

# BOX6 Simple User Manual

## I. Technical indicators:

1. Power supply voltage: 10 — 15.5V
2. Working current: about 0.13A in receiving state and about 0.4 — 1.5A in transmitting state (different power)
3. RF power: 13.8V power supply  $\approx$  6—8W 15.5V power supply  $\approx$  8-12W (good heat dissipation!)
4. Frequency range: 50 — 54MHZ
5. Receiving sensitivity:  $\approx$  -105dbm — -110dbm (12db SINAD)
6. Harmonics: better than -43+10log(p)dbc
7. Channel: 2 programmable channels Default channel 1: 50.313MHZ Default channel 2: 50.323MHZ
8. Trigger mode: VOX
9. Receiving mode: USB -3db bandwidth  $\approx$  3KHZ
10. Transmitting mode: FT8 WSPR JT9 JT10 JT65
11. Trigger audio frequency: should be kept within the range of 200-2700HZ. (The lower the frequency, the higher the signal quality)

## 2. Panel information:

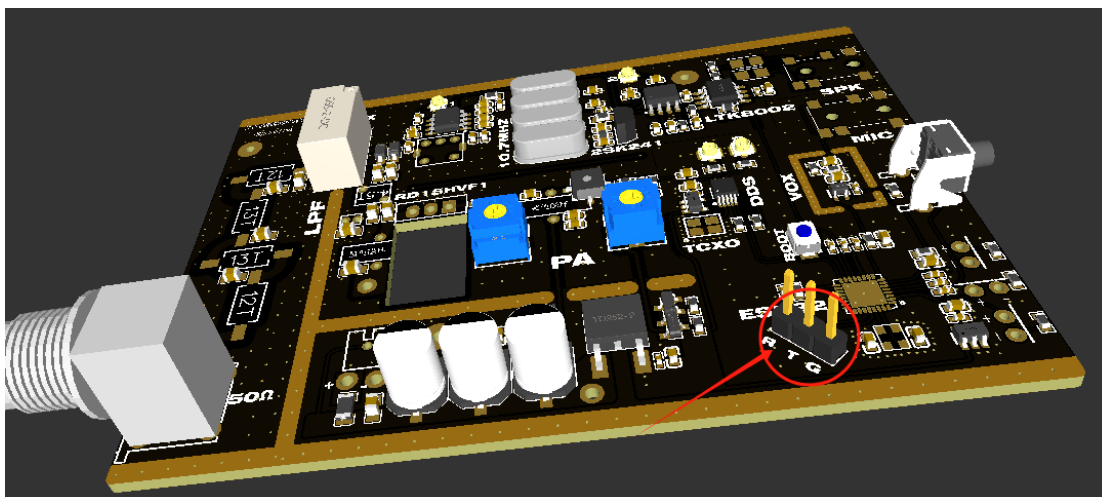


1. RXTX indicator light: always on when transmitting and off when receiving
2. Channel 1 indicator light: always on when working in channel 1
3. Channel 2 indicator light: always on when working in channel 2
4. Control button: short press to switch channels, long press to transmit single tone (channel frequency + 1KHZ audio), used to debug antenna, test power, etc.
5. MIC: audio input port
6. SPK: audio output port
7. Power interface: DC power supply interface
- 8.

## 9. Start using:

10. Connect the two audio cables on BOX6. If you need to use an audio adapter, please connect the adapter (see the audio settings section for details), connect the antenna, power cable, and finally connect to the computer, then power on BOX6, select the desired channel, and finally set the audio input and output source and VOX trigger in the software.

## 11. For channel programming:



**1.** The diagram indicates the UART interface. Use your own serial port terminal program to connect the wires in sequence. Connect the RX, TX, and GND of the serial port module to the T, R, and G of BOX6 respectively. This requires you to open the top cover of the BOX6. Turn off the power of the machine before opening.

```
L口  ?;:  ?5□?)??9 档  SP-ROM: esp32c3-api1-20210207
Build: Feb 7 2021
rst: 0x1 (POWERON), boot: 0xa (SPI_FAST_FLASH_BOOT)
SPIWP: 0xee
mode: DIO, clock div: 1
load: 0x3fcd5810, len: 0x38c
load: 0x403cc710, len: 0x6a0
load: 0x403cc710, len: 0x2624
entry 0x403cc710
..... BOX_6>>>>>>>>>>666>>>>>>>>>V1.01
CH1_SET_OK
CH2_SET_OK
CH1: 50313000
CH2: 50323000
```

单条发送	多条发送	协议传输	帮助
<input checked="" type="checkbox"/> CH1: 50313000	<input type="checkbox"/>	0	<input type="checkbox"/>
<input checked="" type="checkbox"/> CH2: 50323000	<input type="checkbox"/>	1	<input type="checkbox"/>
<input checked="" type="checkbox"/> CH1	<input type="checkbox"/>	2	<input type="checkbox"/>
<input checked="" type="checkbox"/> CH2	<input type="checkbox"/>	3	<input type="checkbox"/>

After confirming that the cable is connected, open the serial port terminal (you need to download it yourself, some software does not support it well and you may need to change it to another), select your serial port number, set the baud rate to 115200, and then power on the machine. In this case, you will see the message returned by the machine as version information (if it is already powered on, you may have missed it, power cycle until you get it).

