

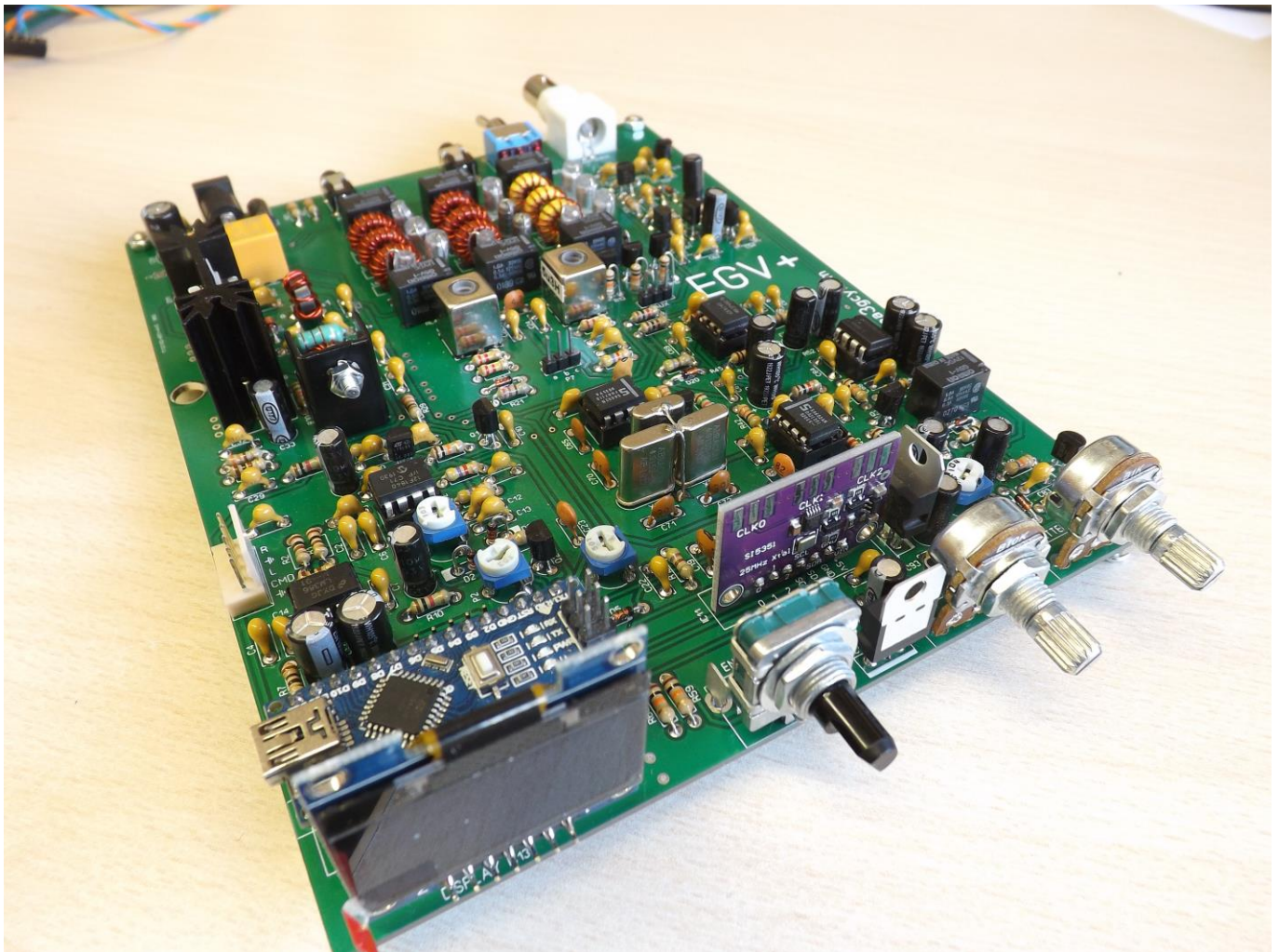
SETTINGS and USER MANUAL EGV+

40-30-20m QRP CW transceiver KIT

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INTRODUCTION

Using the *EGV+* transceiver is very easy. It has no frills. But it has all the necessary functions to enjoy QRP with a device assembled in your home.

Efforts have been made to make changes to menu functions as quick and comfortable as possible.

