LCD Display FM Radio Receiver DIY Kit

1.Introduction:

It is an 76.0MHz-108.0MHz Wireless FM Radio Receiver DIY Kit.It has a built-in high-definition display LCD display screen which can clearly display the receiving frequency and it can store 22 radio stations, which is enough to meet your needs.

2.Feature:

1>.HD display LCD display screen
2>.Support storage of 22 radio stations
3>.Automatically search for radio stations
4>.Built-in 30-level digital volume adjustment
5>.Automatic memory function after power off
6>.Support 76Hz-108MHz receiver frequency
7>.Built-in 5W power amplifier
8>.Power saving mode with backlight off for 20 seconds
9>.Support speaker and earphone audio output

3.Parameter:

1>.Product Name:LCD Display FM Radio Receiver DIY Kit
2>.Work Voltage:DC 5.0V
3>.Output impedance:4ohm
4>.Output power:5W
5>.Output channel:Mono for speaker and Dual channel for earphone
6>.Frequency:87.0MHz~108.0MHz(Disable Campus Broadcasting Band)
7>.Frequency:76.0MHz~108.0MHz(Enable Campus Broadcasting Band)
8>.Equivalent noise: >=30dB
9>.Work Temperature:-40℃~85℃
10>.Work Humidity:5%~95%RH
11>.Size(Installed):120*68*38mm

4.Use Methods:

1>.Keep press MUTE button to automatically search and store the radio stations that can be listened to.
2>.Automatically name searchable stations like P01,P02,P02 and so on.
3>.Press P+ and P- to switch saved stations.
4>.Press SP+ and SP- to adjust volume from V00 to V30.
5>.Switch Campus Broadcasting Band: Keep press SP+ and SP- before power ON and then turn ON work power switch. It means enable Campus Broadcasting Band if display C1 on LCD. It means disable Campus Broadcasting Band if display C0 on

LCD.Available after restart.

6>.Enable backlight mode: Keep press P+ and P- before power ON and then turn ON work power switch. It means keep backlight ON if display B1 on LCD. It means the backlight will turn OFF after 20second if display B0 on LCD(This is the power saving mode).Available after restart.

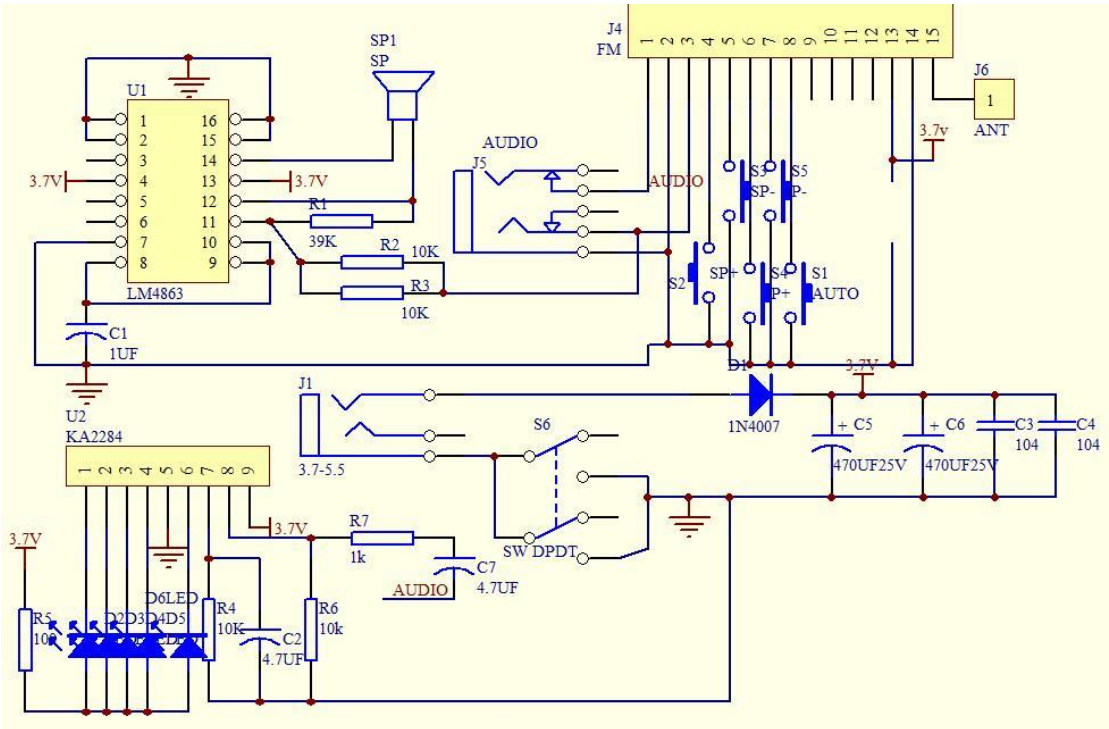
7>.It can output audio from speaker and earphone jack. The speaker of the module does not work when the earphone is connected.

