TJ-56-519A High Voltage Electromagnetic Transmitter DIY Kit

1.Introduction:

TJ-56-519A is a DC 3V High Voltage Electromagnetic Transmitter DIY Kit. It can simulate an electromagnetic transmitter and convert electrical energy into magnetic energy, thereby injecting a metal cylinder. Users can use it to learn and understand the working principle of electromagnetic transmitters and learn the basics of electronic technology.

2.Feature:

1>.Acrylic shell is beautiful and protects internal components
2>.Terminals connect components and avoid welding
3>.Perfect simple circuit
4>.DIY hand soldering

3.Parameter:

1>.Product Name:TJ-56-519A High Voltage Electromagnetic Transmitter DIY Kit
2>.Product Number:TJ-56-519A
3>.Work Voltage:DC 3V
4>.Power Type:Battery(Not Included!)
5>.Work Temperature:-25℃~85℃
6>.Work Humidity:5%~95%RH
7>.Size(Installed):97*90*85mm

4.Use Steps:

1>.Complete the installation correctly according to the installation manual.
2>.Turn ON left blue toggle power switch then the green power indicator will turn ON.
3>.The circuit starts to charge the capacitor.
4>.The Red charged indicator will turn ON(Note:Just shining slightly!!!) after 2~3 minute. That is means the capacitor is fully charged.
5>.Place 1pcs M4*12mm Iron Pillar on Transparent Plastic Tube and align.
6>.Press Red Momentary Start Switch to transmit Iron Pillar. Note:Release immediately after pressing and don’t keep pressing.

5.Notes:

1>.The instantaneous voltage inside the circuit board reaches 90~100V, so the operation must be completed after installing the acrylic case.
2>.Do not wear or damage the insulation layer on the surface of the wire.
3>.The capacitor must be discharged first before circuit testing. The capacitor has been discharged if the voltmeter shows 0V from two pins on capacitor. Otherwise, user need to short-circuit capacitor with wire until the voltage shows 0V.
4>.Its power consumption is relatively fast, the working voltage is about 50mA when charging, so it is recommended to use a new battery.
5>.Its working voltage is 3V, so the input voltage must not exceed the working voltage.
6>.Usually after charging is completed, it can be launched once, but there

will be residual power in the capacitor, and it can continue to be launched, but the launch distance will be reduced.

7>.The launch distance is related to the horizontal position, Iron Pillar's position and many other factors.

8>.Before stopping use, it is recommended to fire several times to release the electric energy inside the capacitor.

6. Component Listing:

NO.	Component Name	PCB Marker	QTY
1	Metal Film Resistor	5.1Kohm	2
2	1N4148 Diode	DO-35	1
3	2EZ91D5 Zener Diode	DO-41	1
4	Electrolytic Capacitor	1000uF 100V	1
5	5mm Red LED	Charged Indicator	1
6	5mm Green LED	Power Indicator	1
7	S9013 Transistor	TO-92	1
8	2Pin 8.5mm Terminal		7
9	AA*2 Battery Box		1
10	Magnetic Ring Coil		1
11	Blue Toggle Switch	Power Switch	1
12	Red Momentary Switch	Transmit Switch	1
13	Electromagnetic Coil		1
14	Transparent Plastic Tube	D10*L70mm	1
15	2mm Heat Shrink Tube	For Stuck Tube	1
16	Wire	20cm	6
17	M2*6mm Screw	Fix Battery Box	2
18	M2 Nut	Fix Battery Box	2
19	M3*10mm Copper Cylinder	PCB Bracket	4
20	M3*12mm Screw	Fix Smaller PCB	4
21	M3*6mm Screw		8
22	M3 Nut		4
23	M2*10mm Screw	Fix Acrylic	8
24	M2 Nut	Fix Acrylic	8
25	M4*12mm Iron Pillar		5
26	M3*5mm Nylon Cushion		4
27	Acrylic Shell		6
28	Main PCB	85*77*1.6mm	1
29	Smaller PCB	52*50*1.6mm	1

7.Application:

1>.Training welding skills

2>.Student school

3>.DIY production
4>.Project Design
5>.Electronic competition
6>.Gift giving
7>.Crafts collection
8>.Home decoration
9>.Souvenir collection
10>.Graduation design
11>.Holiday gifts

8.Installation Tips:

1>.User needs to prepare the welding tool at first.
1.1>.Soldering iron (<50 Watt)
1.2>.Rosin core ("radio") solder
1.3>.Wire cutters
1.4>.Wire strippers
1.5>.Philips screwdriver
2>.Please be patient until the installation is complete.
3>.The package is DIY kit.It need finish install by user.
4>.The soldering iron can't touch the components for a long time(1.0 second), otherwise it will damage the components.
5>.Pay attention to the positive and negative of the components.
6>.Strictly prohibit short circuit.
7>.User must install the LED according to the specified rules.Otherwise some LED will not light.
8>.Install complex components preferentially.
9>.Make sure all components are in right direction and right place.
10>.Check that all of the LED can be illuminated.
11>.This kit include soldering and screw fix components.
12>.It is strongly recommended to read the installation manual before starting installation!!!
13>.Please wear anti-static gloves or anti-static wristbands when installing electronic components.

9.Installation Steps:

1>.Step 1: Splicing terminal blocks for later installation on PCB. Note that there are grooves and protrusions on the terminals that can be fixed to each other.
2>.Step 2: Install 1pcs 5.1Kohm Metal Film Resistor at Pin-L* and Pin-L. Note that all components need to be fixed with screws on the terminals and same as following steps.
3>.Step 3: Install 1pcs TO-92 S9013 Transistor at at Pin-1, Pin-2, Pin-3. Note that the face of S9013 is facing up.
4>.Step 4: Install 1pcs 5mm Green LED at Pin-4 and Pin-5. Positive(Longer) pole connect to Pin-4. Green LED is Power Indicator.
5>.Step 5: Install 1pcs 5mm Red LED at Pin-6 and Pin-7. Positive(Longer) pole connect to Pin-7. Red LED is Charged Indicator.
6>.Step 6: Install 1pcs 5.1Kohm Metal Film Resistor at Pin-3 and Pin-6. Note that its pins should not be short-circuited with other components.
7>.Step 7: Install 1pcs DO-35 1N4148 Diode at Pin-5 and Pin-9. Negative

pole(Black marked) connect to Pin-9. Note that its pins should not be short-circuited with other components.

8>.Step 8: Install 1pcs DO-41 2EZ91D5 Zener Diode at Pin-7 and Pin-9. Negative pole(White marked) connect to Pin-9. Note that its pins should not be short-circuited with other components.

9>.Step 9: Use a knife to scrape off the insulation layer on the surface of the metal wire on Magnetic Ring Coil about 10mm.

10>.Step 10: Connect Magnetic Ring Coil. Note: As shown in the figure, the wires up the magnetic ring are connected to L1*, L2*, L3* and the wires under the magnetic ring are connected to L1, L2, L3. Yellow wire connect to L1/L1*. Green wire connect to L2/L2*. Copper wire connect to L3/L3*. The direction of the wire is very important!!!

11>.Step 11: Install 1pcs 1000uF 100V Electrolytic Capacitor at Pin-9 and Pin-10. Positive(Longer) pole connect to Pin-9.

12>.Step 12: Fix 1pcs 2*AA battery box by 2pcs M2*6mm Screw and 2pcs M2 Nut.

13>.Step 13: Connect power wire form battery box to PCB. Red wire connect to '3V+' and black wire connect to '3V-'. User can cut excess wires.

14>.Step 14: Install 4pcs M3*10mm Copper Cylinder and 4pcs M3*6mm Screw on PCB as bracket.

15>.Step 15: Install 2pcs 20cm red wires on Smaller PCB.

16>.Step 16: Install 1pcs Electromagnetic Coil on Smaller PCB.

17>.Step 17: Connect 2pcs 20cm red wire to Blue Toggle Power Switch.

18>.Step 18: Connect 2pcs 20cm red wire to Red Momentary Transmit Switch.

19>.Step 19: Tear off the protective film on the black acrylic surface.

20>.Step 20: Fixed bottom acrylic plate by 4pcs M3*6mm Screw.

21>.Step 21: Fixed 4pcs acrylic panels on the side by 4pcs M2*10mm Screw and 4pcs M2 Nut.

22>.Step 22: Fixed two Switch on top acrylic plate by matching screws and gaskets.

23>.Step 23: Fixed the smaller PCB on top acrylic plate by 4pcs M3*5mm Nylon Cushion and M3*12mm Screw and M3 Nut.

