

Quick Setup Guide: VARA FM 4.x.x

By Oliver K6OLI

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Special thanks go to **Scott KI6SC**, **Martin HB9AUR**, **Keith KD6PYD**, **Brian KM6IGY**, **Jeff W2JCL**, **Tom KN6BKT**, **Mike KM6KAQ**, **Jim KM6TGJ (SK)**, **Ken KI7EIH**, **Scott NS7C** and **Denis K0TX** for your testing, for your suggestions, insights and encouragement.

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Get the Software

Download

- VARA FM: download VARA FM directly from here <https://rosmodem.wordpress.com/>, or follow the link for VARA FM in Winlink Express, then extract the install files in a location you can find easily (e.g. Desktop). Now right-click on the install file, select **Run as administrator** and install it in C:\VARA FM\
- VARA FM is a separate program from VARA Modem. If you want to only use VARA FM, only download VARA FM. If you want to use VARA on HF you should also download and install VARA Modem.

- NOTE: Some antivirus programs may identify VARAFM.exe as a Trojan or virus. It is a false positive. Create an exception in your antivirus program for the folder VARAFM.exe is located in.
- NOTE: VARA FM can cause Signalink sputtering when third-party antivirus programs are present. Removing the third party antivirus and using Windows Defender is one solution.
- NOTE: VARA FM works perfectly fine without a license key. The key only unlocks the higher speeds and digipeating. Basic VARA FM will be more than twice as fast as Packet.
- NOTE: VARA FM 4.x.x and higher are not compatible with VARA FM 3.x.x or lower.

Soundcard Considerations

After you have hooked up your Signalink please make sure it is not selected as the default audio device.

Right Click on the Windows Icon



Select **Run**

Type or copy and paste **mmsys.cpl**

Press **Enter**

Select **Playback**

Right click on your computer soundcard

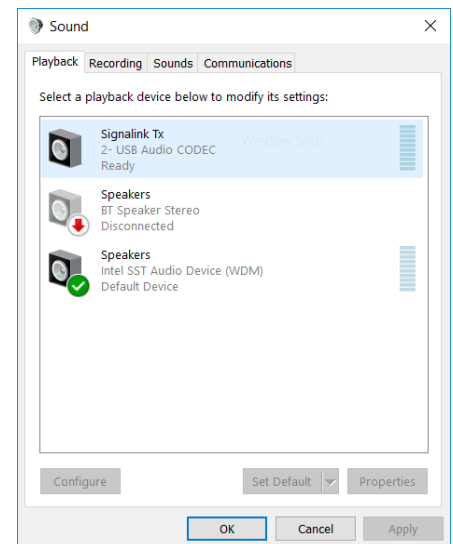
Select **Set Default Device**

Right click on your computer soundcard

Select **Set As Default Communication Device**

Then select **Recording**. Right-click your computer's internal soundcard and **Set as Default Device** and then right-click again and **Set as Default Communication Device**. There should be a green check mark on the internal soundcard device now.

Then click **OK**.



Quick Tip: Soundcard Shortcut


¹ In some Windows 10 installations you can right-click on the speaker icon in the Windows task bar and then select Sounds.

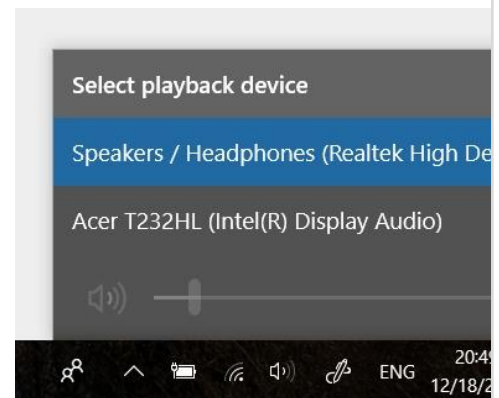
- Right-click on **Desktop**
- Select **Create Shortcut**
- In "Type the location of the item" copy and paste **control mmsys.cpl**
- Click **Next**
- Type **Soundcards**
- Click **Finish**

Customize your Soundcards Shortcut icon:

Properties -> Shortcut -> Change Icon -> paste **C:\Windows\system32\SHELL32.dll**

Also make sure that Signalink is not your active Playback Device. You can select your active playback device by left

clicking on the speaker icon  and selecting any playback device other than USB Audio CODEC. Selecting Speakers/Headphones in the example here is a good idea.



Signalink, DRA/RIM9600, Digirig Settings

Set the TX and RX dials on your Signalink to the 9 o'clock position. You can adjust that later if needed. Set DLY(delay) to the 7:00 setting, i.e. off.

VU Meter:

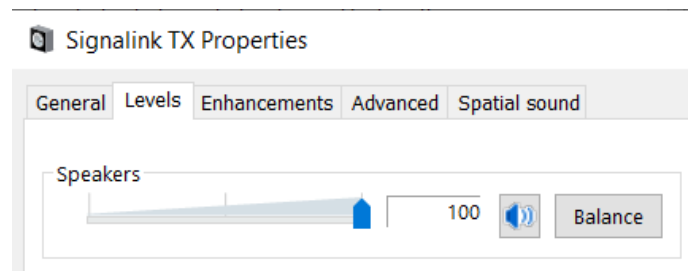
Open the squelch on your transceiver or press the monitor button. Adjust the Signalink RX dial on your Signalink so that the VU meter needle shows between -15dB and -10dB. Avoid the red zone.



Signalink Windows Audio Settings

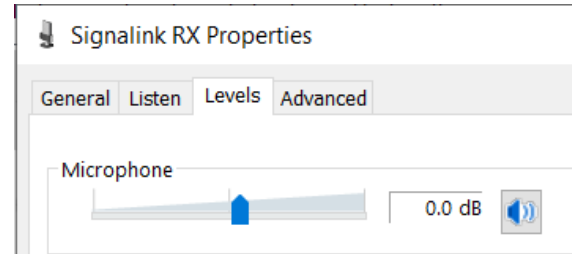
With Signalinks your Windows settings for USB Audio CODEC audio levels should be

... 100% for Speakers and ...



... as near to 0dB for Microphone as possible.

Use [VARA FM Ping](#) to check and optimize your signal.

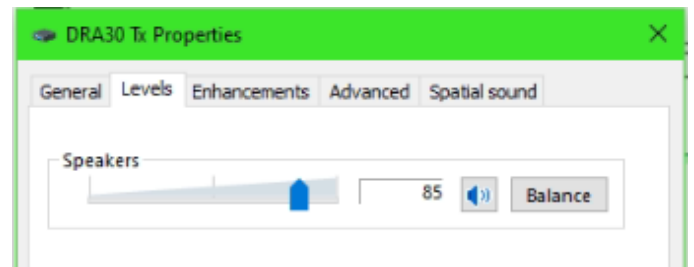


DRA/Rim9600 Windows Audio Settings

Start with a reasonable number like shown below and then adjust the pot on the DRA device. You can then fine tune in Windows if needed.

With the **RIM1200/9600** all the audio settings are adjusted in Windows.

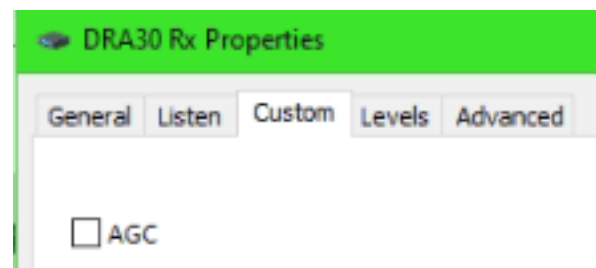
Start with 80% for Speaker Level and ping a nearby gateway or peer station to check your signal. Use the [VARA FM Ping](#) function to check and optimize your signal.

