

# Montgomery Amateur Radio Club Rockville, Maryland

# **Getting Started with Winlink on HF**

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- over two years ago, I saw a need for Winlink training
  - started a project to collect radio Winlink settings
  - collected over <u>30 HF and VHF radio Winlink settings</u>
  - presentation is what I learned on getting started
- previous presentation: Getting Started with Winlink on VHF

## note: this presentation is for Windows 10 only

- setting up an audio device
  - example: up a SignaLink USB with built-in PTT
- setting up VARA HF software modem
- computer radio control device
- setting up Winlink Express
  - example: setting up an Icom IC-706MkIIG using SignaLink USB
- local HF communications
  - near vertical incidence skywave (NVIS)
  - inverted vee NVIS antenna
- demonstration: exchanging messages via Winlink email gateway

• to set up basic working Winlink HF station to exchange messages using the WB3KAS and W1AW Winlink gateways

#### conceptual model



- transceivers are audio devices!
  - audio device is interface between radio and modem software
    - binary data is converted to audio and back again
  - least distortion desired
    - reduce RF Gain to reduce background noise
    - turn off Automatic Gain Control (AGC) on receive
    - little or no Automatic Level Control (ALC) on transmit
    - turn off receive filters
- audio device is often called an external USB "sound card"
- Windows settings are generally the same for external or built-in audio devices

#### **SignaLink USB** audio interface with built-in VOX PTT

- TX: half
- RX: half
- **DLY:** minimum
- **cable:** specific for radio <u>SignaLink<sup>™</sup> USB Product Guide</u>
- header module: corresponding jumper wires or header

SignaLink Jumper Settings & Wiring Information

• these SignaLink settings are generally the same for most HF radios



#### https://shop.tigertronics.com/SignaLink-USB\_c2.htm



built with two black BOURNS audio isolation transformers

#### setting up Windows SignaLink audio device

Sound	I					>
Playback	Recording	Sounds	Communic	ations		
A soun and pro have m Sound	d theme is a ograms. You odified. Scheme:	set of so can sele	unds app ct an exist	lied to events ing scheme of	in Windows r save one you	
No So	unds		~	Sa <u>v</u> e As	<u>D</u> elete	Ľ
Program	scheme. m <u>E</u> vents: /indows				iges us a new	
	Asterisk	Domindor				Ŀ
	Close Prog	gram				
	Critical Bat Critical Sto	ttery Aları op	n			
<u>P</u> lay	Windows S	tartup so	und			
<u>S</u> ound:	s:					
(None)	)		$\sim$	▶ <u>T</u> est	<u>B</u> rowse	
				_		
			ОК	Cancel	Apply	

#### turn off Windows sounds

• this is important if you forget to do the next steps

Sound	I						×
Playback	Recording	Sounds	Commu	nications	1		
Select a	playback d	evice belo	ow to mo	dify its s	settings:		
	Signal 5- USB Defaul	<b>ink</b> Audio C( t Device	ODEC				
	AEPJS1	<b>speaker</b> Hands-F inected	ree AG A	udio			
	Headp AEPJS1	hones Stereo inected					
Q	Speak Intel® Ready	ers Smart So	und Tec	hnology	(Intel® S	ST)	
<u>C</u> onfi	gure			<u>S</u> et Det	fault <del> </del>	Prop	erties
			ОК		Cancel		Apply

set default audio device

• settings are generally the same for all radio audio interface devices

Sound	l						×
Playback	Recording	Sounds	Commun	ications			
Select a	playback de	evice belo	w to moo	dify its se	ettings:		
	SignaL 5- USB Ready	ink Audio C(	DDEC				
	AEPJS1	<b>speaker</b> Hands-F inected	ree AG Au	udio			
	Headp AEPJS1 Discon	hones Stereo inected					
Q	Speake Intel® Defaul	ers Smart So t Device	und Tech	inology (	(Intel® SS	T)	
<u>C</u> onfi	gure			<u>S</u> et Defa	ault 🔽	Prope	erties
			ОК		Cancel		<u>A</u> pply

### correct default audio device

Sound	I					Х	
Playback	Recording	Sounds	Communicat	ions			
Select a	playback d	evice belo	w to modify	its settings:			
	Signal 5- USB Ready	<b>ink</b> Audio C(	DDEC				
	AEPJS1	speaker Hands-F inected	ree AG Audio	)			
	Headp AEPJS1 Discon	hones Stereo nected					
0	Speakers Intel® Smart Sound Technology (Intel® SST) Default Device						
<u>C</u> onfi	gure		<u>S</u> et	Default	<u>P</u> roperties	i	
			ОК	Cancel	<u>A</u> pply	/	

# select Properties of SignaLink device

👁 Signa	Link Pro	operties				×
General	Levels	Enhancements	Advanced	Spatial sour	nd	
		SignaLink Change <u>I</u>	con			
Cont	roller Inf	ormation				
5-	USB Aud	io CODEC			<u>P</u> roperties	
(Ge	eneric US	SB Audio)				
– Jack I No	nformat Jack Inf(	ion ormation Availab	le			
Device	usage:	Use this o	device (enal	ole)		/
			ОК	Cancel	Apply	

## rename as SignaLink as needed



### set output level to maximum

• needed to drive SignaLink PTT

🔹 SignaLink Pr	operties				×			
General Levels	Enhancements	Advanced	Spatial sound	d				
Select the enhancements to apply for your current speaker configuration. Changes may not take effect until the next time you start playback.								
Disable all	enhancements							
Bass Boo	st irround rrection : Equalization							
Enhancement	Properties				1			
Descrip	tion: Boosts the lo by the device	west freque e.	ncies that can	be played				
Prov	ider: Microsoft							
Sta	atus: Disabled			<u>S</u> ettings				
<u>R</u> estore Defa	ults			▶ <u>P</u> review  ▼				
		ОК	Cancel	<u>A</u> pply				

