

RASCAL mark V **GLX Setup and Technical Support; Section: I**

The **RASCAL™**, will not work if the software and computer are not properly configured. Most problems encountered are usually due to PC and software setup. You should always read your software documentation. The WINPSK manual is also on the disk you received with your **RASCAL™**. Be absolutely sure that you have your software set up properly before connecting the **RASCAL™**. If the software and computer are not set up and configured properly, the RASCAL will not see the correct input, output and PTT control signal(s). It is of the utmost importance that you read the documentation that comes with your software! See the Users Manual (PDF) file on the WINPSK disk that was sent with your RASCAL. I did not write the software and therefore, I cannot support the software.

NOTE, that some problems have been encountered using Windows ME and 2000 *upgrades* which sometime hold the comport RTS line "high." This can result in the PTT being activated when the DE9 is connected to the PC serial comport. Using "FIXCOM.EXE" may help to resolve this problem. See WINPSK files section on disk or CD.

SPEECH COMPRESSION:

Be sure all speech compression is OFF. Observe the ALC indicator. Set the microphone gain to a level where there is little or no ALC indication on high peaks. Always insure that it is below the maximum ALC indication.

Set the Windows volume control by double clicking the speaker icon (usually in the lower right desktop task bar), and the wave volume as needed, to drive your radio properly. You may also adjust the transmit level with the RASCAL internal Tx "transmit level" control. Or... use the Tx Level and Rx Level setup under the WINPSK "SETTINGS" Icon.

The final result of your sound card setting should be approximately mid-range or slightly higher, for the on-screen soundcard settings, and the **RASCAL™**, Tx audio level control. One important item to remember; *All adjustments to the soundcard will interact with other settings of the sound card. This is the nature of the soundcard and sound card driver (software).*

VOX OPERATION:

If you prefer, or if you don't have a spare serial comport available on your PC, the **RASCAL™**, has transmit audio to the microphone input when connected, setup, and software is set to "send" or "Transmit." By having the soundcard and RASCAL transmit audio active, you may use of the VOX circuits in your radio to activate transmit (PTT) control instead of relying on the PC serial port to control PTT for transmit/receive. ***If you have only a USB port, a USB to SERIAL converter is available at "www.BUXcommCo.com for \$19.95.***

Set all the microphone settings as described above. Activate VOX in your transceiver, and set the level, delay and anti-trip controls with the tones from the RASCAL/soundcard, as you would when using the microphone (voice) input. In most cases, I've found that normal VOX settings perform with the RASCAL and PC as both levels are set similar.

WHEN OPERATING PSK31, SSTV, WSJT, AND OTHER SOUNDCARD DIGITAL MODES:

UNDER NO CIRCUMSTANCES SHOULD THE POWER OUTPUT OF YOUR TRANSCEIVER EXCEED ONE-HALF THE TRANSCEIVER'S MAXIMUM RATED OUTPUT! FINAL..... Fine Tuning, or initial receive and transmit adjustments: **Let's make the initial adjustments to the **RASCAL™** interface. We can fine-tune the Volume Control for best operation with your PSK31 program, sound card, and radio. Here are the basic things to keep in mind:**

- * The "Wave" slider controls the transmit level, in combination with the "Volume Control" slider.
- * The Volume Control slider controls both the level going to your computer speakers, (receive or transmit) and the overall transmit level.
- * The MIC, LINE IN, or AUXILLARY controls the receive level.

Notice that running the software Volume Control slider up and down will change the level of the receive audio going to your speakers, but it should not change the actual level of the recording (receive) stream. If you mute the input you're using to receive PSK31, the audio will no longer be delivered to the speakers; however, it should still be sent to your PSK31 program.

SOFTWARE SETUP FOR PSK31: Using a program like "WinPSK," enter your call sign using the "**Settings**" / "**General Setup**" menu. Here you can enter your call and other program setup items such as the serial Comport number and PTT (RTS) settings. Your call sign should now appear at the top of the WinPSK screen instead of the text,... "Call Sign Not Set". You can do the soundcard level setup using the Tx and Rx levels shown under the "**Settings**" menu. Use the built in wave file player and recorder to get familiar with your sound card's mixer settings and capability. The mixer control is used to set both the receive audio level to the PSK program as well as set the "coarse" level setting to your transmitter. If you are using the MIC input, you should use the radio's mic gain for precise level adjustments.. It is also a very good idea to disable all the various Windows sounds if you have only one sound card, especially if you are using VOX PTT control.

