



HAMBUILDER

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HBR4HF

100W/25W 4 Band HF Transceiver

by hambuilder

support@hambuilder.com

HBR4HFS , is another 4-banders series with high power out from Hambuilder. It is a small size desktop transceiver with big power (up to 100W). We try to keep it low cost, simple to operate and easy to maintain. You can also adjust the power out down to QRP level (below 10W).

Specification

Frequency Coverage (programmable inside the filter range) :

- *. 80m (3.500.000 - 3.999.990)
- *. 40m (6.900.000 - 7.499.990)
- *. 30m (10.100.000 - 11.449.990)
- *. 20m (14.000.000 - 14.349.990)
- *. Tuning step : 1Hz, 10Hz, 100Hz, 1KHz, 10KHz, 100KHz (rotary dial push)
- *. Display : 2.2 Inch 320x240 pixel TFT
- *. Dimension : 65mm (height) x 225mm (wide) x 135mm (deep)
- *. Controller : ATmega128
- *. Main mixer : ADE-1 mixer
- *. IF Frequency : 11.059200 / 8.000000 MHz
- *. Synthesizer : Si5351
- *. Selectivity : 4 pole crystal ladder filter (3Khz nominal bandwidth)
- *. Power out : at 13.8V 100W at 80m, 80W at 40m, 60W at 30m, 25W at 20m
- *. Adjustable RX gain setting with MMIC front end amplifier up to 0.1uV sensitivity
- *. Adjustable TX gain setting (adjustable power out 0-100W)
- *. Adjustable AF gain setting
- *. Adjustable Mic gain setting
- *. 2 x IRFP150 final transistor
- *. CW sharing filter with SSB
- *. Built-in CW Iambic key (1- 40 WPM) or straight key (set 0 WPM) option setting
- *. PSU Voltage 13.8 V (12-13.8 V)
- *. RX current consumption : 380 - 385 mA (at VCC 13.8 V)
- *. TX current consumption : 80m 15 A, 40m 15 A, 30m 13A, 20m 10 A (at VCC 13.8 V) *.
- 2 Watt, Speaker out
- *. 6 functional button

((IMPORTANT))

After you receive the Radio be sure to do :

- 1. Mic Gain max**
- 2. TX Gain max**
- 3. Warm Up Unit 5-10 minutes (VFO / XTAL stable)**
- 4. Antenna / Dummy Load has been installed correctly**
- 5. Speak / whistle into microphone 1-5cm away**
- 6. Check the test result video link that we share with you via email or ebay**

