

# HB-1A three-band CW QRP transceiver Manual



## Introduction:

HB-1A mk2 with a small size, light weight, can use internal batteries, making it ideal for travel, picnics and other outdoor or portable activities.

The HB-1A covers the 20m, 30m and 40m amateur bands. With a DDS circuit generating the VFO signal, it can also work outside of the three amateur bands. It can cover between 5-16MHz band short wave radio bands. Each CW and SSB IF filter has four bandwidths to choose, you can receive good SSB, AM and CW signals. Also cross-mode contact can be made.

HB-1A's internal battery option can provide about 2-3W of RF power, with external 12V power about 4W output power. HB-1A uses low-power design, the receive current is approximately 55mA.

The HB-1A LCD display: simultaneously shows frequency, operating mode, supply voltage, S meter, receive fine-tuning (RIT) and other information, It is very convenient to use.

HB-1A has a 20 frequency storage memory (useful for quickly changing the operating frequency and band). Frequency step Can be easily changed, amateur bands: 100Hz, 1KHz, 100KHz. Radio frequency bands: 100Hz, 5KHz, 100KHz. Receive fine-tuning (RIT) has two step options - respectively 10Hz and 100Hz.

## Specifications

|                        |  |
|------------------------|--|
| <b>Size:</b>           | 140 x 95 x 35mm (not including protrusion of the knob, etc.) |
| <b>Weight:</b>         | about 500g (not including batteries)                         |
| <b>Supply voltage:</b> | 9-14VDC  |
| <b>Current drain</b>   |  |
| <b>Receive:</b>        | about 55mA quiescent current when                            |
| <b>Transmit:</b>       | about 550-950mA (according to the different supply voltage)  |
| <b>Frequency range</b> |  |
| <b>Receive:</b>        | 5-16MHz continuous   |

**Transmit:** 7.0-7.3MHz, 10.1-10.15 MHz,14.0-14.35 MHz  
**VFO:** DDS circuit with 50MHz reference frequency  
**Display:** 1602 LCD.  
**Output power:** 12V supply 4W、13.8V supply 5W  
**Side tone:** about 700Hz  
**Automatic key:** adjustable speed Built-in.  
**Selectivity:** 4 crystal filter, SSB bandwidth of about 2.2-1.6KHz four selectable bandwidth, CW bandwidth of about 900-400Hz four selectable bandwidth.  
**Audio Output:** 8 ohm load about 0.1W(Need to take stereo plug)

## Connection

### Built-in battery

Removed the two screws on the back to access the battery holders requires 8 AA penlight size cells. (not included)

### External power supply

Any 9-14V DC voltage or battery can be connect to (12VDC). It has a polarity protection circuit

### Antenna

Any resonant antenna can be connect directly to the antenna (ANT) with a BNC connector, for non-resonant antenna you need to insert an antenna tuner

### Headphones

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

### Key/Paddle

The **HB-1A** 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.



Connect to paddle dot  
or straight key's contactor

Connect to paddle dash  
or straight key's ground

Connect to paddle ground  
or straight key's ground

3.5mm stereo plug

## The operation of HB-1A

When power on, 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. (If not connected to any key, you will hear the letter "A").

### V/M/SAV Button



Clicking this button will alternating between Memory mode(MEM) and VFO mode, the LCD screen will show the EME-\*\* or VFO-\*\*( \*\* The figures for 01-20).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. A dash (-) will be displayed to the right of the frequency display as shown above.



