R4 Radio-Network link Box User Manual ver 1.2

Zello EchoLink SSTV PSK31 AllStarLink Node Box

list

R4 basic parameters

Type : USB FM Transmitter
UHF Transmit power : 26 DBm (0.4W)
Weight : 150 grams (0.15KG)
Size : Width: 6CM Height: 10CM

The built-in UHF module is originally designed to be used with other types of handheld walkie-talkies. It may not be suitable for 7X24 hours of continuous operation. The time when I continue to run with abnormal reception and transmission failures, the shortest is 3 weeks and the failure will occur. The longest time is 9 weeks later There is a failure. Disconnect the power supply and power it back on to restore. It is recommended to disconnect the power and reboot every 3 weeks.

Product features are as below :-

1, Built-in USB sound card chip, with high-quality audio input and output.
2, Built-in USB serial chip. E.g. launch control using RTS, receive control using DSR.（ECHOLINK **User**）
3, The built-in audio detection chip controls the radio's PTT button and outputs the sound to the speakers by the radio-compute-controller. （ZELLO **User**）
4, The control-software forwards the input-voice of the microphone with the detection of the SQL radio signal from the USB chip（ZELLO **User**）
5, The USB-Radio Interface is compatible for AllstarLink.
GPIO Detect COS and CTCSS input . GPIO outputs and control the PTT (ASL soundcard function).
6, Built-in UHF module, (no need to connect an external wireless walkie-talkie).
7, USB data transmission has components "common mode inductor" and "magnetic beads". Isolate Power/RF interference and high frequency radiation.
8, The built-in USB HUB is connected to other functional chips, and only one USB cable is used to connect the PC or Raspberry Pi for work..
9, Receive and transmit frequencies... Common parameters can be set and adjusted. One button can quickly switch between five groups of frequency memory and one set of settable modes (VFO).
10, LED status indictors.

Control Principle:-

In general, the Internet voice chat software, with the help of output audio controller that detects audio input from the radio PTT, hence the audio will transmit over. On the other end, once radio receive the audio, the controller detects the SQL signal through the USB control network, the voice chat software will forward to the audio to the radio. In this way, it will be on the radio-linked network.

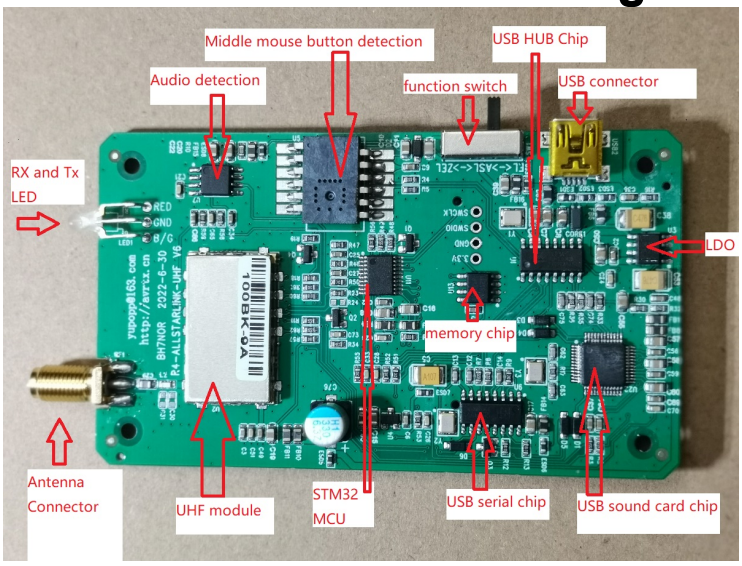
Controller applications:-

By getting the radio link to the network, you can set up radio links or relay links and extend the range radio transceiver or repeater, therefor global radio link is achieved.

The softwares that this product supports are :-

AllstarLink、ECHOLINK, ZELLO, SSTV, psk31, SKYPE, QT, YY and other chat intercom and data transfer software.
Note1: There are some softwares are that not support on USB and control detection, thus at this time, while on the computer microphone input, we can use the software VOX function, or use the keyboard conversion software to trigger them.(described on page 11)

Motherboard function diagram



R4 built-in USB HUB connection system Compatibility test

(Run EchoLink and ZELLO intercom)

lenovo *ThinkPad* W510 (I7-Q820,GPU NVIDIA Quadro FX 880M)	windows 10 enterprise edition	Test Results : PASS
lenovo *ThinkPad* U310 (I3-2540,GPU Integrated Graphics)	windows 10 enterprise edition	Test Results : PASS
TongFang N10Y (N450-1.66G, GPU Integrated Graphics)	windows XP SP3	Test Results : PASS
HP HSN-Q27C-5 (I5-1135G7,GPU Integrated Graphics)	windows 11 Home Edition	Test Results : PASS

R4 built-in USB HUB connection Raspberry Pi Compatibility test

Raspberry Pi 3B+ linux repeater 4.9.80-V7+ (Run AllStarLink) Test Results : PASS

Note2: The R4 built-in transmitter draws a lot of current from the USB port and is not guaranteed to work properly with an untested PC. Connecting a USB HUB in front of the R4 is not supported. Therefore, returns with compatibility issues are not accepted..

R4 external screen function description with laser engraving

"TX: RED" and "RX:B/G" : This is LED status indictors.
When R4 fires, R1 lights up red.
When R4 receives a signal, R1 blue or green light is on.

Function Switch position- Top:

Internal USB sound card/USB audio detection/middle mouse button chip gets power to run. USB mouse middle button detection, connect to PC when running ZELLO or YY…

Function Switch position - middle:

Only the USB sound card chip gets power, USB sound card chip detecting COS / CTCSS and controlling PTT.you can use Raspberry Pi to run AllStarLink to connect R4 intercom.

Function Switch position- bottom:

The USB sound card chip and the USB serial port chip get power supply. The USB serial port chip uses the port RTS (active high) to control the UHF module PTT, uses the port DSR(active low) to detect the UHF module squelch signal (SQL), and can run ECHOLINK/SSTV/PSK31...

