

SalCo ARES Digital Data Messaging



Yaesu FTM-500DR set up and configuration

V 1.0
March 2024

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FTM-500DR Menu Settings

In your FTM-500DR, check the following menu settings;

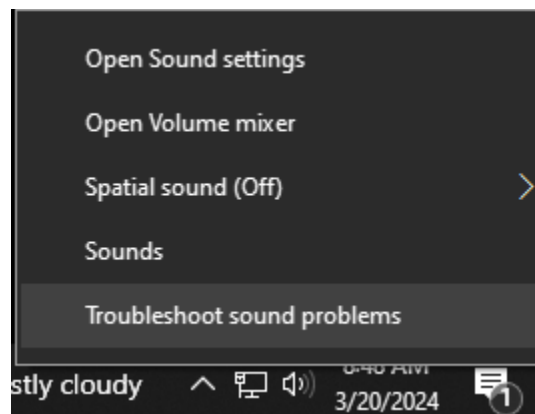
Menu #	Description							
69	COM Port	[Func]	SPEED	[Func]	9600	[Func]	[Back]	
69	COM Port	[Func]	OUTPUT	[Func]	PACKET	[Func]	[Back]	[Back]
70	Data Band	[Func]	DATA	[Func]	SUB-BAND	[Func]	[Back]	[Back]
71	Data Speed	[Func]	DATA	[Func]	1200 BPS	[Func]	[Back]	[Back]
72	Data Squelch	[Func]	RX BAND	[Func]	[Back]	[Back]		

Identify current COM Ports and Sound Settings

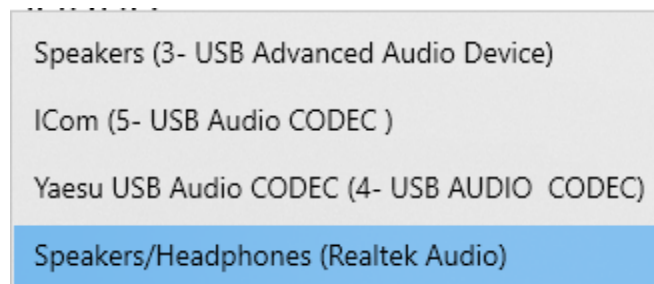
Before you connect any soundcard TNCs to your computer, you need to identify the current sound settings and COM Port Numbers

Sound Settings

Right Click on the speaker icon on your computer's task bar and click on [Open Sound Settings]



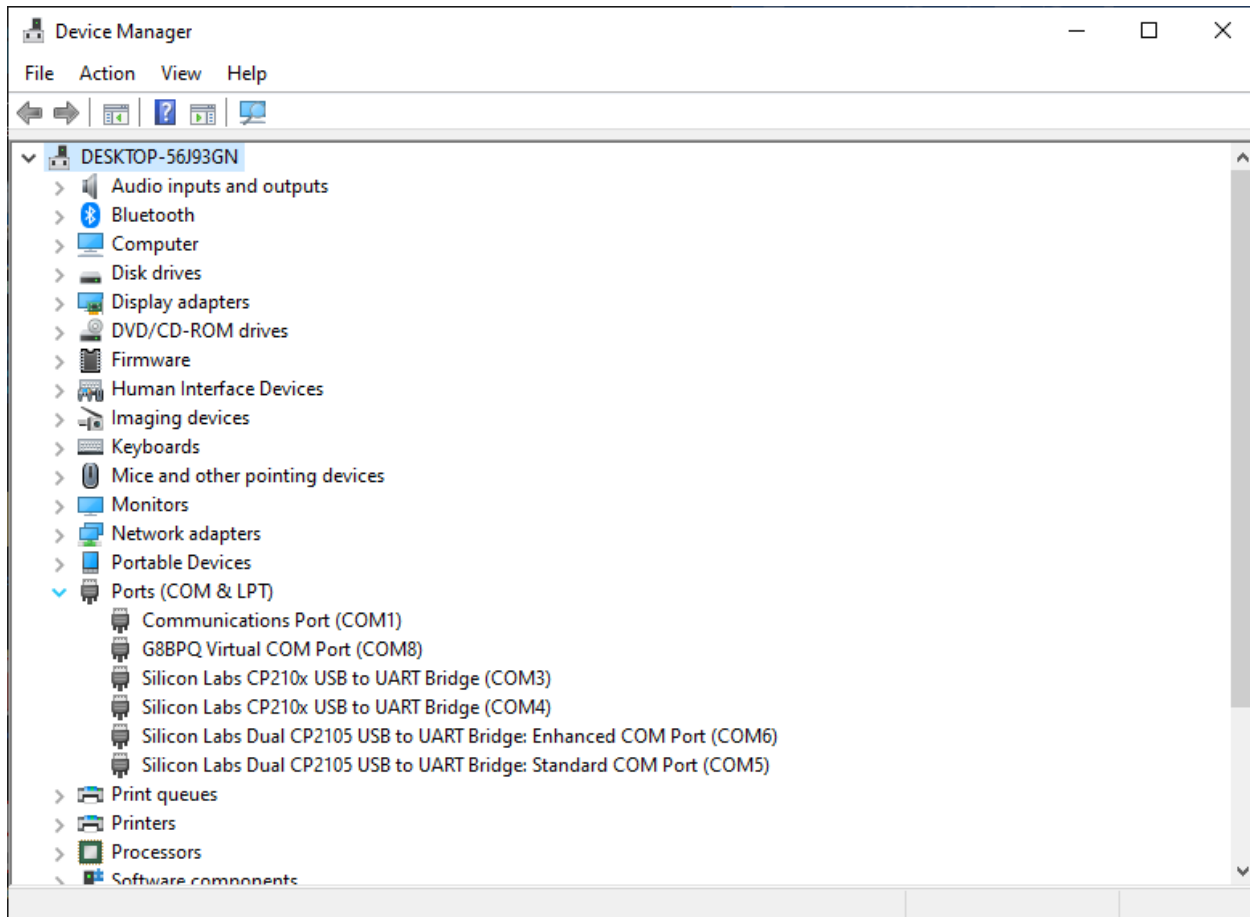
Under {Output}[Select your Output Device], click on the down arrow and make note of the items currently listed. (You do not need to change anything at this time.)



When you have written these items down, repeat the procedure for Input Devices. When you have finished. Close the open Window.

COM Ports

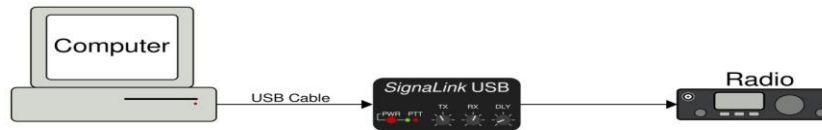
To identify the current COM Ports in use, open the Device Manager app that is included in the Windows operating system.



Click on the down arrow next to Ports (COM & Lpt), and make note of the items currently listed.

After you connect the soundcard to your computer, you will need to repeat these steps for Sound Settings and COM Port numbers to identify the new items.

Signalink Configuration



You can purchase a Signalink USB interface from many different sources for around \$135.00 (March 2024) including the appropriate cable to connect to your specific radio. The Signalink is powered by the USB port from your computer.

Ensure you look at the configuration of the jumper wires for your specific radio (Also available at many sources).

SIGNALINK JUMPER SETTINGS

FTM-500DR.

6-pin Mini-DIN Data Port (use part # SLUSB6PM,
Requires SLMOD6PM cable and
Yaesu CT-141 adapter (purchased separately))

JP-1	<u>Pin-out</u>	<u>Radio Models</u>	<u>Notes</u>
<p>The diagram shows a 6-pin Mini-DIN connector with pins numbered 1 to 8. Labels on the left include G (Ground), PWR, PTT, MIC, and SPKR. Colored lines indicate the following connections: Pin 1 to Pin 2 (yellow), Pin 2 to Pin 3 (orange), Pin 3 to Pin 4 (red), Pin 4 to Pin 5 (black), Pin 5 to Pin 6 (black), Pin 6 to Pin 7 (black), and Pin 7 to Pin 8 (black).</p>	<p>Pin 1 – Data In Pin 2 – Ground Pin 3 – PTT Pin 4 – 9600 Out Pin 5 – 1200 Out Pin 6 – Squelch</p>	<p>DR-735T/E</p>	

Ensure your radio is powered off. Connect the 6 pin Mini Din connector to the DATA port on the back of the radio. Connect that cable to the RJ45 port on the back of the Signalink. Connect the USB cable (USB A to USB B just like the cable to connect to a printer) to any USB port on your computer, then plug the USB connector into the USB B port on the back of the Signalink. (In Windows 7 and above, the computer already has the appropriate drivers and will install them automatically.)

DigiRig Setup

The DigiRig soundcard is mostly plug and play. By mostly, I mean you have to identify the COM port number that gets assigned to it and USB Audio CODEC that gets assigned (I rename to CODEC to make it easier to identify).

For the FTM-500DR, you need the RS-232 configuration for serial CAT and the Yaesu Mini DIN 10 cable to connect to the radio.

Remember to connect the cable to the Radio first, then to the DigiRig. Turn the Radio on, then connect the USB-a to USB-c to your computer.

The FTM-500DR can be used for AX.25 1200 baud packet transmission, and VARA FM high speed data modem.

Soundmodem Installation -

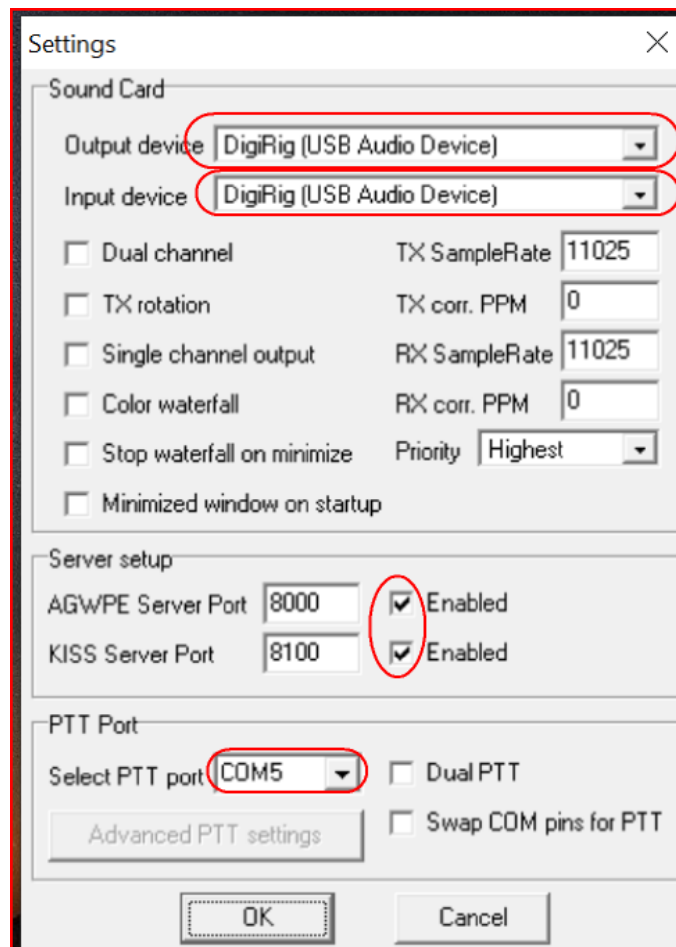
NOTE: Soundmodem is required only for ax.25 packet operation

You will now need to download and install the following file from the UZ7HO website:

<http://uz7.ho.ua/packetradio.htm> scroll down the page until you see the file named “soundmodem##.zip” (where the ## equals the highest number available). Save the file to your desktop, then move it to a convenient location (I use a self-made folder on my C: drive entitled install packages.)

