

## DIY Manual for iCubeSmart 3D8RGB

Dear friends, thank you for choosing our electronic DIY suite! We recommend that users first read through the overall installation process and then start to install step by step, so as to avoid errors. During installation, if you have any question, or lose or damage any part, contact us directly!

**E-mail address:** [iCubeSmart@gmail.com](mailto:iCubeSmart@gmail.com)

Before installation, please pay attention to such considerations as follows:

1. Never use battery or power supply to test LED directly. Otherwise, it will burn out directly because the voltage is 2V for the red LED.
2. During welding, ground the soldering iron as reliably as possible to avoid LED burnout due to leakage of the soldering iron.
3. If doubtful, please email us. Our professional technicians will answer your question about installation. We provide lifelong technical support services for DIY products.
4. There is a link to the Google disk available on the page for our product description. The data package includes the installation video, high-definition pictures, etc. Moreover, you can also get the latest electronic materials on our website [www.icubessmart.com](http://www.icubessmart.com)

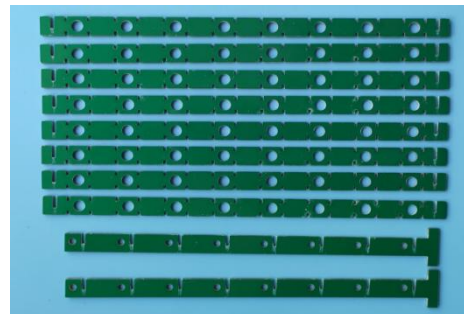
**The suite contains such accessories as follows:**

Welded and tested mainboard	x 1
Core board(Yellow board)	x 1
5mm RGB LED	x 550
Welding support (10 green PCBs)	x 1
Type-C cable	x 1
20cm-long fine tinned iron wire	x 300
White electronic wire	x 1
Red and black wire	x 1

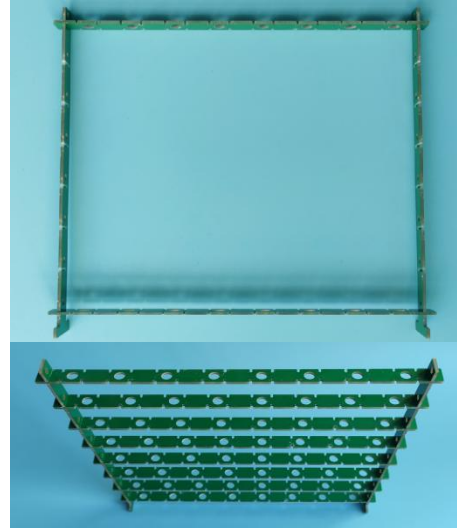
**The DIY installation is detailed as follows:**

**Step 1:** Install the LED welding support.

The LED welding support consists of 8 horizontal PCBs and 2 vertical PCBs.

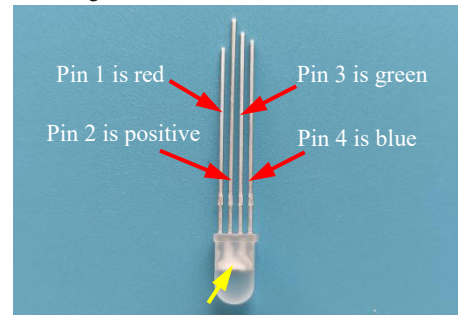


As shown in the following figure, install the horizontal and vertical PCBs in a crisscross manner through the notches on the PCB.

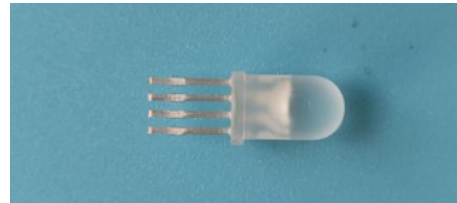


**Step 2:** Bend the LED, as shown in the figure below; the LEDs share the same positive pole (Pin 2 is positive – the longest pin or the largest metal block in the lamp bead as the yellow arrow shows).