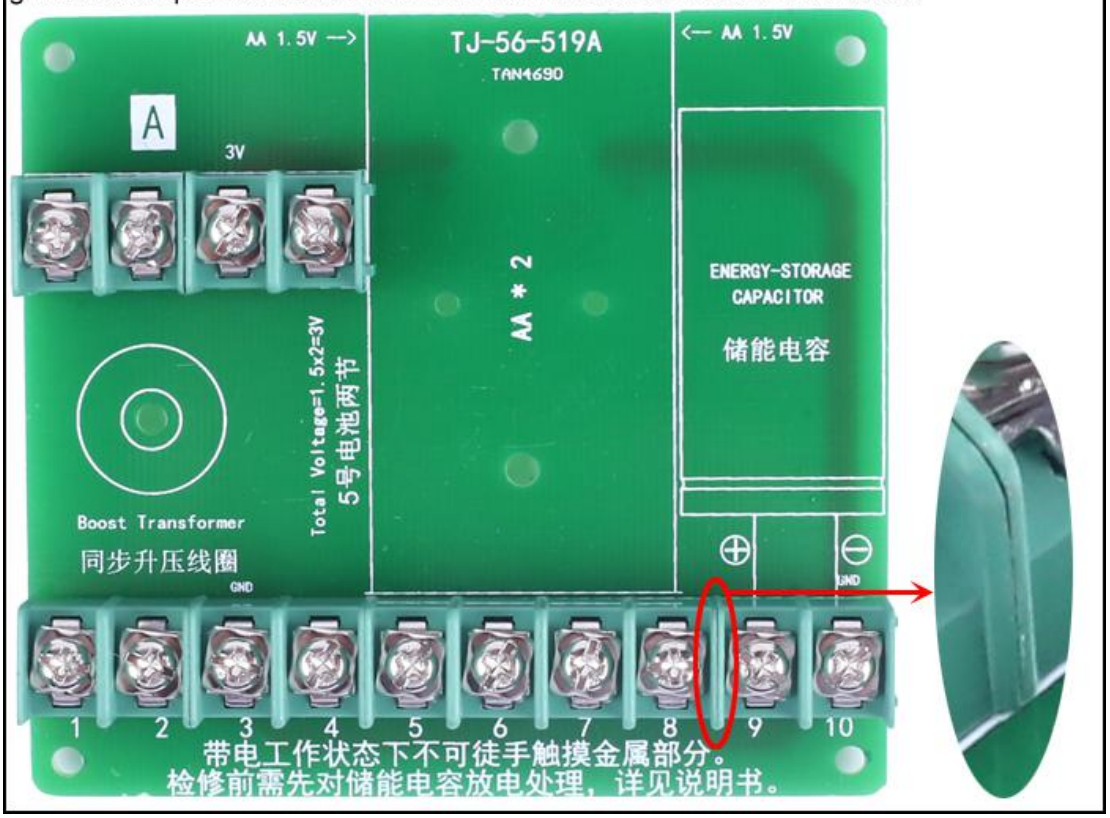
24>.Step 24: Power Switch wires connect to Pin-L2 and Pin-3V; Transmit Switch wires connect to Pin-8 and Pin-9. Electromagnetic Coil wires connect to Pin-8 and Pin-10.

25>.Step 25: Fixed the top acrylic plate by 4pcs M3*6mm Screw. Note: Install 2pcs brand new AA batteries.

26>.Step 26: Install Transparent Plastic Tube on Electromagnetic Coil. It can be fixed by filling a little heat shrink tube.

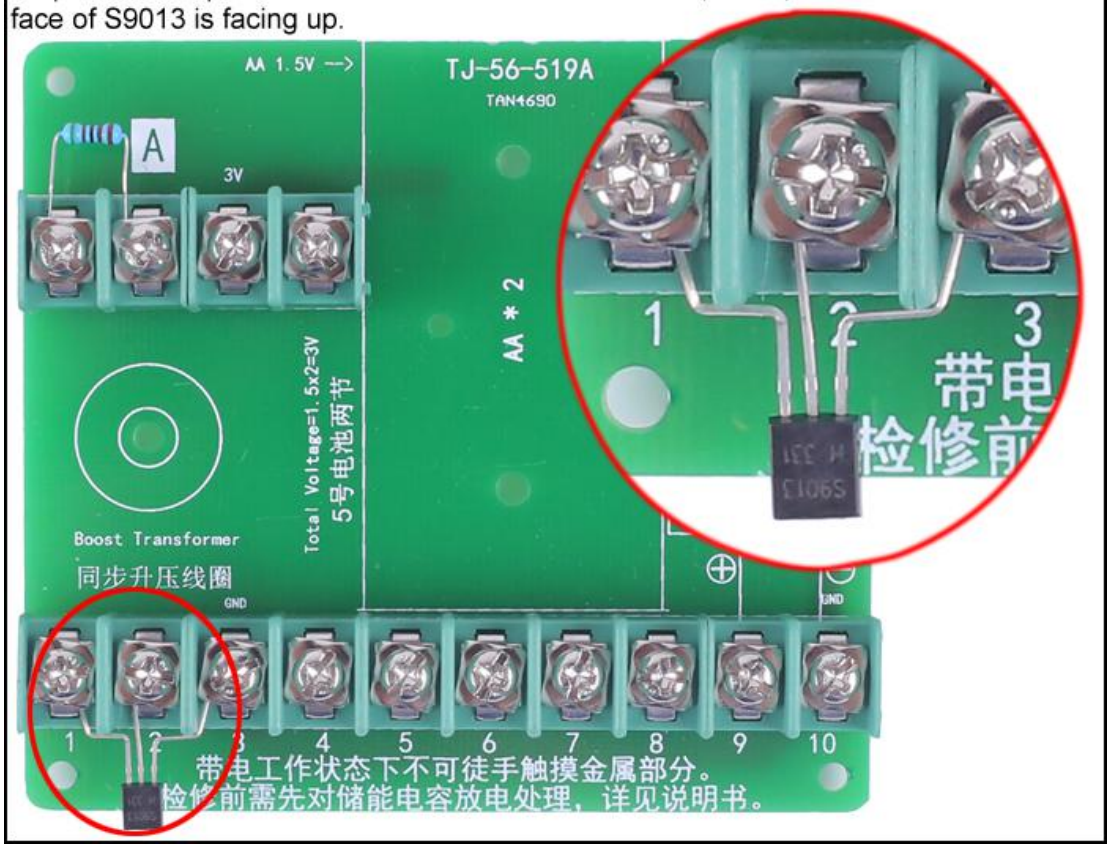
10.Install shown steps:

Step 1: Splicing terminal blocks for later installation on PCB. Note that there are grooves and protrusions on the terminals that can be fixed to each other.

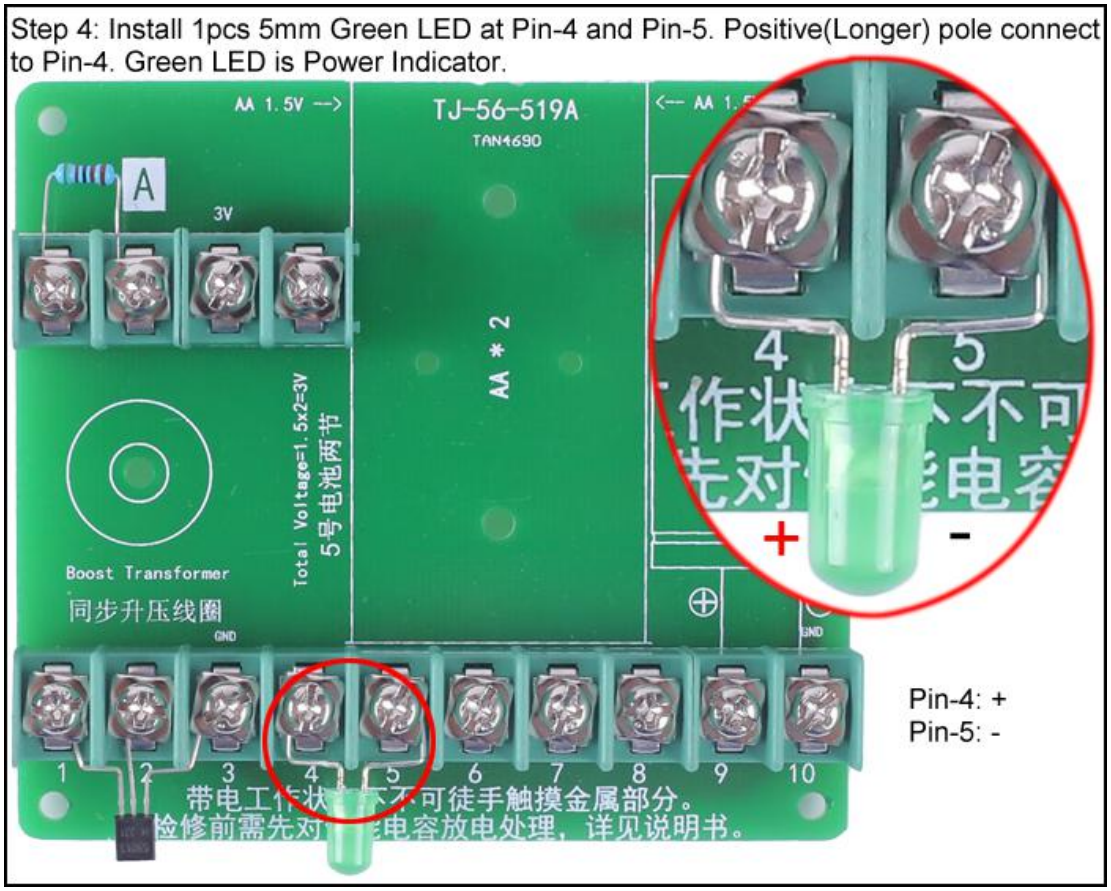


Step 2: Install 1pcs 5.1Kohm Metal Film Resistor at Pin-L* and Pin-L. Note that all components need to be fixed with screws on terminals and same as following steps.

