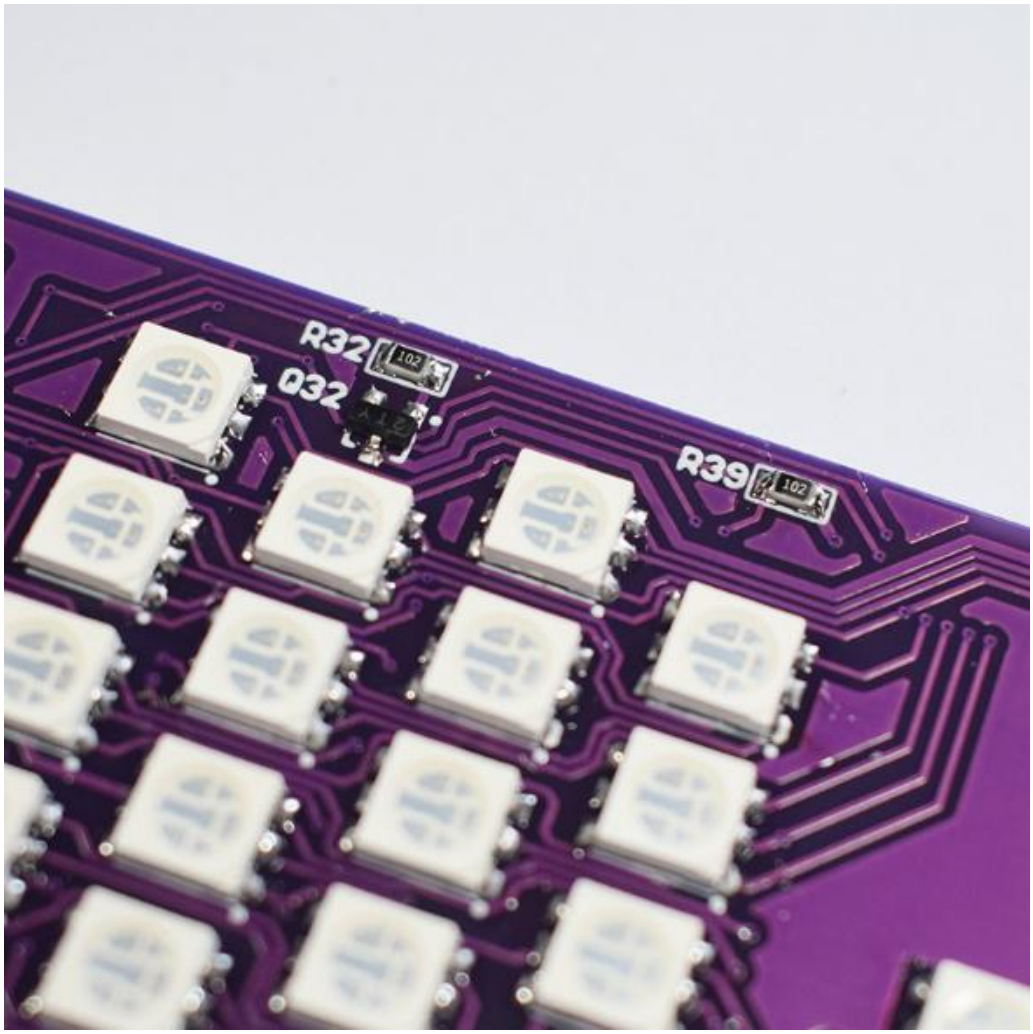
Oversized Rainbow Analog Nixie Tube Clock Production Manual

(If you bought the "**Already Soldered**" version, just look at the "**Assembling part**" below)

Welding part:

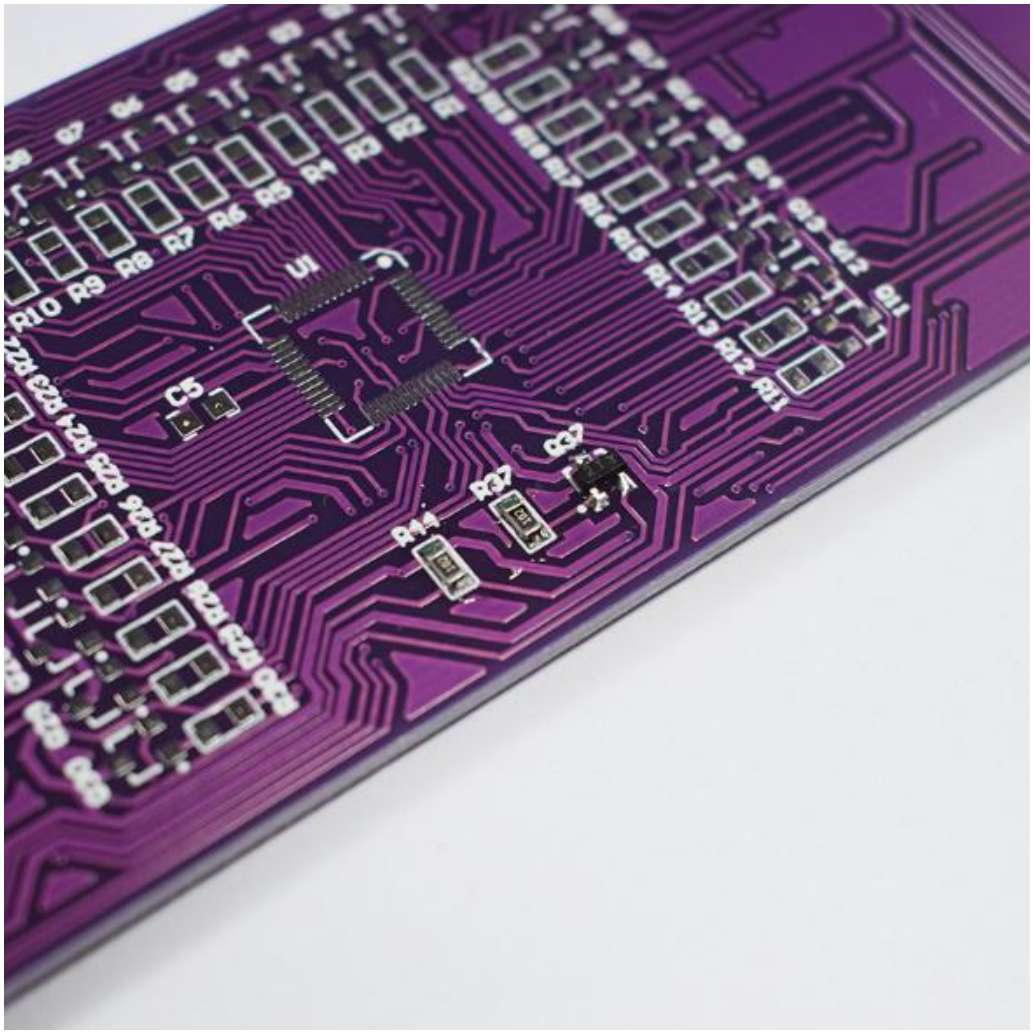
Solder the LED part first, pay attention to the position of the LED notch corresponding to the dot of the PCB package.

Solder all the LEDs.

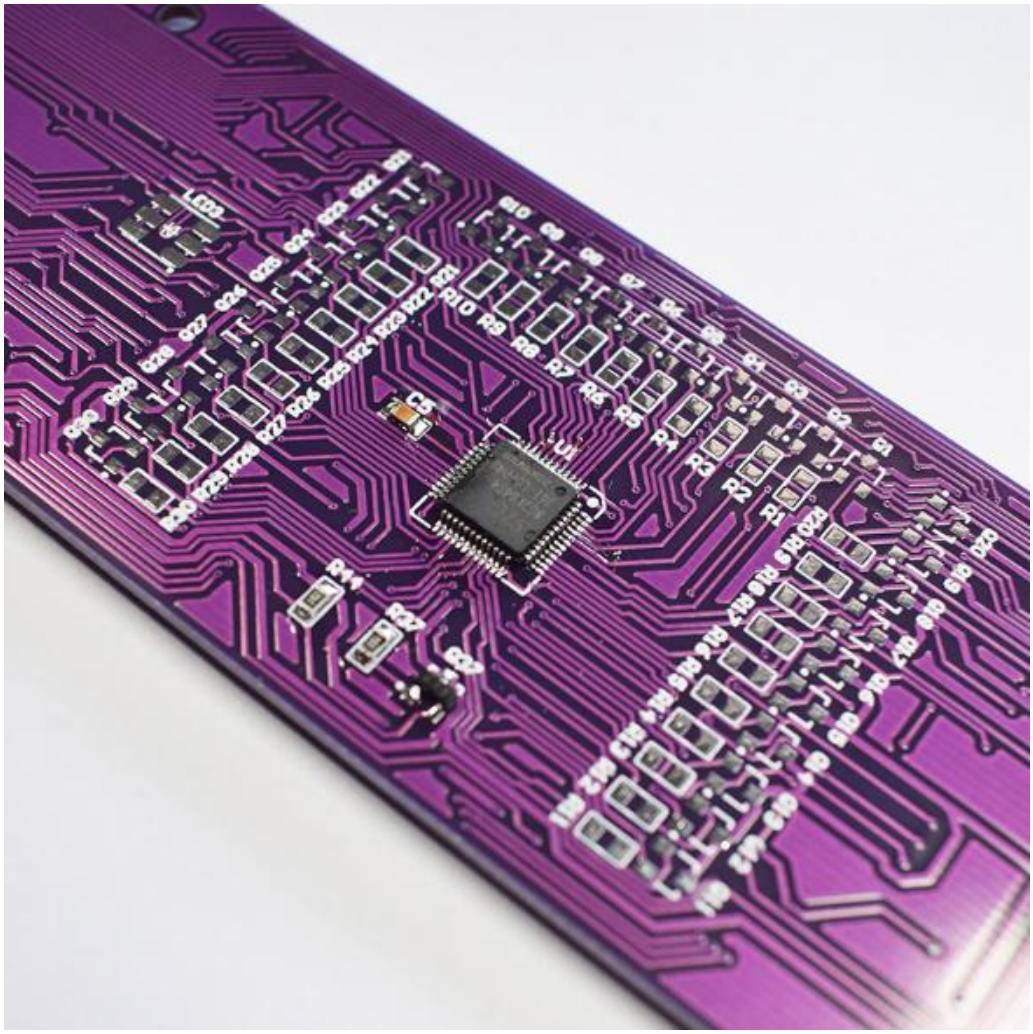


R31-R44 are all 1K resistors (102); Q31-Q38 are all 8550 transistors (short strips);

