

规格说明书

Specifications Manual

无线遥控器

RF remote control

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一、概述 Summary

学习码遥控器、是一款采用 EV1527/PT2240 等芯片编码的发射装置。是一种性价比高、应用广泛的无线遥控编码方式。产品有百万种不同地址编码，有4个固定按键值，可通固定的键值最多组合生成15个不同的按键。产品有不同外壳的可选择，可开模订做或按客户的发射格式进行开发，满足不同客户的需求。

The learning code remote control is a transmitting device encoded with chips such as EV1527/PT2240. It is a cost effective and widely applicable wireless remote control encoding method. The product has millions of different address codes and 4 fixed key values, which can generate up to 15 different keys by combining the fixed key values. The product offers different shell options, and can be developed by opening molds for customization or according to the customer's transmission format to meet different customer needs.

二、 产品特性 Product Features

发射频率：常用315MHZ/433.92MHZ (可做其他频率)

Transmission Frequency: 315MHZ/433.92MHZ (Other frequency available)

频率偏差：±0.2MHZ

Frequency Deviation: ±0.2MHZ

调制方式：ASK (调幅)

Modulation Mode: ASK

工作电流：18MA(12V 供电)/10MA(3V_6V 供电)

Operating current: 18MA (12V) /10MA (3V 6V)

静态电流：OUA

Quiescent current: OUA

发射距离：空旷约50米

Trans Dist: about 50m (open)

编码芯片：EV1527/PT2240/HS1527 等

Enc chips: EV1527/PT2240/HS1527, etc

三、 应用范围 Application scope

(1)卷帘门，卷帘窗控制器；

Roller shutter door and window control

(2)道闸门，伸缩门控制器；

Boom & retractable gate Ctrl

(3) 客车门控制系统;

Bus door control system

(4) 远程控制系统;

Remote control system

(5) 智能家居系统;

Smart home system

(6) 遥控开门机;

Remote door opener

(7) 无线安防报警器;

Wireless security alarm system

(8) 遥控窗帘机;

Remote curtain opener

(9) 无线工业控制器;

Wireless industrial controller

(10) RGB 灯条, 灯带, 照明灯具控制;

Smart RGB Led strip control system and lighting fixture control

四、发码格式说明

Code sending format specification

以下仅提供1-2种常见电阻的发射脉宽数据, 不同的振荡电阻, 发射的脉宽会有差异, 具体以样品为准。

1-2 common resistance pulse width data are listed below. Pulse width varies by oscillation resistance; refer to the sample for specifics.

芯片/电阻 Chip /Resistor	同步头时间 Synchronization header time	高电平时间 High level time	低电平时间 Low level time
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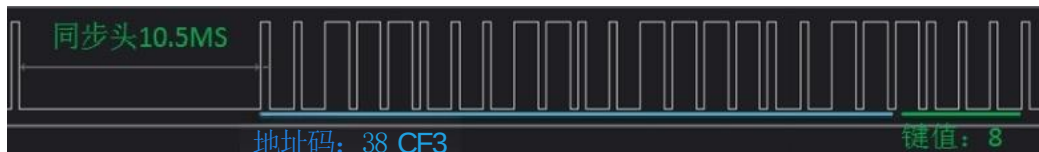
EV1527/330K	10.5MS	1MS	360US
EV1527/270K	8.6MS	840MS	280US
HS1527/270M	10.5MS	1MS	360US



学习码遥控器是一款24位数据的遥控器, 前面20位是遥控器的地址数据, 后4位是遥控器的键值. 前20位实现百万组不同的地址编码, 遥控器地址

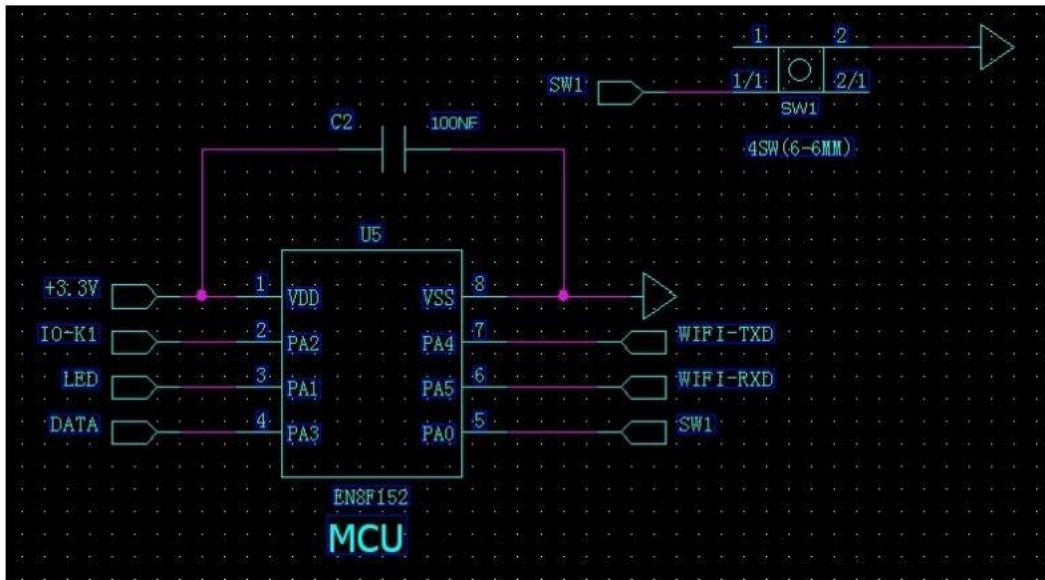
百万不重复.后4位无组合的情况下键值分别是**8421(16进制)**,遥控器键值固定 不变.

