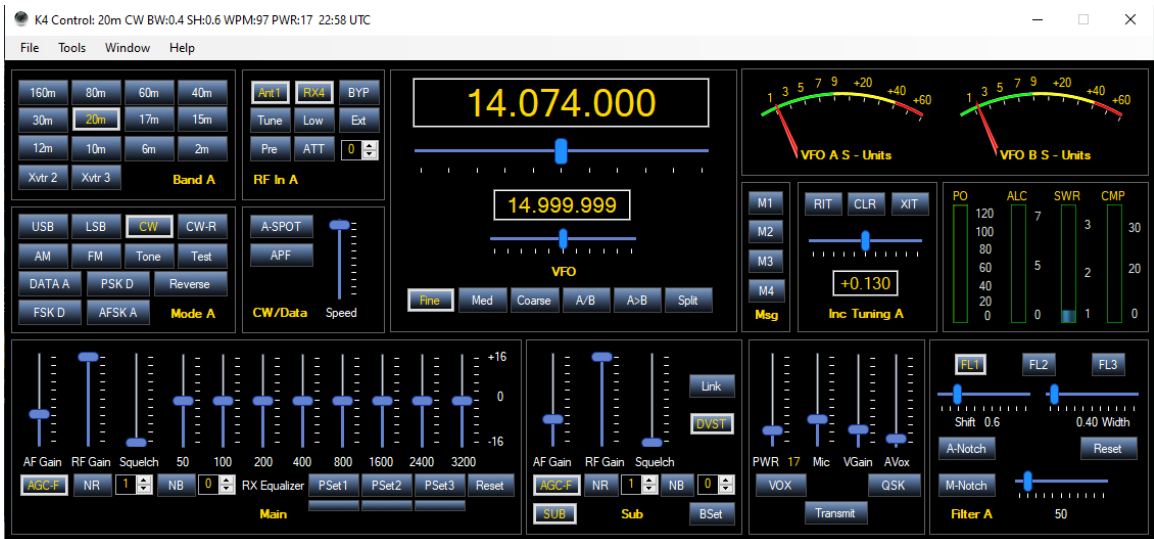
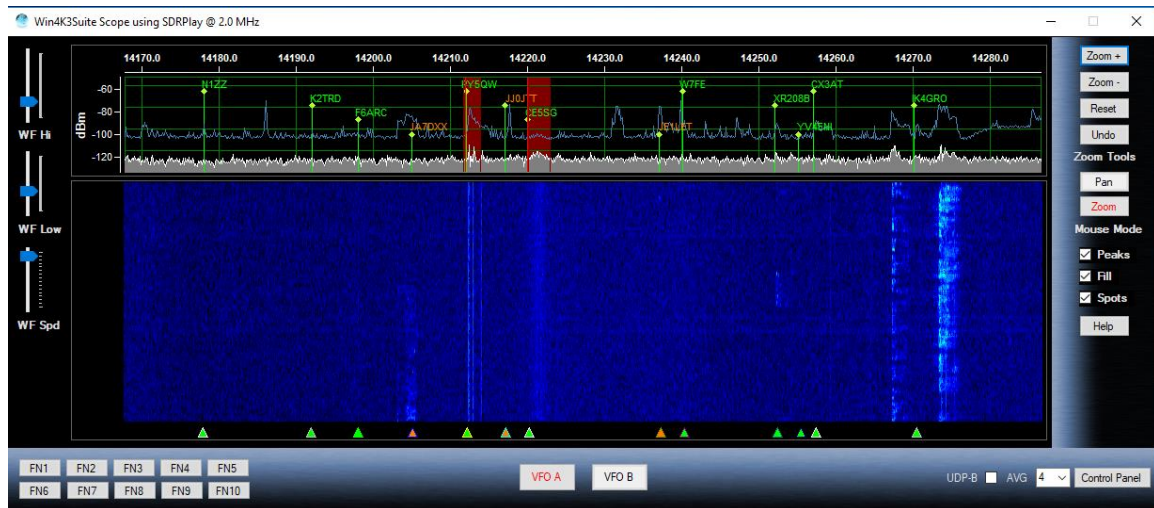


Win4K4 Suite Documentation V1.03 October 2021

Thank you for buying Win4K4Suite. The Suite supports the Elecraft K4 transceiver, the KPA500 and KPA1500 Amplifiers, and the KAT500 Antenna tuner. It also interfaces with external logging programs, third party hardware and the SDRPlay series of panadapters. The software is new as is the radio and additional functionality will be delivered when the radio firmware supports it. You can find additional information at <https://va2fsq.com> . Checkout the Documentation and Video Tutorials.



Support is just an email away at support@va2fsq.com. Release notes at available at <https://va2fsq.com/win4k4suite-release-notes/>

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Part 1: Installation and Configuration

Setup of the Elecraft K4 Radio

There is very little setup required. **The most important thing you can do is to make sure all devices (K4, KPA and KAT) have the latest firmware.**

You will need a serial connection to the K4, and additional serial connections to the KPA500, and the KAT500 if present. You may also use an Ethernet connection for the K4 and KPA1500 (KPA1500 TBD).

If you plan on using the **KAT500** auto-tuner you must first go into the Elecraft KAT500 utility and turn off "Sleep mode" otherwise you will not be able to connect to the KAT500.

Installation of the Software

Once you have downloaded the software (va2fsq.com), double click on the setup file. This will install the software to your computer and install an Icon on your desktop. The software allows a 30 day free trial with full functionality to see if it meets your needs.

You may run into your antivirus or Windows Defender that will block the installation. Select continue anyways. If you do not trust the files, upload them to VirusTotal.com and scan them with 50+ antivirus applications.

Preparation of the Radio

If you plan on using a USB serial port set them up as follows on the K4.

- 1) Press Menu.
- 2) Scroll to USB-PC1 (or another if you wish)
- 3) Set Auto-Info to Nor
- 4) Set Baud rate to 115200 (you can choose a different rate but why not 115200?)
- 5) Set DTR and RTS to NONE.

If you plan on using the ethernet port, scroll to IP Address and make a note of it.

Setup of Comports

The first time you launch Win4K4Suite, you will be taken to the setup menu automatically.

Settings

Hardware | 3rd Party SW/HW | Radio - Amp Settings | K3-KPA-KAT Macros | Spectrum and Key Macros | User Preferences

Comports

K4	KPA500 / KPA1500	KAT500
COM Port: <input type="text"/>	COM Port: <input type="text" value="COM3"/>	COM Port: <input type="text" value="COM11"/>
Baud Rate: <input type="text" value="115200"/>	Baud Rate: <input type="text" value="38400"/>	Baud Rate: <input type="text" value="38400"/>
<input type="button" value="Connect"/>	<input type="button" value="Connect"/>	<input type="button" value="Connect"/> <input type="button" value="Help"/>

Network

K4	KPA1500
IP Address: <input type="text" value="192.168.1.23"/>	
Port: <input type="text" value="9200"/>	
<input type="button" value="Disconnect"/>	

Panadapter UDP Broadcast

Stream Name:

IP Address: Port:

Data Points: Frame Rate(F/s):

Changes require closing and re-opening spectrum

Panadapter

☒ SDRPlay

The menu has several different tabs which will be covered shortly.

Each device such as the K4, KAT500, or KPA500/KPA1500 must have their own serial port. In order to continue you must connect to the K4 Port first. You will also need to determine which com port the K4 is connected to. This can be determined from the Windows Device Manager, Ports section. If you are not sure, unplug the USB cable and watch which port disappears. Plug it in and you will know the com port number.

Make sure that the K4 is on, and pick the com port for the K4 from the drop down menu. If the baud rate is different than 115200, select it and click "Connect". If successful, the button will change to "Disconnect". If the connection to the K4 is not successful, you will be informed to check that you have the right port. If you cannot connect, then the program will not allow you to continue. You must have at least a connection to the K4 before continuing. If you cannot get a connection close the Window and the program will close. At this point check that you are using the correct serial port on the K4 and that the baud rate is correct. Then try again.

When you have connected to the K4, you may then pick the comports for the KPA500/KPA1500 and / or the KAT500, clicking on the connect buttons as appropriate

Once the K4 is connected, you can exit the setup menu by clicking the Save button. All other setup functions can be done later if you wish by selecting the K4 Control Window and Tools Settings.

If you wish to change comports for the K4, KPA500/KPA1500, or KAT500 and you have already connected and saved the initial settings, you will need to click one of the “Disconnect” buttons. This will reset the ports and close Win4K4Suite and on the subsequent start will prompt you to connect the radio again. All other settings will remain the same.

To use the Ethernet port, enter your IP Address or host name in the IP address box, and port (9200) in the port section. Click connect.

Setup of the K4 Spectrum Scope with SDRPlay

The SDRPlay is a software defined radio that can tune from 100 KHz to 2.1 GHz with a maximum bandwidth of 8 MHz. It can be used with the K4 using an RX antenna loop. There is no need for a sound card nor is balancing of the IQ signals necessary. It is pretty well plug and play.

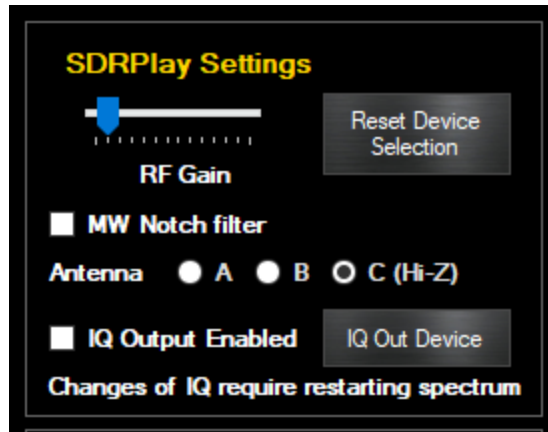
To connect the SDRPlay you will need to insert it into the RX antenna loop for one of the antennas. You will need a splitter box with the output of the RX antenna jack feeding the splitter and then one output going to the SDRPlay and the other to the RX in connection.

The next thing you will need to do is to make sure the drivers for the SDRPlay are installed. If you install SDRUno, the software from SDRPlay.com all drivers will be installed as required.

The second thing you will need to do is to select Tools, Settings from the main control window and then click on the SDRPlay check box. Restart Win4K4.

You can now open the spectrum scope by selecting Windows, IQ Spectrum.

By default, the SDRPlay gain is set for a middle value. This can be adjusted by opening the spectrum Control Panel in the lower right of the spectrum display. You will see the following:



The gain control allows you to set the baseline gain for the SDRPlay. If set too low, then signals will be missed. If set too high, you will see spurious peaks appearing in the spectrum.

