

VARA QUICK GUIDE

VARA LICENSE

The VARA license is valid for the callsign and his 15 suffixes:
CALLSIGN, CALLSIGN-1, CALLSIGN-2.....CALLSIGN-15

There is not hardware restrictions. You can use your VARA license in several computers.

In the case of Gateway operation (Trimode or BPQ32 Gateway) no License is necessary to get full speed.

With your VARA license, you will can use VARA FM too (a high performance mode designed for 2m FM links)

VARA FOLDER

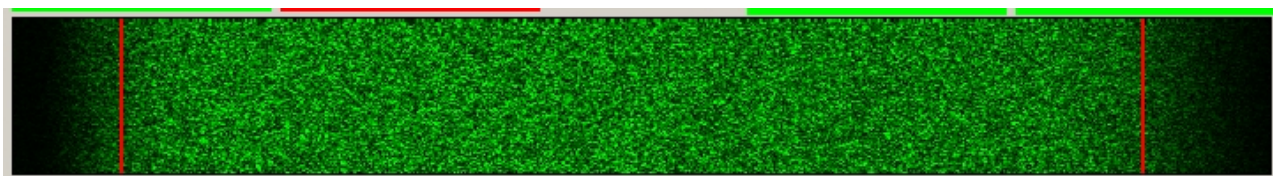
By default, VARA is installed in C:\VARA folder. If you need to use more than one VARA in a same PC, you will need to create another VARA folder.

VARA FM is installed in C:\VARA FM

RIG SETTINGS

I recommend you **AGC Slow, Noise Blanker OFF** and **2800Hz** Filter.

In the waterfall, VARA signal covers the space between the red lines, so ideally, your rig filter should exceed this threshold, like in this picture:

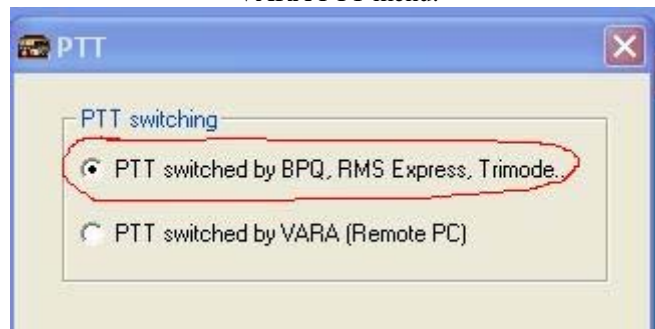


PTT

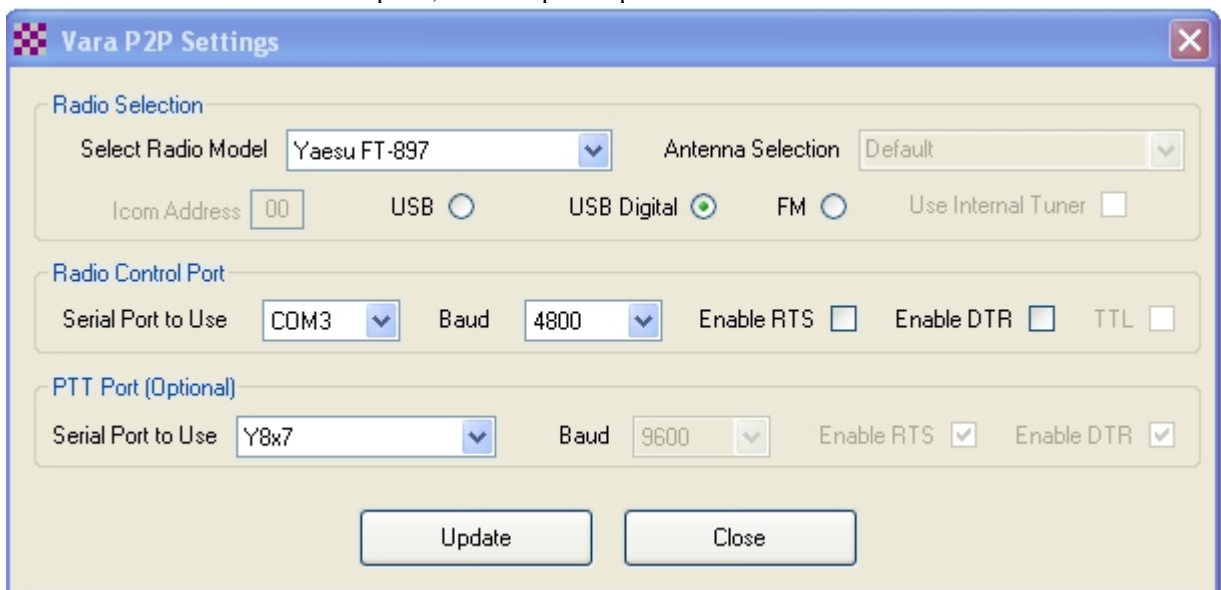
PTT switching is configured into the RMS express, Trimode or BPQ32, like any other mode.

