



Youkits TJ5A SSB CW HF TRANSCEIVER

Guide to Alignment of TJ5A

TJ5A is a high-performance portable multi-band SSB/CW transceiver, used with DDS as LO, offering wide frequency coverage and fine tuning rate. The Doubly Balanced Diode Ring Mixer and high-performance fast AGC make strong signal handling capability possible. With the high-performance IF AMP, **TJ5A** features extremely low background noise reception.

TJ5A is a fully tested, almost ready-to-use kit. What you are required to do is trim the BFO, calibrate DDS clock, and set up IF and USB settings.

IMPORTANT. Before calibrating BFO or DDS, please warm up both the frequency counter and TJ5A for 20 minutes for more accurate result.

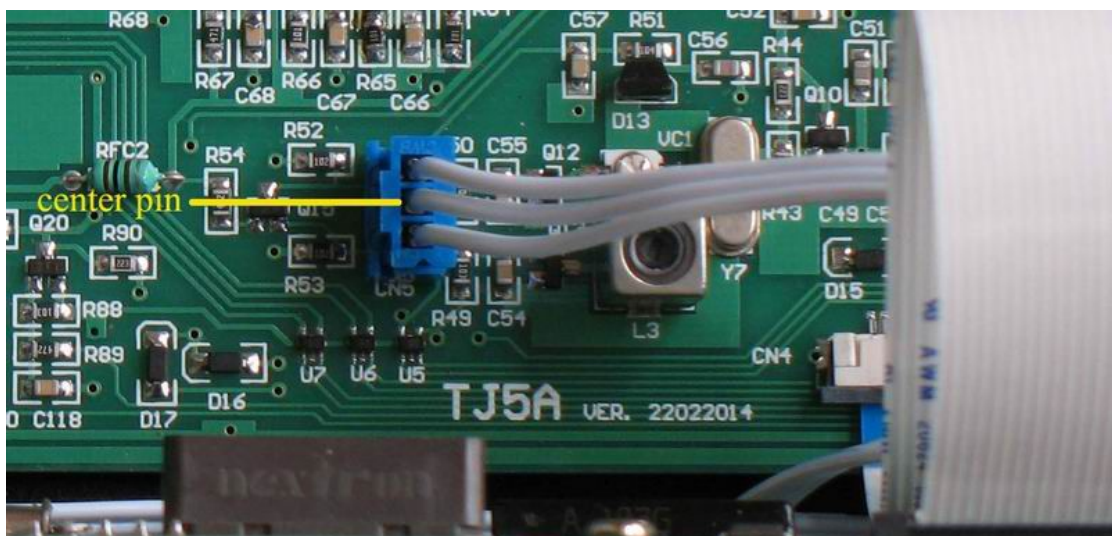
BFO has been calibrated without the warming-up step before shipping. If you do not have a frequency counter, you may ignore this step. However, there would be a frequency tolerance of around 50Hz.

Now, remove the related screws and open the upper cover of TJ5A.

BFO Calibration

Before calibrating the BFO, first make sure that the RIT control is at the zero position. Follow the following steps.

- 1) Set PWR knob to the lowest level.
- 2) Use a digital multi-meter to measure the voltage between the center pin of CN5 and GND (the screws on the four corners of the main board can be regarded as GND).



- 3) Press PTT, and observe the reading. Take down the reading (around 4.36V). Now

release PTT, and observe the reading. Rotate RIT knob until the reading is the same as the reading taken while PTT is pressed. This is the zero position of RIT.

Now, let us calibrate BFO.

Connect the frequency counter to TP2. Set MOD to LSB first. Observe the reading. It is around 8.998500MHz. If it is too far from this frequency, trim L3 to calibrate. Set MOD to USB, the reading is around 9.000600MHz, i.e. 2.1 kHz apart from LSB. If it is far from this frequency, trim VC1 to calibrate. Now go back to LSB and observe the reading. If the reading is affected by USB calibration, trim L3 again. BFO calibration is completed.

Please refer to the manual for button function.

1. MCU Setting-up

You can find the setup button behind the DDS to Main Board ribbon.

Backup the setup data of the factory on a piece of paper, in case you need go back to the factory setup.

Connect the frequency counter to TP1.

Press SETUP button, DDS clock information is displayed:



"99999100" indicates the DDS clock frequency (This value can be different since the tolerance of every 100MHz clock crystal differs slightly). "2.500.000" indicates DDS is working at the lowest band now. (Kits with 10 meter band display 3.000.000. Earlier kits display 3.500.000.) Now, the frequency counter will display "IF + displayed frequency", i.e., if 2.500.000 is displayed, the frequency counter displays 11.500.000 MHz. If the measured frequency is not 11.500.000, please rotate TUNE knob while observing the frequency counter, until the requirement is reached. Use 10Hz step for more precise calibration. Press MEM to memorize your new setting.

DDS clock has been calibrated without the warming-up step before shipping. If you do not have a frequency counter, please ignore this step and go to the next step directly. However, there would be a frequency tolerance of around 50Hz.

Please refer to the manual for button function and step selection.

Press SETUP again, IF interface is displayed. The first line default value is "0"

Select 100Hz step. Rotate TUNE knob counter-clockwise. Set IF to "-1500" (9.000000 – 8.998500 = 1500Hz)

Press MEM button to save the value.

Press SETUP again, USB compensation interface is displayed. The first line default value is “3000”.



Select 100Hz step. Rotate TUNE knob clockwise to set USB Compensation to “2100”. Press MEM button to save this new value.

Press SETUP again, SETUP exits. The alignment is done.

Important: BFO and DDS calibration should be carried out after the required warming-up period of the frequency counter and TJ5A. Leave the frequency counter and TJ5A running for 20 minutes before calibrating BFO and DDS. A high quality, accurate frequency counter should be used to ensure the accurate DDS output frequency.

Put back the upper cover.

Now, you can enjoy QSO with this transceiver.