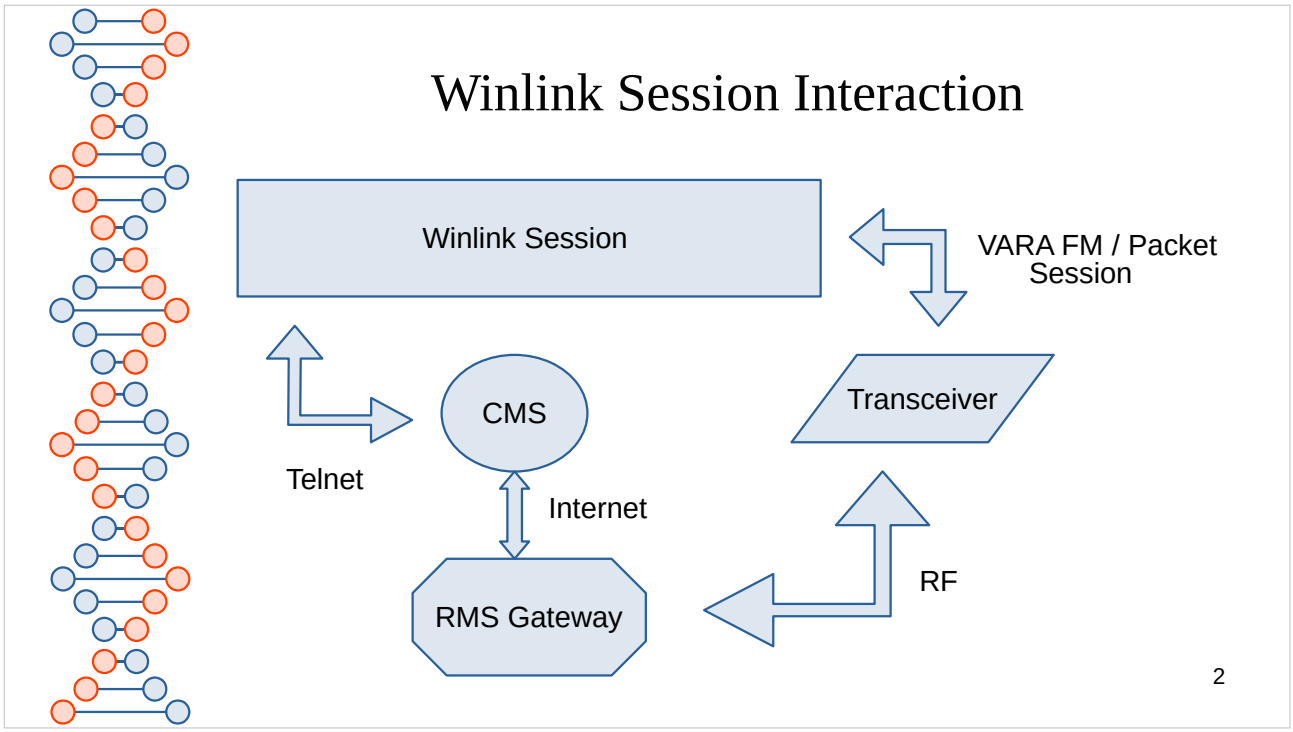
Yamhill County ARES Winlink Training

VHF/UHF Sound Card Interface

VARA FM and SoundModem
Virtual Terminal Node Controllers

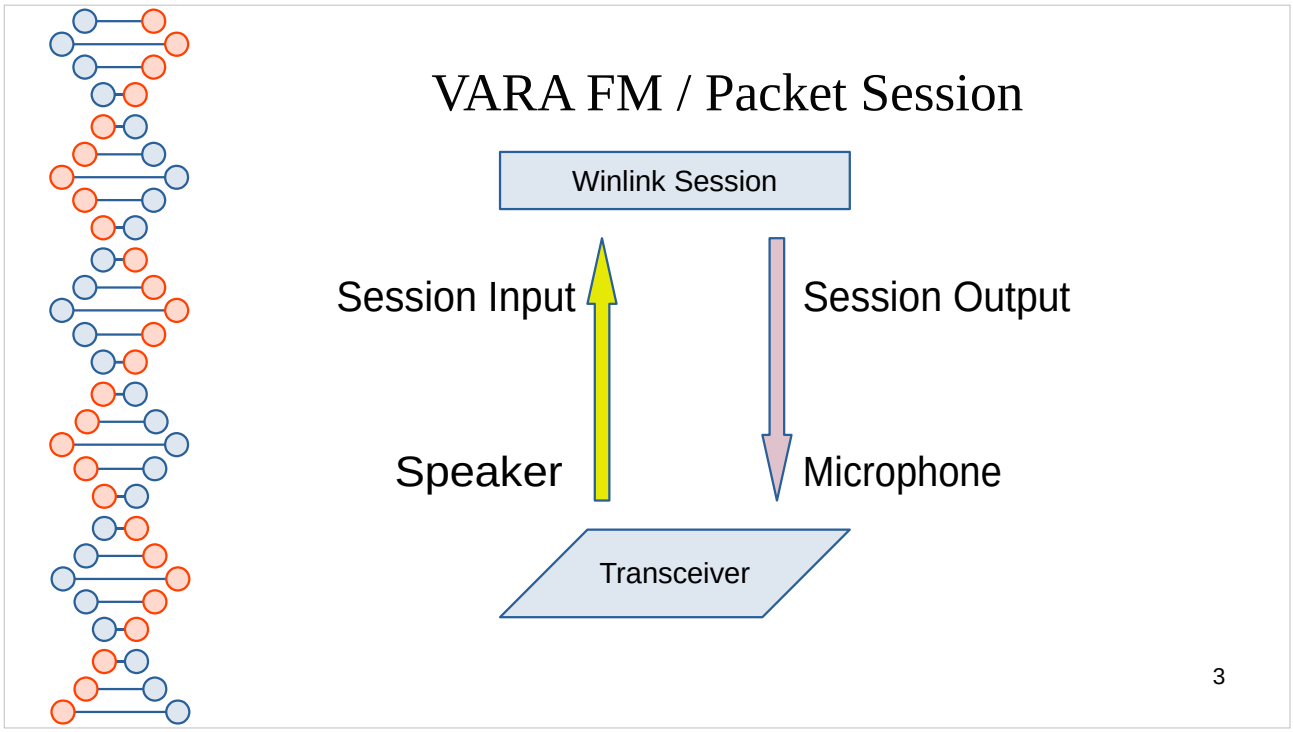
Brian Wright - W7OWO



When you start any of the Winlink Sessions, you either will be using Telnet going directly to the Central Message Server (CMS) or connecting to a radio that will communicate with a Radio Message Server (RMS) that has an internet link to the CMS

The November 18th class focused on getting you setup with Winlink, and using the Winlink Telnet session to send and receive from the CMS.

