	
7	外壳材料 Shell material	ABS	
8	样品颜色 Sample color	参考客户需求规格 Refer to customer requirements specifications	
9	电池规格 Battery specifications	AAA 1.5*2	
10	红外波长 Infrared wavelength	950±50nm	红外 Infrared
11	红外载波频率 Infrared carrier frequency	38.0±0.5KHz	红外 Infrared
12	蓝牙载波频率 Bluetooth carrier frequency	2.400GHz~2.4835GHz	蓝牙 Bluetooth
13	平均工作电流 Average working current	$\leq 20\text{mA}$	

14	平均静态电流 Average quiescent current	$\leq 3\text{mA}$	
15	工作电压范围 Operating voltage range	2.2~3.6V	
16	遥控距离 Remote control distance	$L \geq 10\text{M}$ (红外) $L \geq 10\text{M}$ (infrared)	红外 Infrared
17	按键自由高度 Free height of keys	$\leq 2\text{mm}$	
18	按键作用后高度 Height after key press	$\geq 0.5\text{mm}$	
19	按键作用力 Button force	200gf \pm 20gf	
20	按键负荷寿命 Button load life	≥ 50 万次 $\geq 500,000$ times	
21	自由跌落试验 Free drop test	从 80cm 高度，六面依次自由跌落在不小于 3cm 厚木地板，三个循环。 From the height of 80cm, the six sides will fall freely on the wooden floor not less than 3cm thick in three cycles.	
22	静电环境试验 Electrostatic environment test	$\pm 8\text{KV}$	
23	高温储存试验 High temperature storage test	60 $^{\circ}\text{C}$	
24	低温储存试验 Low temperature storage test	-20 $^{\circ}\text{C}$	
25	恒定湿热试验 Constant humidity test	40 $^{\circ}\text{C}$ 相对湿度 90 \pm 2% 40 $^{\circ}\text{C}$ relative humidity 90 \pm 2%	
26	温度循环变化试验 Temperature cycle change test		
27	验收标准 MIL-STD-105E-LEVEL(II)AQL Acceptance standard MIL-STD-105E-LEVEL(II)AQL	重缺陷 (A 类) AQL=0.65 轻缺陷 (C 类) AQL=1.5 Serious defects (Class A) AQL=0.65 Minor defects (Class C) AQL=1.5	
28	遥控器运输及储存条件 Remote control transportation and storage conditions	运输途中应避免雨雪直接侵袭或者强烈冲击。 遥控器应储存在环境温度-20 $^{\circ}\text{C}$ ~+60 $^{\circ}\text{C}$ ，相对湿度不大于 80%，周围没有强磁场、腐蚀物质和其它有害气体的库房中，储存期为一年。超	

		<p>过一年的产品经重新评估合格后，方可流入市场。</p> <p>Avoid direct rain or snow or strong impact during transportation.</p> <p>The remote control should be stored in a warehouse where the ambient temperature is $-20^{\circ}\text{C}\sim+60^{\circ}\text{C}$, the relative humidity is not more than 80%, and there is no strong magnetic field, corrosive substances and other harmful gases around. The storage period is one year. Products older than one year may enter the market only after being re-evaluated and qualified.</p>	
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3、规格要求 Specification requirements






序号 Serial number	项目 Project	描述 Description	备注 Remarks
1	使用电池 Use battery	碱性环保电池 Alkaline environmental protection battery	
2	供电电压 Supply voltage	2.2-3.6V	
3	电流描述 Current description	$\leq 5\ \mu\text{A}$ @休眠功耗 $\leq 3\text{mA}$ @待机功耗 $\leq 30\text{mA}$ @发射功耗（常规按键） $\leq 25\text{mA}$ @录音功能（语音功能） $\leq 5\ \mu\text{A}$ @sleep power consumption $\leq 3\text{mA}$ @standby power consumption $\leq 30\text{mA}$ @transmission power consumption (conventional button) $\leq 25\text{mA}$ @Recording function (voice function)	蓝牙 Bluetooth
4	音频输出 Audio output	单声道、16K 采样率、16bit 精度音频输出 Mono, 16K sampling rate, 16bit precision audio output	蓝牙 Bluetooth
5	传输距离 Transmission distance	$\geq 12\text{m}$ （周围无遮挡物） $\geq 12\text{m}$ (no obstructions around)	蓝牙 Bluetooth
6	蓝牙协议 Bluetooth protocol	蓝牙 4.2 协议 Bluetooth 4.2 protocol	蓝牙 Bluetooth
7	信号要求 Signal requirements	满足通信传输距离要求，同时符合蓝牙 BQB 认证要求 Meet the requirements of communication transmission distance and meet the requirements of Bluetooth BQB certification	蓝牙 Bluetooth
8	语音要求 Voice requirements	语音软件识别率 $\geq 90\%$ （句），有干扰情况下：语音识别率 $\geq 85\%$ （句）（需要确认和机顶盒和软件正常状态） Speech software recognition rate $\geq 90\%$ (sentence), in the case of interference: voice recognition rate $\geq 85\%$ (sentence) (requires confirmation and normal state of the set-top box and software)	蓝牙 Bluetooth
9	连接响应 Connection response	$\leq 200\text{ms}$ ，这里是指恢复连接速度，通过遥控器端测试开始广播到被连接上的时间间隔	蓝牙 Bluetooth