FYI, a good frequency to begin operating PSK31 is at: 20 mtrs @ 14.070 MHz USB

73 es I hope to QSO w/U on PSK31 soon, de **Buck Rogers** K4ABT@BUXcommCo.com

For Antennas, Accessories, Connectors, and Electronic Components, VISIT; www.BUXcommCO.com

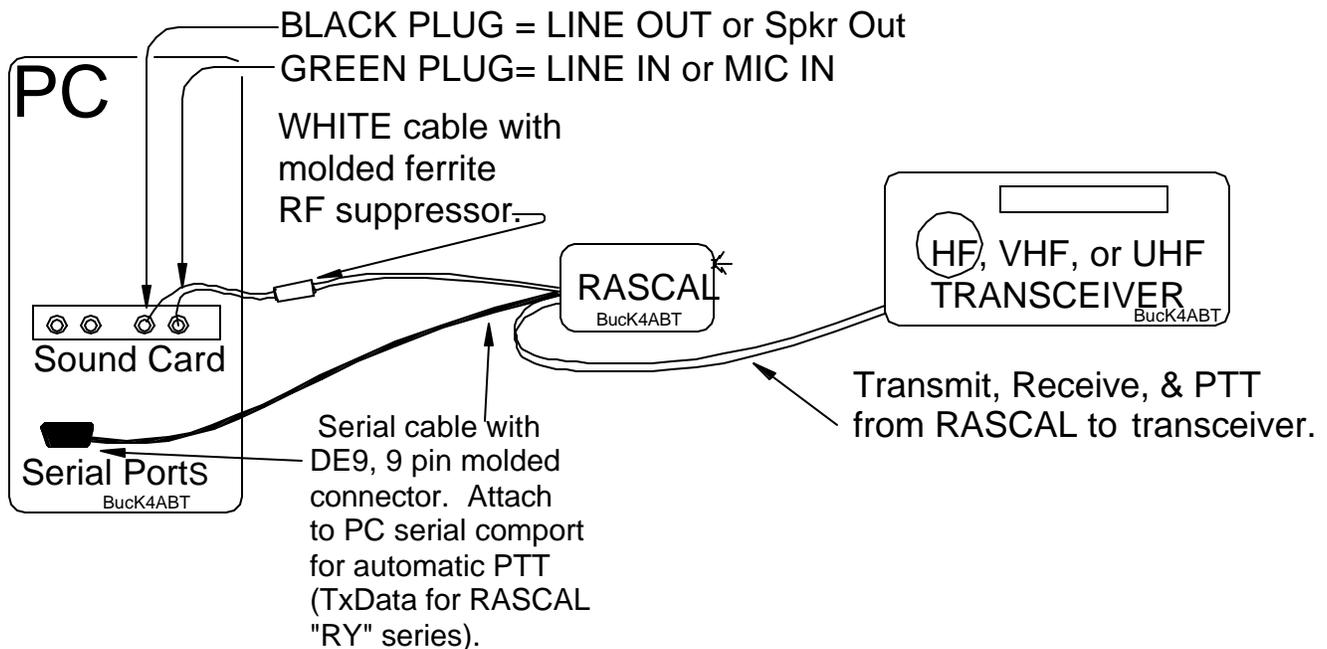
PRELIMINARY SETUP FOR WINPSK SOFTWARE AND THE RASCAL[®]™

Sound Card to Radio Interface:

Most soundcards that work under Windows should work okay with WinPSK. It needs to be a 16 bit type with preferably a "line IN" jack and perhaps a "line OUT" jack as well. The 16 bits refers to the audio resolution and NOT the PC bus type which can be ISA, PCI, USB, etc. as long as it is supported by Windows. The most expensive sound card is not always the best in terms of audio quality. Many \$10 soundcards have better audio specs than the expensive "do everything" soundcards.