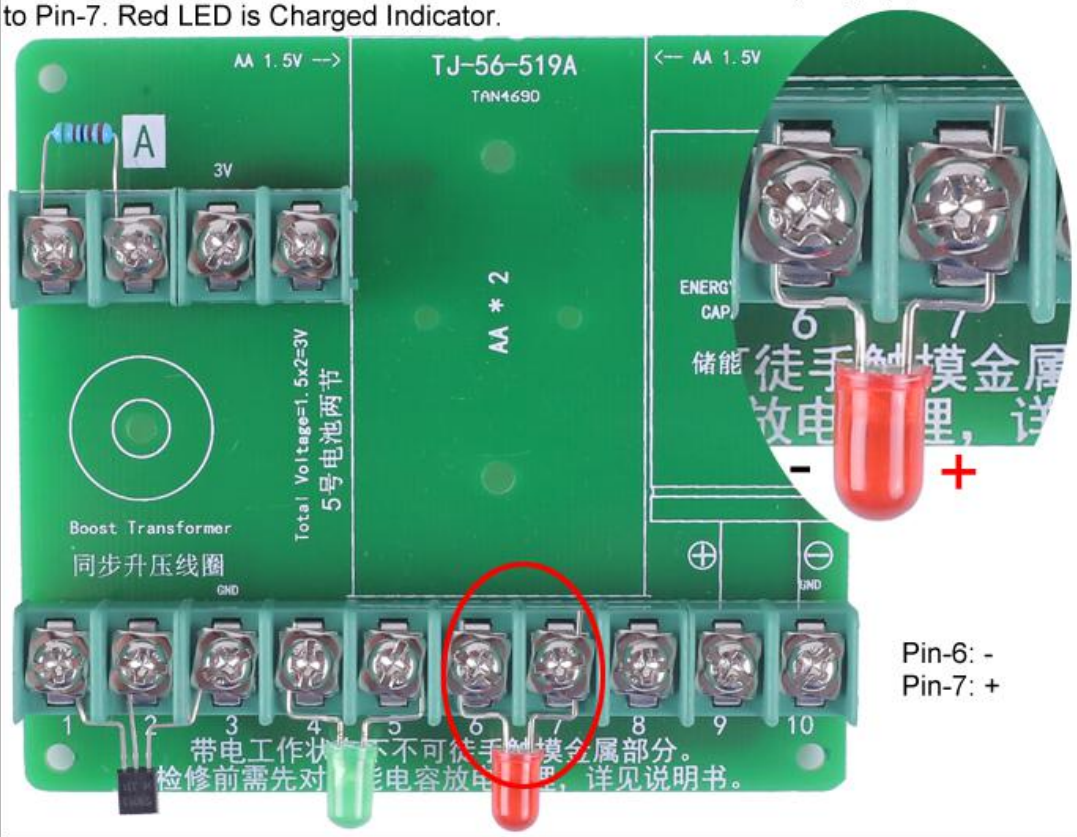
Step 3: Install 1pcs TO-92 S9013 Transistor at at Pin-1, Pin-2, Pin-3. Note that the face of S9013 is facing up.



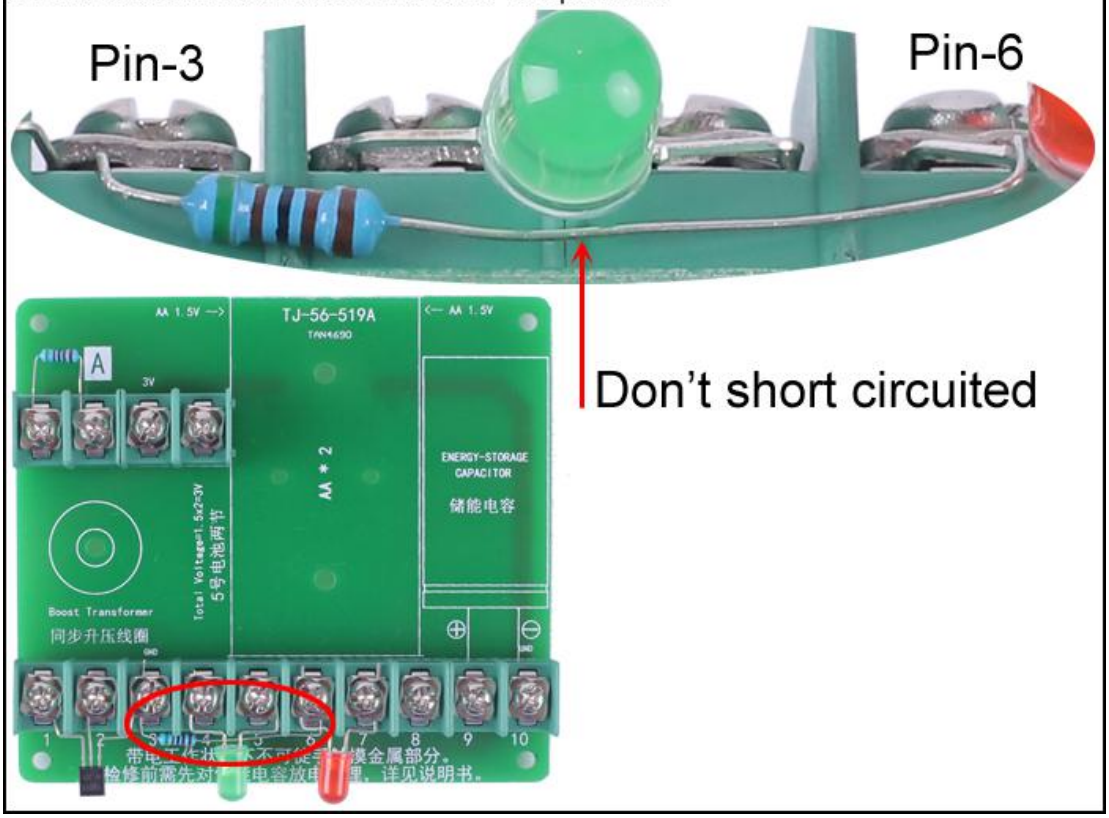
Step 4: Install 1pcs 5mm Green LED at Pin-4 and Pin-5. Positive(Longer) pole connect to Pin-4. Green LED is Power Indicator.



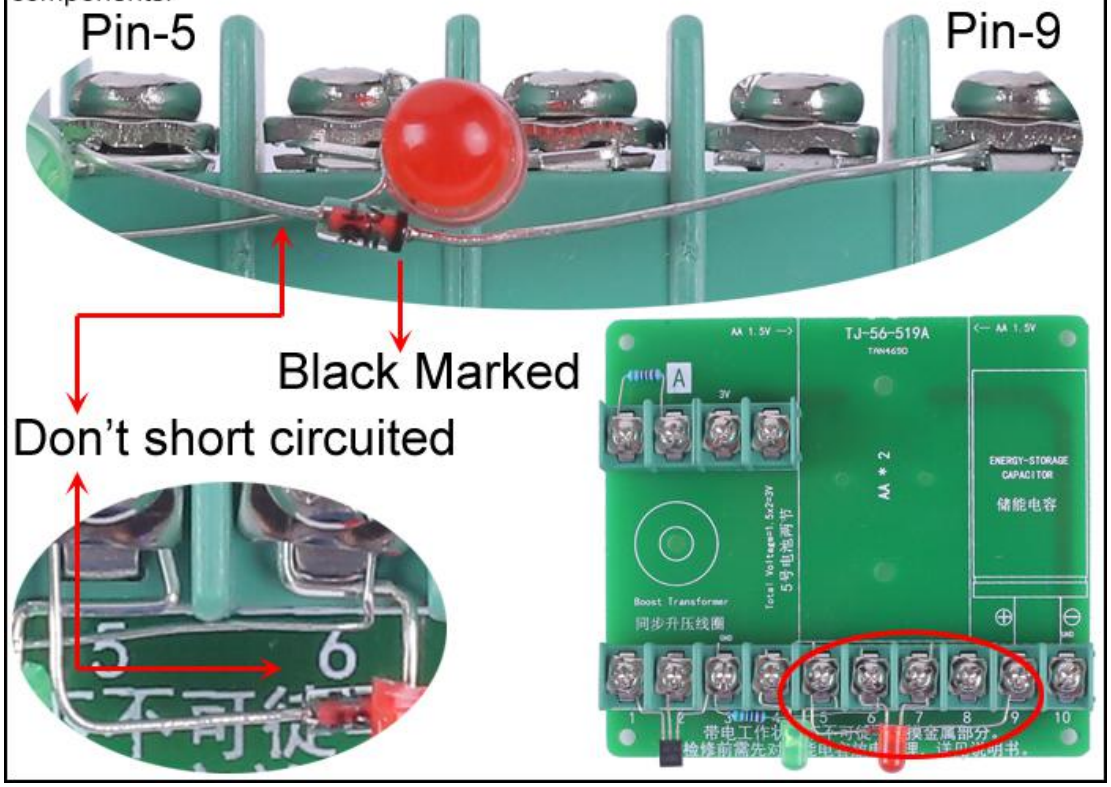
Step 5: Install 1pcs 5mm Red LED at Pin-6 and Pin-7. Positive(Longer) pole connect to Pin-7. Red LED is Charged Indicator.