5.Component Listing:

NO.	Component Name	PCB Marker	Parameter	QTY
1	LM4863 Power Amplifier	U1	SOP-16	1
2	Metal Film Resistor	R2,R3,R4	10Kohm	3
3	Metal Film Resistor	R1	39Kohm	1
4	Metal Film Resistor	R6,R7	1Kohm	2
5	Metal Film Resistor	R5	100ohm	1
6	3.5mm AUX Audio Socket	J5	5Pin	1
7	KA2284 LED Driver	U2	ZIP-9	1
8	1N4007 Diode	D1	DO-41	1
9	Monolithic Capacitor	C3,C4	0.1uF 104	2
10	RGB LED	D2,D3,D4,D5,D6	5mm	5
11	DuPont Female Socket	FM	16Pin	1
12	Electrolytic Capacitor	C2,C7	4.7uF	2
13	Electrolytic Capacitor	C1	1uF	1
14	Electrolytic Capacitor	C5,C6	470uF	2
15	Self-locking Button	S6	8*8mm	1
16	Self-locking Button Cap	S6	Red	1
17	DC-005 Power Socket	J1	5.5*2.5mm	1
18	Black Button	S1-S5 or SP+/SP-/P+/P-/AUTO	6*6*20mm	5
19	FM Receiver Module	FM	16Pin	1
20	75ohm FM Antenna	ANT		1
21	Black Wire	SP	20cm	1
22	4ohm 5W Speaker	SP		1
23	USB-DC005 Power Wire		100cm	1
24	Acrylic Board			6
25	M3*30mm Copper Pillar			4
26	M3*15mm Copper Pillar			3
27	M3*8mm Screw			4
28	M3*6mm Screw			10
29	PCB		56*51*1.6mm	1
Note:Users can complete the installation according to the PCB silk screen and				

component list.

6.Schematic Diagram:



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.Note:

1>.It is a wireless module. So do not use it in an environment with signal interference.

9.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>.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>.It is strongly recommended to read the installation manual before starting installation!!!

11>.Please wear anti-static gloves or anti-static wristbands when installing electronic components.

10.Installation Steps(Please be patient install!!!):

1>.Step 1: Install 1pcs SMD components SOP-16 LM4863 Power Amplifier at U1. Verify and confirm the installation direction of LM4863. The rectangular silk screen on the PCB coincides with the crystal oscillator on the LM4863 to locate the installation direction.

2>.Step 2: Randomly choose a pad on the PCB, and then melt the solder on this pad.

3>.Step 3: Fix LM4863: Use a soldering iron to melt tin on the pad just now and hold LM4863 with tweezers in the other hand to place/press on U1 to prevent movement. Take care to match and align each pads. Then remove soldering iron. Then remove tweezers after solder tin cooling and solidification.

4>.Step 4: Connect others pads on LM4863 to pads on PCB by tin and soldering iron.

5>.Step 5: Install 3pcs 10Kohm Metal Film Resistor at R2,R3,R4.

6>.Step 6: Install 1pcs 39Kohm Metal Film Resistor at R1.

7>.Step 7: Install 2pcs 1Kohm Metal Film Resistor at R6,R7.

8>.Step 8 Install 1pcs 100ohm Metal Film Resistor at R5.

9>.Step 9: Install 1pcs DO-41 1N4007 Diode at D1. Pay attention to the installation direction. There is a white mark on 1N4007 and a white mark on PCB which are used to confirm the installation direction.

10>.Step 10: Install 2pcs 0.1uF 104 Monolithic Capacitor at C3,C4.

11>.Step 11: Install 1pcs 3.5mm AUX Audio Socket at J5.

12>.Step 12: Install 1pcs ZIP-9 KA2284 LED Driver at U2. Pay attention to the

installation direction.

13>.Step 13: Install 5pcs 5mm RGB LED at D2,D3,D4,D5,D6. Note:The longer pin is positive pole and connect to ‘ + ’ pads.

14>.Step 14: Install 1pcs 16Pin DuPont Female Socket at FM.

15>.Step 15: Install 2pcs 4.7uF Electrolytic Capacitor at C2,C7.Pay attention to distinguish between positive and negative.The Longer pin is positive pole.

16>.Step 16: Install 1pcs 1uF Electrolytic Capacitor at C1.Pay attention to distinguish between positive and negative.The Longer pin is positive pole.

17>.Step 17: Install 2pcs 470uF Electrolytic Capacitor at C5,C6.Pay attention to distinguish between positive and negative.The Longer pin is positive pole.

18>.Step 18: Install 1pcs 8*8mm Self-locking Button at S6.

19>.Step 19: Install 1pcs 5.5*2.5mm DC-005 Power Socket at J1.

20>.Step 20: Install 5pcs 6*6*20mm Black Button at S1-S5 or SP+/SP-/P+/P-/AUTO.

21>.Step 21: Install 1pcs FM Audio Receiver on Female Socket.

22>.Step 22: Install 1pcs 75ohm FM Antenna at ANT.Note that the antenna is installed on the other side of the PCB.

23>.Step 23: Cut 1pcs 20cm Black Wire to 2pcs 10cm wires and connect them to 4ohm 5W Speaker.

24>.Step 24: Connect speaker to PCB at SP. The speaker does not distinguish between positive and negative.

25>.Step 25: Tear off the protective film on the surface of the acrylic shell.

26>.Step 26: Fix 3pcs M3*15mm Copper Pillar and 4pcs M3*30mm Copper Pillar on one acrylic plate by 7pcs M3*6mm Screw.

27>.Step 27: Fix PCB on 3pcs M3*15mm Copper Pillar by 3pcs M3*6mm Screw.

28>.Step 28: Install TOP acrylic plate and note the antenna mounting hole and direction.