Welding the triode, pay attention to the long strip is 8050, the short one is 8550;



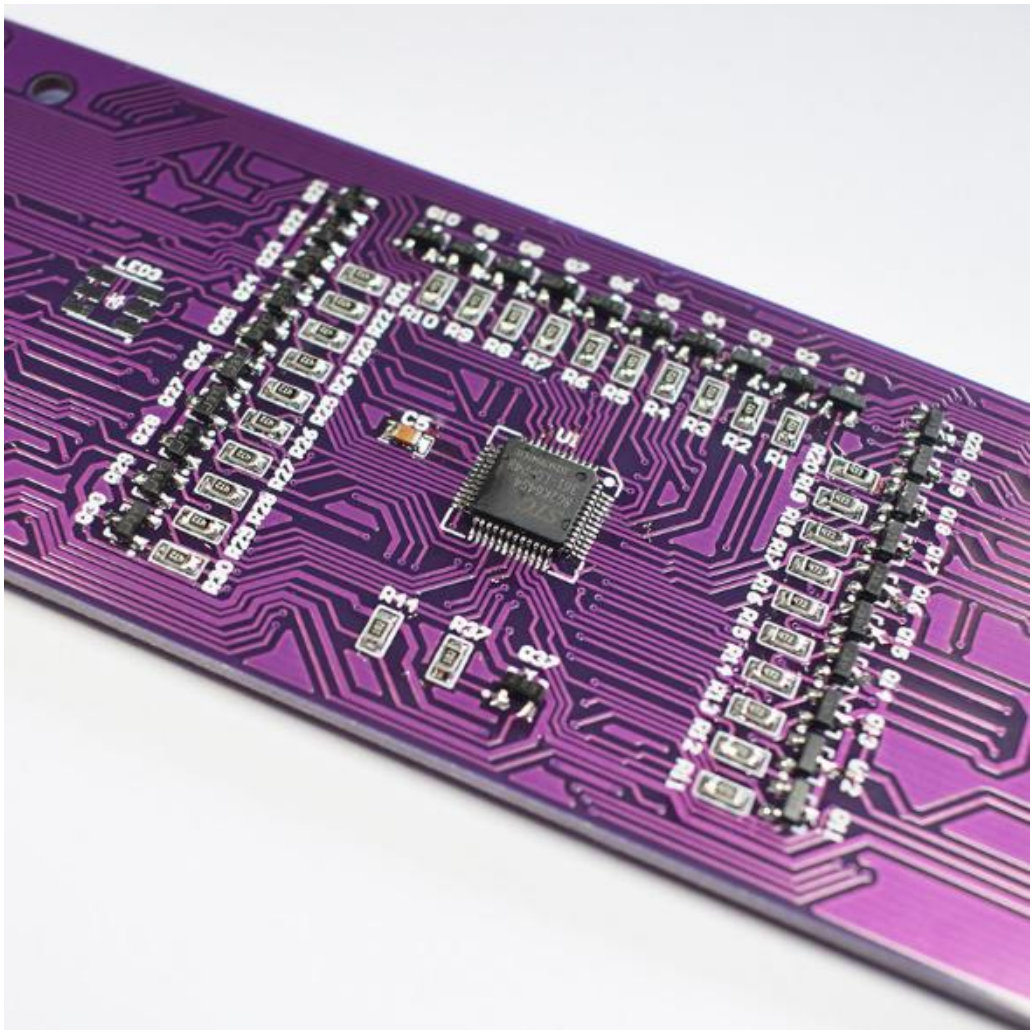
Note that R44 and R37 on the back of the PCB are also 1K resistors (102), and Q37 and Q38 are also 8550 transistors;



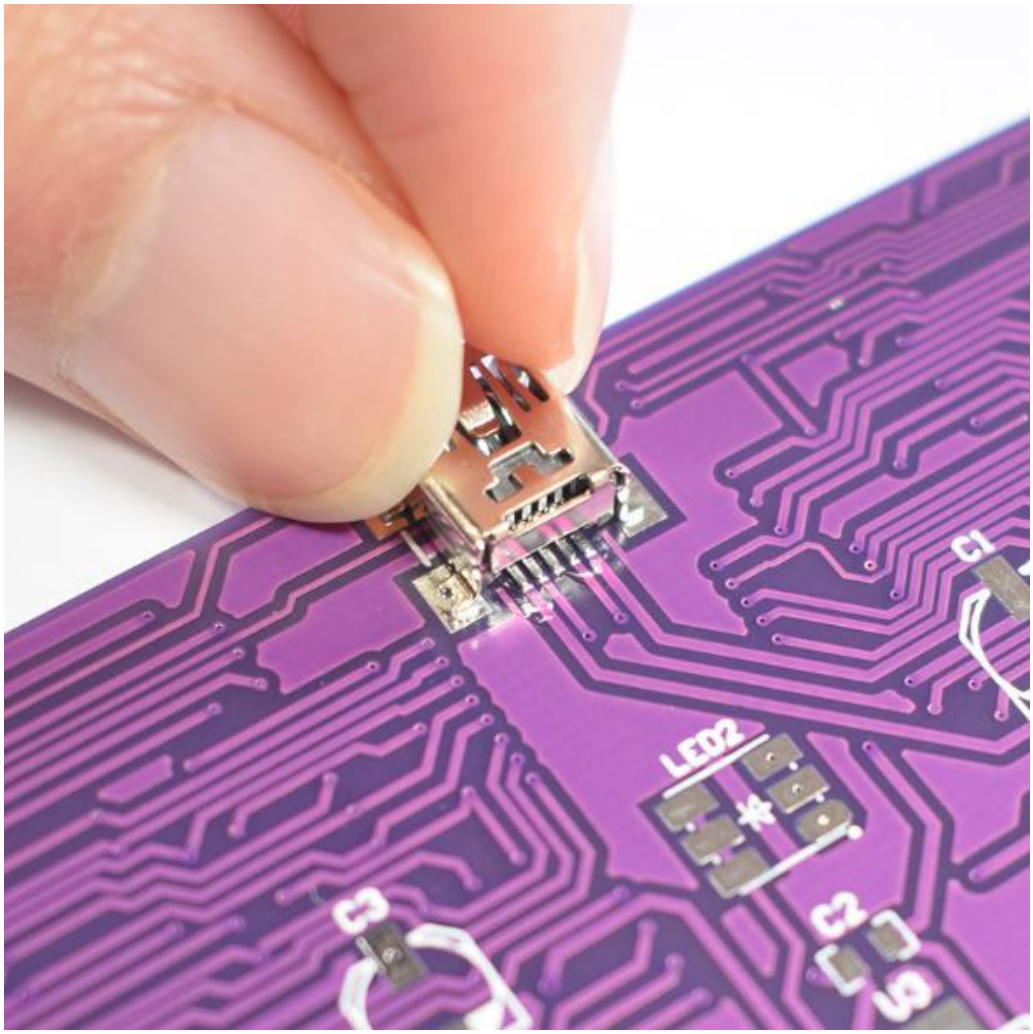
Then solder the U1 chip, pay attention to the U1 round hole corresponding to the

PCB package dot;

In addition, C2, C4, and C5 are 104-chip capacitors;

