

ALX-SSB Transceiver Operating Manual

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This is an attempt to collect the main operation features of the ALX-SSB Transceiver. The radio is built on the design of the popular CS-Series radio from CRKITS.com developed by Adam Rong, BD6CR/4.



Front View of Radio



Rear View of Radio

Specifications based on CS-Series Radio

- Dimension: 153 mm x 97 mm x 40 mm, not including protruding features
- Weight: approximately 500 grams or 1.1 lbs.
- Power Supply: 11~13.8 V, 3 A
- Current consumption: about 70 mA in RX and about 2 A in TX @ 13.8 V
- RF output: about 10 W PEP @ 13.8 V (5 W PEP for the 20m version)
- Spur suppression: better than -43 dBc
- Sensitivity: better than 0.5 μ V at 10 dB SNR
- IF filter: 6 pole crystal ladder filter + 1 pole post IF amplifier crystal filter
- IF bandwidth: about 2.0 kHz
- IF frequency: 8.467 MHz
- Frequency tuning range depending on OPTION:
 - 3.500 MHz – 4.000 MHz
 - 7.000 MHz – 7.300 MHz
 - 14.000 MHz – 14.350 MHz
 - 18.068 MHz – 18.168 MHz
 - 21.000 MHz – 21.450 MHz
- Frequency stability: crystal controlled PLL
- Frequency display: OLED I2C display
- Connectors:
 - Speaker output: 3.5 mm connector, mono output
 - Microphone input: 8-pin, can be configured to be compatible with electret microphones or speaker microphones
 - DC IN connector: Type 2.1 mm center positive
 - Antenna connector: BNC type
- Controls:
 - IF Gain Control: act as volume control
 - Tune Control with button: act as digital VFO tuning and control

Operational Controls

Front Panel from left to right

TUNE Control OLED Display Gain Control Band Change Button



Microphone
Connector

Rear Panel from left to right

Power-On Switch External Speaker



DC power in – center positive 12 VDC Antenna

Special Operation Modes

Tune Control

1. Normal –

- a. Turning the control changes the frequency
- b. Momentarily push in the Tune button to increase the resolution of the display. (Quick push will toggle the resolution)
 - i. Normal resolution would be 7.225
 - ii. Increased resolution would be 7.2251

2. BFO



- a. Push and hold the TUNE Button for about 5 seconds
- b. You will see this display (frequency will not display until you change the TUNE control.
- c. Adjust TUNE knob for about 0.5 KHz for USB or -0.5 KHz for LSB (first pass)
- d. Momentarily press the TUNE Button and this

will store the value (Button must be pushed to store the value in memory)

- e. You will also enter the CRYSTAL CAL mode (NEXT)

You may also exit BFO mode prior to entering Crystal Cal mode by pressing "Band Change Button"

3. Calibration



In the CRYSTAL CAL mode you are now ready to adjust the CAL frequency.

- a. Place the Signal Pin of your Frequency Counter on CLK1 pin located on the back top of the Display PCB as shown in Figure 8.
- b. Remember to Ground the ground pin of the counter (or Oscilloscope).
- c. Adjust the TUNE control until the Frequency Counter reads



10.000000 MHz or as close as you can find.

- d. Then momentarily press the TUNE Button to store the calibration which will also return you to Frequency Mode.

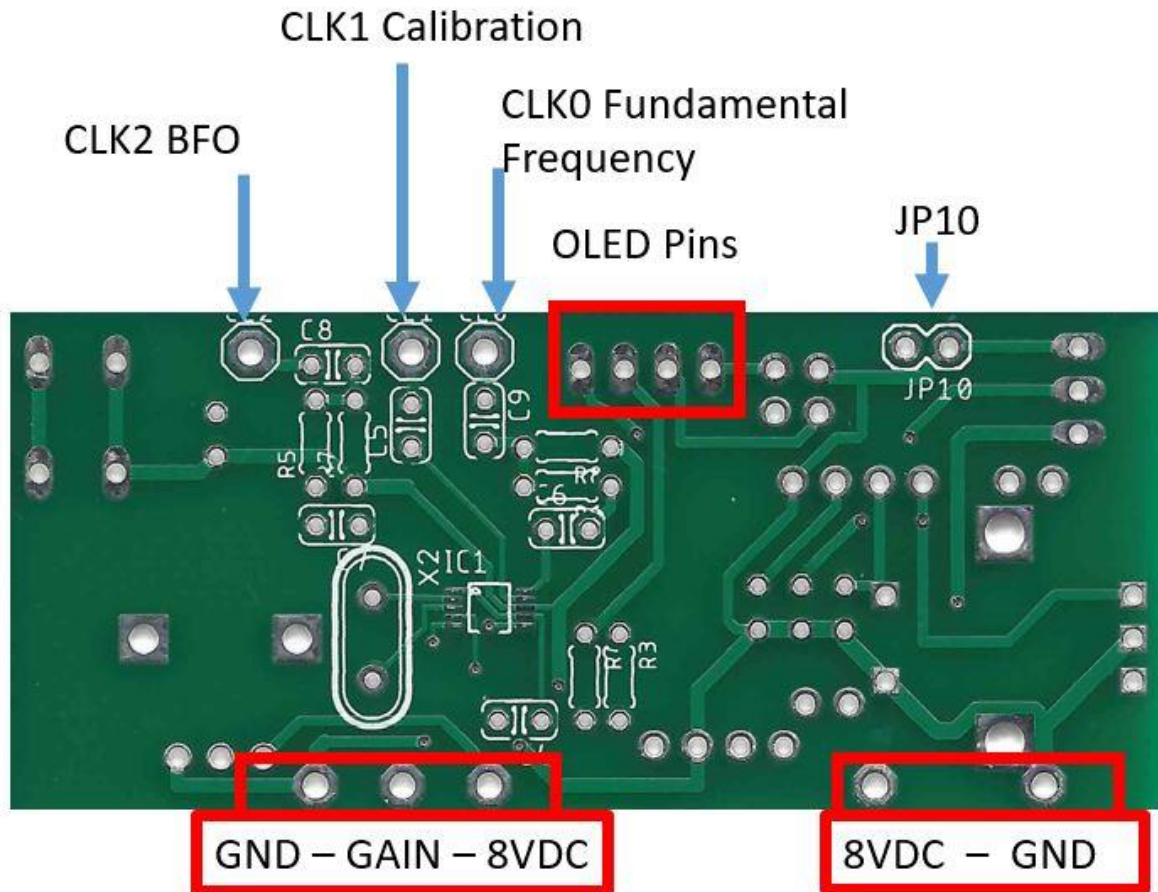


Figure 8

4. Band Change Button

- Pressing the Band Change Button will step the display to the second band, if available.
- Press the Band Change again and nothing should happen.
- Press the Band Change button again and you revert to your original frequency.

Band Options

With the purchase of the dual-band option, you can select more than one band.

The band options are as follows:

Optional frequencies are:

Base Radio plus 80 Meters.

Base Radio plus 40 Meters

Base Radio plus 20 Meters

Base Radio plus 17 Meters

Base Radio plus 15 Meters

Plans are to make a QUAD BAND option upgrade available soon. This will require a Software Upgrade to the Arduino plus the Band Pass Filter upgrade for the additional bands.

More information will be added to this document as time permits.

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