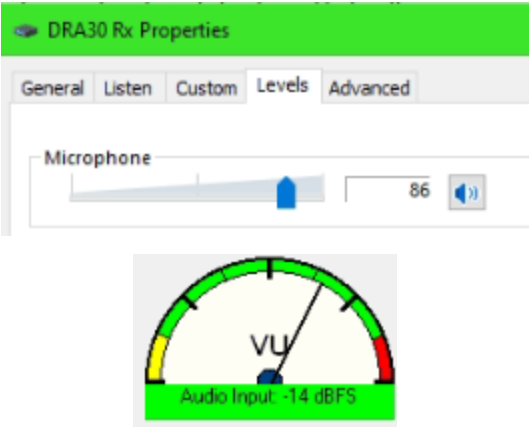


Make sure to **disable the AGC** before proceeding!

Set 50% for Microphone and adjust until your VU meter reads in the -15dB to -10dB range.

Your mileage may vary. Use a well configured remote station to [ping](#) and check and adjust your audio levels.



	
<p>Digirig Windows Audio Settings</p> <p>Speakers: Adjust the speaker level to optimize your outgoing signal.</p> <p>Microphone: Microphone level on the Digirig 9600 is set.</p> <p>Use the VARA FM Ping function to check and optimize your signal.</p>	

Setting up Winlink for VARA FM

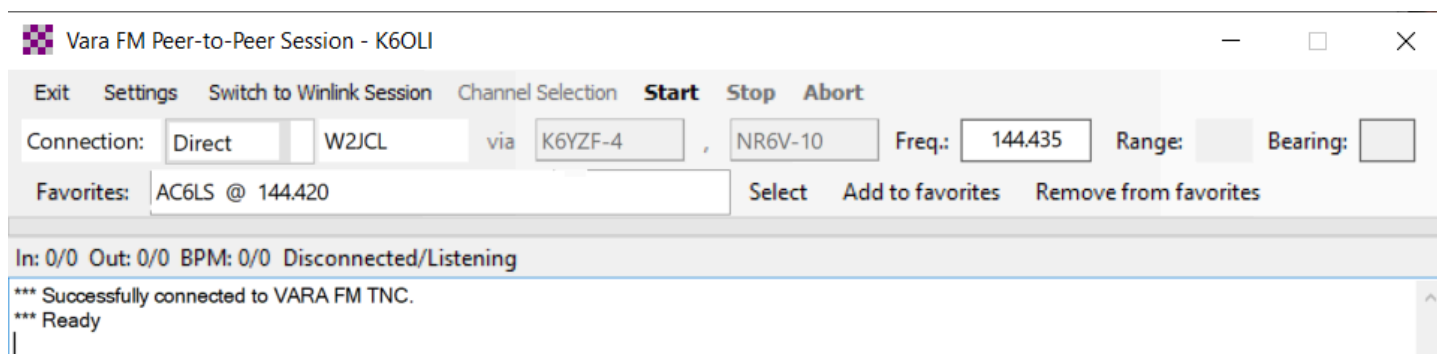
Open Winlink Express

In the Open Session window select **VARA FM P2P²** or **VARA FM Winlink**

Click on **Open Session**

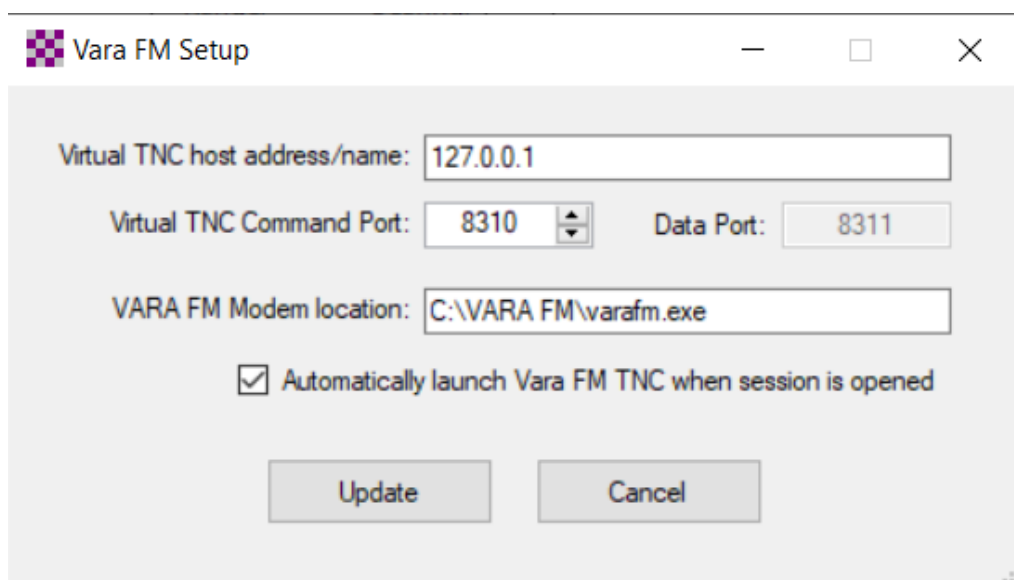
You will see this screen:

² VARA FM settings carry over from the VARA P2P to the Winlink VARA Session and vice versa



VARA FM Winlink TNC Setup

Click on **Settings**
Select **VARA TNC Setup**



Virtual TNC host address/name: **127.0.0.1**

Virtual TNC Command Port: **8300**³

VARA Modem location **C:\VARA FM\VaraFM.exe** (or the path you chose during VARA FM install, if different from default).

Check “Automatically Launch VARA FM TNC when the session is opened”, if you want to launch VARA FM automatically.

Click **Update**.

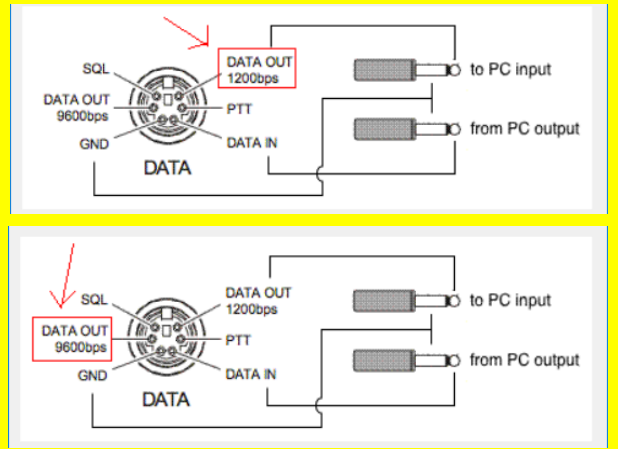
³ In the screenshot above it is set to 8310 due to personal preference.

Quick Tip: NARROW vs WIDE

Pin 1200 is limited to 3kHz audio bandwidth. **VARA FM NARROW** is used with pin 1200.

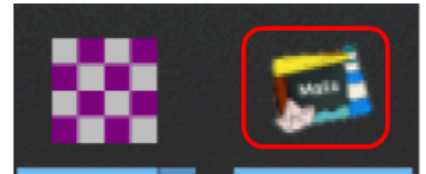
Pin 9600 is limited to 6kHz audio bandwidth. So either **VARA FM NARROW or WIDE** can be used.

You need a 9600 capable transceiver in order to use VARA FM WIDE.