Note3: It is not recommended to connect the Raspberry Pi to the AllStarlink intercom when the switch position is at the top or bottom! ! !

Five buttons on the panel to set the function

memory key, Cyclic conversion: M1/M2/M3/M4/M4/VFO

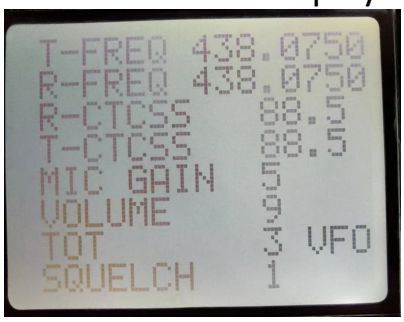
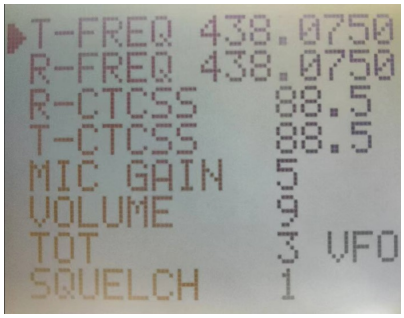
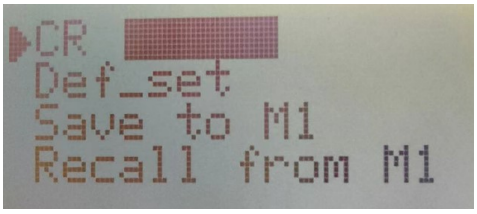
Confirm key/Enter key/Exit key (long press)

Menu key, short press to pop up menu 1, long press to pop up menu 2

Up key/Increase key (Short press the value +1, long press the value +5)

Down Key/Decrease Key (short press the value -1, long press the value -5)

Display menu

A:main interface display	B: menu 1 display	C: menu 2 display
		

T-FREQ : transmit frequency	Value adjustment range 430-470
R-FREQ : receive frequency	Value adjustment range 430-470
R-CTCSS : receive CTCSS	CTCSS=38 Group CDCSS=83 Group
T-CTCSS : transmit CTCSS	CTCSS=38 Group CDCSS=83 Group
MIC GAIN : Microphone gain (transmit audio gain)	Value adjustment range 1-8
VOLUME : Receive Audio Gain	Value adjustment range 1-9
TOT : Prohibited launch time countdown	1-9 (minute) (Recommended default value: 3 minutes)
SQUELCH : Squelch depth	Value adjustment range 0-9

VFO : Custom value setting mode (editable mode)

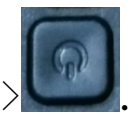
M1-M2…M5 : memory 1-5 Group (Channel memory mode, cannot be edited)

CR : LCD display contrast adjustment

Def_set : All values are initialized

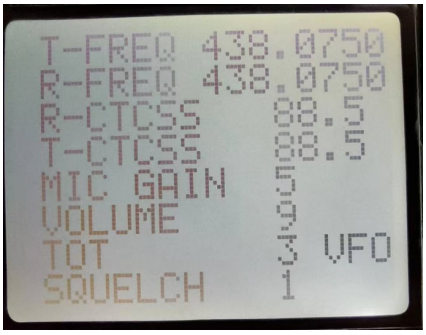
Save to M1 : Save VFO values to M1...M5

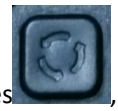
Recall from M1 : Save values from M1...M5 to VFO

Factory initialization operation:  long press to pop up menu 2 ,  short press to **"Def_set",** –>  , –>  .

Editing steps:

1, Menu 1 Edit Settings (VFO)

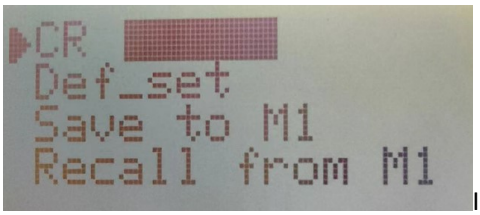


short press several times  , if" VFO" is displayed in the lower right corner, short press  , A right arrow appears in the upper left corner of the standby screen , Entered: Menu 1 Edit Mode

When the LED is off, short press the "Menu button" to enter the "Menu 1 (VFO)" setting mode, a right arrow will appear on the left side of the screen, click the "Menu button" continuously, the right arrow will move down a line, click "ENTER" Enter the value modification mode, and the currently modifiable number will flash. Press "Up" or "Down" to modify the value. Press "ENTER" again to save the modified value, continue to press "ENTER" to move the flashing position of the number... When moving to the rightmost value, press "ENTER" to confirm, then press "Menu" to switch to the next line...

When the setting is over, press "enter" to confirm the save, without any operation, wait for 20 seconds to automatically exit.

2, Menu 2 Edit Settings



In the standby screen, when the LED is off, long press the "menu button" to enter the menu 2 setting mode, Continuously click the "Menu key" to move down the function.....

CR : LCD contrast adjustment, press the up key to increase the contrast, press the down key to decrease the contrast

Def_set : Press "up key" or press "down key" to display "FAC_SET", then press "ENTER", all values return to default values

Save to M1 : Press "Up" or "Down" to switch from M1 to M5, then press "ENTER" to save the VFO value to M1...M5

Recall from M1 : Press "Up" or "Down" to switch from M1 to M5, then press "ENTER" to save the values of M1...M5 to VFO

Note 4. During the programming and setting process of menu 1, only the number flashes, and the digital value can be edited and modified.

