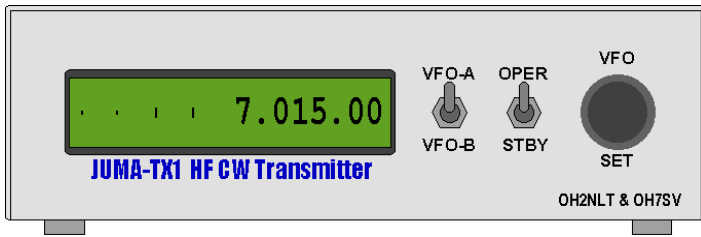


## JUMA-TX1 Quick Guide



### Frequency display

The right half of the LCD display shows the selected frequency. The frequency is shown with a resolution of 10 Hz.

### VFO-A / VFO-B switch

This switch selects one of the two VFOs, A or B. Both of the VFOs can be tuned independently to any valid JUMA-TX1 operating frequency. The frequency display indicates the selected VFO by changing the number separator characters. Periods are shown when VFO A is selected and commas are shown when VFO B is selected.

### OPER / STBY switch

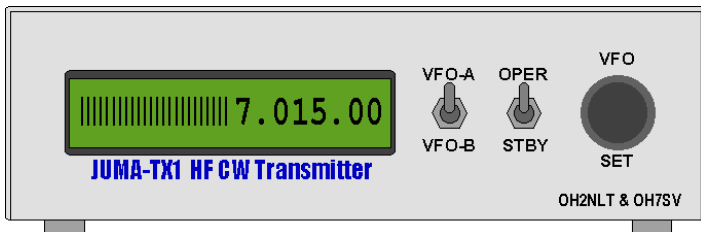
When this switch is in the OPER position the T/R switch is enabled and a key down signal will activate the transmission. In STBY position the T/R switch is disabled but you can key down and spot your frequency with a receiver.

### VFO - SET encoder/switch

This multi-function control is a rotary encoder with a push button switch. By rotating this knob you can tune the frequency up and down. The tuning step can be selected by pushing and simultaneously rotating the encoder. The tuning step can be set to 10 Hz, 100 Hz, 1 kHz or 100 kHz. The tuning step is the same for both VFOs. Just pushing the encoder switch once without rotating it toggles between the relative power and the supply voltage displays. Holding the encoder switch depressed more than two seconds stores both VFO frequencies and the tuning step into the non-volatile memory.

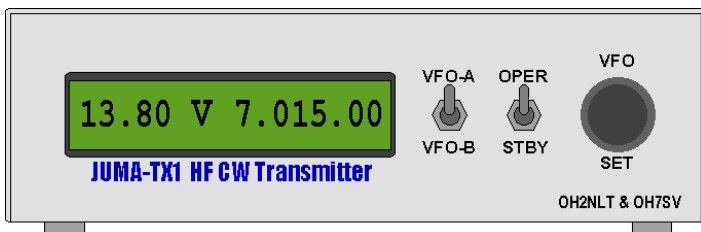
### Acknowledgement tones

A small speaker inside the TX provides the acknowledgement tones. During power up JUMA-TX1 gives a hello message in audible CW. The tuning steps are indicated with different pitch tones. The saving of the frequency setup is acknowledged with an "R" in Morse Code.



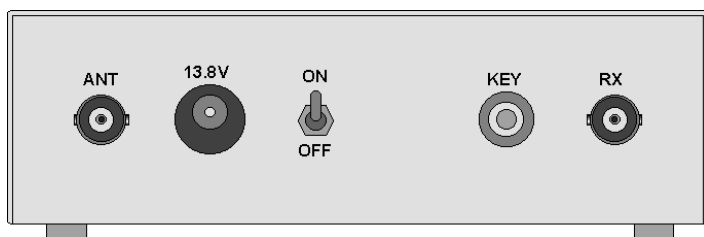
### Relative power display

During transmission the relative output power is shown with a bar graph on the left half of the display. Full-scale display corresponds to approx. 6 W of power to a 50 ohm load. The relative power detector is an RF voltage meter and thus the reading can show lower or higher values depending on the actual antenna impedance.



### Power supply voltage display

Power supply voltage can be monitored on the left half of the display by pushing the encoder switch once. The resolution of the reading is 0.02 V. The supply voltage indicator is very useful when the TX is operated with a battery.