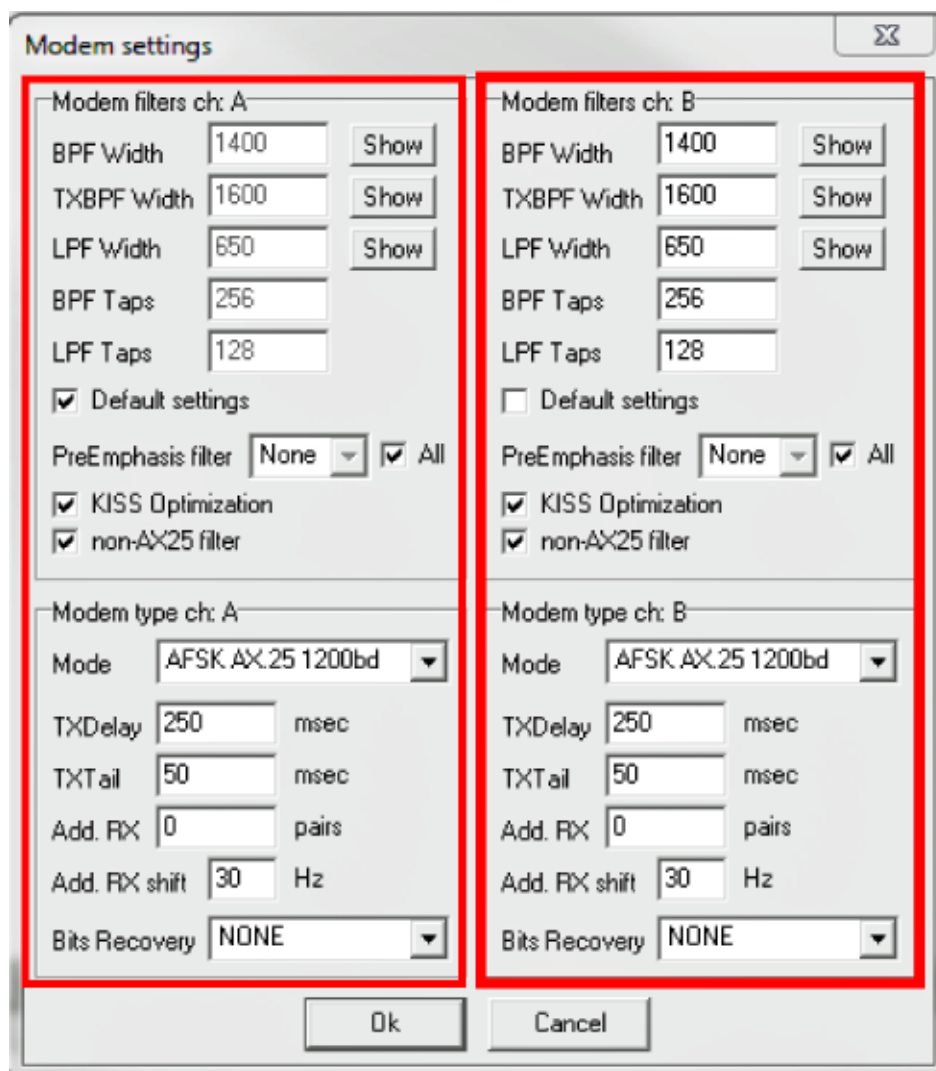
Unzip (extract) the files, then “click” on the soundmodem.exe file to initiate the program. (This program is required to enable the Winlink Express system to communicate via the AX.25 protocol.)

Click on “Settings -> Devices”



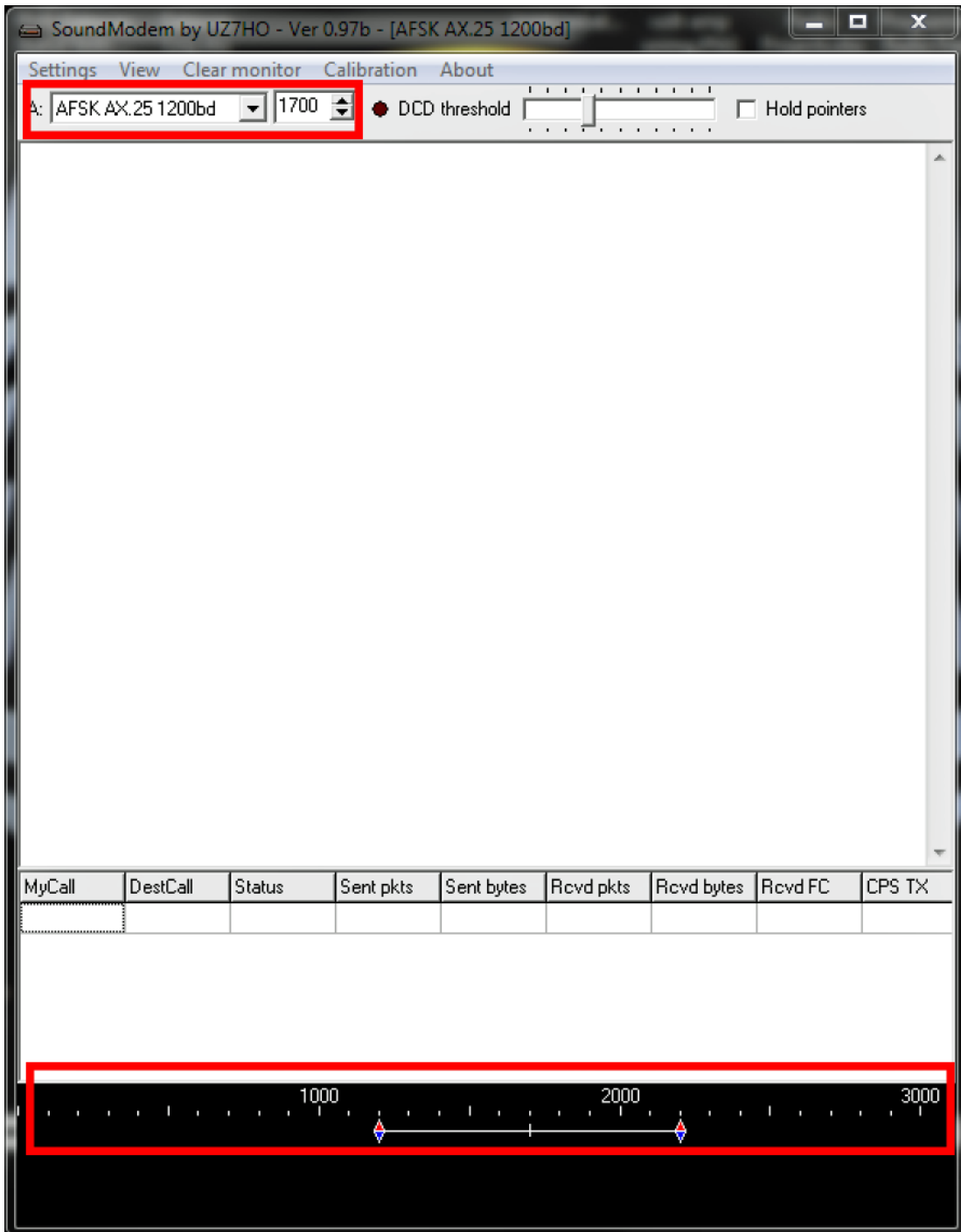
Once the settings are verified, click OK, then Cancel. (NOTE: the numbers associated with the USB Audio CODEC can and will change depending upon which USB port the cable is plugged into on your computer.)

Next click on "Settings -> Modems".



Once the indicated settings are verified, click on OK, then click Cancel.

The main Soundmodem Window should reflect these settings:



Once verified, leave soundmodem running.

Winlink Express Installation

Download Winlink Express software at <https://www.winlink.org/WinlinkExpress>

Install the RMS (Winlink) Express software using the default location for file storage and location. When you start Winlink Express for the first time, you will see: (fill in the items circled in red)

Winlink Express Properties

Call Signs

My Callsign: My Password: (Case sensitive)

Callsign suffix (optional): (Used for country code) Show password

Password recovery e-mail:
(Non-Winlink e-mail address where lost password will be sent when requested)

Auxiliary Callsigns and Tactical Addresses

My Grid Square:

Winlink Express registration key:

Path to propagation forecast program: C:\tshfbc\

Service Codes

PUBLIC

(Use PUBLIC for ham call signs. Separate multiple service codes by spaces.)
If you change service codes, you must update the list of channels.

Contact Information (Optional)

Name:

Street address 1:

Street address 2:

City:

State/Province:

Country:

Postal code:

Web Site URL (optional):

Phone number:

Non-Winlink e-mail:

Additional information (optional):

Recalculate HF path quality if SFI changes more than: 30

Keep logs for 1 weeks. Keep deleted messages for 30 days.

