



WinLink Express - VARA Installation & Setup (Section 3 of 4)

Outer Banks Repeater Association
Malcolm Green – KY4RY



September 2024

KY4RY



WinLink Express - Overview

Winlink Express, also known as Winlink 2000 or simply Winlink, is a globally recognized amateur radio system that facilitates the transmission and exchange of email over HF. The system is highly valued by amateur radio operators, emergency communicators, mariners, and remote expeditions for its ability to provide critical communication in areas without internet or cellular connectivity.

Its ability to send emails over HF, coupled with internet integration, makes it an invaluable resource for maintaining communication in remote and disaster impacted challenging environments.





Key Features of Winlink Express

Email Over Radio:

- **Communication Modes:** Winlink Express supports email transmission using various radio modes, including HF (High Frequency), VHF (Very High Frequency), UHF (Ultra High Frequency), and the Internet.
- **Radio Protocols:** It supports multiple digital protocols such as PACTOR, VARA, ARDOP, WINMOR, and AX.25 Packet for sending emails over radio waves. Each protocol varies in terms of speed, reliability, and required equipment. For our requirements in the OBX we recommend VARA HF.

Internet Integration:

- **Hybrid Network:** Winlink Express can operate as a hybrid system, using both radio and internet paths to ensure messages are delivered even when parts of the network are unavailable.
- **SMTP/POP3:** Supports standard email protocols, allowing it to send and receive emails like conventional email systems when connected to the internet.





Key Features of Winlink Express (2)

Emergency Communication:

- **Disaster Relief:** Widely used by emergency services for disaster relief operations, Winlink Express provides a reliable means of communication when traditional infrastructure fails.
- **Forms and Templates:** Includes pre-built templates for sending structured messages like ICS (Incident Command System) forms, which are crucial for emergency communication.

File Attachments:

- **Attachments:** Users can send small file attachments, including text documents, spreadsheets, images, and more, subject to size limitations that vary with the radio protocol used.

Remote Access and Messaging:

- **Remote Message Pickup:** Operators can retrieve emails from anywhere in the world using radio connections, making it a flexible tool for global communication.





Key Features of Winlink Express (3)

Remote Access and Messaging:

- **Remote Message Pickup:** Operators can retrieve emails from anywhere in the world using radio connections, making it a flexible tool for global communication.
- **Peer-to-Peer:** Supports direct peer-to-peer connections for sending messages between two users without the need for an intermediary station.

Protocols Supported by Winlink Express

- Winlink Express supports a variety of digital communication protocols, each with its own advantages: for OBRA we have selected VARA for its performance, reliability and low cost.
- **VARA:**
 - **Overview:** A newer, high-speed protocol known for its efficiency and ease of use. It provides fast data rates over HF.
 - **Software Modem:** Operates using a sound card interface, eliminating the need for dedicated hardware.





Goals and Objective

- At the end of working through this Guide, you will have Installed and Setup Winlink and VARA HF TNC :
 - Check key component settings
 - Verified correct CAT communication between Radio of choice and PC via USB cable
 - Setup and verified Winlink Express Application
 - Setup and verified VARA HF TNC
 - Set correct ALC level for good operation.



Installing Winlink Express



Go to www.winlink.org.
Select Download drop down menu. You will be presented with following Screen

Winlink Accounts...

...are created with a client program. *You can not create one here.*

We require

- A valid amateur radio license, or
- a license or authorization from a participating government service or agency.

GMRS, LMR, ship station, other marine or general radiotelephone licenses *DO NOT* qualify.

How To Get an Account

- Download, install and configure any [client software](#). We suggest [Winlink Express](#). After you install, study the program's help about configuration and use.

If using Winlink Express:

My Account

Username (Callsign) *

Enter your Winlink Global Radio Email username.

Password *

Enter the password that accompanies your username.

Password Assignments & Recovery

Forgot your Winlink password?

We will send it to your account password recovery address, or your @winlink.org address if you have not supplied one.
NOTE: Password recovery works only for CALL SIGN ACCOUNTS and not for tactical address accounts.
Contact an administrator for assistance with tactical addresses.

Callsign (Username) *

downloads.winlink.org - /

6/7/2024	3:15 PM	<dir> Sysop Programs
7/15/2024	1:05 PM	<dir> User Programs
5/4/2024	1:03 PM	<dir> VARA Products

Select User Programs





Select Download File

downloads.winlink.org - /User Programs/

[\[To Parent Directory\]](#)

6/3/2023	6:34 PM	1846835	Paclink_install_4-3-11-0.zip
6/3/2023	6:34 PM	1101	README_Software_Install_Instructions.txt
6/3/2023	6:33 PM	847697	RMS_Link_Test_install_2-0-24-0.zip
6/3/2023	6:34 PM	12176	SCS_PTC-IIusb and end of PTC-IIusb IIpro IIex.pdf
7/11/2024	1:09 PM	2269252	Standard_Forms.zip
7/15/2024	1:05 PM	40085446	Winlink_Express_install_1-7-17-0.zip

1

Click on WinLink Express Install file Version maybe later when you do this.

2

Note this is a native Windows exe file so you need to install on a Windows PC running Window 7 or later. XP will not work

3

File will commence download to PC once link is clicked.

4

File will commence download to PC once link is clicked. Locate downloaded file and double click too launch

NOTE

You will most likely be presented with "Windows Protected your PC Message. Application may put your PC at Risk. Ignore App is safe, Click More Info and Run Anyway





Account Setup

Having Installed WinLink Express & Opening Application you will be presented with the initialization screen – account setup.

The screenshot shows the WinLink Express Properties dialog box. Several fields are highlighted with orange boxes: 'My Callsign', 'My Password', 'Password recovery e-mail', 'My Grid Square', and 'Lat/Lon to Grid Square'. A red arrow points from the 'Update' button at the bottom to the text in the right-hand callout box.

Go ahead and fill out the required fields, I have identified the minimum data necessary, but I personally fill out the entire form. Once Complete click Update button.

System will auto load your data and then launch the Home Screen – see next slide.



Installation Of VARA TNC Application

<https://rosmodem.wordpress.com/>



Download VARA HF from the link above – the screen to the left will be presented. Download the ‘VARA HF’ file Install on your PC that WinLink is already installed. Follow the normal Windows install procedure.

