

KCAT Users Manual

1.1

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Chapter 1

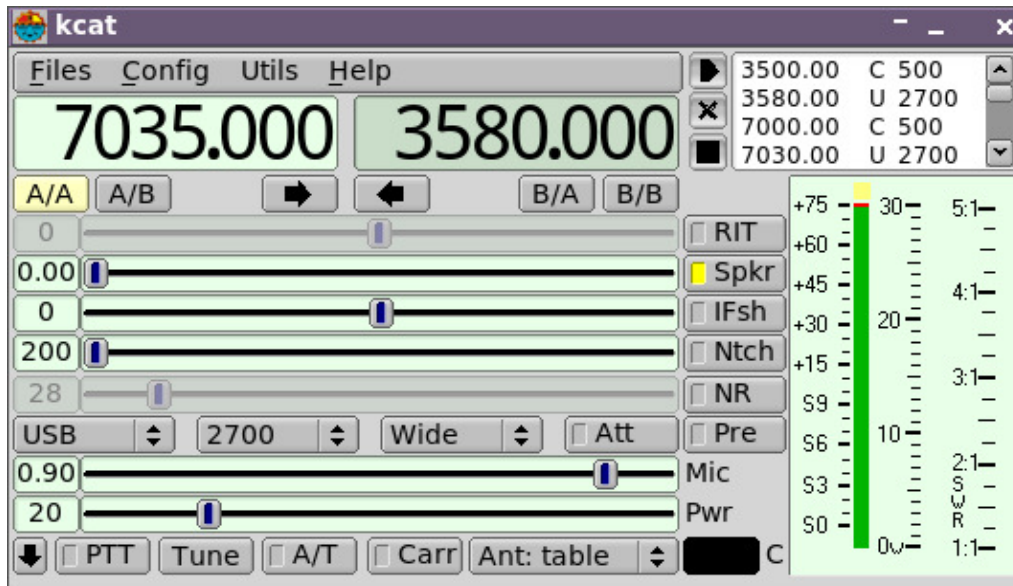
KCAT Users Manual - Version 1.1



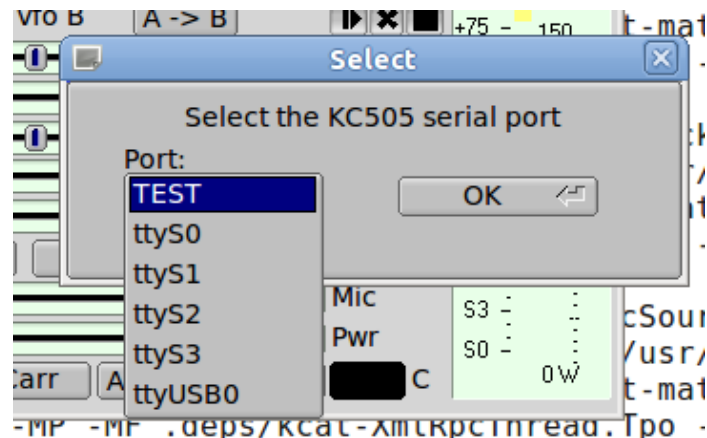
1.1 Kachina Universal Computer Control Program

This is a computer control program for the Kachina 505DSP transceiver. The program is supported on the following operating systems:

- Linux
- Puppy-linux
- OS X
- Windows 2000
- Windows NT
- Windows XP
- Windows Vista
- Windows Win7
- Windows Win8

