



DIGITAL MODES: LOGGING AND RIG CONTROL

BARC MEMBERSHIP MEETING

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Rec	Off	Country	ST	County	Name	Other	S	N
		Ecuador					Y	N
		Cape Verde					Y	N
		Suriname					Y	N
		USA					Y	N
		Puerto Rico					Y	N
		French Guiana					Y	N
		Puerto Rico					Y	N
		Belgium					Y	N
		England					Y	N
		USA					Y	N
		Brazil					Y	N
		Chile					Y	N
FT8		USA	ID	KOOTENAI			Y	Y
FT8		Azores					Y	Y
FT8		Brazil					Y	Y
FT8		Canada					Y	Y
FT8		USA					Y	N
FT8		Belize					Y	Y
FT8		Switzerland					Y	Y

Band	Mode	Power	Time On	Sent	Re...

County	Frequency	Other

QSL Sent
 QSL Rcvd

Spot Last

Comments

Comments	Pfx	Time	C...	Bea...	Dist...
U5FCV: CORRIJO FRECUENCIA	CX	1731Z	SA	156	5...
CLJ: USB	CX	1730Z	SA	156	
Gracias 73's GI	ON	1729Z	EU		
	AO	1729Z			

JOHN WESTERKAMP, W8LRJ

- Always interested in radio and have always been a SWL
- Extra Class Operator and BARC Member since April 2018
- Bachelor of Electrical Engineering from University of Dayton
- Ph.D. in Electrical Engineering from Purdue University
- Specialized in Digital Signal Processing/Communications
- Electrical Engineering Faculty at U.D. for 17 years
- Computers and Networking for 10 years
- Retired and enjoying a great hobby
- **LRJ stands for Lori, Rachel, and Jacob (wife and two kids)**
- Nephew is Jordan Westerkamp, football player University of Nebraska



THE R₉ IS ON THE ROOF!!





R9 CREW

- Tim Procuniar, N8NQH
- Don Macon, KE8WVJ
- Glenn Rodgers, KE8LZD
- Stu Holzer, K8ST
- Jim Gifford, KD8APT
- Paul Sharp, WS8R
- William Curtice, WA8APB
- John Westerkamp, W8LRJ

Thank you all!!

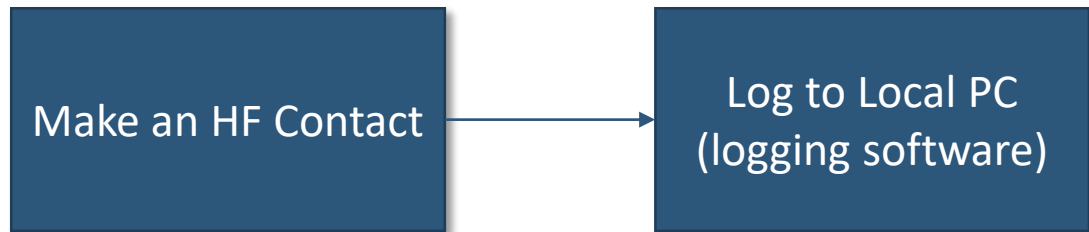


OVERVIEW

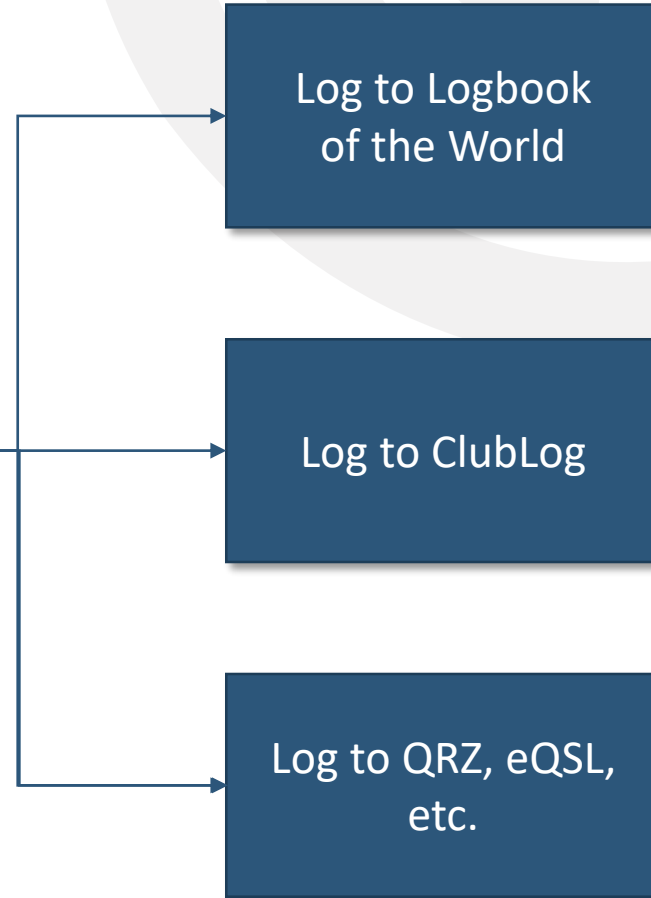
- Previously, we looked at logging and rig control for *voice* contacts using N3FJP locally and LotW and ClubLog over the Internet.
- Tonight, we will consider the same ideas of logging and rig control for *digital software*, in particular WSJT-X (FT-8 and FT-4) and Fldigi (PSK32, Olivia, MT63, RTTY).
- ***Connecting rigs to digital software requires two parts: CAT Control and Audio Communication.***