PSU requirement

- Voltage 12-13.8V
- Current 18A

Operation

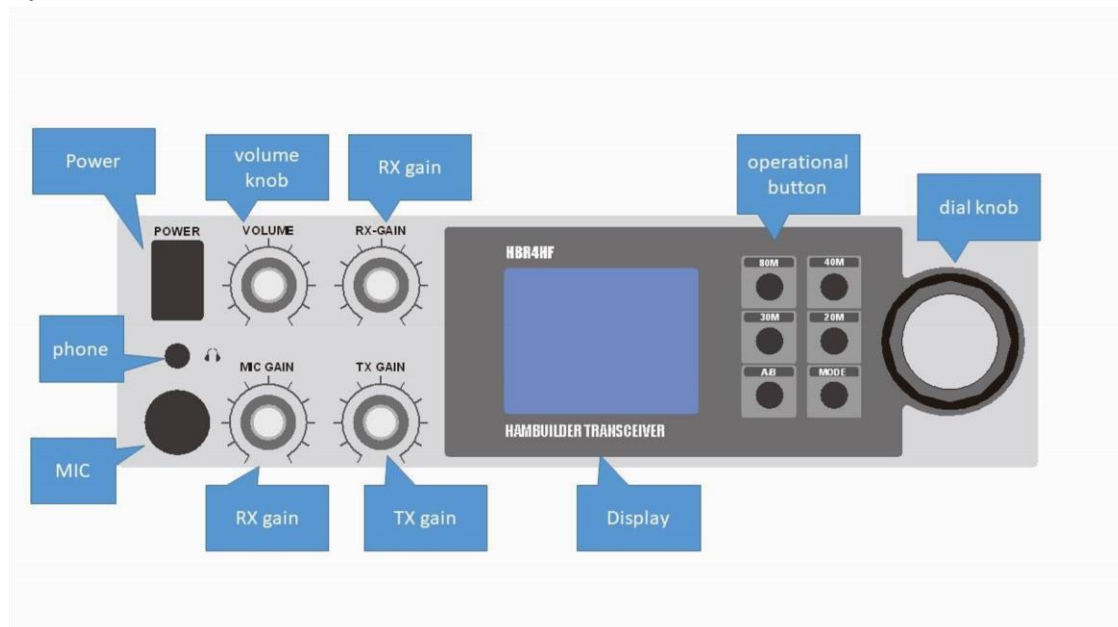


Fig.

1. Front Panel

1. Dial Knob

Used to dial frequency operation. You can push the dial knob to set dial step (default 1KHz), step option is 1Hz, 10Hz, 100Hz, 1KHz, 10KHz and 100KHz then back to 1Hz. This dial knob also used to set iambic WPM

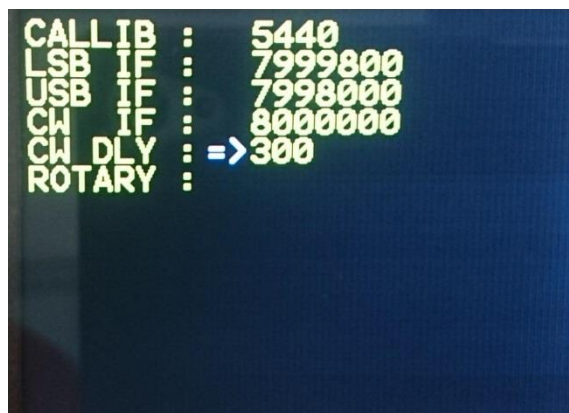
2. Operational Button

- 80M, used to dial 80m band
- 40M, used to dial 80m band
- 30M, used to dial 80m band
- 20M, used to dial 80m band
- A/B, used to access VFO A or VFO B
- MODE, used to access LSB-USB-CW mode
- CW MODE : to set WPM in CW mode, press the dial several times until a sign () appears on the words WPM. And use the rotary dial to change the WPM value. Then press the dial to save the settings so that the mark () disappears
WPM values 1-40 are iambic and 0 wpm values are straight

Sample image :



To set CW DELAY: press mode and a / b button simultaneously. Use the 40m and 20m buttons to move up and down to select settings. Select CW DELAY: value can be changed as desired. The default setting is 300. A smaller value to speed up PTT Delay and a larger value to slow down PTT DELAY. Once you are done, press the MODE button to exit the setting.



3. LC Display



Fig. 2. Display

4. Volume
Adjust the potentiometer will set speaker volume level
5. TX Gain
Adjust the potentiometer will set the RF power out level. This level set is not linear scale but logarithmic scale. The output level also depend on operational band (see specification)
6. RX Gain
Adjust the potentiometer to set front end signal level (sensitivity)
7. MIC Gain
Adjust the potentiometer will set the microphone gain level
8. MIC connector
Connect the micro-phone to this connector. This Radio used condenser microphone. See image bellow for the mic connection pin

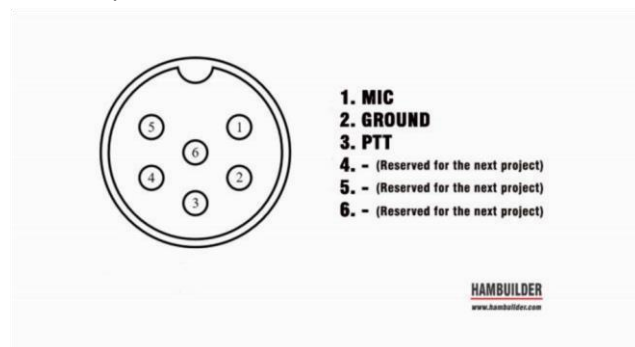


Fig. 3. Mic connection pin out

9. Phone
The phone jack need 3.5mm audio jack stereo (L+R joined) or mono phone. Please take a note this output is totem pole, and isolated from ground. If you want to connect it to external amp, please make sure no ground loop connect.

