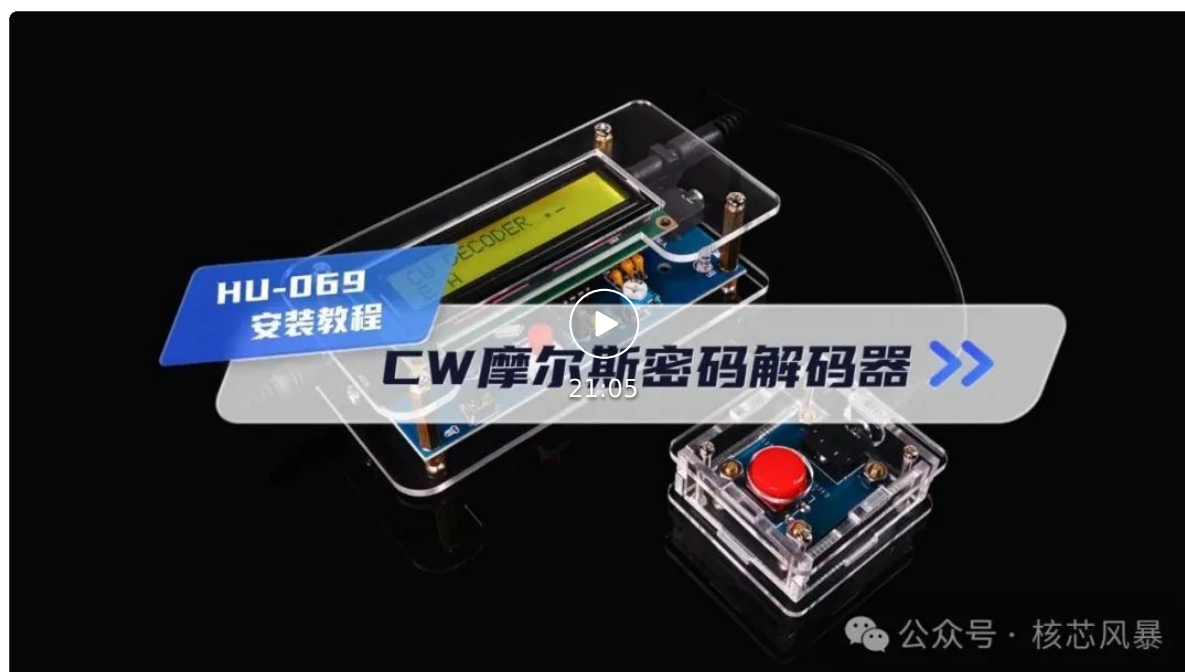


HU-069 CW摩尔斯码解码器

Original 核芯风暴智能科技 核芯风暴 2024年03月30日 09:21

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HU-069 CW摩尔斯密码解码器

CW Morse Cryptodecoder

I、功能 Function

1、CW音频信号输入

CW audio signal input

2、显示接收到的摩尔斯码

Display received Morse code

3、将接收到的摩尔斯码音频解码为字符

Decode the received Morse code audio into characters

4、显示接收码率

Display receiving code rate

5、外接CW按键，用于练习发摩尔斯码

External CW button for practicing sending Morse codes

II、特性 Characteristic

1、由专用电路板、LCD1602、按键等部件组成

Composed of dedicated circuit boards, LCD1602, buttons, and other components

2、CW音频信号输入，点的时间为130ms，划的时间为360ms

CW audio signal input, point time is 130ms, line time is 360ms

3、将接收到的摩尔斯码解码为字符，并显示，一次最多显示16个字符

Decode the received Morse code into characters and display it, with a maximum of 16 characters displayed at a time

4、显示接收到的摩尔斯码

Display received Morse code

5、显示接收码率，单位 char/min，即每分钟接收多少字节

Display the received code rate in char/min, which is how many bytes are received per minute

6、可解码“A-Z”“0-9”“? , . ! @ : - ”共43个字符

Decodable "A-Z", "0-9", "?", " , . ! @ : - " with a total of 43 characters

7、电源：DC9V供电

Power supply: DC9V power supply

8、工作电压：9V

Working voltage: 9V

9、工作电流：33mA

Working current: 33mA

10、PCB长度：101x50mm

PCB length: 101x50mm

III、元件清单 BOM

序号	名称	Name	标号 / Label	数量 / Number	备注
1	3F07耳机插座	3F07 headphone socket	CW 音频输入、CW 音频输出、CWKEY IN、J1	3	/
2	DC005电源插座	DC005 power socket	DC(9V)	1	/
3	蓝白电位器10K	Blue and white potentiometer 10K	10K	1	/
4	蓝白电位器1K	Blue and white potentiometer 1K	1K	1	/
5	8*8自锁开关	8 * 8 self-locking switch		1	/
6	红色自锁开关帽	Red self-locking switch cap		1	/
7	78L05	78L05	78L05	1	/

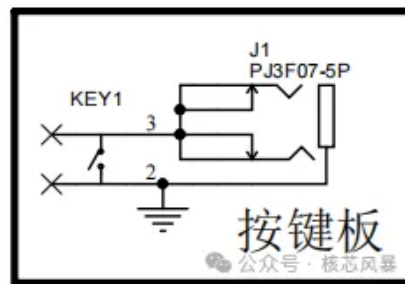
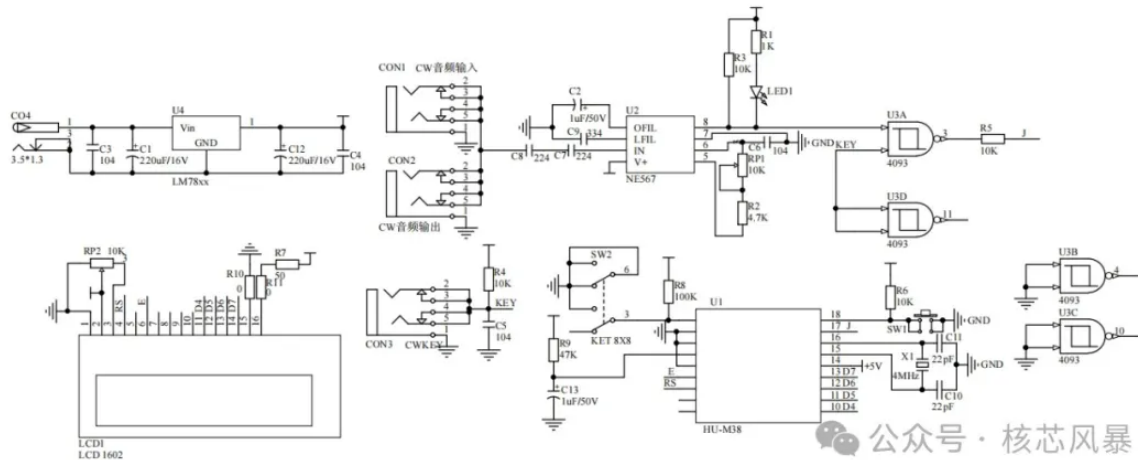
8	瓷片电容22uF	Ceramic capacitor 22uF	22	2	/
9	4MHZ晶振	4MHZ crystal oscillator	4M	1	/
10	LED	LED	LED	1	/
11	电解电容220uF	Electrolytic capacitor 220uF	220uF	2	/
12	电解电容1uF	Electrolytic capacitor 1uF	1uF	2	/
13	独石电容0.1uF	Single stone capacitor 0.1uF	104	4	/
14	独石电容0.22uF	Single stone capacitor 0.22uF	224	2	/
15	独石电容0.33uF	Single stone capacitor 0.33uF	334	1	/
16	直插电阻1K	Direct insertion resistor 1K	1K	1	/
17	直插电阻4.7K	Direct insertion resistor 4.7K	4K7	1	/
18	直插电阻10K	Direct insertion resistor 10K	10K	4	/
19	直插电阻50Ω	Direct insertion resistor 50K	50	1	/
20	直插电阻100K	Direct insertion resistor 100K	104	1	/
21	直插电阻47K	Direct insertion resistor 47K	47K	1	/
22	NE567	NE567	/	1	/
23	CD4093	CD4093	/	1	/
24	LCD1602 液晶显示屏	LCD1602 LCD display screen	/	1	/
25	1*6P双塑排针	1 * 6P Double plastic row needle	/	2	/
26	1*6P单排母座	1 * 6P single row female seat	/	2	/
27	18P IC座	18P IC socket	/	1	/
28	14P IC座	14P IC socket	/	1	/
29	8P IC座	8P IC socket	/	1	/
30	6*6*5 轻触开关	6 * 6 * 5 light touch switch	/	1	/
31	转接板	Adapter board	/	1	/
32	1*9P单排排针	1 * 9P single row needle	/	2	/
33	解码器PCB	Decoder PCB	/	1	/
35	说明书	Instructions	/	1	/
36	音频线	Audio cable	/	1	/
37	外壳	Housing	/	1	选配optional
38	螺丝包	Screw pack	/	1	选配optional