Adjust this to provide adequate gain with minimal artifacts. Please see the Advanced topics for more information. For IF out implementations, setting it once is adequate.

If you receive an error “Unable to attach to API” when starting the spectrum scope, the SDRPlay service may not be running on your computer. Open the Windows Start Menu, find the SDRPlay entry and select “Restart API Service”. This normally should start automatically. If not, please look at the SDRPlay documentation.

The final thing you must do is select the RX antenna loop you used in Win4K4, by cycling through the RX choices in the RF In panel.

Please watch the video on how to use the spectrum scope here:
<https://yaesu.va2fsq.com/video-tutorials/>

Pay attention as to how to zoom!

Use of Third Party Panadapter Software

Win4K4Suite also supports third party panadapter software such as SDRUno or HDSDR. To use these products, they will need to be connected to the AUX / CAT ports as described in the "Integration of Third Party Hardware and Software"

Integration of Third Party Software and Hardware

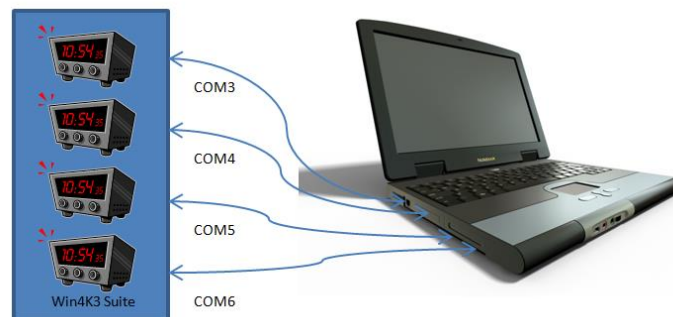
Win4K4Suite supports most third party products that can connect to an Elecraft K4 or K3 through a standard serial port. This includes almost all software packages such as DXLab, WSJT-X, Log4OM, Logger32, N1MM Contest logger and anything that works with OmniRig. In addition it can interface to stand alone hardware packages that have a serial port connection to a computer.

Unlike comport sharing programs, each connected device or software has its own dedicated channel to the K4 avoiding any contention between them.

You can see a video tutorial here: <https://va2fsq.com/tutorials/>

Concept

Imagine for the moment that Win4K4Suite is a black box existing outside of the computer. This black box has 6 K4's imbedded in it. Each of these K4's has a serial port that you can connect to, just like the real K4. To connect to one of these radios you just connect one of these ports to the computer via a cable and then configure your software to connect to the radio as you always have. Here's the idea:



You can have FLDigi, DX Lab Commander, N1MM Contest Logging software, or SDRUno Panadapter software connected, each with its own channel to its own radio.

But Win4K4 is not a physical device like in the picture, but rather a virtual device **in** the computer. So then how does one connect Win4K4up to all of the software?

The answer is using a Virtual Comport Pair. A virtual pair is very much like a NULL Modem cable. It allows connecting two devices together so that the transmit and receive wires are crossed.

When you create a Virtual Comport Pair using various software packages it creates essentially a null modem cable that has one comport defined at one end, and another comport defined at the other end. You connect one end to the software you want to use, telling it it is connected to a K4, and then you connect the other end to Win4K4 using one of 6 specialized "AUX / CAT " ports in the settings of Win4K4. From this point on, the software thinks it is connected to its own K4.

Win4K4Suite supports connecting 6 third party products. These products can read information from the radio. Performance is maintained since the responses to commands have been saved in memory by Win4K4 during its latest round of polling the radio. Thus, high polling rates from software such as N1MM do not directly access the radio but rather the memory. Commands to switch frequencies or modes or any other write commands are executed immediately.

Connecting to Third Party Applications

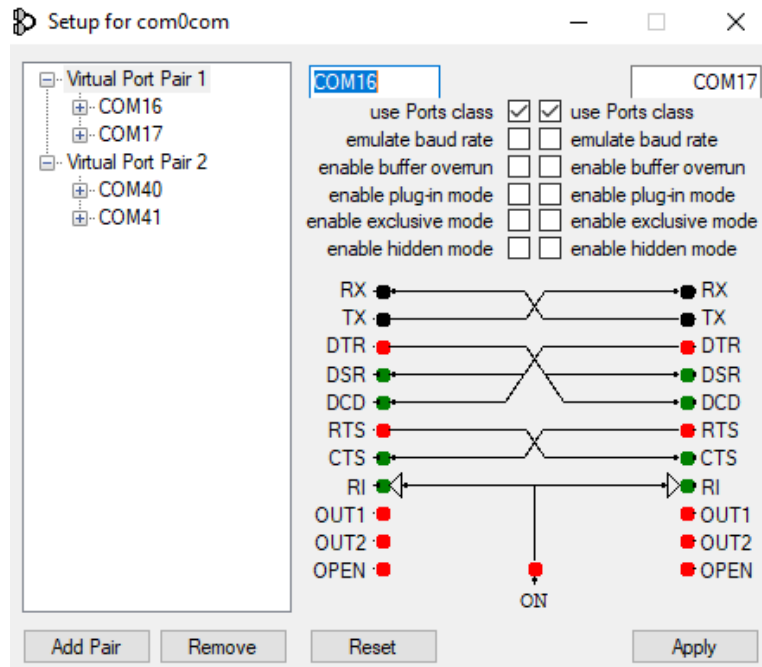
The first thing you are going to need to do is download a third party Virtual comport program. There are a number of these out there but Win4K4 has been tested with COM0COM, Eltima Virtual Comports and VSPE. Most cost money but COM0COM is free. If you are using a MicroHam router, you can create a Virtual Cable included in their router to accomplish the same thing.

One example which is free is COM0COM which is open source and available at:

<http://sourceforge.net/projects/com0com/files/com0com/2.2.2.0/>

Be sure to use the version for your operating system. There is one for 32 bit and another "Signed" for 64 bit. **Only the version at this link is signed. In addition, at this time of writing, be sure to use version 2 and not 3 of com0com.** The drivers are identical however the installation package of version 3 has issues with later versions of Windows 10 and 11.

After you install this, open the Windows start menu and in the com0com folder and run "Setup." (Don't run Setup Command line).



There will be, by default, one pair already defined with weird letter names. You can just click on the names and change the names of the comports to a comport name that does not exist on your system. In the above I chose COM16 and COM17 for one pair and COM40 and COM41 for another.

Once the comport pair is created, start up Win4K4Suite and select Tools, Settings, and the 3rd Party SW/HW tab. You will see the following screen:

Settings

Hardware 3rd Party SW/HW Radio - Amp Settings K3-KPA-KAT Macros Spectrum and Key Macros User Preferences

Software

Aux/CAT Port 1	Aux/CAT Port 2	Aux/CAT Port 3	Aux/CAT Port 4	Aux/CAT Port 5	Aux/CAT Port 6
Port COM16	Port	Port	Port	Port	Port
Baud 38400	Baud 38400	Baud 38400	Baud 38400	Baud 38400	Baud 38400
Tag	Tag	Tag	Tag	Tag	Tag
Disconnect	Connect	Connect	Connect	Connect	Connect

☐ CW Skimmer

Hardware Configure *Used for passive hardware that listens only. Do NOT use for software.*

W4K4Suite Compatible HRD Server

Address 127.0.0.1 Port 7809 ☒ Check for HRD Version 5.24 and higher.

Auto Launch Close on exit?

<input type="checkbox"/> Browse	C:\Program Files (x86)\HRD Software LLC\Ham Radio Deluxe\HRDLogbook.exe	<input type="checkbox"/>
<input type="checkbox"/> Browse		<input type="checkbox"/>
<input type="checkbox"/> Browse		<input type="checkbox"/>
<input type="checkbox"/> Browse		<input type="checkbox"/>
<input type="checkbox"/> Browse		<input type="checkbox"/>
<input type="checkbox"/> Browse		<input type="checkbox"/>

QRZ Account UserID Password

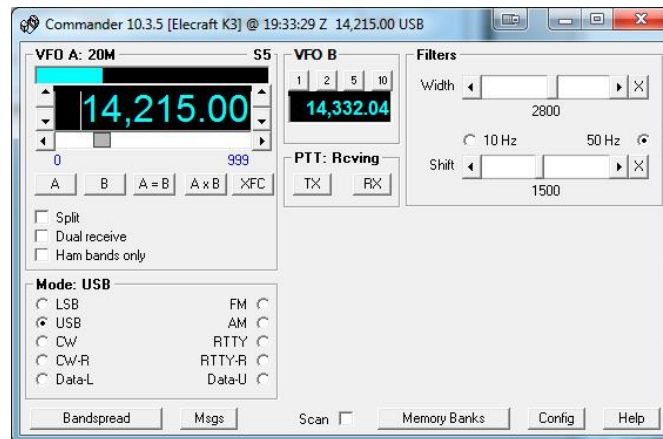
Save Cancel

In this screen there are 6 AUX/CAT ports. Each one can connect to a comport of a virtual comport pair. In this example, AUX/CAT Port 1 is connected to comport 16. The others are currently not connected to other virtual port pairs.

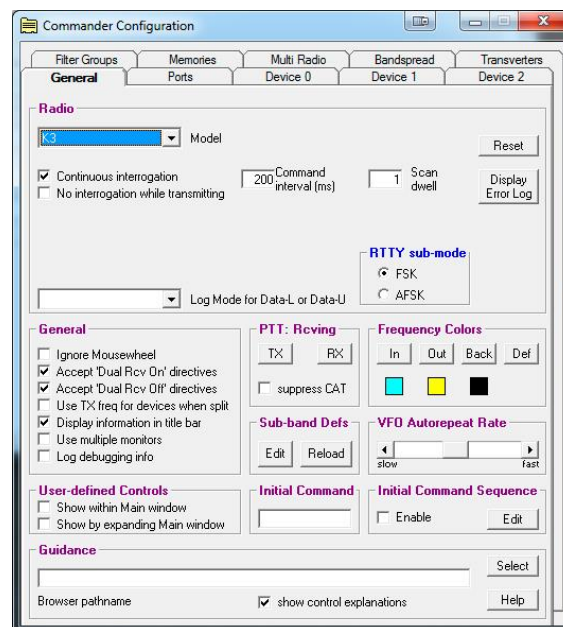
All you need to do now is save the settings and then configure your third party product to connect to comport 17 which is the second comport of the COM16-COM17 pair telling it you have a K3 or K4 connected to that port. Note that you can always use a K3 as the rig since Win4K4 will support this over the virtual radios.