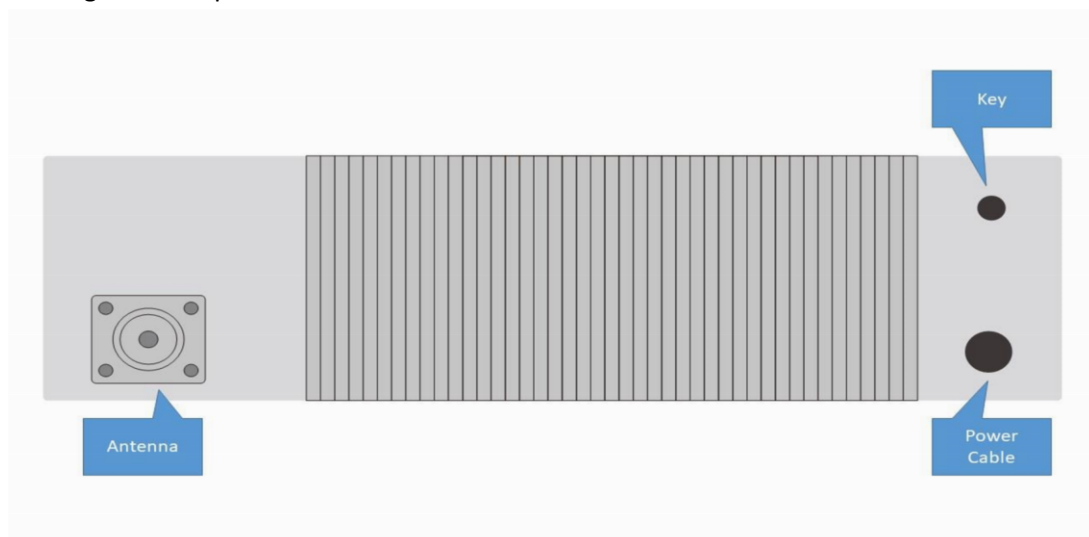


Fig. 4. Back Panel

10. Antenna

This PL259 with impedance connect the Radio to 50 ohm Antenna. Beware of high SWR antenna.

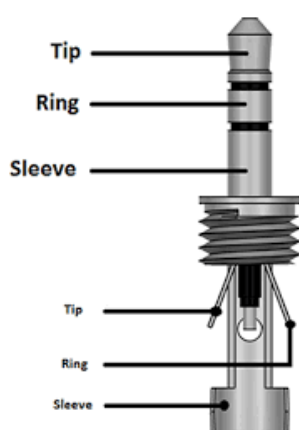
11. Key Socket

Key for CW used 3.5mm stereo audio jack, with connection dit–dah–gnd for tip-ring-sleeve. For CW operation just connect the dit or dah to ground in CW mode (see button) then the radio will automatically generate iambic mode keyer. If you want to use starigh CW mode set the WPM no 0

Tip = dah

Ring = dit

Sleeve = ground



12. Power cable

Power cable for the Radio.

Additional setting

Beware, adjust or do additional setting may cause the radio stop working properly, please make sure you understand about this additional setting.

- Push [A/B] + [MENU] button in the same time
- Use [40m] and [20m] for up down line
- Push [MENU] button again for exit additional setting

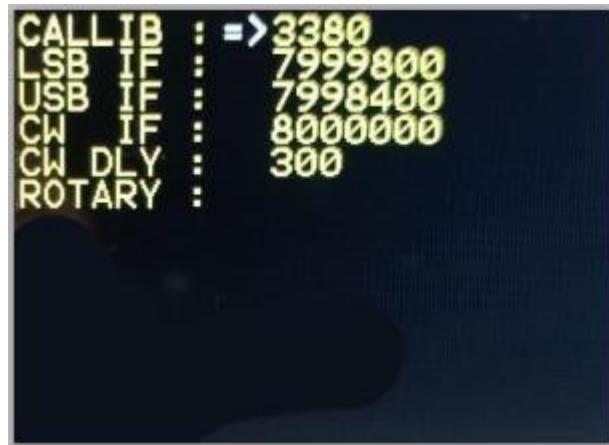


Fig. 5. Calibration setting

1. CALLIB

Default correction value is zero except already calibrate. This nominal value show Si5351 XTAL calibration to produce accurate frequency out. Read the vfo value on VFO out pin by using the frequency counter. If frequency counter read value did not show exact 10MHz please dial knob left or right until the frequency counter show 10.000.000 Hz. Push the dial knob for optional step dial.