39	9V电源	9V power supply	/	1	选配optional
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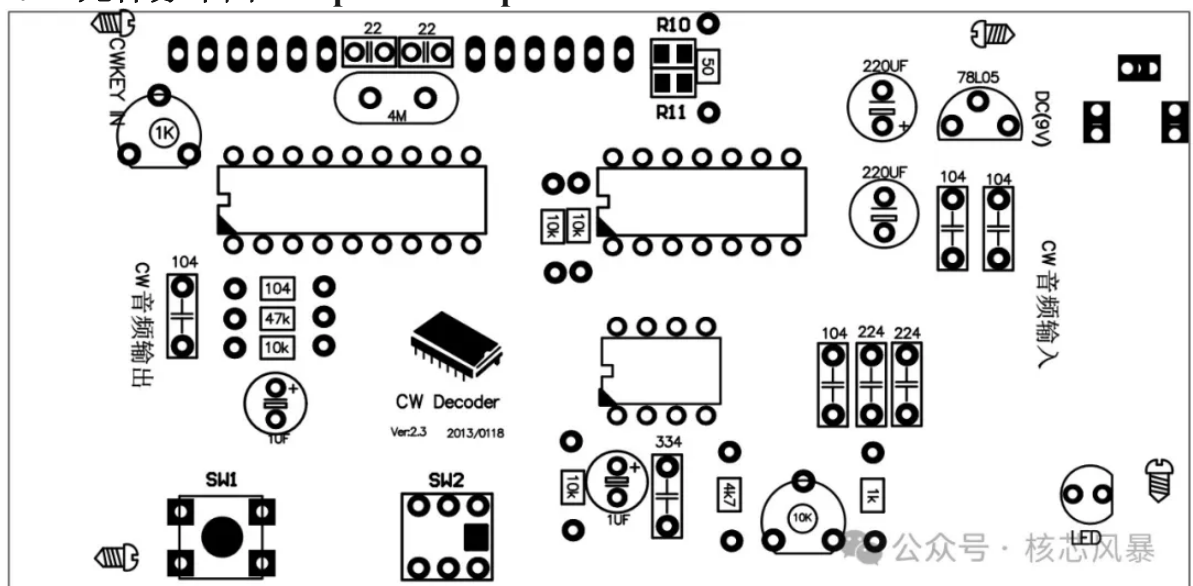
按键板

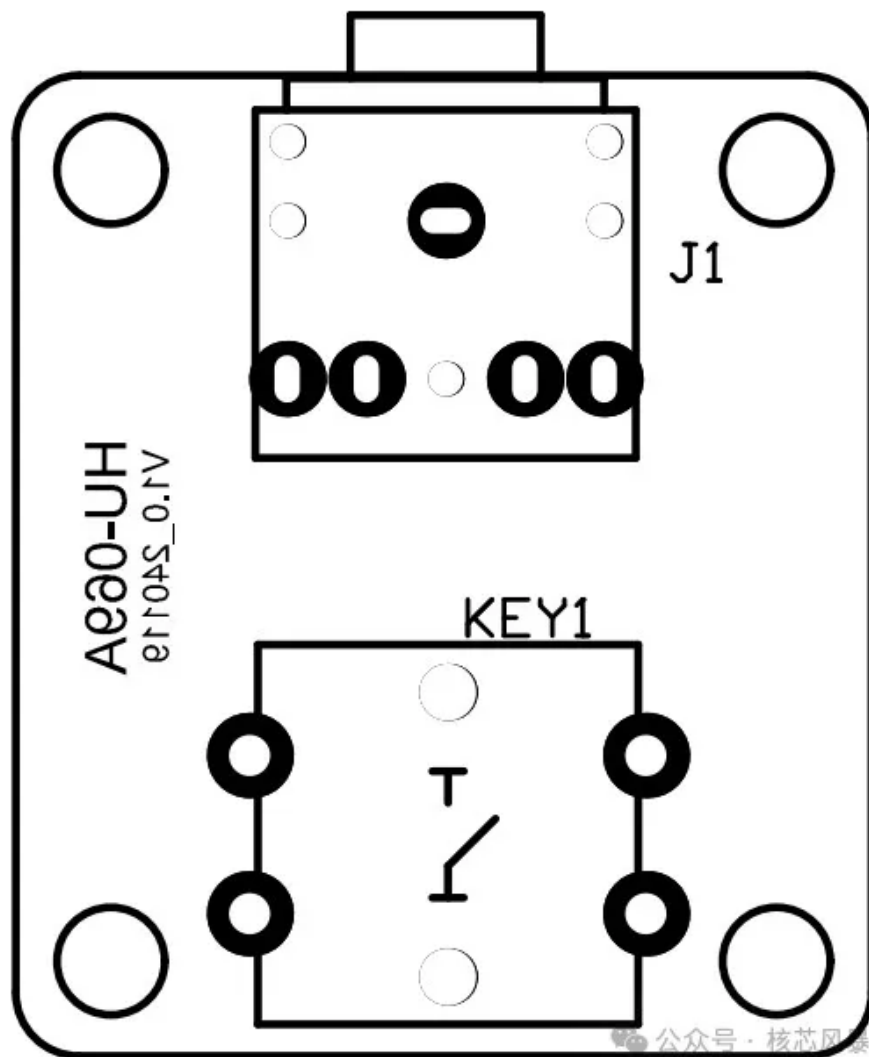
序号	名称	Name	标号/Lable	数量/Number	备注
1	3F07耳机插座	3F07 headphone socket	J1	1	/
2	12*12*7.3按键	12 * 12 * 7.3 buttons	KEY1	1	/
3	红色圆形按键帽	Red circular button cap	/	1	/
4	按键板PCB	Key board PCB	/	1	/