Example: DXCommander from DXLab Suite

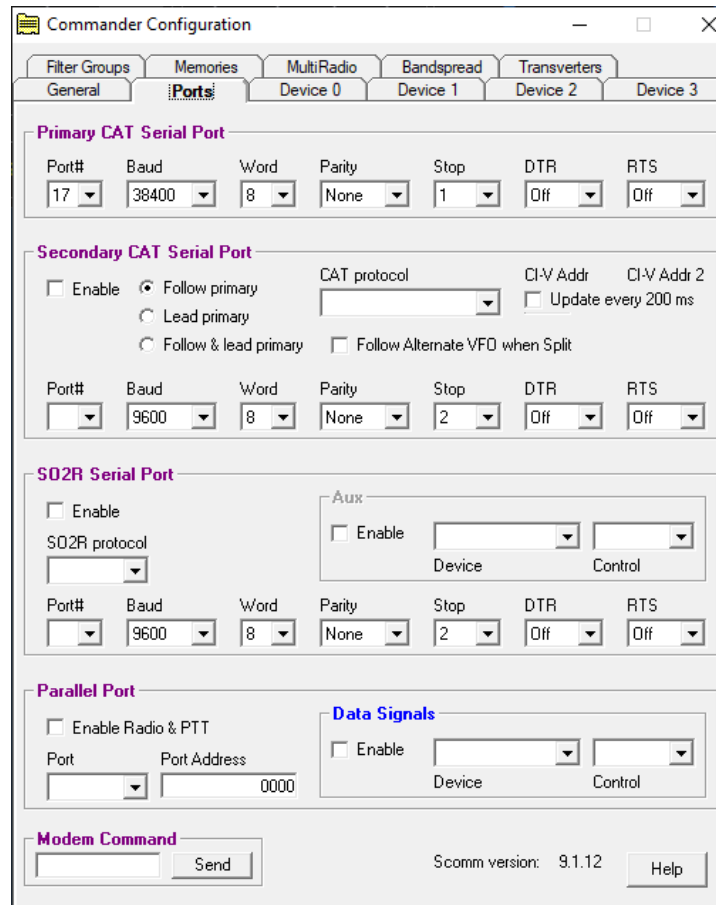
Select **Config** from the main DX Commander screen:



You will then see the following screen. Select the K3.



Next click on the Ports tab and enter Port# 17 corresponding to the serial port of the virtual comport pair you created above.



Make sure that DTR and RTS are set to OFF. Win4K4Suite does not support hardware hand shaking at this time.

Exit out and you should be connected to DXCommander. From the point of view of DXCommander, all it sees is a K3 connected to its comport. Therefore everything that is supported in DXLabs Suite also works.

You can use the same principle for any other third party software such as N1MM, DX4Win and so on.

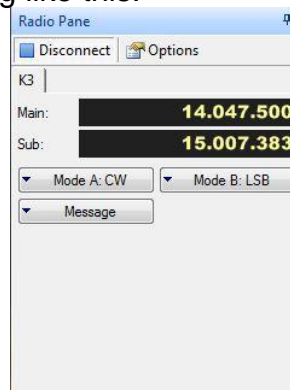
Some packages such as FLDigi, WSJT-X and LOG4OM use OmniRig. You apply exactly the same principle as above.

More information can be found in the Documentation, Video tutorials on the va2fsq.com website.

Connecting to Ham Radio Deluxe Logbook and DM780

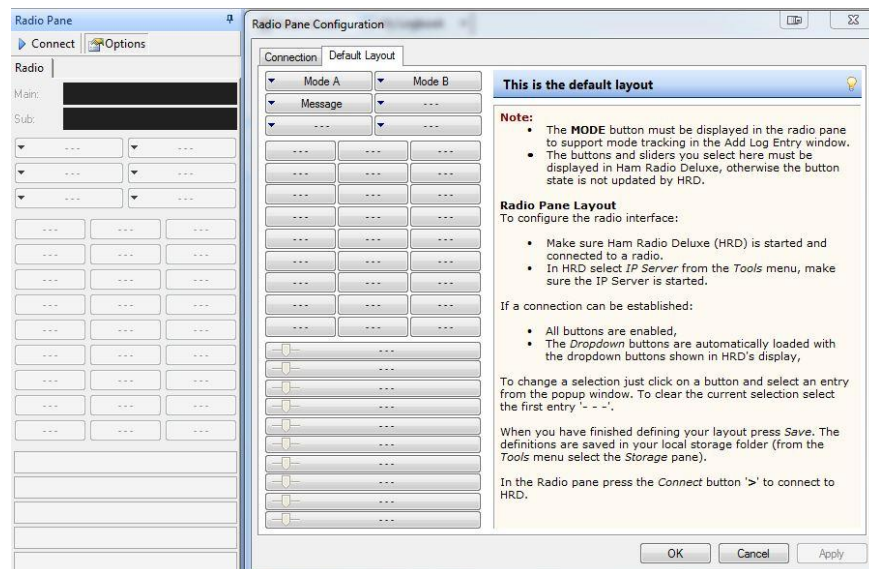
Win4K4Suite has a Ham Radio Deluxe compatible TCP server that can connect with the log book and DM780. In order to use this and track the radio modes you must first connect the **HRD Radio Control program to your radio** and run the HRD logbook. You must do this for specifying the K3 at this time.

Once you are connected open the radio pane in HRD Logbook (View Radio Pane). You will see something like this:



There may be other buttons displayed but Win4K4Suite only supports the default buttons and drop downs at this time. For the K3, these are Mode A, Mode B, and Message. For the KX3, they are Mode A and Mode B. If you have other drop downs defined you **MUST** remove them from the radio pane.

To change the drop downs, click on the Options Tab in the Radio Pane. At that point you will see the following.



If there are any other buttons than this you must remove them. If any are missing, you must add them. The result **MUST** be exactly as shown.

Click OK and if all is well you will see Mode A and B showing the mode of the radio. If you cannot get the Radio Pane to show just the fore mentioned buttons then you will not be able to connect with Win4K4Suite. If you cannot change the buttons as happens in some cases please contact support@va2fsq.com. This is solvable just a little more work is involved.

Once you are successful, close HRD Control and HRD Logbook. Start Win4K4Suite and start HRDLogbook.exe (In the HRD software directory).

To make things simple you will want to create a shortcut on your desktop from the executable in the HRD folder or make an entry in Settings, Third Party HW/SW Auto Launch. This way the logbook will start immediately when you start Win4K4Suite.

Using MicroHam Routers

Win4K4Suite will work with the MicroHam routers. Please see detailed instructions here: http://va2fsq.com/?page_id=798

Integration with CW Skimmer

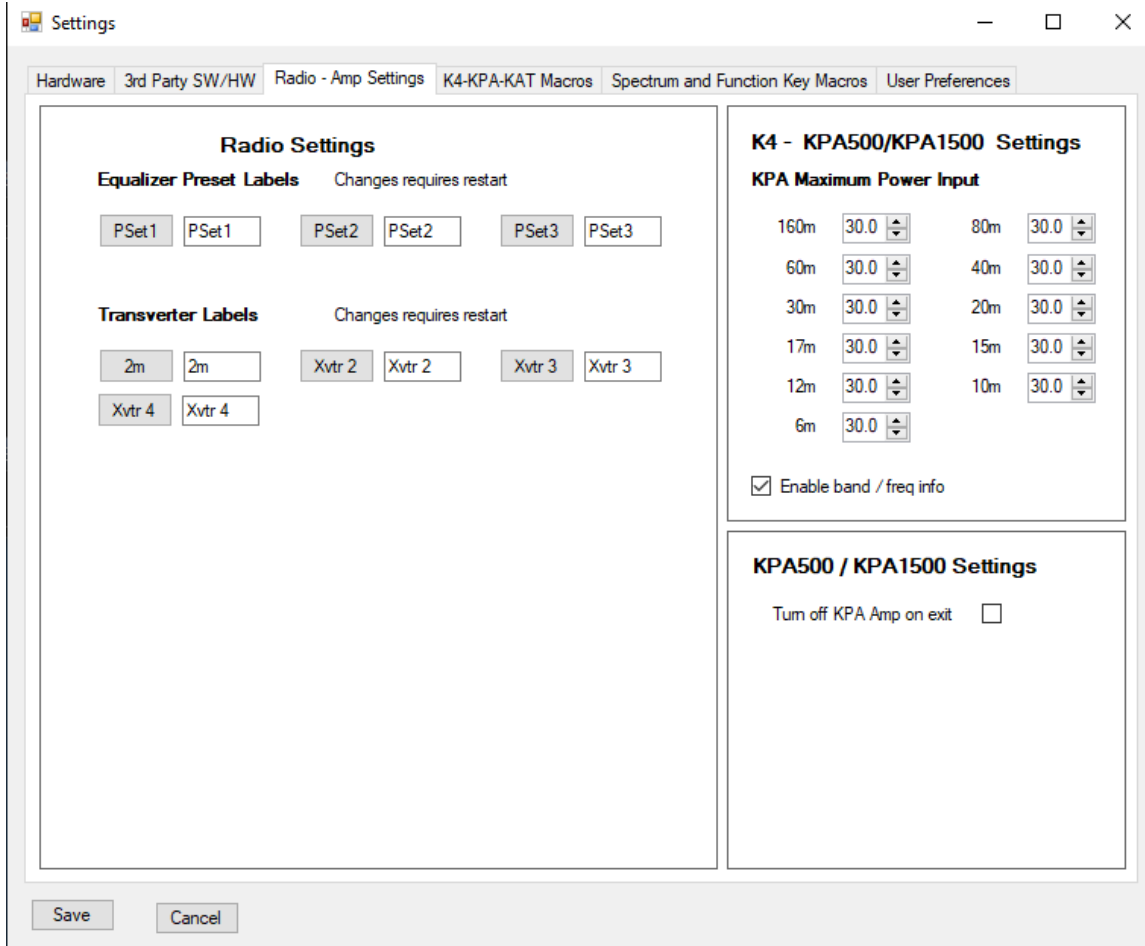
CW Skimmer is an extremely useful tool for decoding CW transmissions over a wide range of frequencies. It is especially useful for working DX pileups, where you can see where the DX last worked a QSO.

By default CW Skimmer will QSY to a spot using VFO A. However, when you are working DX you are usually in SPLIT mode. So if you click on a spot with CW Skimmer, you will lose the DX transmitting frequency. Win4K4 provides a way to translate all QSY's from VFO A to VFO B. To enable this function, connect CW Skimmer to AUX/CAT port 4 and click the CW Skimmer check box. This will inform Win4K4 that CW Skimmer is connected and it will enable the VFO A to VFO B QSY's. By default, it will use VFO A but in the Tools menu of the radio control screens there is a toggle called...