VARA Modem
10 January, 2011

- [VARA HF v4.8.7 \(High Performance HF Modem\)](#)
- [VARA FM v4.3.7 \(VARA for FM transceivers\)](#)
- [VARA SAT v4.4.3 \(VARA for QO-100 geostationary SAT\)](#)
- [VARA Chat v1.4.1 \(Easy Text and File transfer chat\)](#)
- [VARA Terminal v1.2.2 \(VARA dumb terminal for BBS's\)](#)

Email: nietoros@hotmail.com

[Terms of use](#)

Recent Posts

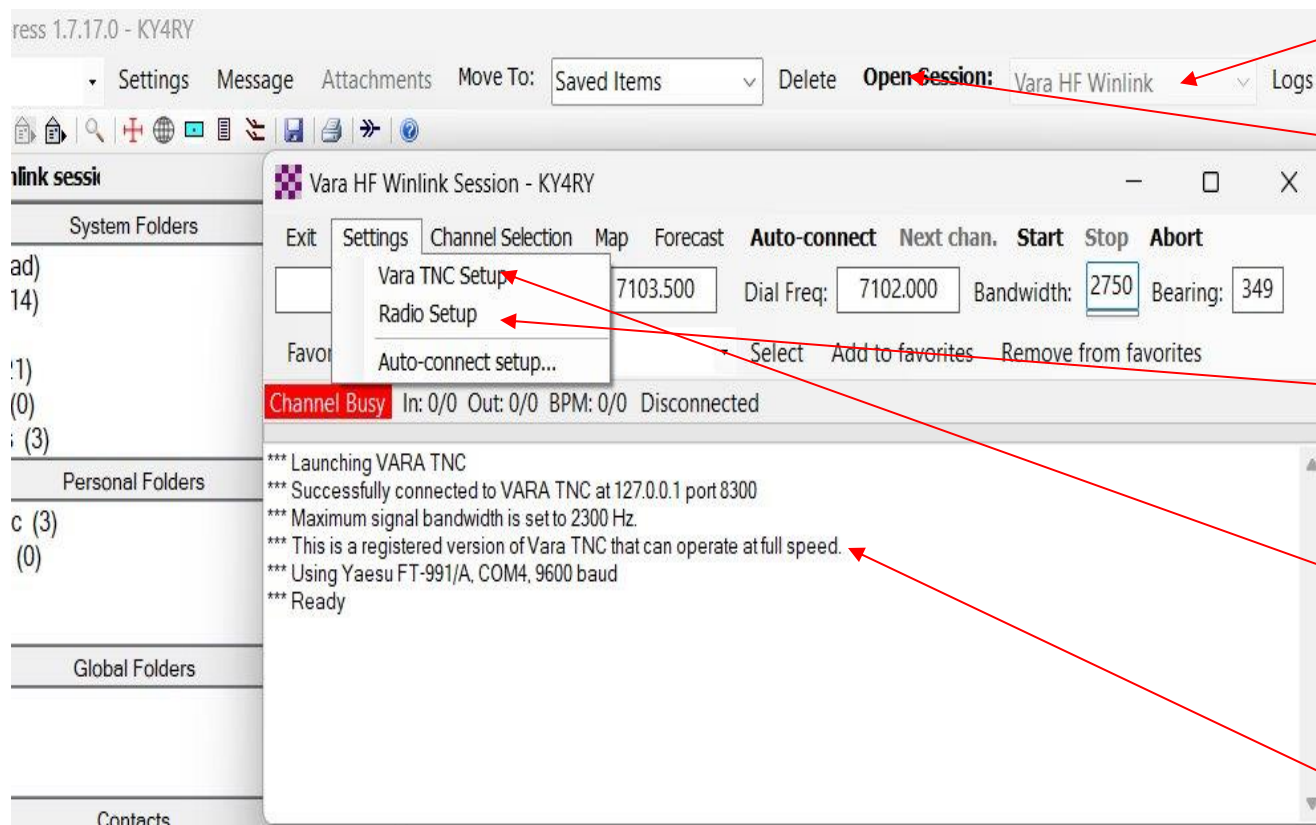
- » VARA HF Modem
- » New ROS v7.4.0
- » (no title)
- » ROS WEEKEND HF AWARD 2016
- » 1 ST 27Mhz ROS WEEKEND AWARD

Recent Comments

- DA5UDI VARA-Update... on VARA HF Modem
- José Alberto Nieto R... on New ROS v7.4.0

For us Tech Nerds, the install will install the application in the C:/ root in a File Named VARA, within the folder you will find the VARA>EXE file and you can create desktop shortcut if you want.

Settings For WinLink & VARA HF



1 Ensure Vara HF is selected from Drop Down

2 Click Open Session Drop Down Menu

3 Click Settings Radio Setup and complete next screen. When complete return and select VARA TNC Setup and complete following screen

4 Select VARA TNC Setup

NOTE: This is a Licensed Copy of VARA therefore unrestricted use. Strongly recommended you purchase license \$69

RADIO Settings

Having Clicked Radio Settings as shown on Slide 11 you should see this screen

Select your radio of choice – this will auto select the correct address of your Radio to communicate correctly

Select USB, some references state USB Digital so you may need to experiment.

Click use Internal Soundcard. Enable RTS and DTR

Check PC Device Manager for the correct Com Port the PC is Connect to it should be the “Enhanced Port and select from Pull Down Menu. See Slide 26. (ERROR SLIDE)

Select the Baud Rate to use – this should be the highest possible and match the rate set on the radio of choice.



VARA HF Settings

Launch VARA HF and Click Settings – VARA Setup – See next Screen

The screenshot shows the VARA HF v4.8.7 software interface. The title bar reads 'VARA HF v4.8.7 KY4RY'. The menu bar includes 'Settings', 'View', 'Log*', 'Monitor', and 'Help'. The 'Settings' menu is open, showing 'VARA Setup...', 'SoundCard...', and 'Waterfall'. A red arrow points from the 'VARA Setup...' option to the text box on the right. The main window contains a large teal area on the right and a grid on the left with a vertical axis labeled 'bps' ranging from 0.0 to 1.0. Below the grid are four gauges: 'VU' (Audio Input -11 dB), 'CPU' (CPU Usage 7%), 'AFC', and 'S/N'. A central control panel has buttons for 'DATA', 'ACK', 'IDLE', 'NACK', 'BREAK', 'REQ', and 'QRT'. At the bottom, there is a status bar with 'RX Disconnected', '2300', 'LISTEN', 'TCP', and 'DCD' indicators.



VARA Settings

The screenshot shows the VARA HF v4.8.7 software interface with the VARA Setup dialog box open. The dialog box has the following sections:

- TCP Ports:** Command: 8300, Data: 8301, KISS: 8100
- VARA Licenses:** Four rows of Callsign and Registration Key fields. The first row has Callsign: KY4RY and Registration Key: *****.
- Checkboxes:**
 - Allow VARA check for updates via internet
 - Accept 500 Hz connections
 - Tuner enhancement
 - KISS Interface Ignore KISS DCD
 - CWID
 - RA-Board PTT SysLog
- Retries:** 15
- Close** button

If you installed the vendor USB driver as previously discussed and connected Radio to PC then these setting should should auto fill.

TCP Ports should default to 8300 and 8301

Registration Key if purchased – highly recommend you purchase license cost = \$69

Multiple Calls supported.

Sound Card Setting – Important!

**** IMPORTANT **** *The DT Gain defaults to 50! This will overdrive the radio modulator which will cause unwanted audio harmonics.*

First check the correct CODEC is selected for your radio/PC

As shown on Slide 12 'VARA Settings click Sound Card and this screen will display

Click 'Tone' which will send tone to the radio and adjust Radio gain until ALC shows about one third (1/3). On the FT991A adjust DT Gain to achieve correct ALC. On 7300 adjust Power Level and Mib=c Gain to achieve same 1/3 ALC.