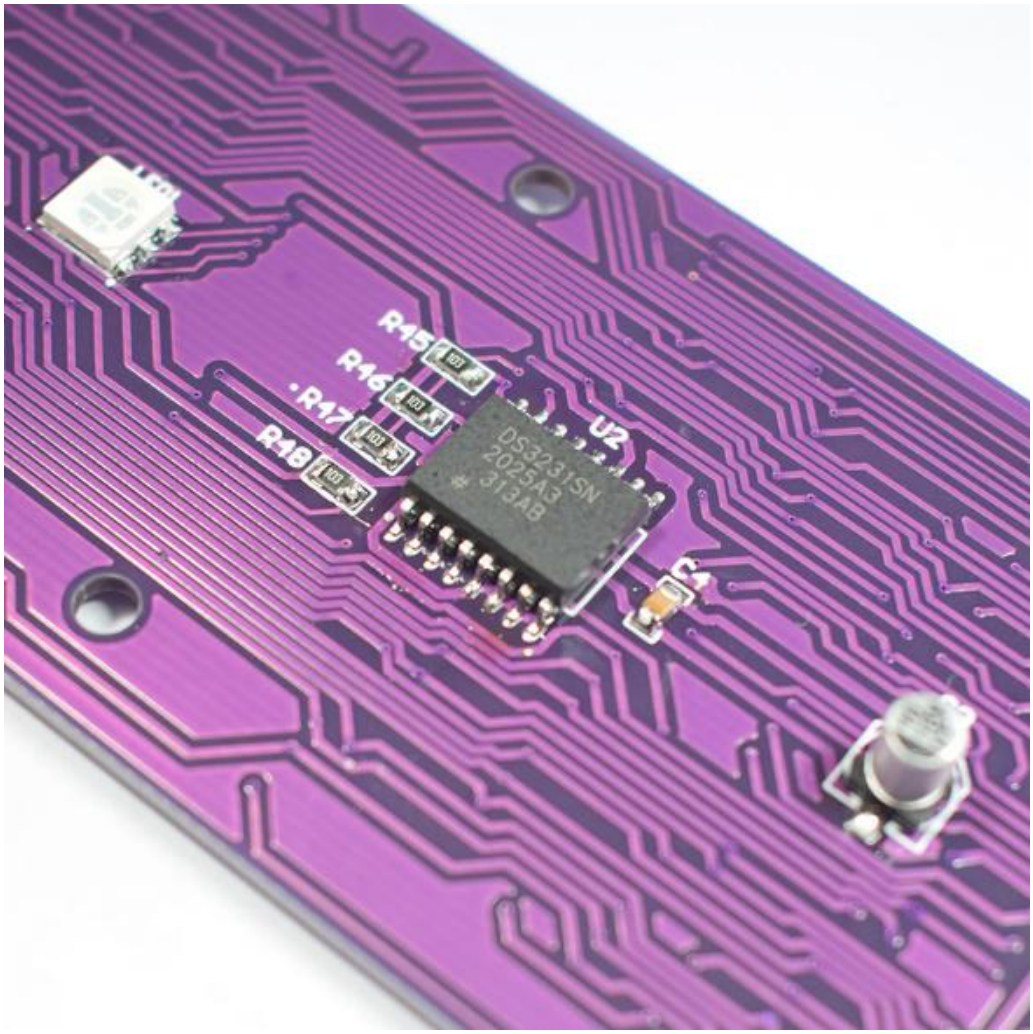


Q1-Q30 are 8050 transistors (long strips), R1-R30 are 4.7K resistors (472);

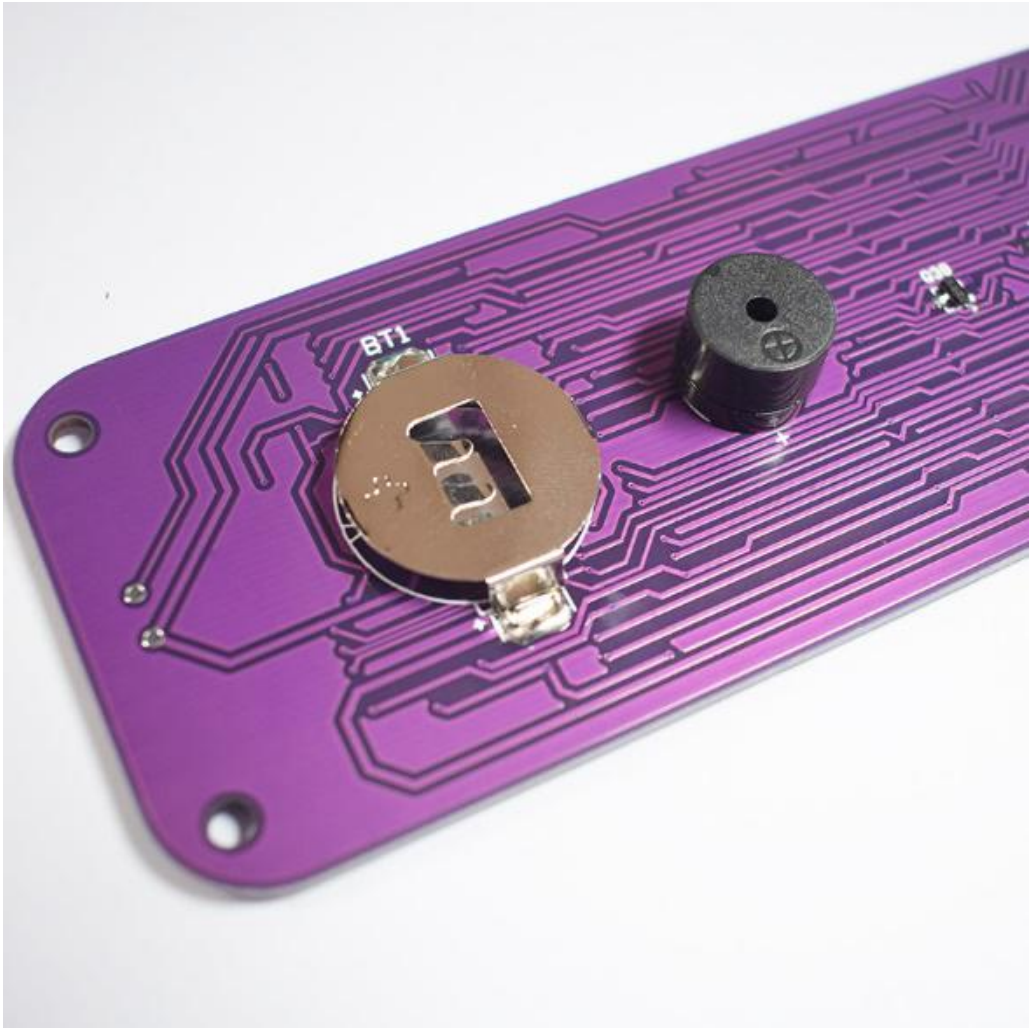


First apply solder on the 5 pins of the USB footprint, then put on the USB socket, and use an electric soldering iron to melt and fix the pins one by one (note that the USB pins cannot be glued together);

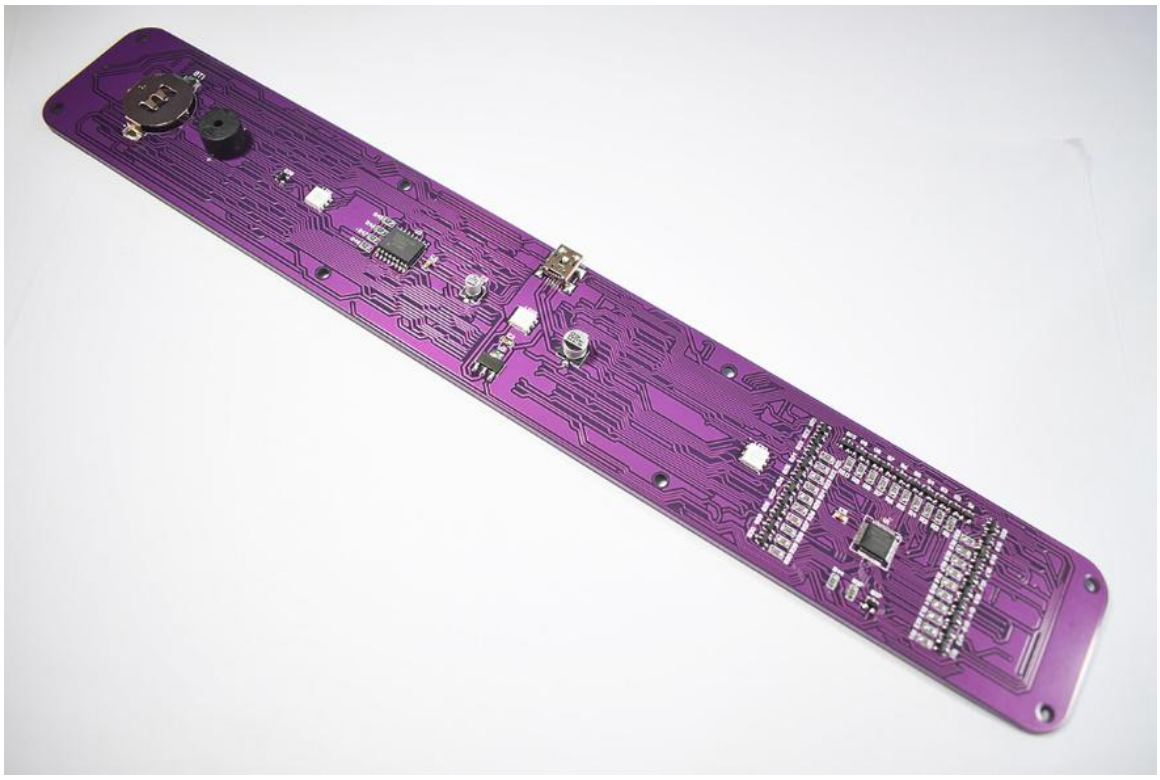
Pay attention to the positive and negative poles of the electrolytic capacitor;