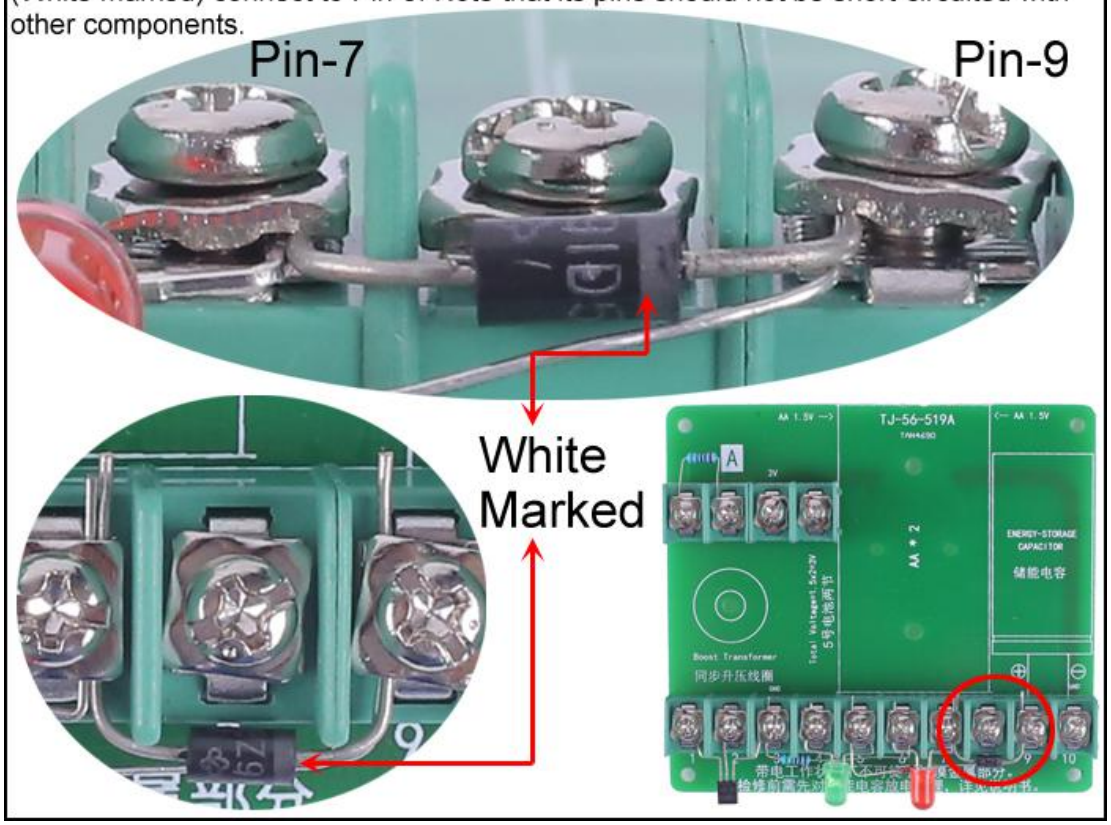
Step 6: Install 1pcs 5.1Kohm Metal Film Resistor at Pin-3 and Pin-6. Note that its pins should not be short-circuited with other components.



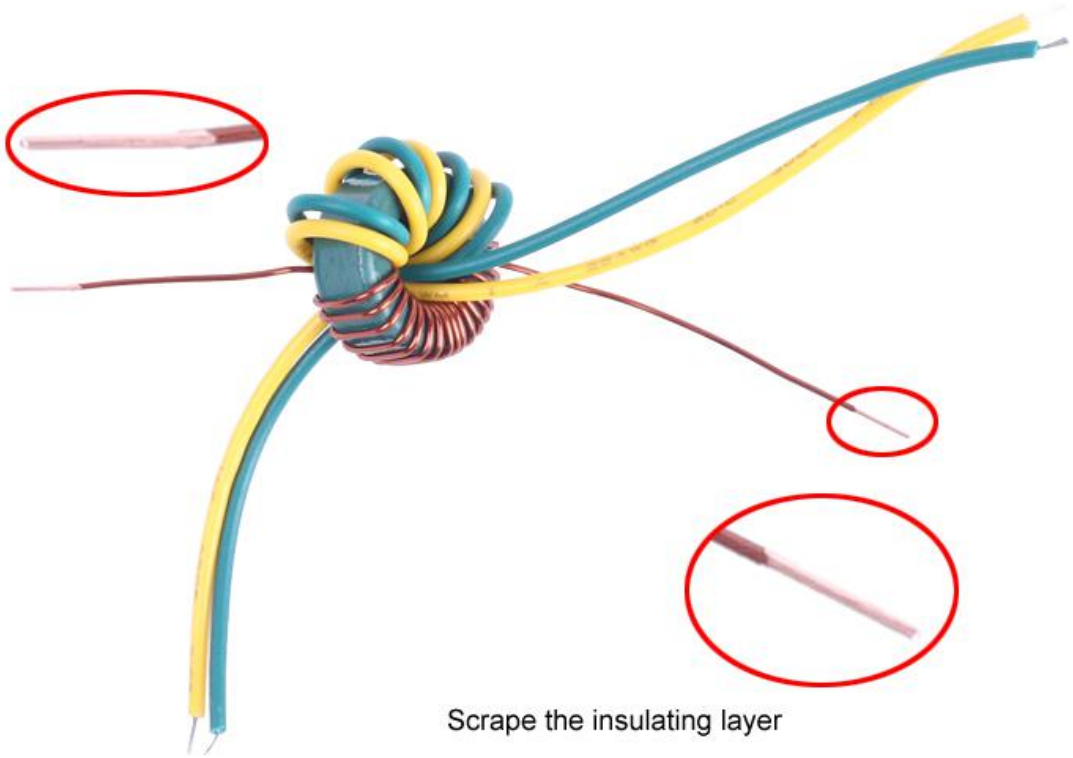
Step 7: Install 1pcs DO-35 1N4148 Diode at Pin-5 and Pin-9. Negative pole (Black marked) connect to Pin-9. Note that its pins should not be short-circuited with other components.



Step 8: Install 1pcs DO-41 2EZ91D5 Zener Diode at Pin-7 and Pin-9. Negative pole (White marked) connect to Pin-9. Note that its pins should not be short-circuited with other components.

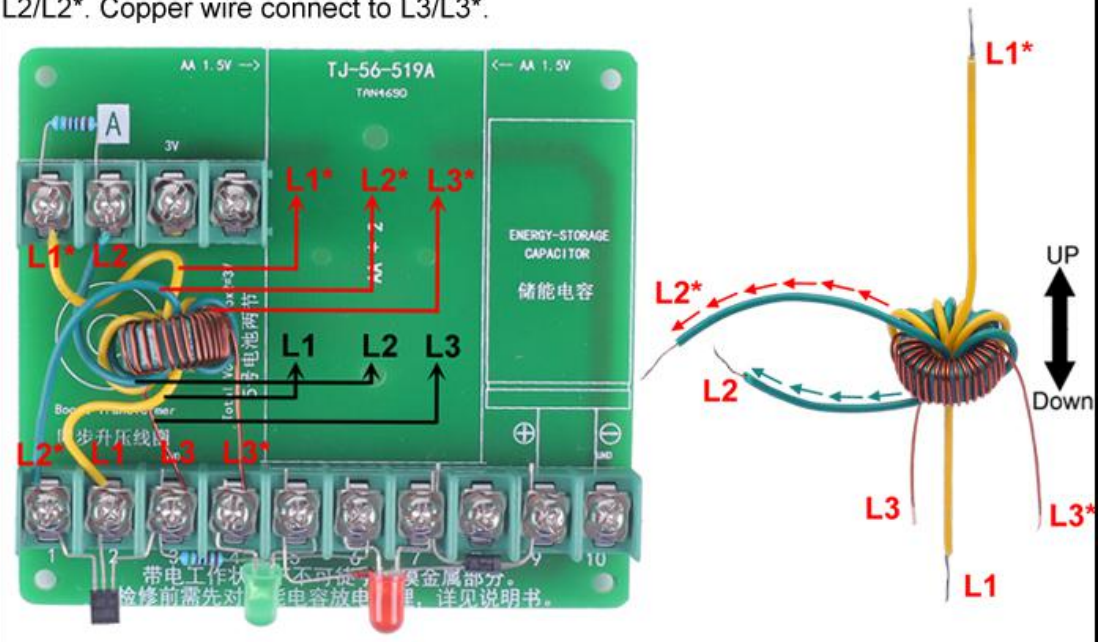


Step 9: Use a knife to scrape off the insulation layer on the surface of the metal wire on Magnetic Ring Coil about 10mm.