2. LSB and USB IF

IF LSB and USB value used to set up IF offset value for ladder crystal filter, rotate the dial rotary button left or right. Changing this value may also do for adjusting audio pitch some people like or easy to hear more SSB bass audio but other more treble. You can adjust this value meanwhile listen RX state. Push the dial knob for optional step dial.

3. IF CW

Same as above but for CW mode

4. CW DLY

This value to set PTT delay for CW mode in iambic mode

Additional Band setting

- Push [80m] + [MENU] button in the same time for 80m band setting
- Push [40m] + [MENU] button in the same time for 40m band setting
- Push [30m] + [MENU] button in the same time for 30m band setting
- Push [20m] + [MENU] button in the same time for 20m band setting
- Use [40m] and [20m] button in the same time for up down line
- Push [MENU] button again for exit additional band setting

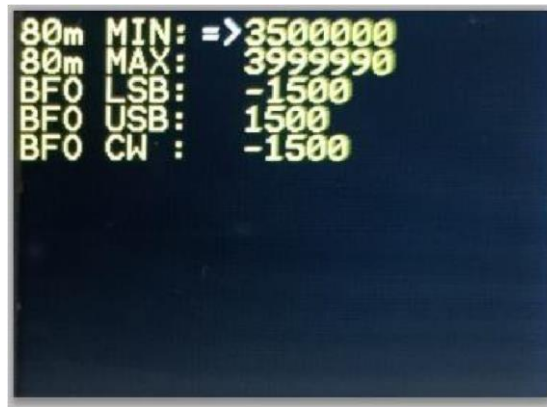


Fig. 6. Band Setting

5. Band Min
Band range start. Beware of the filter range. Push the dial knop for optional step dial.
6. Band Max
Band range stop. Beware of the filter range. Push the dial knop for optional step dial.
7. BFO USB
BFO offset for USB. Default value is 1500Hz (1.5KHz), rotate rotary dial to change the value. Push the dial knop for optional step dial.
8. BFO LSB
BFO offset for LSB. Default value is -1500Hz (-1.5KHz), rotate rotary dial button to change the value. Push the dial knop for optional step dial.
9. BFO CW
BFO offset for CW. Default value is 600Hz, rotate rotary dial button to change the value. Push the dial knop for optional step dial.