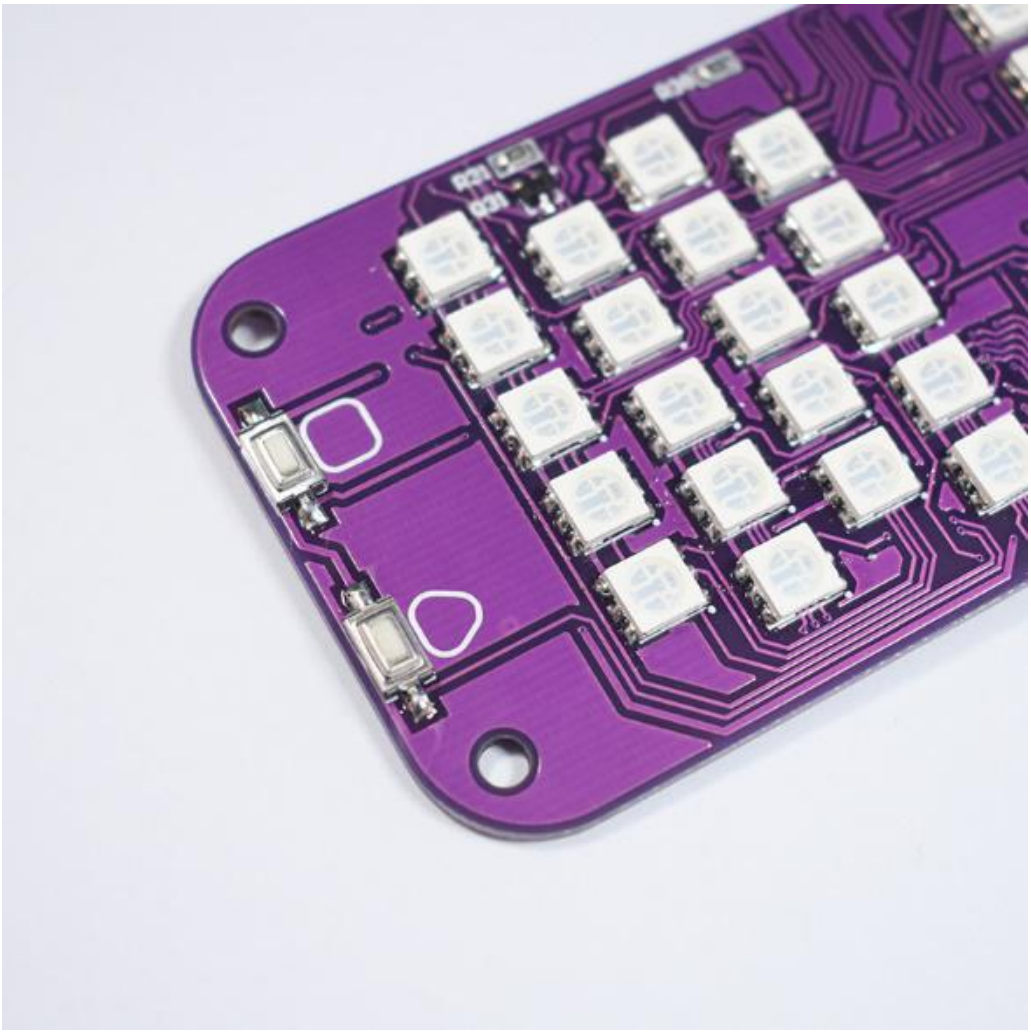
R45-R48 are 10K resistors (103);



Pay attention to the placement of the "+" character on the battery holder;

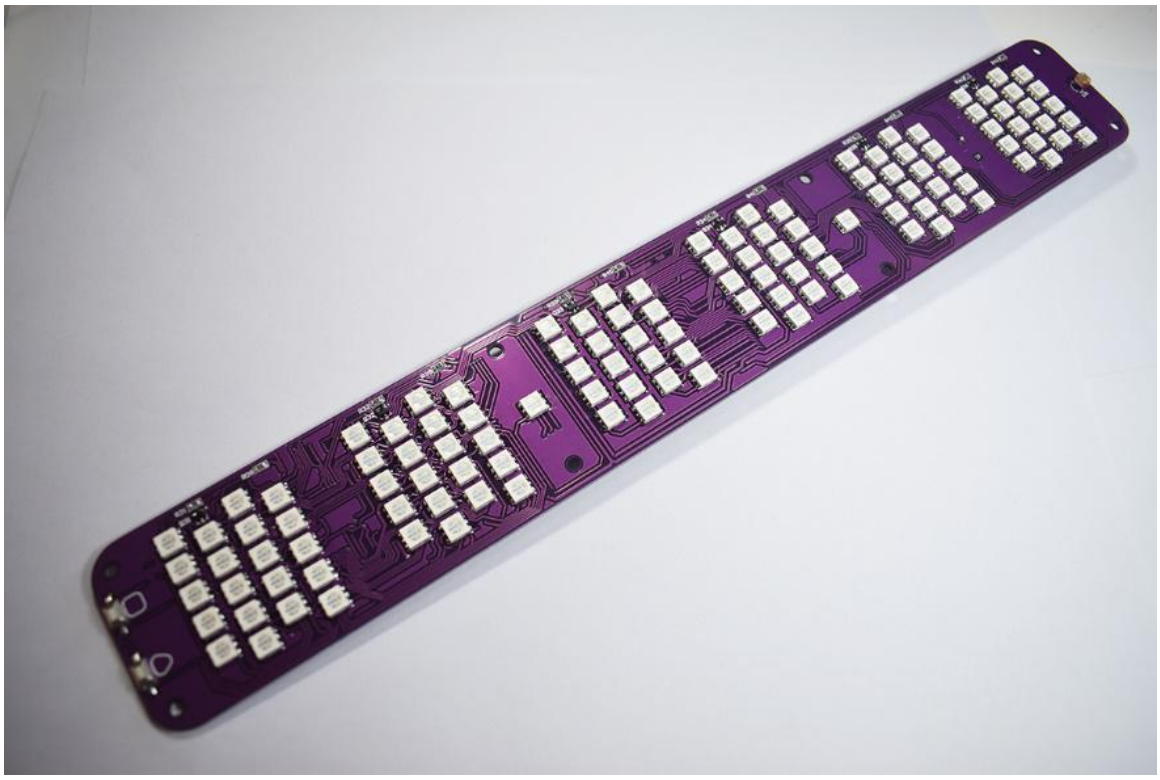


Check all components on the back of the PCB;



Patch button;

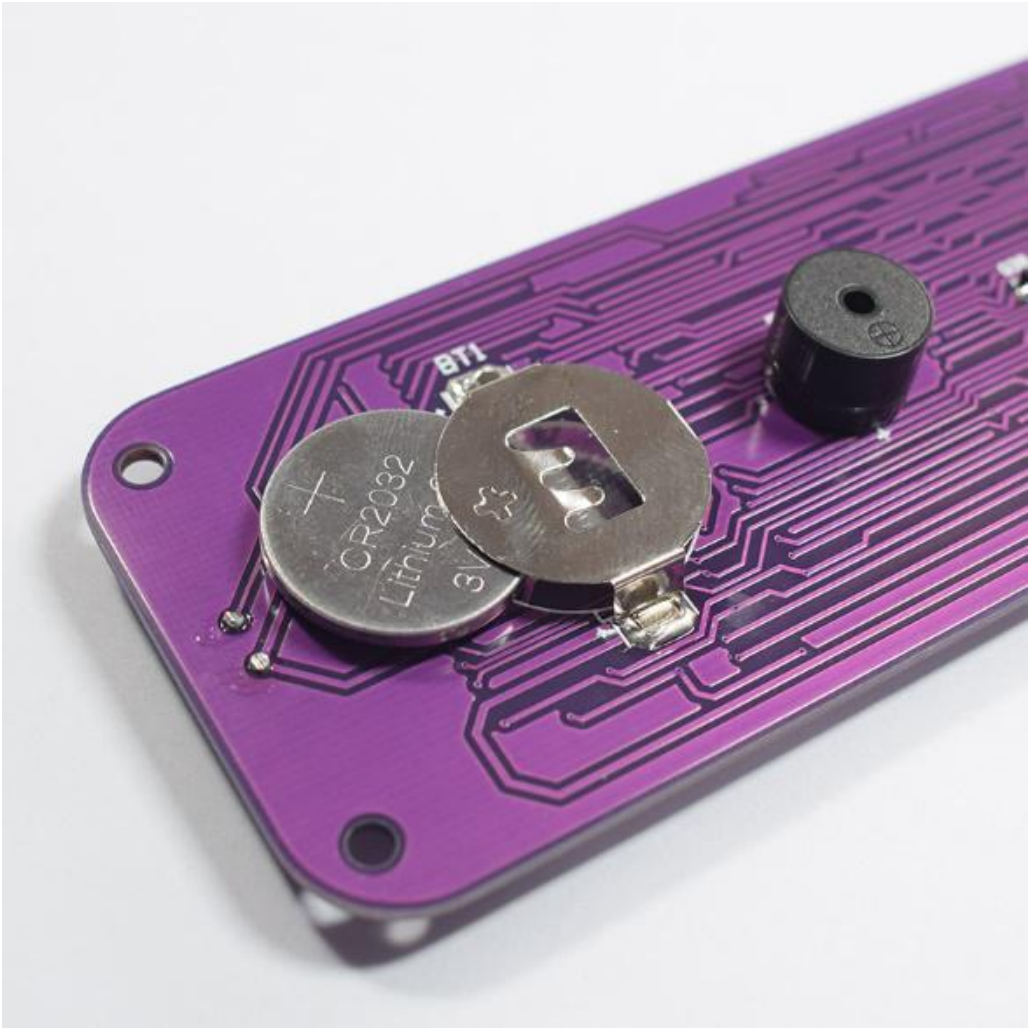
Photoresistance;



Check the components on the front of the PCB;