## no enhancements

SignaLink Properties	Х
General Levels Enhancements Advanced Spatial sound	
Default Format Select the sample rate and bit depth to be used when running in shared mode.	
16 bit, 48000 Hz (DVD Quality) V Vest	
Exclusive Mode Allow applications to take exclusive control of this device Give exclusive mode applications priority	
Restore Defaults	
Restore Defaults	
OK Cancel <u>A</u> ppl	у

# set to highest audio quality

🗢 Signa	Link Pro	perties				$\times$
General	Levels	Enhancements	Advanced	Spatial sound		
Spati Sele	al sound ct the Sp	l format atial sound forr	nat you war	it to apply.		
Off					~	
Res	tore <u>D</u> ef	aults				
			ОК	Cancel	Apply	

# disable spatial sound

Sound	1					×
Playback	Recording	Sounds	Communicati	ons		
Select a	recording d	evice bel	ow to modify	its settings:		
	SignaLi 5- USB Default	i <b>nk</b> Audio C( t Device	ODEC			
	Headse AEPJS1 Discon	e <b>t</b> Hands-F nected	ree AG Audio			
5	Microp Intel® Ready	hone Smart So	und Technol	ogy (Intel® S	5T)	
<u>C</u> onfi	gure		<u>S</u> et	Default 🛛	<u>P</u> roperties	
			ОК	Cancel	<u>A</u> pply	

## set default audio device

Sound	1					×
Playback	Recording	Sounds	Communi	cations		
Select a	recording d	evice bel	ow to mo	dify its setting	js:	
	Signal 5- USB Ready	i <b>nk</b> Audio C(	DDEC			
	Headse AEPJS1	e <b>t</b> Hands-F nected	ree AG Au	dio		
2	Microp Intel® Defaul	<b>hone</b> Smart So t Device	und Techi	nology (Intel®	SST)	
<u>C</u> onfi	gure			Set Default	Pro Pro	perties
			OK	Cance	1	Apply

#### correct default audio device

谢 Sound	1						>	×
Playback	Recording	Sounds	Commun	nications	5			
Select a	recording o	levice bel	ow to mo	odify its	settings:			
	Signal 5- USB Ready	ink Audio C(	DDEC					
	Heads AEPJS1	<b>et</b> Hands-F inected	ree AG A	udio				
2	Microp Intel® Defaul	ohone Smart So t Device	ound Tech	nology	/ (Intel® S	ST)		
<u>C</u> onfi	gure			<u>S</u> et De	fault	<u>P</u> rop	oerties	
			OK		Cancel		Apply	

# select Properties of SignaLink device

🗢 Signa	aLink Pro	opertie	5				$\times$
General	Listen	Levels	Advanc	ed			
	1	S	ignaLink Change <u> </u>	con			]
Cont	roller Inf	formati	on				
5-	USB Aud	lio COD	EC			<u>P</u> roperties	
(G	eneric U	SB Audi	o)				
Jack No	Informat Jack Inf	tion ormatic	on Availab	le			
Device	e usage:		Use this	device (en	able)	×	~
				OK	Cancel	<u>A</u> pply	(

# rename as SignaLink as needed



## set initial input level

SignaLink Properties	×
General Listen Levels Advanced	
Default Format	
Select the sample rate and bit depth to be used when running in shared mode.	
2 channel, 16 bit, 48000 Hz (DVD Quality) $\qquad \qquad \checkmark$	
Exclusive Mode	
Allow applications to take exclusive control of this device Give exclusive mode applications priority	
Restore <u>D</u> efaults	
OK Cancel Apply	

# set to highest audio quality

- developed by Jose Alberto Nieto Ros, EA5HVK
- download VARA HF software modem <u>https://rosmodem.wordpress.com/</u>
- recommend buying registration key for full speed <u>file:///C:/VARA/Buy.html</u>



#### select Settings menu list

🧄 VARA Setup 🛛 🗙
TCP Ports: Command Data 8300 8301
VARA Licenses
Callsign: Registration Key: W2LNX
Callsign: Registration Key:
Callsign: Registration Key:
Callsign: Registration Key:
<ul> <li>Allow VARA check for updates via internet</li> <li>Accept 500 Hz connections</li> </ul>
I uner ennancement
CW ID
☐ KISS Interface Retries:
🗖 RA-Board PTT 🔲 SysLog 10 💌
Close

enter your VARA registration code as needed

# allow incoming 500 Hz connections



# select SignaLink audio device

- used by Winlink HF to set frequency, mode and PTT
- serial device seen by Windows on a COM port
  - COM port speed is obtained from a radio menu setting
- serial device is specific to Icom, Kenwood and Yaesu
  - generally same for different models from same manufacturer
    - external serial external or internal interface
- manual good way to get started
  - mode is upper side band (USB) on all bands
  - dial frequency = center frequency 1.5 kHz

- Icom Communications Interface V (CI-V)
  - binary half-duplex request-response protocol
  - connect to CI-V 3.5 mm jack
  - CT-17 level converter from RS-232C serial to digital logic serial
  - each radio model has a unique CI-V addresses
    - obtained from a radio menu setting
- Kenwood Computer Control Commands
  - ASCII half-duplex request-response protocol
  - connect to RS-232C DE-9 male 9-pin connector
  - FlexRadio uses Kenwood TS-2000 computer control commands

- Yaesu Computer Aided Transceiver (CAT) System
  - binary half-duplex request-response protocol
  - connect to RS-232C DE-9 male 9-pin connector
  - or connect to 8-pin mini-DIN connector
    - CT-62 level converter from RS-232C serial to digital logic serial

- provides global email on VHF and HF remote gateways over ham radio
  - Live System Information with maps and station lists

https://www.winlink.org/RMSChannels

- supports direct station-to-station peer-to-peer message exchange
- used for emergency communication drills by local ham radio volunteers

- download Winlink Express client <u>https://www.winlink.org/</u>
- set up Winlink user account with your callsign <u>https://winlink.org/user</u>
- voluntary Winlink registration turns off reminder <u>https://arsfi.org/express.aspx</u>