Display list of pending incoming messages prior to download

Warn about connections to stations holding messages

Allow diagnostic information to be sent to the Winlink Development Team

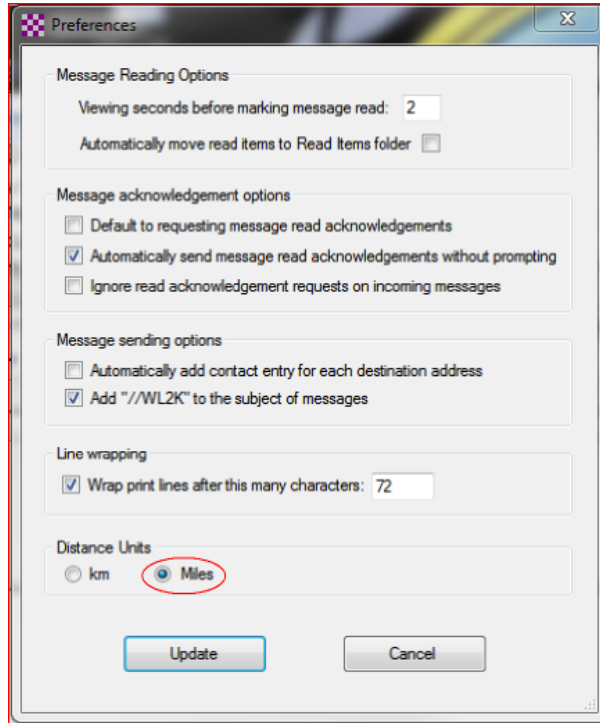
Automatically install field-test (beta) versions of Winlink Express

NOTE: a Winlink registration key is not required! (However if you decide to donate to further the research and development of Winlink, the registration fee is currently \$24.00)

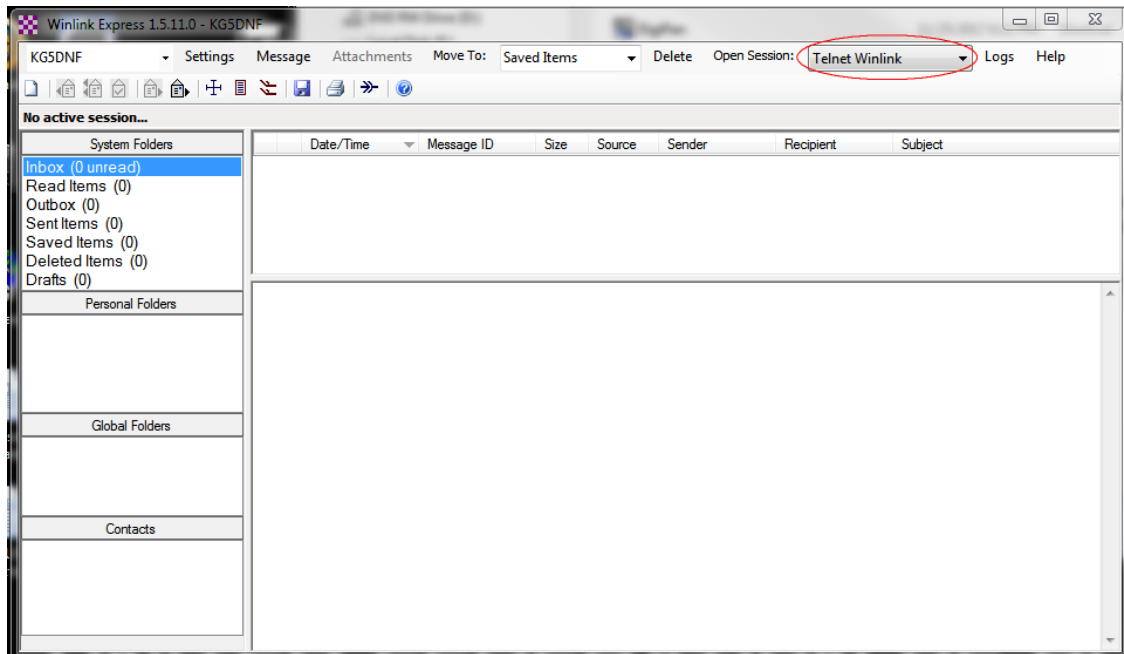
Finally, click "Update" to save the changes you made, then click "Close" to close this window.

If you prefer to have distances indicated in miles instead of kilometers, “click” on Settings > Preferences

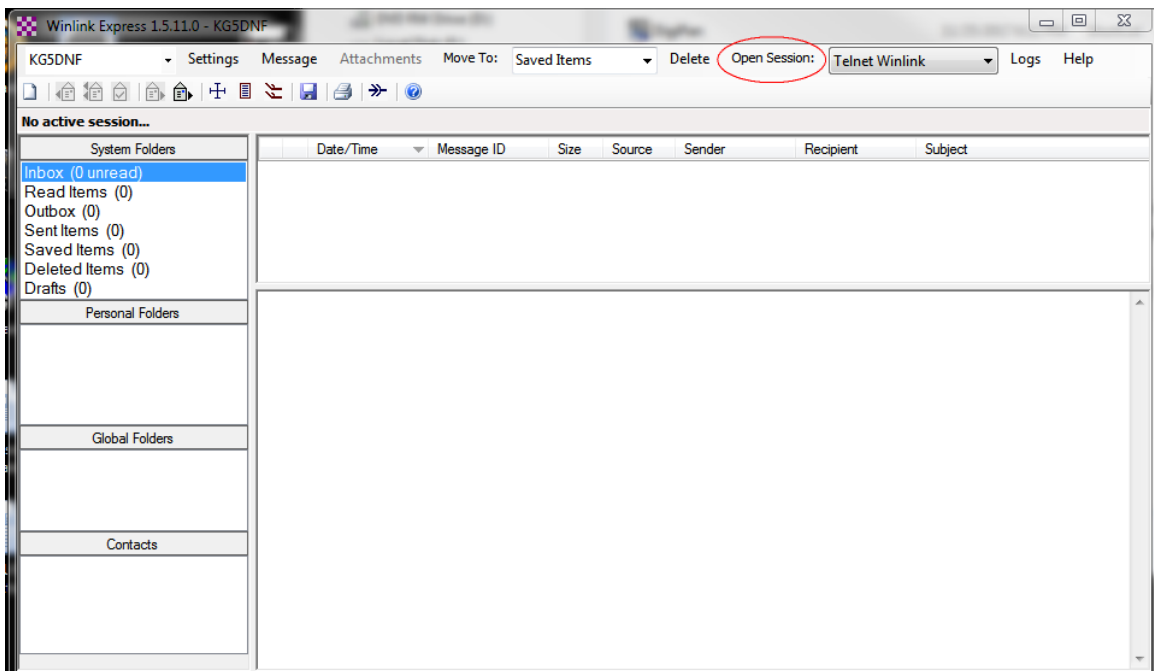
Near the bottom of the new window, you will see radio buttons for kilometers and miles. Click on the button next to miles, then click Update.



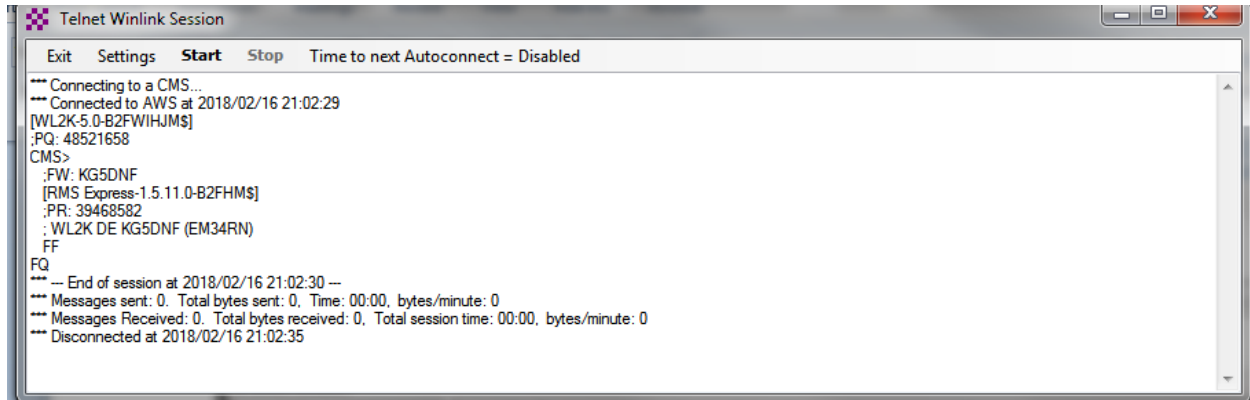
To verify the program was installed correctly (and to complete the installation),
On the pull-down menu near the top of the window, select “Telnet Winlink” from the options:



Then “click” on the “Open Session” text (it actually is a button).



On the window that opens up, press [Start] to begin the session
You will then connect to one of the RMS (Radio Message Servers) via your internet connection.



```

Telnet Winlink Session
Exit  Settings  Start  Stop  Time to next Autoconnect = Disabled
*** Connecting to a CMS...
*** Connected to AWS at 2018/02/16 21:02:29
[WL2K-5.0-B2FWIHJMS]
:PQ: 48521658
CMS>
;FW: KG5DNF
[RMS Express-1.5.11.0-B2FHMS]
:PR: 39468582
: WL2K DE KG5DNF (EM34RN)
FF
FQ
*** -- End of session at 2018/02/16 21:02:30 --
*** Messages sent: 0, Total bytes sent: 0, Time: 00:00, bytes/minute: 0
*** Messages Received: 0, Total bytes received: 0, Total session time: 00:00, bytes/minute: 0
*** Disconnected at 2018/02/16 21:02:35

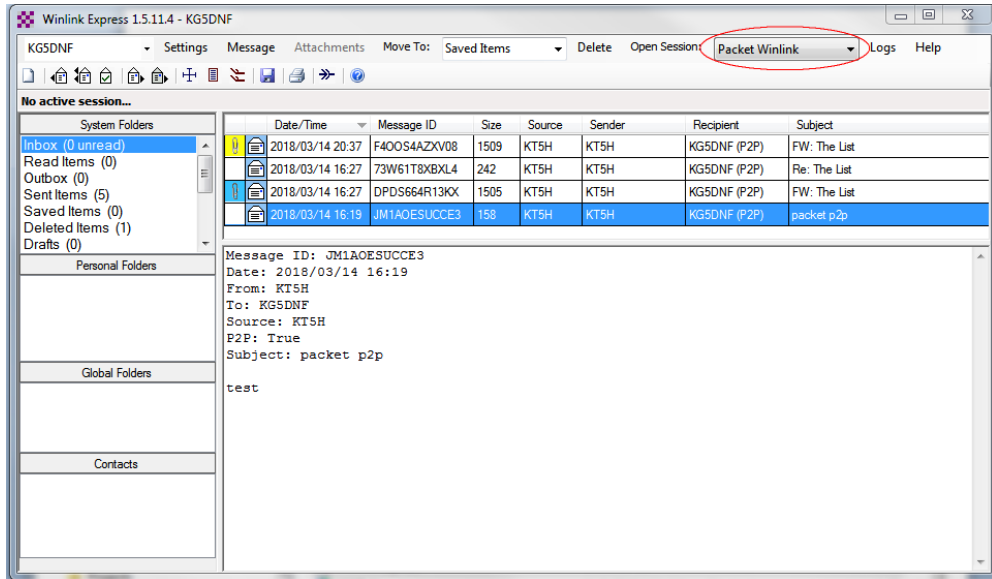
```

(NOTE: You may receive a pop-up notification that your password was changed)

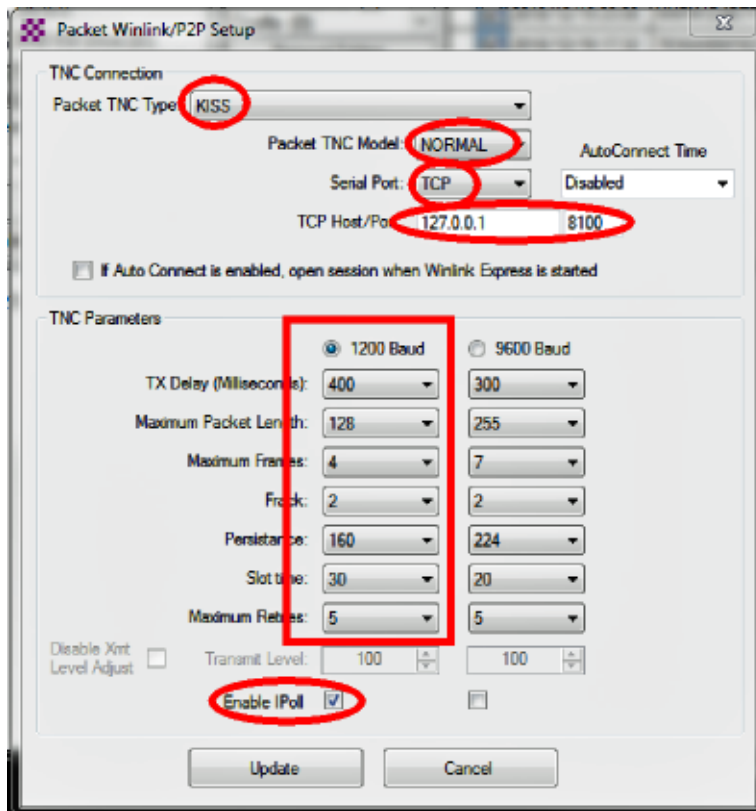
After Winlink completes its connection press either Exit or the Red "X" to exit the session. Your call sign (Winlink User Name) has now been registered!