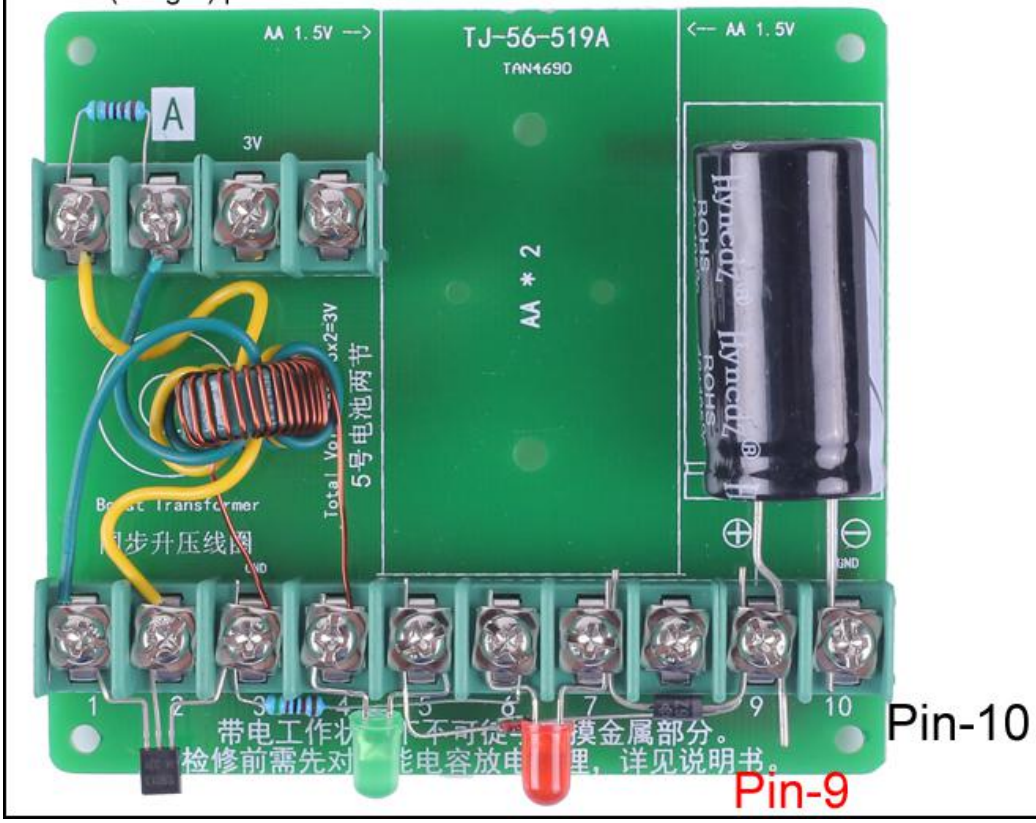
Scrape the insulating layer

Step 10: Connect Magnetic Ring Coil. Note: As shown in the figure, the wires up the magnetic ring are connected to L1*, L2*, L3* and the wires under the magnetic ring are connected to L1, L2, L3. Yellow wire connect to L1/L1*. Green wire connect to L2/L2*. Copper wire connect to L3/L3*.

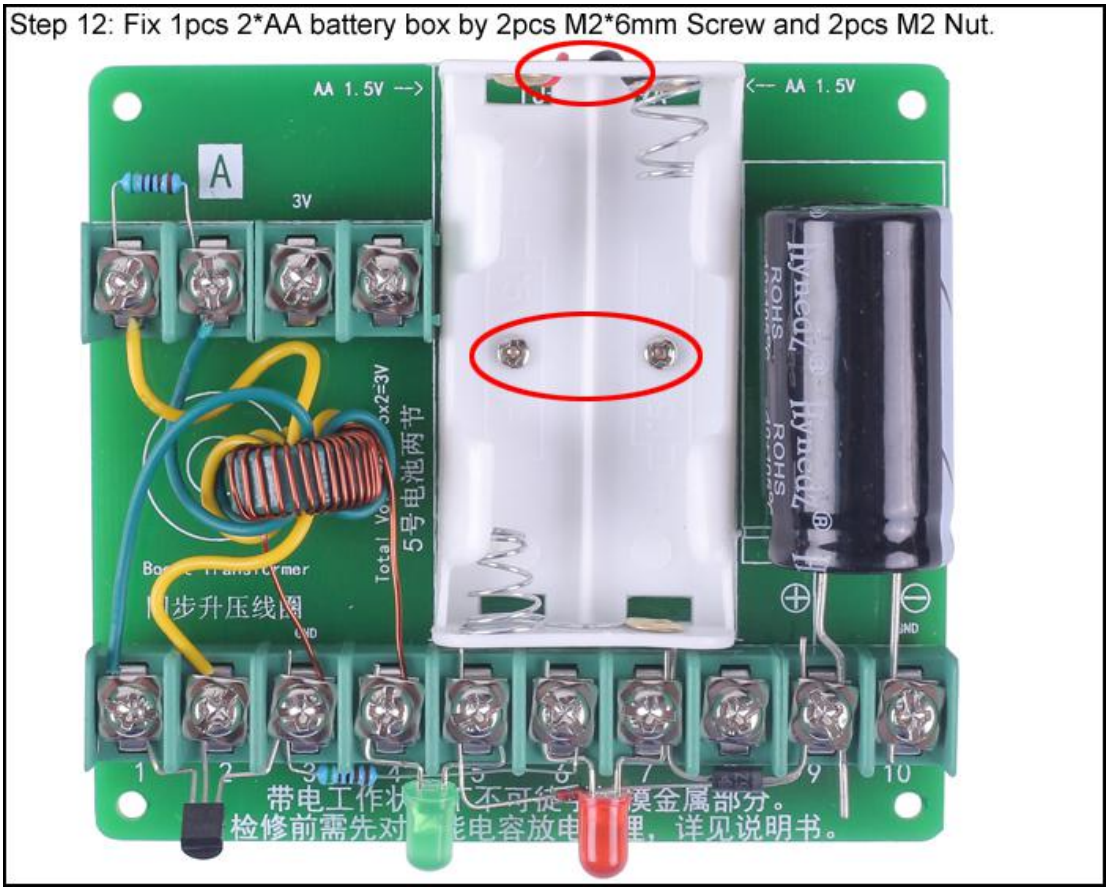


Please Note: the coil should be placed in the same direction as the picture.

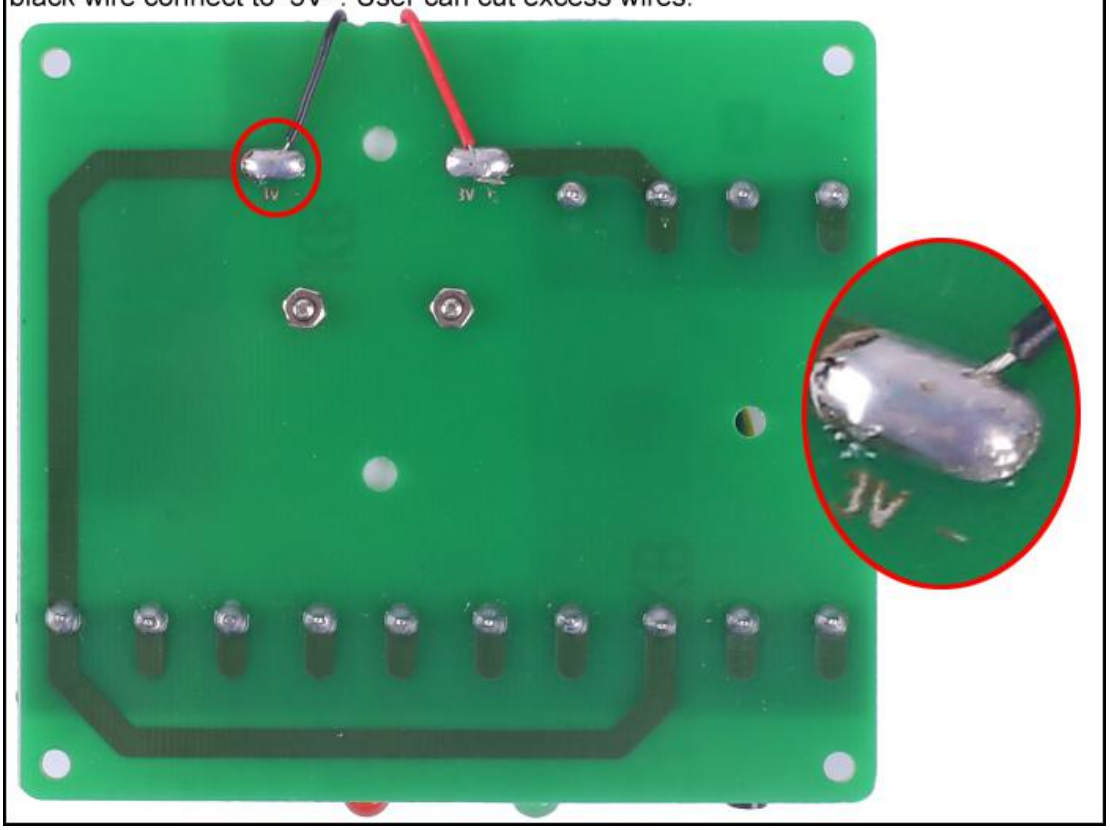
Step 11: Install 1pcs 1000uF 100V Electrolytic Capacitor at Pin-9 and Pin-10.
Positive(Longer) pole connect to Pin-9.