		≤200ms, here refers to the time interval from the time when the connection speed is restored and the broadcast is started to be connected through the remote control test	
10	其他通用蓝牙设备影响 Impact of other general Bluetooth devices	HOST 端适配的驱动, 要不影响原有的蓝牙通用设备支持, 如蓝牙耳机/音响 (HSP/HFP,A2DP 等), 蓝牙键盘, 蓝牙鼠标, 游戏手柄等。 The driver adapted to the HOST end will not affect the original Bluetooth universal device support, such as Bluetooth headset/audio (HSP/HFP, A2DP, etc.), Bluetooth keyboard, Bluetooth mouse, game controller, etc.	蓝牙 Bluetooth
11	音频传输要求 Audio transmission requirements	音频传输无异常, 无明显干扰、丢数据、截幅等现象 There is no abnormal audio transmission, no obvious interference, loss of data, clipping, etc.	蓝牙 Bluetooth
12	麦克风灵敏度 Microphone sensitivity	灵敏度-42±3dB Sensitivity -42±3dB	蓝牙 Bluetooth
13	麦克风信噪比 Microphone signal to noise ratio	不能低于 58dB Not less than 58dB	蓝牙 Bluetooth

三、遥控器功能需求描述 Description of remote control function requirements

1、遥控器键值 Remote control key value

系统码: System code:	0X08F7
码格式: Code format:	NEC

Function	Usage Page	Usage ID	IR CODE
Power 	N.A		0x0A
Back	0x0C	0x0224	0x1C
Home	0x0C	0x0223	0x0C
Google assistant 	0x0C	0x0221	0x74
OK	0x0C	0x0041	0x1F
Up	0x0C	0x0042	0x00
Down	0x0C	0x0043	0x01
Left	0x0C	0x0044	0x03
Right	0x0C	0x0045	0x02
Voice+	N.A		0x58
Voice -	N.A		0x5D
APPS 	0x0C	0x01A2	0x66
NETFLIX	0x0C	0x0008	0x4E
prime video 	0x07	0x003e	0x2E
 Projector Menu	N.A		Code1: 0x08 Code2 : 0x20

2、遥控器操作说明 Remote control instructions

1. 遥控器基本要求 Basic requirements for remote control

1).当连上蓝牙，遥控器发送蓝牙键值；未连接上蓝牙，则发送红外键值。

1). When Bluetooth is connected, the remote control sends the Bluetooth key value; when Bluetooth is not connected, the infrared key value is sent.

2).指示灯：当连接 BT 工作时，按键闪烁蓝色灯；

未连接 BT，用 IR 工作时，按键闪烁红色灯。每按一次按键，指示灯闪一下。

2). Indicator light: When connected to BT, the button flashes blue light;

When BT is not connected, when working with IR, the button flashes red. Each time you press the button, the indicator light flashes.

3). 低电压提醒：2.4V 以上蓝灯闪烁；

2.4V 以下红灯闪烁 5 次（任何状态下）

3). Low voltage reminder: The blue light flashes above 2.4V;

The red light below 2.4V flashes 5 times (in any state)

4).配对方法：

a.同时按住“OK”+“VOL-”键 3 秒，指示灯闪烁，配对成功指示灯常亮 3 秒后熄灭。

b.没配对成功时，如果还在按 OK+VOL-键就要一直发配对广播，以使用户可以配对。

c.按一次 OK+VOL-键就要能配对成功，不要反复清除配对再配对。一次按键配对成功后可以不再发配对广播，直到下次重新按键。

d. Connection interval < 12ms

4). Pairing method:

a. Press and hold the "OK" + "VOL-" keys at the same time for 3 seconds, the indicator light flashes, and the pairing success indicator light is always on for 3 seconds and then goes out.

b. When the pairing is not successful, if you still press the OK+VOL- key, you must keep sending the pairing broadcast so that the user can pair.

c. Press the OK+VOL- button once to be able to pair successfully, do not clear the pairing repeatedly and then pair. After a key pairing is successful, the pairing broadcast can no longer be sent until the key is pressed again next time.

d. Connection interval < 12ms

5).遥控距离：≥10m

5). Remote control distance: ≥10m

6). 蓝牙设备名称：RemoteB016

6). Bluetooth device name: RemoteB016

7).支持 OK+Back 上报功能

7). Support OK+Back reporting function

8).支持连接蓝牙版本为 5.0 的设备


8). Support to connect to devices with Bluetooth version 5.0

9).同时按下“OK+音量+”取消蓝牙配对

9). Press "OK+Volume+" at the same time to cancel Bluetooth pairing

10).在不使用语音的时候 Interval 为 20ms,使用语音的时候 interval 为 12.5ms;