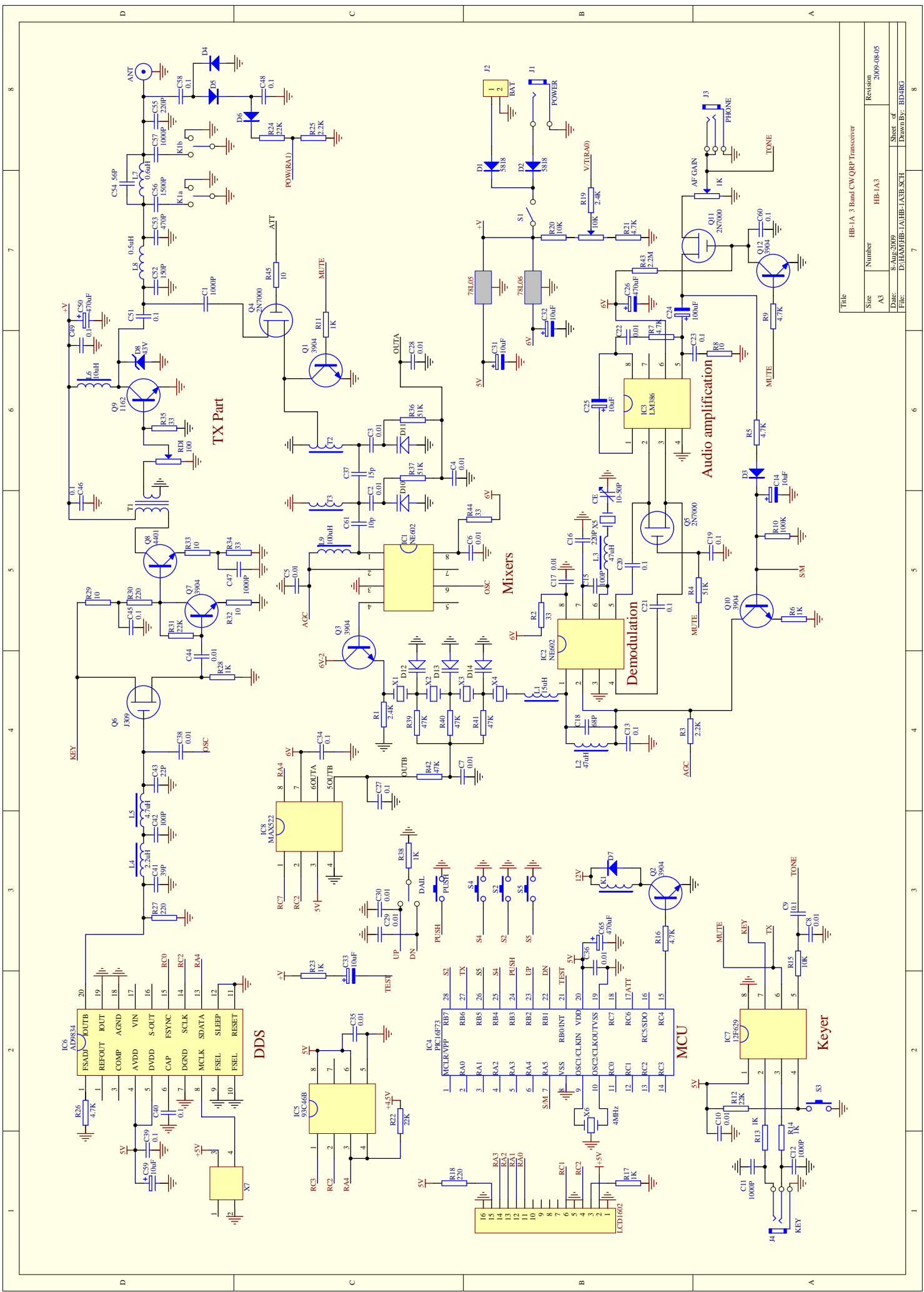
When in the **RIT** mode, turning the tuning knob clockwise raises the frequency (as indicated by the up arrow). turning the tuning knob counter-clockwise will lower the frequency (as indicated by the down arrow).

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.









|       |                          |                                 |       |
|-------|--------------------------|---------------------------------|-------|
| Title |                          | HB-1A 3 Band CW QRP Transceiver |       |
| Size  | Number                   | Revision                        |       |
| A3    | HB-1A3                   | 2009-08-05                      |       |
| Date: | 8-Aug-2009               | Sheet of                        | 7     |
| File: | D:\HAM\HB-1A\HB-1A3B.SCH | Drawn By:                       | BDARG |

**Keyer**

**Audio amplification**

**Demodulation**

**Mixers**

**TX Part**

**DDS**

**MCU**

**Keyer**

**MCU**

**Demodulation**

**Mixers**

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