Step 12: Fix 1pcs 2*AA battery box by 2pcs M2*6mm Screw and 2pcs M2 Nut.

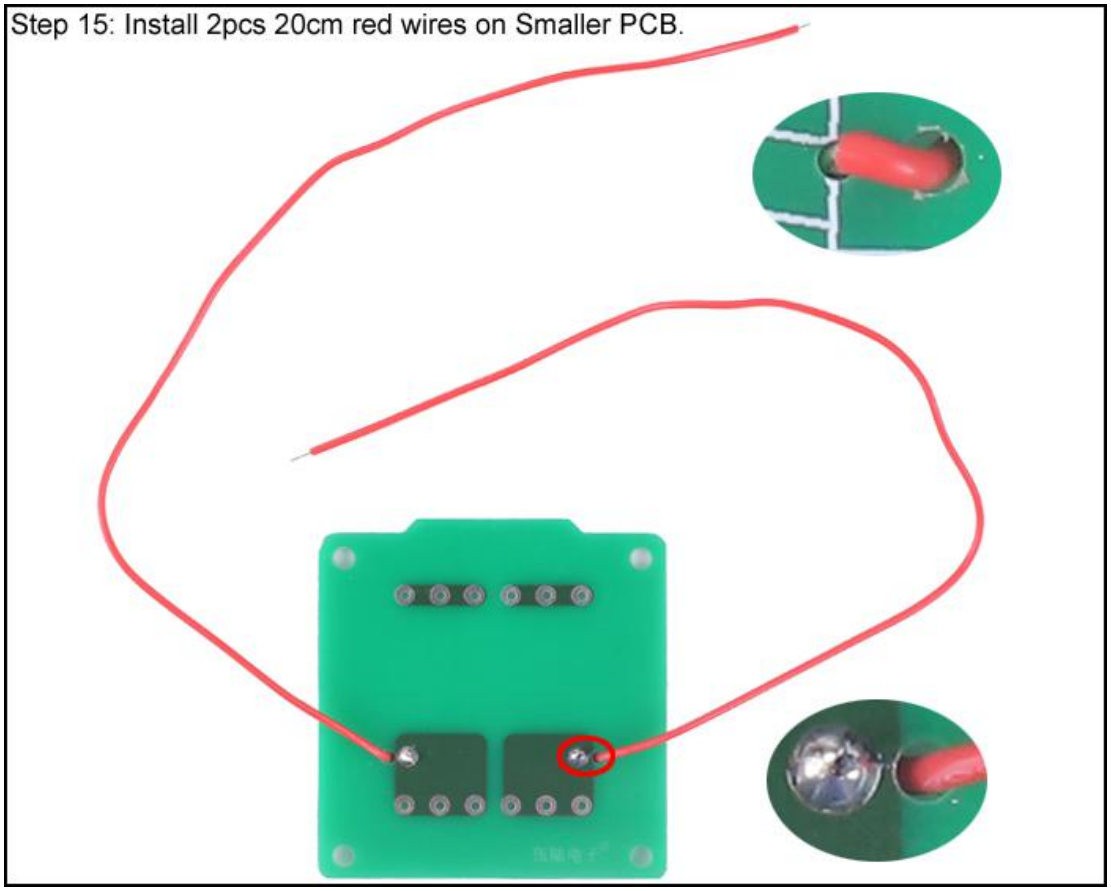


Step 13: Connect power wire form battery box to PCB. Red wire connect to '3V+' and black wire connect to '3V-'. User can cut excess wires.

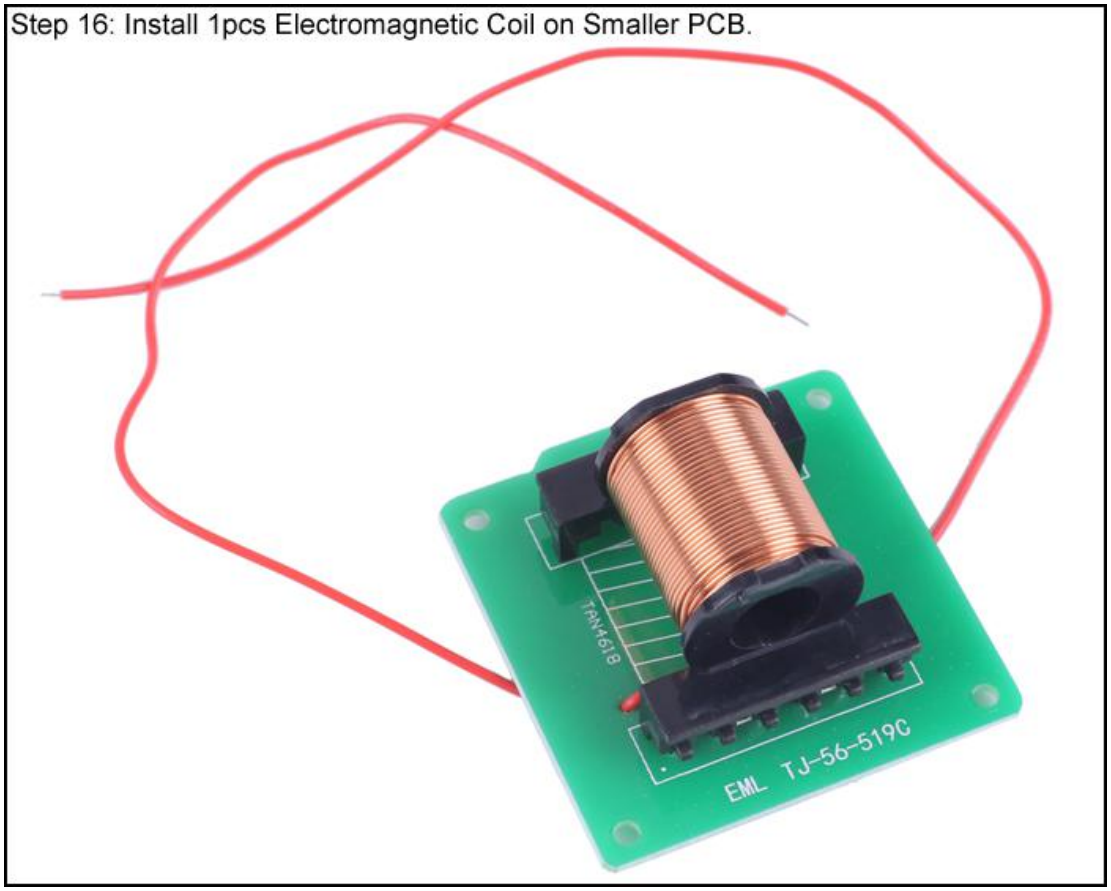


Step 14: Install 4pcs M3*10mm Copper Cylinder and 4pcs M3*6mm Screw on PCB as bracket.