10). Interval is 20ms when voice is not used, and 1012.5ms when voice is used;

11).  只发红外码值

按下该键时，需发 Code1:0x08 码值，同时遥控器其他的按键由蓝牙状态转成红外状态

按下该键时，需发 Code2:0x20 码值，同时遥控器其他的按键由红外状态转成蓝牙状态

11).  Only send infrared code value

When this key is pressed, the code value Code1:0x08 needs to be sent, and the other keys of the remote control switch from Bluetooth to infrared

When you press this key, you need to send Code2:0x20 code value, and at the same time the other keys of the remote control switch from infrared state to Bluetooth state

12).音量键（音量+，音量-）：遥控器处于红外模式下，只发送红外键值；遥控器处于蓝牙配对模式下，只发蓝牙键值。

12).Volume keys (volume +, volume -): when the remote control is in infrared mode, only infrared keys are sent; when the remote control is in Bluetooth pairing mode, only Bluetooth keys are sent.

13) .Power 键：遥控器处于 IR 模式下，只发红外键值；遥控器处于蓝牙配对模式，红外和蓝牙的键值都会发送；遥控器处于蓝牙断连模式下，红外码值和蓝牙回连广播都会发送。

13).Power button: when the remote control is in IR mode, only infrared key values are sent; when the remote control is in Bluetooth pairing mode, both infrared and Bluetooth key values will be sent; when the remote control is in Bluetooth disconnection mode, the infrared code value and Bluetooth loopback will be broadcast send.

14).增加按键唤醒包

Keys	Manufacturer Data	Company ID	Vendor info	key	Mac addr	Key index
Power key	0xff	0xff0xff	0x41,0x6d,0x6c,0x6f,0x67,0x69,0x63	1	host mac addr	累加
Netflix key	0xff	0xff0xff	0x41,0x6d,0x6c,0x6f,0x67,0x69,0x63	2	xx xx xx xx xx xx	累加

14).Add key wakeup package

Keys	Manufacturer Data	Company ID	Vendor info	key	Mac addr	Key index
Power key	0xff	0xff0xff	0x41,0x6d,0x6c,0x6f,0x67,0x69,0x63	1	host mac addr	累加
Netflix key	0xff	0xff0xff	0x41,0x6d,0x6c,0x6f,0x67,0x69,0x63	2	xx xx xx xx xx xx	累加

2. 遥控器其他要求 Remote control other requirements

1). 配对功能要求：不得存在扫描不到蓝牙设备或配对不上（包括短时间内连续按配对键）的问题，请验证 50 次确保无问题；

1). Pairing function requirements: there must be no problems that the Bluetooth device cannot be scanned or paired (including continuous pressing of the pairing key within a short period of time), please verify 50 times to ensure that there is no problem;

- 2). 回连功能要求:不得存在回连不上的问题, 包括盒子断电回连, 遥控器断电回连, 静置 2 小时回连等, 请验证 50 次确保无问题;
- 2). Reconnection function requirements: there must be no problems with the connection failure, including the box power failure and the connection, the remote control power failure and the connection, stand for 2 hours to reconnect, etc., please verify 50 times to ensure that there is no problem;

- 3). 抗干扰功能要求: 不得存在非常影响主机 WIFI 吞吐量的问题, 请确保连接遥控器时主机端 WIFI 吞吐量正常;
- 3). Anti-interference function requirements: there must be no problems that greatly affect the host's WIFI throughput, please ensure that the host's WIFI throughput is normal when connecting the remote control;

- 4). 性能要求: 要求支持 $\leq 10m$, 不得存在语音通话卡顿, 丢失以及遥控器按键卡顿、丢码或连键等问题;
- 4). Performance requirements: It is required to support $\leq 10m$, and there must be no voice call jams, loss, and remote control button jams, missing codes, or continuous keys;

- 5). 功耗要求: 遥控器可持续使用至少 6 个月以上
- 5). Power consumption requirements: the remote control can be used continuously for at least 6 months

- 6). 语音: 16Khz voice sample with 16-bit sampling, 短按语音键(彩色键)可以开始录音, 遥控器收到语音引擎下发的停止录音指令后停止录音。语音超时 30s 保护, 强制退出录音。
- 6). Voice: 16Khz voice sample with 16-bit sampling, short press the voice button (color button) to start recording, and the remote control will stop recording after receiving the stop recording command from the voice engine. The voice timeout is protected for 30s, and the recording is forced to exit.

- 7). 盒子软件可以控制 MIC 打开及关闭。
- 7). The box software can control the opening and closing of the MIC.

- 8). 支持遥控器 MIC 和其他 MIC (如手机 apk 上的录音键) 交替、切换语音输入。
- 8). Support the remote control MIC and other MIC (such as the recording key on the phone apk) to alternate and switch voice input.

四、遥控器零部件图档 Remote control parts drawings

1、遥控器结构图档 Remote control structure drawing file