**1.** Next, program the channel. For example, send CH1:50313000 (set channel 1 to 50313000HZ). If the machine returns the message CH1\_SET\_OK, it means the frequency writing is successful. One thing to note is that the programming data should be accurate to HZ, otherwise it will not work properly until the channel is programmed correctly. All letters should be capitalized. The same is true for CH2.

**2.** Query channel information. For example, send CH1 (query channel 1 frequency), the machine will return channel programming information. The same is true for CH2.

### 3. Some problems:

The serial port gets no data : check the wiring to see if RX TX is connected in reverse.

Is the serial port module driver normal?

Is the baud rate 115200?

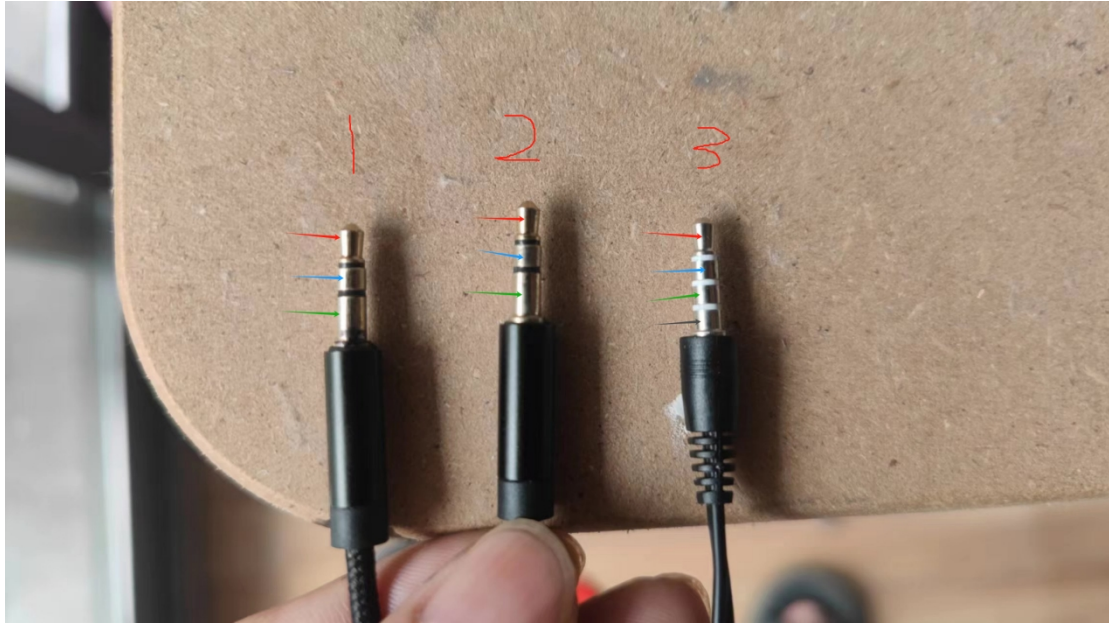
Is the port number in the software correct?

If all of the above are normal, try changing the software or restarting BOX6

Try changing the serial port module

If it still doesn't work, you need to change the software

### Five Audio:



#### 1. Wiring:

1 MIC connector Red, blue, and green are MIC MIC GND

2 SPK connector Red, blue, and green are L R GND

3 Audio adapter Red, green, blue, and black are L R GND MIC1.

#### Wiring:

##### 1. Connection methods for different devices:

1 Computer with two audio interfaces: Connect BOX6 mic to the headphone interface of the computer, and BOX6 SPK to the microphone interface of the computer.

2 Computer or **mobile phone** with one interface, you need to use the audio adapter No. 3 in the figure, connect the MIC of BOX6 to the headphone port of the adapter, connect the SPK of BOX6 to the microphone interface of the adapter, and finally connect to the mobile phone or computer.

3. For the wiring of USB sound card, refer to the above two points.

4. In software such as JTDX, you need to find the audio input and output source options in the software settings, select the option that suits you, and set the volume of the mobile phone or computer to the maximum! ! ! ! ! !  
Especially the power adjustment option in JTDX will have a great impact on the TX volume & VOX ! Try to adjust it until the volume is maximum.