**** Remember to turn Tone Off ****



WinLink EXPRESS OPERATING ESSENTIALS (Section 4 of 4)

Outer Banks Repeater Association
Malcolm Green – KY4RY

September 2024



[KY4RY](#)



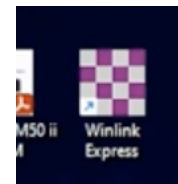
Goal and Objective

- At the end of this package, you will:
 - have successfully setup either an ICOM IC-7300 or YAESU FT991A for data modes including WinLink with VARA HF
 - Installed and set up Winlink Express and VARA applications and ensured PC can 'talk' to the radio via proprietary driver from radio manufacturer.
- This session will walk you through Winlink operation and enable you to;
 - Check key component settings
 - Create an email
 - Send email using VARA over HF
 - Navigate Winlink settings and session options
 - Select ICS Forms from integral Library
 - Send completed ICS Form 213
 - Read incoming email



Initial Checks and Assumptions

- Before proceeding ensure you have completed the radio setup contained in Package 1 for your radio and in addition completed the USB Driver install (downloaded from the appropriate radio vendor website). Installed WinLink and VARA satisfactorily as detailed in Package 2 and your computer can communicate with the radio.
- Now open the Winlink Express application – checkerboard icon and let's send email!





WinLink Home Screen

Account Call

Select means of communication

Winlink Express 1.7.17.0 - KY4RY

KY4RY Settings Message Attachments Move To: Delete **Open Session:** Logs Help

No active session... Message has 1 attached files.

System Folders	Date/Time	Message ID	Size	Source	Sender	Recipient	Subject
Inbox (0 unread)	2024/06/15 ...	T2HOHC7B...	2670	N4ACT	N4ACT	KY4RY	Re: ACK WinLink Exercise E-Mail - 06/15/2024 17:05

System Folders:
 Read Items (13)
 Outbox (0)
 Sent Items (18)
 Saved Items (0)
 Deleted Items (3)

Personal Folders:
 National Traffic (3)
 OBRA Traffic (0)

Global Folders

Contacts

Message ID: T2HOHC7BQ1PL
 Date: 2024/06/15 21:35 (UTC)
 From: N4ACT
 To: KY4RY
 Source: N4ACT
 Downloaded-from: Telnet:cms.winlink.org
 Location: 35.979167N, 75.625000W (GRID SQUARE)
 Subject: Re: ACK WinLink Exercise E-Mail - 06/15/2024 17:05

GENERAL MESSAGE (ICS 213)

1. Incident Name: Dare County HUREX 24
2. To (Name and Position): OBRA N4ACT
3. From (Name and Position): OBRA KY4RY
4. Subject: ACK WinLink Exercise E-Mail
5. Date: 06/15/2024
6. Time: 17:05
7. Message:

Jim,

Acknowledge receipt and action of your email of today 16:32 ref subject. People can of course save the template to their local account templates saving them the Seach each time. That way they build a library of ICS and any other templates they use making in faster to find.

8. Approved by: KY4RY

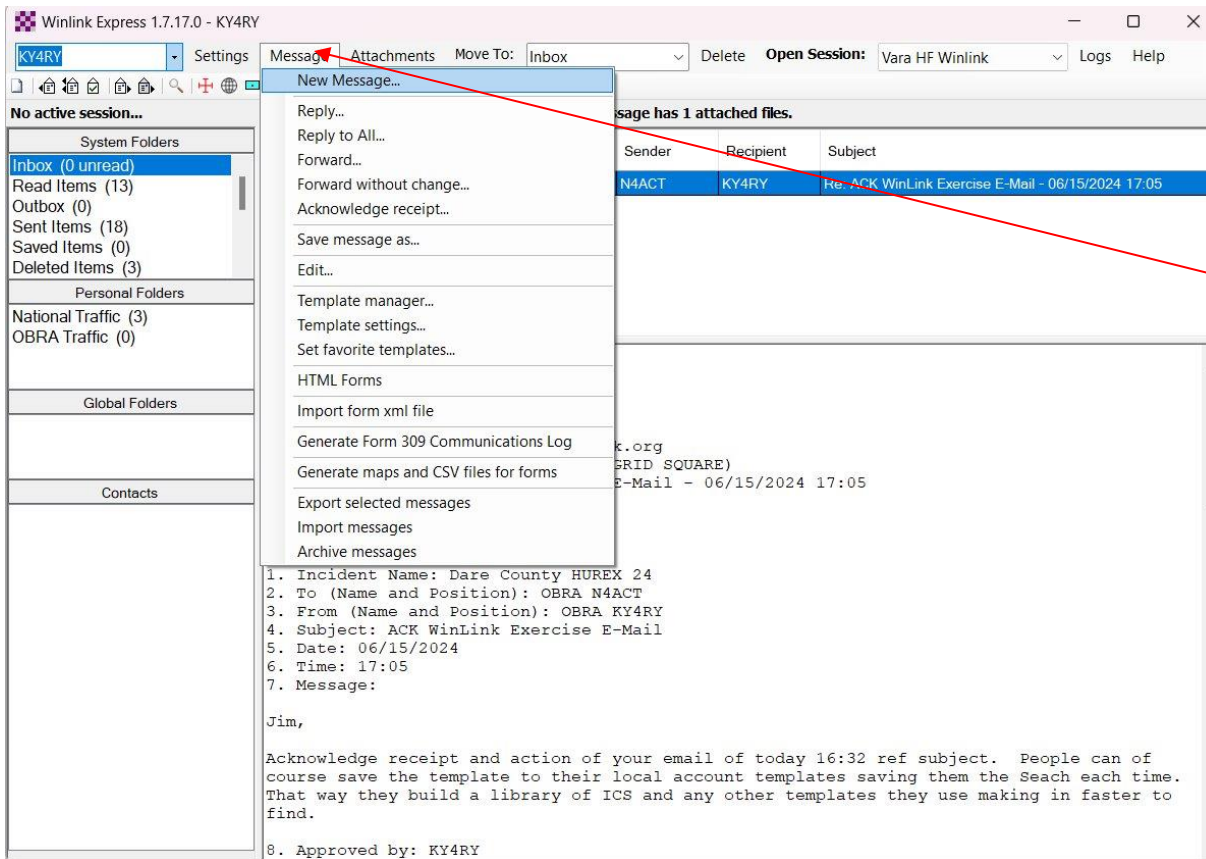
System Folders
Showing status of email sent received & waiting to send in Outbox

Message Viewing
Window displays content of selected folder and message.

From this opening screen you have access to all control functions; Navigate email folders, create mail, add attachments and select the communication means HF VARA TELNET Etc.



Create New Message



Winlink Express 1.7.17.0 - KY4RY

Message Attachments Move To: Inbox Delete Open Session: Vara HF Winlink Logs Help

New Message...