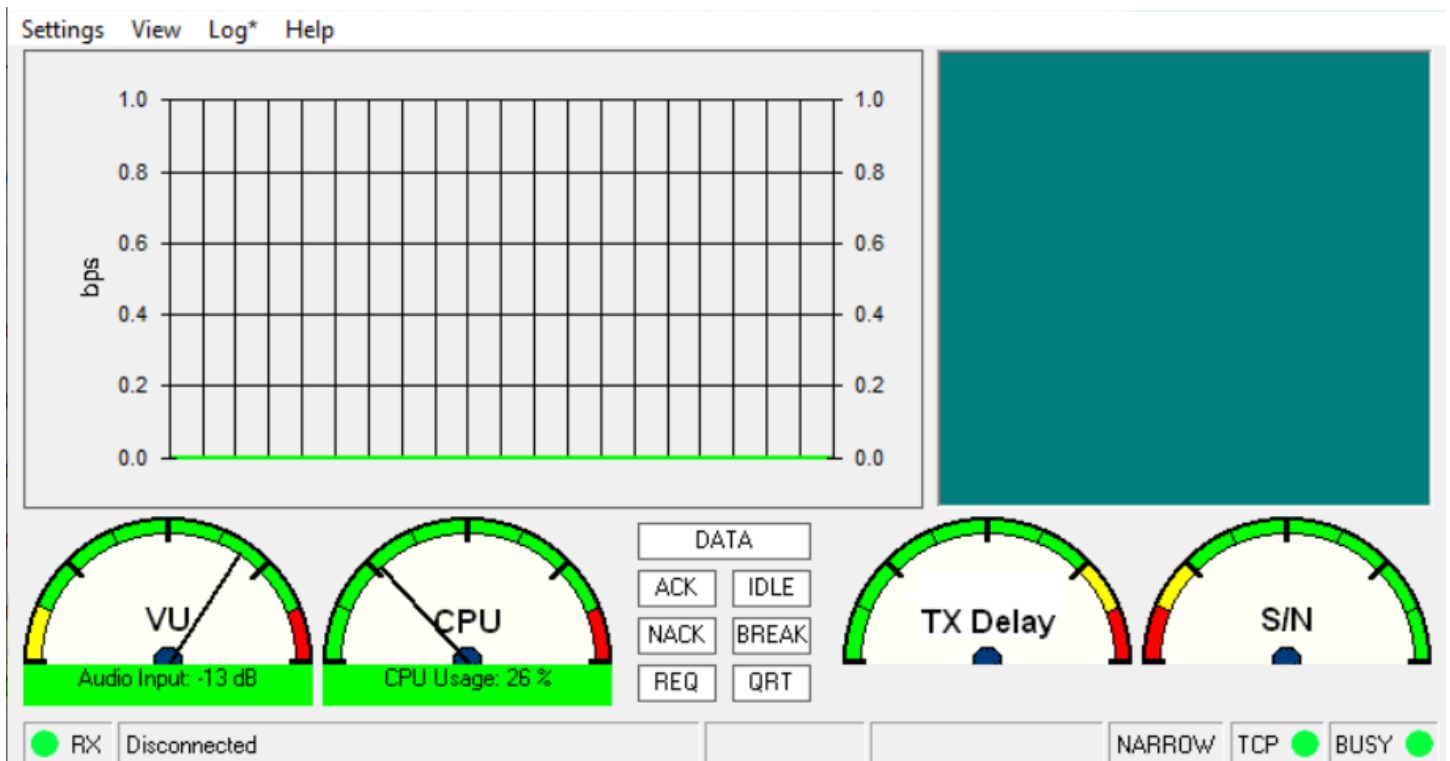


VARA FM Modem Setup

Click on the VARA FM Modem icon next to the Winlink Express icon at the bottom of your screen.



You will see this screen:



VARA FM Setup

Click on **Settings**
Select **VARA Setup**

Make sure the following is set

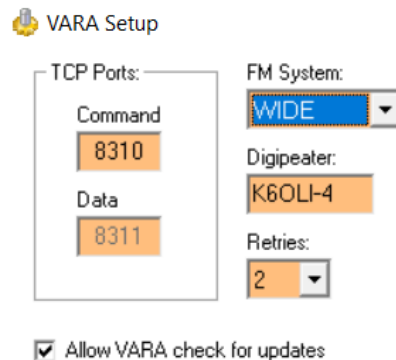
TCP Ports: Command **8300**⁴

FM System: **NARROW** (or **WIDE** if you are set for 9600)

⁵Registration Key: (here is where you enter your registration key if you have one)

Retries: **2**

Click **Close**



VARA Setup

TCP Ports:

Command: 8310

Data: 8311

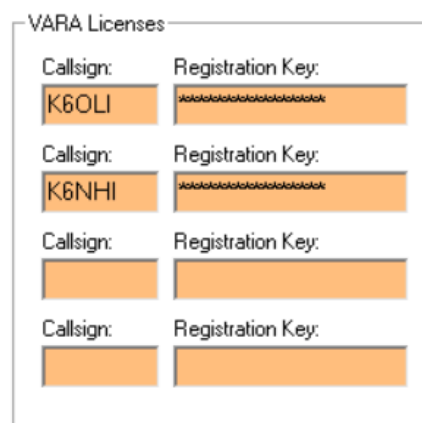
FM System: WIDE

Digipeater: K6OLI-4

Retries: 2

☒ Allow VARA check for updates

×



VARA Licenses

Callsign:	Registration Key:
K6OLI	XXXXXXXXXXXXXXXXXXXX
K6NHI	XXXXXXXXXXXXXXXXXXXX

VARA FM Digipeater Setup

Enter your call sign and an SSID of your choice in the Digipeater field.

Digipeaters in VARA FM are standalone, that is only VARA FM, your soundcard device and your radio need to be running with the Digipeater filled in for your station to work as digipeater.

By convention in SoCal operator stations use SSID -4 and gateways use their gateway call



FM System: WIDE

Digipeater: K6OLI-4

Retries: 2

⁴ I use port 8310. This must match the port you selected in the Winlink VARA FM Session above.

⁵ Use NARROW for devices using a microphone or 1200 pin configuration. Use WIDE for devices using the 9600 pin configuration. NARROW and WIDE are cross compatible.

signs. For example, my laptop VARA FM would use Digipeater call K6OLI-4, my gateway would use Digipeater call K6OLI-12.

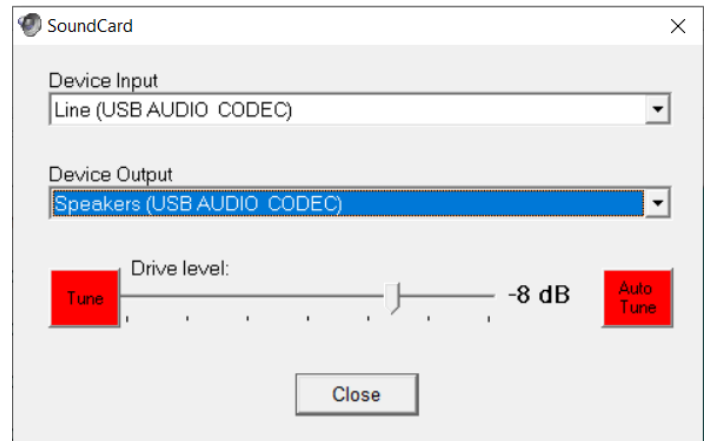
Special note: VARA FM 4.x.x and higher set the software TX Delay automatically.
We recommend setting the Signalink Delay (DLY) to the lowest setting.