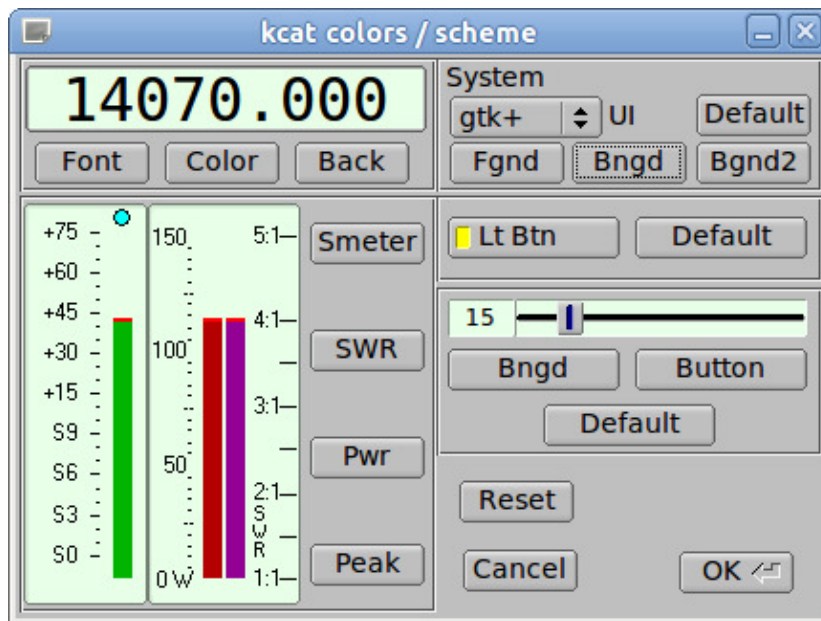


1.2 First time setup

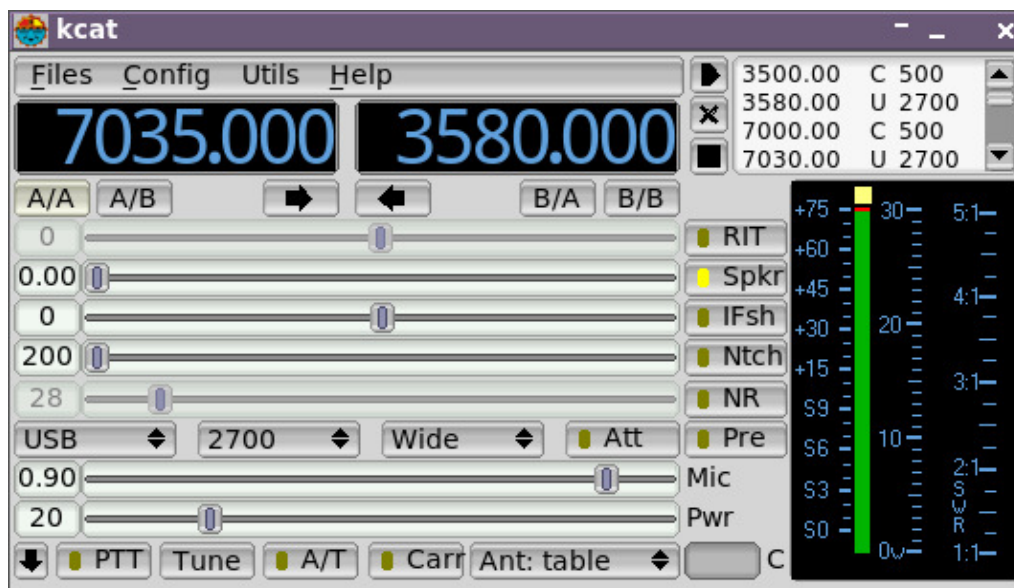


You will need to select the serial port to which your transceiver is connected. This screen capture shows the ports on one of my Linux systems. Windows would list the COM ports that are installed (and not currently in use).

Select TEST if you want to test drive the program without actually connecting to the 505. If you do select TEST this dialog will appear every time you start the program. The program will attempt to use the last used serial port when starting after a satisfactory operating session.



The program allows you to control many aspects of the user interface including fonts, foreground colors, background colors, lighted button colors, and the Scheme (general appearance of controls). Here is an example of a possible set of user choices:



After you become familiar with the various controls you will probably want to turn off the tooltips. Uncheck the "Enable tooltips" menu item on the "Config" menu.

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1.3 Operating Controls



The frequency display is also a control. Each numeric is sensitive to mouse left/right buttons for up/down and to the mouse scroll wheel for rapidly changing values. Click on any of the numeric segments and you can enter a new frequency using the keyboard numeric keypad. If you make an error simply enter a non-numeric key (press the Esc key). Use the period key to separate the kHz from the Hz value. Set the newly entered frequency by pressing the Enter key.



The second image shows the tool tip for the frequency control

Vfo-A and Vfo-B are separate controls, A on the left, B on the right.