This class will be focusing on the configurations, virtual TNC's, sound card interfaces, and radio settings to make this work

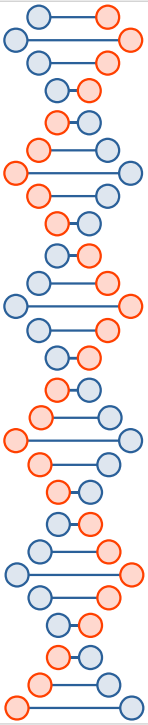


Looking at just the interaction between the Winlink Session (from either the VARA FM or Packet Software TNC's) you can see it is just the audio tones being exchanged.

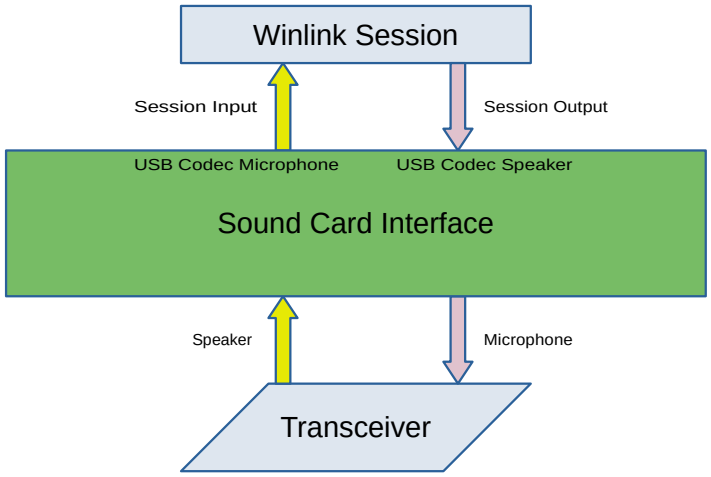
Note: The Output from the software TNC is connected to the Microphone port of the radio. Conversely, the Input to the Session is coming from the Speaker Port from the Radio.

If you were using the built in speaker and microphone of the computer, one could actually put the Microphone of the radio to the Speaker of computer and the Microphone of the computer next to the speaker of the radio. It would be the responsibility of the operator to manage the Push To Talk on the radio. Due to the speed of exchange timing would be an issue and quality of sound would be diminished.

The Sound Card Interface resolves this issue by it controlling the PTT and circuitry to optimize and allow for adjustments to the audio exchange.



VARA FM / Packet Session



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- The sound card interface adds a speaker and microphone to the PC's sound devices.
- Within the TNC's Configuration, the speaker needs to be associated to the TNC's encoded audio output to provide tones to the radios microphone port for transmission by the radio
- Within the TNC's Configuration, the microphone needs to be associated to the TNC's audio input to receive the sound from the radios speaker port for decoding the received tones.
- Fortunately most digital applications will only accept the appropriate Device.
- Signalinks use VOX for triggering the PTT. It requires a specific volume level to trigger the PTT. Either the Windows Speaker, Application Volume level (usually labeled as Power), or the Signalink's TX knob can provide volume level adjustments
- Master Communications DRA devices use the GPIO ports built into C-Media sound cards.

TigerTronics SignaLink & Cable Selection

The base SignaLink USB has cabling options for connecting to the radio and internal jumper settings related to the radio's connection jack pin settings.

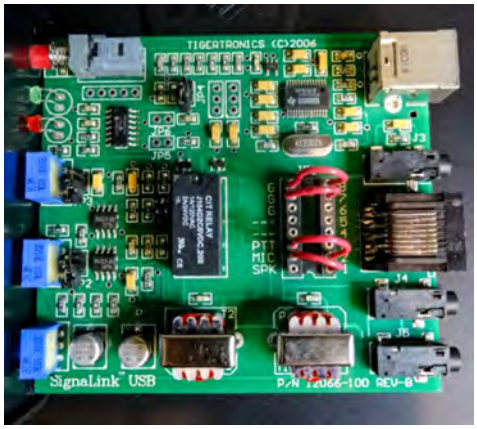
- **In the Radio Store's catalog there seem to be different models of Signalinks, which do I buy to match my radio?**
  - Use the Signalink USB Product Guide for matching the SignaLink model number to your radio manufacturer and model.
    - Note the base SignaLink is common for all radios, the different product numbers delineate the included cable(s) for connecting to the radio
  - https://tigertronics.com/files/SignaLink%20USB%20Product%20Guide.pdf
- **How do I configure the SignaLink Jumper settings for my radio manufacture and model?**
  - https://tigertronics.com/sl_wire.htm
  - For some radios there is a jumper module you can purchase that simplifies the process. Its part number is in the SignaLink USB Product Guide.
    - *I found I prefer the flexibility of the jumper wires as since the base SignaLink is the same, I can use the SignaLink on a different radio if I get a new radio.*

Masters Communications DRA Version & Hardware Selection

There are many DRA versions. Some come with audio output amplifiers, others support VOX PTT, and others can take advantage of the plethora of SignaLink cables to match the target radio.

- **I have a radio with a Mini-DIN-6 port, what is the best fit DRA for it?**
  - https://www.masterscommunications.com/products/radio-adapter/faq/radios-with-mini-din6.html
- **My radio does not have data ports, which DRA should I buy?**
  - https://www.masterscommunications.com/products/radio-adapter/faq/which-one.html
- **What about Cables?**
  - Cables must be purchased seperately, and in some case you may need to make them or purchase jumpered version of the DRA and buy the SignaLink cables. See the SignaLink USB Product Guide for the TigerTronic cable model number.