IV、电路原理 Schematic



V、元件分布图Component map

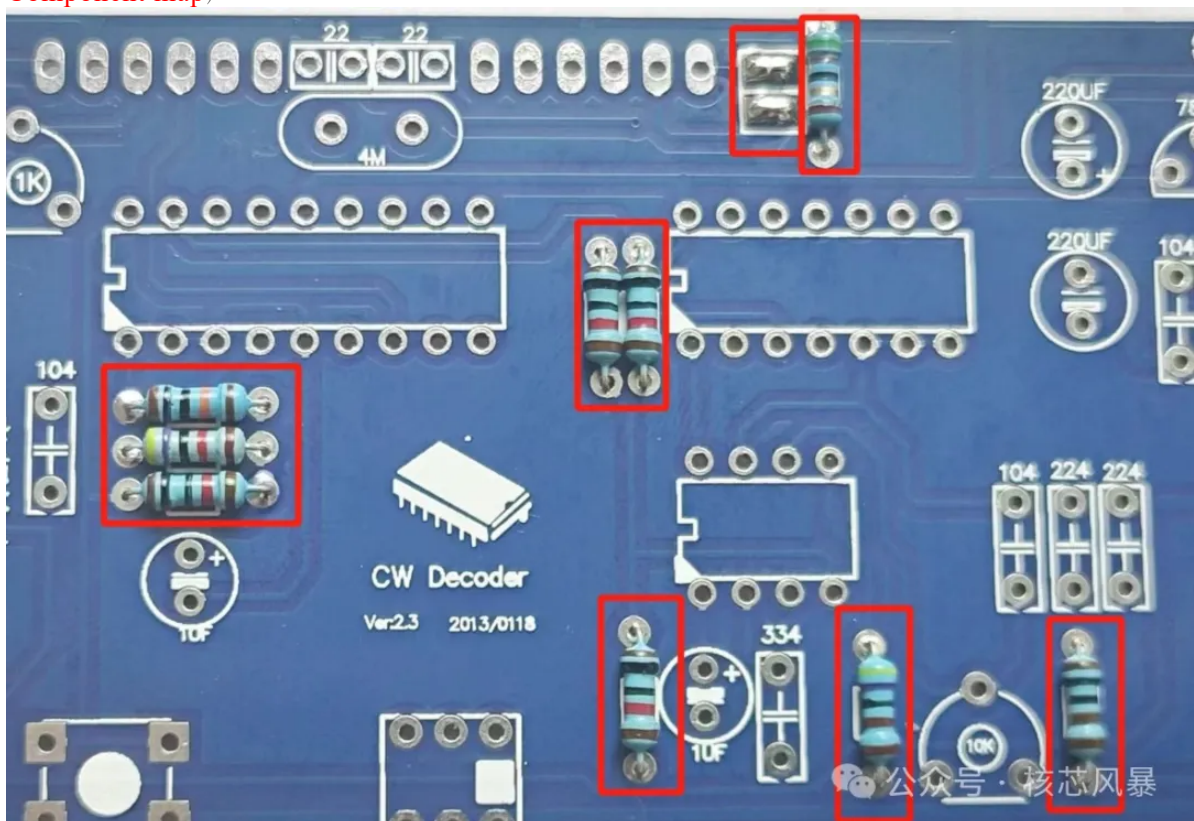




VI、焊接教程 Welding tutorial

1、将R10、R11短接，再分别焊接50Ω、1K、4.7K、10K、47K、100K直插电阻。（**特别注意：在元件分布图里R10、R11需要用焊锡进行短接**）

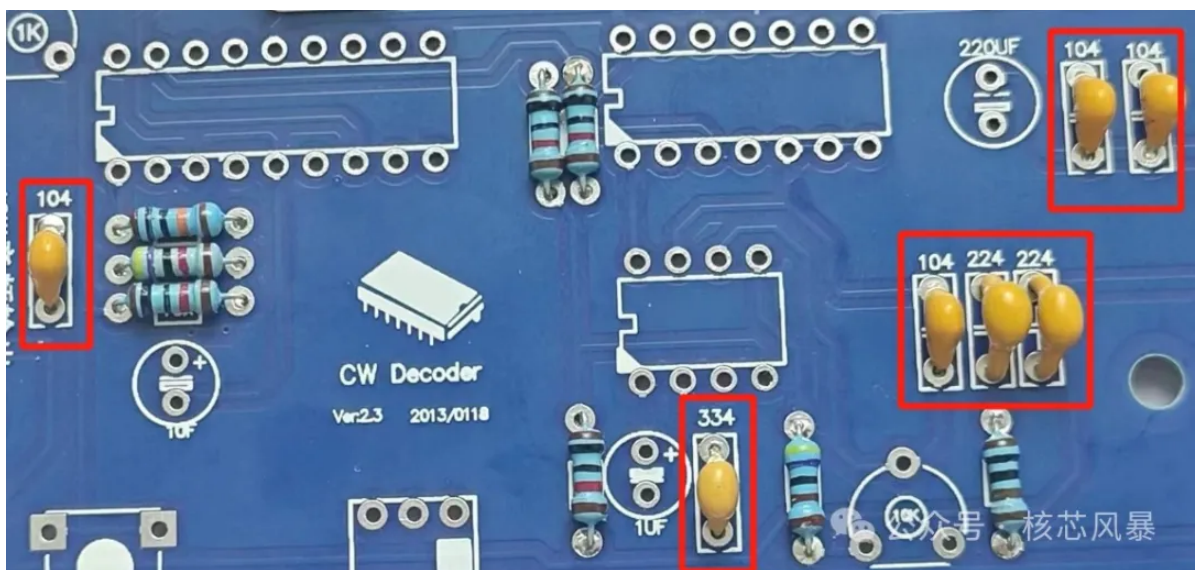
Short circuit R10 and R11, and then weld 50 Ω, 1K, 4.7K, 10K, 47K, and 100K direct insertion resistors respectively. (**Special note: R10 and R11 need to be shorted with solder in the Component map**)