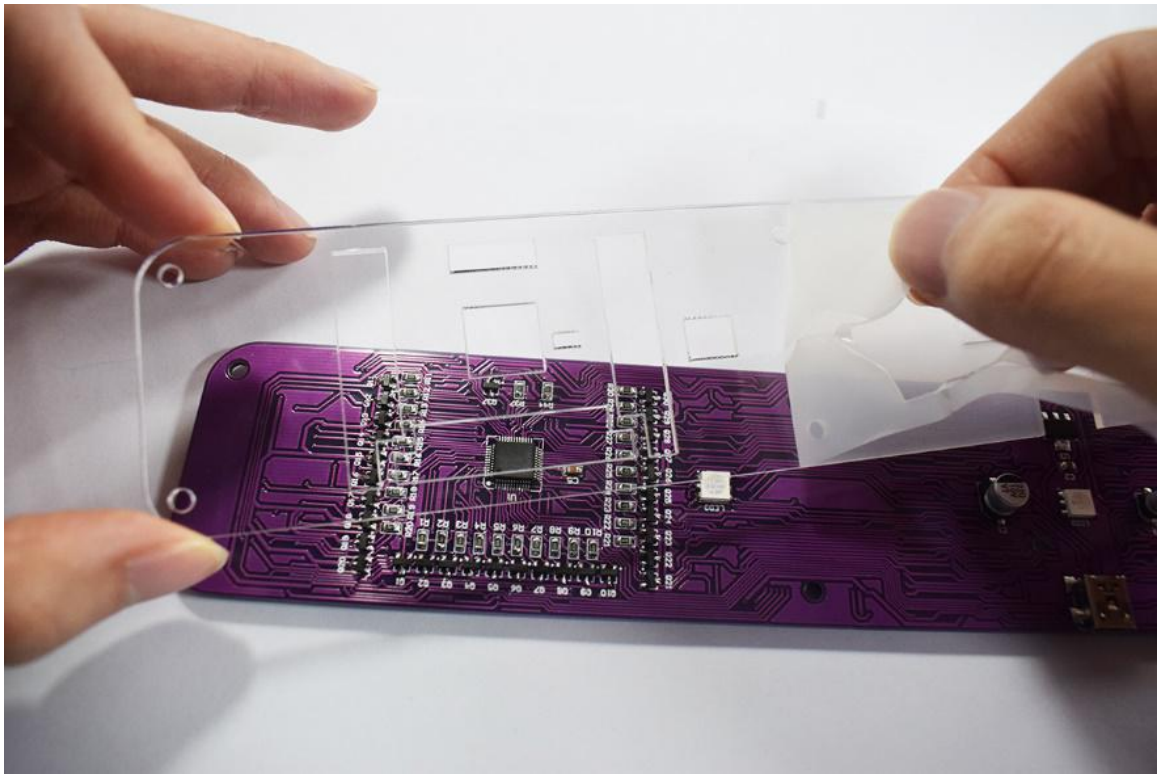
(Note: After soldering all devices, you can power on to test whether all functions are normal. Long press the selection menu 17 to check whether the LED is normal)

Assembling part:



Remember to put in the CR2032 battery;

The installation sequence of the acrylic board at the bottom of the PCB is placed from bottom to top as shown in the figure;

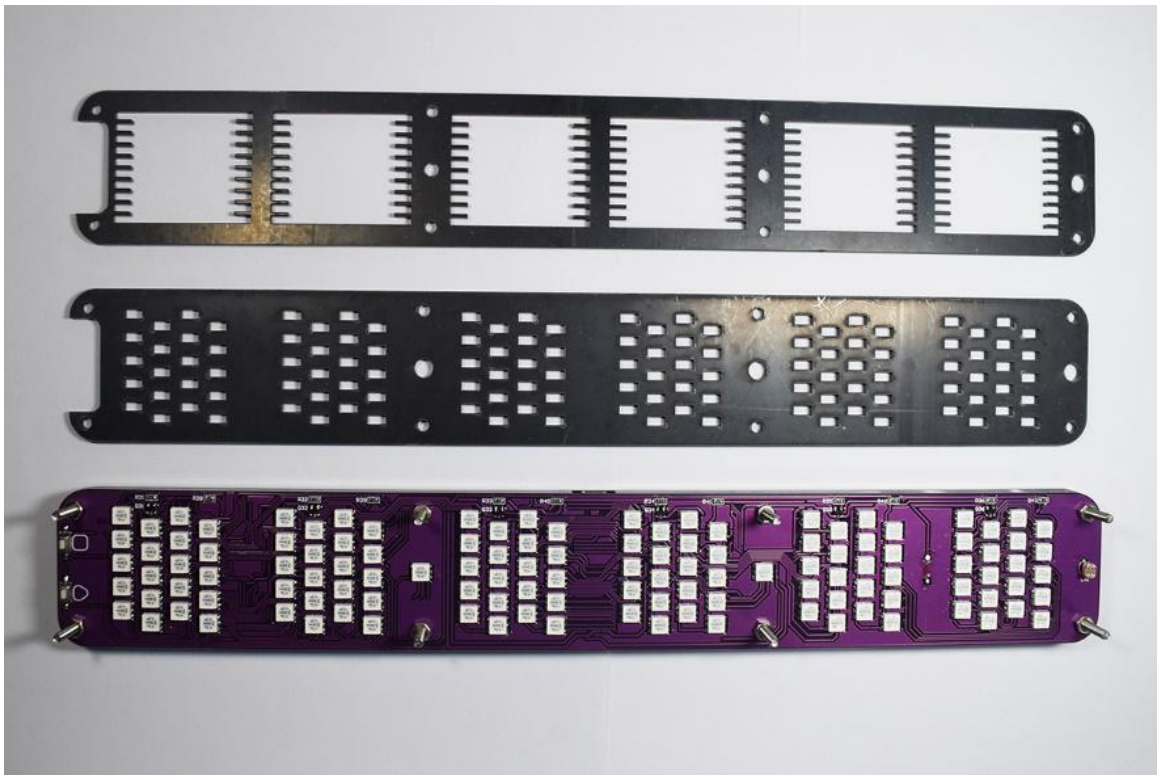


Tear off the film;

Put the black acrylic board at the end;

Put in hexagon socket screws;

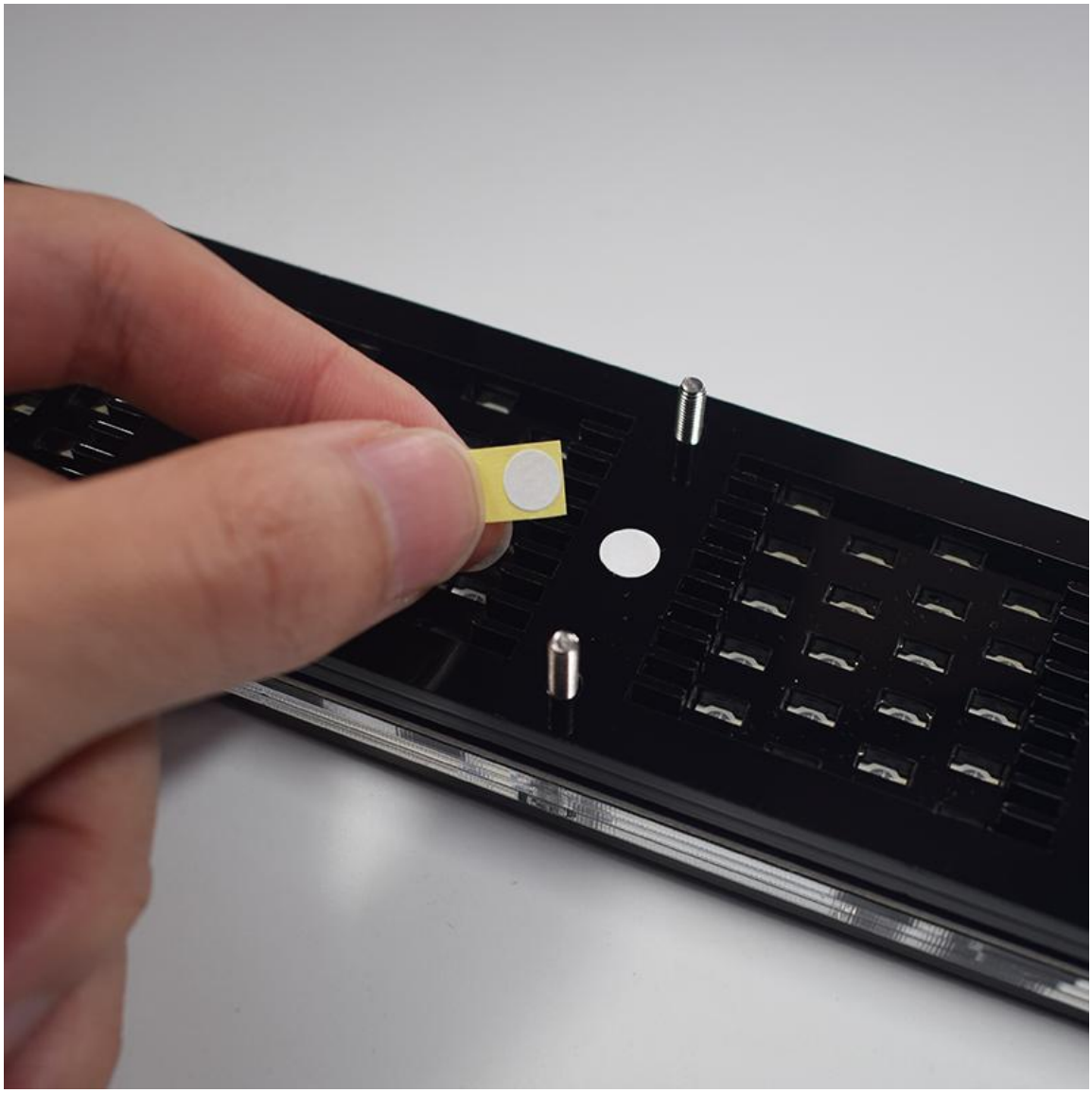
Fix the nut on the front of the PCB;



The placement sequence of the black acrylic board on the front of the PCB (pay special attention to the position of the LED on each square hole in the middle board);