I recommend not to use VOX unless you have no other option. In that case, config your VOX options in your rig to get the minimum delay and switch the PTT as fast as possible.

VARA PTT menu:



RMS express, PTT setup example for Yaesu FT-897:



TUNE BUTTON

The **TUNE button** plays a test VARA signal, useful for the power/ALC settings. Using the **drive level** slider, you can modify the audio level out. Your **ALC** meter should be about **1/3**, and your power meter should measure approx. $\frac{1}{4}$ of the pep power. Example, with 100w pep, VARA send 25 watts rms. If you only see 5 watts in the meter, then your drive level is clearly insufficient.

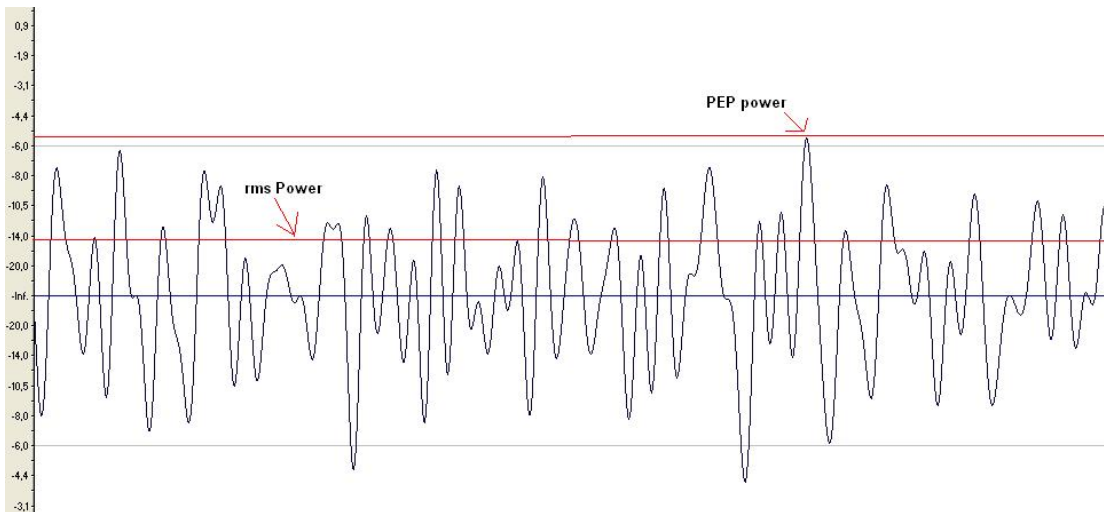
The image shows two screenshots from a software interface. The top screenshot is a window titled "SoundCard" with a close button in the top right. It contains two dropdown menus: "Device Input" and "Device Output", both set to "SoundMAX HD Audio". Below these is a "Drive level:" slider with a red "Tune" button on the left and a numerical display on the right showing "90". A red oval highlights the "Tune" button and the slider. A red arrow points from the "Tune" button to a text instruction: "Press Tune and set the Drive Level for ALC=1/3". The bottom screenshot is a photograph of the ICOM IC-7300 transceiver's LCD display. The display shows the frequency "14.076.00" and the time "19:06". Below the frequency is an "AGC-S" meter with a scale from 0 to 100%. The "ALC" meter is circled in red and shows a reading of approximately 33%. Other meters include "COMP", "SWR", "Vb" (10 to 16V), and "TEMP" (COOL to HOT). A "Close" button is located below the ICOM display.

VARA GATEWAY RMS POWER

A very important parameter for any unattended station is to know what is the rms power, as a long transmission could damage the finals.

Some operators believe the power they are using is the power that appears in the display of his rig. But this is only the PEP power, the important parameter is the rms power as the temperature in the finals depends on rms power. It's not the same 100Watts pep with a continuous carrier, that 100watts pep in SSB (voice) (same pep but different rms power).

This plot shown a VARA signal. The rms power is approximately 1/4 of the pep power. So, with 100watts pep in your rig display, the rms power in any of the VARA speed levels is about 25 watts rms.