Winlink Express 1.7.2.0 - W2LN	x							– 🗆 X		
W2LNX - Settings	Message A	Attachments	Move To: Save	d Items	~	Delete Open Sess	sion: Vara HF Win	link 🗸 Logs Help		
No active session.										
System Folders	Date/	Time 📼	Message ID	Size	Source	Sender	Recipient	Subject ^		
Inbox (0 unread)	1 2022/	10/15 21:20	95710W2ENMMN	3856	<b>WB3KAS</b>	WB3KAS	W2LNX	FW: 214- 4th Quarter 2022 MDC Section Hospital Drill - Milf		
Read Items (741) Outbox (0)	2022/	10/15 21:15	4DV16SROJXC4	15128	<b>WB3KAS</b>	WB3KAS	W2LNX	Fw: Laurel Hospital ICS214		
Sent Items (468)	1 2022/	10/12 14:35	MGI975NEDA3A	3121	WB2U	WB2U	WP4QZH	Winlink Check in Net - WB2U - Home Gaithersburg MD		
Saved Items (0)	2022/	10/12 14:28	IUKPWBBZHCQD	2731	WB2U	WB2U	WP4QZH	Winlink Wednesday Puerto Rico Info Form - Winlink Wedne		
Deleted Items (8) Drafts (0)	2022/	10/12 14:07	PPLRB09AT1XR	331	WB2U	WB2U	KN4LQN	Winlink Wednesday Check-In		
Personal Folders	2022/	10/12 13:06	7BM7QDUKS3H2	3238	N3XL	MDCWINLINK	AA3WS	MDC Section Winlink Check-in Report - October 2022		
	2022/	10/11 13:10	UX1AV80G278X	3955	KN4LQN	KN4LQN	SMTP:kn4lqn@a	Winlink Wednesday Reminder (#318)		
	2022/	10/11 12:45	S0E5XOSJXGT6	2287	WB2U	WB2U	MDCWINLINK	Winlink Check in Net - WB2U - ASBURY METHODIST VIL		
	2022/	10/10 20:27	GYTQDMGG9N	1384	N3XL	N3XL	AA3WS	Reminder: MDC Section Winlink Check-in Exercise, Tuesda		
	2022/	10/10 17:51	S55DWQPI4SPZ	101353	SMTP	SMTP:david.bem	W2LNX	Fwd: testing TM-V71A		
Global Folders	2022/	10/08 20:56	QGRWTTZHSD	211	K3JSJ	K3JSJ	W2LNX	Greetings		
	2022/	10/07 20:01	DHWTUY79HB	2182	SMTP	SMTP:david.bem	W2LNX	demonstrating IC-706MkIIG to Tom, W3TDH		
	2022/	10/07 12:23	W3XT90AZCNHD	454	SMTP	SMTP:awprotigal	W2LNX	Re: fourth Quarter 2022 MDC Section Hospital Drill		
	2022/	10/07 11:20	9YIKKX7HJSGA	430	SMTP	SMTP:mforrence	W2LNX	Re: fourth Quarter 2022 MDC Section Hospital Drill		
Contacts	2022/	10/07 05:47	T9ZXQ2VP133K	441	SMTP	SMTP:rdavidson	W2LNX	Re: fourth Quarter 2022 MDC Section Hospital Drill		
AC3JM	2022/	10/07 02:20	CJECY59LJWKP	450	SMTP	SMTP:ersmar@v	W2LNX	Re: fourth Quarter 2022 MDC Section Hospital Drill		
AC3N@ARRL.NET	2022/	10/07 02:12	3XXB5B3R3Y83	322	<b>KB3EOF</b>	KB3EOF	W2LNX	fourth Quarter 2022 MDC Section Hospital Drill		
AC820 AD3F	Message II	D: 95710W	2ENMMN					^		
ALEKSANDRA.ROHDE@GMAIL.	Date: 202	2/10/15 2	21:20							
DTWIEWORKA@GMAIL.COM	To: W2LNX	NAD .								
ERSMAR@VERIZON.NET ETO-03	Source: W	B3KAS								
JLTAFT@COMCAST.NET	Downloade	d-from: T	Celnet:cms.wi	nlink.	org					
KIEHZ KIEHZ@ARRL.NET	Subject:	38.72917 FW: 214-	4th Ouarter	2022 1	IDC Sect	ion Hospital	Drill - Milf	ord-10/06/2022 - 10/0		
K3BAB						<b>-</b>				
КАЗАНІ	Hi; it's n	me again.								
KA3AHI@AOL.COM KB3CS	Take a lo	ok at bot	h attachemen	ts. Bo	oth have	the same ver	r. Ver 17. bu	t they print different on my HP		
KB3CS@ARRL.NET	printer. The one from the first message cannot print wholly on one page, while Milford's does.									
KB3MXM@ARRL.ORG										
KB3UZB@ARRL.NET	a long or short page?									
KC3CNX@ARRL.NET			-							
103030	Thanks for	r the tim	1e					*		

#### click on Settings

select Winlink Express Setup... and then Preferences...

Winlink Express Properties		×		
Call Signs My Callsign: W2LNX My Password: •••••	Contact Information (Optional)			
(Case sensitive)	Name:	David Bem		
Callsign suffix (optional): (Used for country code) Change password	Street address 1:	8809 Cold Spring Rd		
	Street address 2:			
(Non-Winlink e-mail address where lost password will be sent when requested)	City:	Potomac		
	State/Province:	MD		
Request password be sent to recovery email	Country:	USA		
	Postal code:	20854-2430		
Auxiliary Callsigns and Tactical Addresses	Web Site URL (optional):			
Add Entry	Phone number:	240-242-5660		
Edit Entry	Non-Winlink e-mail:	david.bem@engineeer.com		
Low Dray	Additional information (option	al):		
My Grid Square: FM19JB Lat/Lon to Grid Square				
Winlink Express registration key:		¥		
Service Codes	Recalculate HF path quality if SI	FI changes more than: 30		
PUBLIC	Keep logs for 52 🚔 weeks	. Keep deleted messages for 30 days.		
(Use PUBLIC for ham call signs. Separate multiple service codes by spaces.) If you change service codes, you must update the list of channels.	<ul> <li>Display list of pending incoming messages prior to download</li> <li>Warn about connections to stations holding messages</li> <li>Allow diagnostic information to be sent to the Winlink Development Team</li> <li>Automaticaly install field test (beta) versions of Winlink Express</li> </ul>			
Update Cancel				

enter your password, registration key and location

Services	$\times$
Message Reading Options Viewing seconds before marking message read: 2 Automatically move read items to Read Items folder	
Message review before downloading Display list of pending incoming messages prior to download	
Message acknowledgement options Default to requesting message receipts Automatically send message receipts when requested Automatically send message receipts for all messages Ignore message receipt requests on incoming messages	
Message sending options  Automatically add contact entry for each destination address  Disallow editing or altering messages you send  Line wrapping	
Wrap print lines after this many characters: 72 Distance Units Km  Miles	
Update Cancel	