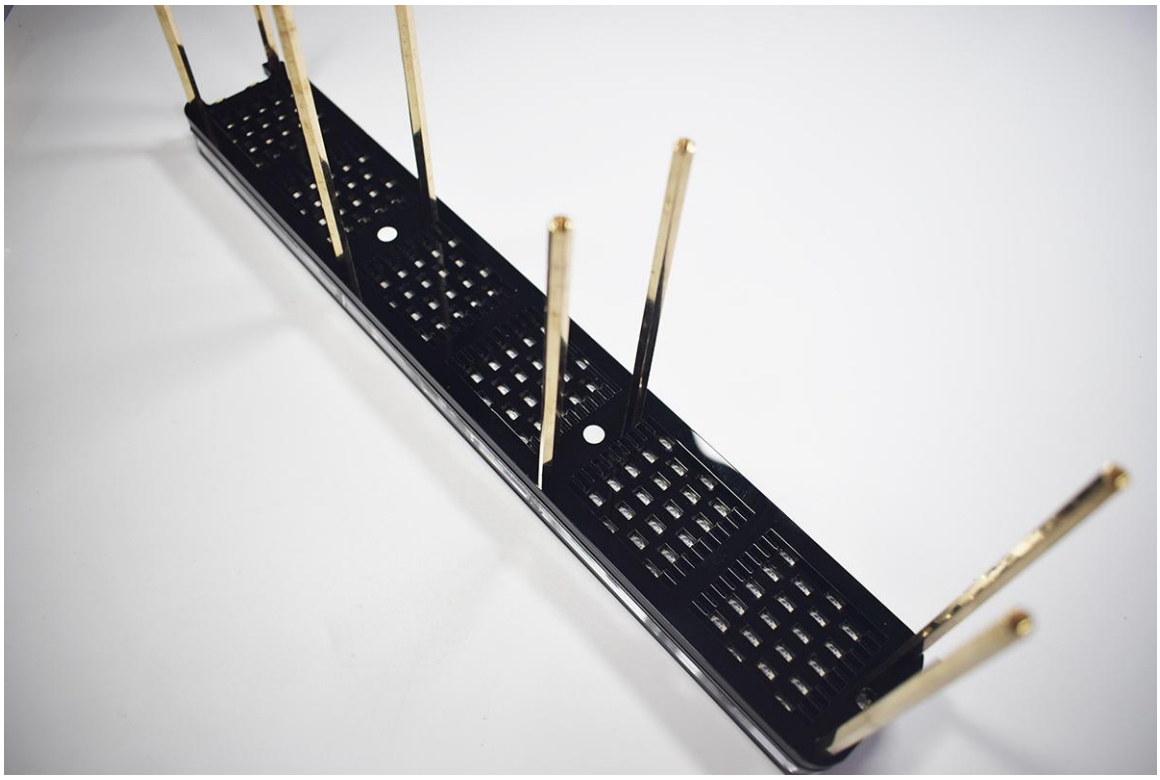
You can see that each LED is correct on the grid hole;

The second black acrylic board;

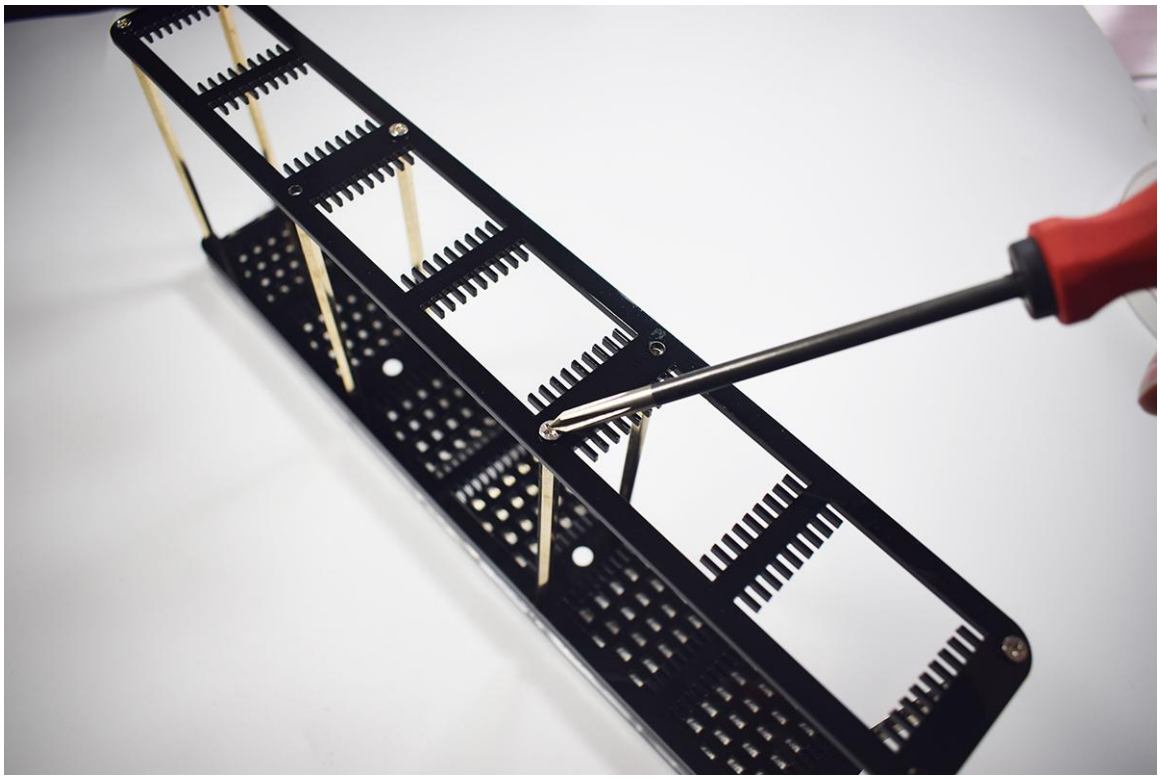


Attach the white sticker to the round hole.

Fixed-length copper pillars;

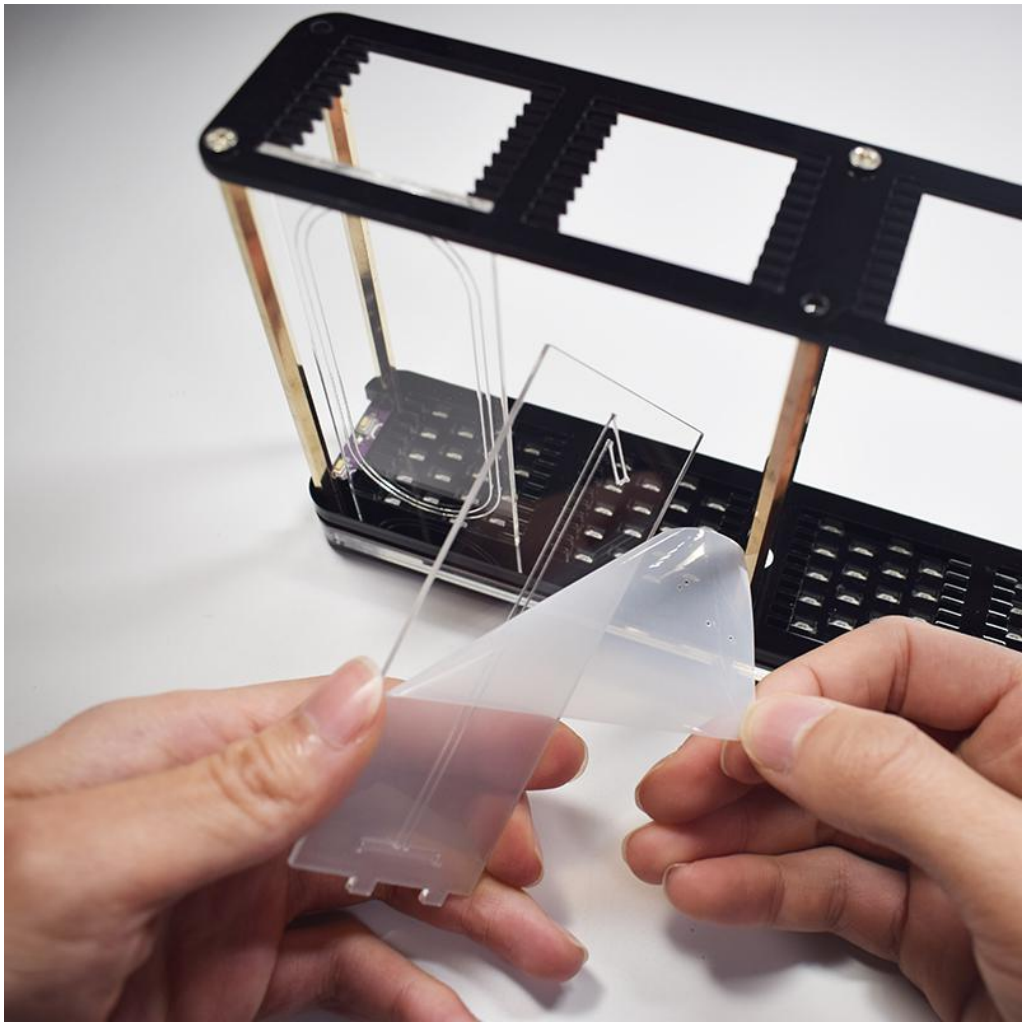


Fix 8 copper pillars;



First fix the black acrylic on the top with a few flat-head screws, and lay flat on the table;

Take out the digital acrylic board;



Remember to tear off the film;