When the mouse pointer is over the frequency display you can also change frequency values using the arrow and page key buttons:

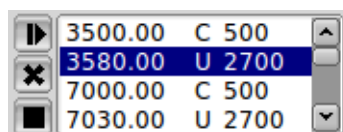
- left / right arrow - increase / decrease 1 Hz
- up / down arrow - increase / decrease 10 Hz
- Page Up / Page Down - increase / decrease 100 Hz



These buttons control how each vfo is used

- [A/A] - Rx on A, Tx on A
- [A/B] - Rx on A, Tx on B
- [→] - transfer vfoA to vfoB
- [←] - transfer vfoB to vfoA
- [B/A] - Rx on B, Tx on A
- [B/B] - Rx on B, Tx on B

Each "vfo" consists of the frequency, mode, bandwidth triad.



The active vfo triad can be saved to the vfo list using the [→] button, the selected vfo triad can be deleted from the list using the [X] button, and all of the entries can be deleted using the [] button

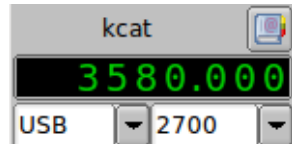


The buttons that have a light box are toggles - activated when the lighted box is colored. Some of these are linked to a slider. If the button state is inactive then that associated slider will be greyed out. In the example the volume control is active and the RIT and IF shift controls are inactive. The volume slider will be greyed out when the Spkr button is not illuminated. Sliders can also be adjusted using the mouse wheel when the mouse cursor is over the intended control.

1.3.1 CW Keyboard

Open the CW Keyboard from the Utils Menu [CW Keyboard](#)

1.3.2 Connecting kcat to FLDIGI

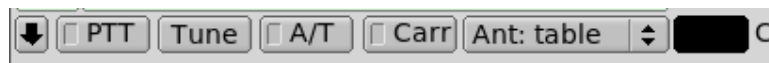


XmIrpc is used via a local socket device for the two programs to communicate. FLDIGI acts as the server and kcat the client. There is no requirement for start / stop ordering of the programs. Your local firewall should be set up to allow FLDIGI access to the 127.0.0.1 socket address.

kcat sends rig configuration data to FLDIGI when the two programs initially recognize each other. This data is used to populate the rig name, the available modes and the available bandwidths.

After this initial communications the operator can set the paired controls from either FLDIGI or kcat. The two programs will remain synchronized.

PTT can be activated at kcat or using the T/R button on FLDIGI. FLDIGI also engages the PTT via the macro <TX> <RX> tags. When operating digital modes with FLDIGI you need to use the PTT from FLDIGI.



Access to additional controls is obtained by pressing the [down-arrow button](#).

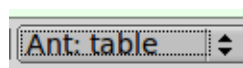
PTT - can be selected via the h/w PTT line, the PTT dialog button, or from a support application such as FLDIGI.

Tune - command the internal antenna tuner to tune to the current frequency and antenna port.

A/T - turn the automatic antenna tuner on and off. Pressing Tune will place the A/T in the On condition

Carr - transmit a carrier at the AM carrier level.

1.3.3 Antenna Ports



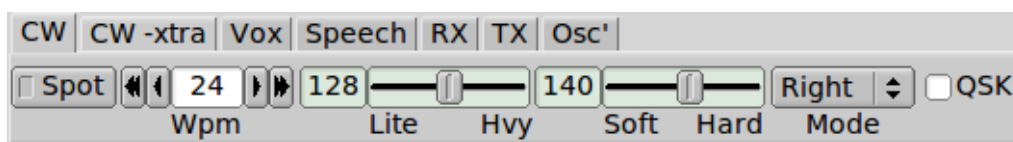
You can set the antenna combinations of A/B, Rx/Tx to be used with various frequency bands. The menu item Config / Antenna Ports provides access to the set up dialog. You can also over ride those settings by choosing from the Ant: table pick list. details on [antenna port selection and setup](#)

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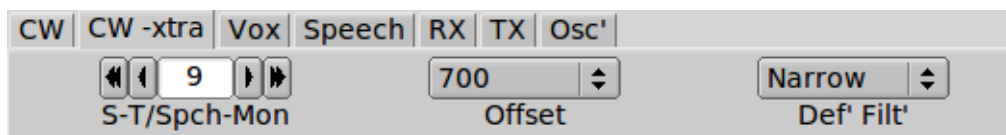
Chapter 2

Kachina 505DSP Additional Controls

2.1 CW



The internal keyer can be enabled for left or right handed operation. It can also be configured for straight key operation. The words/min, weight and attack of the keyed waveform can be set. The Kachina Pegasus is a QSK rig. Select QSK operation by enabled the QSK check box. Press the Spot button to hear an injected tone at the side tone (Offset frequency). Use this for zero beat with a received signal.