Jumper Settings Where Applicable



8-Pin Round Mic Connector (use SLUSB8R, SL1+8R, or SLCAB8R)

JP-1	Pin-out	Radio Models
	Pin 1 – Mic Input Pin 2 – PTT Pin 3 – N/C Pin 4 – N/C Pin 5 – N/C Pin 6 – N/C** Pin 7 – GND Pin 8 – GND	ALD-24T ALR-22T/22HT/72T DR-110T/112T DR-130T/135E/135T DR-150/235T DR-430T/435E/435T DR-510T/570T DR-590T/592T/599T DR-600T/610E/610T DR-620E/620T DR-635 DR-1200 DR-B185HT/HE DX-70/70T/70TH/70EH DX-77 DX-SR8T/E DX-SR9

When using a SignaLink, jumper settings are required to correspond to the radio and cabling used. Also if you have chosen a DRA-39 or similar that uses jumpers it will also need to have its jumpers set. The DRA-39 allows you to use the SignaLink cables to use a non-data-ready radio with DRA circuitry.

Use the SignaLink Jumper Guide discussed in slide 5, https://tigertronics.com/sl_wire.htm, to determine how to place the jumpers.

The jumper drawing above is from that guide. The picture shown is a SignaLink that has been configured for an old Alinco Radio that does not have a data port. The cabling is the 8-Pin Round Mic Connector (SLUSB8R) and uses the headphone jack on the radio to supply sound to the SignaLink via the SPKR jack port on the backside. You can see that the SPK jumper is not used. You can see pins 8 and 7 connect to ground, Pin 1 connects to the Mic, and Pin 2 to the PTT. If this was a DRA-39, it would use the same jumper settings if the SLUSB8R cable is used.

If your radio uses a 6 pin mini-DIN data port and follows the data port standard, you will find that all use the exact same jumper settings. After setting the jumpers, if you have an Ohm meter, I'd advise testing for continuity of the solder pads on the bottom for those pins that have jumpers.

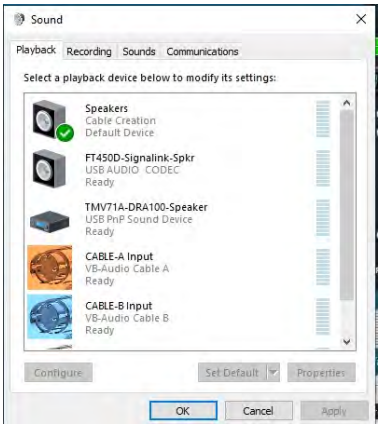
Sound Card Interface Initial Settings

If you are using cables that utilize the microphone jack, when using VARA FM you are limited to VARA FM Narrow. Or if the SignaLink's transformers are red like on slide 7, you are limited to VARA FM Narrow.

VARA FM Wide will only work on Data Ready Radios that have 6 pin mini-DIN or adapters for one. Pin 4 is for 9600 baud data (Wide) and Pin 5 is for 1200 baud data (Narrow). If you plan on using a SignaLink With VARA FM Wide, you need to ensure you have jumpered the SPKR to Pin 4 rather than Pin 5. set TX and RX at 50% rotation, and DLY fully counterclockwise.

On DRA's there is a block jumper just behind the 6 pin socket for 9600/1200 set it accordingly. A fully assembled version's default is 9600. Set the left and right RX channels potentiometers (R14 & R16 smaller blue) to 50%, and the TX potentiometer (R12 large blue) fully counterclockwise.

Sound Control Panel



When using digital modes on Windows, the Sound Control Panel will be your best friend for configuration and trouble shooting. Know How to Access It.

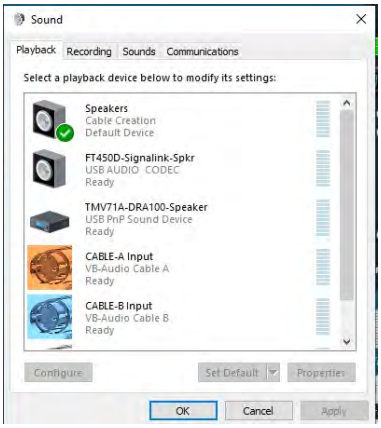
There are multiple ways, the tried and true way is to click on the Windows Icon, select *Settings*, Select *System*, Select *Sound*.

- Window 10: Scroll down to the **Related Settings** Section, and click on *Sound Control Panel*
- Windows 11: Scroll down to the **Advanced Settings** and click on *More sound settings*.

This window allows you to configure the properties of your *Playback* Devices (speakers), *Recording* Devices (microphones) and other sound related features.

Sound Control Panel Initial Settings

Adding the USB SoundCard Interface's Devices

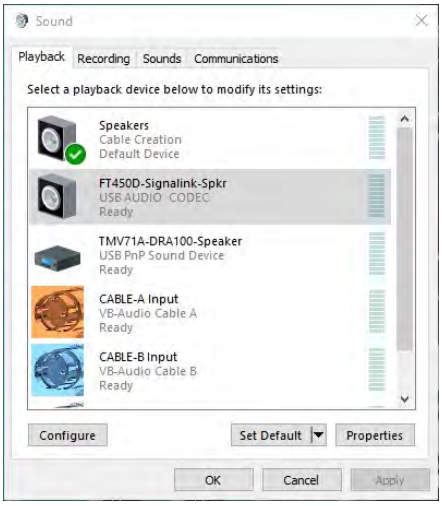


1. Prior to plugging in the soundcard to the computer, Start up Sound Control Panel
2. For both the *Playback* and the *Recording* tabs & Scroll through and note all the listed devices. Also note which one in each tab has the green check box (Default Device)
3. Switch Back to the *Playback* tab and with the USB Cable connected to the sound card interface, plug it into the computer.
4. Note the new device in the list. Reset the original device as the Default Device by clicking on the device and then click on the Set Default Button,
5. Select the *Recording* tab, note the new device in this list, and reset the original default device back to being the default.

- Once you have plugged the Sound Card Interface into the computer. Note the USB port you used.
- If you plug the Sound Card into a different USB port on the computer, the computer may see it as a complete new device, and you may need to go through the sound card interface configuration again.
- I label my ports on computer that I plug and unplug USB devices regularly (like the Go-Kit computer).
- If you don't set the default back to the computers sound card devices, Systems sound will be transmitted along with the Session tones. Or if PTT is under VOX, when ever there is an system alert.