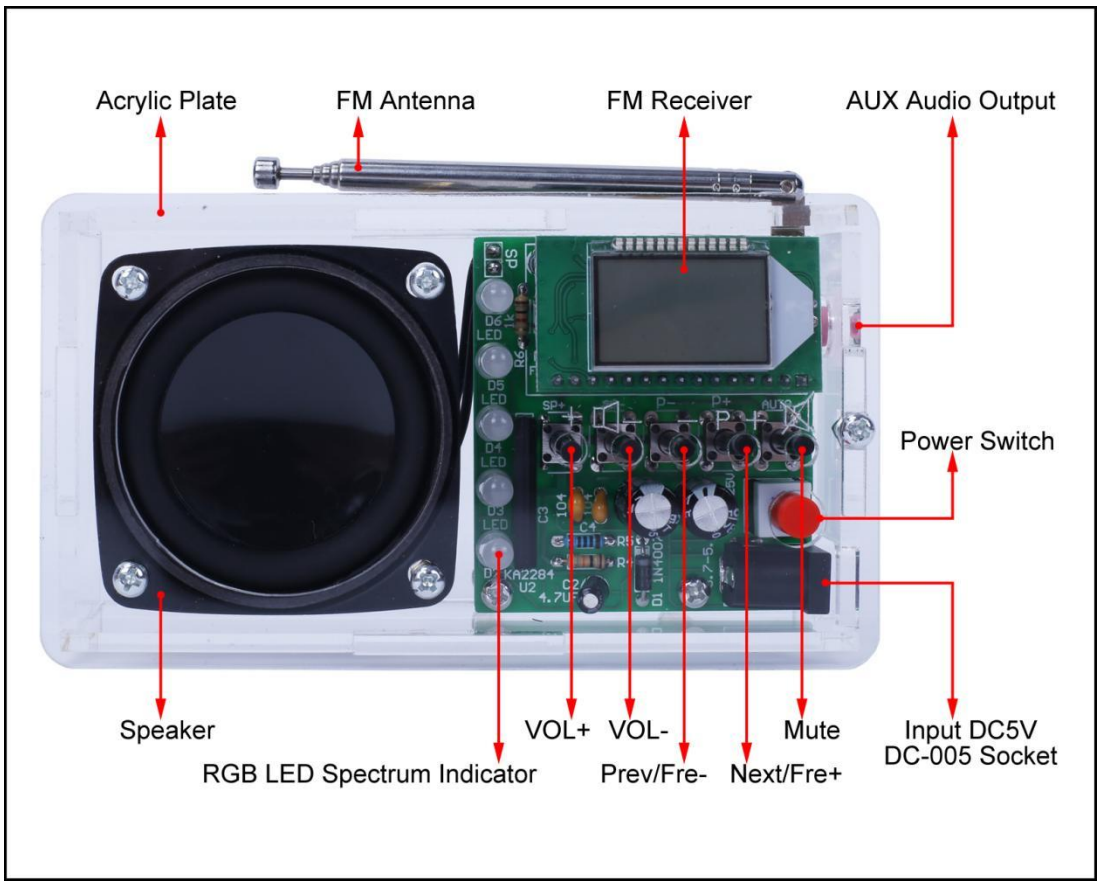
29>.Step 29: Install side acrylic plate for power socket and note the mounting hole and direction.

30>.Step 30: Install the bottom acrylic plate.

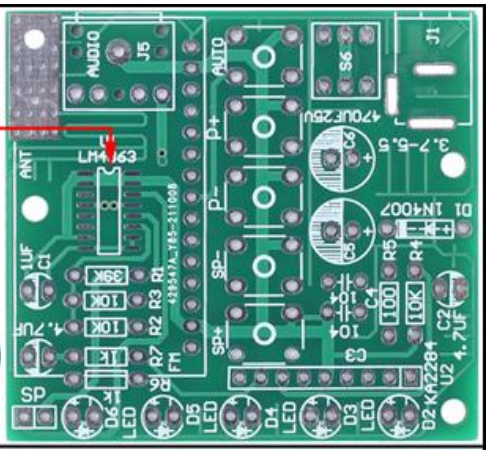
31>.Step 31: Install another side acrylic plate.

32>.Step 32: Install the last acrylic plate and fix it with speaker by 4pcs M3*7mm Screw.

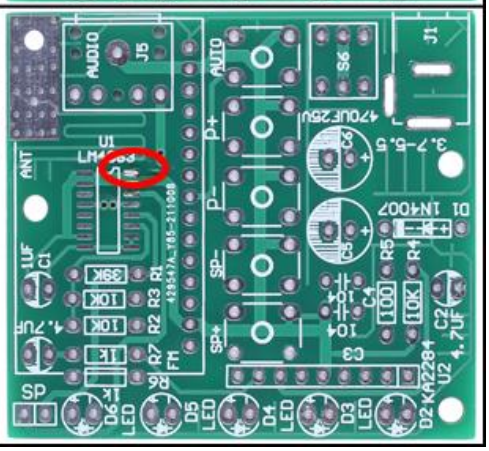
11.Install shown steps:



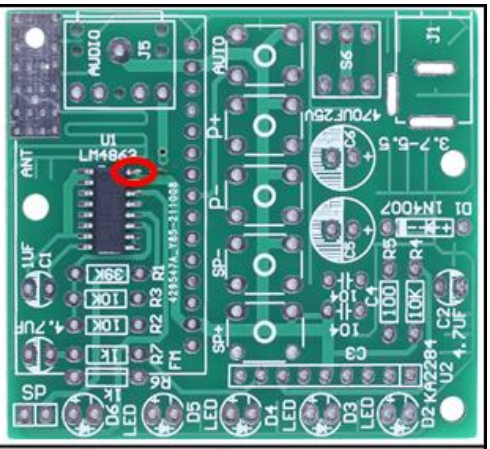
Step 1: Install 1pcs SMD components SOP-16 LM4863 Power Amplifier at U1. Verify and confirm the installation direction of LM4863. The rectangular silk screen on the PCB coincides with the crystal oscillator on the LM4863 to locate the installation direction.