Settings Menu in Depth

Radio - Amp Settings

Here you may select averaging for the P3. Also you can select a file for use with the Frequency Memory Window, Labels for the Equalizer presets and power levels for the KX3 amp when used with the KPA500.



Spectrum and Function Key Macros

Here you can specify macros for the spectrum scope window such as Span etc. You can change the labels as well. These will appear on the spectrum scope windows window in the lower left. You can use any macros you wish. Please see the section on Programmable Macros for more details. .

Settings

Hardware | 3rd Party SW/HW | Radio - Amp Settings | K4-KPA-KAT Macros | **Spectrum and Function Key Macros** | User Preferences

Scope Macros

FN1	FN1		FN6	FN6	
FN2	FN2		FN7	FN7	
FN3	FN3		FN8	FN8	
FN4	FN4		FN9	FN9	
FN5	FN5		FN10	FN10	

Function Key Macros

Function Key	Macro
F1	
F2	
F3	
F4	
F5	
F6	
F7	
F8	

Save Cancel

There is also the ability to program the various keyboard function keys F1 to F8. F9 and F10 are dedicated to VFO down and VFO up. They can be used by keyboard controllers like the Contour Plus.

Third Party SW / HW Tab

In this section you can specify the settings for the AUX / CAT ports as described in Connecting to Third Party Applications.

Settings

Hardware 3rd Party SW/HW Radio - Amp Settings K4-KPA-KAT Macros Spectrum and Function Key Macros User Preferences

Software

Aux/CAT Port 1	Aux/CAT Port 2	Aux/CAT Port 3	Aux/CAT Port 4	Aux/CAT Port 5	Aux/CAT Port 6
Port COM16	Port	Port	Port	Port	Port
Baud 38400	Baud 38400	Baud 38400	Baud 38400	Baud 38400	Baud 38400
Tag	Tag	Tag	Tag	Tag	Tag
Disconnect	Connect	Connect	Connect	Connect	Connect

☐ CW Skimmer

Hardware Configure *Used for passive hardware that listens only. Do NOT use for software.*

W4K4Suite Compatible HRD Server

Address 127.0.0.1 Port 7809 ☒ Check for HRD Version 5.24 and higher.

Auto Launch Close on exit?

<input type="checkbox"/> Browse	C:\Program Files (x86)\HRD Software LLC\Ham Radio Deluxe\HRDLogbook.exe	<input type="checkbox"/>
<input type="checkbox"/> Browse		<input type="checkbox"/>
<input type="checkbox"/> Browse		<input type="checkbox"/>
<input type="checkbox"/> Browse		<input type="checkbox"/>
<input type="checkbox"/> Browse		<input type="checkbox"/>
<input type="checkbox"/> Browse		<input type="checkbox"/>

QRZ Account UserID Password

Save Cancel

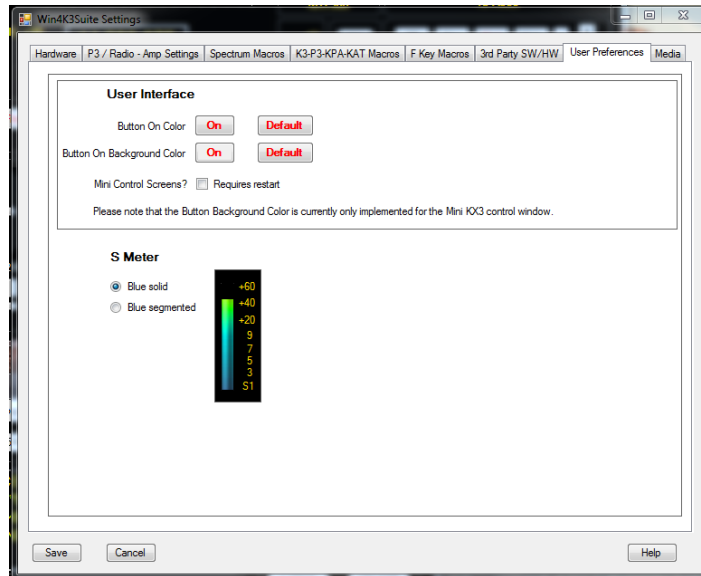
The Win4K4Suite Compatible HRD Server provides the address and port of the HRD Logbook server. If you are using an old version of HRD, uncheck the check box shown.

Auto Launch: This provides a facility to automatically launch up to 6 third party programs when you start Win4K4. You can check or uncheck the check boxes to enable a particular Launch as you deem necessary.

The Close on exit checkbox will close the software in most cases but not all. N3FJP for example will not close. It also has an infinite timeout for the serial ports so will lock up unless it is closed first before Win4K4.

QRZ Account: This is for lookup of call signs in the CW - FSK-D - PSK terminal.

User Preferences: This tab allows you to select Mini Control screens as well as the color of the buttons that appear in Win4K4Suite.



Limitations of the Software and the Elecraft API

Currently in version 1.021 the spectral and audio output of the K4 is not yet available in the firmware. Same thing for the frequency memories.

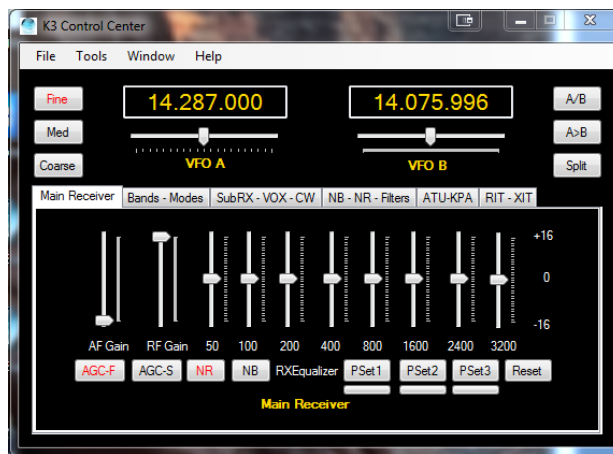
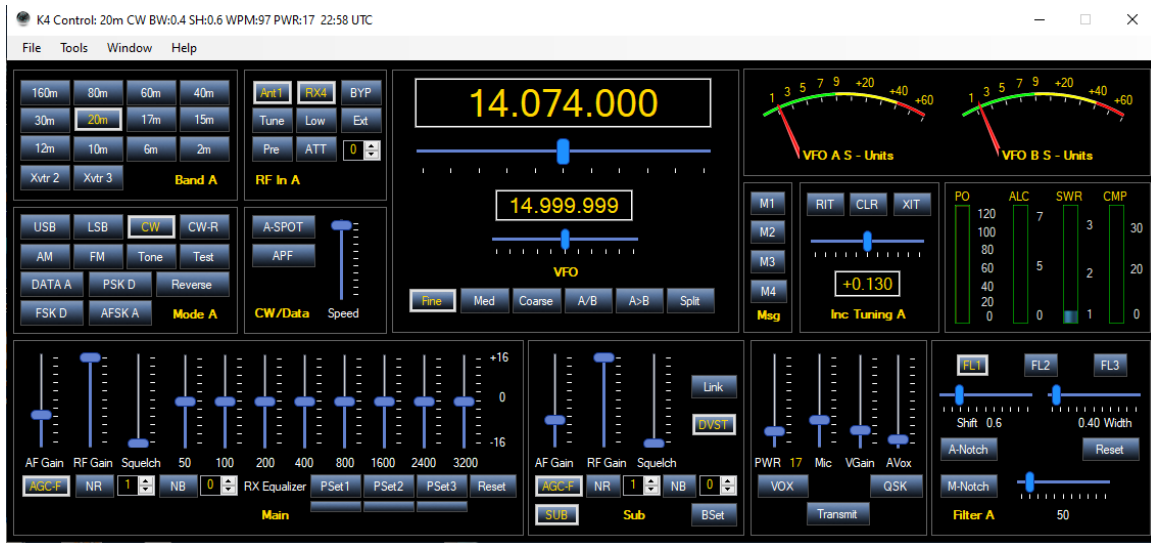
Part 2: User Interface and Functionality

Radio Control Screens

Win4K4Suite provides an easy to use interface to the Elecraft K4 radio, integrating almost all functionality including that of the KPA500/1500 and the KAT500. There are two possible radio control screens: the full sized interface and the Mini-Screen. Switching between them is accomplished by going into Tools Settings User Preferences and checking or un-checking the "Use Mini Control Screens" box. A restart is required.

Most of the buttons are self-explanatory but there are a few sets of controls that can use further explanation.

Full Sized Control for the K4



Mini-Screen Controls for the K4

VFO A and VFO B Tuning

The radio may be tuned by sliding the slider to the left or right and then releasing the mouse. Tuning rate is governed by the buttons of Fine, Med, or Coarse. If you use the mouse wheel after selecting the slider, the wheel can be continuously turned to change the frequency.

By default **Fine** tuning changes the frequency by one Hz if you use the keyboard to slide the slider. If you use the mouse wheel each "tick" will increase the value by three times the slider increment.

Medium tuning will change the frequency in 10 Hz increments and **Coarse** by 100 Hz increments. In all cases the mouse wheel will increase this by three times.

Double Clicking the VFO windows will pop up a direct frequency keypad as shown here:



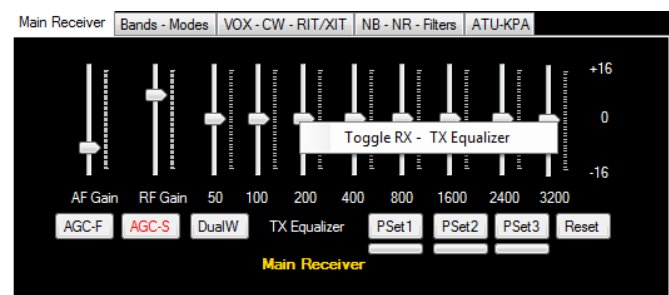
You can use the keyboard or the mouse to enter a frequency. Note that the frequency is in kHz.

You may also click in the VFO A or B frequency digits directly and use the arrow keys or mouse wheel to individually change the values of the digits. Note, click slightly to the left of a digit.

Right Clicking in the VFO B frequency display allows you to select various "Up" and "Down" split frequencies automatically.

Hidden Controls Accessed with a Right Click of the Mouse or Double Clicking

There are several controls in Win4K4 that can have a dual function. For example, the Equalizer can be toggled between receive and transmit equalization by right clicking the equalizer



Some of the others include right clicking on VFO B to select a split frequency which will also automatically copy settings from VFO A to VFO B and enter Split mode.