Sound Control Panel Initial Settings

Configuring the Sound Card Interface's Speaker



1) Click on the Speaker you want to rename
   1) Click on Properties

You may have noticed that the second and third sound device are named FT450D-Signal-Spkr and TMV71A-DRA100-Speaker. I editted the properties of these devices from just the word Speaker, to make them easily identifiable to the radio equipement that they are associated with.

Sound Control Panel Initial Settings

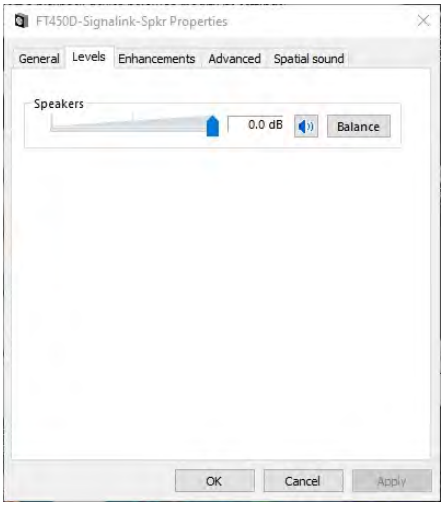
Renaming the Sound Card Interface's Speaker

1) Where this text box that shows *FT450D-Signalink-Spkr*, you will see *Speaker*
2) Click within the text box and edit to fit your setup.
   1) In my case it is the speaker device that is associated to my Yaesu FT-450D and the Sound Card Interface is a SignaLink.

The initial time you plug in a SignaLink into the computer, it will give provide a **Playback** device named *Speaker/USB Audio Codec* and a **Recording** device named *Microphone/USB Audio Codec*. Because of the slight differences in Audio Chips used, for the DRA's you will see *Speaker/USB PnP Sound Device* and *Microphone/USB PnP Sound Device*.
On subsequent devices OR if you plug the SignaLink into a different USB port, You'll see *Speaker/2- USB Audio Codec* or with a second *DRA Speaker/2- USB PnP Sound Device*. The only thing than makes them unique is if they have no number or 2, or 3 if you have three devices of the same type (or plugged the device to 3 different USB ports). Fortunately the Speaker or Microphone part of the name is a configurable property. Descibed in the steps above.

Sound Control Panel Initial Settings

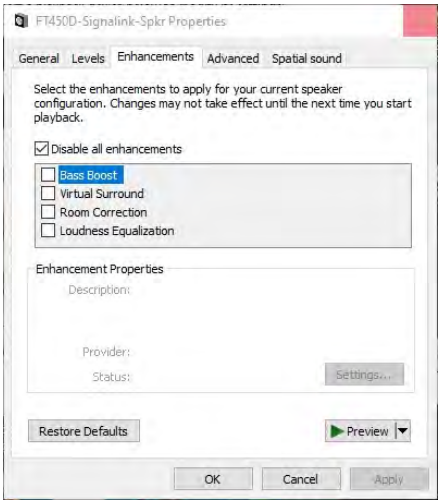
Setting the Sound Card Interface Speaker's Level



1) The slider controls the volume of the output from the speaker
2) Right clicking on the text box between the slider and Microphone icon allows you to view the value in dB's or percentage.
3) Since there is no amplification in this sound card, 0.0 db is 100% of the output of card.
4) For dual channel needs, click on balance and adjust each channel as needed
5) For VOX PTT interfaces Set to value to 100% (0.0 db). For DRA's or hardware PTT set value initially to 75% or -4.3 dB
6) During Tuning steps (discussed later) adjust as needed

Sound Control Panel Initial Settings

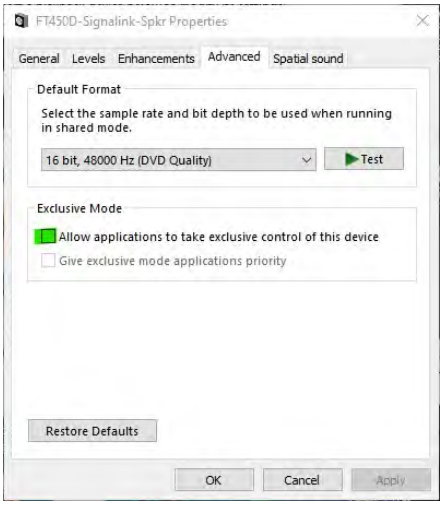
Turning off the Sound Card Interface Speaker's Enhancements



1) Ensure the *Disable all enhancements* check box is checked
2) Digital modes are based upon the tone of the sounds produced. Enhancements change the tones and will disrupt decoding the signal into text.

Sound Control Panel Initial Settings

Setting the Sound Card Interface Speaker's Advanced Features



1) Click on the drop down for the default format of the sound.
   1) Select the DVD quality setting.
   2) Unless you are using dual channel features single channel modes will work.
2) Turn off Exclusive Mode by unchecking the checkbox.
   1) This prevents a single application from controlling the sound card
   2) I found with this turned off, when operating P2P, I can have a version of Winlink Express running a VARA FM P2P Session and another version of Winlink Express running Packet (SoundModem) at the same time. If an external station is attempting to connect to my station, they can connect via Packet or VARA FM.

Sound Control Panel Initial Settings

Turn Off the Sound Card Interface Speaker's Spatial Sounds

1) Select the Off option on the drop down selection box.

Sound Control Panel Initial Settings

Turn Off the Sound Card Interface's Spatial Sounds

1) Select the Off option on the drop down selection box.

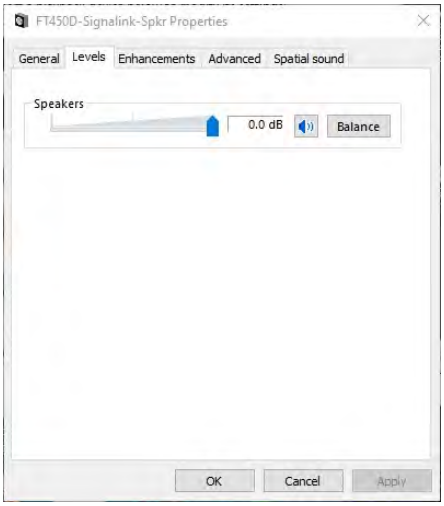
Sound Control Panel Initial Settings

Renaming the Sound Card Interface's Microphone

1) Where this text box that shows *FT450D-Signalink-Microphone*, you will see *Microphone*
2) Click within the text box and edit to fit your setup.
    1) In my case it is the microphone device that is associated to my Yaesu FT-450D and the Sound Card Interface is a SignaLink.