- Reply...
- Reply to All...
- Forward...
- Forward without change...
- Acknowledge receipt...
- Save message as...
- Edit...
- Template manager...
- Template settings...
- Set favorite templates...
- HTML Forms
- Import form xml file
- Generate Form 309 Communications Log
- Generate maps and CSV files for forms
- Export selected messages
- Import messages
- Archive messages

Message has 1 attached files.

Sender	Recipient	Subject
N4ACT	KY4RY	Re: ACK WinLink Exercise E-Mail - 06/15/2024 17:05

1. Incident Name: Dare County HUREX 24
2. To (Name and Position): OBRA N4ACT
3. From (Name and Position): OBRA KY4RY
4. Subject: ACK WinLink Exercise E-Mail
5. Date: 06/15/2024
6. Time: 17:05
7. Message:

Jim,

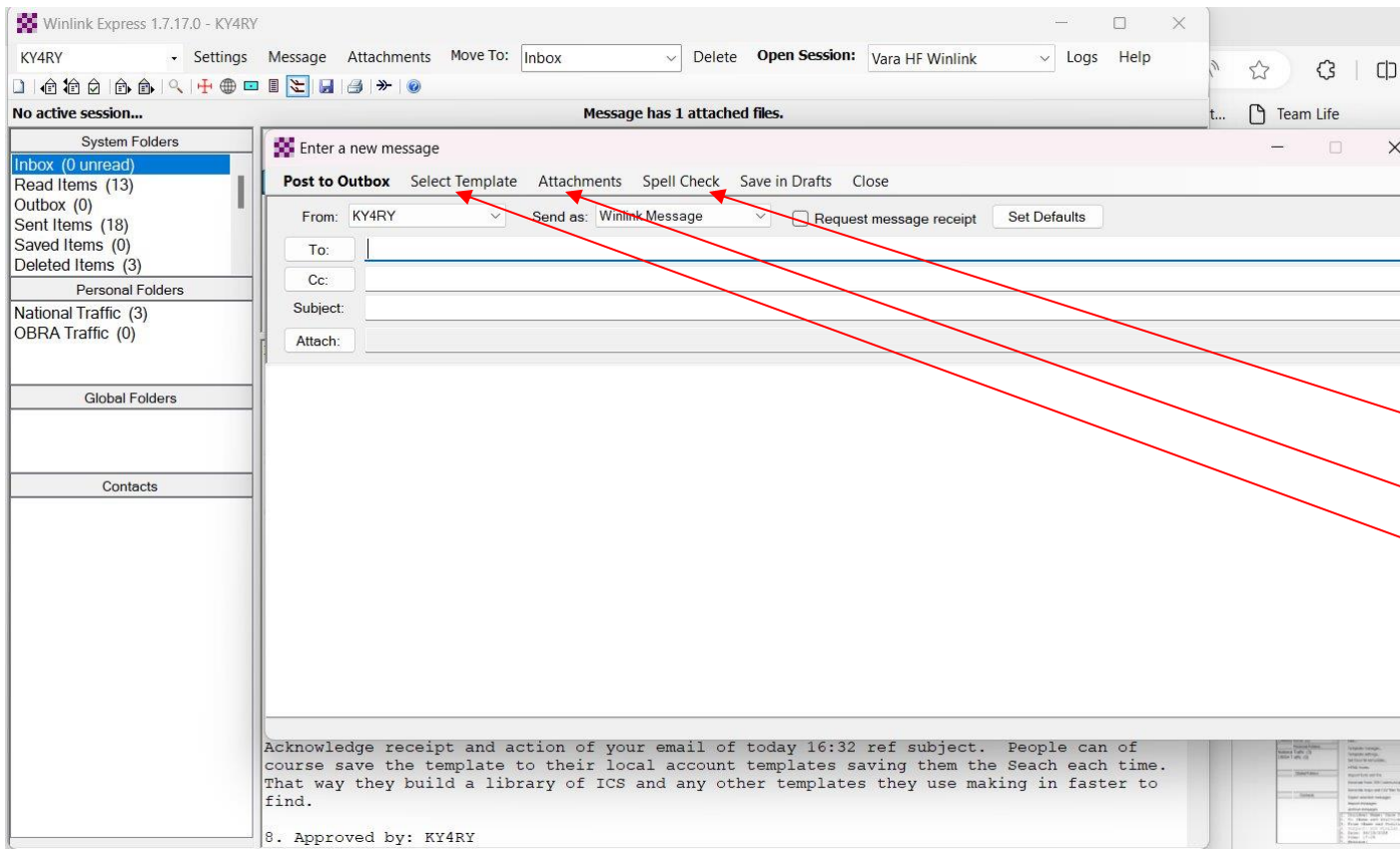
Acknowledge receipt and action of your email of today 16:32 ref subject. People can of course save the template to their local account templates saving them the Search each time. That way they build a library of ICS and any other templates they use making in faster to find.

8. Approved by: KY4RY

Click Message Drop Down Menu and select 'New Message'



Compile Message



Complete as you would any email client – NB WinLink addresses are call@winlink.org, you only need enter call, e.g., KY4RY WinLink will route to WinLink account.

Drop down menus for spell check, add attachments or select a pre-defined ICS Form Template





Draft your Message

Enter a new message

Post to Outbox Select Template Attachments Spell Check Save in Drafts Close

From: KY4RY Send as: Winlink Message Request message receipt Set Defaults

To: N4ACT;

Cc:

Subject: Test Message

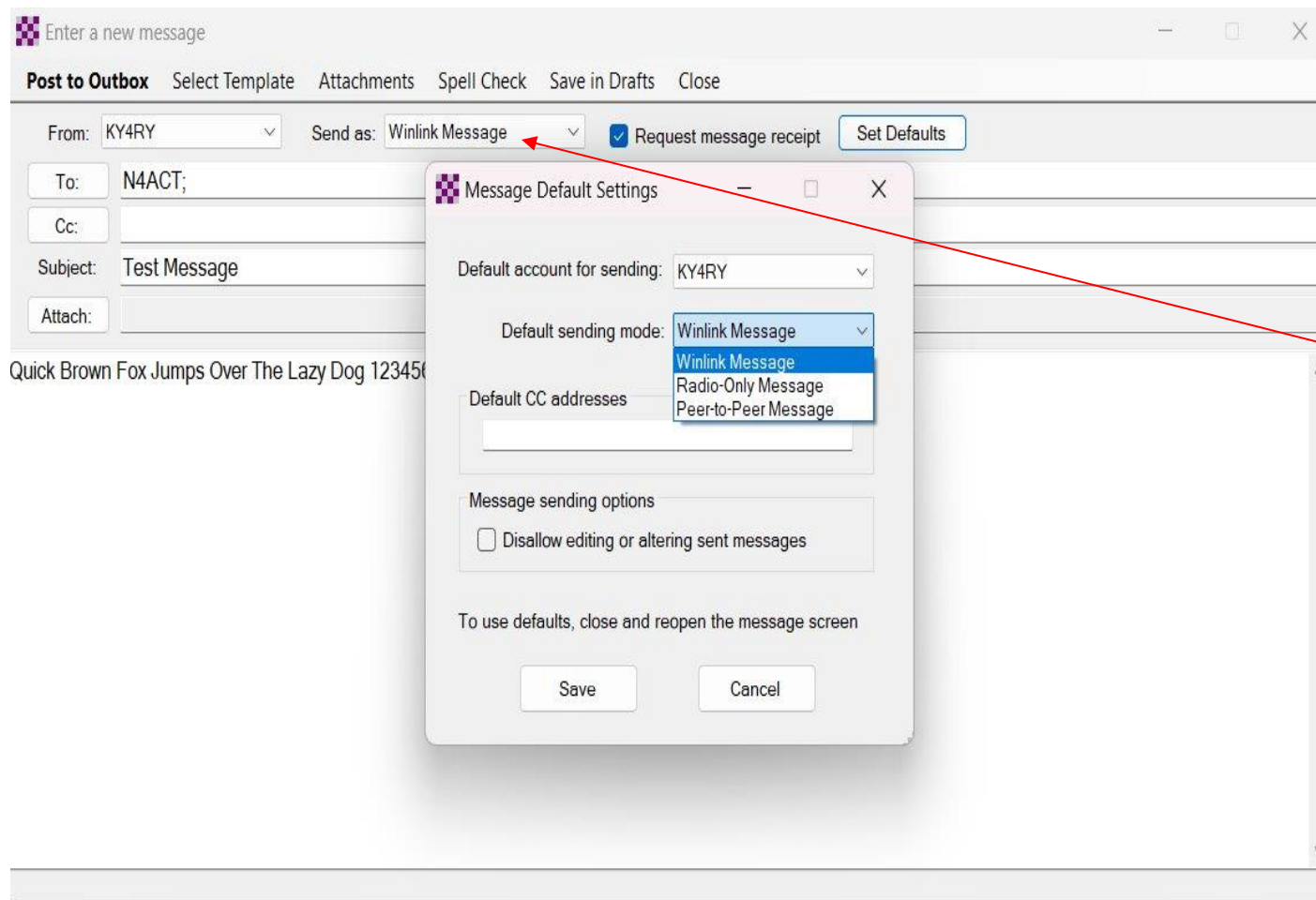
Attach:

Quick Brown Fox Jumps Over The Lazy Dog 1234567890

Draft your message – note the check option for confirmation of Receipt. The System will auto mail you confirmation.

Once message is complete spell checked and attachments added once ready for transmission click **'Post to Outbox'**

Select Message Parameters



The screenshot shows the 'Enter a new message' window with the following fields: From: KY4RY, Send as: Winlink Message, Request message receipt: checked, Subject: Test Message, To: N4ACT;. The 'Message Default Settings' dialog box is open, showing: Default account for sending: KY4RY, Default sending mode: Winlink Message (with a dropdown menu open showing Winlink Message, Radio-Only Message, and Peer-to-Peer Message), and a checkbox for 'Disallow editing or altering sent messages' which is unchecked. A red arrow points from the 'Send as' dropdown in the main window to the 'Winlink Message' option in the dialog box's dropdown menu.

Select 'Send as' Drop Down Menu to select required send mode, Radio only; Peer-to-Peer etc.



Message Now in Outbox

The screenshot shows the Winlink Express 1.7.17.0 interface. The top bar includes the user name 'KY4RY', 'Settings', 'Message', 'Attachments', 'Move To: Inbox', 'Delete', 'Open Session:', 'Logs', and 'Help'. Below this is a toolbar with various icons. The main window is divided into three panes: a left sidebar with folders, a middle message list, and a right message details pane.

System Folders: Inbox (0 unread), Read Items (14), Outbox (1), Sent Items (18), Saved Items (0), Deleted Items (3).

Personal Folders: National Traffic (3), OBRA Traffic (0).

Global Folders: (empty)

Contacts: (empty)

Message List:

Date/Time	Message ID	Size	Source	Sender	Recipient	Subject
2024/07/28 ...	JNW11KI4G...	259	KY4RY	KY4RY	N4ACT	Test Me

Message Details:

Message ID: JNW11KI4GDRH
Date: 2024/07/28 16:55 (UTC)
From: KY4RY
To: N4ACT
Source: KY4RY
Location: 36.104167N, 75.708333W (Grid square)
Subject: Test Message

Quick Brown Fox Jumps Over The Lazy Dog 1234567890

[Message receipt requested]

Open Session: A drop-down menu is open, showing various session options:

- Vara HF Winlink (selected)
- Telnet Winlink
- Packet Winlink
- Pactor Winlink
- Robust Packet Winlink
- Ardop 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

From Session Drop Down Menu select VARA HF WinLink

Message now visible in Outbox ready to send. Like a throw back to the '90's dial up internet we need to establish a communication link to send and receive email.