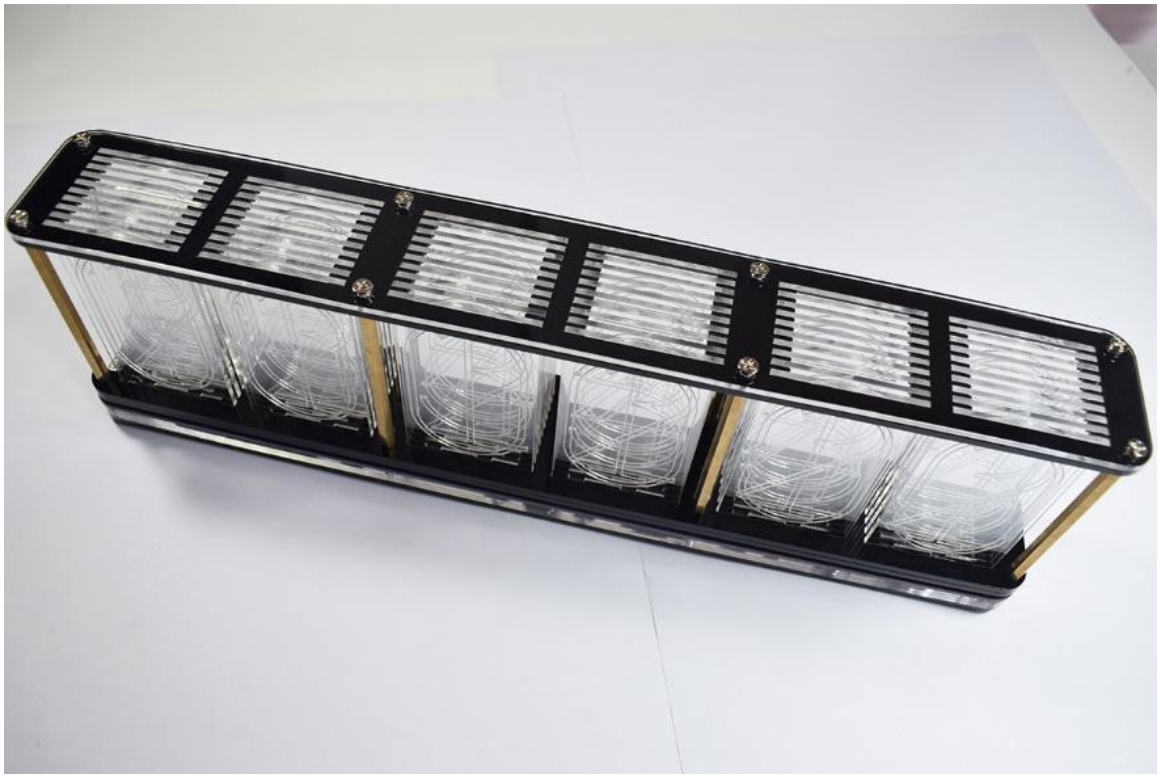
Insert corresponding to the grid hole below;

Placed in the order from 0-9;

By analogy, place 60 digital boards;

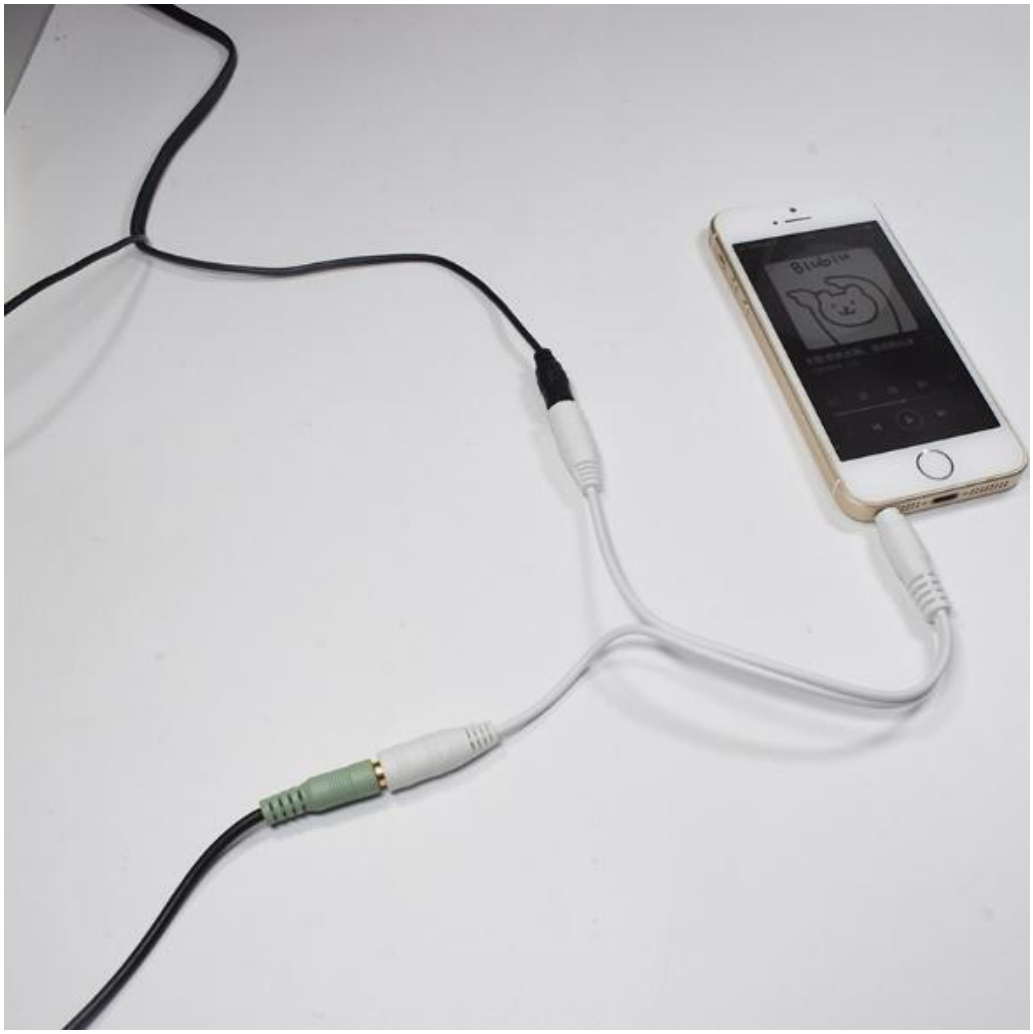
In order to prevent shaking, when installing the bottom transparent board, you need to remove a flat head screw first, and then fix a corner of the transparent board;

Similarly, carefully remove other flat-head screws to prevent the digital board from shaking;



Fix the top transparent board;

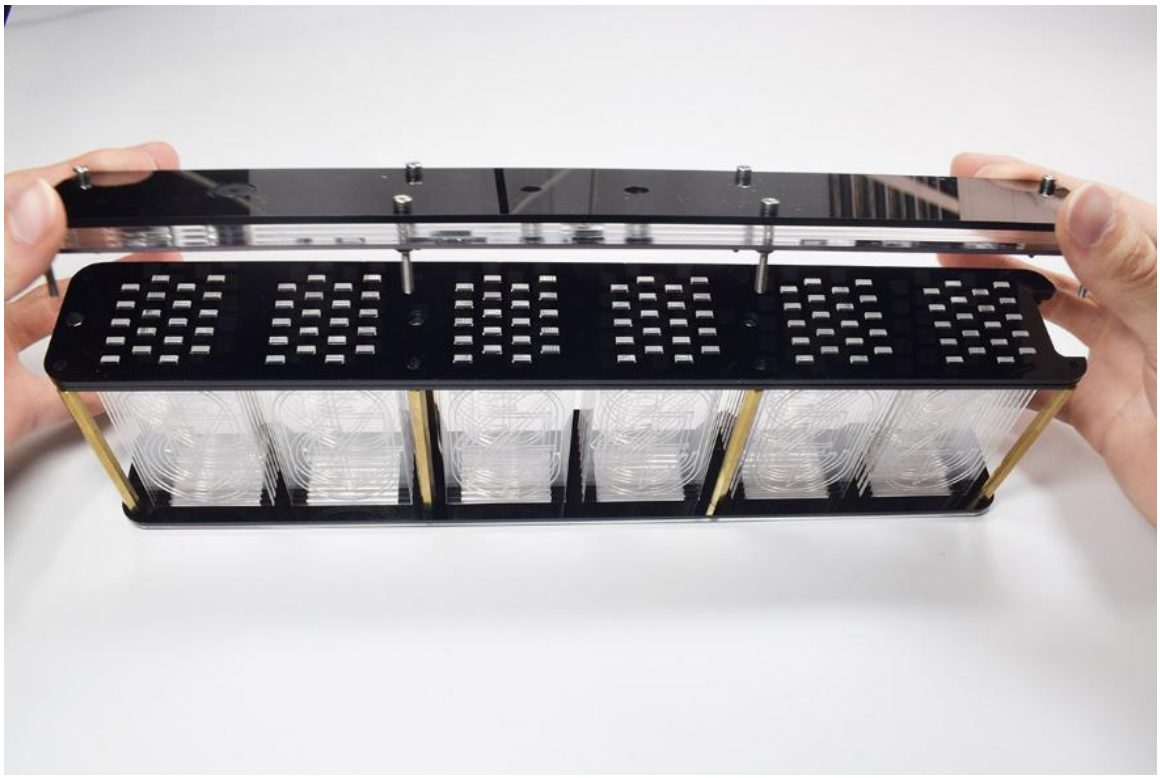
Display time effect after power-on;