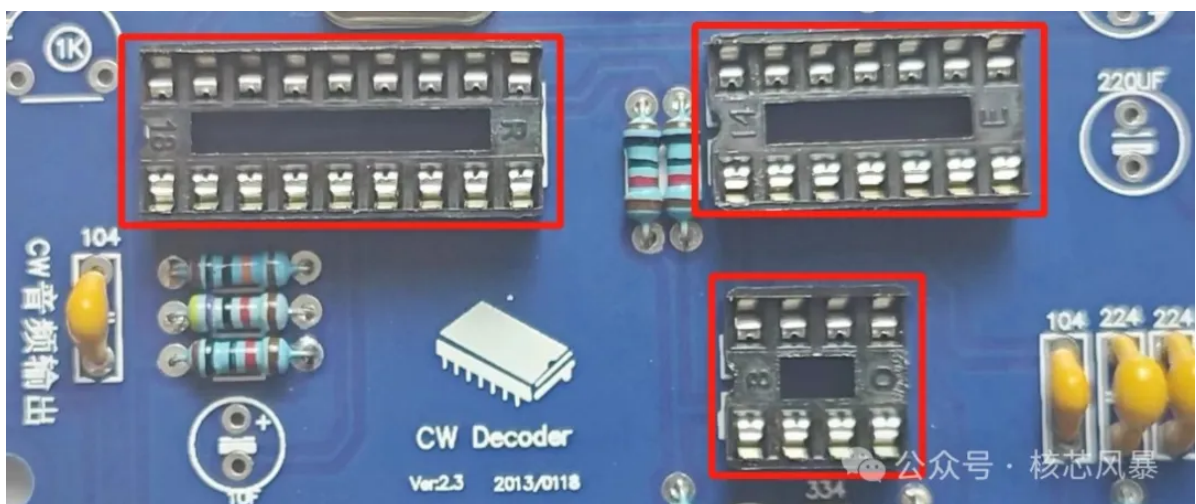
2、焊接4MHZ晶振和22pF瓷片电容。
Weld 4MHZ crystal and 22pF chip capacitors.



3、分别焊接104、224、334的独石电容。
Solder the individual stone capacitors of 104, 224, and 334 at their respective positions

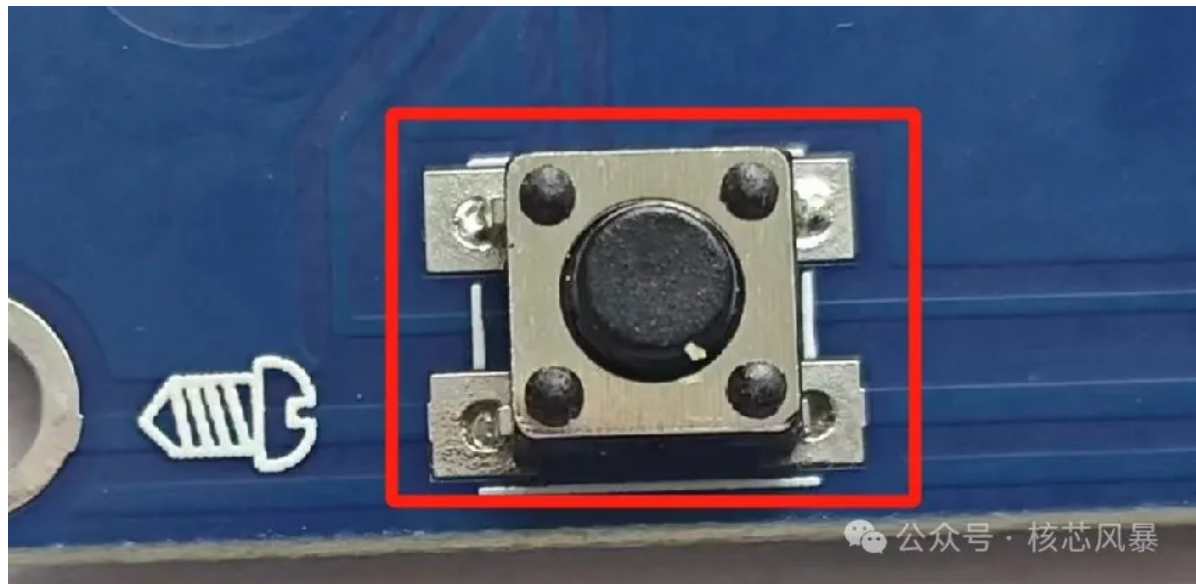


4、将分别8P、14P、18P的IC座焊到对应位置上（注意方向，有缺口对着有缺口的一边）。
Weld the IC sockets of 8P, 14P, and 18P to their corresponding positions (pay attention to the direction, with the notch facing the side with the notch).



5、焊接6*6*5按键开关。

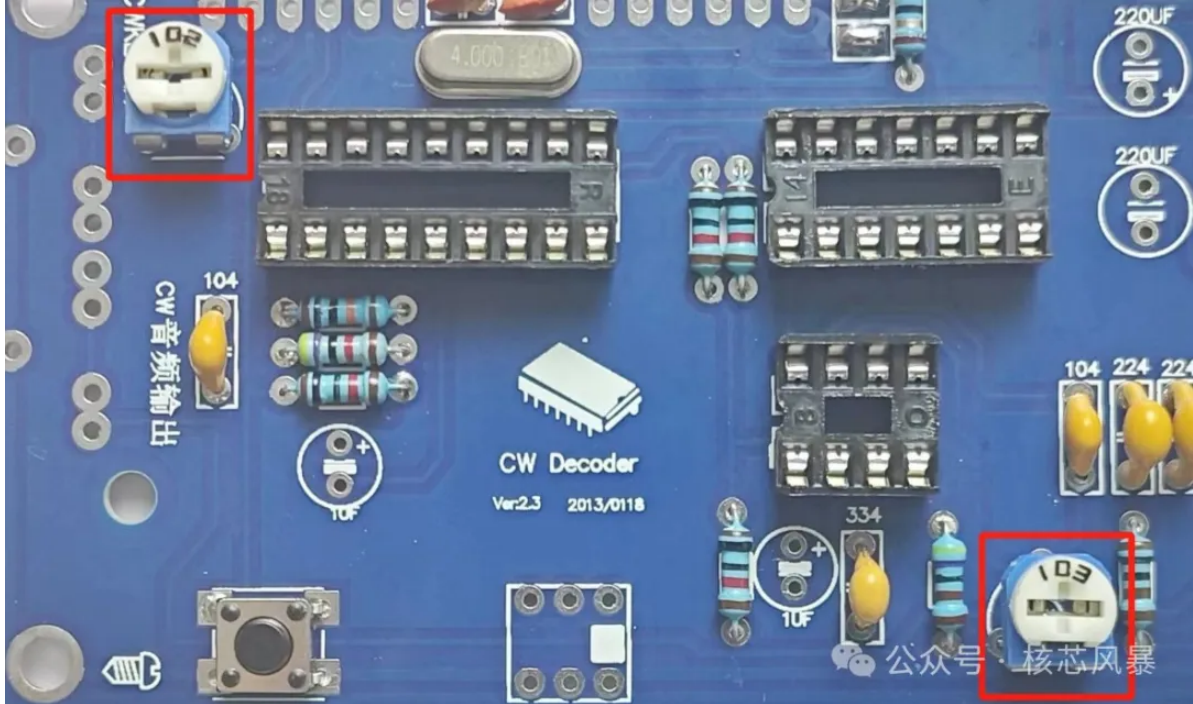
Welding 6 * 6 * 5 button switches.