LOGGING PROCESS

Your Shack

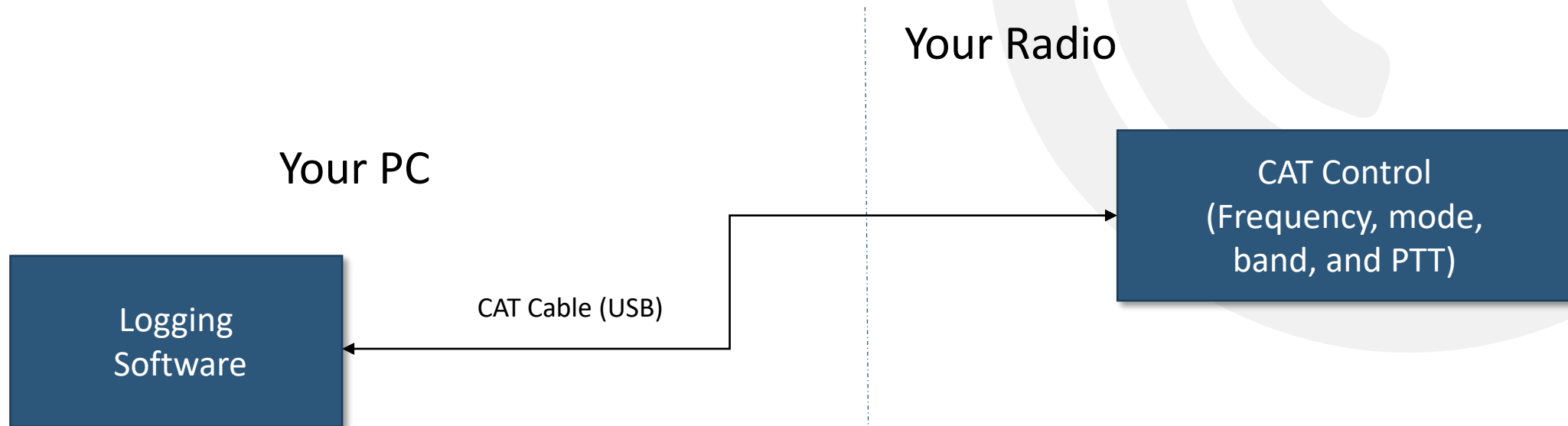


Internet



- Ideally, the Internet logging is done automatically by your logging software on your PC.
- You may have to trigger the upload manually, however.
- Internet logging is *optional*, but important.

RIG CONTROL FOR VOICE



- Generally requires a single USB cable and setup for CAT Control.
- Allows your logging software to enter the band, frequency, and mode automatically.
- Allows you to click on spots in the logging software and automatically switch your rig.



RIG CONTROL

Rig Interface Setup 2.8 (Ctrl R)

Select Rig: None, Client API, Elecraft, Flex API, FlexRadio, Icom, Icom2, Icom 735, Kenwood, Kenwood2, N3FJP API, Ten Tec Argonaut VI, Ten Tec Eagle, Ten Tec Fnt Pnl, Ten Tec Omni VI, Ten Tec Omni VII, Ten Tec Orion, Ten Tec Pegasus, Yaesu - Older, Yaesu 100D, Yaesu 757 GX II, Yaesu 890, Yaesu 891, Yaesu 900

Com Port: COM4, COM104, COM5, COM105

Baud Rate: 1.2, 2.4, 4.8, 9.6, 11.5, 14.4, 19.2, 28.8, 38.4, 56, Other

Parity: Odd, None, Even

Data Bits: 7, 8

Stop Bits: 1, 2

Connection Power: None, RTS, DTR, Both

Radio Polling Rate: 100 ms, 500 ms, 2 sec, 10 sec

Mode Determined By: Rig, Frequency, Don't Use

Mode by Frequency: Return All Mapped Modes

Use Frequency on Main Form Convert Command to Hex

Return LSB / USB Immediately Execute Commands

Show Frequency Change Form on Startup Clear On QSY

Don't Send CW Mode Change if on CW (so CW filters won't reset)

Don't Send Mode Change with Freq (useful when operating digital)

Add Offset to Frequency Change (CW & DIG) Offset (Hz): 0

Enable Ctrl Key Keyboard Tuning Invert Keyboard Tuning Up / Dn + / -

Block Band Overlap Transverter Offset (MHz): 0

Description:
To use the Rig Control interface, select the appropriate parameters for your radio and click test.
Be sure to select the RTS or DTR connection power option if your interface requires it. Many interfaces require RTS.
Icom users, after selecting Icom, don't forget to enter your rig ID into the command strings, which you will find in your rig's manual under CAT control.
I have the detailed successful settings users have sent along for many rigs here:
<http://www.n3fjp.com/help/righelp.htm>
I have tested this code personally on