Note 5. Press any key to turn on the backlight, if there is no key operation within 20s, the backlight will turn off and enter the power saving mode

Note 6. Press the Enter key to save successfully. If there is no value input within 20s after the last digit is modified, the system will automatically return to the menu interface. After 20s, the system will return to the main interface, and after 5s, the system will Auto lock screen

Driver Installation:

- **USB sound card chip: the Windows operating system has the integrated driver; hence, installation is not needed.**
- **USB mouse middle key detection chip: the Windows operating system also has the integrated driver; hence, driver installation is not needed.**
- **But you need to install the USB serial driver, the download link is as below:-**
  http://avrtx.cn/download/USB%20driver/CH340/CH340%20DRIVER.ZIP
  http://www.wch-ic.com/search?t=all&q=CH340 (CH341 Driver compatible)

Important function microphone settings:

System audio management interface, do not select the microphone to enhance or AGC, if you select the option , the audio of other party will be very loud and noisy。

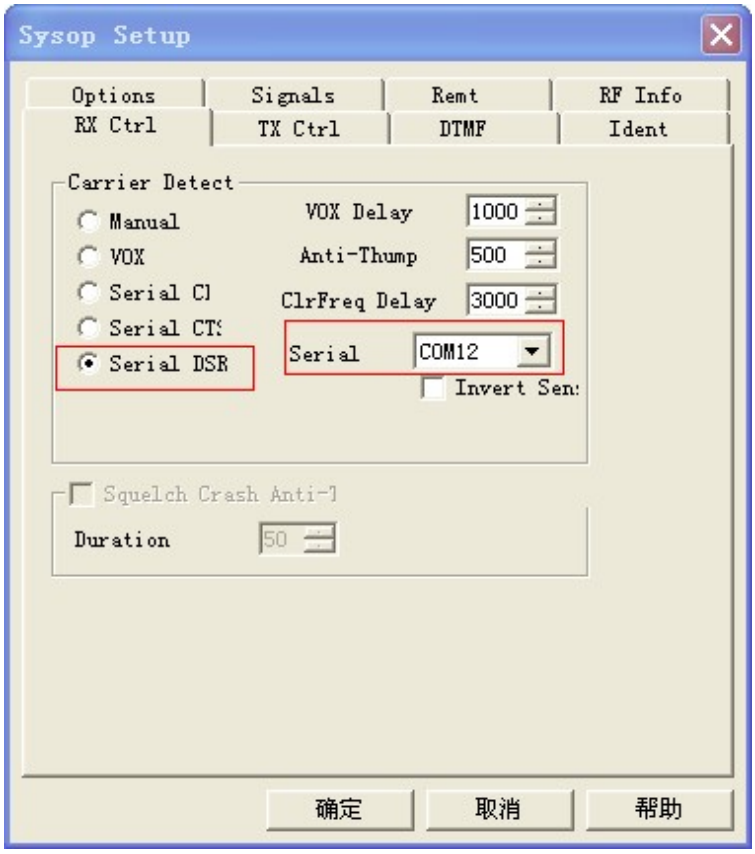
ECHOLINK and MMSTV Connect to use:

ECHOLINK Set reference

Select audio input and output as: USB pnp sound device
Input and output volume setting, please set to the system audio management interface

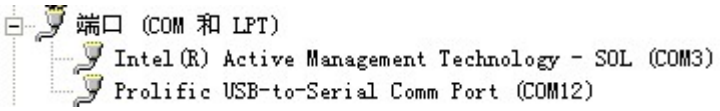
Important function microphone settings:

System audio management interface, do not select the microphone to enhance or AGC, if you select the option , the audio of other party will be very loud and noisy。