For the KPA500 and KXPA100 double clicking the Temperature box will cycle through Temperature, Voltage, and Current.

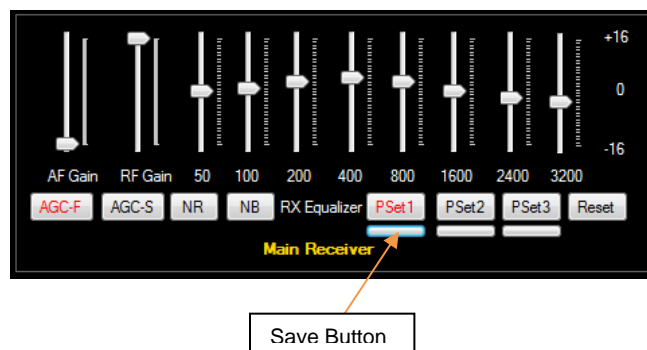


In addition, right clicking anywhere in the KPA500 control will allow you to set the fan settings on the amp.

Receive and Transmit Equalizers

Win4K4Suite provides access to the receive and transmit equalizers built into the K4. Right click to toggle between RX and TX equalizers.

You can save up to 3 equalizer settings for each of the equalizers in Win4K4 by pressing the little bar beneath the preset button. The labels on the presets can also be saved in the settings. (Tools, Settings, Radio – Amp Settings).



Filters and Passband Tuning

Win4K4Suite allows full control of the filters in the radio.

Band Stack Registers

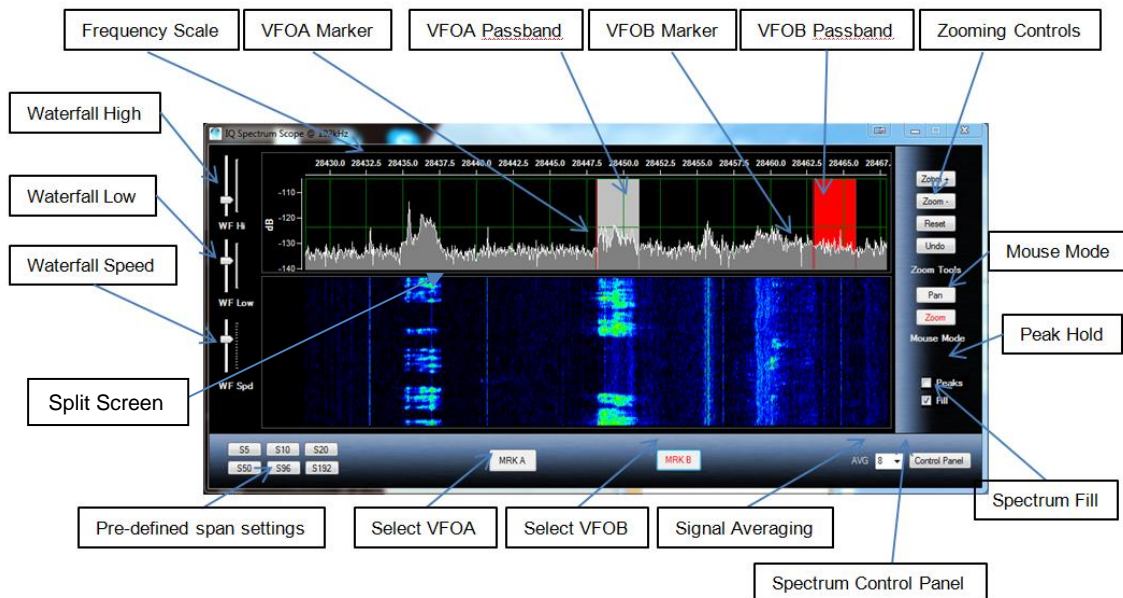
By default, the K4 will remember the previous frequency and mode when you change the band. Band stack registers are per band memories that allow you to store up to 4 different frequency / mode pairs per band.

To use this feature, clicking the Band button that you are currently on, will store the frequency and mode you are currently using, and then cycle through up to 3 additional frequency / mode pairs. The first time you use this on a particular band, a press of the band button will store the current frequency and mode. If you then tune to a different frequency and mode on that band, and then press the Band button again, it will store the new pair and then go back to the previous pair. Up to 4 pairs are available per band. You can also right click in the Band section and then select a frequency / mode pair from the popup menu.

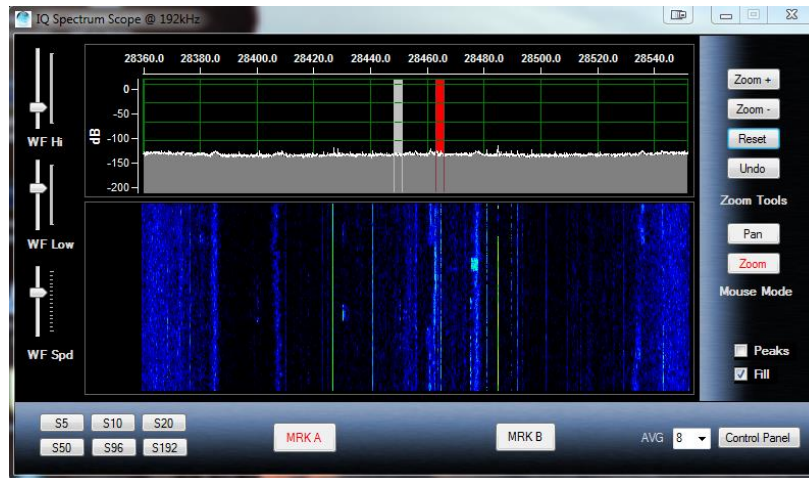
The Win4K4Suite Spectrum Scope

The Win4K4Suite spectrum scope offers an easy to use spectrum scope with no need to worry about many of the technical aspects of Digital Signal Processing. The display automatically takes into account all offsets for the various modes. You can find a video tutorial as well at <https://va2fsq.com/tutorials/>

Control Layout



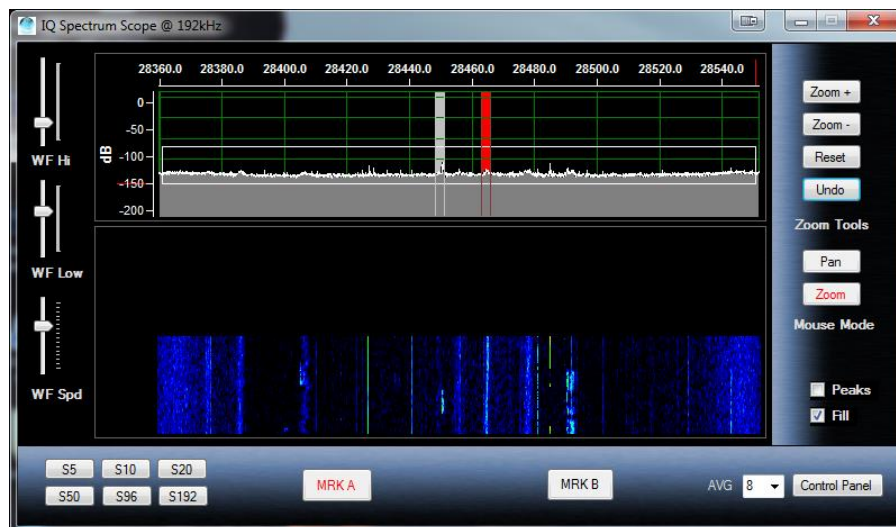
When you first start the spectrum scope you may see something like the following picture. If not press the "Reset" button.



Zooming and Panning

The spectrum scope has two modes for the mouse: Zoom and Pan. The Zoom button will allow you to zoom into parts of the spectrum using the mouse.

For example, you can use the mouse to draw a box around the area you wish to look at as shown below:



It is useful to make a selection across the whole spectrum so that peaks are closer to full scale as has been done in the above picture. You can also select a small section to really zoom into the signals.

You can use the mouse in this fashion at any time as long as the Mouse Mode Zoom button is active. If you make a mistake, you can press the "Undo" button which will revert back to the previous zoom ratio.

Clicking Zoom + and Zoom -, will zoom in the X Axis, increasing or decreasing the span of the display.

In addition to the Zoom, there is a Pan button. This allows you to move the spectrum up and down by clicking and holding the mouse button in the spectrum display. In addition, you can use the mouse to grab the Frequency scale at the top of the spectrum and move it left to right to pan the spectrum over the whole frequency range.

QSY to Signal

Double clicking in the spectrum window will QSY to the signal of interest. This is possible for both VFO A and B by selecting either the MRK A or MRK B buttons. The VFO Passbands reflect the actual bandwidth and shift settings on the radio.

Right clicking on the spectrum allows you to set a tuning rate for the radio using the mouse wheel and also allows you to "Jump Up" or "Jump Down" to even 500 Hz settings. You can also set a "Snap" which will always QSY to even 100 Hz boundaries.

Waterfall Settings

The WF Hi setting adjusts the colors for the signal peaks, while the WF Low adjusts the colors for the background. The WF Spd adjusts the waterfall scrolling speed. All settings are saved by band.

Signal Averaging

The AVG box allows setting the averaging rate for the spectrum from 1 to 16. The higher the value the slower the spectrum becomes but the noise is reduced in the process. A good value is either 4 or 8. A value of 16 can be used to dig out very weak signals using the waterfall. In this case adjust the waterfall Low setting to just bring up the background until the noise starts to show.

Other Controls

The Split Screen control allows you to resize the relative sizes of the spectrum and waterfall.

Peaks will display the highest signal level in the display and hold them until it is turned off.

Fill fills the spectrum for a more pleasing display.

Spectrum Control Panel

Most of the control in this screen are self-explanatory.



Spectrum Spots

Spots from the ClubLog screen appear as both triangles beneath the waterfall and call signs in the spectrum. Hovering the mouse above the triangle will display the call sign or call sign DE Spotter depending on the setting in the spectrum control panel. In addition, if there are several spots at that frequency with different call signs all will be shown if you hover your mouse just above the triangles. Clicking on the triangle will QSY to the spot. You may need to zoom in a little since screen resolution per pixel may be too coarse at higher spans. You can always double click in the waterfall or spectrum as well but the best accuracy is with low zoom levels (100 kHz or less) and clicking the triangles.

CW - FSK-D - PSK Terminal

The Elecraft K4 has a built in decoding function for CW, FSK-D, and PSK digital modes. Win4K4Suite provides this functionality in the program by selecting **Window then CW - FSK-D - PSK Terminal**. By default, the basic screen shown below will open.