Close this window (click the red "X").

Select "Packet Winlink" from the pull down mode menu, then click "Open Session"

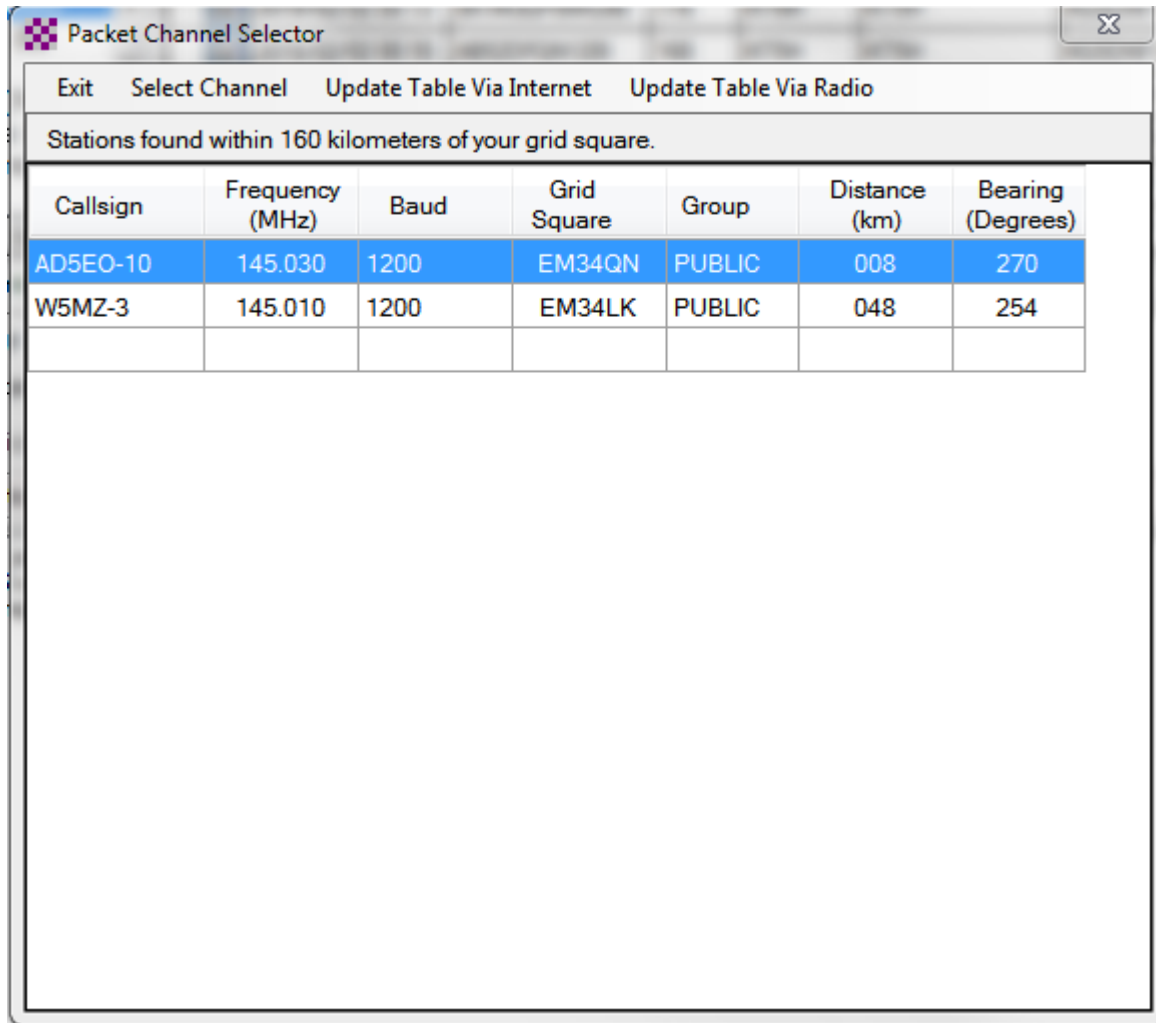


When the new window opens, click on "Settings". Adjust the settings to the following:



When finished, click "Update"

Select [Channel Selection].



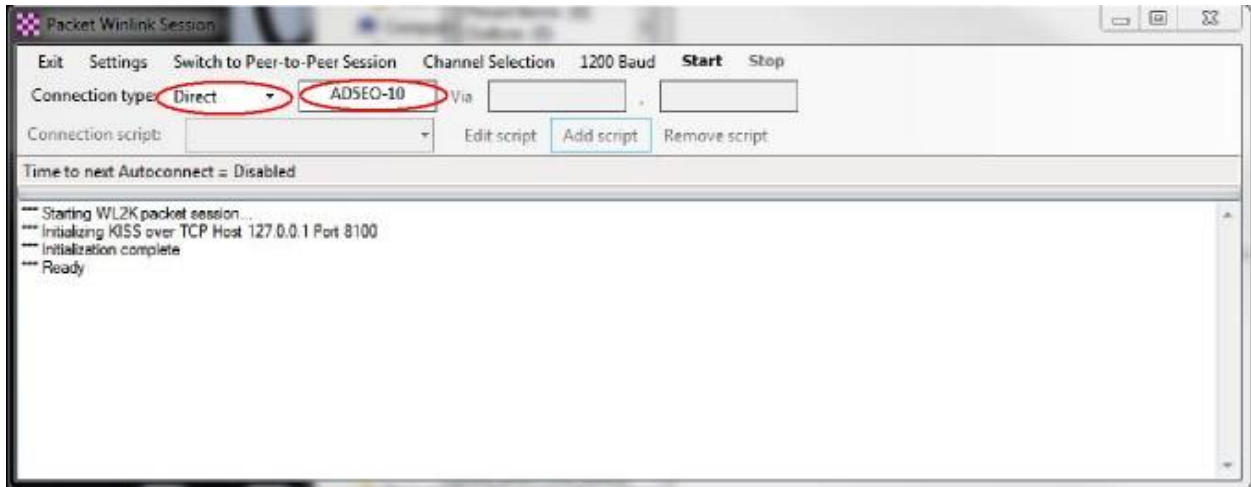
The screenshot shows a window titled "Packet Channel Selector" with a menu bar containing "Exit", "Select Channel", "Update Table Via Internet", and "Update Table Via Radio". Below the menu bar is a status bar that reads "Stations found within 160 kilometers of your grid square." The main area of the window contains a table with the following data:

Callsign	Frequency (MHz)	Baud	Grid Square	Group	Distance (km)	Bearing (Degrees)
AD5EO-10	145.030	1200	EM34QN	PUBLIC	008	270
W5MZ-3	145.010	1200	EM34LK	PUBLIC	048	254

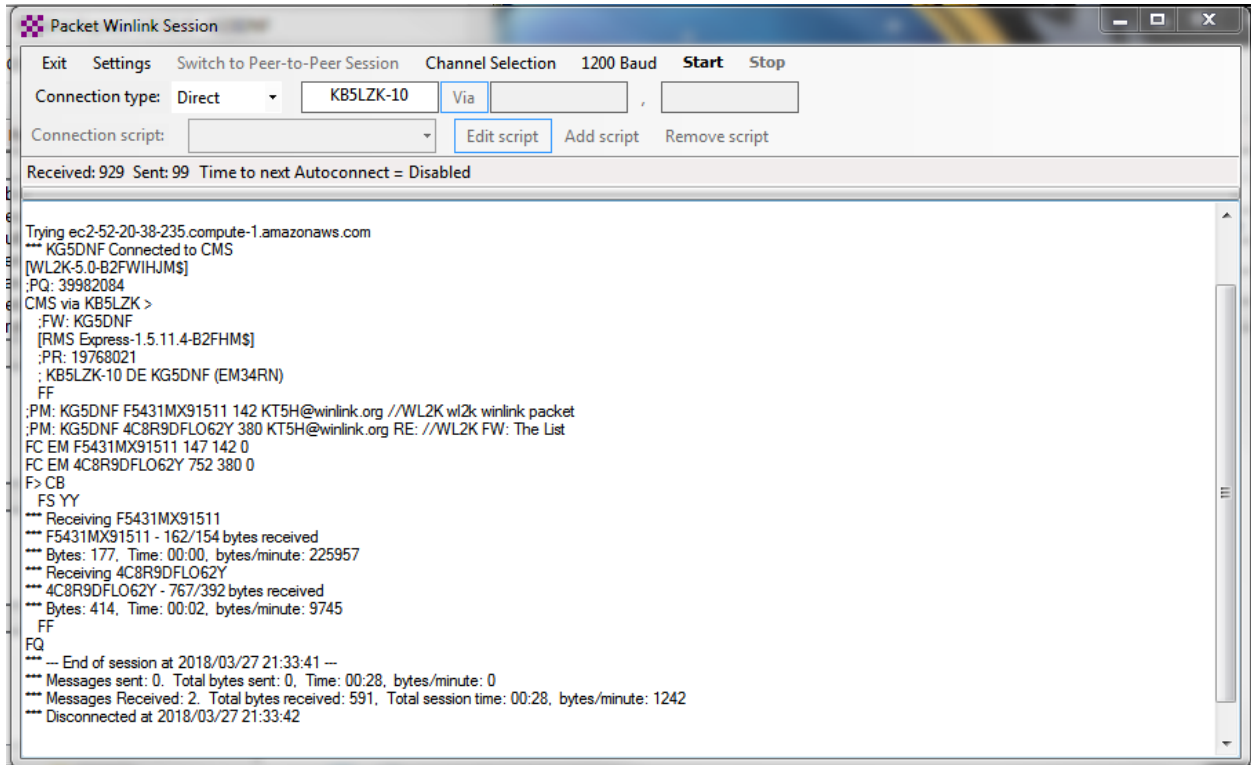
If this table is blank, select [Update Table via Internet]. Once the process is complete, this window should look similar to the one pictured.