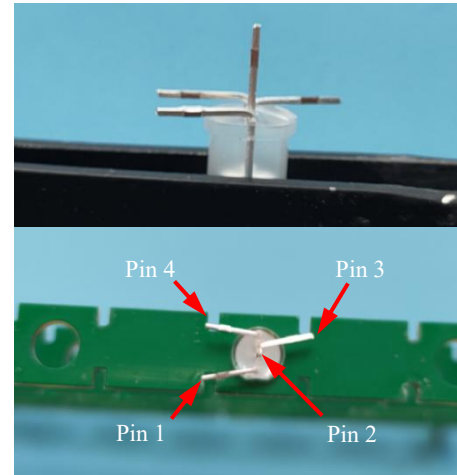
Pin 1 is red negative, Pin 3 is green negative, and Pin 4 is blue negative.



Cut the metal pins of the LED short to about 6mm.



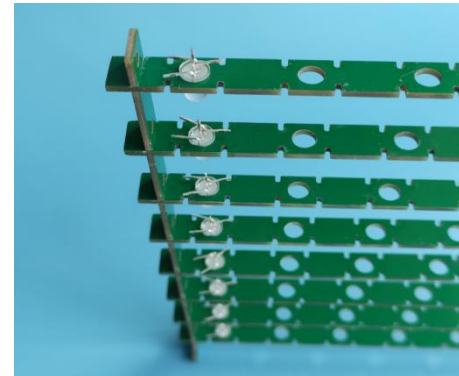
Clamp the lamp bead onto the welding support and bend the pins (1, 3 and 4) respectively into the support notches.



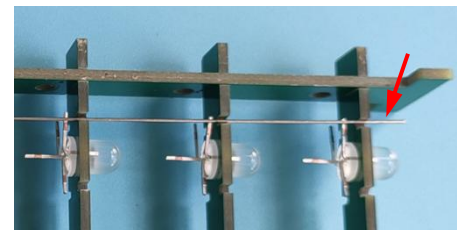
The 3D8RGB LED CUBE uses 512 LEDs; only 512 lamp beads need to be bent; the rest are spare LEDs.

**Step 3:** Weld LED lamp beads.

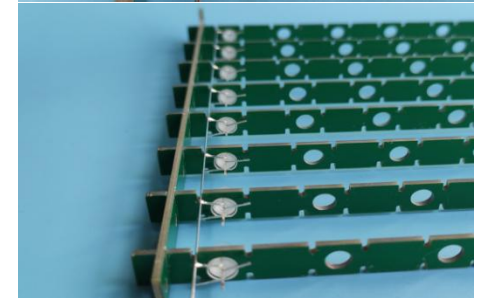
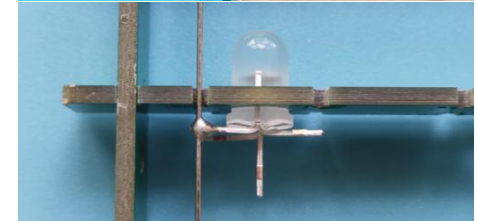
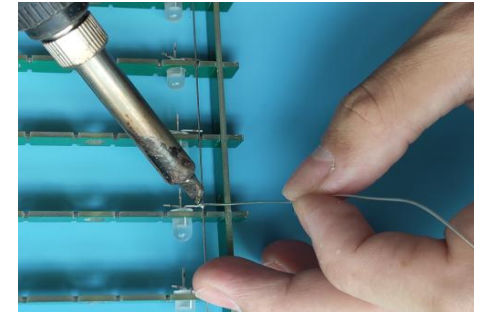
As shown in the figure below, place a vertical row of 8 LEDs on the welding support.



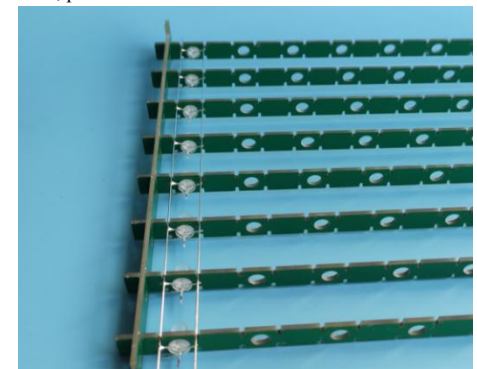
Then, lay the welding support flat on the table. As shown in the figure below, place a tinned iron wire in the notches of the welding support. Note: The iron wire at the arrow can only go beyond the PCB by 5mm at most. Otherwise, the welding support cannot be placed flat when it is erected.