Sound Control Panel Initial Settings

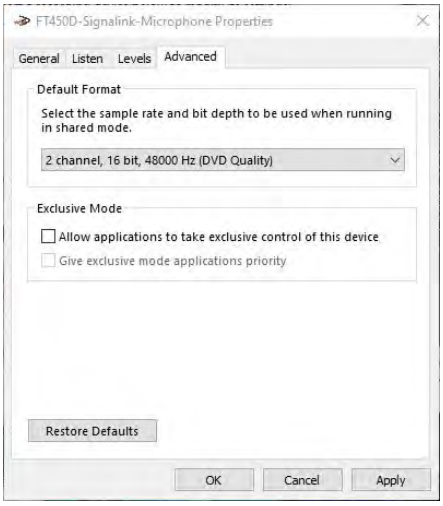
Setting the Sound Card Interface Microphone's Level



1) The slider controls the volume of the output from the speaker
2) Right clicking on the text box between the slider and speaker icon allows you to view the value in dB's or percentage.
3) Since there is no amplification in this sound card, 0.0 db is 100% of the output of card.
4) For dual channel needs, click on balance and adjust each channel as needed
5) Set value initially to 50% or -10.0 dB
6) During Tuning steps (discussed later) adjust as needed

Sound Control Panel Initial Settings

Setting the Sound Card Interface Microphone's Advanced Features



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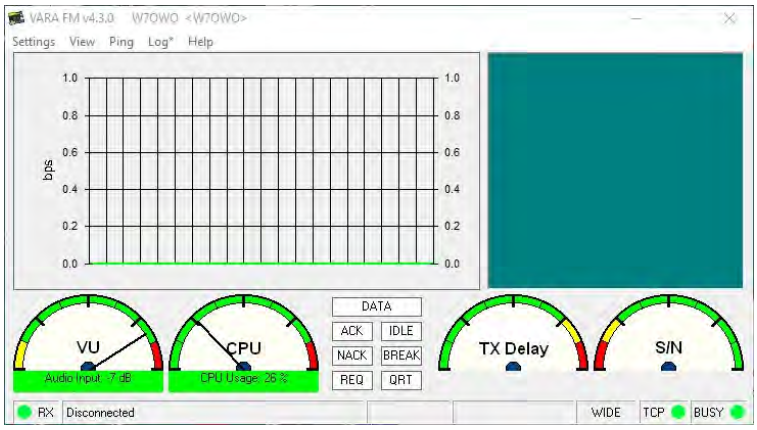
VARA FM Download and Install

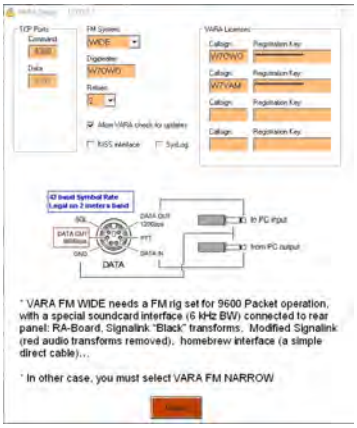


1) Download VARA FM zip file from: https://rosmodem.wordpress.com/
2) The Current Version is v4.3.1
3) Extract all from ZipFile
4) To install, as administrator execute:
   1) VARA FM setup (Run as Administrator).exe

The VARA FM screen has three parts.

1) The graph will show the bps (bits/second) of the throughput of the current buffer of the information.
2) The turquoise square is known as the constellation diagram. When receiving, the square will be segmented into squares, where the number of squares represents the number of symbols that are being transmitted with the current modulation.
   1) You will see 4, 8, 16, 32, 64, 128, or 256 squares. The more symbols the more data transferred in one exchange.
3) There are 4 dials
   1) VU represents the volume level of the received signal. Yellow is is a weak signal and if to low will not be decoded, Red is an overly strong and may produce clipping and may not decode.
   2) CPU is the current percent CPU usage on the computer. Red is not good.
   3) TX Delay is the amount of TX Delay occuring to allow needed to prevent collisions
   4) The higher the S/N on the dial the more symbols transferred. To get max symbols a S/N of 25 or greater is best.
4) In the bottom center you will see key exchange information. NACK's aren't good.
5) There is also a status bar that will display VARA speed levels, current bps, bytes transferred, and whether the connection is in WIDE or NARROW mode.

VARA FM Configuration
Settings → VARA Setup...

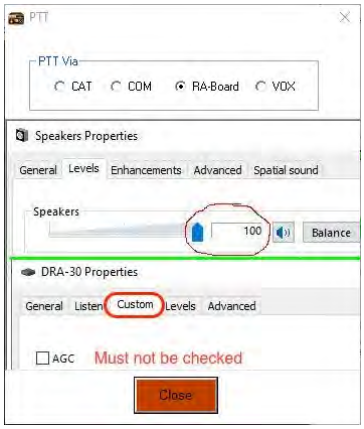


- **TCP Ports**: VARA FM uses TCP for communicating with Winlink. Values need to match between Winlink and VARA FM
  - Ports must be unique for any application running. If you plan on having multiple VARA FM's running, each needs to have their own set of values. Data defaults to 1 plus the Command Port
- **FM System**: WIDE only works with data ready radios and the 9600 baud data port is in use and the radio is configured for that. Otherwise use NARROW
- **Digipeater**: Provide your callsign with a SSID and VARA FM will behave as a digipeater if someone connects to this CallSign and SSID
- **VARA Licenses**: If you have a paid license you enter you callsign and registered code. Since it is possible to have mulitple instances of VARA FM running, one could be for an auxilary callsign like W7YAM or W7NDR

VARA FM Configuration
Settings → PTT… (VOX)

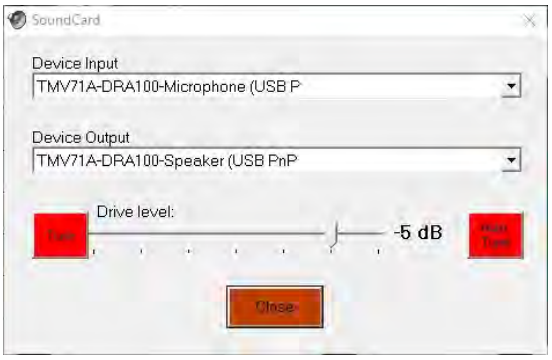
- PTT Via
  - With a SignaLink or a VOX capable DRA that is enabled the VOX radio button should be selected

VARA FM Configuration
Settings → PTT… (GPIO)



- PTT Via
  - DRAs using the GPIO PTT feature should have the RA-Board radio button selected
    - DRA's are enhanced version of the RA-Boards used for other applications
- Note that if the Microphone has the Custom Tab, make sure the AGC is not selected. This can disprupt the tone frequencies and cause issues in decoding.