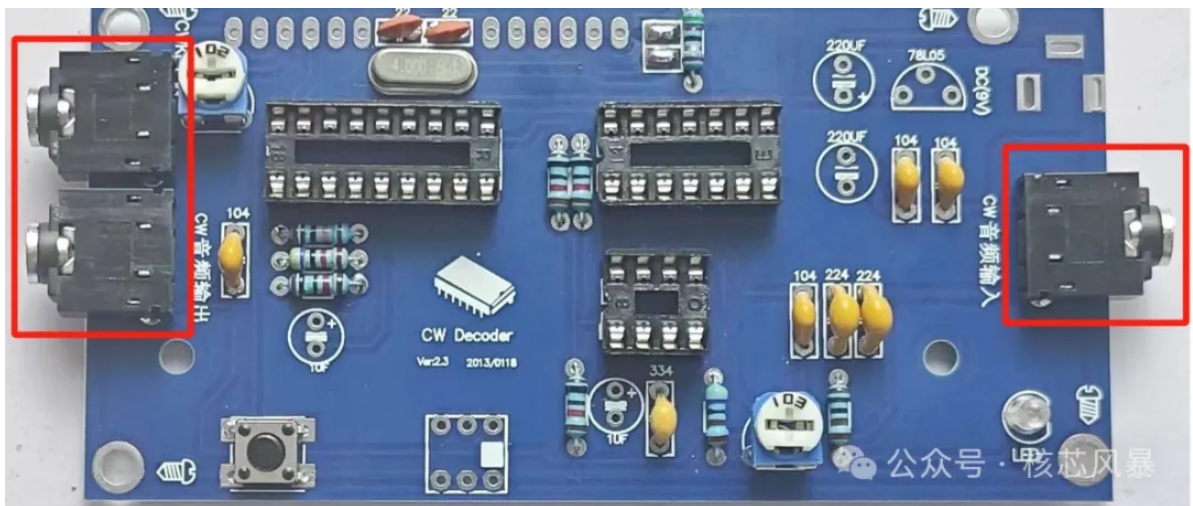
6、焊接LED。Welding LED.



7、焊接1K和10K蓝白电位器。
Weld 1K and 10K blue and white potentiometers.



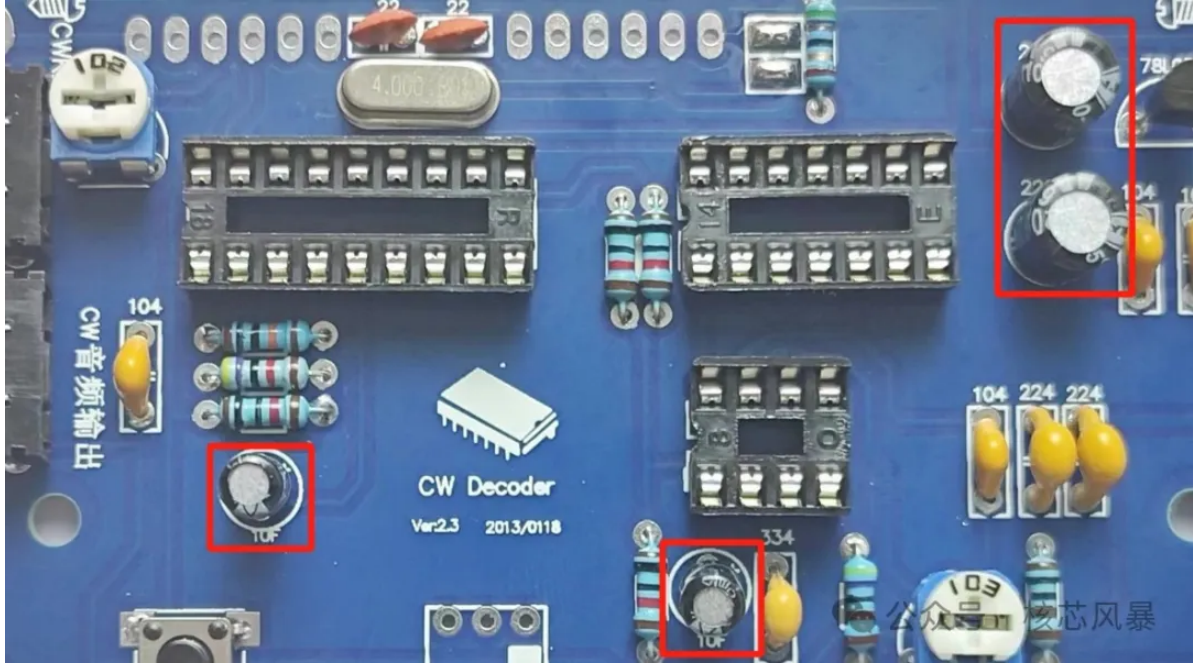
8、焊接三个音频插座。
Welding three audio sockets.



9、焊接78L05三端稳压器。
Welding 78L05 three terminal voltage regulator.



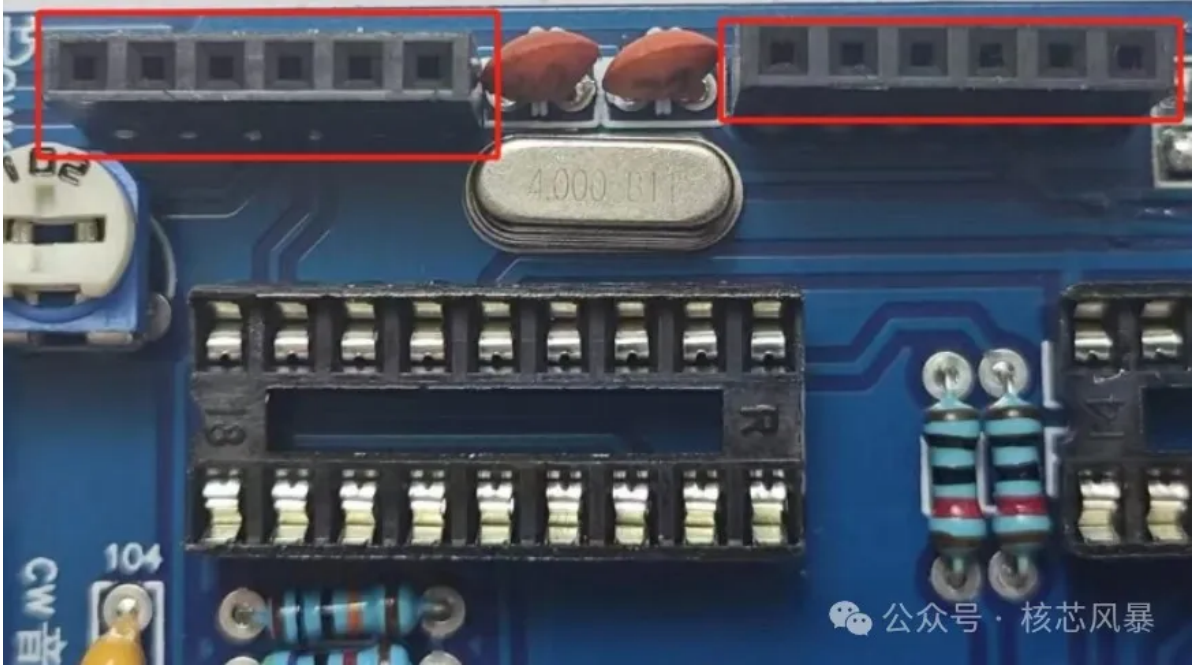
10、焊接1uF和220uF电解电容。
Welding 1uF and 220uF electrolytic capacitors.