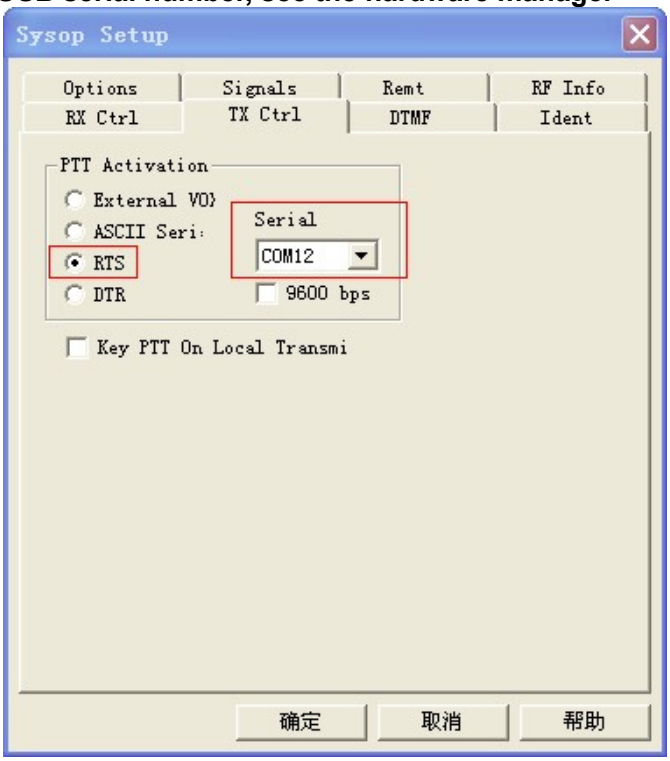


Set receive control as: Serial DSR

Select: USB serial number



USB serial number, see the hardware manager

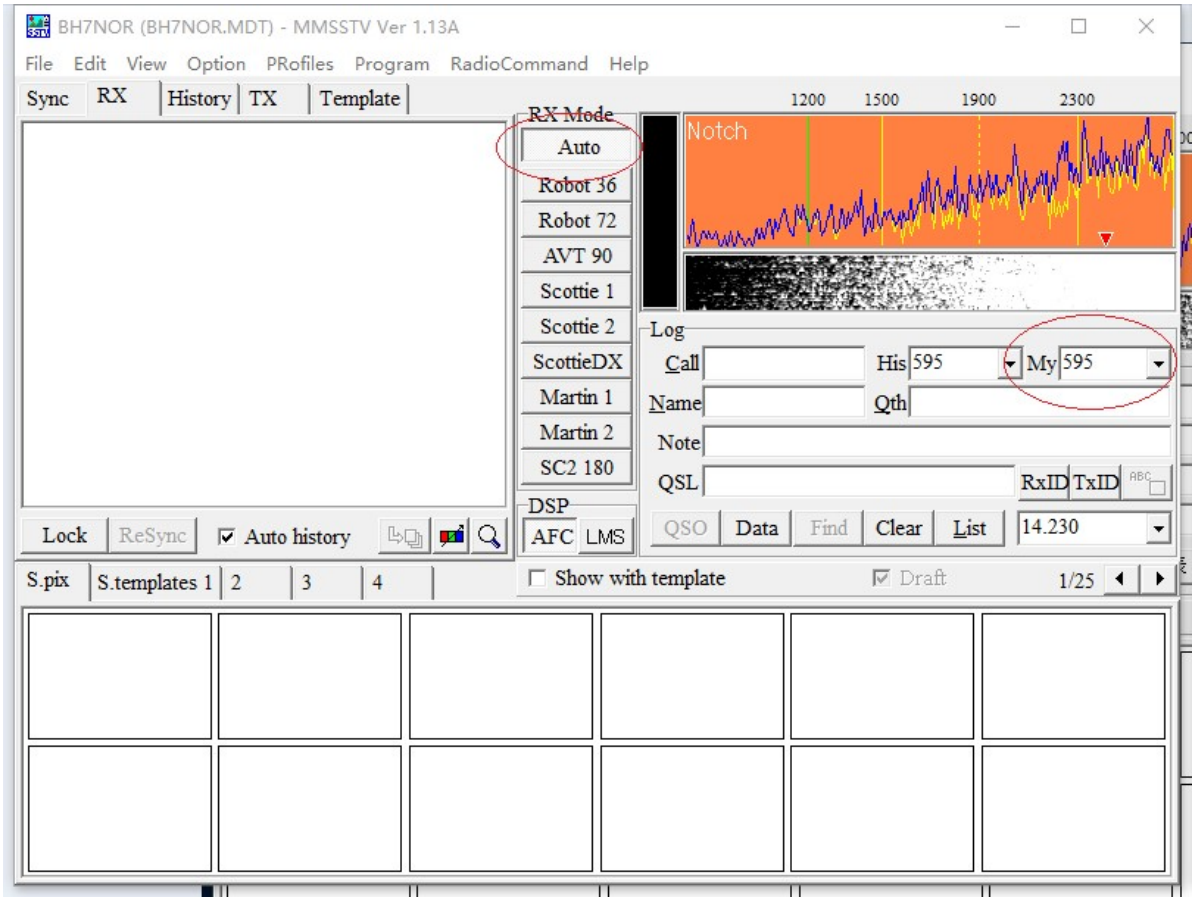


Select: USB serial number

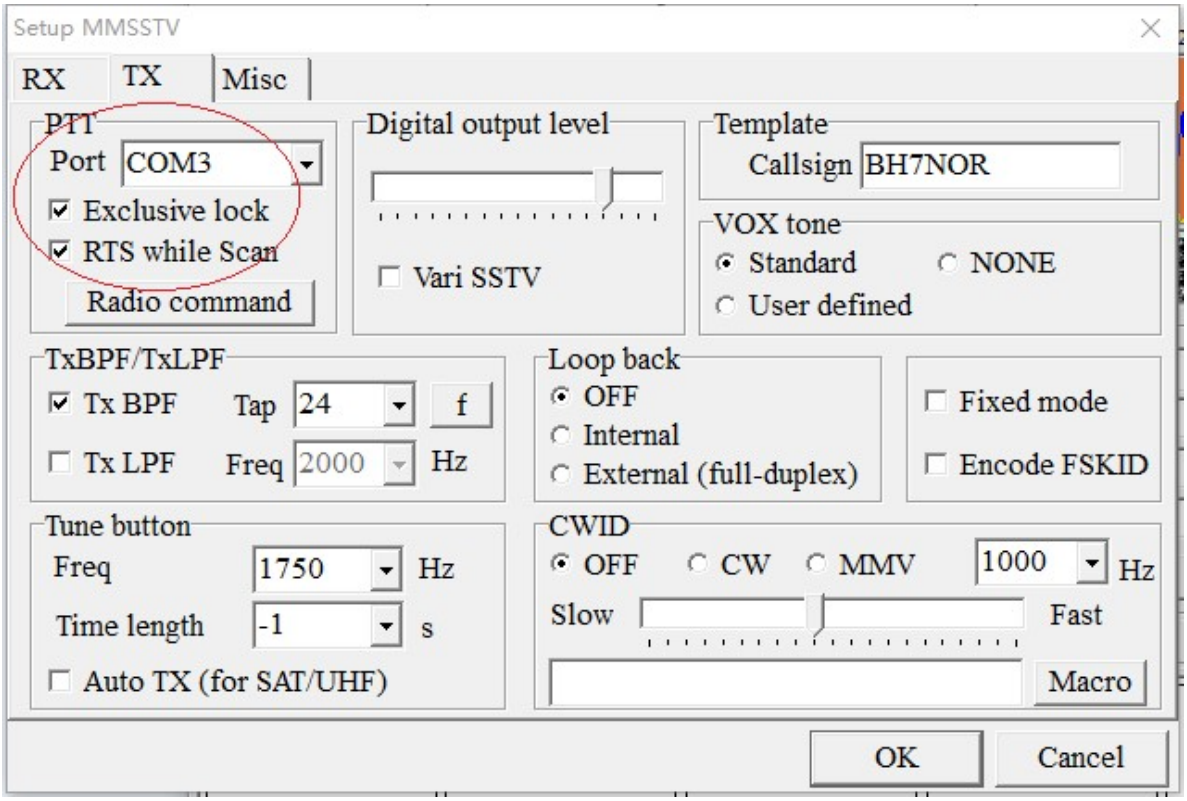
Set the launch control as: Serial port RTS

Note7: If the R4 control is abnormal after the PC is turned off, please set "PC shutdown=USB no power" in the PC BIOS. The reason for the above problem is related to the drive control principle of R4 and PC-ECHOLINK serial port RTS control. Not an R4 design flaw. There is no solution to this problem.