First lets look at the radio receive audio to soundcard connection. Most radios have an *Ext Spkr* jack on the back. If your sound card has a "line IN" jack all that is needed to run the GREEN plug, shielded cable from the RASCAL audio out to the line IN jack on the soundcard. If the soundcard only has a "MIC" input then you may have to attenuate the signal with a simple 2 resistor divider. Connect the white plug from the RASCAL to the sound card LINE OUT (or *SPKR OUT*).

The audio jacks on soundcards are the 3.5mm (1/8") type. WinPSK operates in the monophonic, single channel mode so a mono connection can be used. A typical cable wiring scheme is shown here. This is only a starting point.

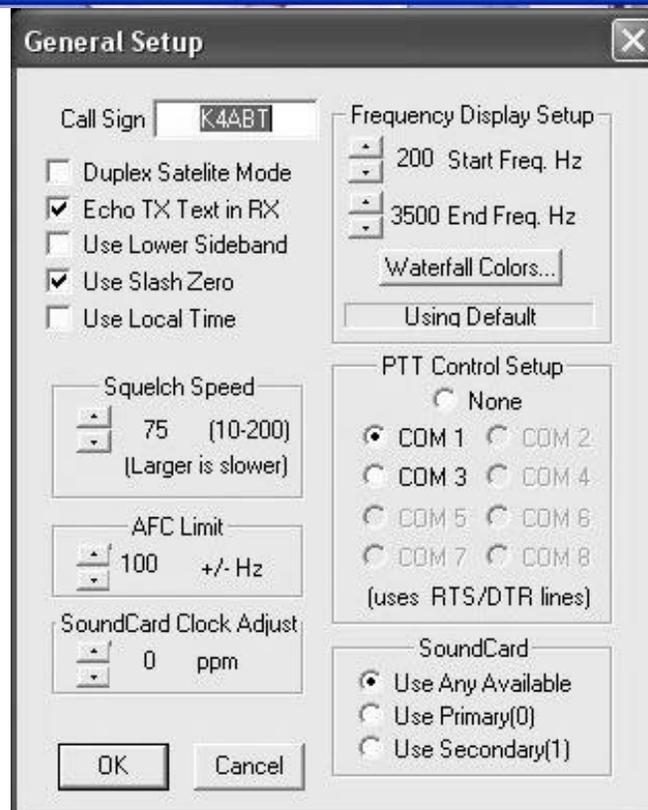
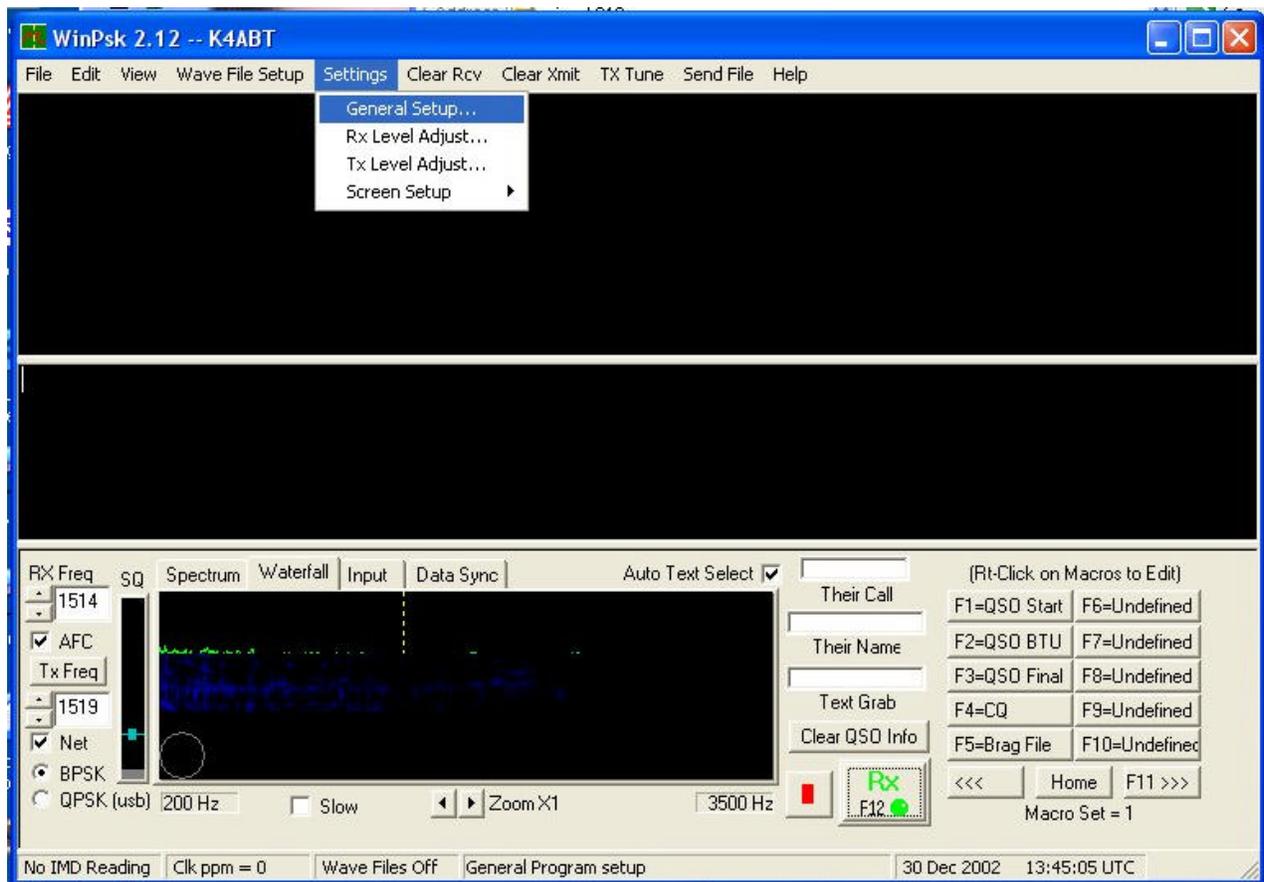