11、焊接电源接口。
Welding power interface.



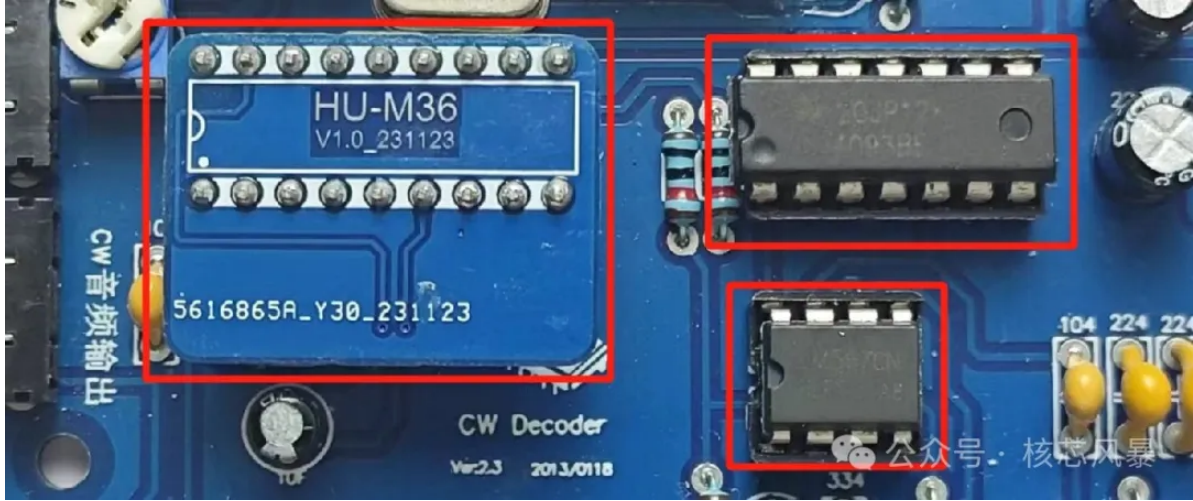
12、焊接两个6P单排母座。
Weld two 6P single row female seats.



13、焊接8*8自锁开关，并插上按键帽。
Weld the 8 * 8 self-locking switch and insert the button cap.



14、两个9P单排排针焊接到转接板上，并将转接板、CD4093、NE567插到对应的位置上。
Weld two 9P single row pins onto the adapter board and insert the adapter board, CD4093, and NE567 into the corresponding positions.



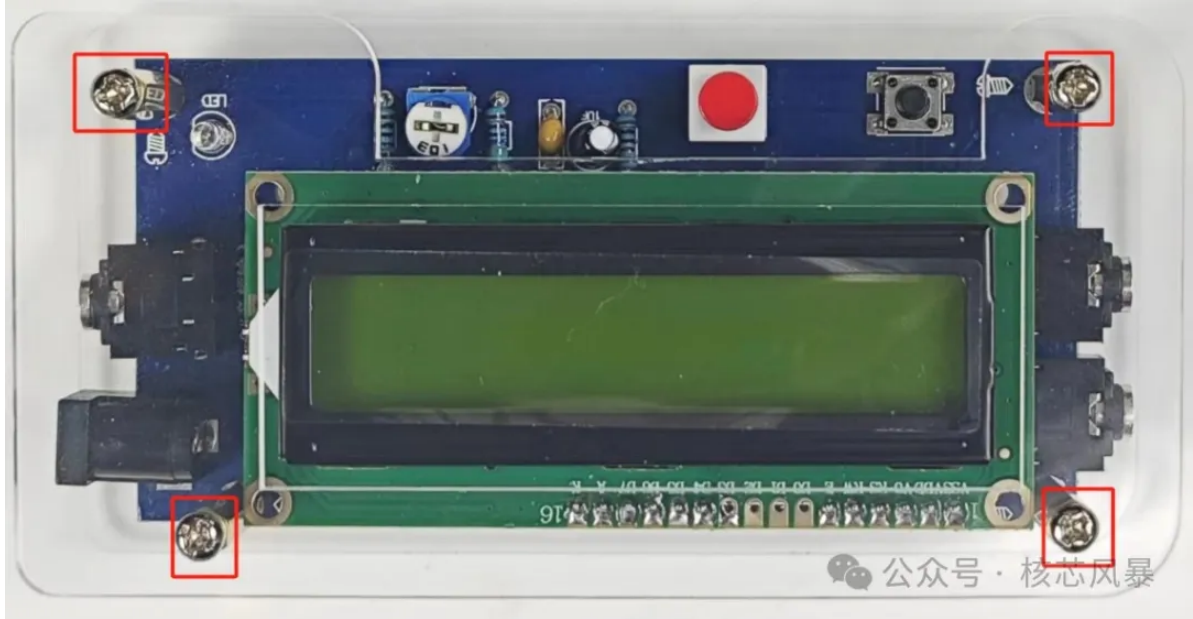
15、将6P双塑排针焊接到LCD屏上，并将LCD屏插到两个6P单排母座上。
Weld the 6P double plastic row pins onto the LCD screen and insert the LCD screen into two 6P single row female sockets.



16、用M3单通铜柱、双通铜柱和螺丝将PCB固定在底部外壳上。
Fix the PCB to the bottom shell using M3 single pass copper pillars, double pass copper pillars, and screws.