Clicking on Expand will reveal various controls as follows:



The "**Settings**" section allows you to turn on text decode, and set the threshold for decoding of signals. Please note that this is only available in the K4. In addition, if you are using a MicroHam router, the controls are slow to operate.

A-SPOT allows spotting of CW, FSK (manual) and PSK signals. You can toggle Auto spot or Manual spot by right clicking on the button.

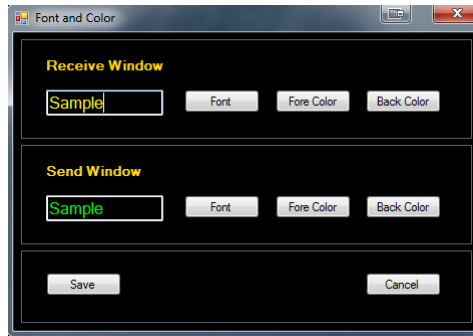
APF/DPB allows settings of audio peaking filter or dual pass band filters.

CW CPM sets the keyer speed

A-WPM allows setting of auto words per minute keyer speed when used in conjunction with CW Skimmer's telnet server.

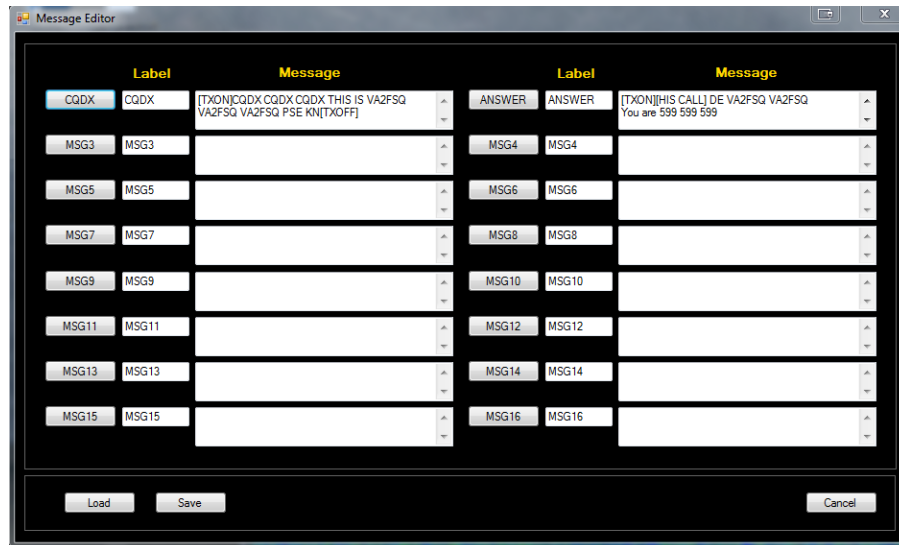
Settings - Fonts

Selecting this option will open the font window allowing you to change how the terminal mode will appear.



Messages

Win4K4 allows you to set up to 10 messages per file. Clicking on Load will load an existing message file into Win4K4. Clicking on Edit will provide this screen:



You may enter a Label for the button and a message you want transmitted when the button is pressed. There are a number of special tags that you can use which will perform specific functions.

[HIS CALL] This tag will be replaced by the call sign that appears next to the QRZ button.

[TXON] will start transmitting.

[TXOFF] will stop transmitting.

All carriage returns in the message will be sent using the appropriate translation depending on mode.

Logging from the Terminal Screen

It is possible to log QSO's directly from the terminal screen to an ADIF file, DXKeeper, N3FJP or HRD Logbook. To configure this, select Settings, Logging from the terminal screen. There are three options:

ADIF Logging: If you select this, the QSO is logged to an ADIF file that can be imported into most logging programs.

DXKeeper Logging: If you select this, the QSO is logged to DXKeeper. Please note that DXKeeper must be open for this to work.

HRD Logbook Logging: Here you must install the Microsoft Access Database Engine 2010 available here:

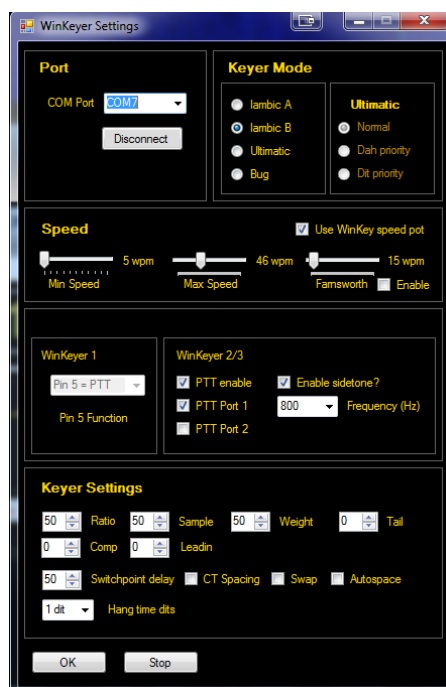
<https://www.microsoft.com/en-ca/download/details.aspx?id=13255>

For all HRD Logging scenarios, open HRDLogbook.exe and then in Tools, Configure, Sharing, click the checkbox to allow automatic refresh on new records. Without this, HRD Logbook will accept the entries from Win4K4but will not display them until you do a Refresh in HRDLogbook.

K1EL WinKey Support

Starting in Win4K4Suite version 1.782, support for K1EL's WinKey is built in to the terminal. Although the built in, K4 - X software based support of text to CW works quite well, it uses the same serial port as rig control and the spectrum scope. This can result in some latency for CW transmission. WinKey gets around this by using a separate serial port for communications.

The first thing you will need to do to use the WinKey support is to go into the terminal settings and select "Settings - WinKeyer". You will then see this screen:



You can then select a comport and then click on connect. From this point on, WinKey will be used for CW. Please note that Win4K4Suite will provide all of the settings for the WinKey so any existing settings will be replaced when the interface is started.

It is beyond the scope of this manual to discuss all of the features of WinKey. Please see the K1EL website for in-depth information. However, the most important item is the words per minute settings. There are two possibilities: One is using the Speed pot on the WinKeyer itself. Make sure that this option is selected ion the settings if you wish to use this. The other is to use the speed settings in Win4K4Suite itself. You can de-select the "Use WinKey speed pot" if this is your desire.

ClubLog Spotting Window

I'm a big fan of Club Log. It's easy to use, you don't have to mess with complicated filters and it just works. What was missing though, is a way to just point and click on the spots and have your radio tune to the DX. Thus when Michael Well announced that he was making available a means to obtain your DXCC Matrix of worked and new spots via a programming interface, I know I needed this. So CLSpotter was born. Full QSY capabilities are integrated into Win4K4Suite as well.

Club Log Spots

Call	Spotter	Comment	Freq	Band	Dxcc	Date	Status	LOTW
W1AW/1	#	15 dB 22 WPM...	-11.7	2	UNITED STATES OF...	08:12:2014: 23:19:56	New	LOTW
W1AW/1	#	15 dB 21 WPM...	-11.7	2	UNITED STATES OF...	08:12:2014: 23:20:14	New	LOTW
K1AY	#	15 dB 19 WPM...	9.2	2	UNITED STATES OF...	08:12:2014: 23:20:26	New	
W5AT	#	10 dB 36 WPM...	-8.7	2	UNITED STATES OF...	08:12:2014: 23:20:29	New	
ZLIRS	/N5BEK	hrd cq dx 539 in ...	50103.0	6	NEW ZEALAND	08:12:2014: 23:19:32	New	
LU1YT	DD3SP	cq nice sig ...	10122.5	30	ARGENTINA	08:12:2014: 23:19:31	New	LOTW
5P8VW	DJ8VW	simplex EU125 O...	3780.0	80	DENMARK	08:12:2014: 23:20:19	New	
9M2AX	F2DX	CQ	3501.5	80	WEST MALAYSIA	08:12:2014: 23:19:31	New	
JH1MDJ	HI7SBR	trax qso 73 ...	24939.0	12	JAPAN	08:12:2014: 23:19:32	Verified	LOTW
W1AW/1	JF2IWL		21335.0	15	UNITED STATES OF...	08:12:2014: 23:19:34	Verified	LOTW
W1AW/9	JG1ULT	cq	21305.0	15	UNITED STATES OF...	08:12:2014: 23:19:34	Verified	LOTW

Band Filters All 160m 80m 60m 40m 30m 20m 17m 15m 12m 10m 6m VHF

Include: ☒ New ☒ Worked ☒ Confirmed ☒ Verified

How it Works

CLSpotter works by downloading your DXCC matrix from Club Log using your user id, password and email address. Once this is downloaded, it connects to a DX Cluster and then does a lookup in your matrix to see if an incoming spot is new, worked, confirmed or verified. According to some simple filters, it will display these spots in a table.

Clicking any spot in the table will immediately do a QSY to the frequency of the spot. In addition if you are using the LP-Pan or KX3 spectrum scope, then moving the mouse slowly over the waterfall will show any spots that are in the frequency range of the panadapter. If the CW - FSK-D -PSK Terminal is open, the call sign of the spot is entered into the QRZ field.

Setup

The first time you use Club Log Spots (found in the Windows menu from any control screen), it will bring you directly into the Control Panel. There are 4 main sections to the control panel.

The screenshot shows a window titled "clubLogControlPanel" with a dark theme. It is divided into four main sections:

- Club Log Account:** Contains fields for "User ID" (va2fsq), "Password" (masked with dots), and "Email Address" (support@va2fsq.com).
- DX Cluster:** Contains fields for "Call sign" (va2fsq), "DX Cluster" (a dropdown menu showing dxcluster.us), a checked checkbox for "Use custom cluster?", "Address" (127.0.0.1), and "Port" (23). A note at the bottom says "Changes require restart".
- Entity List:** Shows "Last Update" as 2014-12-04 10:2 and an "Update" button.
- Highlighting Preferences:** Shows color selection buttons for "New Spots", "Confirmed", "Worked", and "Verified".

At the bottom of the window are "Ok" and "Help" buttons.

Club Log Account: This is where you must put your Club Log credentials that you are currently using. If this is not correct, then there will be no spots available. Make sure that your password does not contain any reserved characters like a \ or %. To be sure use plain text.

DX Cluster: Here you must provide your call sign and pick one of the DX Clusters. In addition to the pre-defined clusters, you can add your own cluster by specifying the ip address and port of the cluster.