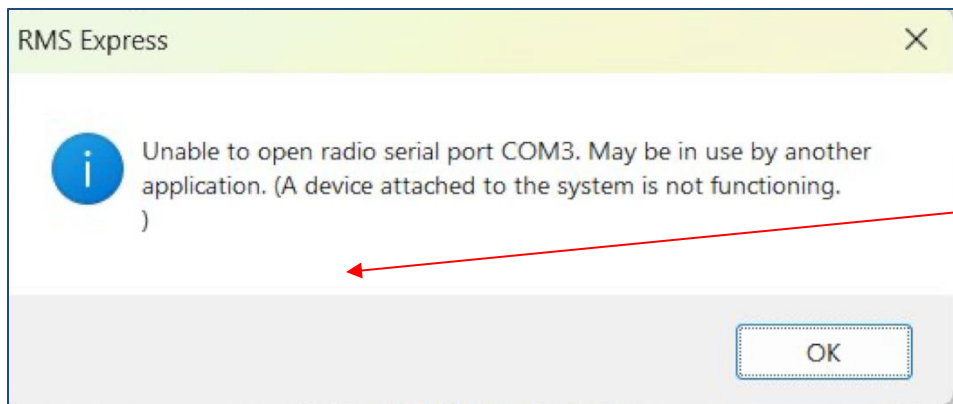


System Self Updating

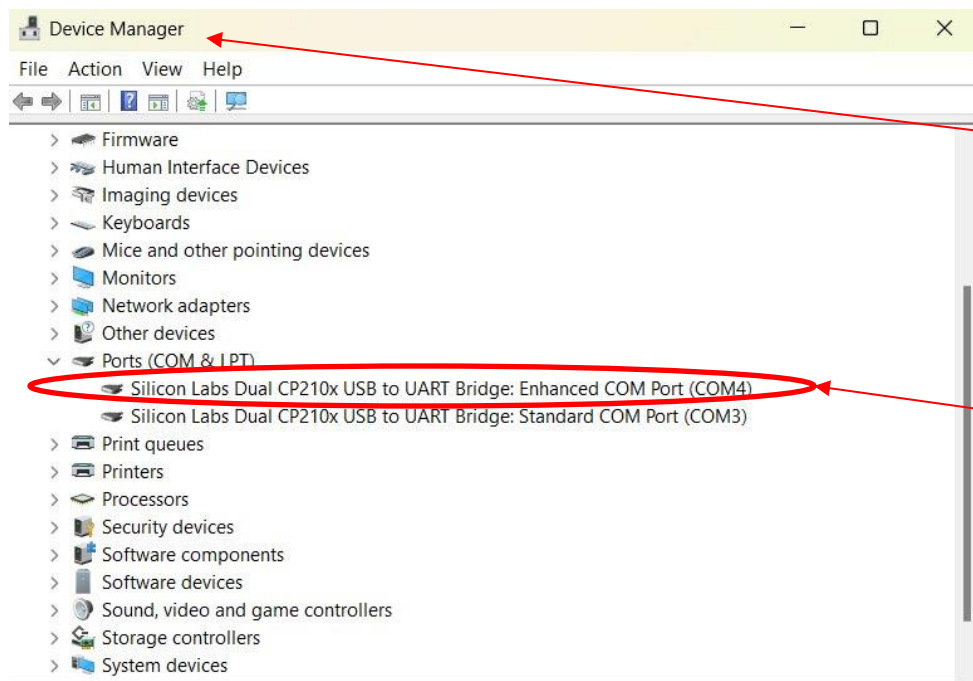


Once you initiate Comms Session the system will most likely update various parameters

Error!



This is most likely your frustration level 1 – so I forced the error to show. Unless you have a dedicated computer for WinLink and do nothing else it is likely that the ComPort setting will develop conflicts. And give this error.



Solution: Open Device Manager on PC ensuring Radio is powered on, USB Connected to PC.

Verify which Com Port is connected as Enhanced Comm Port – in my case its Comm 4



Change Com Port

Vara HF Winlink Settings

Radio Selection

Select Radio Model: Yaesu FT-991/A Antenna Selection: Default

Icom Address: 00 USB: USB Digital: FM: Use Internal Tuner: Use Internal Soundcard:

Codan Radios

Codan login and optional password: _____ Filter width: 2.4 kHz

Enable ALE scanning after session completes

Radio Control Port

Serial Port to Use: COM4 Baud: 9600 Enable RTS: Enable DTR: TTL:

PTT Port (Optional)

Serial Port to Use: External Baud: 9600 Enable RTS: Enable DTR:

Log radio control commands to RMS Express(date).log

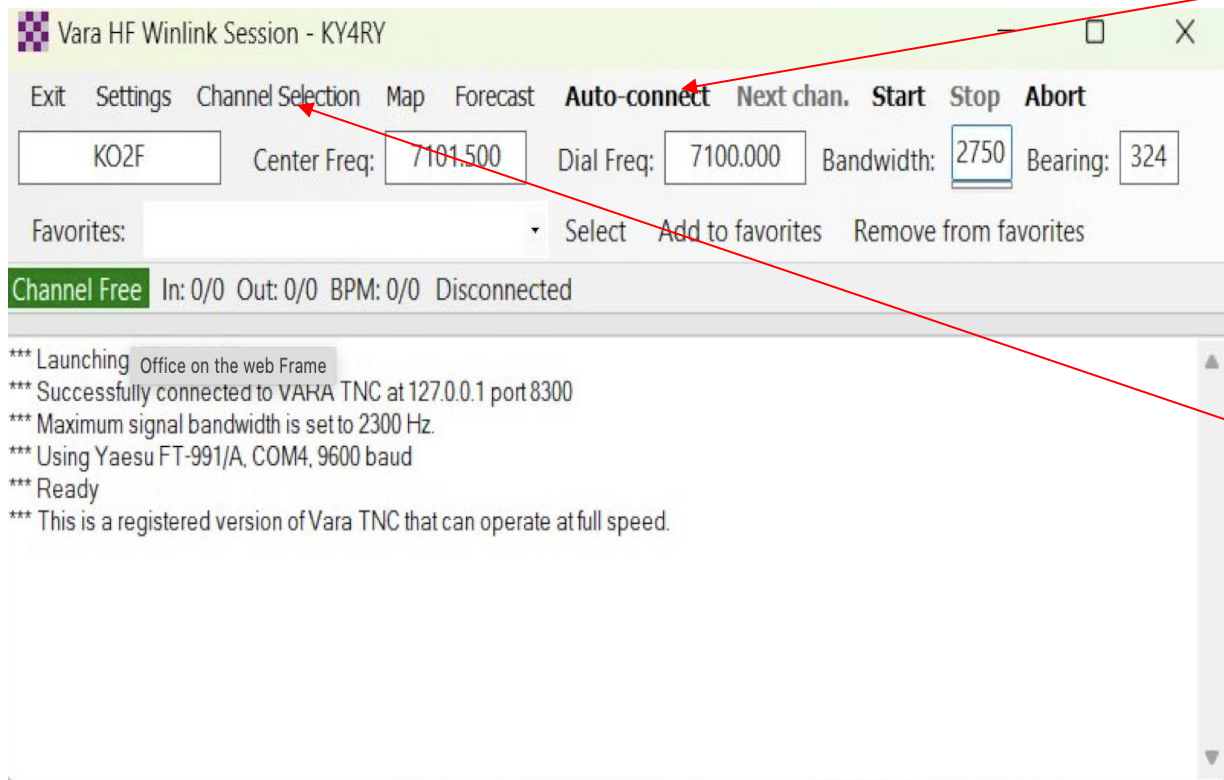
Update Cancel

Within the VARA Winlink Setting change the Com Port to Match the Connected Com Port – in my case you remember this was Com 4