MMSTV Set reference



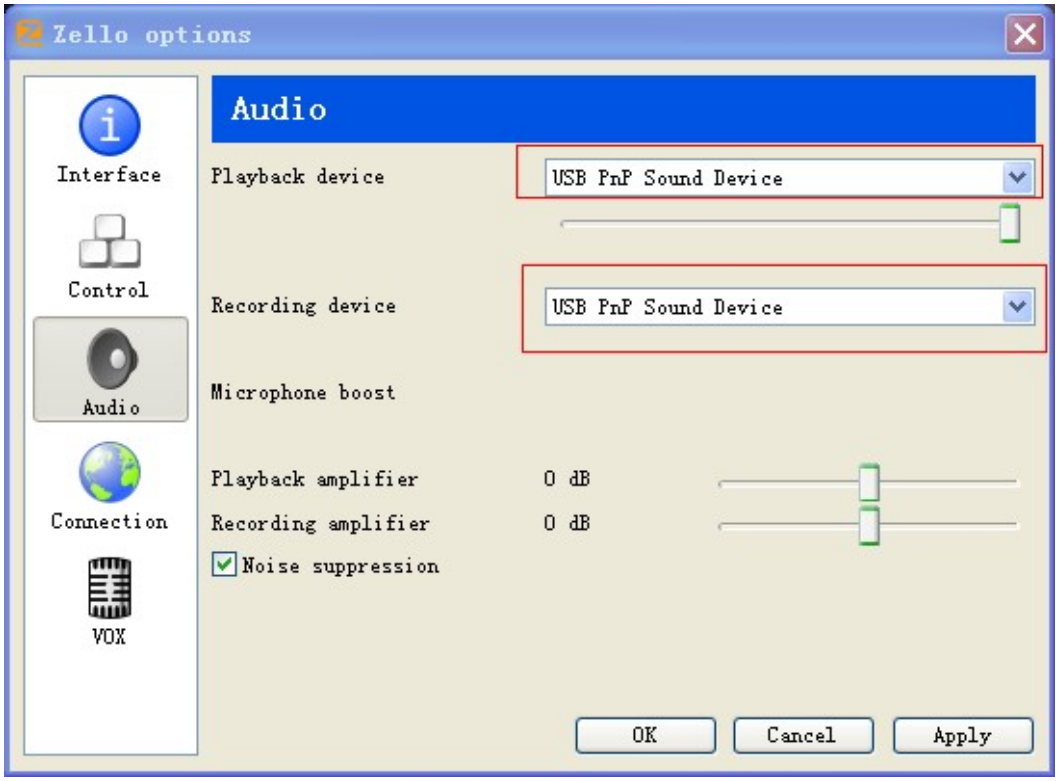
Select RX MODE : AUTO



Select: USB serial COM number, Select Exclusive Lock and RTS While Scan

Below is the connection to use in ZeLLO:-

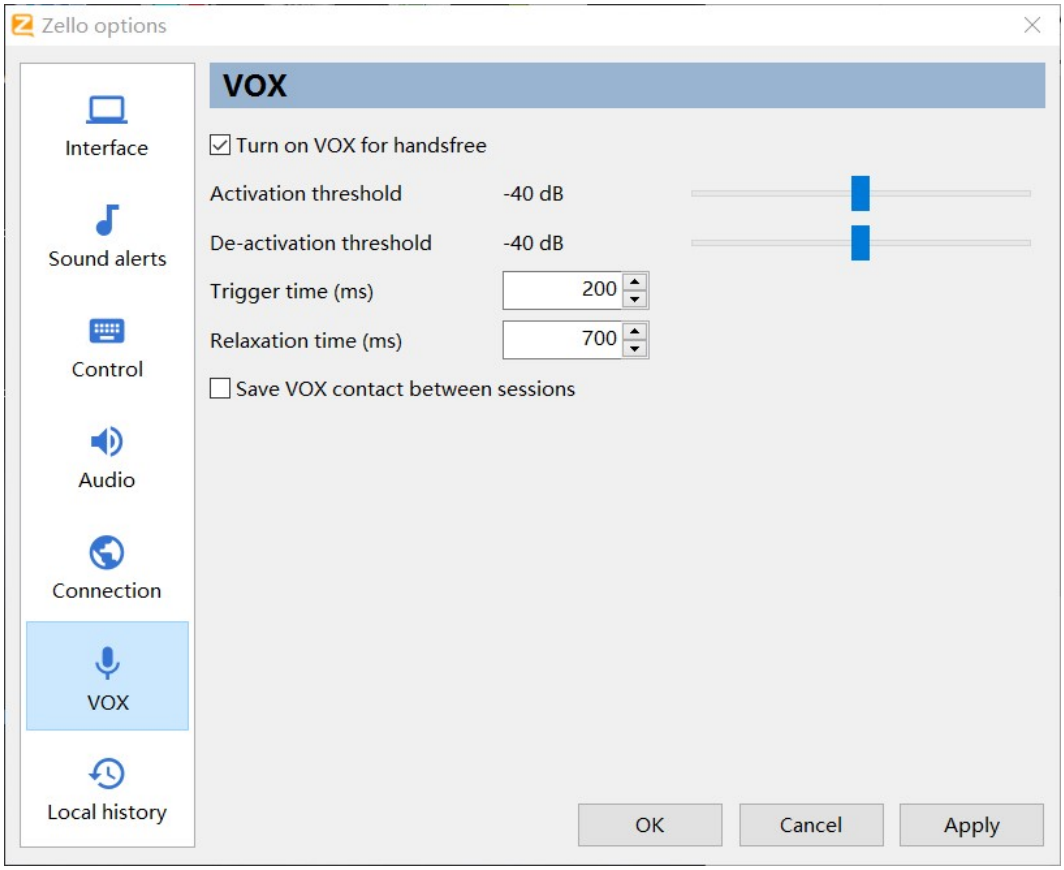
The “set reference” for ZeLLO:-



zello ver 1.38

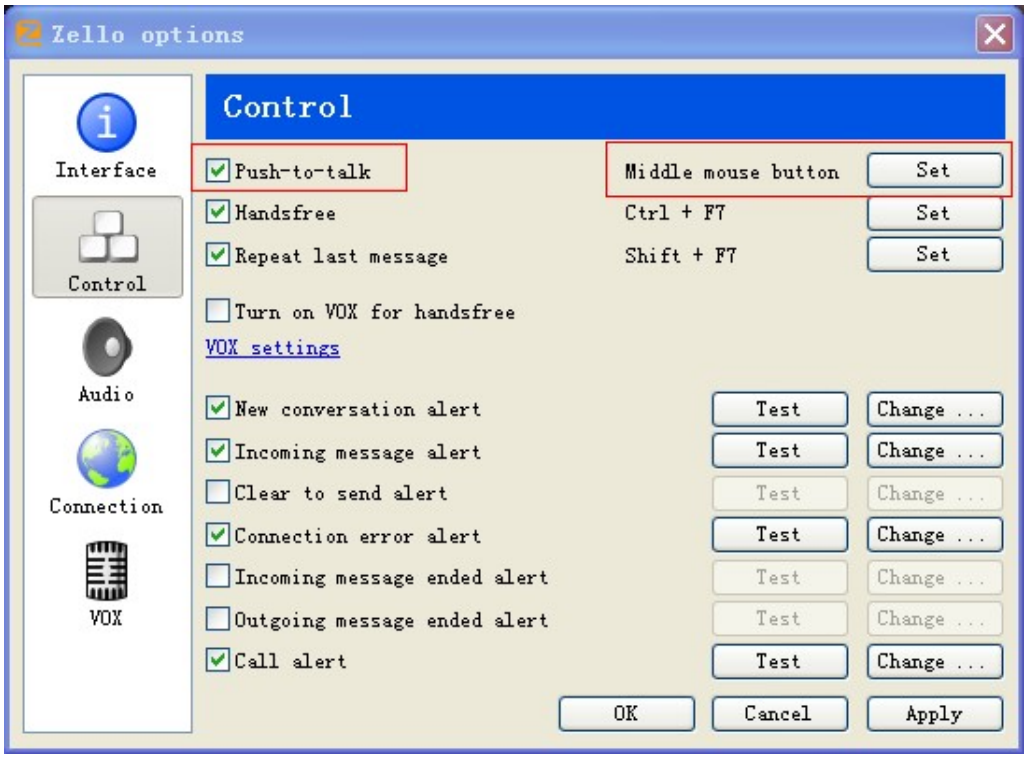
1, set the audio on both input and output to USB PnP Sound Device (windows operating system already has the integrated driver)

Important function microphone settings: System audio management interface, do not select the microphone to enhance or AGC, if you select the option , the audio of other party will be very loud and noisy。