# add contacts automatically
Winlink Express 1.7.1.0 - W2LN	IX								- 0	×
W2I NX - Settings	Message Attachmen	ts Move To: Save	ed Items	→ Delete	Open Session:	Vara HE Win	link v	Logs Help	_	
				• Delete			шик *	cogo nep		
	P 🗉 🛰   🖬   🗔   쐔									
No active session.	Data (Time	Maaaaa ID	Cine C.	suma Canda	Pag	iniant	Cubinet			
Inbox (46 unread)			1220 JW		nec w2los	apieni.	testing IC-706M	IkliG on 2 m via WM	2M-10 uning 5	watta
Read Items (329)	2022/10/02 21:1	KB544B55B9CI	933 W		w210	i@ard.net	Retesting IC-700W	06MkUG on 6 m via V	VB2LL using 50	0 watte
Outbox (0)	2022/10/02 15:10 2022/10/02 15:10		10207 W		wh2	i@ard.net	testing IC-706M	kliG on 6 m via WB2	Uusing 50 wa	atts
Saved Items (2)	2022/10/02 14:53	0MVRJ6BK4OH0	352 W	2LNX W2LNX	wb2u	i@anl.net	testing IC-706N	1kllG on 6 m via WB2	2U using 100 v	watts
Deleted Items (1)	2022/10/02 14:30	GG1DGWX4M0N9	10200 W	2LNX W2LNX	kn3u	@arrl.net	FW: testing IC-	706MkIIG on 6 m via	WB2U usina '	100 watt
Dratts (2)	2022/10/02 14:28	TJUIUOIOXKR4	1245 W	2LNX W2LNX	wb2u	@arrl.net	Re:Fwd: testing	IC-706MkIIG on 6 m	via WB2U	
	2022/10/02 14:17	EW1ZKTRPU0GA	918 W	2LNX W2LNX	WB2	.U	Retesting IC-70	06MkIIG on 6 m via V	VB2U	
	2022/10/02 14:11	NL6JB31NZWN4	10186 W	2LNX W2LNX	WB2	U	testing IC-706M	1kIIG on 6 m via WB2	20	
	2022/10/02 12:1	5 7DEOU4B8CLK6	12172 W	2LNX W2LNX	w2ln	x@arrl.net	testing IC-70Mk	IIG via W1AW on 40	) m	
	12:12:12:12:12:12:12:12:12:12:12:12:12:1	CUAU2CS0UA38	2155 W	2LNX W2LNX	w2ln	x@arrl.net	testing IC-70Mk	IIG via W1AW on 40	) m	
Global Folders	2022/10/02 10:4	JP12J5DPOD4N	2229 W	2LNX W2LNX	w3td	h@arrl.net	testing IC-70Mk	IIG via W1AW on 80	) m	
	10/01 18:23	YNXG29T9YD2U	2175 W	2LNX W2LNX	w2ln	x@arrl.net	testing packet o	over WM3M-10 using	IC-706MkIIG	
	2022/09/30 23:44	LLRHKQ47HMSY	1021 W	2LNX W2LNX	w3td	h@arrl.net	Re: testing IC-7	06MkIIG via WM3M	10	
	2022/09/30 23:2	7 JIZY36A9H1IV	20683 W	2LNX W2LNX	w2lnx	x@arrl.net	testing IC-706M	lkIIG via WM3M-10		
Contacts	2022/09/28 15:03	BOZ6Z4BMFCYO	2163 W	2LNX W2LNX	W3T	DH	demonstrating t	he FT-2000D to you		
AC3JM AC3N	2022/09/27 17:00	KFDN50102E2D	12171 W	2LNX W2LNX	w2ln	x@arrl.net	testing settings	for FT-2000D		
AC3N@ARRL.NET	2022/09/27 16:50	67WZW30L636S	2141 W	2LNX W2LNX	w2ln	x@arrl.net	testing settings	for FT-2000D		
AD3E ETO-03 JLTAFT@COMCAST.NET K1EHZ K1EHZ@ARRL.NET K38AB K3XIT KA3AHI KA3AHI@AOLCOM KB3CS KB3CS@ARRL.NET KB3UZB@ARRL.NET KC3DSO KC3OG KD3JA KN3U KN3U KN3U KN3U KN3U KN3U KN3U KN3U	Message ID: 5SPD Date: 2022/10/02 From: W2LNX To: w2lnx@arrl.n Source: W2LNX Subject: testing testing IC-706Mk	0357KSPQ 21:19 et IC-706MkIIG o IIG on 2 m via	on 2 m vi a WM3M-10	.a WM3M-10 ) using 5 w	using 5 wat atts	ts				

#### open VARA HF session

• Open Session: is a button to click on after selecting session type

Vara HF Winlink Session - W2LNX	_	×
Exit Settings Switch to Peer-to-Peer Channel Selection Map Forecast Best chan. Next chan. Start Stop /	Abort	
W1AW Center Freq. (kHz): 7101.500 Dial Freq. (kHz): 7100.000 Bearing: 051 Quality: 48		
Favorites: W1AW @ 7101.500 [500] (48) · Select Add to favorites Remove from favorites		
Channel Free In: 0/0 Out: 0/0 BPM: 0/0 Disconnected		
<ul> <li>Launching VARA TNC</li> <li>Successfully connected to VARA TNC.</li> <li>Vara signal bandwidth is 500 Hz.</li> <li>Using Icom Amateur Radios, COM19, 19200 baud</li> <li>Ready</li> <li>This is a registered version of Vara TNC that can operate at full speed.</li> </ul>		
		 ~
click on Settings menu		