VARA FM Configuration
Settings → SoundCard… (VOX)



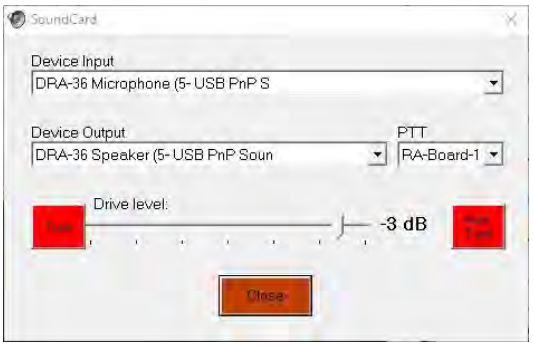
- Device Input
  - Select from the drop down list the microphone associated to the sound-card you wish to use.
- Device Output
  - Select from the drop down list the speaker associated to the sound-card you wish to use.

Like a good program, only the information you need to set is shown when using a SignaLink or other VOX driven soundcard.

If you are using a SignaLink, the next slide will not be of interest.

If you are using a DRA you need to look at the next slide

VARA FM Configuration
Settings → SoundCard… (GPIO)



- Device Input
  - Select from the drop down list the microphone associated to the sound-card you wish to use.
- Device Output
  - Select from the drop down list the speaker associated to the sound-card you wish to use.
- PTT
  - Select from the PTT drop down list the RA-board that will perform the PTT.
    - If there is only one DRA attached there will be just one. I've found it is trial and error on machines I've installed multple DRA's

This getting the PTT associated to the correct DRA boards GPIO ports.

You will note I have placed the SoundCard Setting after the PTT which doesn't match the program.

The PTT box doesn't show up until you've selected the PTT RA-Board option.

Seems to me I have them in the right order, not the program

VARA FM Configuration
Receive Levels

Adjust the VARA FM received sound level to the VU meter reads around -10 dB

If the sound card is connected to the radio via a Data Port
- **Signlink**: Rotate the RX knob so value is near the 10 db mark on the meter
- **DRA**: Rotate the potentiometer R12 (large blue) is near the 10 db mark.

If the sound card is connected to the radio via the microphone jack and the headphone jack
- Turn off the Squelch. (with the headphone jack inserted, no sounds are heard anyway) This also helps for receiving weak signals
- Rotate the AF volume knob to the VU meter value is near the 10 dB mark

Note: You may need to use the Sound Control Panel properties of the sound card's microphone levels to bring the microphone into a range so it can be adjusted with the above methods.

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The VARA FM screen has three parts.

1) The graph will show the bps (bits/second) of the throughput of the current buffer of the information.
2) The green square is known as the constellation diagram, when transmitting or receiving, the square will be segmented into squares, where the number of squares represents the number of symbols that are being transmitted with the current modulation.
    1) You will see 4, 8, 16, 32, 64, 128, or 256 squares. The more symbols the more data transferred in one exchange.
3) There are 4 dials
    1) VU is basically the volume level of the received signal. Yellow is too weak of a signal, Red is too strong of a signal.
    2) CPU is the current percent CPU usage on the computer. Red is not good.
    3) TX Delay is the amount of TX Delay occuring to allow needed to prevent collisions
    4) The higher the S/N on the dial the more symbols transferred. To get max symbols a S/N of 25 is best.
4) In the bottom center you will see key exchange responses. NACK's aren't good.
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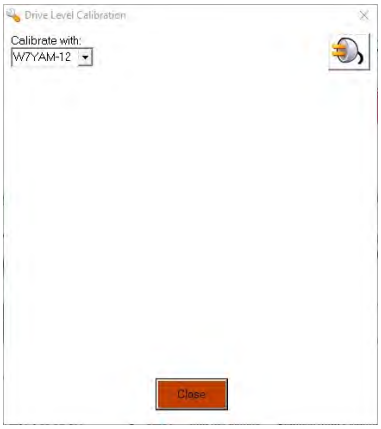
VARA FM Configuration
Settings → SoundCard → AutoTune



- Calibrate with:
  - Enter a VHF VARA FM Gateway or Digipeater that is closest to your QTH* or more likely to be line of sight. I suspect this will be either W7YAM-10 (144.970 MHz), W7YAM-12 (145.090 MHz) or W7OWO-10 (145.090) and tune your radio to the associated frequency
- Button with plug icon (Start Calibration)
  - Pressing this button will start the calibration with the target VARA FM station. Your radio will send tones of increasing drive level to estimate the best setting of the drive level to use with that gateway.
  - If it can't get an optimal level, if you have a DRA it will request you rotate the TX potentiometer either clockwise or counter clock wise

* Visit https://winlink.org/RMSChannels & click on VARA FM to see a map of all the current VARA FM Gateways

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Because of the differences in distances and sometimes a poorly tuned gateway, you may find it helpful to run AutoTune when switching RMS Gateways. I strive to make each of the W7YAM and W7OWO gateways behave similarly and at their best.

But, the VHF radio that W7YAM-10 uses is not data ready and uses a SignaLink via the microphone jack. I have notes when I set the AF volume knob and TX knob levels after tuning the configuration. I have repeatedly found the knobs at different settings. Until I can get up to the site to reset back to the optimal settings, I use the computer's Sound Control Panel to adjust the transmit and receive sounds for optimal message exchange. Though sometimes the AF knob was left in a position that an optimal value is not quite reachable and it requires me to visit the Eola Hills site to remedy. So it is quite possible to find W7YAM-10 at 144.970 not at its best.