Board Layout

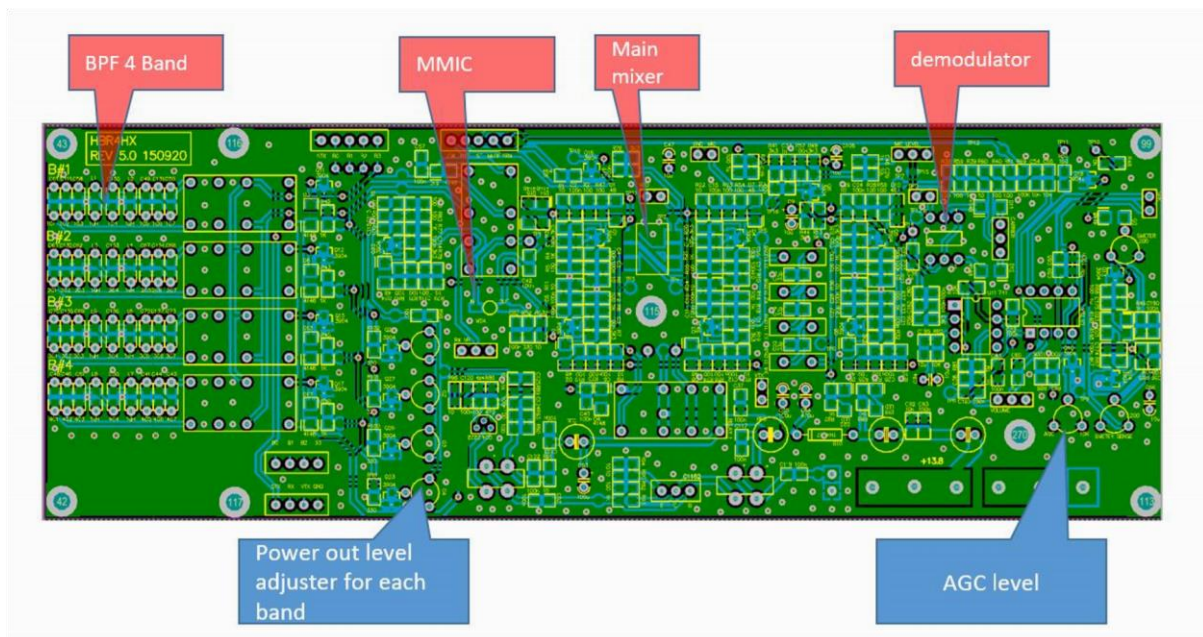


Fig. 7. Main Board

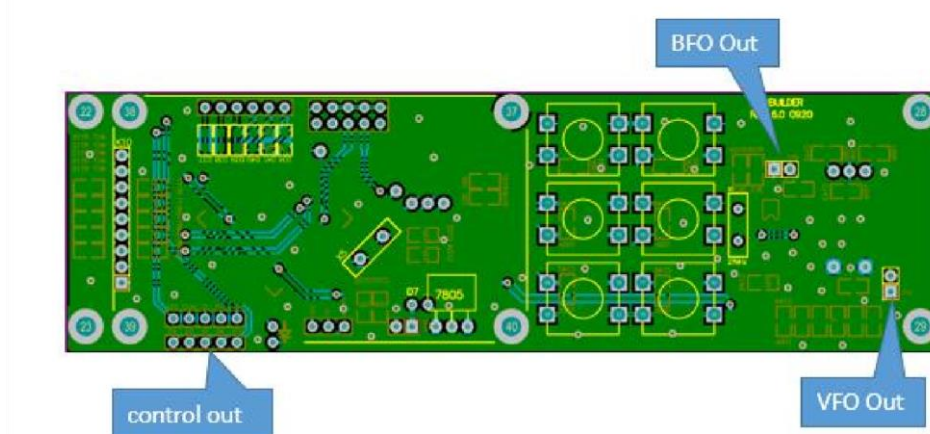


Fig. 8. Controller Board

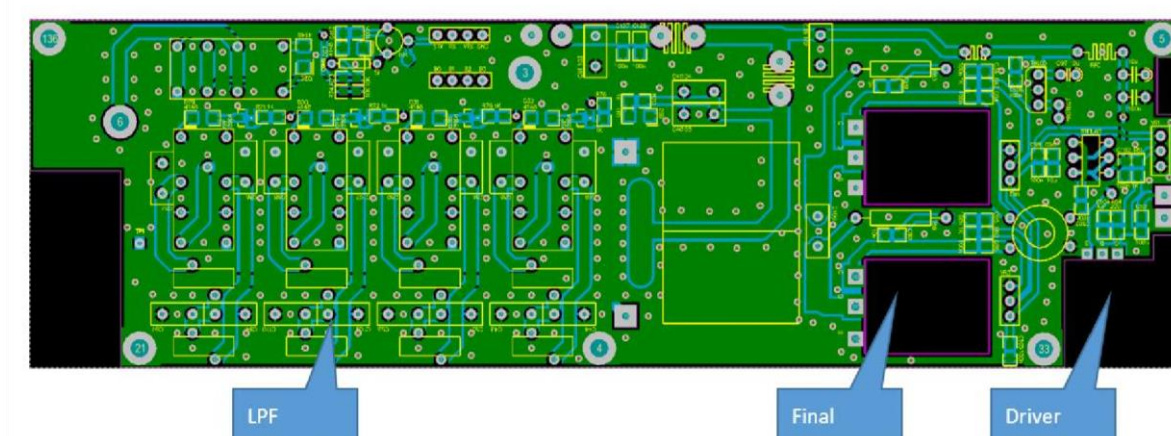


Fig. 9. PA Board

Dear Customer,

If you have experience difficulties and problems in operating the radio unit, please contact us through email or WhatsApp. and please take a note we will answer within 1x24 hours, due to the time difference between Indonesia and abroad

Here are our contacts:

Email: support@hambuilder.com

Email: jalapindai@gmail.com

WhatsApp: +6281312349961

YouTube Channel: Hambuilder Radiowork

www.hambuilder.com

**Kindly Regards,
Hambuilder Team**