Select [AD5EO-10] (double click) This is the RMS Packet Gateway located at the Saline County EOC in Benton, Arkansas.

Your screen should now look similar to this:



Ensure your FTM-500DR “SUB” channel is manually set to 145.030 MHz, you’re ready to click on “Start” to begin the session.

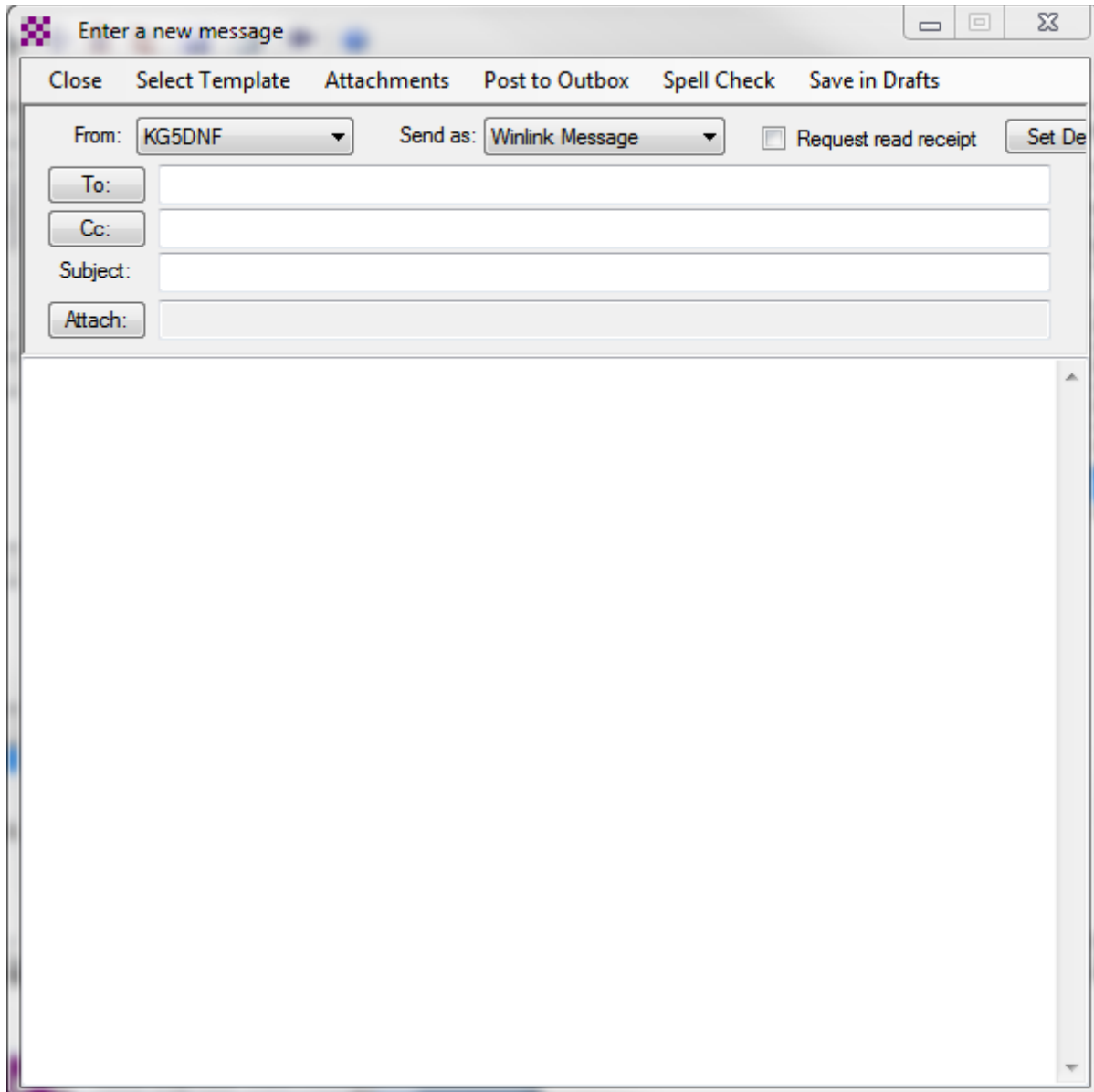


Note that in this particular “session” I received 2 messages. If you followed these instructions and had a successful session, you connected through the Packet RMS server at the Saline County EOC.

When you close down the programs, please remember to close soundmodem as well, or it may keep residing in a background window causing issues the next time you ‘start’ it.

Winlink Packet Message Composition

To send a message (either to a registered user of Winlink (using their call sign), or to a “standard” email address), in the Winlink Express Main Window, click on [Message] [New Message] a new window will open:



The screenshot shows a window titled "Enter a new message" with a menu bar containing "Close", "Select Template", "Attachments", "Post to Outbox", "Spell Check", and "Save in Drafts". The "From:" field is set to "KG5DNF". The "Send as:" dropdown is set to "Winlink Message". There is a checkbox for "Request read receipt" and a "Set De" button. Below these are fields for "To:", "Cc:", "Subject:", and "Attach:". A large text area for composing the message is at the bottom.

The call sign (for registered Winlink express users) or an email address will be entered into the [TO] section. The rest of the message should be filled out similarly to any other email client software. When you are finished composing your message, click the [Post To Outbox] button.

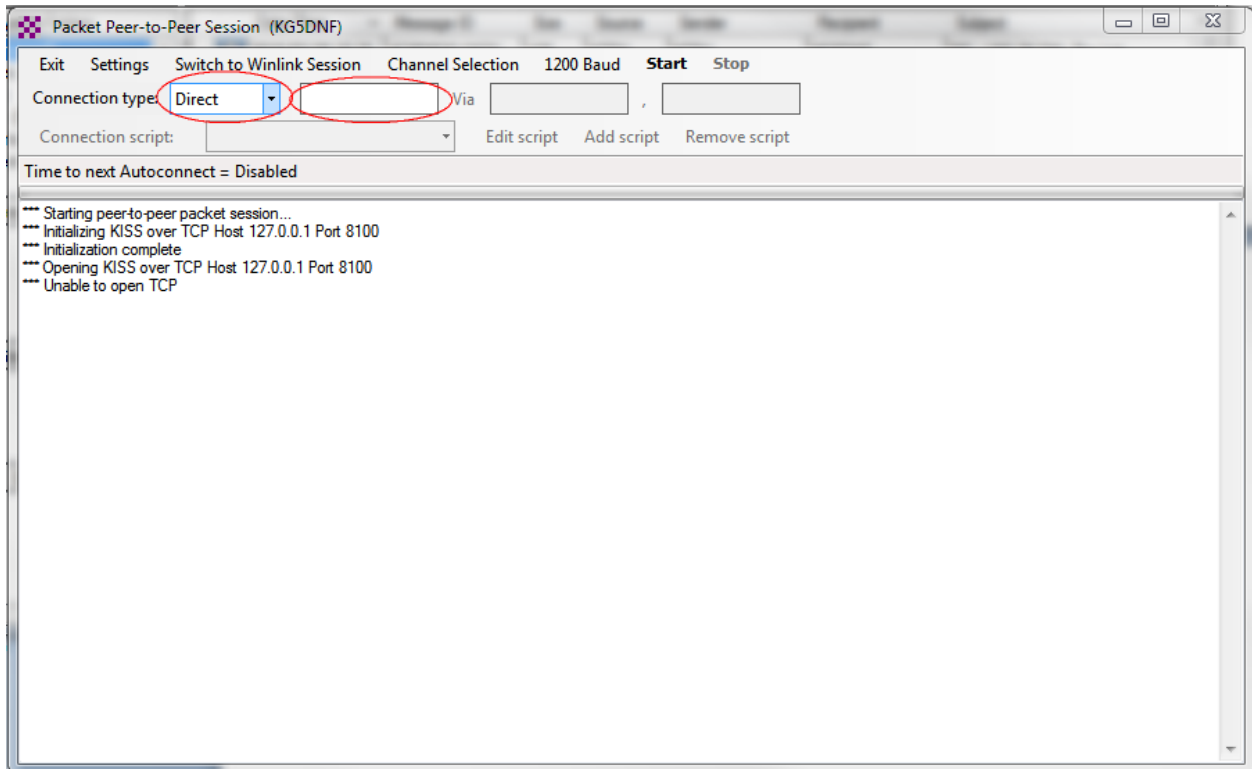
The next time you connect to an RMS Packet Gateway, your message will be sent.

Packet P2P

As previously mentioned, enter all the information for your outgoing message as required, select “Peer to Peer” as the message type, then post to outbox.

As with any packet operation, soundmodem must be running. If it is not, close all programs, start soundmodem, then restart Winlink Express.

Select “Packet P2P” in the session type, then click on the “Open Session” button.



Ensure “Direct” is selected as the connection type, then enter the call sign of the operator you wish to connect to.

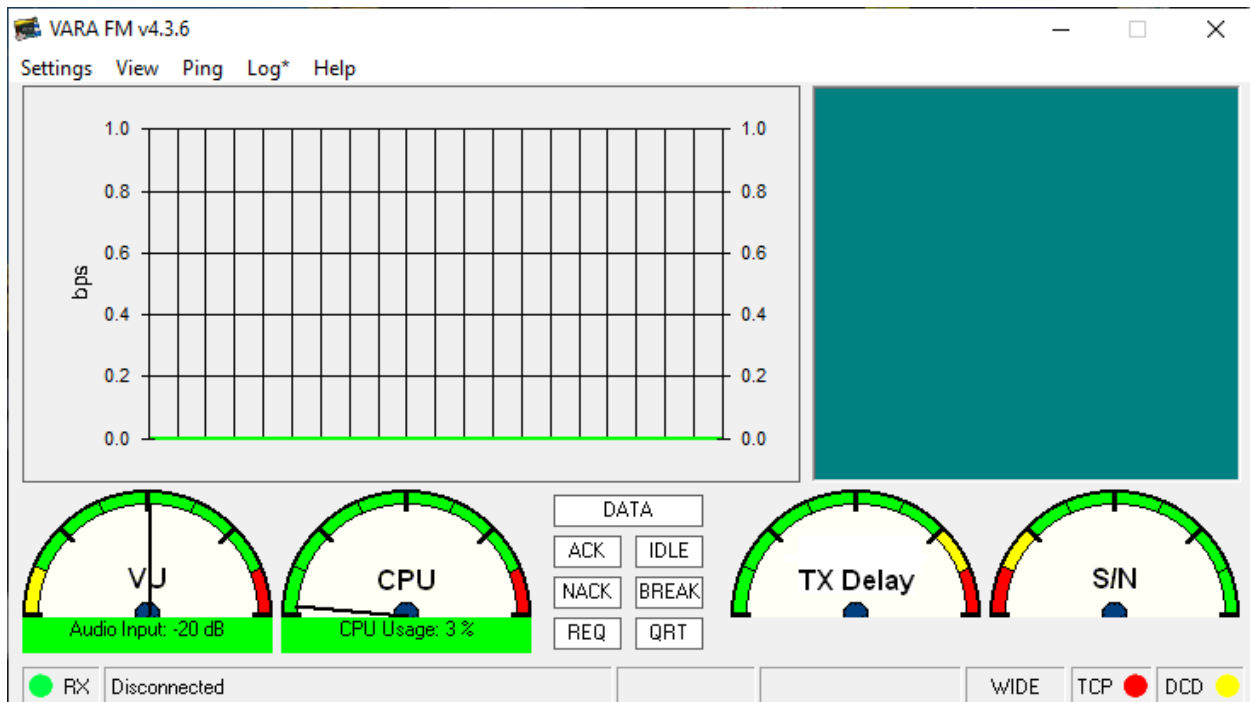
Tune your radio to the agreed upon frequency, (and ensure the intended recipient is also on frequency with Winlink Packet P2P running) then click “Start”. The software will then take over and transmit your message to the other operator. When the comm is complete, close the window and check your inbox for any received messages.