Weld the 8 LED lamp pins with the tinned iron wire.



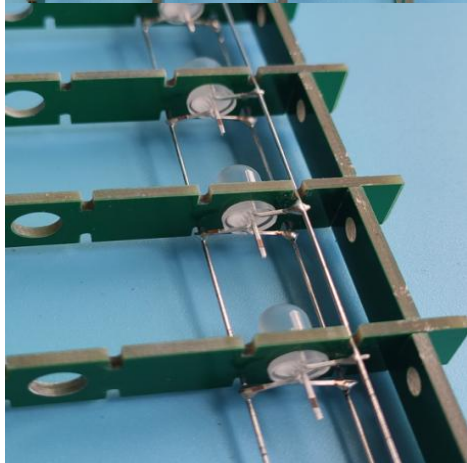
Next, place the second tinned wire and weld it.







Turn the welding support over and weld the third tinned wire.



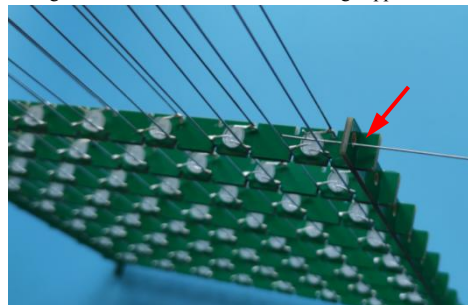
Place 8 LEDs in the second row and weld 3 tinned wires as mentioned above.



Do the same for the 8 vertical bar LEDs.



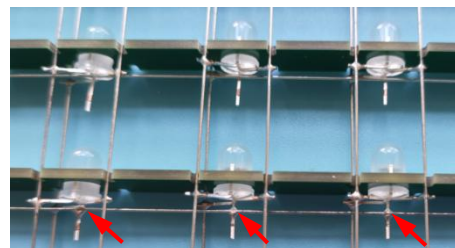
After welding the 8 vertical LEDs, pass a tinned wire through the hole on the side of the welding support.



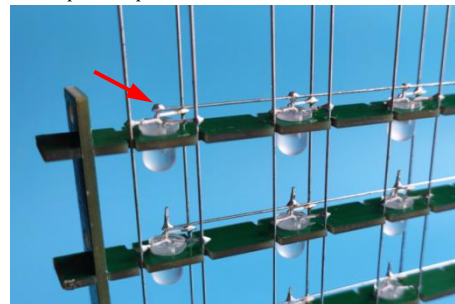
Place a tinned wire respectively across the upper and lower 8 rows of holes.



Weld the tinned wire with the positive pin of each lamp bead.



Weld 8 tinned iron wires with 64 LEDs respectively. Then cut off the excess wire on both sides and the excess positive pin.

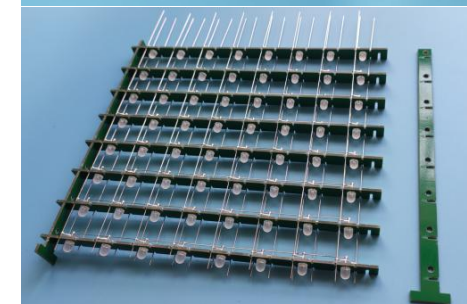


So far, one LED bead strip has been welded.

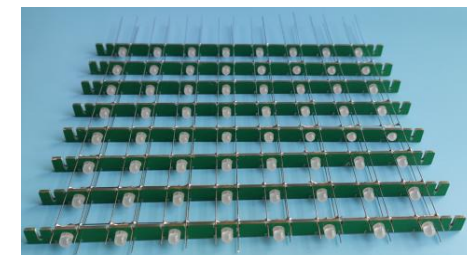
**Step 4:** Remove the LED welding support.

Carefully separate the horizontal welding support from the vertical one slowly.