## select Vara TNC Setup

🗱 Vara Setup	×						
Virtual TNC host address/name: 127.0.0.1							
Virtual TNC Command Port: 8300 🖨 Data Port: 8301							
Session Bandwidth: 500 $\checkmark$							
Enable 2750 Hz channels							
(Requires radio TX filter set for 100-2900 Hz and RX bandwidth of 3000)							
VARA Modem location: C:\Users\bem\program files\VARA\VARA.exe							
Automatically launch Vara TNC when session is opened							
Show the Vara TNC screen when it's launched							
Identify with Morse code at end of session							
Update Cancel							

enter path name of VARA HF program as needed set transmission bandwidth to <mark>500 Hz</mark>

- 500 Hz is recommended on HF bands to be a good neighbor
  - less likely to be interfered by a transmission you do not hear
- 2300 Hz can be used on uncrowded bands
- 2750 Hz is not permitted under Part 97 rules

### IC-706MkIIG:

**mode:** upper side-band (USB)

power: 100 watts

**RF/SQL:** adjust to reduce background noise

#### SignaLink USB:

- **TX:** 12 o'clock
- **RX:** 12 o'clock

**DLY:** minimum

**JP3:** on

# header module: SLMOD6PM cable: SLCAB6PM

#### frequency control cable:

Valley Enterprises CT-17 USB FTDI CI-V Cat Control Cable or

RT Systems USB-RTS01 Programming Cable

Winlink Express 1.7.1.0 - W2LN	Х		_							_	- 0
W2LNX - Settings	Message	e Attachments	Move To: S	aved Items	~	Delete	Open Session:	Vara HF Wi	nlink ~	Logs Help	
🗋   🖨 🖆 🏚   🗗 🌐	) 🛛 🏷	🛃   🔿   ≫	0								
No active session.											
System Folders		Date/Time 🔍 👻	Message ID	Size	Source	Sender	Rec	ipient	Subject		
Inbox (46 unread)	0 🖓	2022/10/02 21:19	5SPD03S7KSPG	12202	W2LNX	W2LNX	w2ln	x@arrl.net	testing IC-70	6MkIIG on 2 m via WM	3M-10 using 5 watts
Read Items (329) Outbox (0)	P 2	2022/10/02 15:16	KB5A4R55B9CL	933	W2LNX	W2LNX	wb2u	u@arrl.net	Retesting IC	-706MkIIG on 6 m via \	WB2U using 50 watts
Sent Items (430)	🕴 P 2	2022/10/02 15:10	JZN8CNMILEQF	10207	W2LNX	W2LNX	wb2u	u@arrl.net	testing IC-70	6MkIIG on 6 m via WB2	2U using 50 watts
Saved Items (2)	P 2	2022/10/02 14:53	0MVRJ6BK4OH	352	W2LNX	W2LNX	wb2u	u@arrl.net	testing IC-70	6MkIIG on 6 m via WB2	2U using <mark>100</mark> watts
Deleted items (1) Drafts (2)	🕴 P 2	2022/10/02 14:36	QG1DGWX4M0	N9 10200	W2LNX	W2LNX	kn3u	i@arrl.net	FW: testing	C-706MkIIG on 6 m via	WB2U using 100 w
Personal Folders	P 2	2022/10/02 14:28	TJUIUOIOXKR4	1245	W2LNX	W2LNX	wb2u	u@arrl.net	Re:Fwd:testi	ing IC-706MkIIG on 6 m	n via WB2U
	P 2	2022/10/02 14:17	EW1ZKTRPU00	A 918	W2LNX	W2LNX	WB2	20	Retesting IC	-706MkIIG on 6 m via \	WB2U
	🤰 🌄 2	2022/10/02 14:11	NL6JB31NZWN	4 10186	W2LNX	W2LNX	WB2	20	testing IC-70	6MkIIG on 6 m via WB2	20
	🤰 🌄 2	2022/10/02 12:15	7DEOU4B8CLK	5 12172	W2LNX	W2LNX	w2ln;	x@arrl.net	testing IC-70	MkIIG via W1AW on 40	) m
	🤰 🌄 2	2022/10/02 12:12	CUAU2CS0UA3	8 2155	W2LNX	W2LNX	w2ln;	x@arrl.net	testing IC-70	MkIIG via W1AW on 40	) m
Global Folders	1 🖓 🖓 2	2022/10/02 10:45	JP12J5DPOD4N	2229	W2LNX	W2LNX	w3td	h@arrl.net	testing IC-70	MkIIG via W1AW on 80	) m
	🤰 🌄 2	2022/10/01 18:23	YNXG29T9YD2U	J 2175	W2LNX	W2LNX	w2ln:	x@arrl.net	testing packe	et over WM3M-10 using	IC-706MkIIG
	P 2	2022/09/30 23:44	LLRHKQ47HMS	Y 1021	W2LNX	W2LNX	w3td	h@arrl.net	Re: testing IC	C-706MkIIG via WM3M	-10
	<u>)</u> P 2	2022/09/30 23:27	JIZY36A9H1IV	20683	W2LNX	W2LNX	w2ln:	x@arrl.net	testing IC-70	6MkIIG via WM3M-10	
Contacts	0 P 2	2022/09/28 15:03	ROZ6Z4BMFCY	0 2163	W2LNX	W2LNX	W3T	DH	demonstrating	g the FT-2000D to you	
AC3JM AC3N	🤰 🌄 2	2022/09/27 17:00	KFDN50102E2D	) 12171	W2LNX	W2LNX	w2ln:	x@arrl.net	testing setting	gs for FT-2000D	
AC3N@ARRL.NET	<u> </u> 🔁 2	2022/09/27 16:56	67WZW30L636	5 2141	W2LNX	W2LNX	w2ln	x@arrl.net	testing setting	gs for FT-2000D	
AC82U AD3F ETO-03 JLTAFT@COMCAST.NET K1EHZ K1EHZ@ARRL.NET K3BAB K3XIT KA3AHI	Messag Date: From: To: w2 Source Subjec testin	e ID: 5SPD0 2022/10/02 W2LNX lnx@arrl.ne : W2LNX t: testing g IC-706MkI	357KSPQ 21:19 t IC-706MkIIG IG on 2 m v	; on 2 m ria WM3M-	via WM -l0 usi	3M-10 t ng 5 wa	asing 5 wat	ts			