VARA FM SoundCard Setup

Click on **Settings**
Select **SoundCard**

Set the following

Device Input: **USB Audio CODEC**
Device Output: **USB Audio CODEC**
Drive Level: **-5dB**
Click **Close**



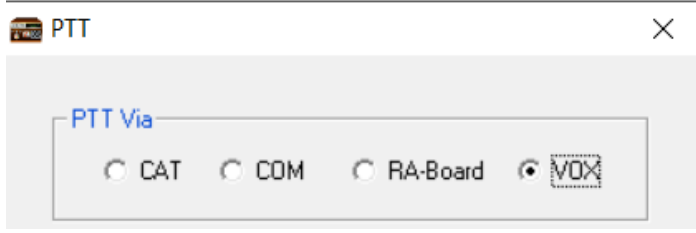

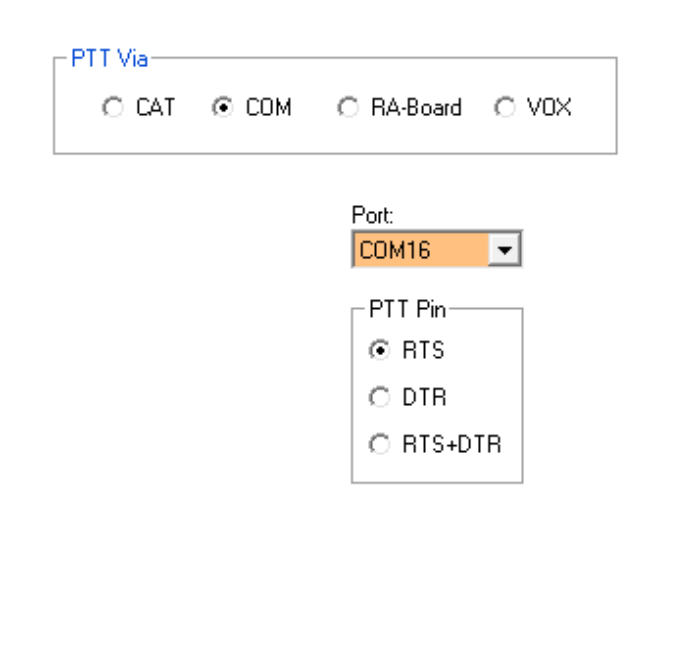
Note: This selects your Signalink as the Output and Input device for VARA FM and Winlink Express.

Note: The Signalink may sometimes show up as 2-USB Audio CODEC or similar.

Note: Other sound devices (Digirig, XGComms, etc.) may show up as **(USB PnP Sound Device)**

PTT

Choose **Settings**
Select **PTT**

<p>Signalink (or similar)</p> <p>Set radio button to VOX</p>	
<p>DRA Boards, RIM9600 (or similar)</p> <p>Set radio button to RA-Board</p> <p>Note: for RIM9600 make sure the AGC is turned off on the Windows Sound Settings.</p>	
<p>DigiRig</p> <p>Select COM</p> <p>Port: Select the COM port associated with your DigiRig.</p> <p>PTT Pin: RTS</p> <p>Check the Digirig Setup section in Appendix I for details.</p> <p>Note: You may want a virtual serial port emulator, like Eterlogic VSPE, Franson GPSGate or similar, if you plan on using UZ7HO, Direwolf, or other apps at the same time with VARA FM on the DigiRig. Thus multiple applications can share a virtual COM port.</p>	

ICOM IC-7100 (or similar)

Select **CAT**

Brand: **Icom**

Port: **COM7**

(this port will likely be different on your rig, it will be the one labeled _A in your “Device Instance Path”)⁶

Model: **IC-7100**

Bauds: **19200**

CI-V: **88**

 PTT

PTT Via

☒ CAT ☐ COM ☐ RA-Board ☐ VOX

Brand:

Icom

Port:

COM7

Model:

IC-7100

Bauds:

19200

☒ RTS

☐ DTR

CI-V Address:

88

Close

Done! You are now set up to use VARA FM. It is a good idea to exit your VARA FM P2P session at this point and re-initialize it to ensure the changes are saved.

⁶ For details see Icom's “Tips for USB Port Settings”: <https://www.icomjapan.com/support/manual/2574/>

Ping


Ping helps you set audio levels in VARA FM 4.x.x, specifically your TX audio. You can ping a gateway or a P2P station. The pinged station will respond with an audio level reading.

From VARA FM version 4.2.3 the ping function can be accessed from the menu bar

Settings View Ping Log* Help

You can ping a station directly or via one or two digipeaters.

A Ping reveals how you can hear the other station and how it can hear you.


 Ping

Connect with:

Via1:


Via2:

K6YZF-11





S/N: +25.5

VU: -22 dB



K6OLI-4





K6YZF-11

S/N: +14.9

VU: -22 dB

K6OLI-4 S/N: +25.5dB This is how your station “hears” the remote station’s signal. In other words, you are looking at the S/N and VU meters on your station. A S/N greater than +10dB is considered good for connections. VU: -22 dB Represents the signal level of	K6YZF-11 S/N: +14.9dB This is how the remote station station “hears” your signal. In other words, you are looking at the S/N and VU meters on the remote station. An S/N greater than +10dB is considered good for connections. VU: -22 dB Represents the signal level of
--	--

K6YZF-11.

K6OLI-4.

Notes:

You can adjust how the remote station hears you by

- Decreasing or increasing your TX volume through
 - Your audio device pot, e.g. Signalink or DRA Board
 - Your Windows speaker levels
 - The VARA FM Drive Level
 - Your radio volume settings, on radios that support that
- Decreasing or increasing power
 - Increasing power should only be a matter of last resort. VARA FM works well on low or medium power. Always try adjusting volume first.

Conversely, the other station can improve its signal to you through the same TX focused mechanisms.

If your RX level is set to -13dB (+/- 2dB) on the VU meter then there is little you can do to improve a bad signal from the other side. In rare cases you can pick the signal out by adjusting your RX levels, but the problem is more likely on their TX or on their or your antenna.

There is also a penalty: adjusting your RX to a station with bad TX will result in you having a worse time receiving other stations.

VARA FM is a low signal modem. In most cases users overdrive their signals resulting in poor S/N. Reducing your TX volume will often increase throughput and S/N ratio.

Best practices:

- Ping the remote station before starting a Winlink session to check whether a viable path exists.
- Ping the individual hops in a digipeat connection. For example, if K6OLI wanted to connect to W6RH-10 via K6YZF-11 and NR6V-10 then he would first ping to the first hop, K6YZF-11. Then do another ping to NR6V-10 via K6YZF-11. And then ping W6RH-10 via K6YZF-11 and NR6V-10. If there is a problem along the path the ping will reveal that quickly. Conversely, if the path has good S/N the ping will show that also.
- Avoid sending traffic on any connection with a S/N less than 10dB. It ties up the frequency unnecessarily.

Auto Tune

Auto tune is a practical feature to optimize your transmit (TX) signal.

You can autotune with a gateway or with a peer. When tuning with a peer make sure he/she is running VARA FM 4.x.x or higher and in a Winlink P2P session.

Ideally you tune with a station that has a good signal to you.

You only need to tune once for a specific radio, antenna, location, combination.

Click on **Auto Tune**

Enter the call sign of the station you want to tune with, in this example, K6YZF-11, a gateway.