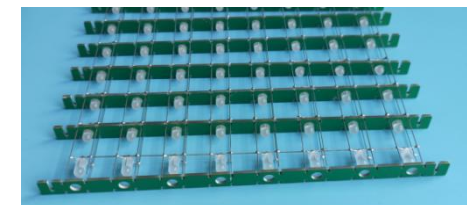
Note: Take care to separate them bit by bit slowly. Never pull out one of them too fast; otherwise, the tinned wire will get bent.



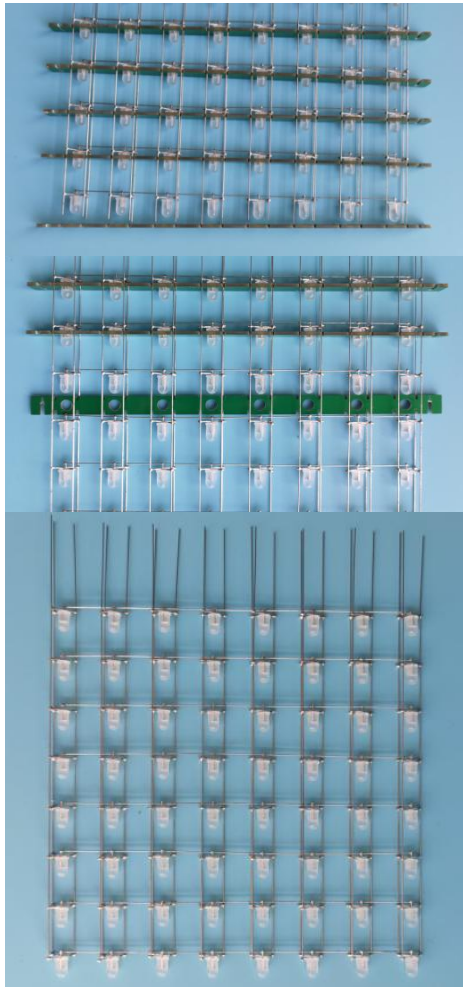
Separate the vertical support on the other side from the horizontal one.



Next, pull away the horizontal welding support beams from the LEDs.



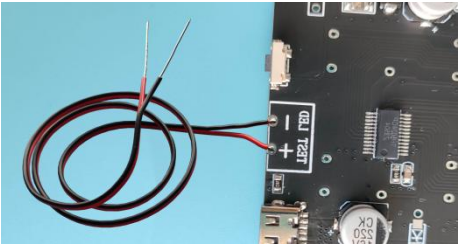




Now, one LED strip has been welded. Repeat the previous steps (1 - 4) to weld 7 more LED strips.

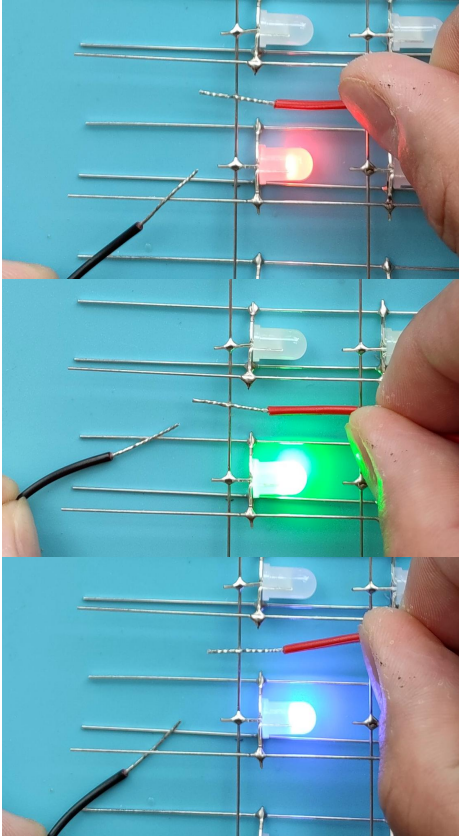
**Step 5: Test the LED.**

Weld the red and black wires on the “TEST LED” test pad on the mainboard as shown in the figure below.

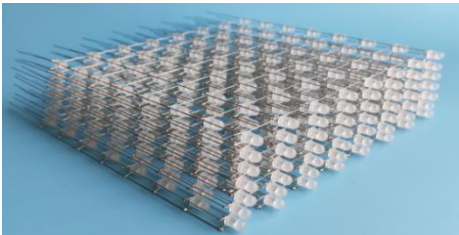


Touch the red line with the horizontal wire of the LED positive pole, and the black line with the vertical wire of the LED red negative pole, green negative pole, and blue negative pole to light the red, green, and blue lamps respectively.