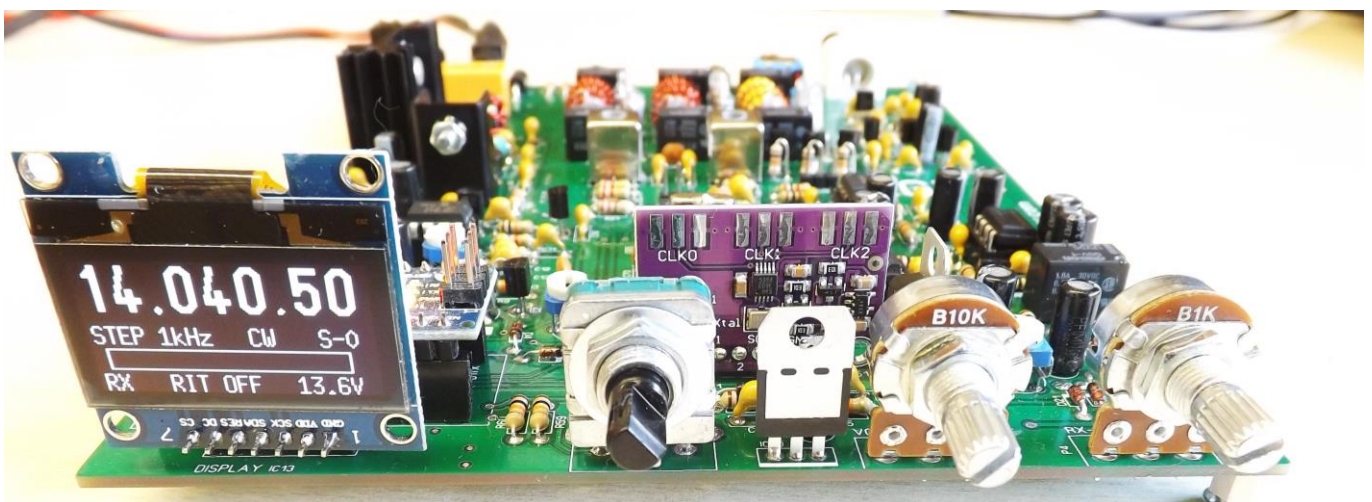
Tuning, step changes, adjustments and all other functions are performed using a rotary encoder with a built-in push button.

A single knob for all functions!

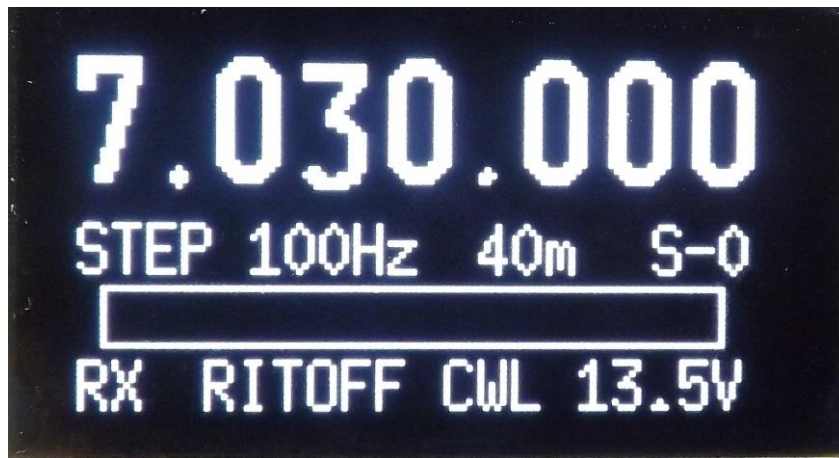
The ATMEGA328P processor (Arduino NANO compatible) module is already programmed at the factory. There are initial values and frequency settings that will help get you up and running. ***With the default values, your EGV+ will be able to start working.*** However for each assembly some slight re-adjustments must be made in the display settings menu.

The default settings are:

- **CW-LSB BFO = 4.913.2 MHz. User must re-adjust according to IF tolerances**
- **CW-USB BFO = 4.914.3 MHz. User must re-adjust according to IF tolerances**
- **CALIBRATE XTAL = 800 User must re-adjust according to SI5351 module Xtal**
- **CALIBRATE VOLTS = User must adjust.**
- **S-METER function: On**
- **RIT ON/OFF: OFF**
- **CW MODE: CW-LSB**



DIAL DISPLAY



On the working dial display, you can see the tuned frequency, the current step, Band, the S-Meter, the current status (RX or TX), the RIT status (ON / OFF), the CW mode CWL or CWU) and the supply voltage.

By turning right or left the rotary encoder the frequency respectively increases or decreases by the current "step". A quick push on the encoder will change the step.

There are two ranges of steps. The default range is 10Hz - 100Hz - 1kHz. To change to the second range of steps, go to main menu.

The current band, frequency, step, and CW mode are stored in a non-volatile memory automatically every 4 seconds (only if there has been any change). When you start it, you will always recover the frequency where it was last time.