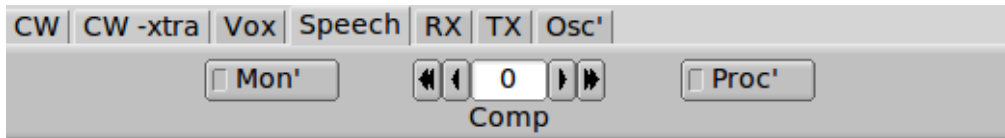
You can adjust the keyer sidetone relative to the received audio. Set the control to zero if you do want to hear the sidetone. The Offset frequency is the CW BFO pitch. You can elect to use the narrow or wide filter for CW. The Farnsworth controls are associated with the [CW Keyboard](#).

2.2 VOX



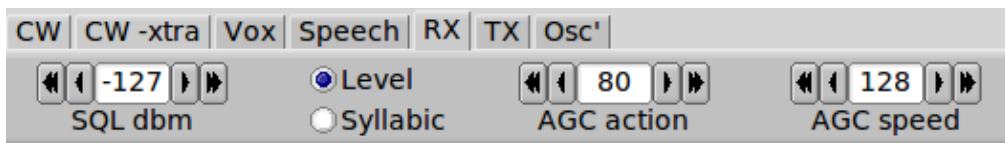
You can operate the Kachina with manual SSB PTT or with VOX. The three Vox controls are controlled IAW the Kachina manual.

2.3 Speech



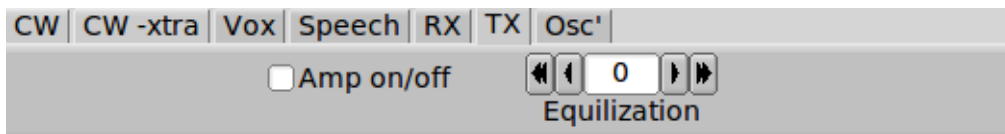
You can enable the SSB speech level (recommended only with headphones) or monitor the digital audio that is applied to the rear panel auxiliary connector. The compression level is also adjustable and speech compression can be enabled or disabled as suited. Do not use speech processing with digital mode audio.

2.4 RX



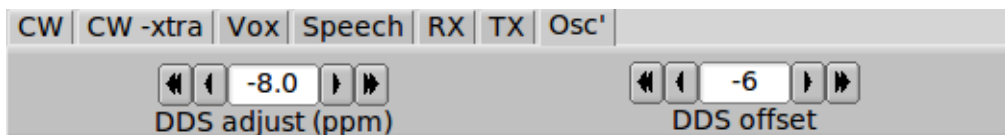
The squelch control can be used to open the audio based on either level or syllabic action. -127 dbm setting disables the squelch. A sliding button indicator next to the smeter indicator shows the position of the level squelch. AGC action and AGC speed can be adjusted to suit the operating requirements.