VARA FM setup

You will first have to download and install the Vara FM program which can be found here:

<https://winlink.org/tags/varafm>

Once the program is installed on your computer, it should open the program.



Click on [Settings] , then [Vara FM Setup]

VARA Setup 10.0.0.12

TCP Ports:
Command: 8300
Data: 8301
KISS: 8100

FM System: **NARROW**

Digipeater:

Retries: 2

Allow VARA check for updates
 KISS interface SysLog

VARA Licenses

Callsign	Registration Key
AA5FO	

Compatible with Signalink USB

SQL
DATA OUT 9600bps
GND
DATA
PTT
DATA IN
DATA OUT 1200bps

to PC input
from PC output

* VARA FM WIDE needs a FM rig set for 9600 Packet operation, with a special soundcard interface (6 kHz BW) connected to rear panel: RA-Board, Signalink "Black" transforms, Modified Signalink (red audio transforms removed), homebrew interface (a simple direct cable)...

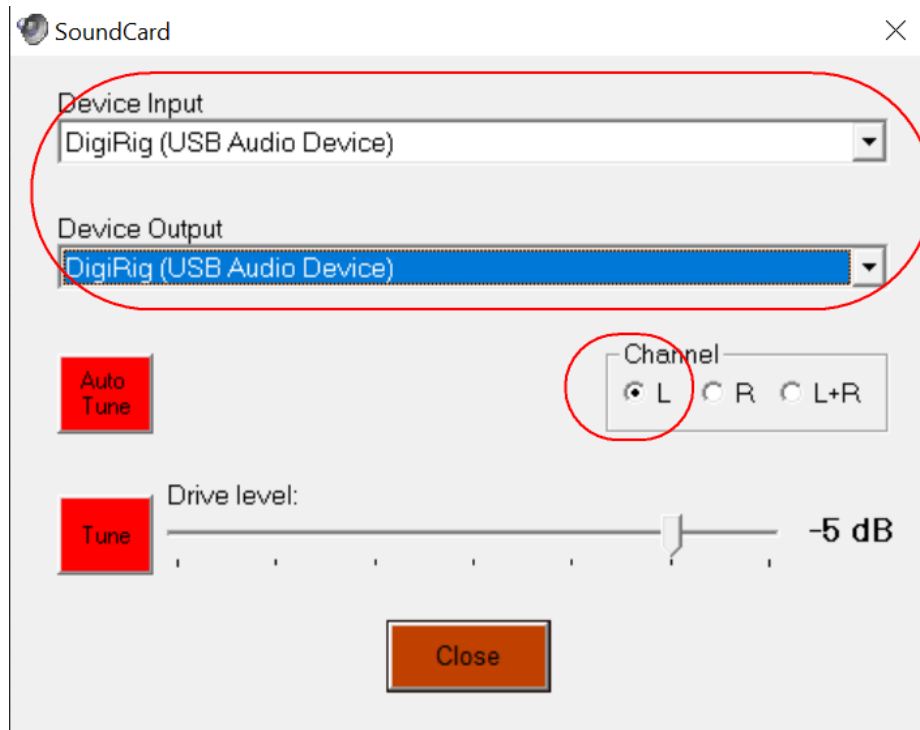
* In other case, you must select VARA FM NARROW

Close

At a minimum, you will need to enter your call sign (no SSID). If you have previously purchased a Vara HF Registration, the same registration key may be used to "unlock" the higher speed capabilities of Vara FM.

When finished, click the [Close] button.

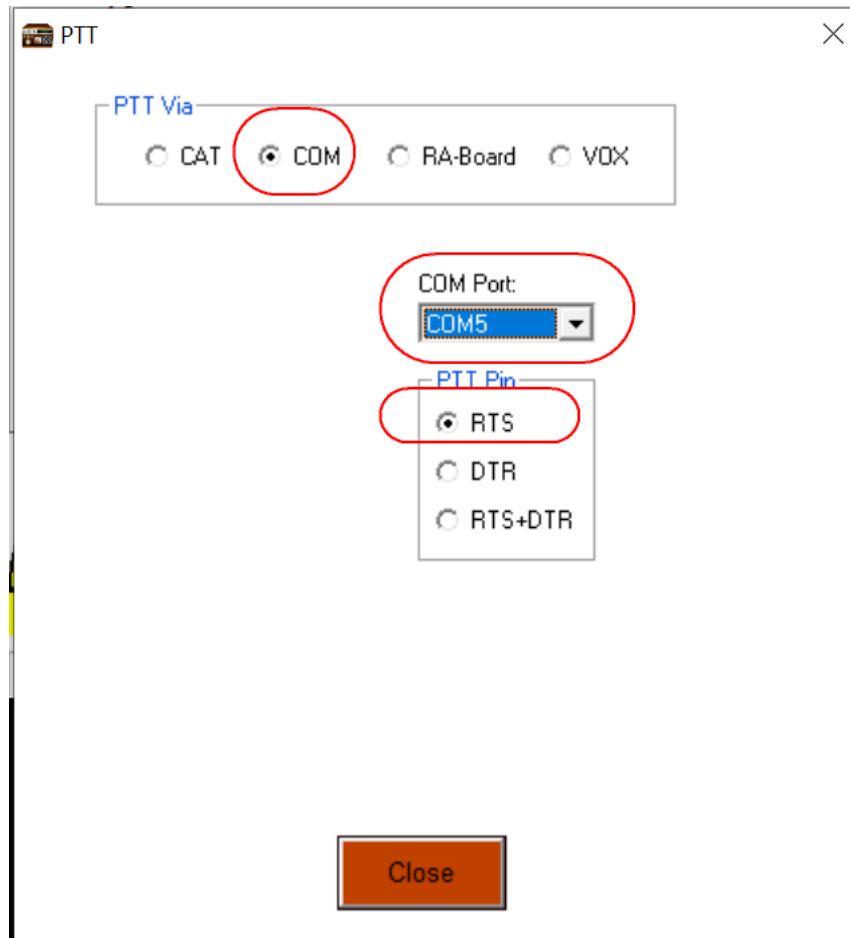
Next, click on [Settings], then [Soundcard Setup]



Select the USB Audio Codec that was assigned when you connected your soundcard interface (Signalink or DigiRig). As mentioned previously, I rename the Audio Codecs as they get assigned to aid in identification. Also, please ensure the channel selector is set to [L].

When finished, press the [Close] button.

Finally, click on [Settings], then [PTT Settings]



As mentioned previously, you identified the COM port that was assigned when you connected the soundcard interface (Signalink or DigiRig). Both these devices use the COM port number for PTT control. {Please remember, your COM Port number will most likely be different than mine.} When you have selected the correct settings, click on the [Close] button.

Now, please close the Vara FM Modem program.

Open Winlink Express

Winlink Express 1.7.13.5 - AA5FO

AA5FO Settings Message Attachments Move To: Saved Items Delete **Open Session:** Vara HF Winlink Logs

Help

No active session...

System Folders	Date/Time	Message ID	Size	Source	Sender	Recipient
Inbox (0 unread)	2024/03/20 08:15	3V6U1WZ34580	388	KA5GOQ	KA5GOQ	AA5FO
Read Items (0)	2024/03/19 20:35	CG4NWXZGOEKA	309	KA5GOQ	KA5GOQ	AA5FO
Outbox (0)	2024/03/19 20:34	EELRHLTEHTS1	315	KA5GOQ	KA5GOQ	AA5FO
Sent Items (14)	2024/03/19 07:39	J9RQC90VRA5T	219	KA5GOQ	KA5GOQ	AA5FO
Saved Items (0)	2024/03/18 15:00	F2A8FO1KTV1U	20502	KA5GOQ	KA5GOQ	AA5FO
Deleted Items (10)	2024/03/18 13:46	9QMKNK7Y8JRFI	3486	KA5GOQ	KA5GOQ	AA5FO...
Drafts (0)	Message ID: V8TH2QCZBEXU Date: 2024/03/17 07:19 (UTC) From: KA5GOQ To: AA5FO Cc: AA5AD Source: KA5GOQ Downloaded-from: RMS:AD5EO-10 Subject: sitrep, 202403170230L situation nominal, no utility outages					

Personal Folders

Global Folders

Open Session dropdown menu items:

- Vara HF Winlink
- Telnet Winlink
- Packet Winlink
- Pactor Winlink
- Robust Packet Winlink
- Ardop Winlink
- Vara HF Winlink
- Vara FM Winlink
- Iridium GO Winlink
-
- Packet P2P
- Pactor P2P
- Robust Packet P2P
- Ardop P2P
- Vara HF P2P
- Vara FM P2P
- Telnet P2P
-
- Pactor Radio-only
- Vara HF Radio-only
- Vara FM Radio-only
- Telnet Radio-only
-
- Telnet Post Office

Click on the session selection drop down list and select [Vara FM Winlink], then click on [Open Session].

Vara FM Winlink Session - AA5FO

Exit Settings Channel Selection **Start** Stop Abort

Connection: Direct via KB5LZK , Freq.: 145.770 Range: Bearing: 039

Favorites: Select Add to favorites Remove from favorites

In: 0/0 Out: 0/0 BPM: 0/0 Disconnected Time to next Autoconnect = Disabled

```

*** Launching VARA FM TNC: C:\VARA FM\VaraFM.exe
*** Successfully connected to VARA FM TNC at 127.0.0.1 port 8300
*** Ready
*** This is a registered version of Vara TNC that can operate at full speed.
  