MAIN MENU

To enter the main menu, you must push and hold the encoder pushbutton for >1 second. Then, you can move through the menu lines by turning the encoder. The last line is "EXIT" to exit without change.



⇒ **Band change:**

To change the band, go to main menu and select the line "40M BAND", "30M BAND" or "20M BAND" and a short press on switch encoder.

⇒ **RIT on/off:**

To activate the RIT, select the "RIT ON / OFF" line and press the encoder switch. Then, "RIT ON" will appear on the main screen. If the frequency increases, "RX+" will appear or if it decreases, "RX-" will appear. If the frequency does not change, "RX=" will appear.

When transmitting, the frequency will always return to the initial one.

To deactivate the RIT, proceed as in activation.

⇒ **CW Mode:**

There are two CW modes, LSB and USB". To switch from one mode to the other, select the "CW-LSB/CW-USB" line and press the encoder switch.

⇒ **Step range change:**

There are two ranges of steps. The default range is "1kHz - 100Hz - 10Hz" To change to the second range of steps, go to main menu and select the line "1MHz 100kHz 10kHz" and push switch encoder again. To return to the previous range, repeat the same operation.

⇒ **SETTINGS:**

Select this line, press push-button to enter the "SETTINGS" menu.

⇒ **EXIT:**

Return to the main tuning screen.

SETTINGS MENU

⇒ **CALIBRATE XTAL:**

IMPORTANT: This setting is essential to adapt the SI5351 module to your assembly.

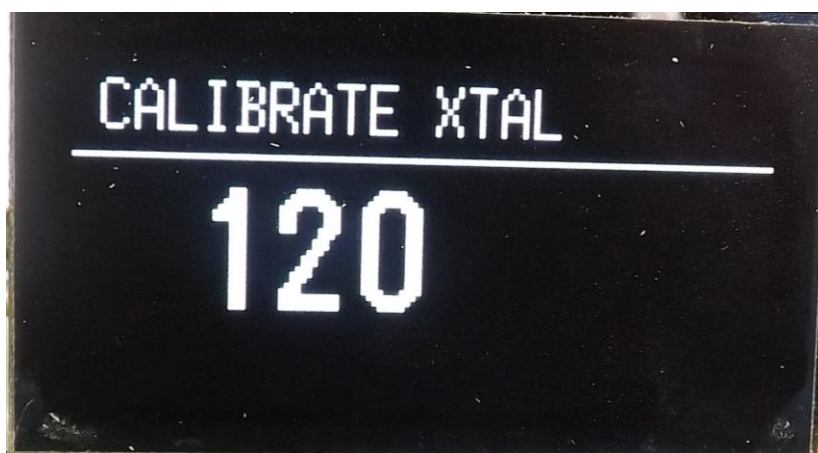
**It is advisable to make this adjustment before making the BFO.
The XTAL calibration modifications affect BFOs (you scroll within IF filter)**

Press the push-button to enter "CALIBRATE XTAL" sub-menu.

You can calibrate the frequency of the clock crystal oscillator of the SI5351 module. It has a range of adjustment -2000 to +2000. This value not is Hz and is inverse to the output frequency, that is, when it is increased, the frequency decreases and vice versa.

To make this adjustment you should use a professional frequency meter or a good quality receiver to read the output frequency of the SI5351. Use the CLK1 output on the SI5351 module (BFO out) and for example switch to CWL mode so that the output frequency it should be 4,913,300MHz. Adjust until the frequency meter reads that reading.

This adjustment is essential, and compensates for the crystal tolerances of each SI5351 module. Notable differences can be observed in modules with crystals from different manufacturers.