2.5 TX



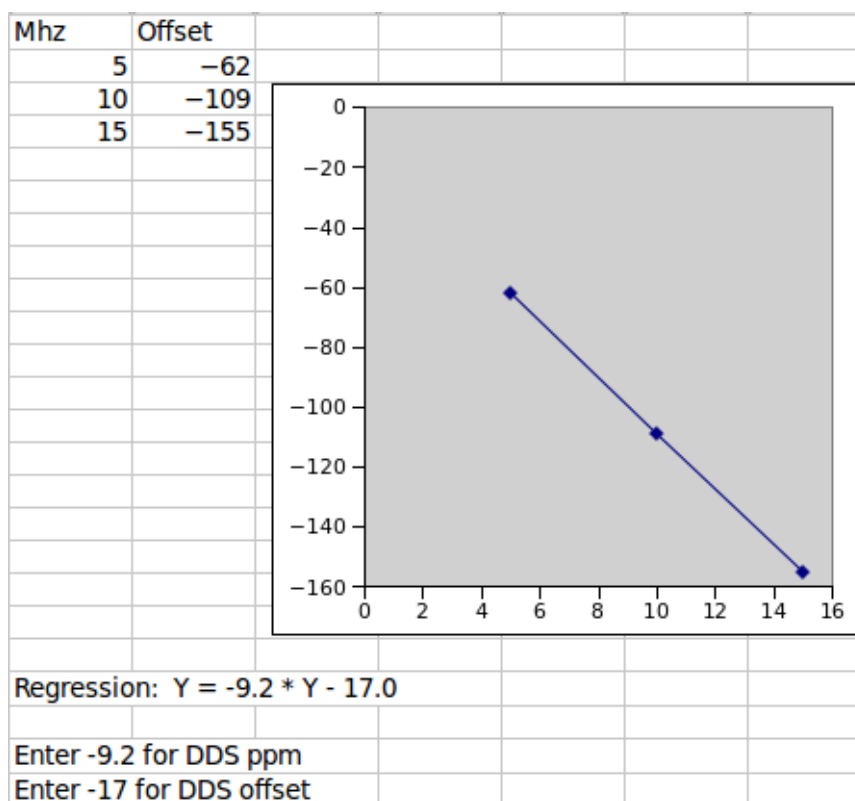
Enable the "Amp on/off" if you want the Kachina to operate with an amplifier that is keyed. Adjust the equalization to accentuate portions of the speech spectrum. Low values increase base, high values increase treble

2.6 Master Oscillator Calibration



The signal frequencies internal to the Kachina are all derived from a single oscillator. That oscillator can be corrected for frequency errors.

2.7 Advanced multi-frequency analysis



Proceed as follows.

Simple single frequency adjustment:

1. Set the DDS adjust to 0
2. Set the DDS offset to 0
3. Tune the transceiver to to external reference (WWV at 10 MHz for example).
4. Set the transceiver to CW mode, 1 KHz bandwidth
5. Adjust the volume control so that you can hear the beat note
6. Turn the CW spot control ON and adjust the Spot volume so that both the WWV and the Spot notes are about the same amplitude.
7. Adjust the "DDS adjust (ppm)" for zero beat between the WWV and spot tones.
8. You're done

Advanced multi-frequency adjustment:

1. Repeat 1 through 6 above for each of 5/10/15 MHz WWV signals (or other signals available at your QTH). At each frequency adjust the "DDS offset" control for zero beat. This will vary with each external reference frequency.
2. Record the frequency and the offset value need for zero beat.
3. Enter these into a spreadsheet program (preferably Gnumeric or Xcel).
4. Plot the pairs and you should get something similar to that shown at the left.

5. Perform a regression analysis on the pairs to determine both the slope and the y intercept of the extended curve.
6. Enter the slope value into the "DDS adjust (ppm)" control
7. Enter the intercept value into the "DDS offset" control.
8. You are done.

Using FLDIGI with the above:

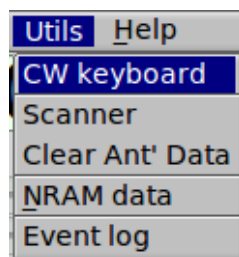
Set FLDIGI to the frequency analysis mode. Set the waterfall cursor at the CW tone (i.e. 700 Hz). When each reference is adjusted the WF signal should be exactly at the CW tone frequency. This will occur at zero beat.

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Chapter 3

CW Keyboard

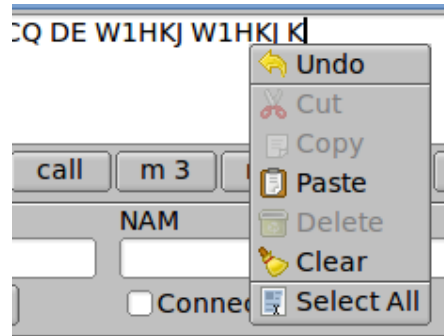


Selecting the CW keyboard menu item on the Utils menu opens the CW dialog. This is a fully interactive morse code generator. It uses the 505DSP internal firmware for generating the code. This means that the timing and the CW waveform shape is controlled by the transceiver.