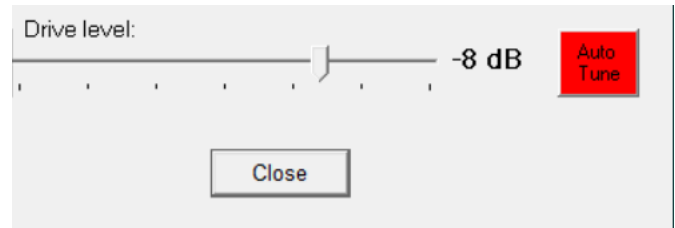


Click on the power plug icon

VARA FM will key the radio and go through a number of levels. The other station will transmit results. VARA FM uses these results to either

- a) Set the drive level automatically
- b) Recommend setting changes on the Signalink

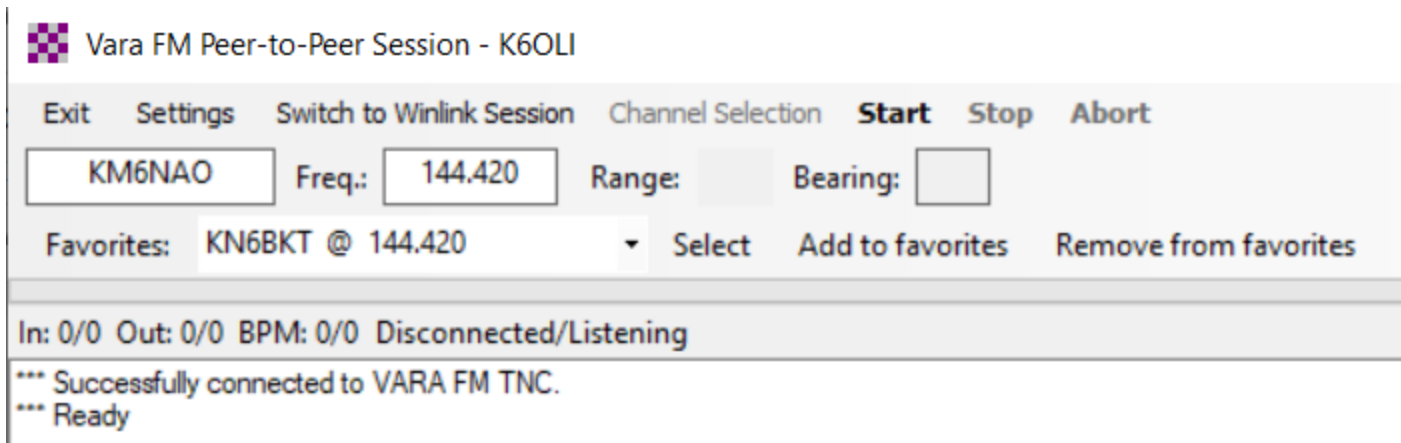
Click **Close**



Winlink Operation

Winlink VARA FM P2P Connection

Make sure both stations are in a VARA FM P2P session



The screenshot shows the Winlink VARA FM Peer-to-Peer Session window for station K6OLI. The window has a title bar with a checkered icon and the text "Vara FM Peer-to-Peer Session - K6OLI". Below the title bar is a menu bar with the following items: Exit, Settings, Switch to Winlink Session, Channel Selection, **Start**, Stop, and Abort. The main area contains several input fields and buttons. There is a call sign field with "KM6NAO", a frequency field with "144.420", a range field, and a bearing field. Below these is a favorites section showing "KN6BKT @ 144.420" with a dropdown arrow, and buttons for "Select", "Add to favorites", and "Remove from favorites". At the bottom, there is a status bar showing "In: 0/0 Out: 0/0 BPM: 0/0 Disconnected/Listening". Below the status bar, there are two lines of text: "*** Successfully connected to VARA FM TNC." and "*** Ready".

Enter the call sign of the station you are trying to connect with.

Enter a frequency in the **Freq.:** field.

Note: For Signalinks the frequency itself is of no consequence, but it is best operating practice to enter the frequency you are working. It will matter once you use a rig with CAT.

Ensure that your transceiver is set to the correct frequency.

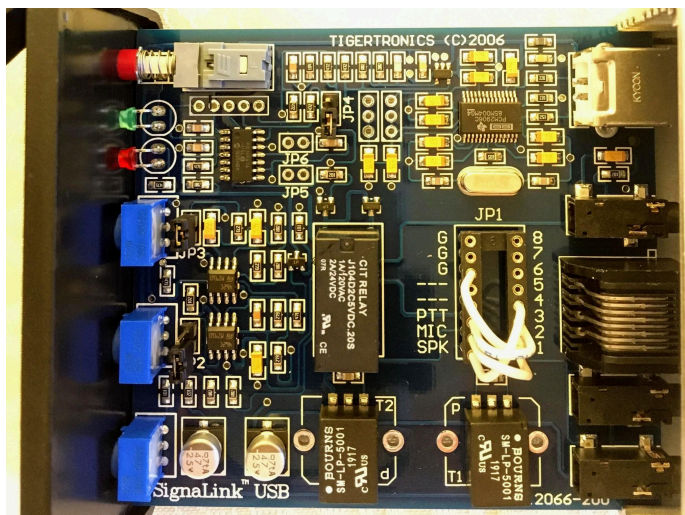
Click **Start**

VARA FM will connect and any Peer-to-peer traffic in your outbox addressed to the receiving station will be passed.

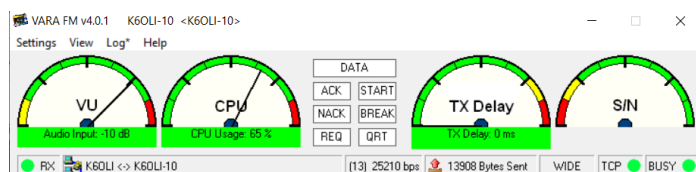
Appendix I

Signalinks can support the full speed of VARA FM WIDE, if wired for 9600. VARA FM WIDE works with radios that allow access to the discriminator and an RA-board, rig built-in soundcard or homebrew USB soundcard interface.

VARA FM NARROW uses the microphone path and is compatible with the greatest number of radios.



Signalink WIDE Connection at Level 13⁷



Signalink Wiring for 6 Pin Mini DIN

(before proceeding check out the Tigertronics wiring diagrams here:

https://www.tigertronics.com/sl_wire.htm)

VARA FM Narrow (1200)

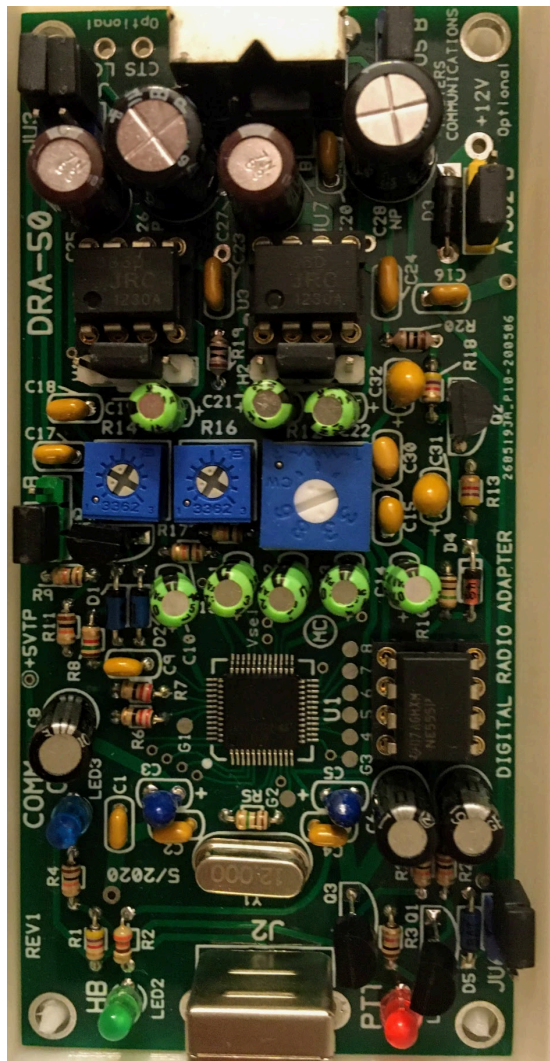
- 1 ⇔ MIC
- 2 ⇔ GND
- 3 ⇔ PTT
- 5 ⇔ SPKR

VARA FM Wide (9600)

- 1 ⇔ MIC
- 2 ⇔ GND
- 3 ⇔ PTT
- 4 ⇔ SPKR

If your rig has low output volume on the 9600 setting then connect jumper JP3.