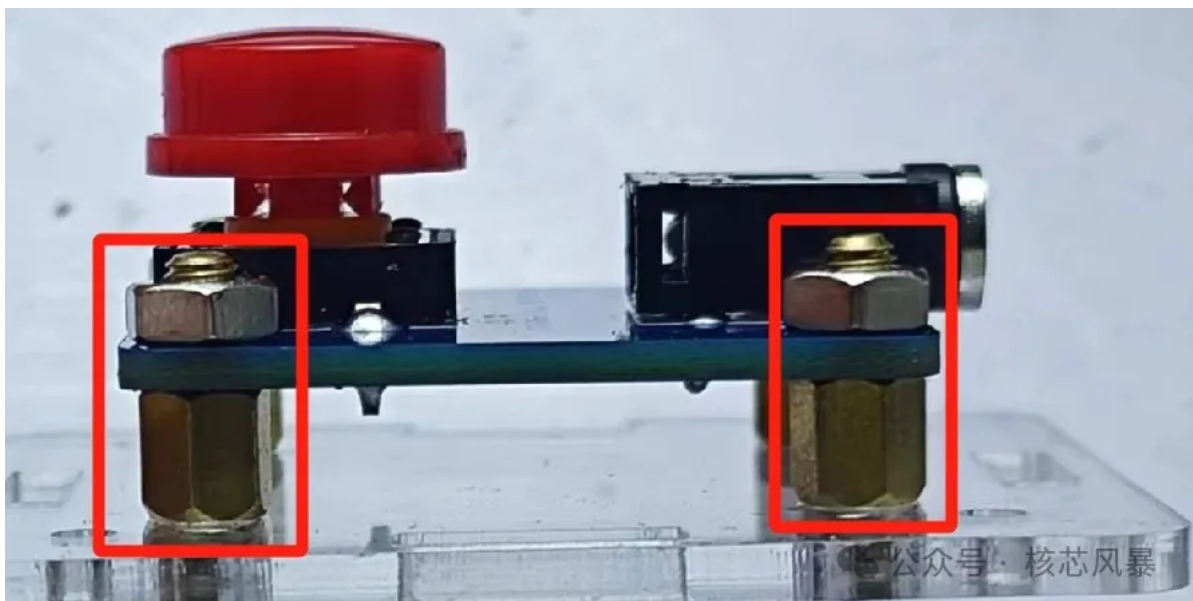
17、用M3螺丝将顶部外壳固定在PCB上。
Secure the top shell to the PCB using M3 screws.



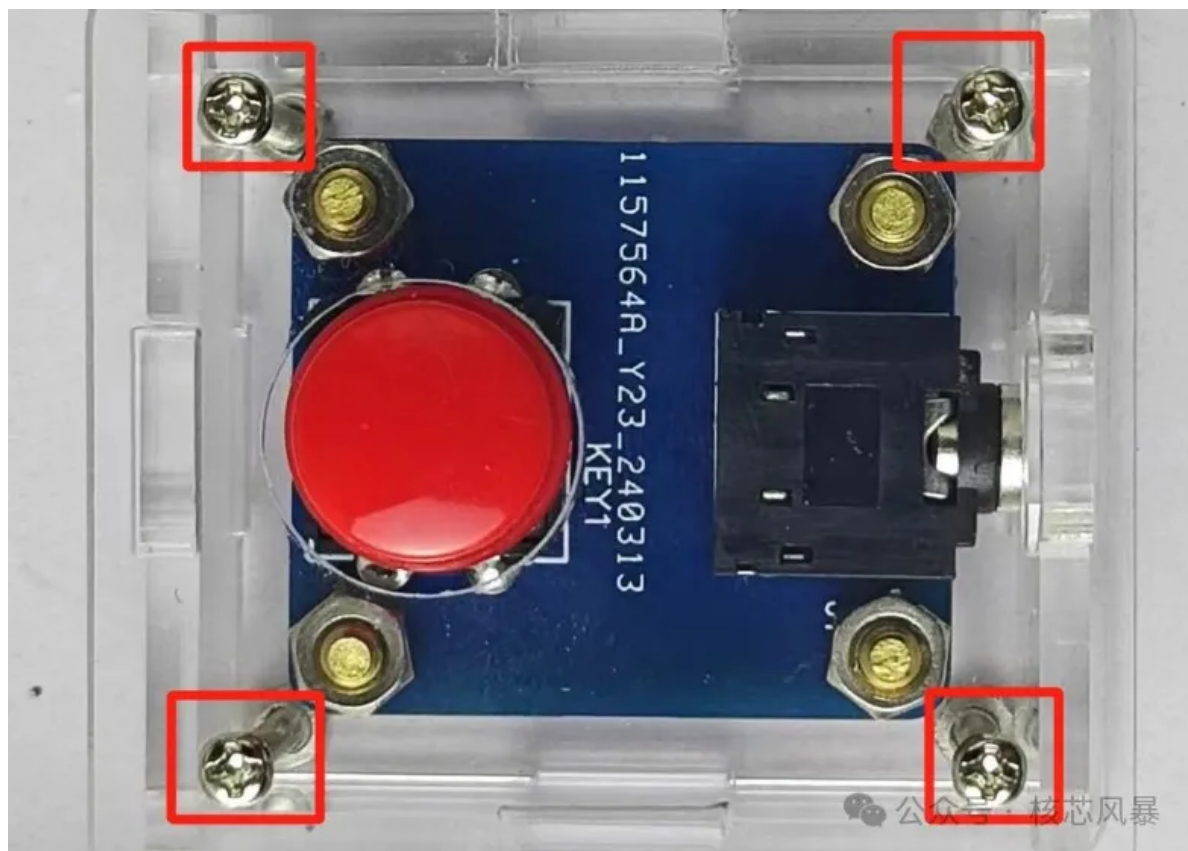
18、焊接按键板上的音频插座和按键。
Weld the audio socket and buttons on the button board.



19、将按键帽装在按键上，并用M3铜柱将按键板固定到外壳上。
Install the button cap on the button and secure the button board to the housing with an M3 copper pillar.



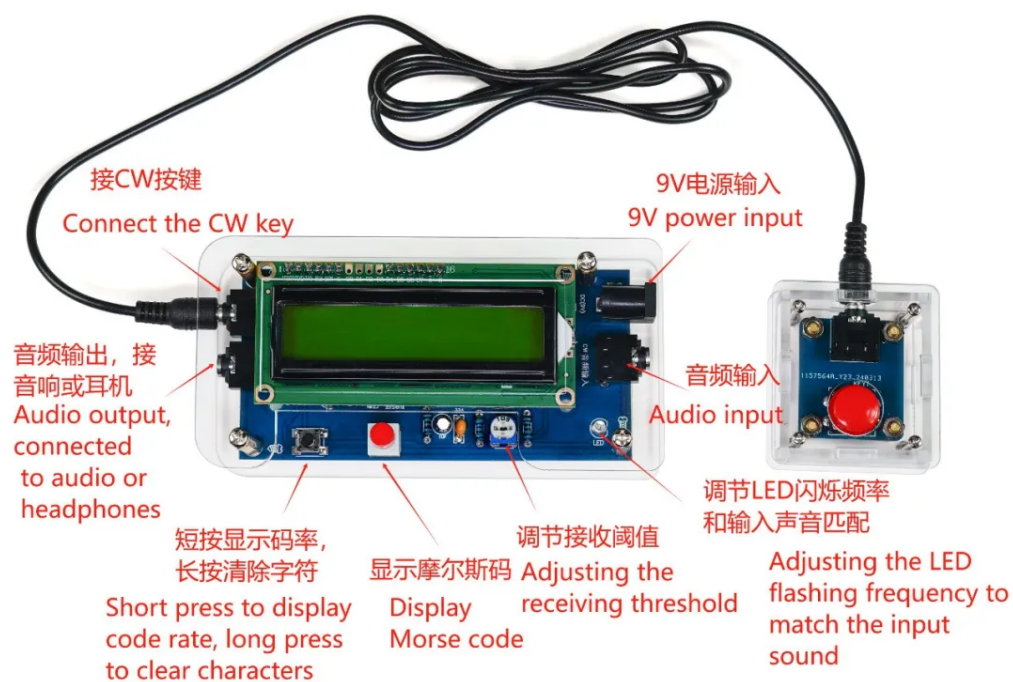
20、用M3螺丝和铜柱将外壳组装好。
Assemble the housing with M3 screws and copper pillars.