The large blank control is the text entry which accepts text from either the keyboard or from one of the macro button closures. When the Send button is enabled (lit) the text will be sent one character at a time. As the text is sent it will scroll off the control to the left in a marquee style. You can pause the transmission at any time by pressing the Send button which acts as a toggle switch. The currently sent character will be finished by the transceiver. If you press the Abort button the text transmission will stop and the transceiver will immediately return to receive. Any character being sent will be truncated.

Press function key F1...F12 to add the macro text to the end of the transmit text buffer. You can also press the associated button with the mouse left-click.



Right-click with the mouse in the text buffer control to open a pop-up menu.

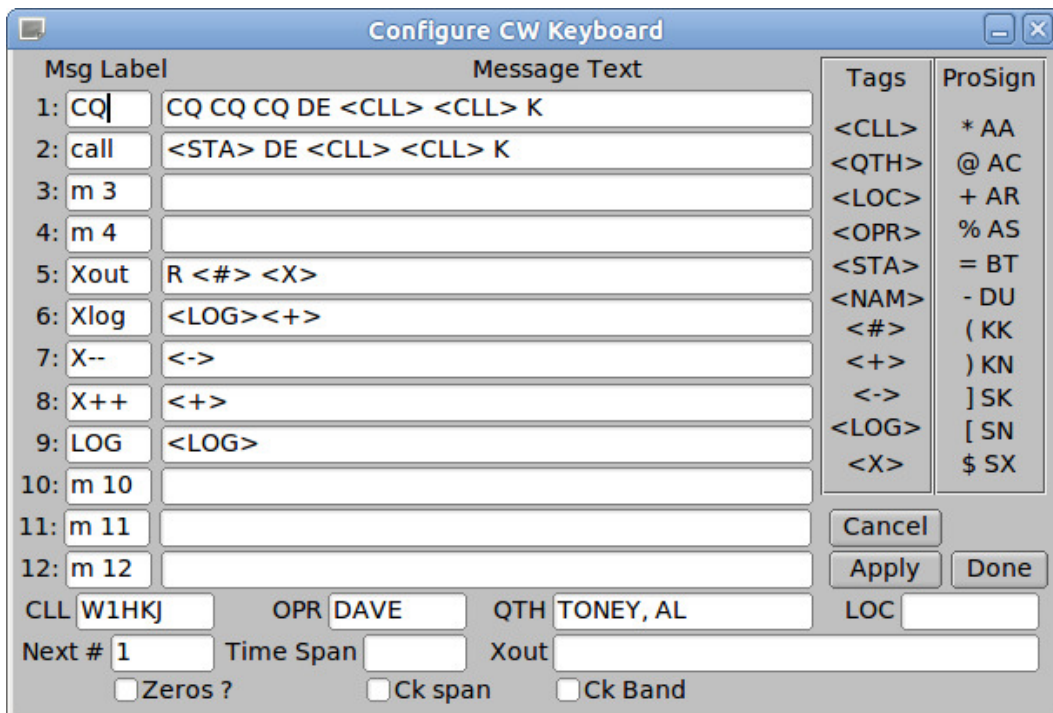
You can cut, copy and paste to/from another application. Use the left-mouse drag to mark text.

You can clear the text buffer from this pop-up

Enter the data for each contact in the STA - station call, NAM - operator name, Freq: - frequency of operation, X_in - contest exchange received.

Clear the logbook area by pressing the Clear button

If you are running the program fllog, a logbook server program, you can connect to the server for the purpose of logging your exchange, looking up previous QSOs (automatic), and checking for duplicates during a CW contest. Check the Connect box and the program will start data exchanges with the server. If the connection is successful the button remains checked. If not then it returns to the unchecked state. Upon successful connection the Log button and the Ck Dups buttons are activated. Press the Log button to log the current qso (also see below for use of macros and duplicate parameter selection). Press the Ck Dups button for contest duplicate checking. Simply enter the STA callsign and if it is a dup the control will turn red.