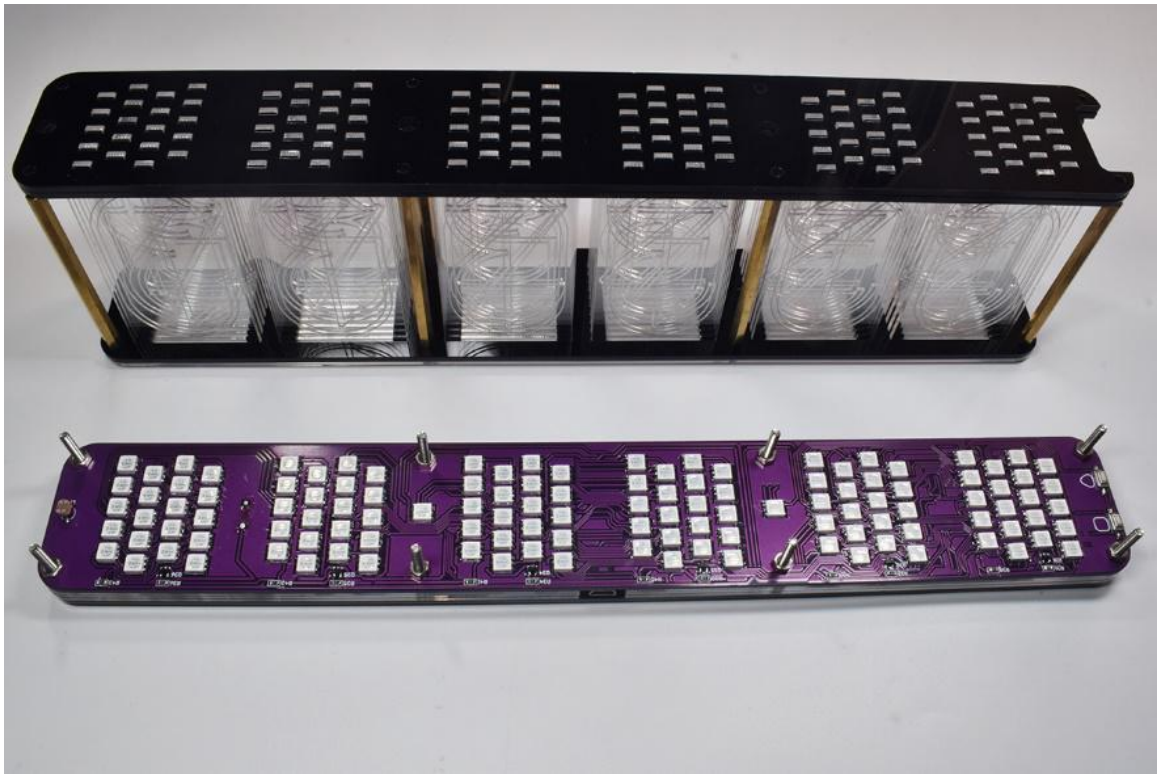
One-to-two 3mm wire connection method, the other side is connected to the 3mm plug of the speaker;

How to replace the button battery:

Put it upside down on a flat table first, and remove all hexagon socket screws with a screwdriver;



After removing all the hexagon socket screws, carefully remove the PCB part upward;



After replacing the button battery, be sure to loosen the 8 nuts of the PCB board

(first unscrew a part), then install it in the same way, and tighten the hexagon socket screws;

Under normal circumstances, the clock backup battery can be used for 5-6 years, so there is no need to worry about replacing the battery prematurely;

Functions:

Long press the switch button (triangular icon) to switch: **Clock Display Mode function** or **Music Spectrum Display Mode function**;

In "Clock Display Mode":

Short press the setting button (square icon) to pause or continue the color change;

Short press the switch button (triangular icon) to switch the color effect;

List of color effects:

1- Rainbow gradient effect;

2- Two grids of cold color gradient effect;

3- Aurora color gradient effect;

4- Two-frame rainbow gradient;

5- Full color gradient effect;

6- Two-cell Aurora color gradient effect

7- Cool aurora gradient effect;

8- Full-color same-color gradient effect;

9- Ruby gradient color effect;

10- Emerald gradient color effect;

11- Sapphire gradient color effect;

12- Gradient color effect from the middle to both sides;

13- Gradient color effect from both sides to the middle;

14- Display custom colors (38 custom colors are optional);

1: Long press the setting key (square icon) to enter or exit the menu;

2: Short touch the switch key (triangular icon) to switch: **[number 0]** time setting-**[number 1]** date setting-**[number 2]** alarm setting-**[number 3]** format setting-**[number 4]** switching effect selection-**[Number 5]** Switching duration setting-**[Number 6]** Base bottom LED effect selection-**[Number 7]** Switch automatic dimming function-**[Number 8]** Switch button wake-up function-**[Number 9]** Custom number color-**[Number 10]** Set the whole Point reminder and half-point conversion effect-**[Number 11]** Set the second digital conversion effect-**[Number 12]** Countdown function-**[Number 13]** Stopwatch function-**[Number 14]** Set the color gradient speed-**[Number 15]** Time separation point LED effect -**[Number 16]** Set the countdown and alarm ringtone-**[Number 17]** Test the quality of the LED.

Short press the setting key (square icon) to enter the setting, and then use the switch key (triangular icon) to modify the parameter value.

Clock mode parameter setting:

【Number 0】 Time setting:

Switch key (triangular icon) to modify the flashing parameter value, set key (square icon) to confirm the modification;

【Number 1】 Date setting:

The modification sequence is: year-month-day;

[Number 2] Alarm clock:

1- Turn on the alarm and enter the alarm time setting; 0- Turn off the alarm; (Note: the alarm ringtone is set in menu 16)

[Number 3] Format setting (Format):

[0] (Hour format): 24-24 hour system mode; 12-12 hour system mode.

[1]: (Date format): 12-31: month-day mode; 31-12: day-month mode.

[2]: (temperature format): Celsius and Fahrenheit;

[Number 4] Switching effect selection:

0-[Only time display];

1- Sweeping effect from left to right;

2- Overall sweeping effect;

3- The effect of lighting up one by one from the middle to both sides;

4- Light up the effect one by one from left to right;

5- Random sweep effect;

6-Sweeping effect from the middle to both sides;

(Note: the order of switching display is: time-temperature-date week)

[Number 5] Switching duration setting:

(10) Switch every -10 seconds;

(30) Switch every -30 seconds;

(60) Switch once in -60 seconds;

(5min) Switch every 5 minutes;

(10min) Switch once every -10 minutes;

(15min) Switch every 15 minutes;

(30min) Switch every -30 minutes;

(60min) Switch every -60 minutes;

[Number 6] Base bottom LED effect selection:

0-Turn off the bottom LED effect;

1- Three different color gradients;

2- Button Fading effect lights;;

3- Three different cool colors with gradient;

4- Candlelight color effect;

5- Three different aurora color gradients;

[Number 7] Switch automatic dimming function:

0- Turn off dark mode;

1- Turn on the automatic dark mode (when the ambient light is detected to be dark,

it will automatically enter the dark yellow light and low brightness mode);

[Number 8] Turn on the button wake-up function:

0- Turn off the button wake-up function;

1- Turn on the button wake-up function (press any button to wake up the display);

[Number 9] Customize the color of the number:

Switch key (triangular icon) to modify the color value of the flashing number (38 colors in total), set key (square icon) to modify the color and enter to set the color setting of the next number;

[Number 10] Set the conversion effect of the whole point and half point:

0-[No conversion effect];

1- Sweeping effect;

2- Fading effect;

3- Mixing effect (the whole point enters the sweeping effect, the half point enters the fade effect);

[Number 11] Set the digital conversion effect of seconds:

0-[No transformation effect];

1- Digital progressive effect;

2- Digital breathing effect;

3- Mixed effect (automatically switch every day);

【Number 12】 Countdown function:

Enter the minutes and seconds, press the set button (square icon) to start the countdown, the bell will play automatically when the countdown ends, and press any button to exit the countdown; (Note: the remind ringtone is set in menu 16)

【Number 13】 Stopwatch function:

Press the switch button (triangular icon) to start timing, press again to pause timing, and press again to reset the timer (maximum timing is 99 minutes, 60 seconds, and 990 milliseconds).

Switch key function cycle: start timing-pause timing-timing reset;

Press the set button (square icon) to exit the stopwatch function;

[Number 14] Set the color gradient speed:

Seven level settings 1-7: from fast to slow;

[Number 15] Set the time division point LED effect

0- Turn off the split point LED effect;

1- Rainbow gradient effect;

2- Aurora color gradient effect;

3- Left and right gradient effect

4- Breathing mode;

5- Lighting mode per second;

[Number 16] Set countdown and alarm ringtone

0- know or not;

1- Sky City;

2- Canon;

3- Kikujiro's summer;

4- Spirited Away

5- It's windy

6- Lemon

7- Wonderful U

[Number 17] Test the quality of LED:

Press the switch key (triangular icon) to switch the test color, a total of three colors of red, green and blue are tested.

Press the set key (square icon) to exit the test.

In "Music Spectrum Display Mode":

Long press the setting key (square icon) to enter the music spectrum gain setting, you can choose different gain effects of **1-5 levels** according to different playback devices;

Short press the switch key (triangular icon) to switch between different color gradient effects;

List of music spectrum bounce effects:

1- Rainbow color without peak spectrum effect;

2- Red and blue transition color spectrum effect;

3- Blue-yellow transition color spectrum effect;

4- The spectrum effect of the apex of the yellow-blue belt;

5- Blue-red band apex spectrum effect;

6- Purple-green band apex spectrum effect;

7- Rainbow color gradient single-point spectrum effect;

8- The single-vertex spectrum effect of the same color gradient;

9- Aurora color gradient single vertex spectrum effect;

10- Inverted blue-yellow transition color spectrum effect;

11- Inverted yellow-green transition color spectrum effect;

12- Inverted red-yellow transition color spectrum effect;

13- Left and right rainbow color gradient spectrum effect;

14- The left and right aurora color gradient spectrum effect;

15- All the same color gradient spectrum effect;

To enter the music spectrum mode, you need to use a one-to-two 3mm audio interface cable to connect to the music playback device (mobile phone, speaker, MP3 player, etc.). And it can display the music spectrum bounce effect.