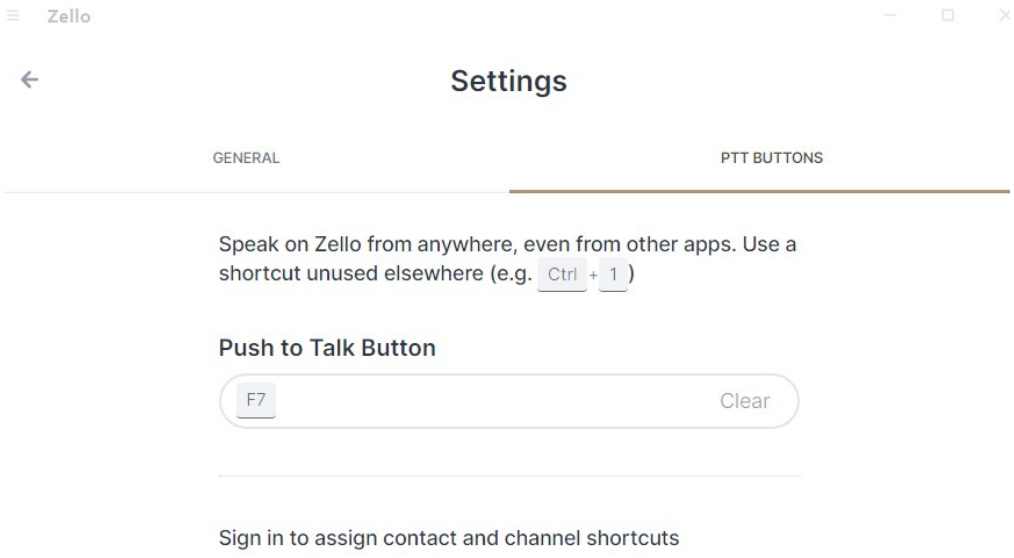
zello ver 2.6

2-A， Select ZeLLO detection as "VOX Enabled"



zello ver 1.38

2-B，Set Push to talk on ZeLLO to “Middle Mouse Button”



zello ver 15.0.1

Note: The new version of ZELLO does not support the middle mouse button mode, you need to run "MouseChange". Convert the "middle mouse button" to: keyboard value "F7". The window is minimized to run. At this time, R1 internal detection will It will be converted to "F" 7 to trigger ZELLO forwarding. Program MouseChange download website: avrtx.cn

This is a screenshot of the mouse to keyboard settings

Using the same settings, you can also control other keyboard trigger software, for example**: ESChat...**