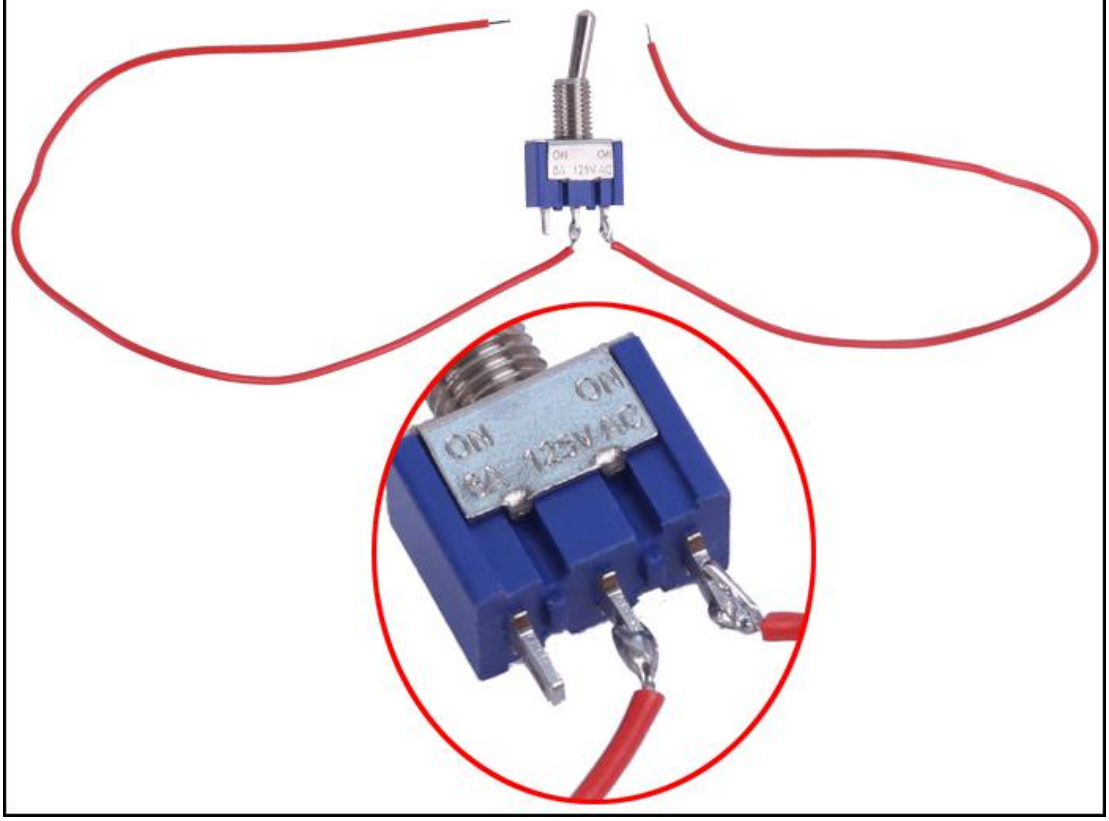
Step 15: Install 2pcs 20cm red wires on Smaller PCB.



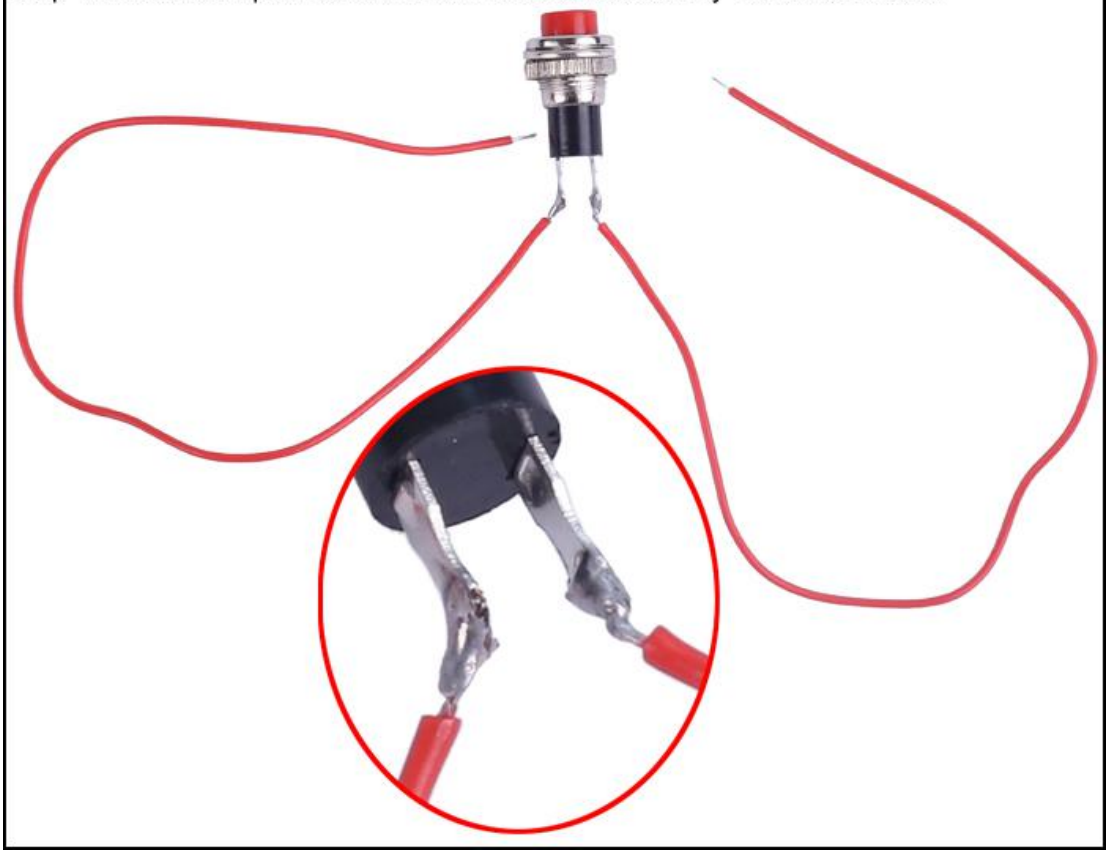
Step 16: Install 1pcs Electromagnetic Coil on Smaller PCB.



Step 17: Connect 2pcs 20cm red wire to Blue Toggle Power Switch.

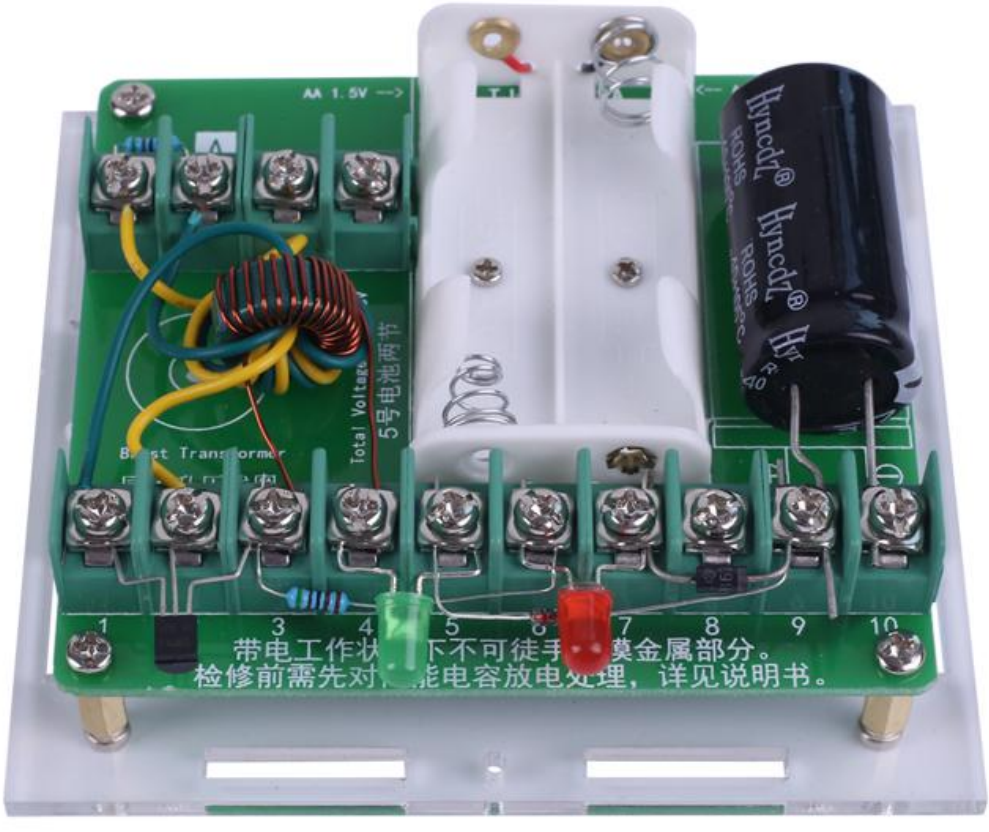


Step 18: Connect 2pcs 20cm red wire to Red Momentary Transmit Switch.