## open VARA HF session

🗱 Vara HF Winlink Session - W2LNX	-	×
Exit Settings Switch to Peer-to-Peer Channel Selection Map Forecast Best chan. Next chan. Start Stop /	Abort	
W1AW         Center Freq. (kHz):         7101.500         Dial Freq. (kHz):         7100.000         Bearing:         051         Quality:         48		
Favorites:         W1AW @ 7101.500 [500] (48)         •         Select         Add to favorites         Remove from favorites		
Channel Free In: 0/0 Out: 0/0 BPM: 0/0 Disconnected		
** Launching VARA TNC ** Successfully connected to VARA TNC. ** Vara signal bandwidth is 500 Hz. ** Using Icom Amateur Radios, COM19, 19200 baud ** Ready ** This is a registered version of Vara TNC that can operate at full speed. ** This is a registered version of Vara TNC that can operate at full speed.		~
		$\vee$

#### click on Settings menu

#### select Radio Setup

Select Radio M	odel Icom An	nateur Radios	$\sim$	Antenna Selec	tion Default	
Icom Addres	s 58	USB 🔘	USB Digita	al 🔿 🛛 FM	O Use Inte	emal Tuner
Codan login	and optional p	assword:				
Radio Control Port						
Carial Dartta Ilaa	COM19	Baud	19200 ~	Enable RTS	Enable D	
Senal Fort to Use						
PTT Port (Optional)	)					
PTT Port (Optional) Serial Port to Use	) External	~	Baud 960	10 ~	Enable RTS	Enable DTR

enter settings in VARA HF Winlink Settings

- CI-V address is used for Icom radios instead of model name
- PTT is performed by the SignaLink

Exit Settings Switch to Peer-to-Peer Channel Selection Map Forecast Best chan. Next chan. Start Stop Abort	
W1AW Center Freq. (kHz): 7101.500 Dial Freq. (kHz): 7100.000 Bearing: 051 Quality: 48	
Favorites:         W1AW @ 7101.500 [500] (48)           Select         Add to favorites         Remove from favorites	
Channel Free In: 0/0 Out: 0/0 BPM: 0/0 Disconnected	
*** Launching VARA TNC *** Vara signal bandwidth is 500 Hz. *** Using Icom Amateur Radios, COM19, 19200 baud *** Ready *** This is a registered version of Vara TNC that can operate at full speed. 	

#### click on Channel Select

🗱 HF Char	nnel Selector									×
Exit Sele	ct Update	Via Internet U	Jpdate Via Radio	Map	Forecast	SFI All RM	IS	•		
Callsign	Frequency (kHz)	Mode	Grid Square	Hours	Group	Distance (mi)	Bearing (Degrees)	Path Reliability Estimate	Path Quality Estimate	^
N2LEE	3595.000	V2300	FM18HX	00-23	PUBLIC	16	198	99	99	
N2LEE	3595.000	V2300	FM18HX	00-23	PUBLIC	16	198	99	99	
WB3KAS	3590.000	V2300	FM18NR	00-23	PUBLIC	39	145	99	99	
WA3MEZ	3587.500	V2300	FM19OJ	00-23	PUBLIC	30	061	99	99	
N3HYM-10	3588.000	V2300	FM19FK	00-23	PUBLIC	22	322	99	99	
<b>WB3KAS</b>	7090.000	V500	FM18NR	00-23	PUBLIC	39	145	96	96	
N2LEE	7103.500	V2300	FM18HX	00-23	PUBLIC	16	198	96	96	
N3HYM-10	7099.400	V2300	FM19FK	00-23	PUBLIC	22	322	96	96	
N2LEE	7103.500	V2300	FM18HX	00-23	PUBLIC	16	198	96	96	
WA3MEZ	7101.200	V2300	FM19OJ	00-23	PUBLIC	30	061	96	96	
WA3MEZ	10147.800	V2300	FM19OJ	00-23	PUBLIC	30	061	94	94	
WA3MEZ	14109.800	V2300	FM19OJ	00-23	PUBLIC	30	061	92	92	
N3HYM-10	14097.900	V2300	FM19FK	00-23	PUBLIC	22	322	92	92	
KB3PCY	7107.250	V500	FM29EV	00-23	PUBLIC	101	060	90	56	
W2MMD	7101.500	V2300	FM29JR	00-23	PUBLIC	117	071	89	55	
WA3MEZ	18108.300	V2300	FM19OJ	00-23	PUBLIC	30	061	89	89	
NA3MD	7101.500	V2300	FM18QT	00-23	PUBLIC	44	126	89	55	
N3HYM-10	18108.500	V2300	FM19FK	00-23	PUBLIC	22	322	89	89	
W2GSA	7090.500	V500	FN20WG	00-23	PUBLIC	183	065	88	53	
WA3MEZ	21091.500	V2300	FM19OJ	00-23	PUBLIC	30	061	87	87	
AJ4FW	7103.600	V2300	FM07BC	00-23	PUBLIC	201	225	86	51	
KD4JWF	7098.000	V500	FM06RH	00-23	PUBLIC	210	199	85	50	
W1AW	7058.500	V500	FN31PR	00-23	PUBLIC	298	052	83	49	
W1AW	7101.500	V2300	FN31PR	00-23	PUBLIC	298	052	83	49	
N3HYM-10	28131.500	V2300	FM19FK	00-23	PUBLIC	22	322	82	82	
WA3MEZ	28145.500	V2300	FM19OJ	00-23	PUBLIC	30	061	82	82	
VE3HJL	7108.000	V2300	FN03IR	10-22	PUBLIC	330	342	80	48	
KF1D	7101.300	V2300	FN42FA	00-23	PUBLIC	359	055	79	47	
VA3MCT	7087.000	V2300	FN03HU	00-23	PUBLIC	339	342	79	48	
KF1D	10148.000	V2300	FN42FA	00-23	PUBLIC	359	055	78	50	
VE3KPG	7091.000	V2300	FN04VE	00-23	PUBLIC	349	352	78	47	~