Once Com Port is Corrected Click Update Button to save change

Now go back to step on Slide 13 to Open Session Again

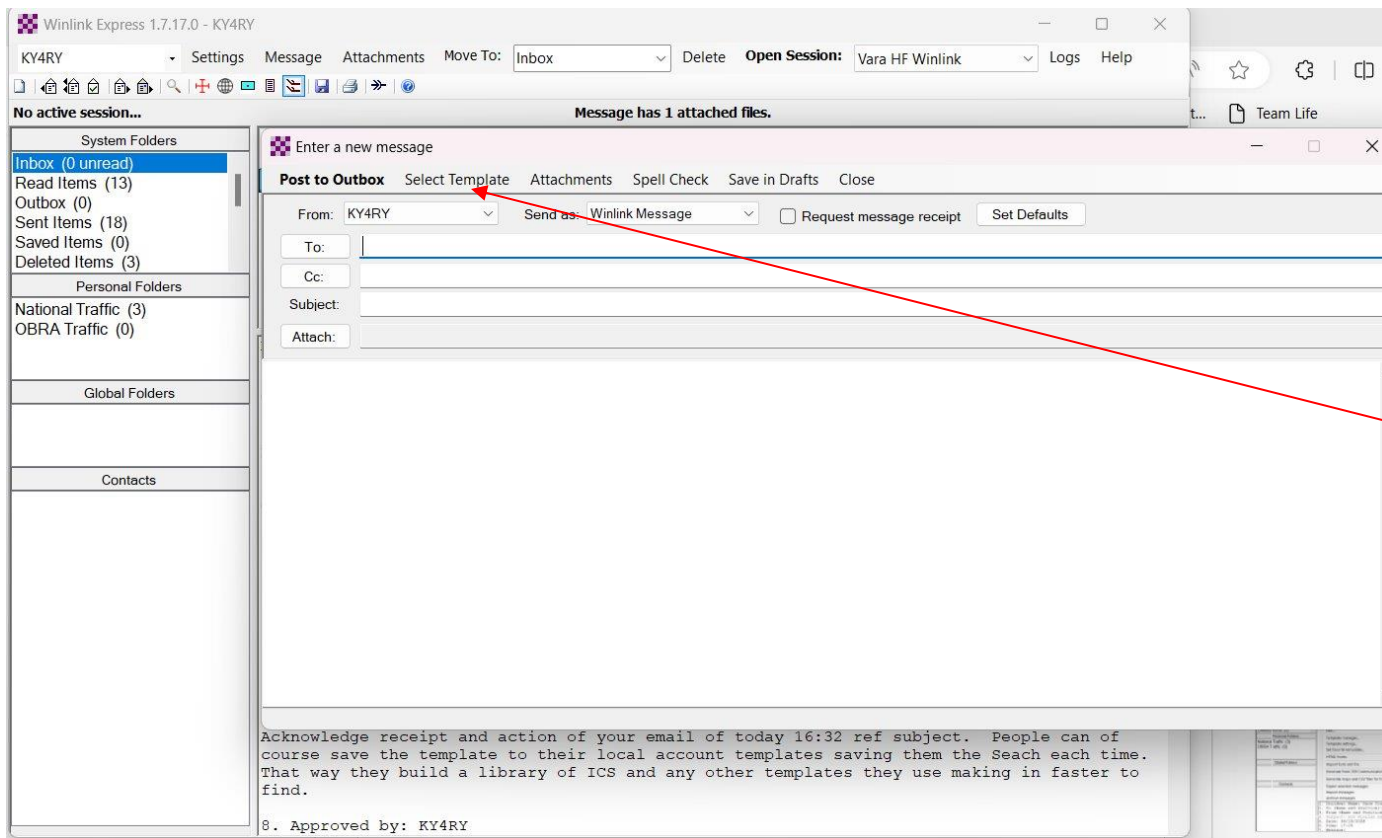
Communication Session Now Starts



Once VARA Open it will report ready, you can select 'Auto Connect' or Click Channel Selection and select best channel from the propagation forecast presented.