```

Click on [Settings] then click on [Vara TNC Setup]

Vara FM Setup

Virtual TNC host address/name: 127.0.0.1

Virtual TNC Command Port: 8300 Data Port: 8301

VARA FM Modem location: C:\VARA FM\VaraFM.exe

Automatically launch Vara FM TNC when session is opened

Show Vara FM TNC screen when it's launched

Automatic Calling

Autoconnect time: Disabled

Automatically call when there are pending outgoing messages

Update Cancel

Most of the settings will not need to be changed, but please check the box for [Show Vara FM TNC Screen when it is launched]. When done checking the settings, click on [Update] then [Close].

The last step is to click on [Channel Selection] in the main session window.

Callsign	Frequency (MHz)	Channel Width	Grid Square	Group	Distance (km)	Bearing (Degrees)
KB5LZK	145.770	Wide	EM34UT	PUBLIC	036	039
W5TCB-15	145.010	Wide	EM34MN	PUBLIC	038	270
N5EWC	145.770	Wide	EM35JM	PUBLIC	123	330
N0UCK	145.090	Narrow	EM36VE	PUBLIC	184	009
N9SEO-10	145.050	Wide	EM36TG	PUBLIC	191	004
W5VG	145.050	Narrow	EM32PU	PUBLIC	191	185
NA0D-10	145.050	Wide	EM25WU	PUBLIC	203	315
W5HB-10	145.050	Narrow	EM25VU	PUBLIC	209	314
KD5BS-10	145.615	Wide	EM54BW	PUBLIC	246	079
K4SPB-10	144.990	Narrow	EM55CD	PUBLIC	259	075
WB5L-10	145.050	Narrow	EM26TK	PUBLIC	267	322
AE5ME-14	145.030	Narrow	EM25IT	PUBLIC	286	300

Click on [Update Table via Internet] to propagate the list with the closest stations to your location. When the list has finished updating, double click on the station you would like to connect to and it will set the call sign into the Vara FM program. NOTE: Vara FM does not support CAT control of your rig. You will have to manually tune your transceiver to the frequency indicated for the station you chose.

Vara FM is now set up and ready to use.

FLDIGI/FLARQ Installation

Download fldigi files from: <https://sourceforge.net/projects/fldigi/files/> (fldigi-#### setup.exe). Save to your desktop, then move to a convenient location. While you are at sourceforge, also download FLMSG (save to your desktop, then move to a convenient location.)

Name	Modified	Size	Downloads / Week
fldamp	2019-01-31		388
flrig	2019-01-31		443
flmsg	2019-01-31		2,179
fldigi	2019-01-29		1,786
alpha tests	2019-01-19		

Double click on the FLDIGI setup file. Once the program opens, click on “Configure -> UI -> Operator”

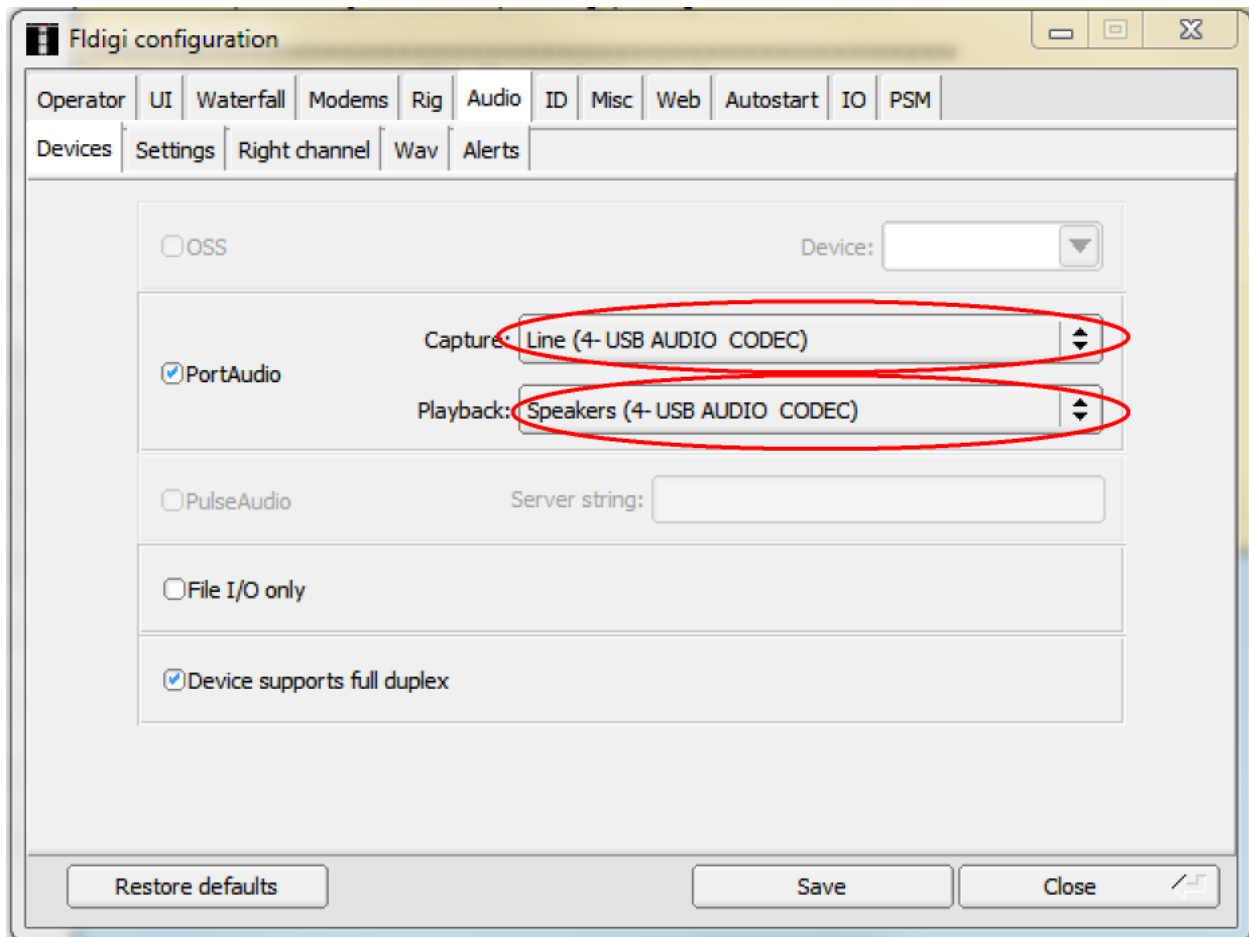
The screenshot shows the 'Fldigi configuration' window with the 'Operator' tab selected. The 'Station / Operator' section contains the following fields:

- Station Callsign:
- Station QTH:
- Station Locator:
- Operator Callsign:
- Operator Name:
- Antenna:

Buttons at the bottom include 'Restore defaults', 'Save', and 'Close'.

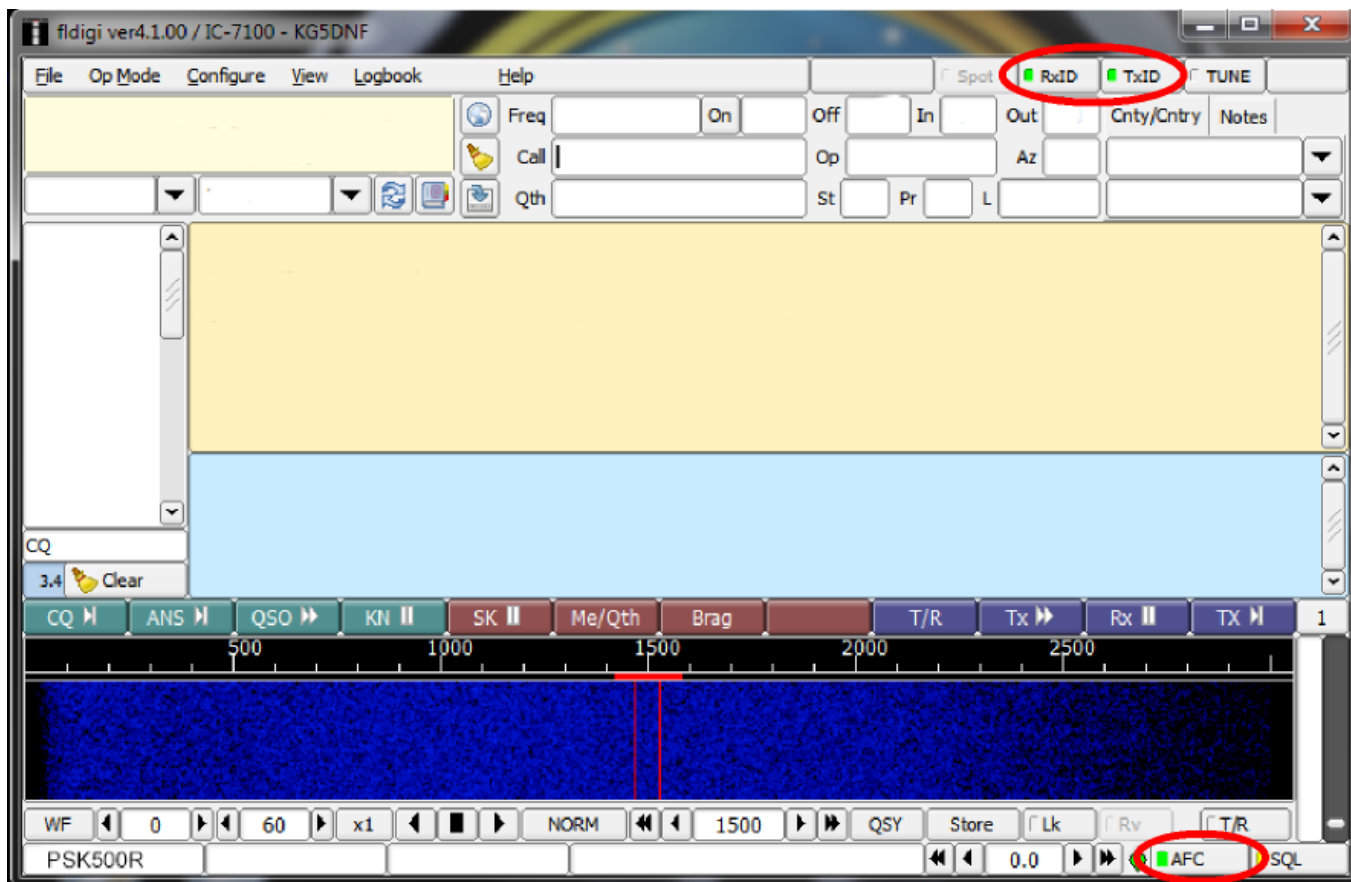
Fill in the indicated areas, Station QTH is the name of your city and State, Station Locator is your maidenhead grid location. Once completed, click “Save”

Next, click on the Audio Tab.