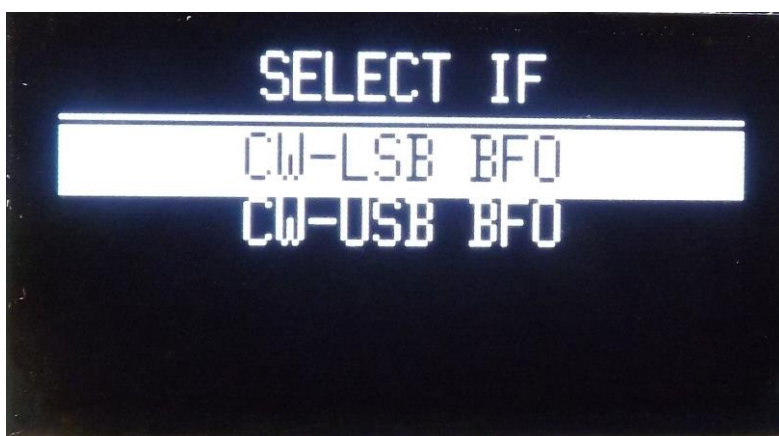
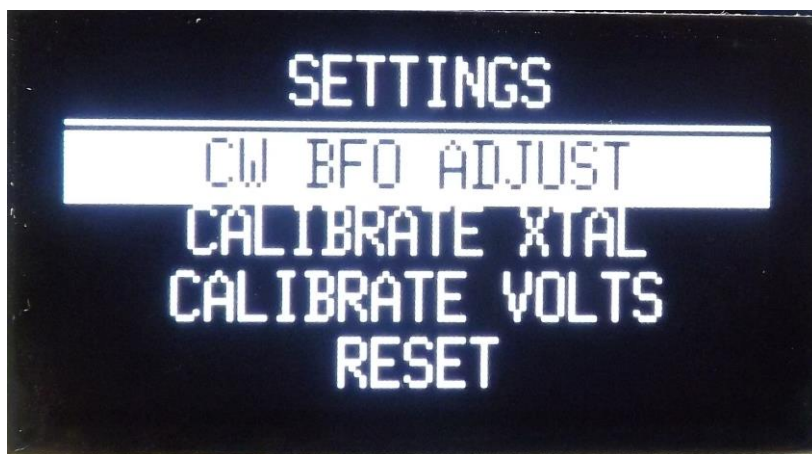
⇒ **CW BFO ADJUST:**

Press the encoder button to enter the "CW BFO ADJUST" sub-menu. Then, select the line "CW-LSB BFO" or "CW-USB BFO" and press the encode button.

IMPORTANT: This setting is essential to suit your assembly.

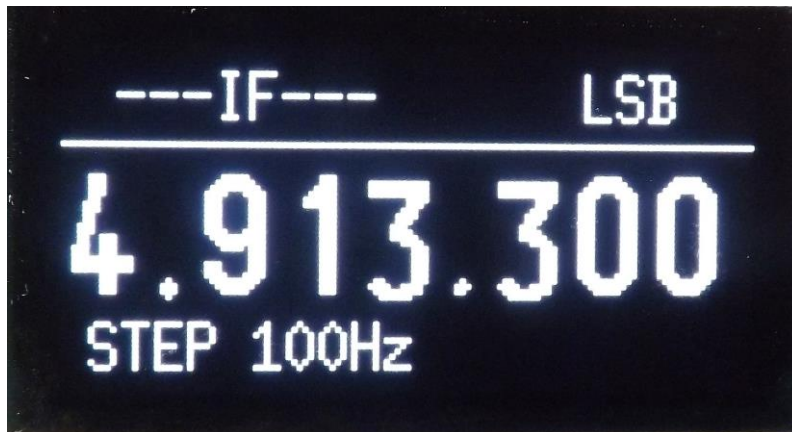
The "CW-LSB" and "CW-USB" settings are used to suit the tolerances of the IF crystal filter for each setup. These adjustments will affect the quality of reception. You should look for the most suitable frequency close to the center frequency of the filter (real frequency not nominal). One tip: the sound should be heard in a fairly low pitch.

Note: Some hobbyists use audio spectrum analyzer software such as "spectrogram" to help with adjustments. You should try to get closer to an audio bandwidth of 700-800Hz.



- “CW-LSB” it is by default 4,913,300. This may be the correct frequency. If desired, you vary slightly. To finish, hold > 1sec pressed and "SAVE / CANCEL" will appear, you can change it or leave it as it was before.
- “CW-USB” it is by default 4,914,200. This may be the correct frequency. If desired, you vary slightly. To finish, hold > 1sec pressed and "SAVE / CANCEL" will appear, you can change it or leave it as it was before.

Note: A quick push on the encoder will change the step (all steps available from 1Hz to 1MHz). The 100 HZ step is best suited for these settings



This screen always appears after making a value or frequency adjustment. You can record the changes “OK” or “CANCEL” them.

⇒ **CALIBRATE VOLTS:**

Press the push-button to enter “CALIBRATE VOLTS” sub-menu. You can calibrate the dial display voltmeter. Use a quality multimeter in the volts function. Measure the input voltage of the EGV+. Turn the encoder until the same reading is displayed as on the multimeter. The measurement resolution is 0.1V.

⇒ **RESET:**

If necessary, you can perform a RESET to the factory default values. Choose the RESET line and then choose "OK" or "CANCEL".

Important note: When you do a RESET, then you have to redo all the settings.

⇒ **EXIT:**

Returns to the previous menu screen.

S-METER ON/OFF function

To enable or disable the S-Meter function. Turn on the power while holding down pushbutton rotary encoder. This will invert the state from ON to OFF or vice versa. The EGV+ will always maintain that status until you change it again.