## click on Path Reliability Estimate to sort



#### click on Settings menu list

select SoundCard...



set the audio drive level for little or **no** indication on ALC meter

• rule of thumb for older radios and current radios



horizontal antenna quarter wavelength above ground or less

- used for local communications within 400 miles
- used on 80 m (night) and 40 m (day)
- <u>Real-Time Local NVIS & DX</u>

#### inverted vee antenna



- modified horizontal dipole
  - compromise antenna easier to set up
- antenna calculators: <u>MOUKD</u> and <u>hamuniverse.com</u>

- each leg is 32 feet of 16 gauge antenna wire
- 8 foot rope at each end
- slope is 45 degrees
- MFJ-1917 telescopic 34 foot mast: used 28 feet
- flagpole tire mount
- coax cable: 25 feet LMR-240 + 12 feet RG-8X
- Diamond BU-50 1:1 balun
- anchored by 10 pound weight at each end
- SWR: 1.7:1 at 7.1 MHz measured by graphical antenna analyzer
- can be deployed by one person



## 40 m inverted vee antenna



## flagpole tire mount - driver mirror aimed down

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coax cable secured to each mast segment



## grippy gloves is needed to tighten and loosen mast segments



### coax cable with mast ties



### reusable 1:1 balun



## adjustable antenna ends



gravity anchors at ends instead of stakes



## antenna on bobbin



## bobbin made from two shallow carry-out food containers

Montgomery Amateur Radio Club



## exchanging Winlink messages via WB3KAS and W1AW using 5 watts

IS video: send and receive messages via the WB3KAS Winlink gateway

Vara HF Winlink Session - W2LNX —	×
Exit Settings Switch to Peer-to-Peer Channel Selection Map Forecast Best chan. Next chan. Start Stop Abort	
W1AW         Center Freq. (kHz):         3584.000         Dial Freq. (kHz):         3582.500         Bearing:         051         Quality:         2	
Favorites: K1EHZ @ 14108.500 [2300] (40) - Select Add to favorites Remove from favorites	
Channel Free In: 0/0 Out: 0/0 BPM: 0/0 Disconnected	
*** Launching VARA TNC *** Successfully connected to VARA TNC. ** Vara signal bandwidth is 500 Hz. *** Using Icom Anateur Radios. COM19, 19200 baud *** Ready *** This is a registered version of Vara TNC that can operate at full speed.	

#### press Start to send message with file attachment



VARA HF displays transmission rate in red

• the transmission rate is more than twice the bandwidth

Vara Winlink Session - W2LNX	_	х
Exit Settings Switch to Peer-to-Peer Channel Selection Map Forecast Best chan. Next chan. Start Stop	Abort	
W1AW         Center Freq. (kHz):         7058.500         Dial Freq. (kHz):         7057.000         Bearing:         051         Quality:         0		
Favorites: W1AW @ 7058.500 [500] (0)  • Select Add to favorites Remove from favorites		
Channel Free In: 0/0 Out: 12032/12032 BPM: 5920 Disconnected		
<ul> <li>*** Winlink Vara Connection to W1AW @ 2022/10/02 12:15:55 USB Dial: 7057.000</li> <li>*** Station Bearing: 051, Range: 300 miles</li> <li>RMS Timode 13.47.0</li> <li>W2LXX has 102 daily minutes remaining with W1AW (FN31PR)</li> <li>(W12xK-50-B27WIHJMS]</li> <li>;PO: 92070247</li> <li>CMS via W1AW &gt; </li> <li>;FW: W2LNX</li> <li>[RMS Express-1.7.1.0-B2FHM\$]</li> <li>;PR: 97041483</li> <li>; W1AW DE W2LNX (FM13JB)</li> <li>FC EM 7DEOU4B8CLK6 12115 12032 0</li> <li>F&gt; F4</li> <li>FS Y</li> <li>*** Sending 7DEOU4B8CLK6.</li> <li>FF</li> <li>FG and reesage 7DEOU4B8CLK6</li> <li>*** Completed send of message 7DEOU4B8CLK6</li> <li>*** Sending 7DEOU4B8CLK6.</li> <li>FG and of session with W1AW at 2022/10/02 12:18:26</li> <li>*** Messages Received: 0. Total bytes sent: 12172, Time: 02:09, bytes/minute: 5630</li> <li>FQ</li> <li>*** — End of session with W1AW at 2022/10/02 12:18:26</li> <li>*** Messages Received: 0. Total bytes received: 0. Total session time: 02:30, bytes/minute: 0</li> <li>*** Disconnecting</li> <li>*** Disconnecting</li> <li>*** Disconnecting from Winlink RMS: W1AW @ 2022/10/02 12:18:32</li> <li>*** Sension: 2.6 min: Avg Throughput: 4715 Bytes/min; 1 Min Peak Throughput: 4715 Bytes/min</li> </ul>		< > >