⁷ Signalinks work perfectly fine with VARA FM WIDE.



DRA-50 Board for 6 PIN Mini DIN

Check this out before proceeding:

<http://www.masterscommunications.com/products/radio-adapter/dra/txt/dra50-DIN-pinout.txt>

- JU3 ⇔ Open
- JU4 ⇔ Open
- JU5 ⇔ A for left audio
- JU6 ⇔ Open
- JU7 ⇔ A for (1200), B for WIDE (9600)

RX:

- Set Windows Microphone Level to 0.0dB (or as close as possible).
- Start VARA FM and select PTT and Soundcard
- With the squelch open and no carrier present adjust R12 until VU shows -13dB (+/- 2dB)

TX

- Set Windows Speaker Level to 90%
- Turn R14 completely counterclockwise
- Ping a local gateway or a friend
- Increase R14 until the pings show diminishing returns. Then back off a little.
- Fine tune in the future using the Windows Speaker Level

Check the Google Groups for suggestions on building a USB soundcard interface:


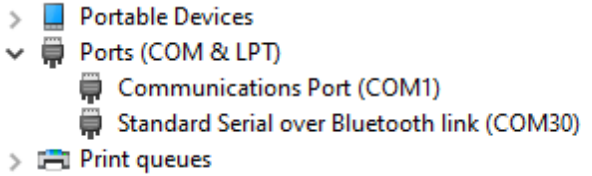
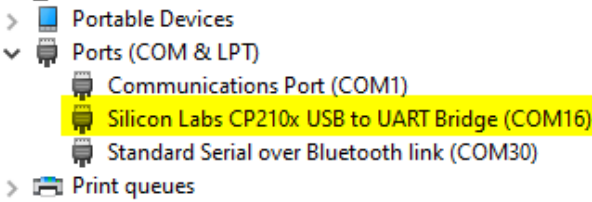
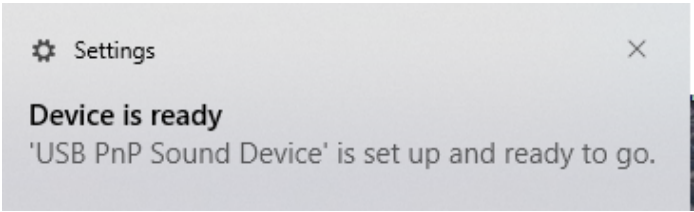
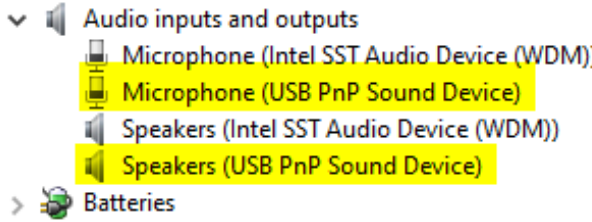

<https://groups.google.com/forum/#!forum/winlink-programs-group>

<https://groups.google.com/forum/#!forum/varahfmodem>

DigiRig Setup

[DigiRig](#) is a small soundcard device that comes in a robust metal case. DigiRig handles the PTT by using a COM port.

For detailed setup instructions see [Getting Started with Digirig Mobile](#) and the [Digirig troubleshooting guide](#).

<p>1. Device Manager</p> <p>Before connecting the Digirig bring up your Device Manager (right click on the Windows icon  then select Device Manager)</p> <p>Expand the Ports (COM & LPT) section</p>	
<p>2. Attach the Digirig to a USB port on your PC.</p> <p>Wait for a minute or two and there should now be an entry reading Silicon Labs CP210x USB to UART Bridge in your Device Manager.</p> <p>Your COM port will differ. In this case it is COM 16.</p> <hr/>	  
<p>3. Check Digirig Windows sound settings</p> <ol style="list-style-type: none">Right mouse click on the speaker icon  in your Windows taskbar, then select Sounds.Click on Playback. Check Disable all enhancements.Click on Recording. Click on Custom.	

Uncheck AGC.

Note: one cannot adjust the Digirig microphone levels in Windows. Input levels can only be adjusted on the radio or not at all (e.g. 6 pin mini DIN rigs).

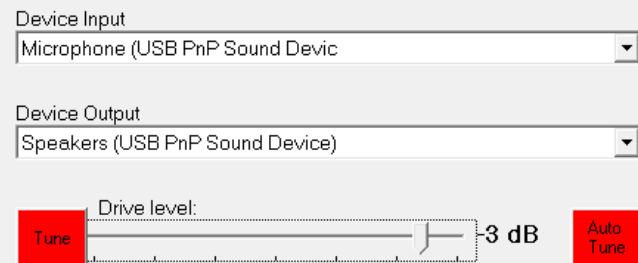
Microphone Properties

General Listen Custom Levels Advanced

☐ AGC

4. Digirig VARA FM setup

- a. Select **Settings > SoundCard...**
 - i. Device Input (**USB PnP Sound Device**)
 - ii. Device Output (**USB PnP Sound Device**)
 - iii. Click **Close**
- b. Select **Settings > PTT**
 - i. Select the **COM** radio button
 - ii. Select the COM **Port** you identified in step 2. In this example it is COM 16.
 - iii. Click **Close**



Close

PTT Via

☐ CAT ☒ COM ☐ RA-Board ☐ VOX

Port:

COM16

PTT Pin

☒ RTS
☐ DTR
☐ RTS+DTR

4. Check your settings by **pinging a gateway** or a peer who is also running VARA FM.

(Pro tip: avoid using Auto-tune)

You can **adjust your VARA FM Device Output** by

- a. Adjusting the Level slider in the Windows Sounds menu Speaker Level, or
- b. Adjusting the Drive Level in VARA FM



As a rule it is better to **start with low audio** and work your way up.
Overdriven signals are the number one cause of underperformance with VARA FM.

Appendix II

Winlink Express

Quick Tip: Winlink Express Setup

If you have not set up Winlink Express, go to **Settings -> Winlink Express Setup** and fill in the appropriate fields.

You only have to do this once (unless your personal information or location changes, e.g. Call Sign, Registration Number, Locator, etc., then update in Winlink Express Setup).