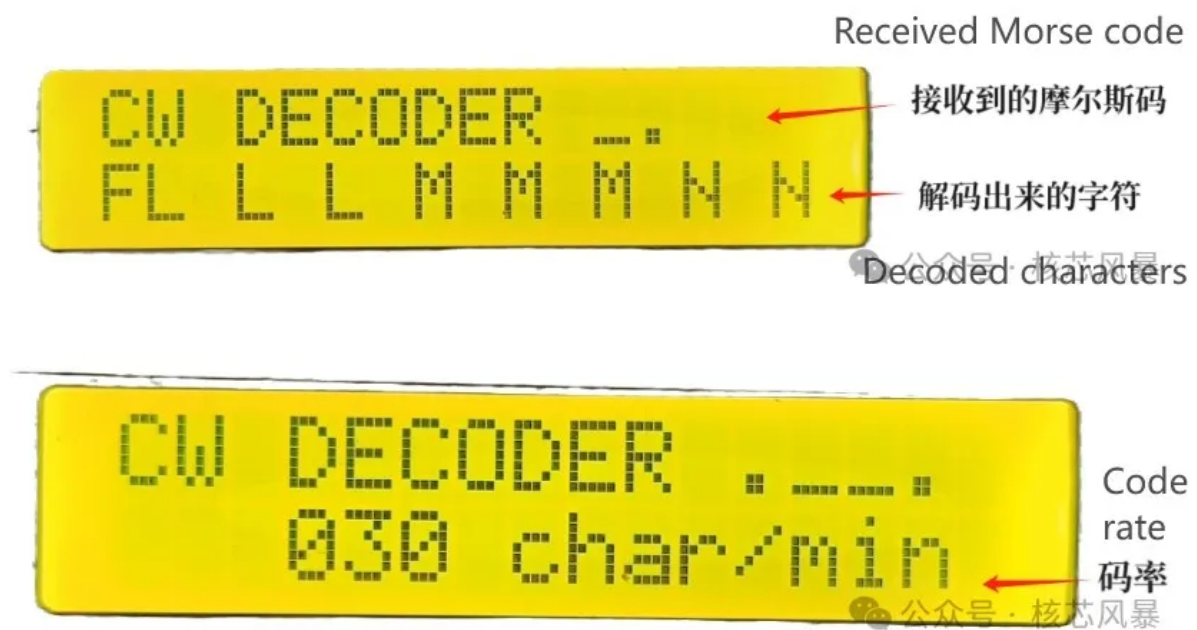


VII、使用说明 Instructions for use

1、接口说明 Interface Description

2、用户界面显示说明 User interface display instructions





3、操作说明 Operating instructions

(1)接入DC9V电源。

Connect to a DC9V power supply.

(2)CW音频输入端接入摩尔斯码音频，可对摩尔斯码音频进行解码转换成字符，并显示在液晶屏上。

The CW audio input terminal is connected to Morse code audio, which can be decoded, converted into characters, and displayed on the LCD screen.

(3)CW音频输出端可输出接收到的摩尔斯码音频，可接音响或耳机。

The CW audio output terminal can output the received Morse code audio, and can be connected to a speaker or headphones.

(4)调节接收阈值电位器，调节到LED闪烁频率和听到的声音匹配。（如果未调节好，则解码器无法对音频进行解码）

Adjust the receiving threshold potentiometer to match the LED flashing frequency with the sound heard. (If not properly adjusted, the decoder cannot decode the audio)

(5)按下自锁开关可查看输入的摩尔斯码，弹起则不显示。

Press the self-locking switch to view the input Morse code, which will not be displayed when it pops up.

(6)按下轻触开关可查看接收摩尔斯码的码率。

Press the light touch switch to view the received Morse code rate.

(7)CWKEY端接入按键板，可进行摩尔斯码的练习，按键输入的摩尔斯码会显示在液晶屏上。（不可与音频输入同时输入，否则会互相干扰，从而无法正确进行解码）

The CWKEY end is connected to the button board for practicing Morse code, and the Morse code entered by the button will be displayed on the LCD screen. (Cannot input at the same time as audio input, otherwise it will interfere with each other and cannot be decoded correctly)

(8)短按按键板为点，长按按键板为划。（长按按键超过360ms为划，否则为短按为点）

Short press the button board as a point, long press the button board as a line. (Long press the button for more than 360ms as a line, otherwise short press as a point)

(9)摩尔斯电码表 Morse code table

字母 Letter

字符 Character	电码符号 Morse code symbol	字符 Character	电码符号 Morse code symbol	字符 Character	电码符号 Morse code symbol	字符 Character	电码符号 Morse code symbol
A	. -	B	- . . .	C	- . - .	D	- . .
E	.	F	. . - .	G	- - .	H	
I	. .	J	. - - -	K	- . -	L	. - . .
M	- -	N	- .	O	- - -	P	. - - .
Q	- - . -	R	. - .	S	. . .	T	-
U	. . -	V	. . . -	W	. - -	X	- . . -
Y	- . - -	Z	- - . .				

数字 Number

字符	电码符号	字符	电码符号	字符	电码符号	字符	电码符号
----	------	----	------	----	------	----	------

Character	Morse code symbol	Character	Morse code symbol	Character	Morse code symbol	Character	Morse code symbol
0	-----	1	.-----	2	..-----	3	...---
4	--	5		6	-.	7	---...
8	-----.	9	-----.				

标点符号 Punctuation marks

字符 Character	电码符号 Morse code symbol	字符 Character	电码符号 Morse code symbol	字符 Character	电码符号 Morse code symbol	字符 Character	电码符号 Morse code symbol
?	. . . --- . .	,	--- . . . ---	.	. - . - . - . -	!	--- - . - . ---
@	. - . - . - .	:	---	-	- -		

(10)摩尔斯码练习例子Morse code practice examples

HXFB 核芯风暴

H	X	F	B
....	- . . -	. . . -.	- . . .

I 我

I	
..	

LOVE 爱

L	O	V	E
.- . .	- - - -	. . . -	.

LIKE 喜欢

L	I	K	E
.- . .	..	- . - -	.

YOU 你

Y	O	U	
- . - -	- - - -	. . -	

GOOD 好

G	O	O	D
- . .	- - - -	- - - -	- . .

OK 好的

O	K		
- - - -	- . - -		

EAT 吃饭

E	A	T	
.	. -	-	



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个人观点，仅供参考