VARA FM Configuration
Settings → SoundCard → AutoTune

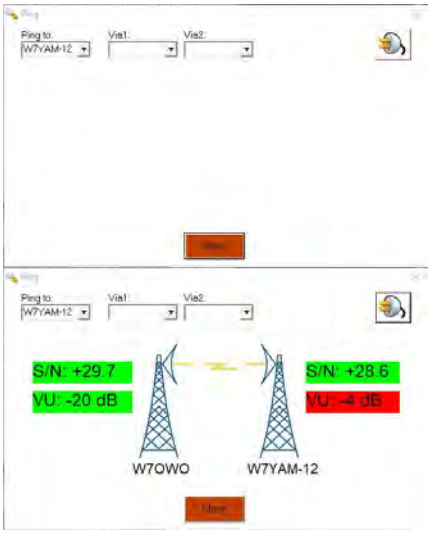
Once the TX potentiometer on a DRA or the TX knob on a Signalink are optimal, the AutoTune will find a working drive level and you will get the approved stamp.

If the S/N value is +25 dB or better, VARA FM will use the highest VARA Speed levels fitting the need. For small messages, the VARA Speed level may be a low value, but that is all that is needed to send the one buffer.

Because of distance or other obstacles, some gateways may have a much lower S/N value for it optimum connection between you station and the gateway.

If you find your drive level is consistently below -20 db, you may want to decrease the TX knob or potentiometer a slight amount. I like to keep my values so that none of my adjustment levels are against or close either end of their range.

VARA FM
Ping Feature



The Ping feature in the VARA FM main window menu, allows you to get an idea of how well you are being heard by a gateway or a digipeater, or if you can work a gateway via one or two digipeaters. It is a very good tool for testing the connectivity between two VARA FM stations.

Enter (or select from the drop down if you have entered before) the call sign and SSID of the gateway or digipeater and press the plug Icon (Start Ping)

You will presented with a display as shown in the bottom screen capture. In this case my Winlink Client had a S/N of +29.7 and VU reading of -20 dB from the reception of the W7YAM-12 RMS Gateway. W7YAM-12 had a S/N of 28.6 and a VU value of 4 db. It is red, meaning the Microphone on W7YAM-12 is too high for my signal. Both my station and W7YAM-12 are in line of sight of each other and only 4 miles away so even though I am running low power my signal is strong. Since I am seeing the fastest capable VARA FM speed level with that gateway, I have not adjusted it so it may pickup more remote stations better.

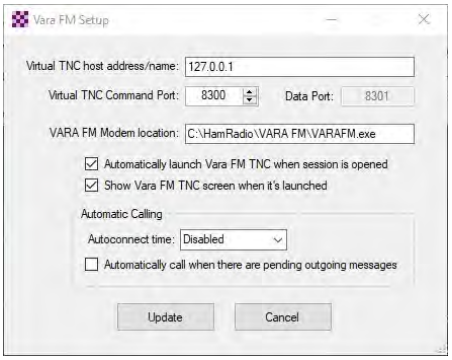
VARA FM
Configure Data Capable Radio For 9600 Baud

DATA		
1 COM PORT SETTING	COM port settings	SPEED: 4800 bps / **9600 bps** / 19200 bps / 38400 bps / 57600 bps OUTPUT: OFF / GPS OUT / PACKET / WAYPOINT WP FORMAT: NMEA 6 / NMEA 7 / NMEA 8 / **NMEA 9** WP FILTER: ALL / MOBILE / FREQUENCY / OBJECT/ITEM / DIGIPEATER / VoIP / WEATHER /YAESU / CALL RINGER / RANGE RINGER
2 DATA BAND SELECT	APRS/DATA band selection settings	APRS: MAIN BAND / SUB BAND / A-BAND FIX / B-BAND FIX / A=TX/B=RX / A=RX/B=TX DATA: MAIN BAND / SUB BAND / A-BAND FIX / B-BAND FIX / A=TX/B=RX / A=RX/B=TX
3 DATA SPEED	APRS/DATA communication baud rate settings	APRS: 1200 bps / 9600 bps DATA: 1200 bps / 9600 bps
4 DATA SQUELCH	Squelch detection settings	APRS: RX BAND / TX/RX BAND DATA: RX BAND / TX/RX BAND TX: ON / OFF

Data capable radios may default to 1200 baud data rates and will need a menu setting to change to 9600 baud

My Yaesu FTM-300DR default is 1200 baud and I need to go the the Data section if the setup, then menu item 3 and change the data to 9600 baud.

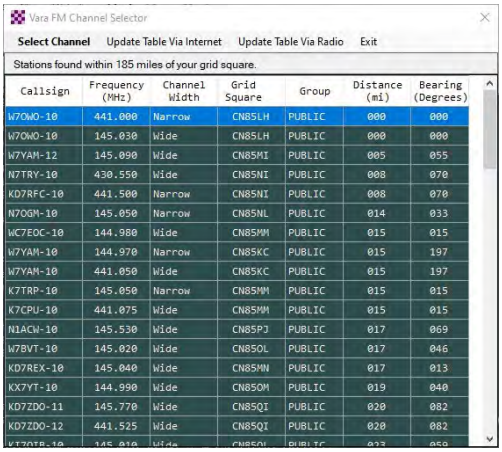
VARA FM Winlink Session Configuration Settings → Vara TNC Setup



1) Open a VARA FM Winlink Session
2) If VARA FM is on your computer use 127.0.0.1 to tell the application to use the local host
3) The Virtual TNC Command Port should be the same value as specified in slide 22
4) If when you open a VARA FM Winlink Session you want VARA FM to start provide the path where the VARAFM.exe file resides and click on the Automatically launch VARA FM TNC
5) By default it will be a hidden window, click the Show VARA FM TNC if you would like it visible
6) Don't use automatic calling under normal scenarios.
7) Click Update

*To open a VARA FM Winlink session, on the Main Winlink Express window, in the Open Sessions: dropdown list select **Vara FM Winlink** and click on the Open Sessions menu item.

VARA FM Channel Selector



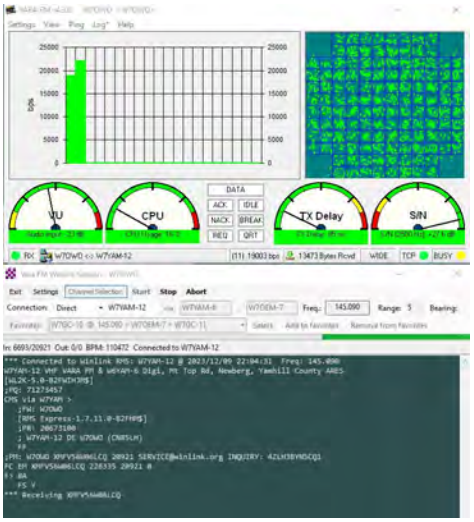
Clicking on Update Table Via Internet will refresh the list with the latest known VARA FM Gateways.