**ANT connector**

This is the BNC type antenna connector for a 50 ohm, 80 m or 40 m antenna. If the antenna impedance is far off from 50 ohms (SWR > 1:3) a tuner is recommended between JUMA-TX1 and the antenna.

**13.8V connector**

This is the DC power supply connector. A 12-15 volt regulated power supply capable of delivering at least 1.5 A is required. The power supply input is protected against over current and against wrong polarity with a built-in 2 A fuse. JUMA-TX1 can also be operated with a 12 V battery capable of providing 1.5 A current.

**ON / OFF switch**

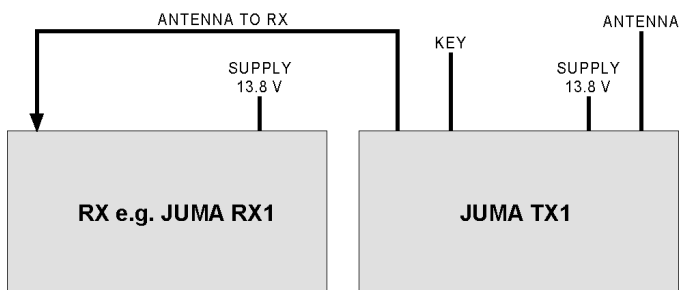
This power ON/OFF switch interrupts only the control power for the DDS and the TX board. Power supply voltage is always connected to the RF power amplifier MOSFETs but they do not draw any current when control power is OFF. When JUMA-TX1 is OFF the 80 m band low-pass filter is connected between the antenna and the RX connector.

**KEY connector**

A key or an automatic keyer (elbug) with a grounding switch can be connected to the JUMA-TX1 key input. The keying interface is a 5 kohm positive pull-up to +6 V. The required sink current is less than 2 mA, thus any NPN transistor or N-MOSFET in the keyer output is suitable for driving the keying input. When the OPER state is selected and the key is pressed, JUMA-TX1 will automatically change to the transmit state. Releasing the key will restore the ready state after a typical 300 ms release time.

**RX connector**

This is the BNC type RX antenna output which provides the antenna signal to a JUMA-RX1 or any other HF receiver. When JUMA-TX1 is not transmitting, it connects the antenna to the receiver connector through a low-pass filter. When just listening, the JUMA-TX1 should be tuned to same band to select the correct low pass filter. The cross-over frequency from 80 m to 40 m is 4 MHz.

**Using the JUMA-TX1 with a receiver**

Connect an antenna to the JUMA-TX1  
 Connect the RX antenna cable via JUMA-TX1 RX connector  
 Power up both the RX and the TX  
 Connect a key or an elbug to the KEY input of the JUMA-TX1

**CW working procedures**

The best practice for listening CW is to tune the RX frequency so that the CW tone pitch is quite low. The reason for this is that the human ear has better selectivity in the lower frequency range. Thus tuning for a low pitch will make copying easier when QRM is present. Most experienced amateurs tune to a pitch of approx. 700 Hz. The best advice when working with a QRP transmitter is: "listen, listen, listen!". Naturally you can call CQ but the best QSOs are achieved by first listening carefully.

**RX/TX tuning procedures**

Before trying to have a QSO with a station that you are listening to, you need to set your transmitter at the correct frequency. For this you need to know whether your receiver is tuned to a lower or to a higher frequency than the transmission you are listening to. If the pitch of the CW goes up as you tune up the frequency, your receiver is tuned at a higher frequency than the transmission. In this case you need to set your transmitter VFO at a frequency about 700 Hz lower than your receiver (if you are listening with a pitch of 700 Hz). Likewise, if the pitch of the reception goes down when you tune up the receiver frequency, set your transmitter at a correspondingly higher frequency. As you can hear your own CW via the RX in the the STBY state for "spotting" and in the OPER state when transmitting, it is easy to verify that you are transmitting at the correct frequency. The pitch of the received and the transmitted CW should be approx. the same when the tuning is spot on.

**Band limits**

JUMA-TX1 DDS control does not limit the transmitter frequency to be within the amateur radio bands. Keep track that you are operating within the allocated bands and within your license limits. A valid amateur radio license is required to operate this transmitter.