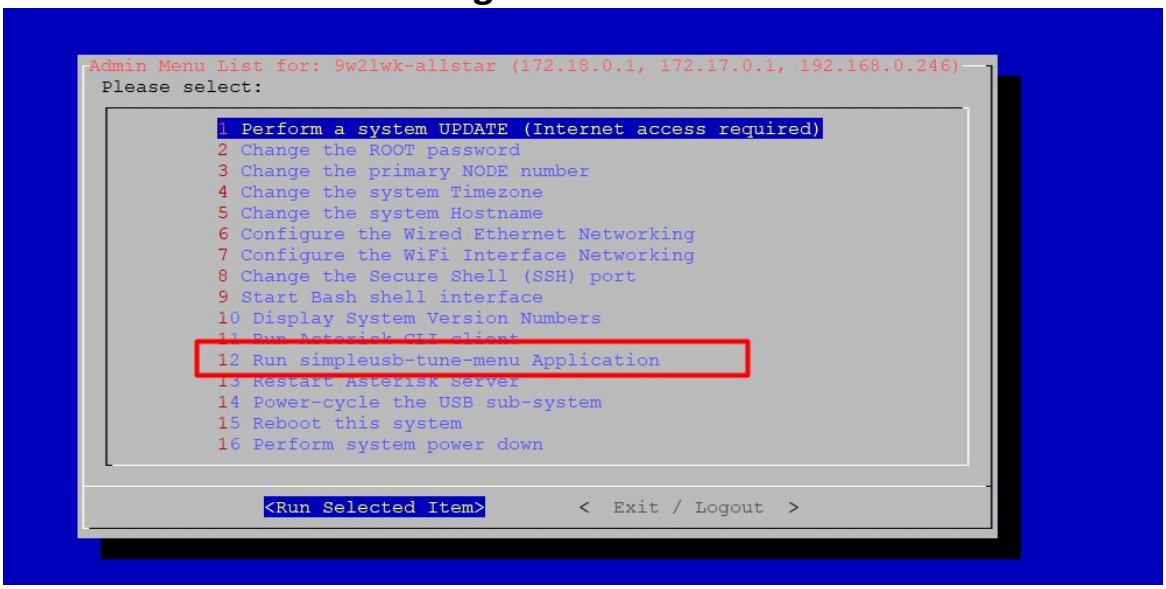
AllstarLink Connect to use:

Allstarlink settings and Raspberry Pi system mirror download URL:

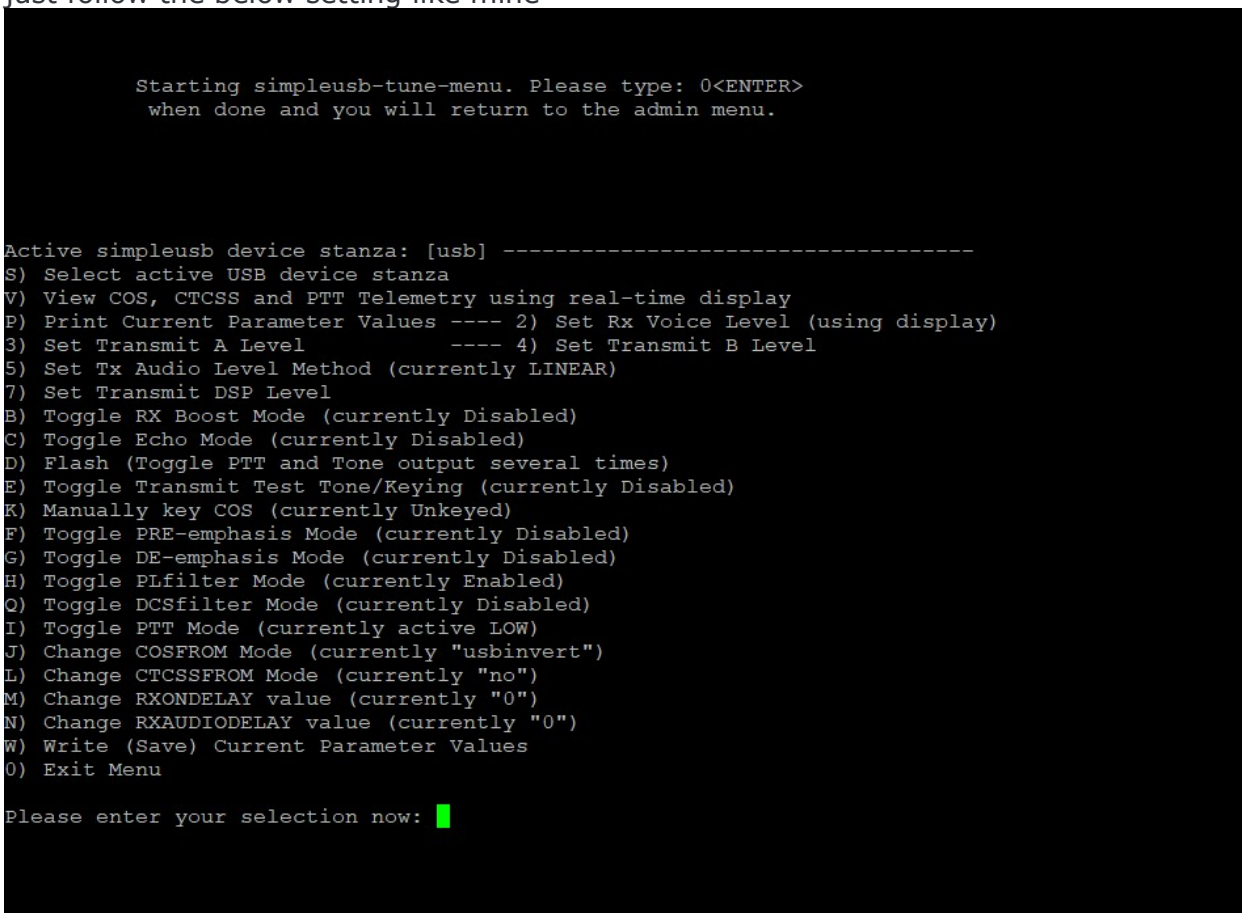
https://allstarlink.org/ https://hamvoip.org/