Pressing the Configure button on the keyboard dialog will open up the Configure dialog for the keyboard. You can customize the macro buttons for various canned transmissions. These transmissions can include various computed tags. The tags are

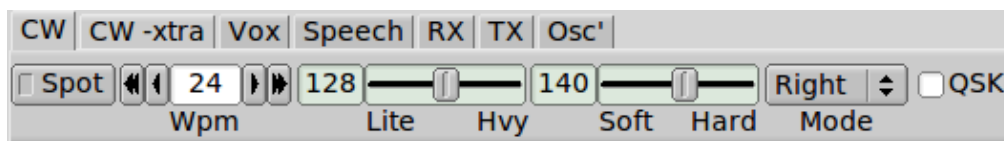
Tag	Description
<CLL>	your callsign, entered in the CLL control
<QTH>	your QTH, entered in the QTH control
<LOC>	your Locator, entered in the LOC control
<OPR>	your name, entered in the OPR control
<STA>	the other stations callsign, entered in the STA control above
<NAM>	the other stations name, entered in the NAM control above
<#>	Contest: serial number, starting # entered in Next # control
<+>	Contest: increment the serial number
<->	Contest: decrement the serial number
<LOG>	Logbook: send the data to the flog server program (if running)
<X>	Contest: send the contents of the Xout control

Prosigns are sent using the indicated keyboard character. For example, the % character will send the AS prosign.

Check the Zeros control if you want each serial number to have leading zeros.

Duplicates can be tested for callsign only, or callsign plus a time span using the "Time Span" and "Ck span" controls. You can also include a requirement for the band the match, "Ck Band"

3.1 Farnsworth code speed



The CW-keyboard character WPM and the Paddle WPM controls are mirrored on the CW tab pulldown and the cw-keyboard dialog.

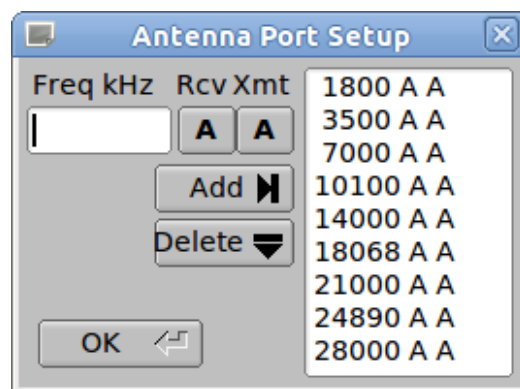
Farnsworth code speed allows characters to be sent at a faster rate than the word rate. For example you can send the characters at 24 wpm and the word rate at 15 wpm. The program will adjust the inter character and inter word spacing to produce the desired effect. This capability is only available using the CW keyboard and not from the CW paddle or key inputs. Set the word rate and enable the Farnsworth check box to use this feature.

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Chapter 4

Antenna Port Assignments



To modify an existing entry in the Antenna Ports List:

select it with the mouse (left click)

Change the frequency (kHz), the port associated with transmit (A/B) and receive.

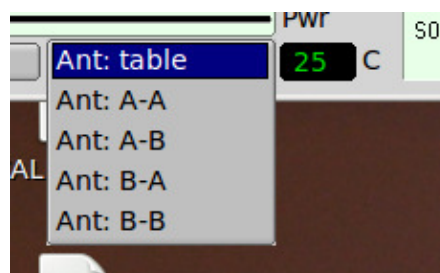
Press the Add button.

This will create a new entry in the table. You can then delete the old entry by highlighting it and pressing the Delete button.

The table is a progressive entry system. If for example, in the illustration to the left, the 7000 entry were "7000 B B" then all transceiver operation from 7000 kHz to the next entry of 10100 kHz would be on antenna port B for both transmit & receive. The simplest table would be a single entry at 1800 A A. That would cause the transceiver to always transmit & receive on Port A.

Be sure of your table entries before pressing the OK button.

4.1 Override Port Assignments



Under most operating conditions you will want to use the antenna port assignments as specified in the port configuration. You may on occasion want to override that setting. The Ant: pick control allows the selection of the Rx/Tx antenna combination. The 505DSP can operate with Rx on either antenna port and Tx on either antenna port independent of each other. The default is to use the table.

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