Select the appropriate entry associated with the USB Audio CODEC listed on your computer. (The number will probably be different on your computer.) Once completed, click “Save”, then click “Close”.

FLDIGI is now configured to work with your Yaesu radio through your Signalink USB soundcard/DigiRig on the FTM-500DR!



Please ensure that both RxID and TxID are checked to allow for automatic mode switching.
 If using HF or 6 meters, ONLY Upper Side Band is used (6 meter FM can also be used).

NOTE: you will see a red rectangle on your waterfall. This is the center frequency for the passband. It is easy to change by clicking with your mouse (or tapping with your finger), but changing this location will make the difference between being able to decode incoming transmissions/messages and not (conversely, transmitting with the center of the passband changed will make it difficult for other stations to decode your transmission.) The small Lock [Lk] button will lock your center frequency in place.

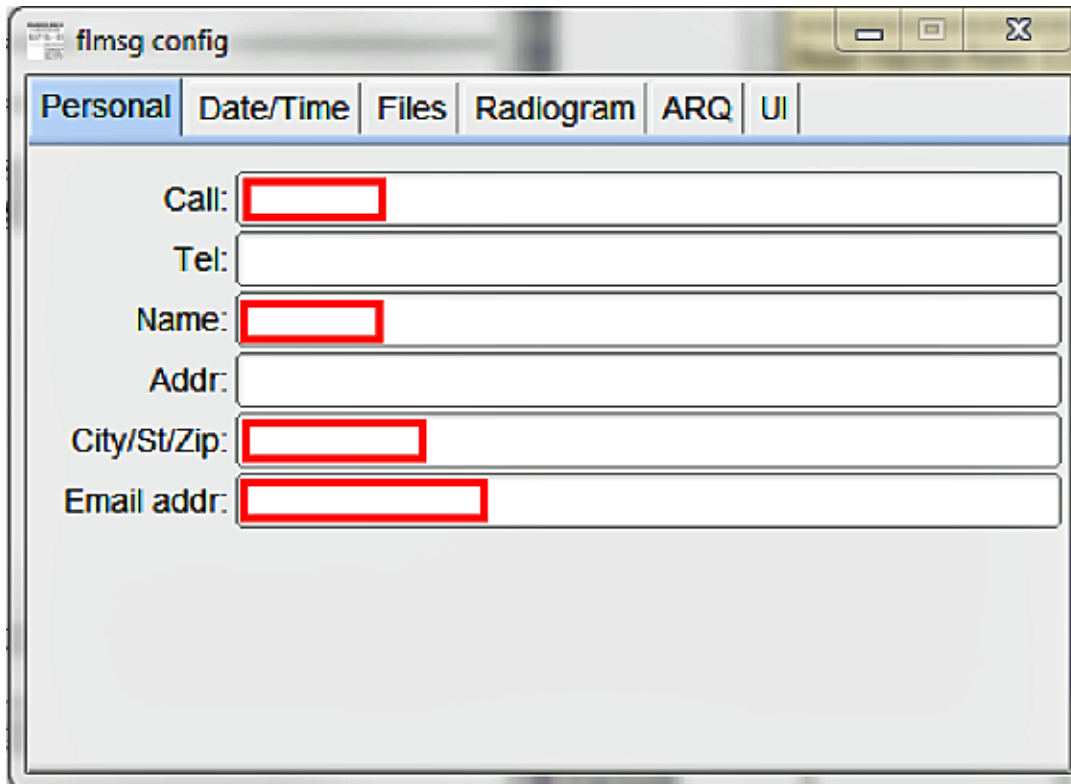
Once you have either typed a message or pasted text into the blue window for transmitting, then press the indicated transmit [Tx] button.

Receiving is simple – watch the yellow part of the screen.

FLMSG Installation

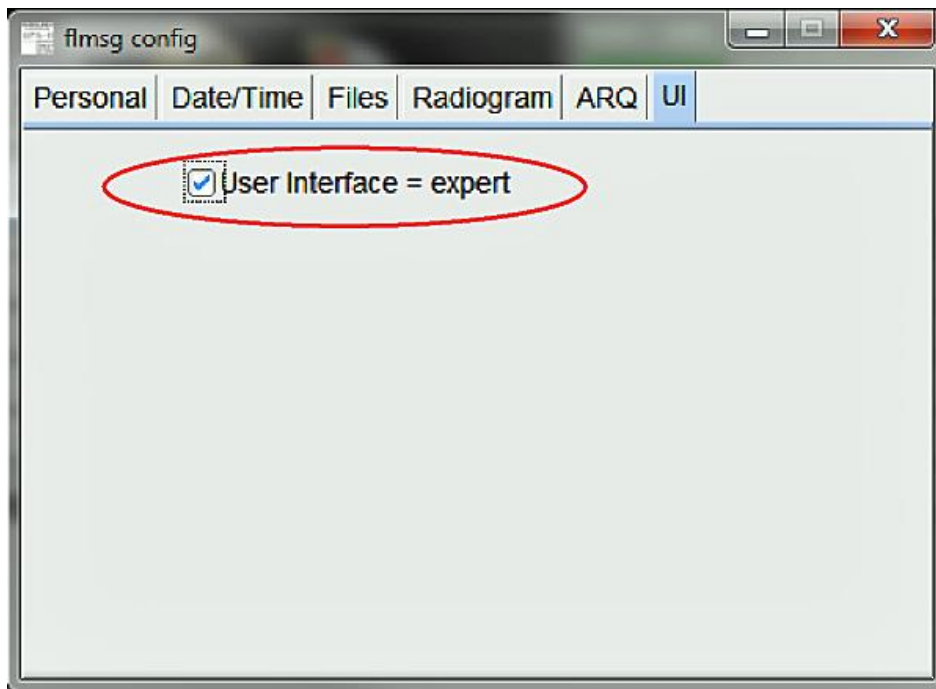
Maneuver your way to where you downloaded FLMSGsetup.exe and execute the set up file following the routine installation suggestions. This will place a FLMSG shortcut icon on your desktop.

When you open FLMSG very little configuring will need to be done,



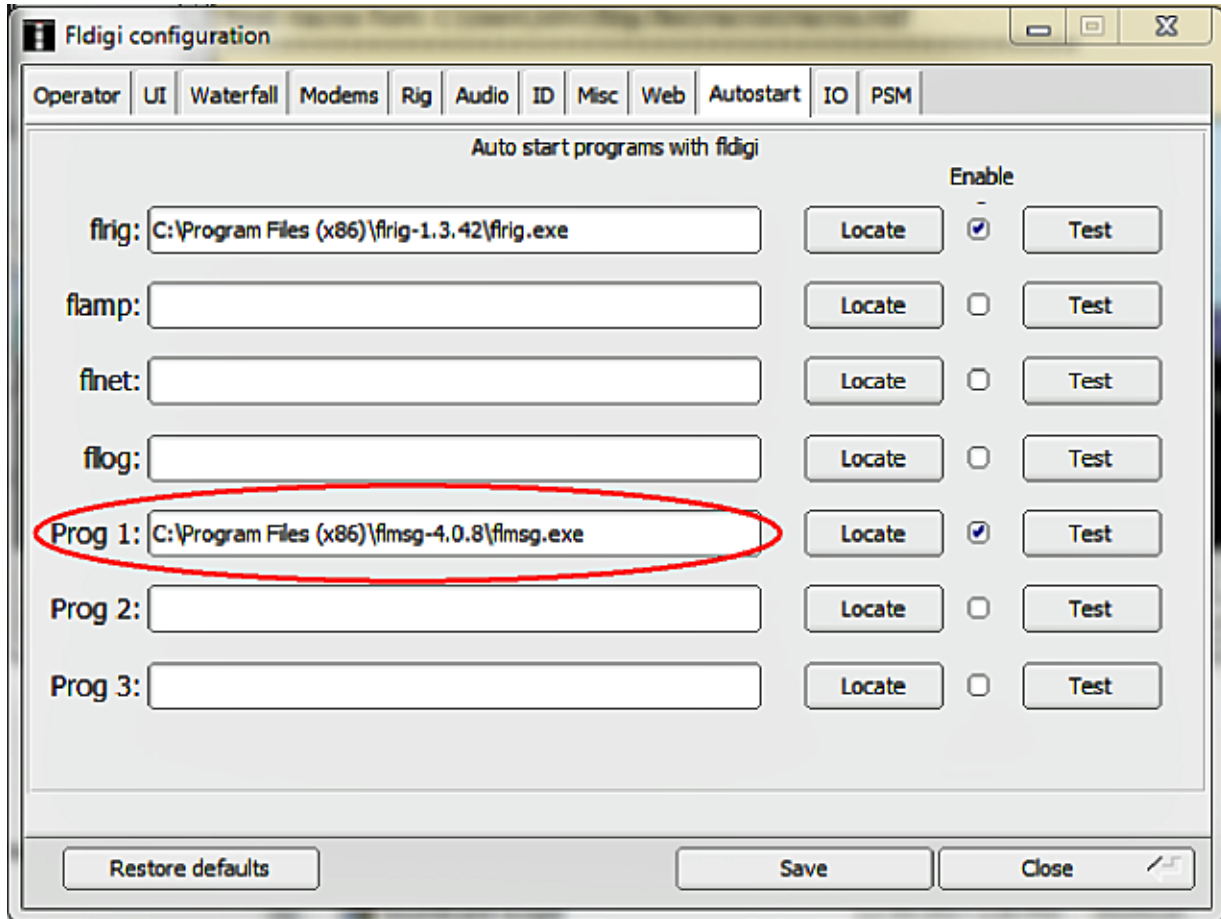
The image shows a screenshot of the 'flmsg config' window. The window has a title bar with the text 'flmsg config' and standard window control buttons (minimize, maximize, close). Below the title bar is a tabbed interface with six tabs: 'Personal', 'Date/Time', 'Files', 'Radiogram', 'ARQ', and 'UI'. The 'Personal' tab is currently selected. The 'Personal' tab contains six input fields, each with a label to its left: 'Call:', 'Tel:', 'Name:', 'Addr:', 'City/St/Zip:', and 'Email addr:'. The input fields for 'Call:', 'Name:', 'City/St/Zip:', and 'Email addr:' are highlighted with red rectangular boxes, indicating they are the focus of the current step in the installation process.

After you enter your information in the personal tab, click on the [UI] tab.



Ensure the box [User Interface = expert] is checked to ensure you have full capability with the forms function.

FLMSG can be included to auto-start when FLDIGI is opened. To do so, click on [Configure] [UI] [Operator] [Autostart].



In the "Prog 1:" section, click on the [Locate] button and browse your way to c:\Program Files (x86)\flmsg x.x.x (x.x.x is the most current version number)\flmsg.exe and click [Open]. The blank field next to Prog 1 should now contain the proper path to the location of the flmsg.exe file. Please remember to click the [enable] box so starting with the next time you open fldigi, all your associated programs will start automatically.