Some PCees may have MIC IN and SPKR OUT, instead of LINE IN and LINE OUT.

Program Setup

Before going on the air, you should enter your call sign using the "Settings" Icon, then "General Setup" menu. Here you can enter your call and some other program setup items such as the COM port PTT settings. Your call sign should now appear at the top of the WinPSK screen instead of the text "Call Sign Not Set"

Use **WINPSK** from the Disk or CD to make the initial setup of you RASCAL GLX and Software. This will enable you to "get a fell" for other software for other modes, and allow you to become familiar with the serial comport selection, Callsign installation, Tx Level, and Rx Level settings.



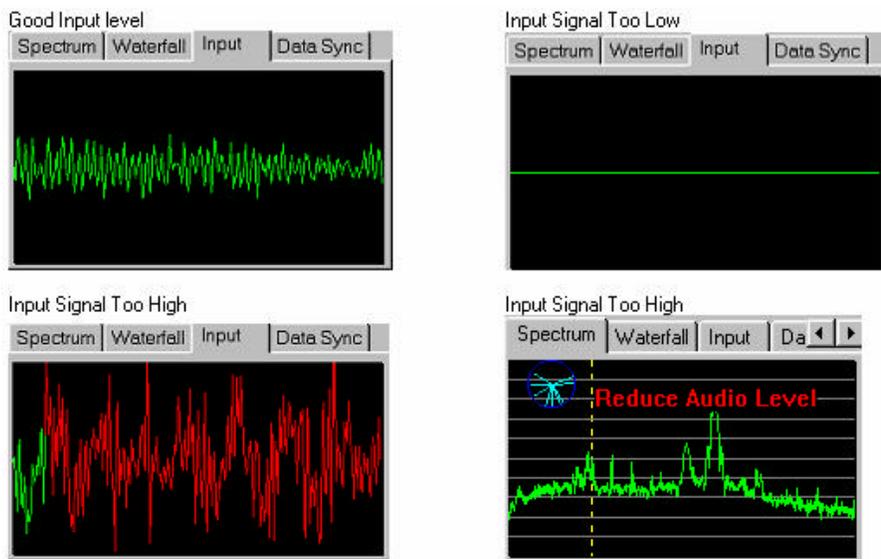
Most of the settings including last used TX and RX frequencies, display settings, etc. are saved into Window's registry upon program exit,.