Entering your locator here will help you later finding Winlink Gateways near you. You can look up your Maidenhead Locator at http://www.levinecentral.com/ham/grid_square.php

VARA FM Winlink Session (i.e. Gateways)

Vara FM Winlink Session - K6OLI

Exit	Settings	Switch to Peer-to-Peer	Channel Selection	Start	Stop	Abort
<input type="text" value="K6YZF-11"/>	Freq.: <input type="text" value="145.030"/>	Range: <input type="text"/>	Bearing: <input type="text" value="270"/>			
Favorites:	K6YZF-11 @ 145.030	▼	Select	Add to favorites	Remove from favorites	
In: 0/0 Out: 0/0 BPM: 0/0 Disconnected						
*** Successfully connected to VARA FM TNC.						
*** Ready						

Enter the call sign of the Gateway you are trying to connect with.

Enter a frequency in the **Freq.:** field.

Note: For Signalinks the frequency itself is of no consequence, but it is best operating practice to enter the frequency you are working. It will matter once you use a transceiver with CAT.

Ensure that your transceiver is set to the correct frequency.

Click **Start**

VARA FM will connect and any traffic in your outbox addressed to the receiving station will be passed.

Using the VARA FM Channel Selector

In the session Window

Click on **Channel Selection**

Highlight a channel

Click **Select Channel** or **Double-click** the channel

Winlink will populate the channel information in the Winlink Session window for you.

Remember to set your transceiver to the frequency shown in the **Freq.:** field!

Note: Update your channel table regularly, at least once a month. If you have access to the internet

Click **Update Table Via Internet**

Digipeating⁸

VARA FM has digipeating capabilities. You may digipeat to and from a gateway or to and from a peer. The process is the same in the respective session.

You can digipeat via gateways and via peers. Please [ping](#) the path and check whether it is even viable before trying to connect.

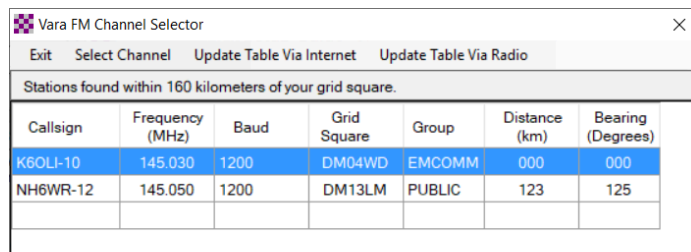
In VARA FM Winlink Session

Connection: **Digipeater**

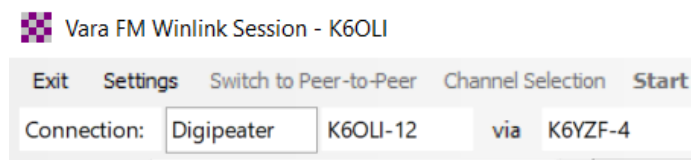
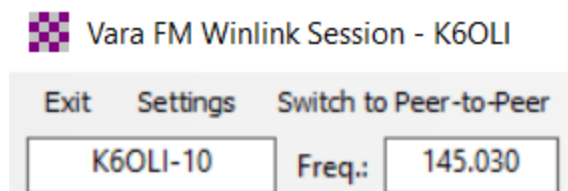
In the first box enter the target station (K6OLI-12 in this example)

In the **via** box enter a digipeater.

Enter another digipeater in the second via box, if required.



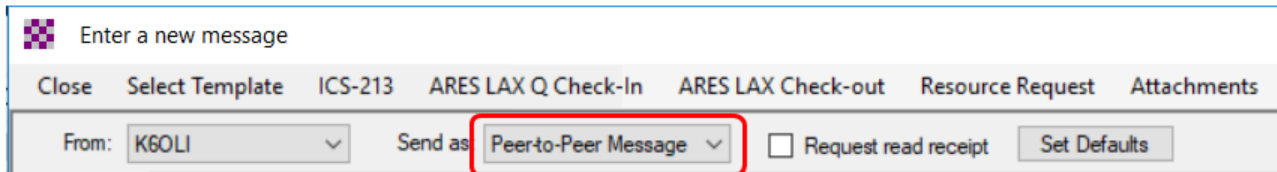
Callsign	Frequency (MHz)	Baud	Grid Square	Group	Distance (km)	Bearing (Degrees)
K6OLI-10	145.030	1200	DM04WD	EMCOMM	000	000
NH6WR-12	145.050	1200	DM13LM	PUBLIC	123	125



⁸ Digipeating is only available to stations with a paid VARA license. For details contact the VARA author Jose EA5HVK at <https://rosmodem.wordpress.com>

Peer-to-peer message

If you want to send a message as a Peer-to-Peer Message (P2P) you need to ensure that you select Peer-to-Peer Message in the Send as drop-down menu. Then click Post to Outbox.

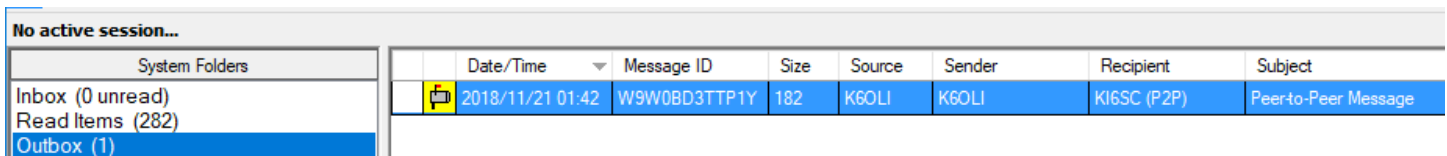


Enter a new message

Close Select Template ICS-213 ARES LAX Q Check-In ARES LAX Check-out Resource Request Attachments

From: K6OLI Send as Peer-to-Peer Message ☐ Request read receipt Set Defaults

Double-check that the message is P2P by clicking on the **Outbox** and verifying under **Recipient** recipient's call sign is followed by **(P2P)**. In this example **KI6SC (P2P)** indicates the message is P2P.



No active session...

System Folders	Date/Time	Message ID	Size	Source	Sender	Recipient	Subject
Inbox (0 unread)	2018/11/21 01:42	W9W0BD3TTP1Y	182	K6OLI	K6OLI	KI6SC (P2P)	Peer-to-Peer Message
Read Items (282)							
Outbox (1)							

- P2P Messages can only be sent to the call sign in the **To:** field and only when in a P2P session with that station.
- Both stations need to be in the same type of session at the same time for P2P traffic to be exchanged.
- You can push a message to the other station or they can pull the message from your Winlink by initiating the session on their end. Only the initiating station needs to enter the target station's call sign and then press start in a P2P session.
- You can enter multiple addresses in the To: field and Winlink will create separate, but identical messages for each recipient. Each recipient has to either pull the message from your system or you have to push each message to each respective recipient in separate sessions, i.e. enter each recipient's call sign in the Session window and press Start. Having stations pull messages is more efficient for a central station.

Winlink Message (via Gateway, Telnet CMS, etc.)

If you want to send a message as a Winlink Message via a gateway or the internet you need to ensure that you select **Winlink Message** in the Send as drop-down menu. Then click **Post to Outbox**.

Enter a new message

Close Select Template ICS-213 ARES LAX Q Check-In ARES LAX Check-out Resource Request Attachments

From: K6OLI Send as: **Winlink Message** ☐ Request read receipt Set Defaults

Double-check that the message is a Winlink Message by clicking on the Outbox. Winlink Messages are preceded by **//WL2K** in the **Subject** have no (P2P) after the call sign under Recipient.

No active session...