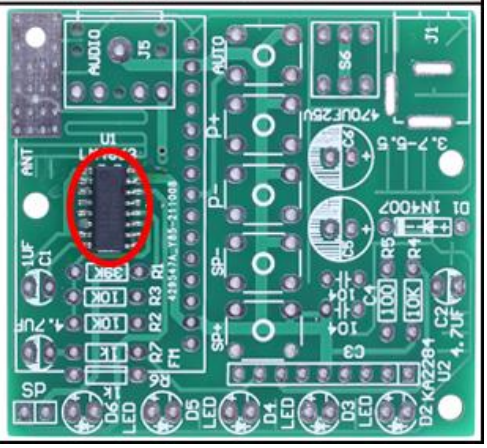
Step 2: Randomly choose a pad on the PCB, and then melt the solder on this pad.



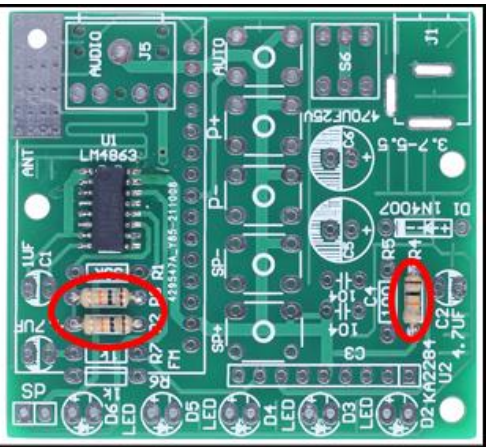
Step 3: Fix LM4863: Use a soldering iron to melt tin on the pad just now and hold LM4863 with tweezers in the other hand to place/press on U1 to prevent movement. Take care to match and align each pads. Then remove soldering iron. Then remove tweezers after solder tin cooling and solidification.



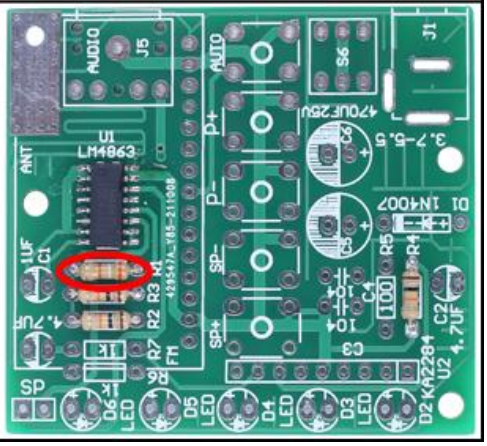
Step 4: Connect others pads on LM4863 to pads on PCB by tin and soldering iron



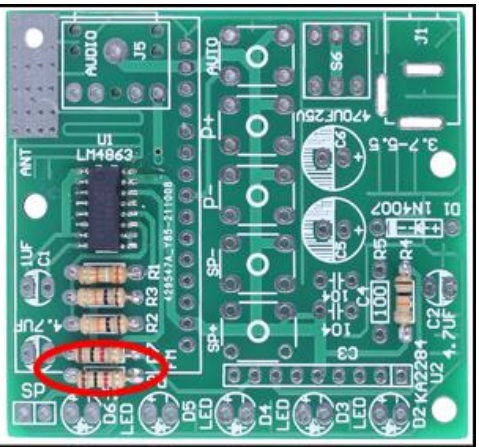
Step 5: Install 3pcs 10Kohm Metal Film Resistor at R2,R3,R4.



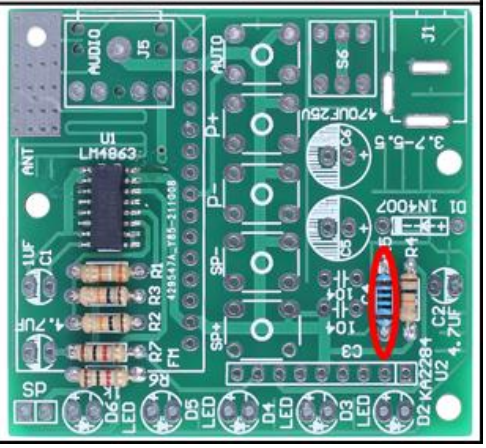
Step 6: Install 1pcs 39Kohm Metal Film Resistor at R1.



Step 7: Install 2pcs 1Kohm Metal Film Resistor at R6,R7.