It's a good idea to make sure your sound card is installed properly and is working correctly before tackling the WinPSK soundcard level setup. Use the built in wave file player and recorder to get familiar with your sound card's mixer settings and capability. It can be activated from within WinSPK by going to the "Settings" menu and clicking on either the Rx or Tx Level adjust item. (If you are using NT or Win95, you will have to manually select the record option in the mixer control to set the receive volume) The mixer control is used to set both the receive audio level to the WinPSK program as well as set the "course" level setting to your transmitter. One should use their radio's mic gain for fine adjustments. The RECORDER mixer settings are used to control the receive audio level while the PLAYBACK mixer settings are used to set the transmitter audio level.

Receive Audio Input Level

Once the interface is connected, the first thing to do is set your receive audio level. Tune your radio to a loud signal or carrier. Bring up your soundcard's Mixer program (or use the one that comes with Windows). The Mixer's RECORDER settings are the ones to use for adjusting the Receive audio levels. Select either the LINE or MIC IN control and set it mid way.

Click on the WinPSK Signal Display TAB labeled "Input". Adjust your recording Mixer controls for a signal display that is about half screen size on peaks. If the level is too high, the signal display will turn red. Here are some example settings:



If in one of the spectral signal views, a red message will warn of too high audio. You should now be able to start receiving PSK31 signals from off the air. Use one of the spectrum signal displays and just left-click the mouse cursor close to a signal peak that looks like a PSK31 signal. Make sure the AFC is checked and the correct PSK31 mode (probably BPSK) is selected. Click on the bottom part of the squelch control until it turns yellow. This will "open" the squelch if it is set too high. Text should appear in the RX text window.

Transmit Audio Level Adjustment

This is probably the trickiest part of PSK31 setup because one cannot see the actual signal spectrum coming out of their transmitter.

In the initial setup, you must guess at a good level then get someone to give you a critical signal report over the air. The Mixer's PLAYBACK settings are the ones to use for adjusting transmit audio levels.

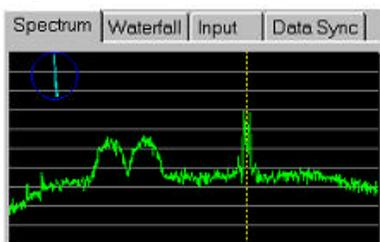
Compounding the problem is the fact that the soundcard is producing around 1 volt of audio and the typical transmitter Microphone input needs only a few millivolts to drive it. One must be very careful to attenuate the soundcard signal by about 1/1000 before attempting to drive the microphone input. Here is where the **RASCALS** internal Tx audio level control come into play.

If you are unable to lower the transmit level low enough by using the sound card Tx Level settings, then you may use the coarse (manual) Tx audio level control inside the RASCAL engine. As a rule, this pot is factory set to mid range.

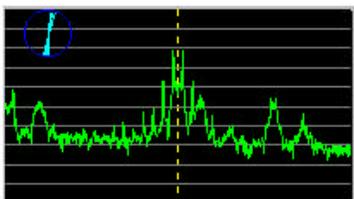
A good rule of thumb is to *not* have any level control near it's extreme. The mixer control should not be at it's *maximum or minimum* and your radio MIC gain should not be at either extreme.

The correct setting will vary from radio to radio. In general, one should not drive the transmitter anywhere near it's rated power at least not at first. If you must error, error on under driving your rig until you are comfortable that your signal is clean then try bumping it up and see where your signal starts "getting wide" as observed by the receiving station.

The following graphic is an example of a good strong PSK signal. The noticeable sidebands are down in amplitude.



In the example below, a PSK31 signal that is "Too Wide", is probably the result of being overdriven.



There are sidebands only about 15 dB down and the signal is interfering with another PSK31 station just above it in frequency.

Study the MACRO settings, and more detailed information in the WINPSK PDF file/manual on the disk you received with your RASCAL.

Have fun with PSK, es 73 de BucK4ABT

VISIT: www.PacketRadio.com