Test the red, green, and blue of the 64 lamp beads respectively in the same way. If any of them are dark, or if multiple colors light up at the same time, it needs to be repaired before proceeding with the next step.



Weld and test 8 LED strips. Make sure that each strip works properly, since it is harder to repair after welded together.

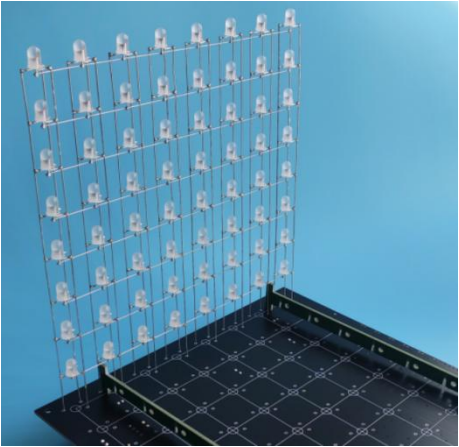


**Step 6: Fit the LED cube.**

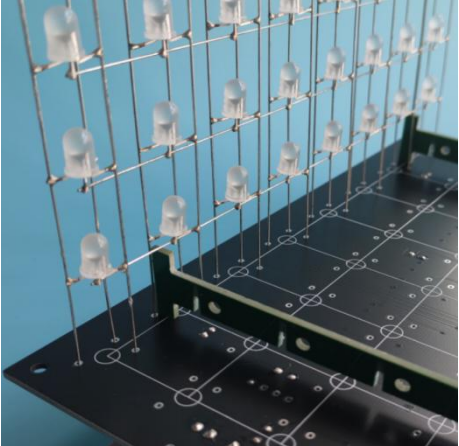
Prepare 16 tinned iron wires, marking them once every 22mm. These will be used later to reinforce the LED strips from shaking.



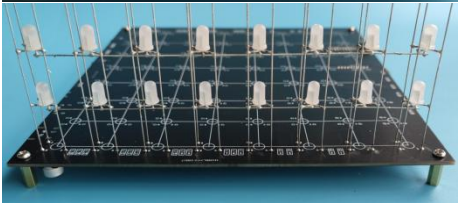
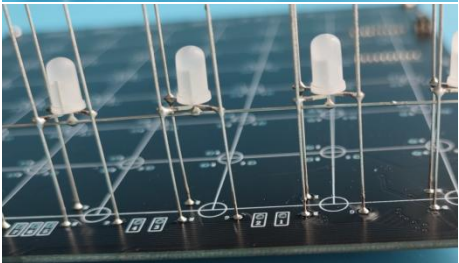
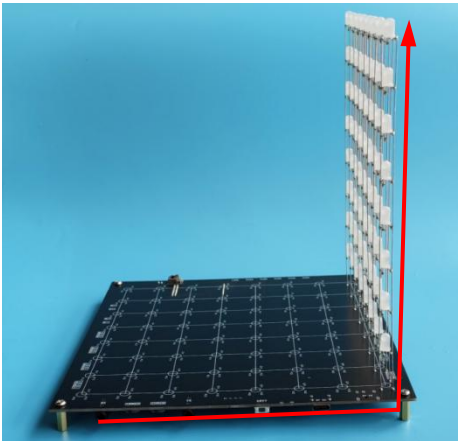
Insert a welded lamp bead strip into the hole on the mainboard.



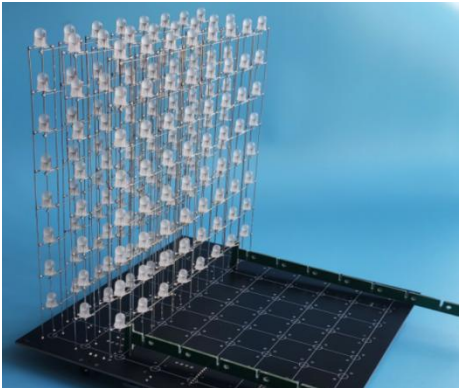
Insert the LED tinned wire pin into the mainboard as deep as shown in the figure below, resting on top of the vertical welding support.