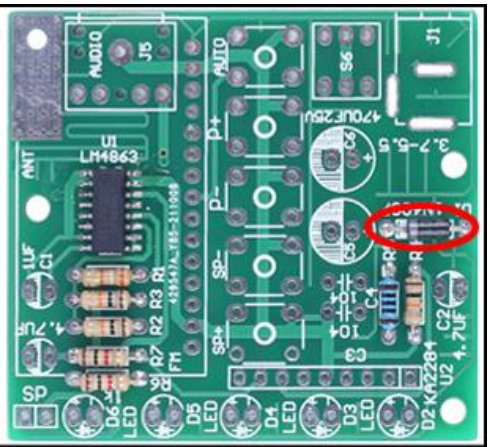


Step 8 Install 1pcs 100ohm Metal Film Resistor at R5.

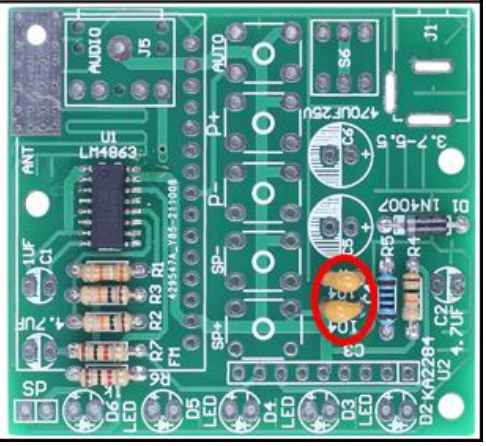


Step 9: Install 1pcs DO-41 1N4007 Diode at D1. Pay attention to the installation direction. There is a white mark on 1N4007 and a white mark on PCB which are used to confirm the installation direction.

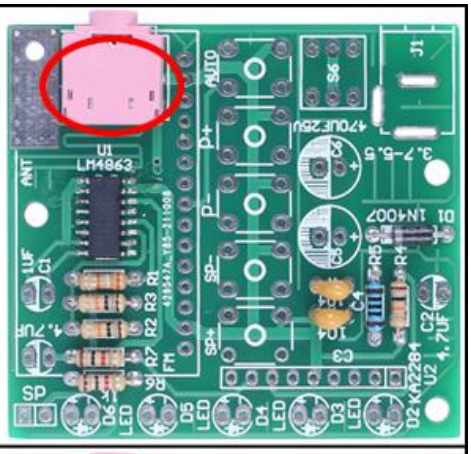
White Mark



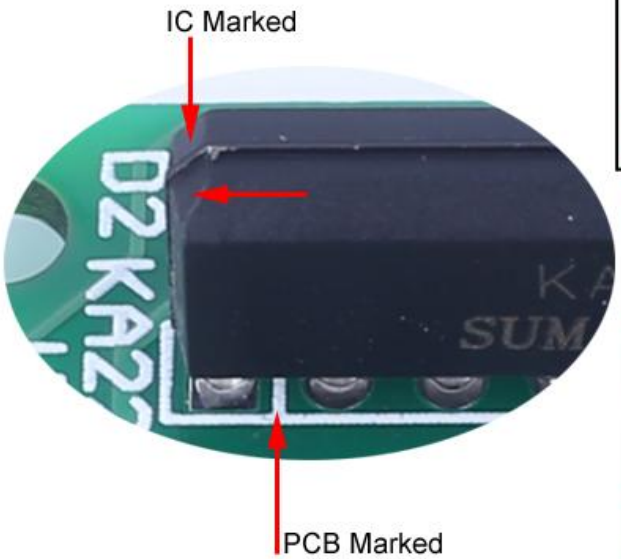
Step 10: Install 2pcs 0.1uF 104 Monolithic Capacitor at C3,C4.

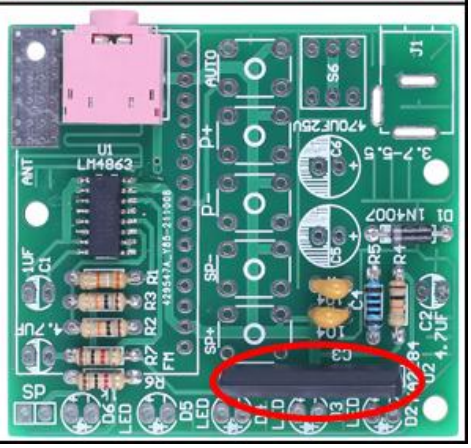


Step 11: Install 1pcs 3.5mm AUX Audio Socket at J5.

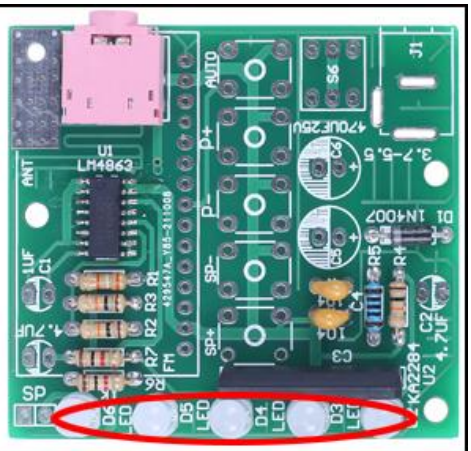


Step 12: Install 1pcs ZIP-9 KA2284 LED Driver at U2. Pay attention to the installation direction.