The 24-bit learning code remote uses 20 bits for unique address (millions of combinations) and 4 fixed hexadecimal key values (8421 format)



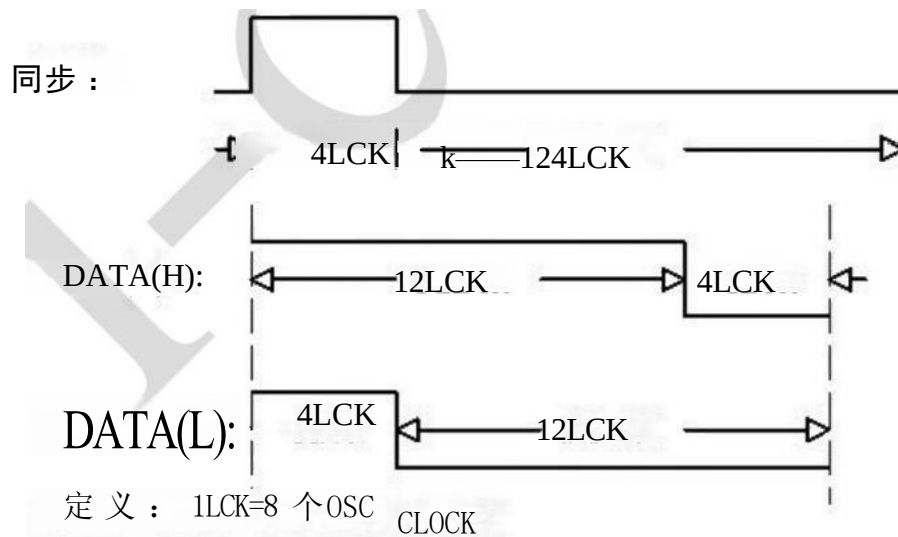
学习码遥控器需通过单片机解码，从而实现遥控的一对一的控制。用前遥控器与接收控制端需要进行遥控配对操作。如下图MCU 的第5脚外接学习键，按下学习键5脚有高低电平变化的时候，程序认为是学习配对状态，立即按遥控器，配对完成，程序退出配对状态。也可通过上电前几秒为学习状态，按遥控器任意键，来完成配对。配对为了更直观的看到效果，如下图的MCU 第三脚可接一个LED 来进行指示，当第五脚有电平变化，进入学习状态时，可以点亮LED 来指示，学习成功后LED 可以闪烁几次来进行指示。以上二个方法是我们遥控行业常用的配对方式，程序员也可以根据自己产品的特点，设计不同的操作方法，以上仅供参考。

The learning code remote control needs to decode via a microcontroller to achieve one-to-one remote control. Before use, the remote control and the receiving control terminal need to be paired. As shown in the figure, the 5th pin of the MCU is externally connected to a learning button. When the 5th pin has high-low level changes due to pressing the learning button, the program considers it as the learning pairing state. Press the remote control immediately to complete the pairing, and the program exits the pairing state. Alternatively, the learning state can be entered within the first few seconds after power-on, and pairing can be completed by pressing any key on the remote control. For a more intuitive display of the pairing effect, the 3rd pin of the MCU as shown in the figure can be connected to an LED for indication. When the 5th pin has a level change and enters the learning state, the LED can be lit for indication. After successful learning, the LED can flash several times for indication. The above two methods are commonly used pairing methods in the remote control industry. Programmers can also design different operation methods according to the characteristics of their products. The above is for reference only.



单片机解码在样品的脉宽的基础上，程序放宽正负20%。避免遥控不灵敏或无法遥控的现象

The microcontroller decoding relaxes the program by $\pm 20\%$ based on the sample pulse width to avoid remote control insensitivity or failure.



输出编码的格式：Output the encoding format

同步	C0-C19 (100万组)	D0	D1	D2	D3
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K0-K3按键组合表： K0-K3 (K0-K3 Key Combination Table)

K3	K2	K1	K0	D3	D2	D1	D0
0	0	0	1	0	0	0	1
0	0	1	0	0	0	1	0
0	0	1	1	0	0	1	1
0	1	0	0	0	1	0	0
0	1	0	1	0	1	0	1
0	1	1	0	0	1	1	0
0	1	1	1	0	1	1	1
1	0	0	0	1	0	0	0
1	0	0	1	1	0	0	1
1	0	1	0	1	0	1	0
1	0	1	1	1	0	1	1
1	1	0	0	1	1	0	0
1	1	0	1	1	1	0	1
1	1	1	0	1	1	1	0
1	1	1	1	1	1	1	1

FCC Caution.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

* RF warning for Portable device:

The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.