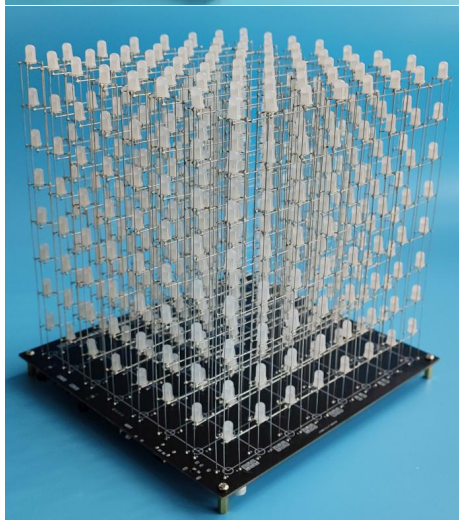
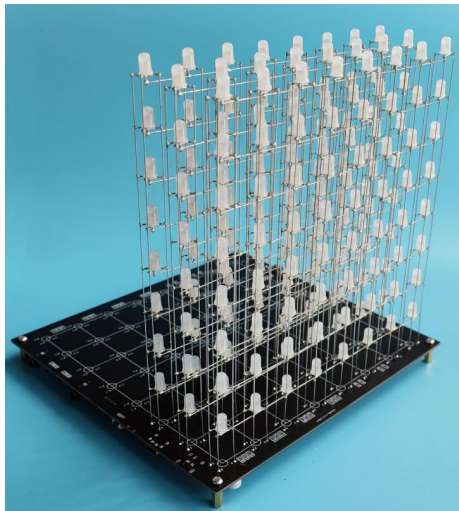
After confirming that the LED lamp strip is made perpendicular to the mainboard, weld the tinned iron wire inserted into the mainboard.



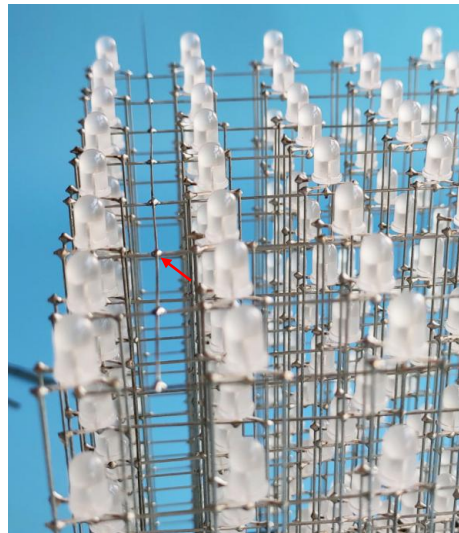
Then insert the remaining 7 LED strips in the same way. Note: Make sure that each LED strip is inserted perpendicularly to the mainboard at 90 degrees.



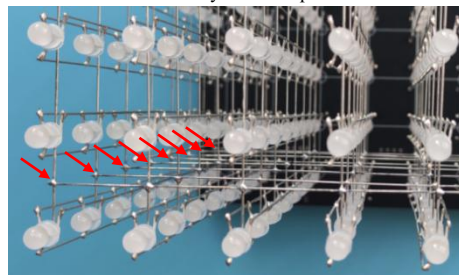




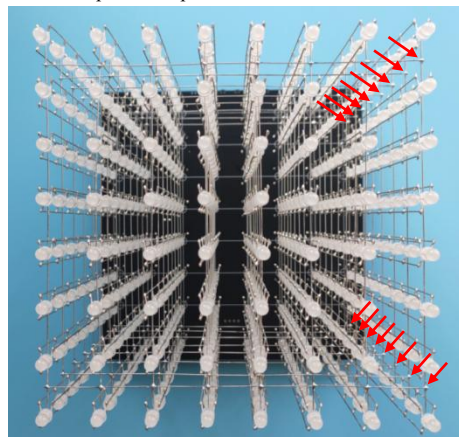
**Step 7:** After the 8 lamp strips have been soldered to the board, weld the tinned iron wires prepared earlier on the 8 tinned iron wires as shown in the figure below as marked once every 22mm.