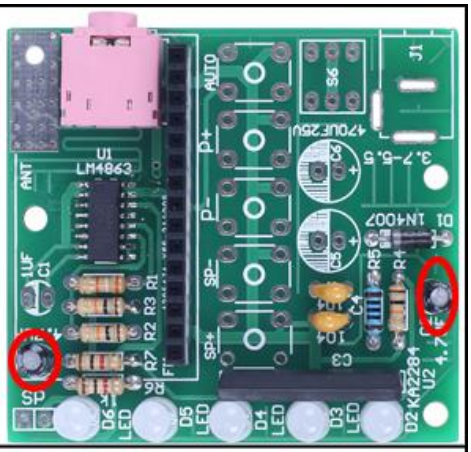


Step 13: Install 5pcs 5mm RGB LED at D2,D3, D4,D5,D6. Note:The longer pin is positive pole and connect to ' + ' pads.

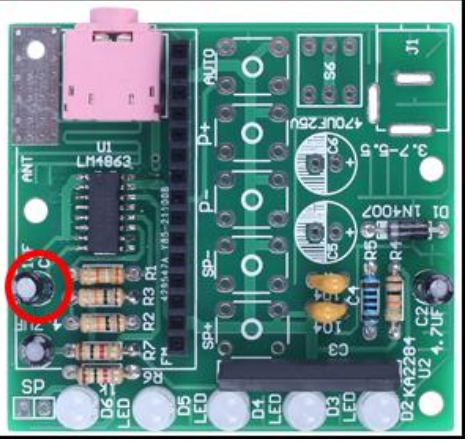


Step 14: Install 1pcs 16Pin DuPont Female Socket at FM.

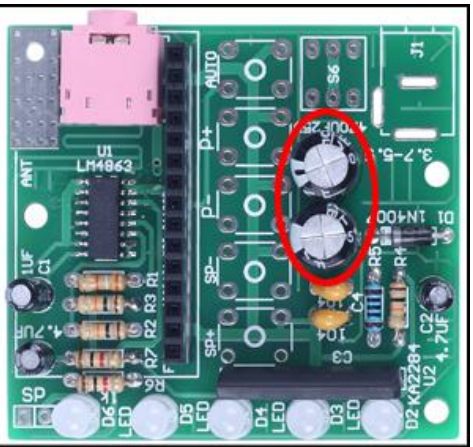
Step 15: Install 2pcs 4.7uF Electrolytic Capacitor at C2,C7.Pay attention to distinguish between positive and negative.The Longer pin is positive pole.



Step 16: Install 1pcs 1uF Electrolytic Capacitor at C1.Pay attention to distinguish between positive and negative.The Longer pin is positive pole.

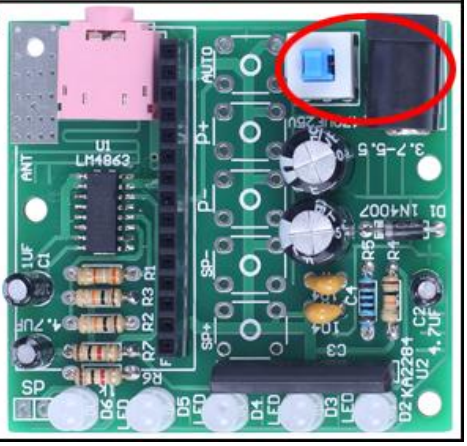


Step 17: Install 2pcs 470uF Electrolytic Capacitor at C5,C6.Pay attention to distinguish between positive and negative.The Longer pin is positive pole.

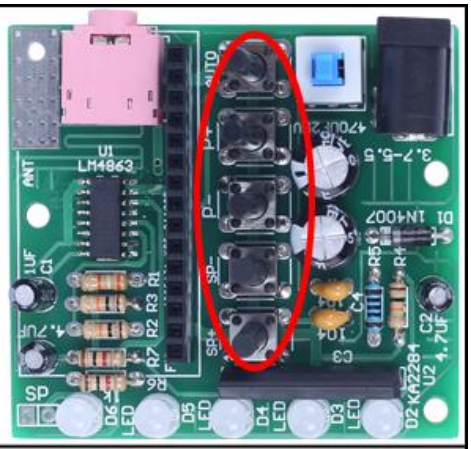


Step 18: Install 1pcs 8*8mm Self-locking Button at S6.

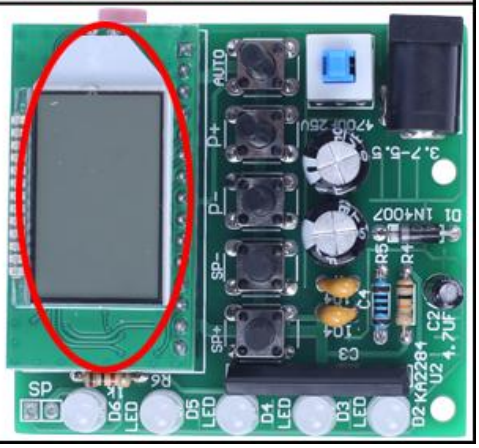
Step 19: Install 1pcs 5.5*2.5mm DC-005 Power Socket at J1.