VARA GATEWAYS SCAN TIME

Scan time should be, at least, **7.5 seconds**. This is the value by default in RMS Trimode

VARA GATEWAYS CENTER FREQUENCY

Center Frequency = USB dial + 1500Hz

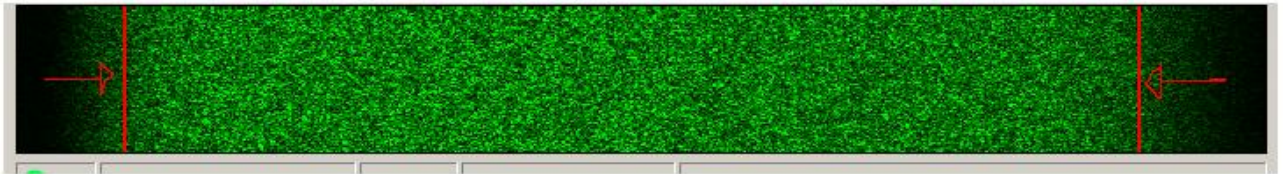
Center Frequency (KHz)	BW	Start Hour	Stop Hour	P3/4	P1/2	W	A	Vara	Rp	Dwell (sec)	Callsign	Service Code
10131,500	W	0	23	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	7	EA5HVK	PUBLIC
0,000	W	0	23	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0	EA5HVK	PUBLIC

SOUNDCARD INTERFACES

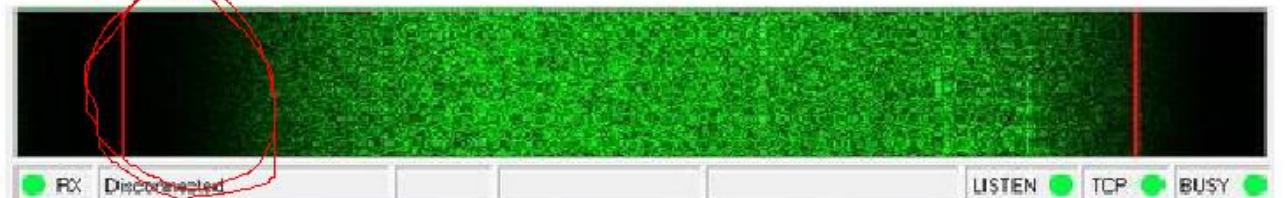
An ideal soundcard interface should not limit the wideband available of your rig. However, some interfaces filter a good part of the signal. By the robust nature of VARA, the modem continue working with a good performance, but obviously this not help. As Alfredo Di Stefano told his goalkeeper: “Do not ask you to stop the balls going inward, but at least not goals balls going out”

Here there are two different noise waterfalls:

PERFECT SOUNDCARD INTERFACE



BAD SOUNDCARD INTERFACE



In the first case there is not signal filtered between the red lines (300-2700 Hz). This waterfall was recorded with a built-in IC-7300 interface.

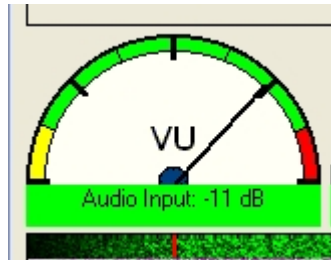
In the second case the low frequencies are filtered, reducing the performance.

Some new radios have a built-in interface, which is ideal. Anyway, if you need buy a soundcard interface i recommend you something similar to this, which not filter the signal, easy to set up, simple, and without any button:



VU METER

Avoid VU meter in Red Zone.



FLEX RADIO LATENCY

Latency decreases the throughput of an ARQ mode. VAC Audio adds latency, which should be reduced as much as possible. If you are using a SDR radio, consult with your provider about how to reduce the latency, at least to 250 ms.

LINUX

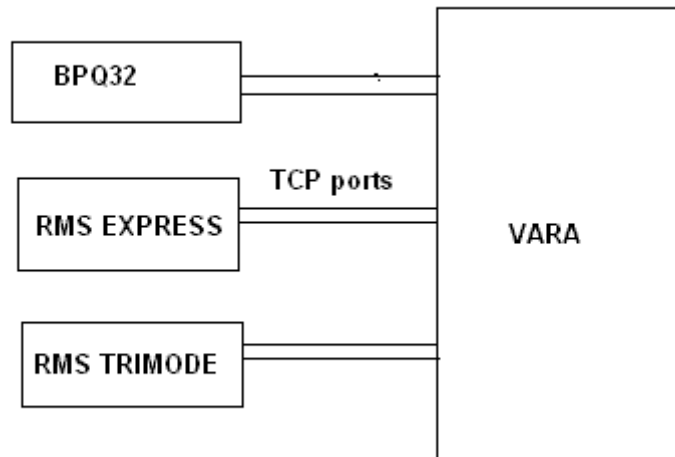
For using VARA under Linux S.O go to this link:

http://spinfax.org/RMS_on_Linux_or_Mac.pdf

For more information, ask to Steve K6ETA or Rafael PU2UIT.

VARA APPLICATIONS

Currently, VARA have been incorporated to BPQ32, RMS express and RMS Trimode. The communication between VARA and these external applications is done using two TCP ports (8300, 8301).



If you are a developer you can include VARA in your application, only have to follow the command set described in the next document:

<https://www.dropbox.com/s/4uxujcsoi0n1cds/VARA%20Protocol%20Native%20TNC%20Commands.pdf?dl=0>

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