Weld one wire on each layer from top to bottom.

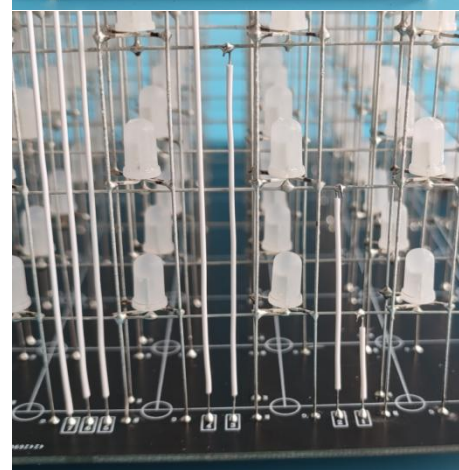
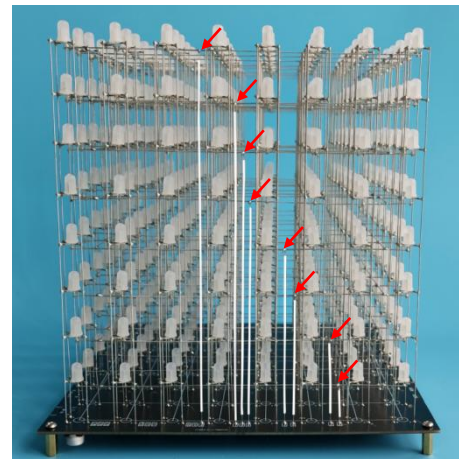


As shown in the figure below, weld 8 tinned iron wires respectively on both sides. The tinned iron wires are welded not only to make the LED CUBE more strong, but also to power the positive electrode.

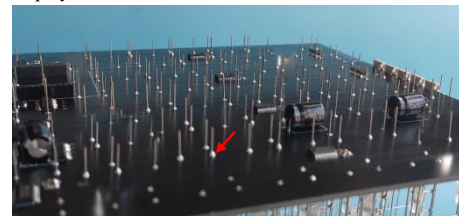


**Step 8:** Weld the white cables.

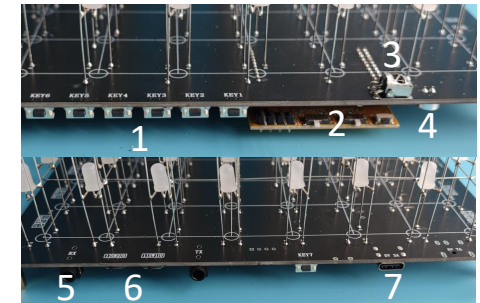
As shown in the figure below, weld the 8 tinned iron wires from top to bottom to the 8 holes on the mainboard with white cables.



After this step, the LED CUBE should work properly. You can trim off the excess LED pins underneath the mainboard to make it smooth. Turn on the power supply (5V) and the built-in 3D dynamic effects can be displayed.



**Function introduction:**



1. KEY1-KEY7 Button default settings are: previous, next, speed+, speed-, run/pause, cycle mode, ON/OFF LED. The button functions are set by 3D software.
2. Please keep the switch on the yellow PCB in the original state (BOOT0=0, BOOT1=1), after changing it, it will enter the factory mode, and the program will not start. Subsequent versions will remove this switch.
3. Remote control receiver: The functions of the infrared remote control are as follows.

Please note that there is no battery in the remote control, buyer need to install a CR2025 battery by himself.



4. Microphone: Switch the microphone audio animation by setting the switch (the software default setting SW1=0, SW2=1 is audio animation), at this time, the display will be changed according to the sound collected by the microphone.
5. RX TX Headphone port: multiple 3D8RGB serial display, refer to the electronic document.
6. SW1 SW2 switch: select different animation groups. for the default setting of the switch, refer to the switch and function correspondence table on the PCB.
7. Type-C: 5V DC power input, minimum current 3A.

Now, that's all for installation. Please email us if you have any question during installation, we offer life-long technical support services for our DIY products. If you are satisfied with our products, please give favorable comment. We also have many different Led Cube and other electronic DIY kits. If you like, search our brand name iCubeSmart or email us. Thank you very much!