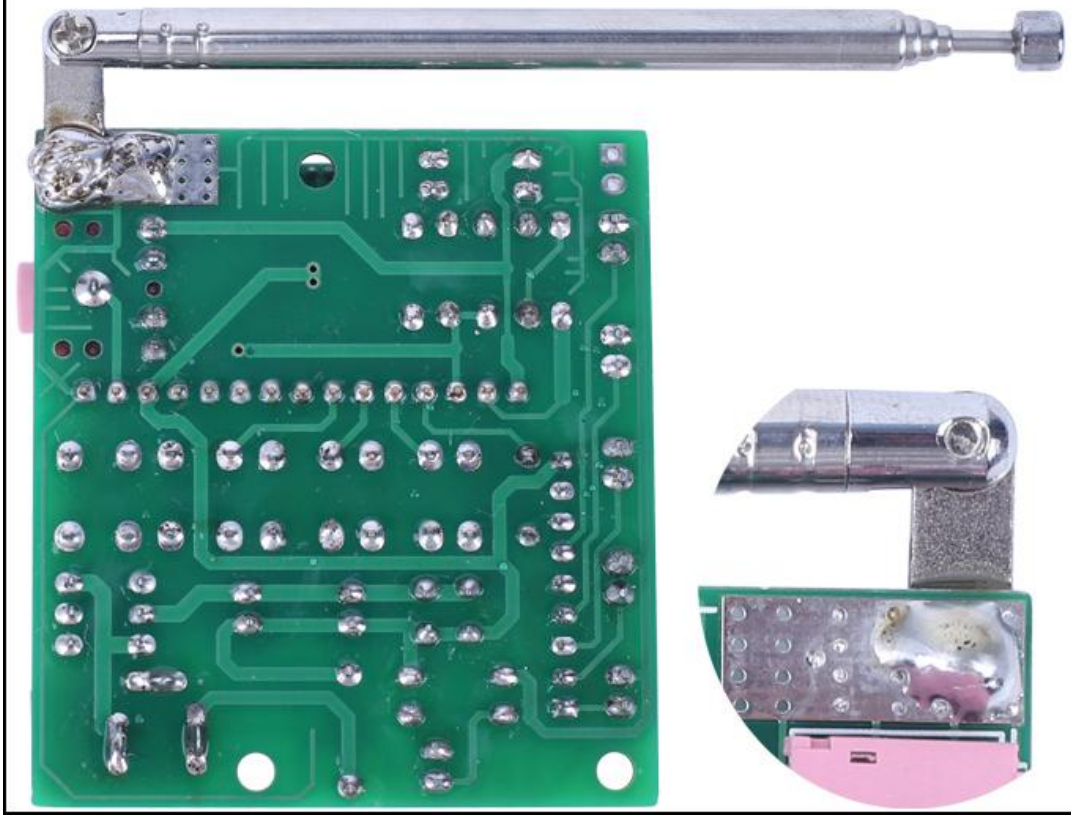
Step 20: Install 5pcs 6*6*20mm Black Button at S1-S5 or SP+/SP-/P+/P-/AUTO.



Step 21: Install 1pcs FM Audio Receiver on Female Socket.



Step 22: Install 1pcs 75ohm FM Antenna at ANT.Note that the antenna is installed on the other side of the PCB.

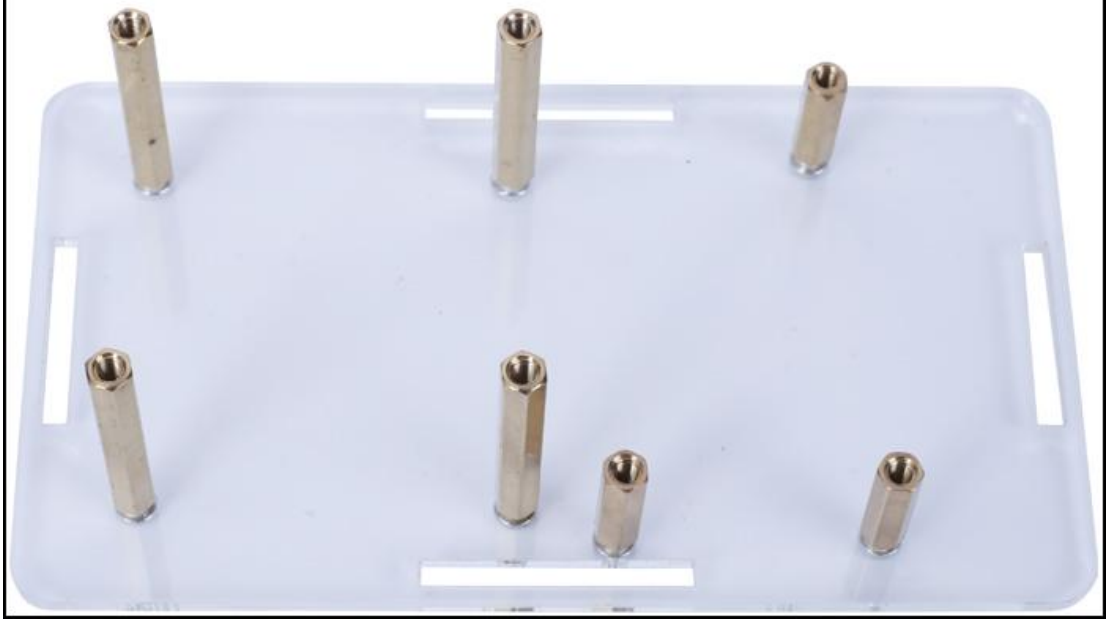


Step 23: Cut 1pcs 20cm Black Wire to 2pcs 10cm wires and connect them to 4ohm 5W Speaker.

Step 24: Connect speaker to PCB at SP. The speaker does not distinguish between positive and negative.