System Folders	Date/Time	Message ID	Size	Source	Sender	Recipient	Subject
Inbox (0 unread)	2018/11/2...	CUG4N9V...	196	K6OLI	K6OLI	HB9AUR	//WL2K Winlink Message Example
Read Items (282)	2018/11/21 01:42	W9W0BD3TTP1Y	182	K6OLI	K6OLI	KI6SC (P2P)	Peer-to-Peer Message
Outbox (2)							

- In the example above, we could first initiate a regular Winlink Session with a Gateway (or through the Internet via Telnet) and the message to HB9AUR would be sent. The message to KI6SC (P2P) would stay in the Outbox.
- We could also first initiate P2P Session with KI6SC and the message to KI6SC (P2P) would be sent. The message to HB9AUR would stay in the Outbox in this example.
- You can change whether a message is sent via Winlink Gateway or P2P after the fact by double-clicking on the message in the **Outbox**, changing the mode (**Winlink Message, Radio Only, Peer-to-Peer**) in the **Send as** dropdown menu and then clicking **Post to Outbox**.

Appendix III

VARA FM KISS Interface

The KISS Interface provides a connection for DATA Packet applications with Network KISS capabilities, such as PinpointAPRS and similar. VARA FM, HF and SAT KISS signals are incompatible with AX.25 and will only work with other VARA Stations.

Under no circumstances should the VARA KISS interface be used on established Packet and APRS frequencies, to avoid interference.

The KISS Interface was designed to work on tactical or dedicated VARA frequencies and for manual, operator controlled beaconing.

For an basic instructions on how to set up PinpointAPRS see the ARES LAX Guide to PoinPointAPRS: <https://bit.ly/QG-PinpointAPRS-Web>

VARA FM from Version 4.1.7 onwards provides a KISS interface which can be used to send and receive DATA Packets.

Please remember that VARA FM and AX.25 protocols are INCOMPATIBLE. So your net must decide at the beginning which mode to use. Never transmit VARA FM data packets on designated Packet frequencies, such as the national APRS frequency.

VARA FM KISS Setup

Open VARA FM

Enter your Digipeater address, if you have not already done so. In this example it is K6OLI-4*.

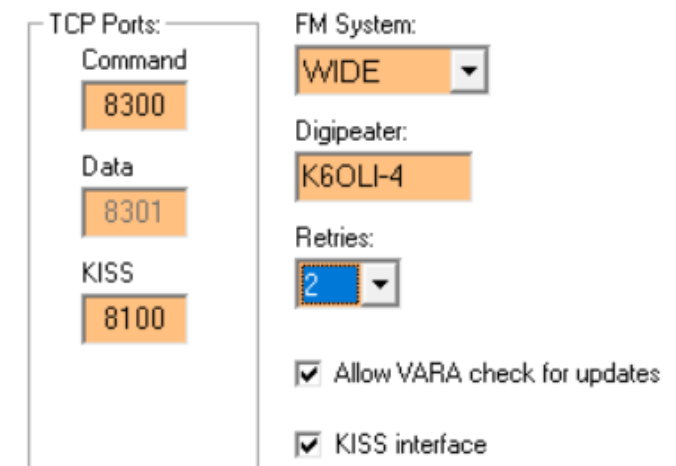
Check KISS Interface

KISS Port: **8100****

* By convention in SoCal client stations use SSID -4, gateways use their gateway SSID. For example, gateway K6OLI-12 would also use K6OLI-12 as digipeater SSID.

** 8100 is the default. This port needs to match the network KISS port in PinpointAPRS.
8100 is a popular port, consider using 8150 to deconflict.

VARA Setup



TCP Ports:

- Command: 8300
- Data: 8301
- KISS: 8100

FM System: WIDE

Digipeater: K6OLI-4

Retries: 2

☒ Allow VARA check for updates

☒ KISS interface

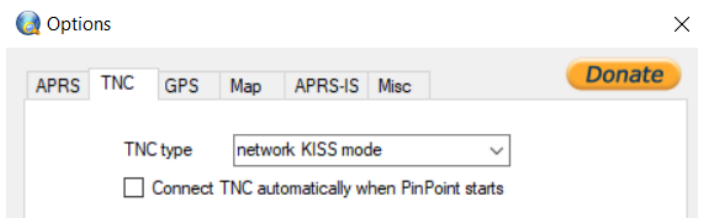
Pinpoint APRS Setup for VARA FM KISS

In PinpointAPRS go to **Tools > Options**

Click on **TNC**

TNC Type: **Network KISS mode**

Ignore the Serial TNC Settings



Options

APRS TNC GPS Map APRS-IS Misc [Donate](#)

TNC type: network KISS mode

☐ Connect TNC automatically when PinPoint starts

Network KISS TNC Settings

TCP/IP address or URL: **127.0.0.1**

Port: **8100****

** 8100 is the default. This port needs to match the network KISS port in VARA FM.
8100 is a popular port, consider using 8150 to deconflict.

Verify APRS Settings

Click on **APRS**

My APRS Call sign + SSID: Enter your preferred callsign and SSID, in this example it is K6OLI-1

APRS Path: Enter your digipeater preferred digipeater. In this case it is the remote gateway K6OLI-12, which has VARA FM KISS enabled.

Check: Enable APRS beaconing
Beacon at least every **600*** minutes
Click **OK**

* 600 is the minimum - essentially that is manual beaconing. You do not want to beacon automatically with VARA FM. Automatic beaconing is likely to cause interference. Always listen for a clear frequency before beaconing.

The image shows two screenshots from the VARA FM software. The top screenshot is the 'Network KISS TNC Settings' dialog box. It has a title bar with 'Network KISS TNC Settings' and a 'Donate' button. It contains two input fields: 'TCP/IP address or URL' with the value '127.0.0.1' and 'Port' with the value '8100'. The bottom screenshot is the 'APRS' settings tab of the same software. It has a title bar with 'APRS' and a 'Donate' button. It contains several settings: 'My APRS Call sign + SSID' (K6OLI-1), 'APRS Path' (K6OLI-12), 'Position comment' (empty), 'Station icon' (a palm tree icon), 'Overlay (type table + symbol directly in box + Enter key)' (f), 'APRS DigiPeater settings' (a checkbox for 'Enable APRS DigiPeater' is unchecked, and 'My DigiPeater alias' is WIDE1-1), 'APRS Position Beacons settings' (a checkbox for 'Enable APRS beaconing' is checked, and 'Beacon at least every' is 600 minutes, 0 seconds, 3 miles, 35 degrees, 'Beacon a minimum of every' is 3 miles, 'Beacon when heading changes more than' is 35 degrees, 'Beacon my altitude' is checked, 'Beacon my course and speed' is checked, and 'Maximum speed reported via radio' is 65 mph). At the bottom are 'Reset', 'OK', and 'Cancel' buttons.

Network KISS TNC Settings

TCP/IP address or URL: 127.0.0.1

Port: 8100

APRS TNC GPS Map APRS-IS Misc [Donate](#)

My APRS Call sign + SSID: K6OLI-1

APRS Path: K6OLI-12

Position comment:

Station icon:

Overlay (type table + symbol directly in box + Enter key): f

APRS DigiPeater settings

☐ Enable APRS DigiPeater (Fill-in Digi. For non-KISS TNC's only for the moment)

My DigiPeater alias: WIDE1-1

APRS Position Beacons settings

☒ Enable APRS beaconing

Beacon at least every: 600 minutes 0 seconds

Beacon a minimum of every: 3 miles

Beacon when heading changes more than: 35 degrees

☒ Beacon my altitude

☒ Beacon my course and speed

Maximum speed reported via radio: 65 mph

Reset OK Cancel

Beacon

In PinpointAPRS click on Tools

Click **Send Position Beacon**

Alternatively press the F1 key