##### 2. Some abnormal problems:

1 Unstable transmission: Check the volume of the computer and the power option in the software!

**2** Unable to transmit: Check the wiring, check whether the audio cable and adapter are suitable for the definition of your device. Check whether it is VOX trigger in the software settings.

The most important thing is to check whether there is undesirable DC voltage on your computer audio output interface. If there is DC voltage, it can only be fixed by using an external sound card (known to be okay is the cm108 model USB sound card).

**3** Sometimes TX may be triggered by mistake: Check if there are other sound outputs on the computer, such as some prompt sounds. Disable those. When using an external sound card, similar phenomena may occur due to some quality problems of the sound card.

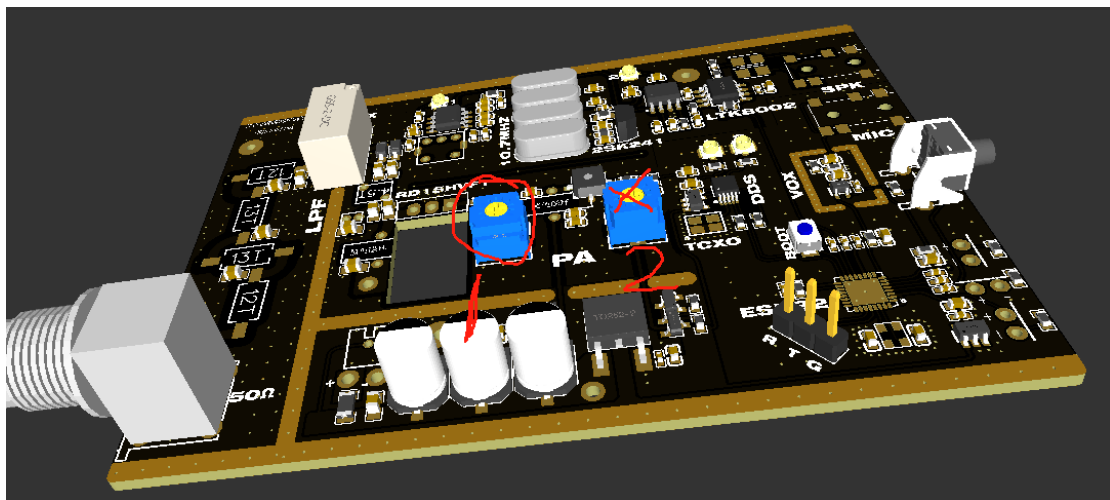
**4** No signal reception: Use headphones to connect to the BOX6 SPK port and listen to see if there is a signal reception. If the headphones can hear the signal, but the spectrum in the computer software does not respond, then you need to check the wiring and wiring connection or settings.

## 6. Power Adjustment

**1.** Turn 1 clockwise to increase the power, and turn 1 counterclockwise to decrease the power. Try not to move the No. 2 potentiometer.

**2.** It is best to use a spectrum analyzer when adjusting the power, otherwise the spurious signal may worsen in some cases.

**3.** Do a good job of heat dissipation! ! ! ! ! ! ! ! See page 5



### Finally:

This looks like a toy box, which lowers the entry level threshold of 6M band equipment. You don't need expensive equipment to experience the magic of magic band. Although it can't compare with the performance, function and quality of professional machines, it is a cheap toy box!

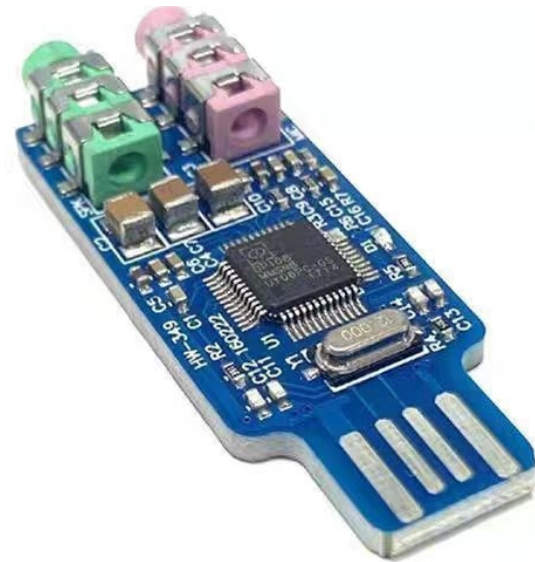
### 1. Some things to note:

**1.** It should be used under supervision, and any adverse consequences are at your own risk.



**2.** Additional heat dissipation is required when using high power! ! ! ! For example, stand it up vertical (the bottom is the heat dissipation surface of the power amplifier), add additional fans or add heat sink !!!! The following figure is a solution of BOX6 for your reference.

**3.** The picture below shows a USB sound card that can be well adapted to BOX6, model CM108. You can find it on various shopping platforms.



SOME TXT EDITS BY DAVE VK7DC