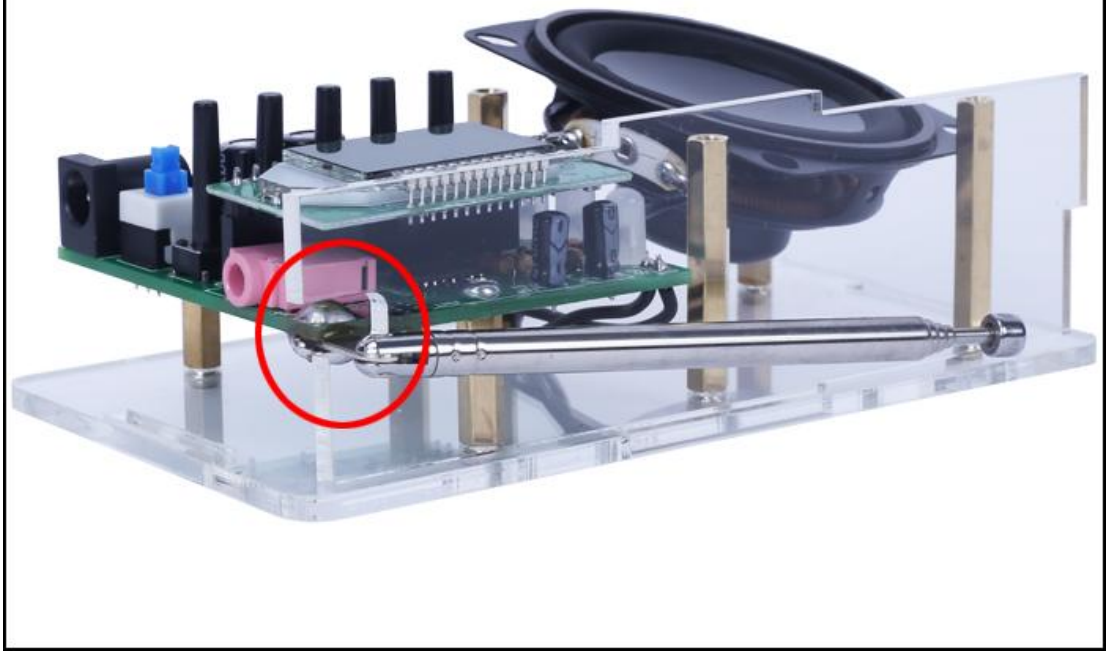
Step 25: Tear off the protective film on the surface of the acrylic shell.

Step 26: Fix 3pcs M3*15mm Copper Pillar and 4pcs M3*30mm Copper Pillar on one acrylic plate by 7pcs M3*6mm Screw.

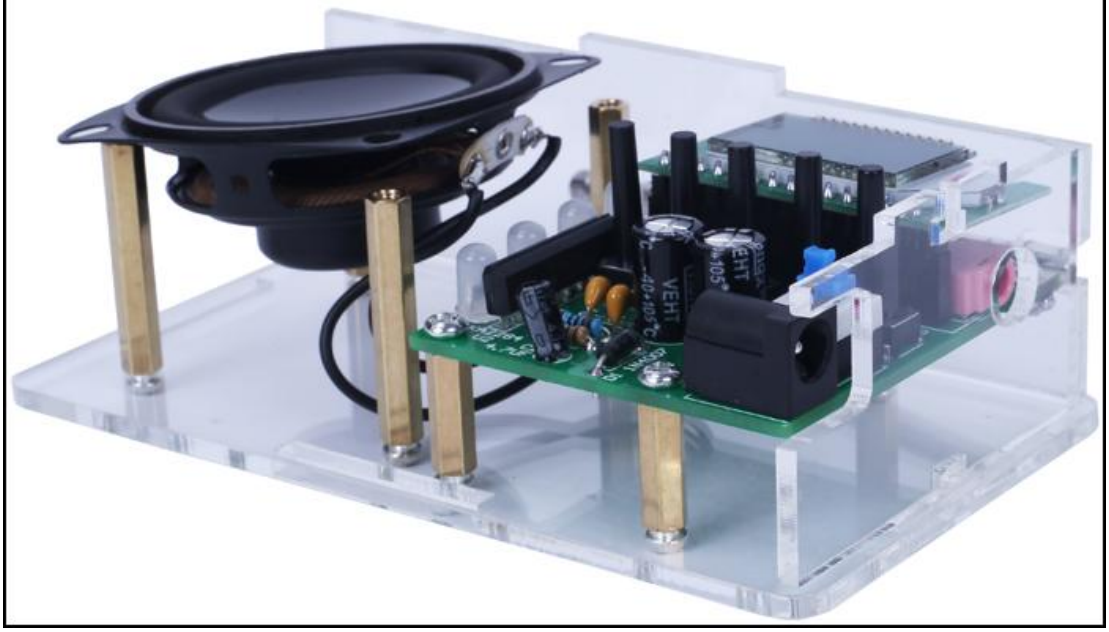


Step 27: Fix PCB on 3pcs M3*15mm Copper Pillar by 3pcs M3*6mm Screw.

Step 28: Install TOP acrylic plate and note the antenna mounting hole and direction.



Step 29: Install side acrylic plate for power socket and note the mounting hole and direction.



Step 30: Install the bottom acrylic plate.

Step 31: Install another side acrylic plate.

Step 32: Install the last acrylic plate and fix it with speaker by 4pcs M3*7mm Screw.