allstarlinkr image download: https://hamvoip.org/#download

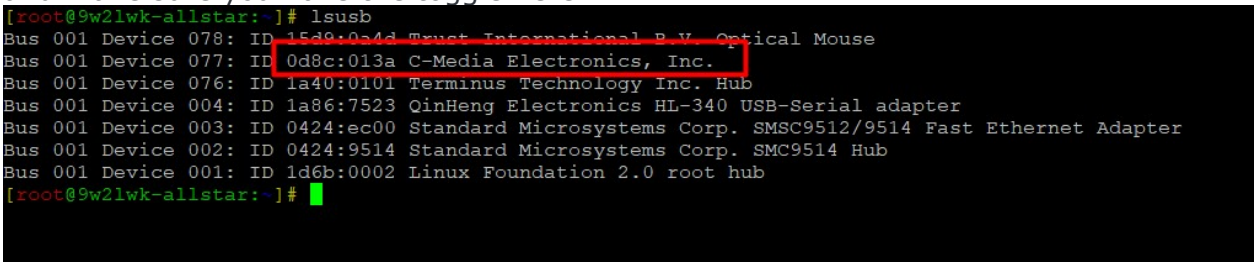
R1 hardware related settings of allstarlink:



just follow the below setting like mine

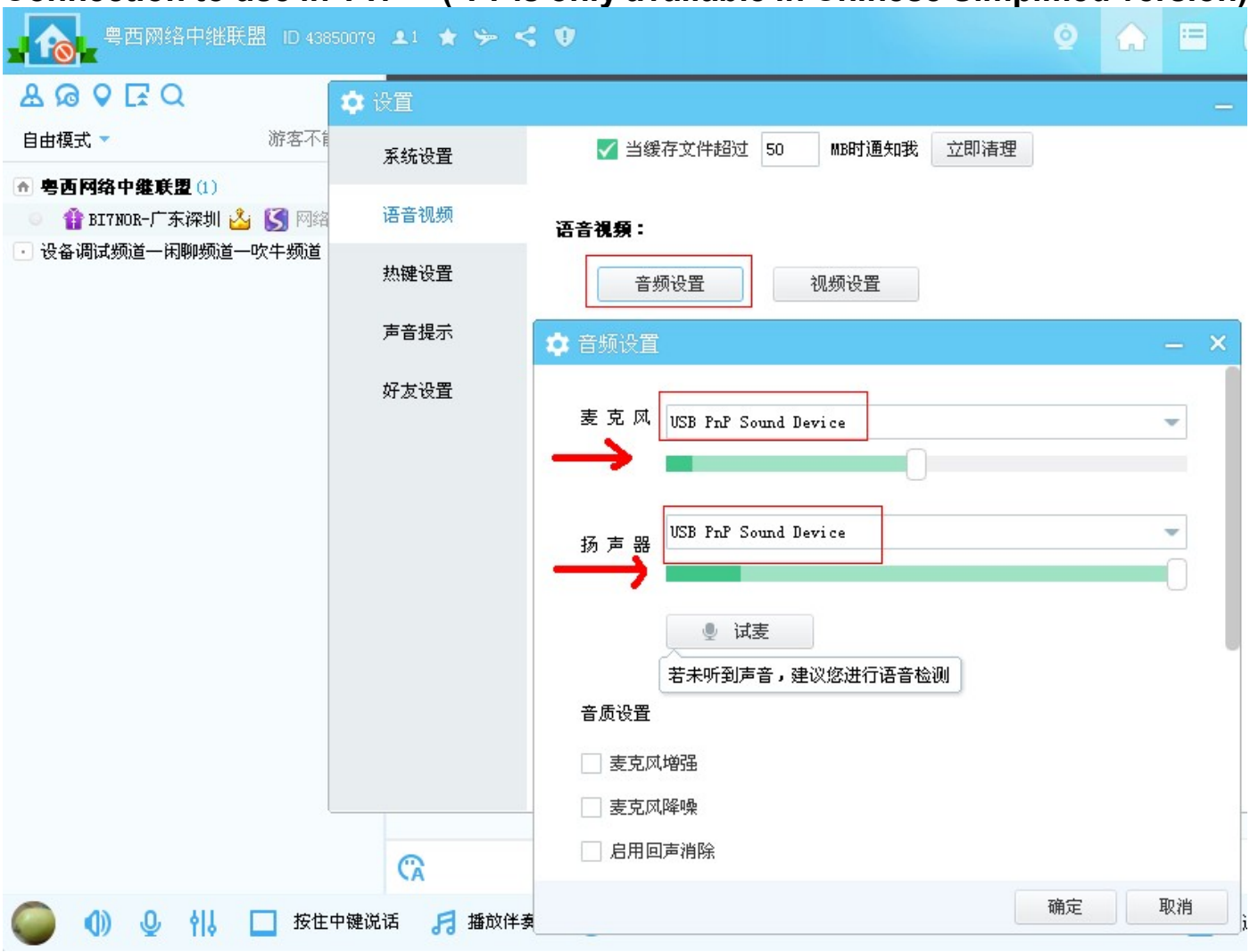


and make sure you have the toggle here:-



Note:For help with connecting Allstarlink to R1, please contact 9W2LWK, email: 9w2lwk@gmail.com

Connection to use in YY: (YY is only available in Chinese Simplified version)



On the YY channel, select both the microphone input and speaker output to "USB PnP Sound Device" on the system audio management interface, please do not select microphone enhancement or AGC, if you select the option, the audio of other party will be very loud and noisy

If you want to set the external radio to receive the audio sent through the network from each other, choose to press the mouse to speak: the middle button (selected the green point, and click the middle mouse button).

External radio transmission is the internal default control, it does not need to set.

Tip: The middle mouse button control function should be reserved for YY software. In order to avoid mis-forwarding network communications, other software can not overlaps/reuse/override the middle mouse button.

The last two suggestions are to disable the voice prompt function. This is to avoid miss trigger on communication.

Accessories list ：

R4 Box	**1 PCS**
USB- Cable	**1 PCS**
UHF ANT	**1 PCS**

Manual Download URL：**http://avrtx.cn/**

Contact E-mail： yupopp@163.com

manufacture：BH7NOR (Old callsign: BI7NOR) **Manual Fix: 9W2LWK**

R4 Manual version 1.2 March 8, 2023