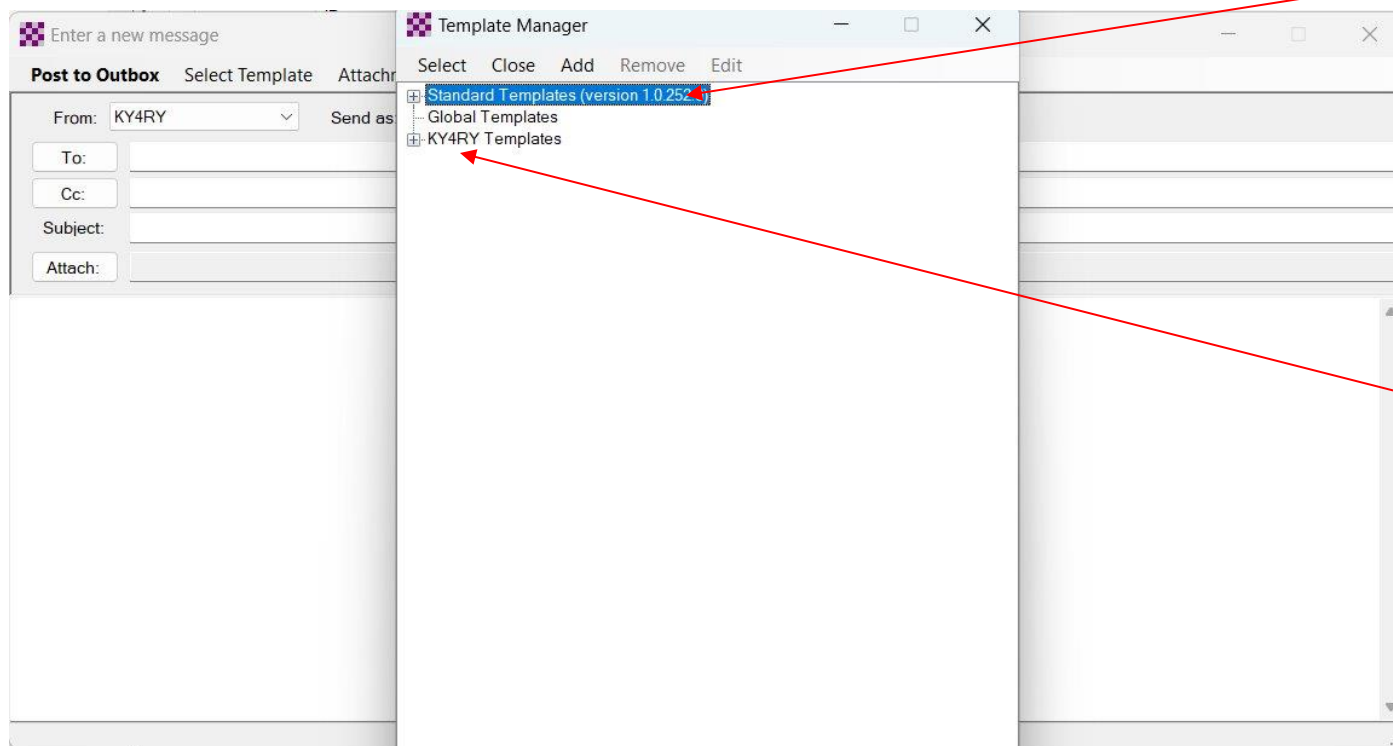
Adding Attachments & ICS Forms



To use and add an ICS Form to your email click 'Select Template' drop down Menu



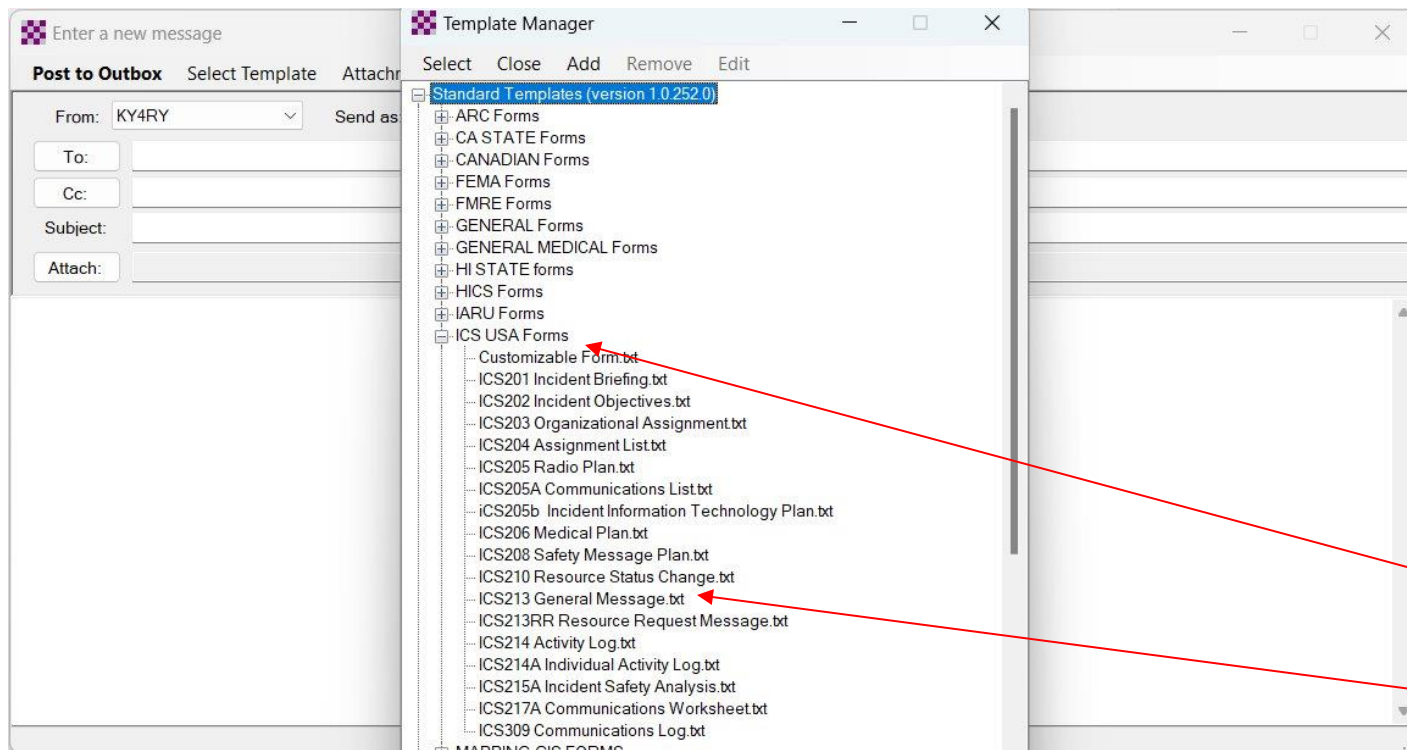
ICS Standard Templates



Open Standard Templates menu to be presented with all available library forms. FEMA, American Red Cross etc. and US ICS Forms

You will note I have created my own local library to hold the forms I mostly use to save time searching.

Expanded Template Menu



You are interested in the ICS USA Forms – mainly ICS 213, 214



ICS 213 Template

Setup Click to add an agency or group name

General Message (ICS 213)

THIS IS AN EXERCISE [Load ICS213 INITIAL Data](#) [Form Instructions](#)

1. Incident Name:

2. To (Name/Position):

3. From (Name/Position):

4. Subject: 5. Date: 6. Time:

7. Message:

8. Approved by: 8b. Position / Title:

Optional Location Coordinates

Latitude Longitude MGRS Grid

LAT/LON and MGRS default to the center of the grid square listed in Express Settings, unless a GPS is used or Lat/LON or MGRS are entered manually. For Winlink mapping and CSV export you must enter a latitude and longitude.

 [Save ICS213 INITIAL Data](#) Ver 43.1

Double Click on the ICS Form from the Template drop down and you will be presented with the Form in a browser window. Complete fully – clicking on data time windows will auto fill from PC settings. Make sure to tick Exercise if appropriate. When complete click Submit button.

On clicking submit button you will be prompted to close browser – once closed message will be loaded.





Completed Form Loaded

Note F213 attached

Now rinse and spin – Post To Outbox and establish comm session to sent.

Note the message body contains synopsis of ICS 213 Form Attached this is more efficient that compiling F213 outside WinLink and attaching as an attachment. Also note that message is flagged 88this IS AN EXERCISE**

Enter a new message

Post to Outbox Select Template Attachments Spell Check Save in Drafts Close

From: KY4RY Send as: Winlink Message Request message receipt Set Defaults

To: KY4RY

Cc:

Subject: EXERCISE INCIDENT REPORT - 2024-07-28 20:16

Attach: RMS_Express_Form_ICS213_Initial_Viewer.xml;FormData.txt;

GENERAL MESSAGE (ICS 213)

** THIS IS AN EXERCISE **

1. Incident Name: OBRA EXERCISE #044
2. To (Name and Position): N4ACT
3. From (Name and Position): KY4RY
4. Subject: EXERCISE INCIDENT REPORT
5. Date: 2024-07-28
6. Time: 20:16
7. Message:
Bla Bla Bla
8. Approved by: KY4RY
- 8a. Position/Title: AUXCOM
[Sender: KY4RY Lat: 36.104167, Lon:-75.708333, MGRS:]





Help File

The screenshot shows a web browser window titled "Winlink Express". The address bar is empty. The browser's navigation toolbar includes "Hide", "Back", "Forward", "Font", and "Print". Below the toolbar are tabs for "Contents", "Index", "Search", and "Favorites". A search box contains the text "Type in the word(s) to search for:". Below the search box are buttons for "List Topics" and "Display". The search results section shows "Select topic: Found: 0" and a table with columns "Title", "Location", and "Ra". The table is empty. At the bottom left, there are search options: "Search previous results" (unchecked), "Match similar words" (checked), and "Search titles only" (unchecked). The main content area displays the "WINLINK Global Radio Email" logo with a globe, the date "10/9/22", and the title "Winlink Express Overview" in blue. Below the title is a paragraph of text: "Winlink Express is a radio email client program that can function with no Internet. It supports multiple callsigns, and each callsign may have assigned tactical addresses. Winlink Express can support HF sound card modes like ARDOP and VARA, as well as Pactor, VHF/UHF packet, Vara FM, Robust HF Packet and direct telnet to Winlink CMS servers." Below this is another paragraph: "Winlink Express is the primary client program for the **WINLINK RADIO EMAIL SYSTEM**. You can send and receive email messages from virtually any place on the earth. It uses the B2F protocol that supports attachments, multiple addresses".

For more help and detailed support see integral Help File under Help on main Home Screen





So what's the investment cost?

Assuming you have a CAT compatible HF rig and Windows PC then the investment is very modest at just \$69 one-time cost for Licensed copy of VARA. If you want to support the WinLink development team, then a one time license registration fee of \$24 so this full capability can be online for >\$100!
Further information contact N4ACT or KY4RY





WinLink Express

Essentials

This WinLink Express user guidance has been developed to help OBRA members gain knowledge and competency with the capability. If you discover errors or have improvements contact N4ACT or KY4RY