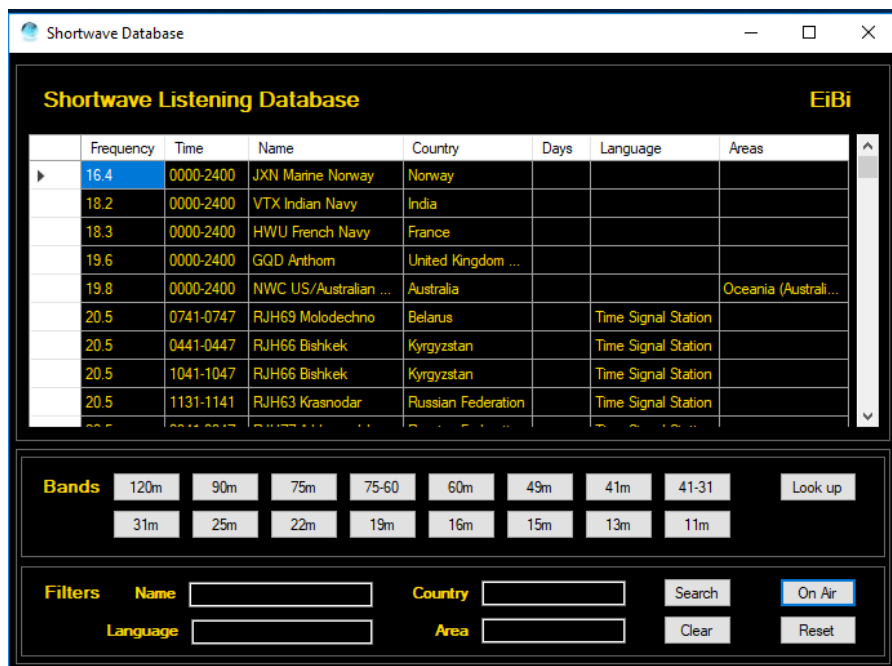
Entity List: The entity list is a list of DXCC's. This is used to provide the name of the country in the spot window. This table is automatically updated once a month and the first time you run the program.

Highlighting Preferences: Here you can select the colors you would like to use for the different spots.

Shortwave Listening Database

The SWL DB uses the free SWL database from <http://eibispace.de/> . Please donate to his cause to keep this quality DB!

The database can be opened from the Windows menu in the control screen. When the database is opened you will see the following:



There are two main sections to master. The **Bands** section will filter the database by band. The **Filters** section has 4 fields where you can enter text to do a search.

The **On Air** button will filter all the results based on the current UTC time. In order for Spots to show up on the spectrum a Band must be selected, the On Air button must be active and you need to click on an entry in the database to tune there.. This is due to the vast number of stations that are included in the database. You also need to be tuned to a frequency within the band to actually see the spots on the spectrum.

Search Filters: You can enter a Name of a station, the Language, the Country as well as the Area that the transmission is targeted at. The text is not case sensitive and you can enter partial text such as “eng” for English. Once you have entered any text, click on the **Search** Button. The clear button will delete all search filters.

Look up: The look up button will do a search in the database for the currently tuned station. It will also take into consideration if the On Air button is active. Pressing it again will remove the lookup. Note that the lookup needs to be precisely on the frequency for it to return results. Therefore since most shortwave stations appear to be on 1 kHz boundaries, it is best to select QSY Snap to nearest 100kHz in the right click menu of the spectrum. If the station is at x.5khz a few turns of the mouse wheel will get it on frequency.

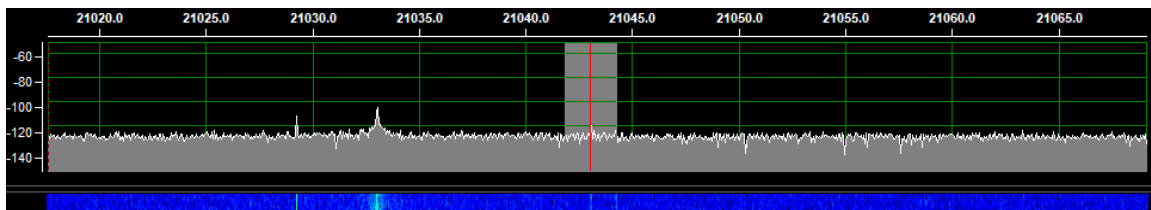
Spotting on the spectrum: If the spectrum “Spot” checkbox is selected then spots will appear on the spectrum if a band filter and “On Air” are enabled. This has priority over the ClubLog spots and they will not appear.

Part 3: Advanced Topics

SDRPlay API 3 Information

Win4K4 now supports the SDRPlay API 3. Therefore the new RSPDx is now supported.

There are a few items that deserve mentioning here. API 3 seems to have more difficulty managing the DC offset spike at a sampling rate of 192kHz. Therefore in the spectrum using the IF output of the radio, this is moved down by 10kHz. It will appear as follows:

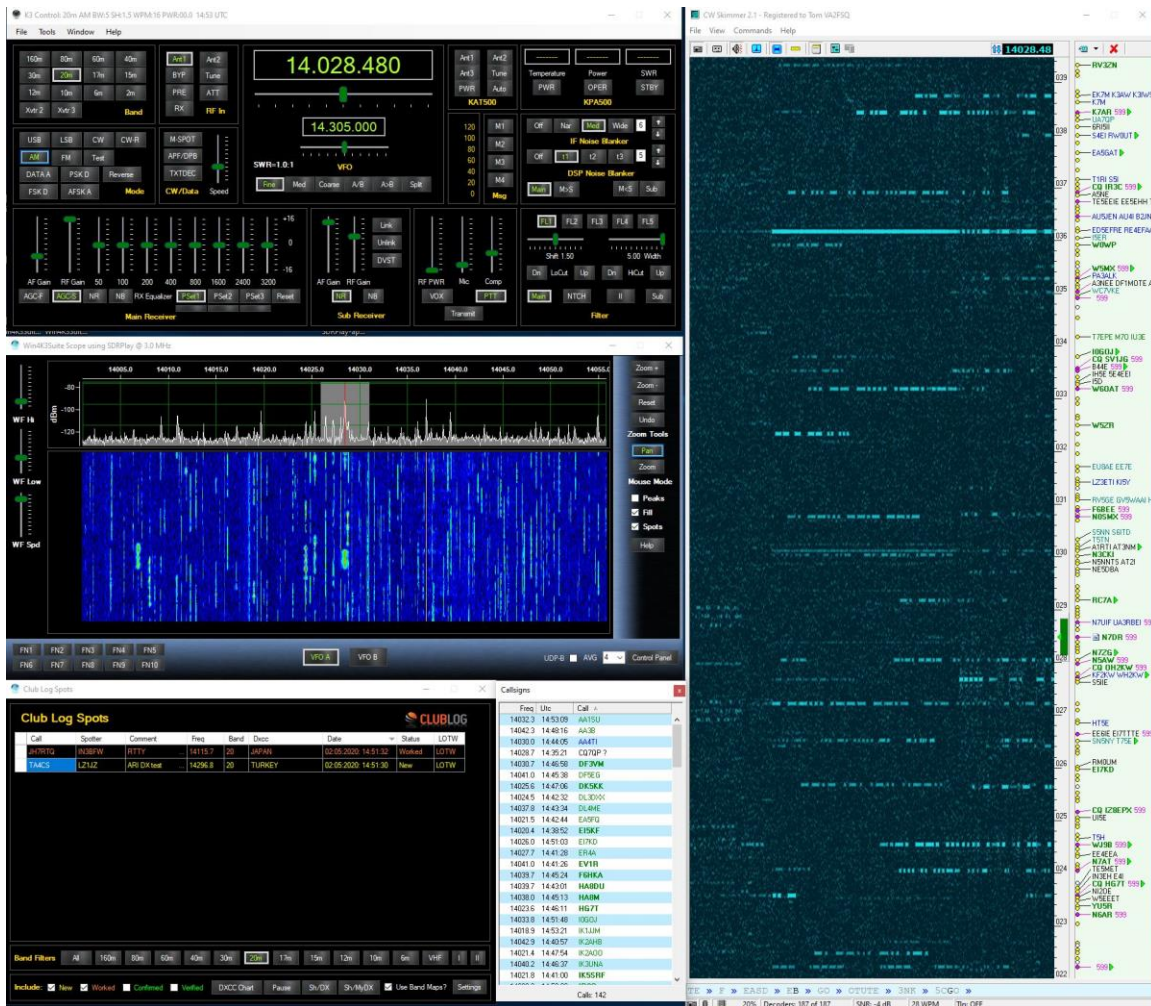


The effect can be minimized by adjusting the gain appropriately.

CWSkimmer Usage with the SDRPlay

CWSkimmer is a software product that will analyze a section of the CW band and produce a graphic display of all the CW signals with their decoded callsigns.

Win4K4 has the ability to output an IQ signal which can be input into CWSkimmer allowing it to decode any signals within its passband. See the following picture:

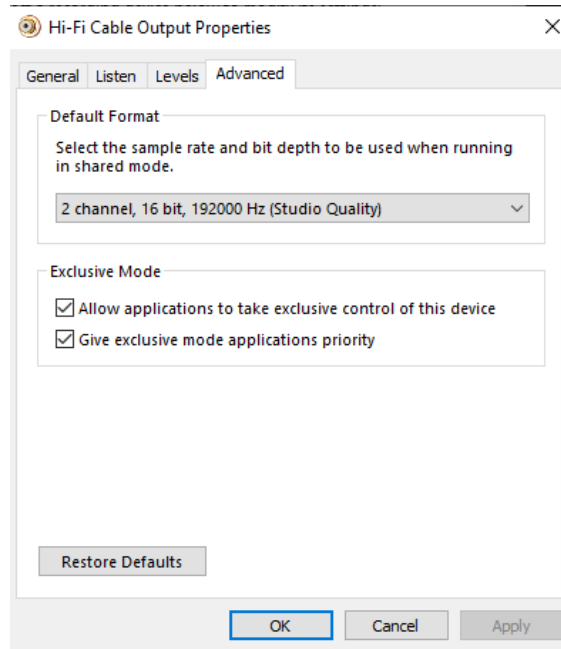


This is very useful when CW Skimmer is integrated with Win4K4 running Split and selecting Tools CW Skimmer QSY B. This allows you to click on callsigns in CW Skimmer and then do a QSY using VFO B to pounce on the frequency last used by the DX.

There are a few steps that are necessary to get this functionality going. The first is you will need a Virtual Audio Cable.