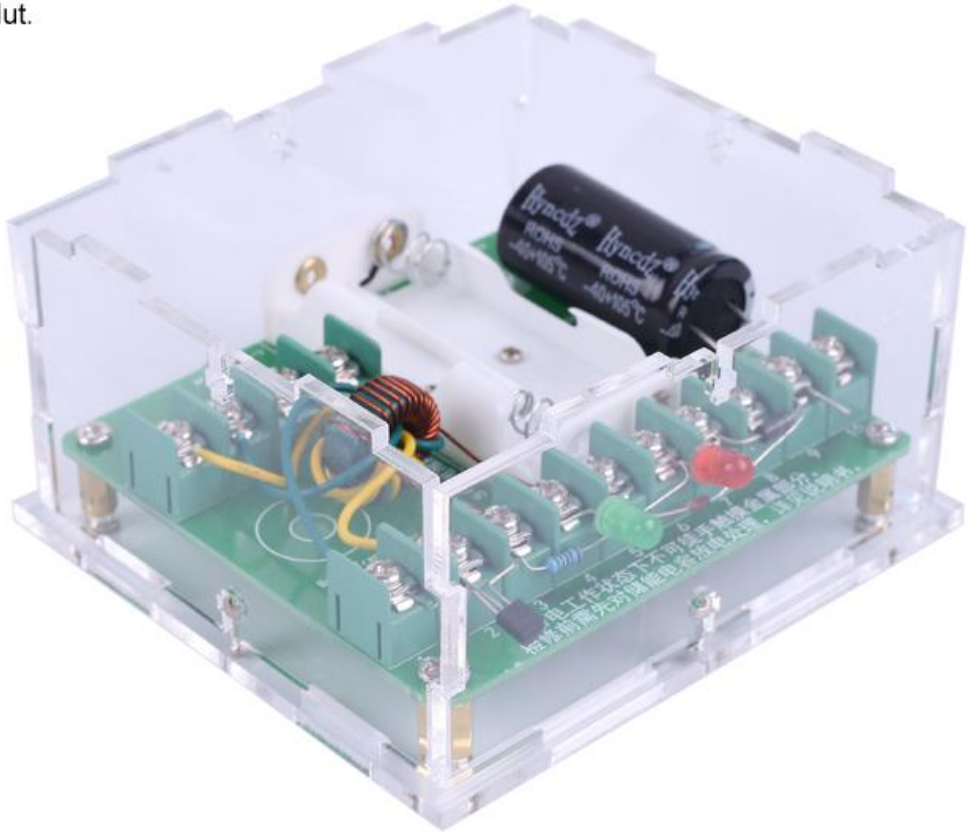


Step 19: Tear off the protective film on the black acrylic surface.

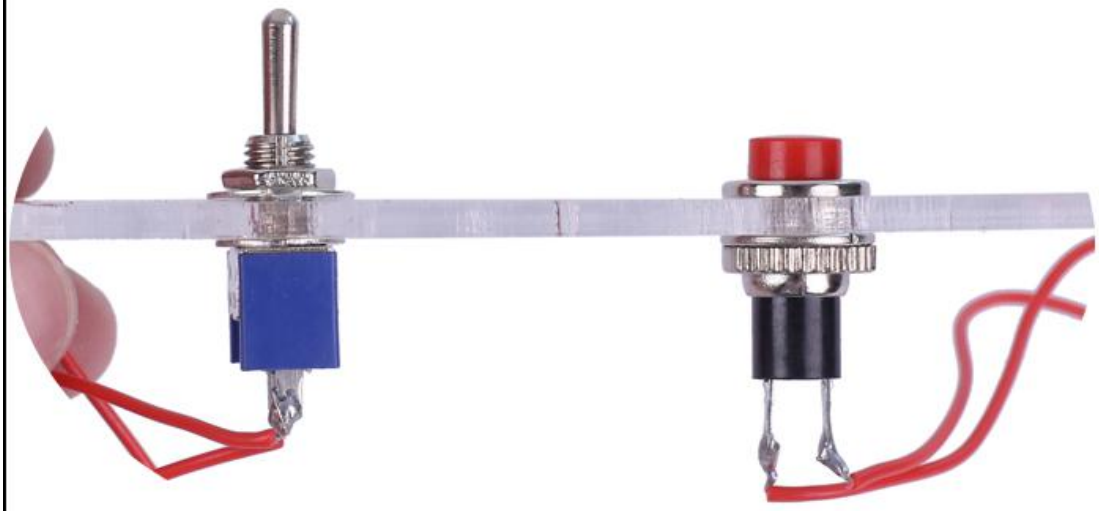
Step 20: Fixed bottom acrylic plate by 4pcs M3*6mm Screw.



Step 21: Fixed 4pcs acrylic panels on the side by 4pcs M2*10mm Screw and 4pcs M2 Nut.

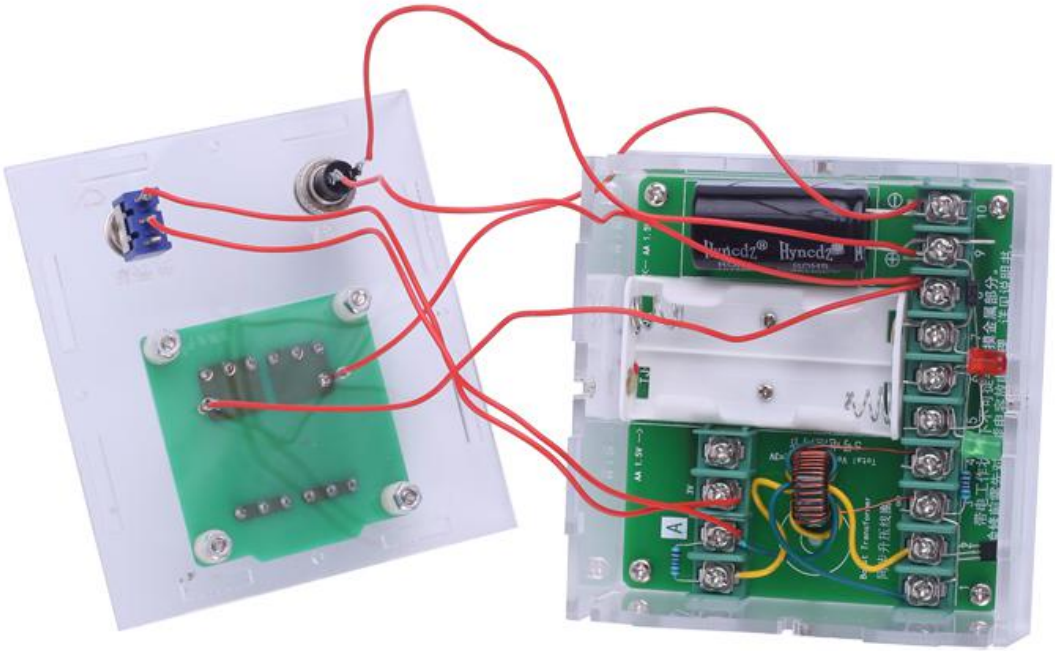


Step 22: Fixed two Switch on top acrylic plate by matching screws and gaskets.

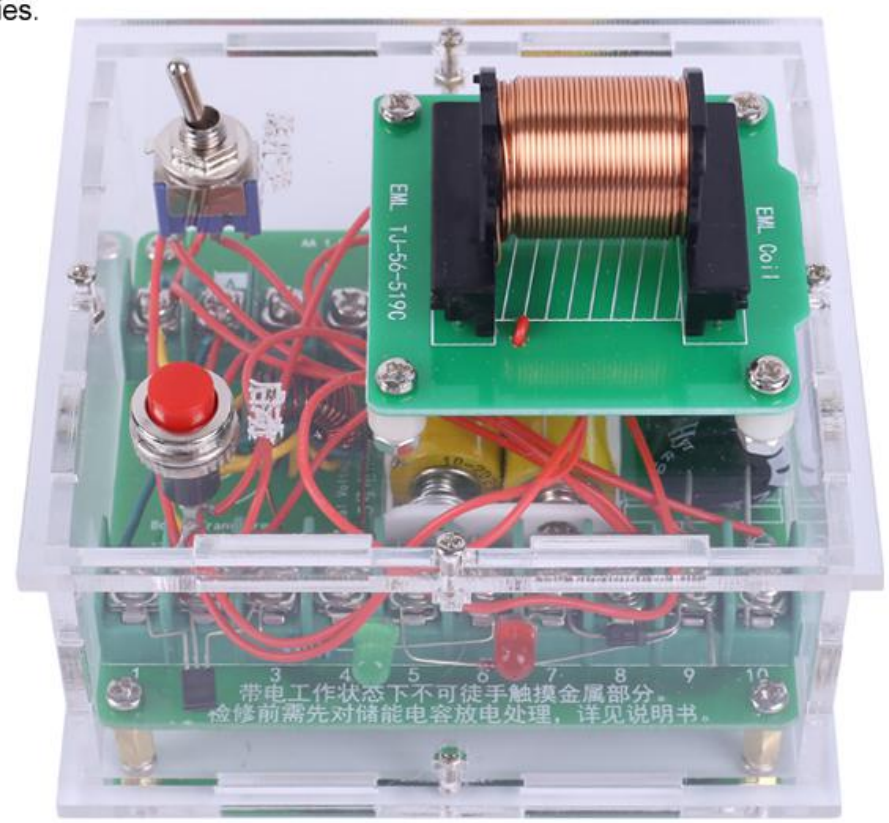


Step 23: Fixed the smaller PCB on top acrylic plate by 4pcs M3*5mm Nylon Cushion and M3*12mm Screw and M3 Nut.

Step 24: Power Switch wires connect to Pin-L2 and Pin-3V;
Transmit Switch wires connect to Pin-8 and Pin-9;
Electromagnetic Coil wires connect to Pin-8 and Pin-10.



Step 25: Fixed the top acrylic plate by 4pcs M3*6mm Screw. Note: Install 2pcs brand new AA batteries.



Step 26: Install Transparent Plastic Tube on Electromagnetic Coil. It can be fixed by filling a little heat shrink tube.