#### log of finished transmission

Exit Settings Switch to Peer-to-Peer Channel Selection Map Forecast Best chan. Next chan. Start Stop Abort W1AW Center Freq. (kHz): 3584.000 Dial Freq. (kHz): 3582.500 Bearing: 051 Quality: 2 Favorites: K1EHZ @ 14108.500 [2300] (40) • Select Add to favorites Remove from favorites Channel Free In: 0/0 Out: 0/0 BPM: 0/0 Disconnected *** Launching VARA TNC *** Successfully connected to VARA TNC. *** Using lcom Amateur Radios, COM19, 19200 baud *** Ready *** This is a registered version of Vara TNC that can operate at full speed.	Winlink Session - W2LNX —	×
W1AW       Center Freq. (kHz):       3584.000       Dial Freq. (kHz):       3582.500       Bearing:       051       Quality:       2         Favorites:       K1EHZ       @ 14108.500 [2300] (40) <ul> <li>Select</li> <li>Add to favorites</li> <li>Remove from favorites</li> </ul> Channel Free       In: 0/0       Out: 0/0       BPM: 0/0       Disconnected         ***       Launching VARA TNC         ***       Launching VARA TNC.         ***       Vara signal bandwidth is 500 Hz.         ***       Using Icom Amateur Radios, COM19, 19200 baud         *** Ready         ***       This is a registered version of Vara TNC that can operate at full speed.	tings Switch to Peer-to-Peer Channel Selection Map Forecast Best chan. Next chan. Start Stop Abort	
Favorites:       K1EHZ @ 14108.500 [2300] (40)       Select       Add to favorites       Remove from favorites         Channel Free       In: 0/0       Out: 0/0       BPM: 0/0       Disconnected         ***       Launching VARA TNC       ***       Successfully connected to VARA TNC.         ***       Vara signal bandwidth is 500 Hz.       ***       Using Icom Amateur Radios, COM19, 19200 baud         ***       Ready       ***       This is a registered version of Vara TNC that can operate at full speed.	V Center Freq. (kHz): 3584.000 Dial Freq. (kHz): 3582.500 Bearing: 051 Quality: 2	
Channel Free In: 0/0 Out: 0/0 BPM: 0/0 Disconnected *** Launching VARA TNC *** Successfully connected to VARA TNC. *** Vara signal bandwidth is 500 Hz. *** Using Icom Amateur Radios, COM19, 19200 baud *** Ready *** This is a registered version of Vara TNC that can operate at full speed.	K1EHZ @ 14108.500 [2300] (40) - Select Add to favorites Remove from favorites	
*** Launching VARA TNC *** Successfully connected to VARA TNC. *** Vara signal bandwidth is 500 Hz. *** Using Icom Amateur Radios, COM19, 19200 baud *** Ready *** Ready *** This is a registered version of Vara TNC that can operate at full speed.	e In: 0/0 Out: 0/0 BPM: 0/0 Disconnected	
	VARA TNC ly connected to VARA TNC. bandwidth is 500 Hz. Amateur Radios, COM19, 19200 baud gistered version of Vara TNC that can operate at full speed.	

press Start to receive message with file attachment



VARA HF displays transmission rate in green

• the receiving rate is more than twice the bandwidth

Vara Winlink Session - W2LNX	_	×
Exit Settings Switch to Peer-to-Peer Channel Selection Map Forecast Best chan. Next chan. Start Stop	Abort	
W1AW     Center Freq. (kHz):     7058.500     Dial Freq. (kHz):     7057.000     Bearing:     051     Quality:		
Favorites: W1AW @ 7058.500 [500] (0) - Select Add to favorites Remove from favorites		
Channel Free In: 2520/2711 Out: 0/0 BPM: 5341 Disconnected		
<ul> <li>*** Winlink Vara Connection to W1AW @ 2022/10/02 12:19:58 USB Dial: 7057.000</li> <li>*** Station Bearing; 051, Range: 300 miles</li> <li>RMS Timode 1:3.47.0</li> <li>W2LXX has 99 daily minutes remaining with W1AW (FN31PR)</li> <li>W2LXX has 99 daily minutes remaining with W1AW (FN31PR)</li> <li>W2LXX has 99 daily minutes remaining with W1AW (FN31PR)</li> <li>W2LXX Cap2PWIHJMS]</li> <li>:PQ: 72016286</li> <li>CMS via W1AW &gt;</li> <li>:FW: W2LNX</li> <li>[RMS Express-1.7.1.0-B2FHMS]</li> <li>:PR: 39559672</li> <li>:W1AW DE W2LNX (FM19JB)</li> <li>FF</li> <li>:PM: W2LNX G5VLKKOIHHY0 2711 david bem@engineer.com Fwd: testing IC-70MkIIG via W1AW on 40 m</li> <li>FC EM GSVLKKOIHHY0 4073 2711 0</li> <li>F&gt; 0A</li> <li>FS Y</li> <li>*** Receiving G5VLKKOIHHY0</li> <li>*** G5VLKKOIHHY0 4073 2711 0</li> <li>FS 4</li> <li>*** G5VLKKOIHHY0 4082/2719 bytes received</li> <li>*** Receiving G5VLKKOIHHY0</li> <li>*** G5VLKKOIHHY0</li> <li>*** Each of session with W1AW at 2022/10/02 12:21:05</li> <li>*** Messages sent: 0. Total bytes serceived: 2780, Total session time: 01:06, bytes/minute: 2492</li> <li>*** Disconnected from Winlink RMS: W1AW @ 2022/10/02 12:21:13</li> <li>*** Session: 1.2 min; Avg Throughput: 2033 Bytes/min; 1 Min Peak Throughput: 2033 Bytes/min</li> </ul>		<

#### log of finished transmission

- connect to W1AW and WB3KAS on 80 m and 40 m
- find reliable HF Winlink gateways on 80 m and 40 m
- periodic practice exercises
  - <u>Winlink Wednesday</u>
  - <u>Winlink Wednesday PR</u> in Spanish and English
  - <u>EmComm-Training.org</u>
  - join <u>MCACS</u>
  - join <u>PG-ARES Listserv</u>

- this presentation is to get you started on Winlink HF
- Windows settings for
  - audio device are essentially the same for external or built-in devices
    - always check settings for correct default audio device
    - naming radio audio device reduces confusion
  - computer radio control are essentially the same for
    - external serial cable or built-in
- easiest way to set up Winlink is to use
  - SignaLink USB audio interface with built-in VOX PTT
  - manually setting radio frequency
- need to practice, practice and practice

- Al, KN3U my EmComm Elmer
- Jim, WB3KAS my other EmComm Elmer
- Vic, WB2U for inspiring us to do Winlink testing
## questions



## W2LNX@ARRL.NET

ask for assistance!

printed: Oct 19, 2022 05:49:27 PM

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