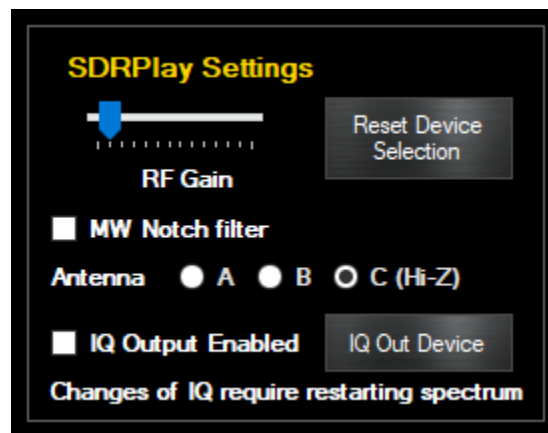
A good choice is the free cable here: <https://www.vb-audio.com/Cable/> Select the "VB Audio Hi Fi Cable" down the page and install it.

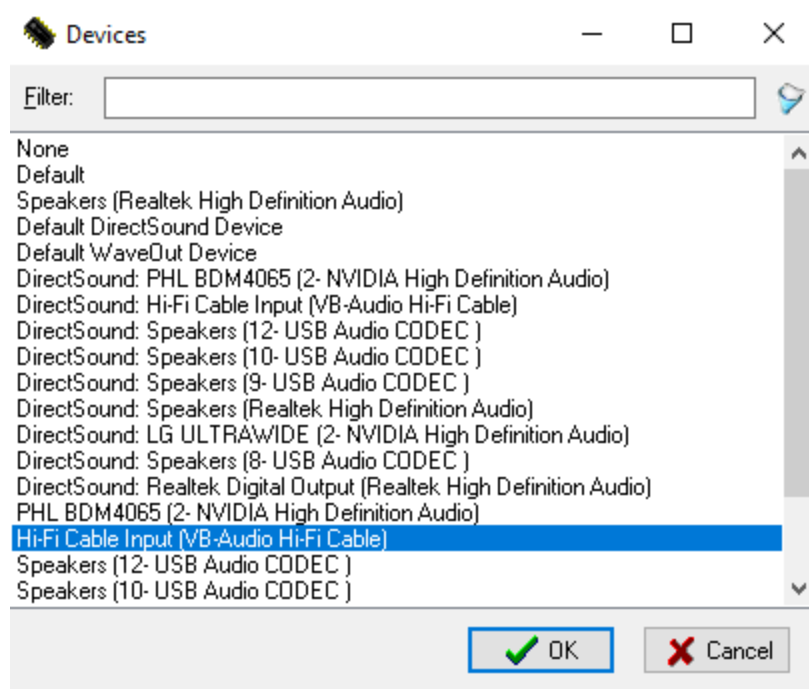
When you have this installed, open the Windows control panel and select Sound and click on the Recording tab. Find the Hi Fi cable output entry and double click on it. Next select the Advanced Tab. In there you will want to select the 2 channel, 16 bit 192000 entry as follows:



You will also want to do this in the Playback tab of the Sound Control Panel.

The input of this “cable” is then connected to in Win4K4 in the spectrum Control Panel by pressing the IQ Out Device button:





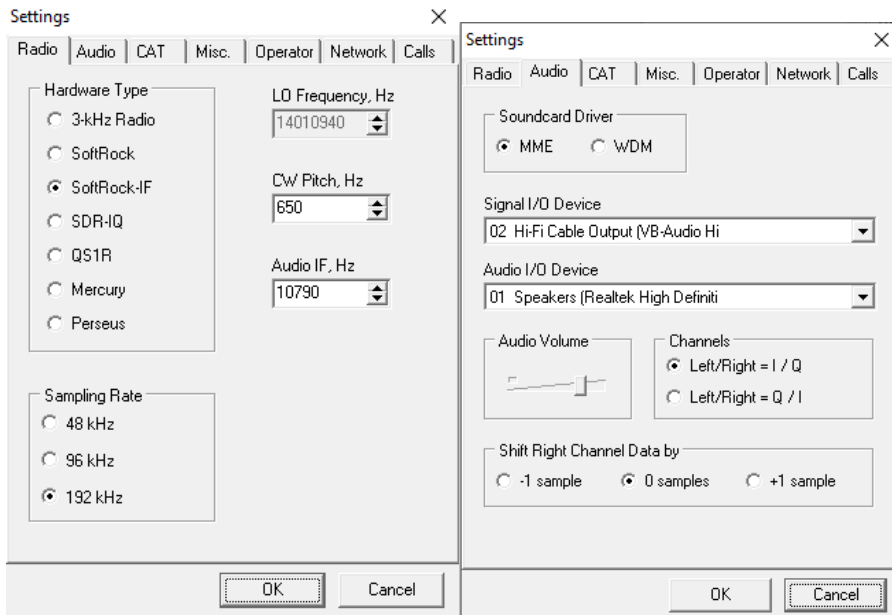
(Little note here...For the life of me I can never understand why people have their sound devices messed up when a new Windows update comes along....Never happened to me, and my computer is a little more packed than most!).

You will also need to enable the IQ out device checkbox. Next close the control panel and spectrum and re-open it.

This completes the setup in Win4K4. The actual output to the IQ out will now occur anytime you select a span less than 192kHz.

Configuring CWSkimmer

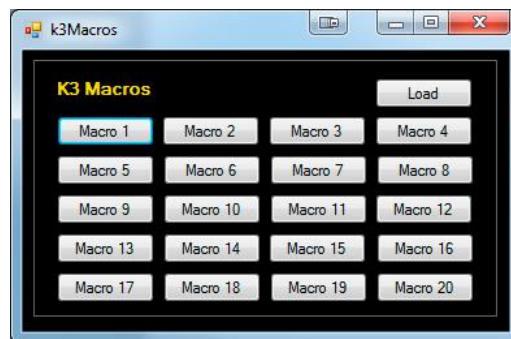
Since you are using a radio that provides an IF out then you will need to set up CWSkimmer as follows:



One thing about CWSkimmer. The audio output may occasionally sound distorted when you are listening to a very strong signal. Discussions with the author have not revealed the cause yet. However, it is a simple matter to just stop CW skimmer and then restart. In most cases this will get rid of the distortion.

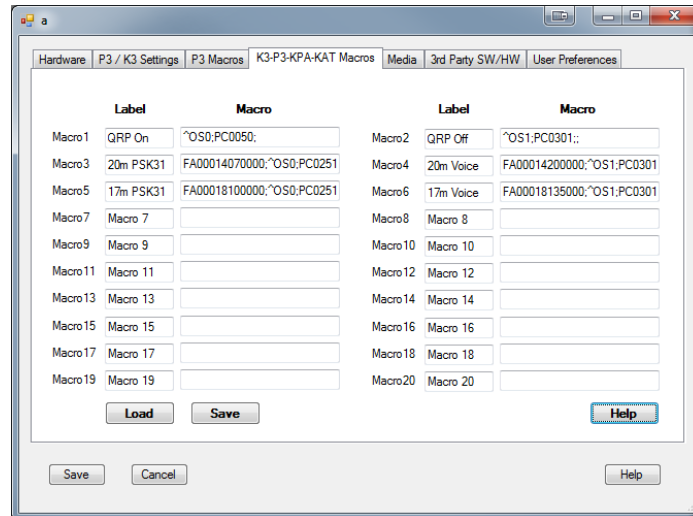
Programmable Macros

Win4K4Suite supports 20 programmable macro buttons.



Each button can be programmed with a mix of K4, KPA500/1500, and KAT500 commands. Sets of macros can also be saved to a file and loaded allowing different sets depending on needs.

Macros are setup in the Tools Settings menu under the K4/KPA/KAT Macros tab.



Macros in Win4K4Suite can use almost any SET commands for the K4, KPA500 and KAT500. They can be mixed together in the same macro according to the following rules:

K4 Macros:

You can use K4 macros using the normal K3 commands such as FA00014100000; i.e SET frequency of VFO A to 14100000 Hz. The software uses the K31 and K22 extended modes. If this is changed be sure to set it back.

Use of AI1, AI2 and AI3 modes are not permitted.

KPA500/KPA1500 Macros:

You can use KPA500/KPA1500 macros using the normal KPA commands such as

^FC4; which sets the minimum fan speed to 4. Please note that bootloader commands are not supported and if the KPA500 is off the commands are ignored.

KAT500 Macros:

To use the KAT500 macros, you must proceed each command with a &. For example, &AN1; sets the antenna to antenna 1. Please note that bootloader commands are not supported and if the KAT500 is off the commands are ignored.

Radio Menu Items (K4)

From the "Tools" menu, select "Radio Menu Items". This will open the following screen:

K4 Menu Settings Serial # 0007

AF LIMITER	GET	15	SET	RX 1.5MHz HP FIL	GET	No	SET	SPKR EXTERNAL	GET	1	SET
AGC ATTACK	GET	210	SET	RX AUTO ATT.	GET	No	SET	TUNE LOW PWR	GET	5	SET
AGC DECAY FAST	GET	140	SET	RX DYN RANGE OPT	GET	On	SET	TX ALC	GET	On	SET
AGC DECAY SLOW	GET	20	SET	SERIAL-RS232 AI	GET	Nor	SET	TX DLY	GET	8	SET
AGC HOLD	GET	0	SET	SERIAL-RS232 BAUD	GET	4800	SET	TX INH	GET	Off	SET
AGC NOISE PULSE REJECT	GET	On	SET	SERIAL-RS232 DTR	GET	None	SET	VFO B DIF BAND	GET	No	SET
AGC SLOPE	GET	15	SET	SERIAL-RS232 RTS	GET	None	SET				
AGC THR	GET	6	SET	USB-PC1 AI	GET	Nor	SET				
FAN SPEED MIN	GET	Slow	SET	USB-PC1 BAUD	GET	115200	SET				
FM DEV TONE	GET	350	SET	USB-PC1 DTR	GET	None	SET				
FM DEV VOICE	GET	4500	SET	USB-PC1 RTS	GET	None	SET				
FSK MARK TONE	GET	915	SET	USB-PC2 AI	GET	Nor	SET				
FSK DUAL TONE RX FILT	GET	On	SET	USB-PC2 BAUD	GET	115200	SET				
FSK POL	GET	Norm	SET	USB-PC2 DTR	GET	None	SET				
MSG RPT	GET	5	SET	USB-PC2 RTS	GET	None	SET				
PER BAND POWER	GET	No	SET	SPKR	GET	On	SET				
PREAMP 3	GET	No	SET	SPKR+PH	GET	No	SET				

OK Refresh All

All items are loaded when this window opens. If you make changes directly on the radio you will need to refresh the items or Refresh All.

Be careful if you modify any of the serial port entries if you are currently using it for Win4K4. If you change something in use you may lose control of the radio if it is the port you are using for control.