Update Table Via Radio will post a request in you outbox. When you upload this message, in your next active session, you will down load a message that contains the updated list which will automatically update the table with the down loaded information.

Click on the Channel you wish to use and click on Select Channel.

Clicking on a column header will sort by that column.

Active VARA FM Winlink Session

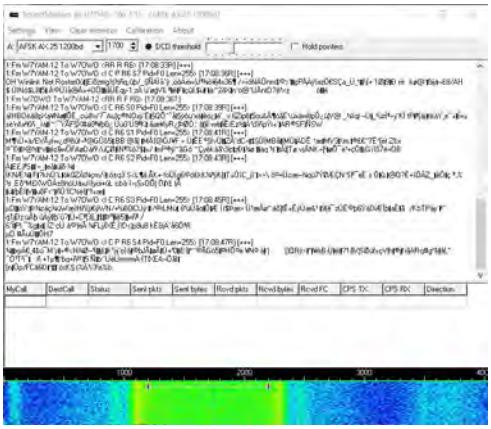


The screen capture shows both the VARA FM window and the Winlink VARA FM Session window during an active down load.

Prior to clicking start make sure your radio is at the frequency displayed in the text box labeled **Freq:**. I've found the majority of my failed connections is I am not on the frequency of the gateway. Or I have exited from the Channel Selector rather than selected. That leaves the Connection Gateway field blank.

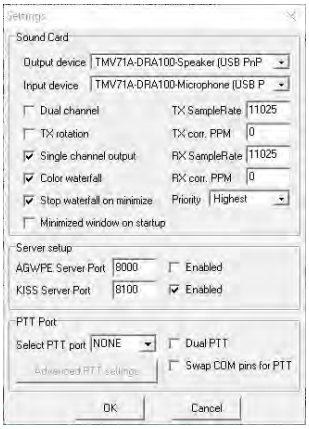
As in all Session Windows, clicking the menu item **Start** will begin the connection and if a connection is made will pass you Winlink Credential to the Gateway. If successful, message waiting for you will be downloaded, messages in the Outbox will be uploaded.

UZ7HO SoundModem Download and Install



1) Download UZ7HO SoundModem zip file from: http://uz7.ho.ua/packetradio.htm
2) Download the files
   1) soundmodem114.zip
   2) If using DRA GPIO pt-dll.zip
3) Create a directory in the location you are keeping you ham radio software
   1) Extract soundmodem114.zip and also pt-dll.zip if you downloaded it into the same directory.
   2) You should now have CAT.dll, PTT.dll, and soundmodem.exe in the directory
4) To start configuration double click on soundmodem.exe
5) This program usually starts minimized and places the icon in your system tray.

U7HO SoundModem Configuration
Settings → Devices (SignaLink)



- Sound Card
  - Output device
    - Select from the dropdown the Signalink speaker
  - Input device
    - Select from the drop down the Signalink microphone
  - Keep remaining Sound Card fields
- Server setup
  - Unless running multiple SoundModem applications keep as default
- PTT Port
  - Since the SignaLink uses VOX keep port to NONE

U7HO SoundModem Configuration
Settings → Devices (DRA/GPIO)

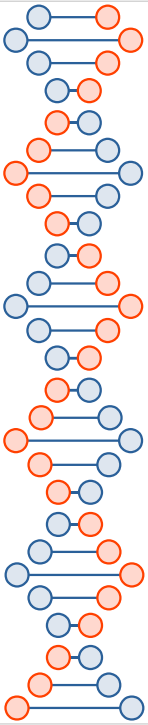
- Sound Card
  - Output device
    - Select from the dropdown the DRA speaker
  - Input device
    - Select from the drop down the DRA microphone
  - Enable Stop waterfall on minimize
  - Keep remaining Sound Card fields
- Server setup
  - Disable AGWPE Server Port
  - Keep the KISS Server Port enabled and keep the port number as 8100.
- PTT Port
  - The DRA uses the PTT.dll so select EXT for the PTT port
  - Click on Advanced PTT settings
- Select PTT HID device
  - From the dropdown list select the USB PnP Sound Device
- Click Apply then OK

UZ7HO SoundModem Configuration

- On the SoundModem main screen, enable Hold Pointers
- There should be no need to adjust the threshold
- Exit the program, this will write the .INI file in the directory with the .EXE file.
- Open SoundModem.ini in notepad
- Find the text *MyDigiCall*= 18 lines under the text *[AX25_A].*
  - Add the same call sign and SSID you provided for the VARA FM Digipeater. This created the Packet Digipeater
- Save the .INI file.

UZ7HO SoundModem Winlink Session Configuration Settings

- Close any open sessions.
- Change the Open Session type to *Packet Winlink*
- Click on Opwn Session
- Packet TNC Type should be *KISS*
- Packet TNC Model should b *NORMAL*
- Serial Port should be *TCP* (last item in list)
- Enter the complete path to the soundmode.exe file
- Automatically launch packet soundmodem should be selected
- Leave the TNC Parameters
  - If you have strong Packet connections you can increase the Maximum Frames by one or two.
- Disable AutoConnect Time
- Click on **Update**



Winlink Packet Session

- After configuration, close Winlink Express and reopen.
- Change the Session type to Packet Winlink if not already so
- Click on Open Session
- Click on Channel Selection, and update the Table from the Internet.
- Click on a nearby Gateway and click select
- Validate your radio is on the frequency of that Gateway
- Click Start. Any pending receipt messages will be downloaded and any pending messages in the outbox will be sent.
- By addressing a message to **TEST;** it will be sent to the Winlink reflector, and on your next connection it will be sent back to you. I generally keep a 5 K text message in my drafts and make a copy of it for testing through put on the gateways I support. And by addressing it to TEST; I can test both the upload and download from CMS.
- In recent test, I found it took 73 seconds for the complete session for a PACKET Winlink session, the same message took 22 seconds for the full session with VARA FM.
- All W7YAM VHF/UHF Gateways support PACKET. All but W7YAM-11 support VARA FM.