



HB-1B MK4 2018

## 4 band CW QRP transceiver Manual

### Introduction:

HB-1B MK4 2018 is the upgrade version of our HB-1B QRP transceiver. It is a small in size, light weight, lithium battery pack , particularly suitable for travel, picnics and other outdoor activities.

HB-1B MK3 covered 40m,30m,20m, (17m) and 15m amateur bands. With the DDS circuit to generate VFO signal, it can also work outside of the 5 amateur bands. It can cover between 5.9-22MHz band short wave radio bands. Additional IF bandwidth switching adjustable continued, you can receive a good SSB, AM and CW signals.

HB-1B MK4 LCD display: frequency, operating mode, supply voltage, S meter, receive fine-tuning (RIT) and forward and reflected power level, It is very convenient to use.

HB-1B MK4 have 30 frequency storage memories can be convenient to change the operating frequency and band. Frequency step Can be easily to change, amateur bands: 10Hz, 100Hz, 1KHz, 100KHz. Radio frequency bands: 10Hz, 100Hz, 5KHz, 100KHz. Receive fine-tuning (RIT) has the step 10Hz and 100Hz.

### Specifications

Size: 143\*88\*38mm (not including knob, etc.)

Weight: about 380g (not including battery pack)

Supply voltage: 9-14VDC

Current drain

Receive: about 70mA

Transmit: about 800mA (DC12V)

Receive: 5.9-22MHz continuous

Transmit: 7.0-7.3MHz, 10.1-10.15 MHz, 14.0-14.35 MHz, 18.068-18.168MHz, 21-21.45MHz.

VFO: DDS circuit with 54MHz reference frequency

Display: 1602 LCD.

Output power: 12V supply 4-5W、

Side tone: about 700Hz

Automatic key: adjustable speed Built-in.

Selectivity: 3 crystal filter, IF bandwidth adjustable 400Hz-3kHz

Audio Output: 8 ohm load about 0.1W (Need to take stereo connector)

### Connection

#### Battery power supply setup

Remove the four screws on the back, battery holder can be installed. Please only use ( 3 ) rechargeable 14500 lithium batteries (not included). Only charge it with our special lithium battery charger (included). Standard AA batteries will not work.

### External power supply

Any 9-14V DC voltage or battery can be connect to power jack at top.It has a polarity protection circuit.

### Antenna

Any tuned antenna can be connected directly to the antenna(ANT) with a BNC connector, for non-resonant antenna need to use an antenna tuner

### Headphones

Stereo headset will be connected to the headphone port(PHONE), impedance 8-32 ohm.

### Key/Paddle

The HB-1B has an automatic function that determines what type of key is being used and is initiated at Power On time. you will hear (in CW) the sound of the letter "A" if the paddle is connected or the letter "M" if the straight key is connected. (Must plug in straight key before power on to active straight key)



3.5mm stereo plug

### The operation of HB-1B

When power on, you will be heard (in CW) the sound of the letter

“A” if the paddle is connected or the letter “M” if the straight key is connected. (If not connected any key, will heart he letter “A”).

#### V/M/SAV Button



Click this button will be Alternating between Memory mode(MEM)and VFO mode, the LCD screen will show the MEM-\*\* or VFO-\*\*(The figures for 01-30).In Memory Mode the Tuning knob is used to change memory locations. In VFO Mode the Tuning knob is used to change the frequency.

Press the V/M/SAV button for 2 seconds(the LCD screen will display SAVE), the current frequency and current mode will be stored in the Memory Location selected.

#### RIT/MOD button



Click this button to enter or exit RIT function. RIT 0.00 showing, the step is 10Hz in adjustment mode

When in the RIT mode, turning the tuning knob clockwise raises the frequency (as indicated by the up arrow). turning the tuning knob counter-clockwise will lower the frequency (as indicated by the down arrow).

To Change mode, press and hold the RIT/MOD for 2 seconds. This will allow you to change the mode from CW to USB to LSB and CW again. Press and hold the RIT/MOD for 2 seconds for each change.

XIT/DEL button



Click this button to enter or exit XIT function. Screen showing XIT 00.0, the step is 100Hz.

To change QSK setup, press and hold XIT/DEL button for 2 seconds, each press XIT/DEL will switch between Full(QSK), 250mS, 500mS and 800mS. Press XIT/DEL for 2 second to save.



Change the Frequency Tuning Steps

While working in Ham band, pressing the tuning knob will change the tuning step between 10Hz, 100Hz or 1KHz (in the RIT mode, will be 10Hz and 100Hz). Working in board casting band, the step is 10Hz, 100Hz and 5kHz.

If you Pressing the tuning knob for 2 seconds, the tuning step will be 100KHz.

IF filter adjustable function

Use IF FILT to change the IF filter bandwidth

ATT switch

Turn to ATT, the RX signal attenuation is about 20db

## Transmitting



You can transmit in 5 mentioned band. The screen display “TX” when transmitting. S meter indicate the power output, screen showing forward power output and R for resistant power, you want to see less R as possible. Showing HI! Means your SWR is too high to operate. The indicator closed to antenna showing light up means in transmitting. The screen display “TX ERRER” when you try to transmit outside 5 Ham band.



## Automatic key function

### Automatic call CQ

Press the CQ/SET button lightly to send “CQ CQ CQ DE (yourcall sign three times) + K”. If the CQ is to be cancelled press CQ/SET button for 1 second at any time during the CQ.

**Below 3 function must use paddle to operate**

### Change speed

Press CQ/SET button for approximately 2 seconds and the Morse code letter “S” will be heard, then release the button. With in 8 seconds, push the paddle to the DOT side to increase the keyer speed or to the DASH side to decrease the keyer speed. When complete, press CQ/SET lightly to exit (the letter “E” will be heard).

### How to enter your call sign

Press CQ/SET button and hold about two seconds ,you can hear the Morse code letter “S”, continue to hold down the CQ/SET button until you hear the letter “I”, at this time release CQ/SET button, and then send your call sign with paddle as usual. When done, a short click CQ/SET button to exit, you can hear Morse code letter “E”, or wait for about 8seconds, it will automatically exit.

### Antenna tuning function

Press CQ/SET button and hold about two seconds ,you can hear the Morse code letter “S”,continue to hold down the CQ/SET button until you hear the letter “I”,continue to hold down the CQ/SET button until you hear the letter “T”,then release the CQ/SET button.Push the paddle to the DOT side to send continued carrier, then push to the DASH side to end. When complete, press CQ/SET lightly to exit

### Reset

This operation will reset the 30 frequency memory to its original value. And, you need a frequency meter to calibrate the frequency of DDS.

Turn-off power, Simultaneously press both V/M/SAV and the RIT/MOD, turn-on power, holding down the two keys until you see the LCD display like this, then release the keys.



A few seconds after entering the DDS calibration state, the LCD display will show below:



Testing the frequency at DDS testing point with a frequency meter,Adjust the frequency with tuning-knob, Until the frequency of reading is the same as the LCD display. Press the RIT/MOD button to exit. Push V/M/SAV to finish.

Adjust VR2 for DC voltage display on LCD screen if needed.

Adjust VR1 for the sidetone audio level

Adjust VR3 for the screen contract level

Adust VC1 for the side tone if off 700Hz.

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