Command to Read Frequency: FA; Frequency: [REDACTED]

Command to Read Mode (if required): MD; Mode: [REDACTED]

Save Settings Load Settings Test **Polling Rig!** End Test [More rig interface help and settings!](#)

Unprocessed data returned: [REDACTED] Copy Data to Clipboard

Converted from hex: [REDACTED]

Multi Radio Configuration: (Main Form Ctrl + X)

Rig 1: [] Browse

Rig 2: [] Browse

Rig 3: [] Browse

Help Test Swap Done

To test the change frequency command, enter a frequency in MHz and click Send. The mode should change to SSB or CW as well, depending on the frequency you enter. Test changing modes by clicking on the mode buttons:

Frequency: 21.446 Send

CW USB LSB AM FM RTTY TX RX

- Select *Rig*
- Select *COM Port*
- Select *Baud Rate*
- Click *Test*
- If box shows current rig frequency, click *Done*.
- If not, may have to play with Rig settings.
- You can *Save Settings* on the left and keep separate settings for each rig you own.



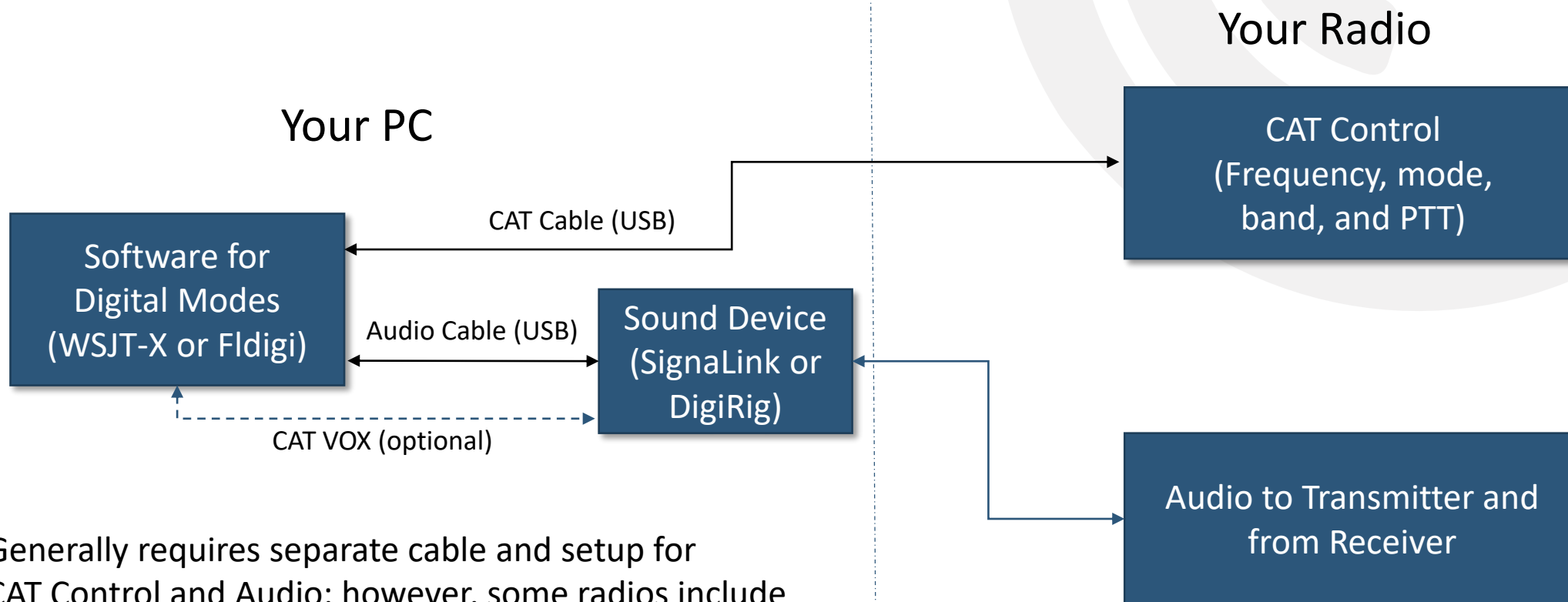
DX SPOTTING

DX Spotting Setup (Ctrl D)

Data Source <input checked="" type="radio"/> Telnet Host <input type="radio"/> LAN Relay	Telnet Host: dxspots.com <small>Delete Host From List</small>	Telnet 23	Telnet Login W8LRJ	Login Command SHOW/DX	<input type="checkbox"/> Enable DX Spotting % of Form <input checked="" type="checkbox"/> Auto Reconnect <input type="checkbox"/> 3 Min Keep Alive 12 <input checked="" type="checkbox"/> Show Band Map on Startup (Ctrl E) <input type="checkbox"/> Show Large Form on Startup (Ctrl+Shift D)
Display spots for these continents on the main form: <input checked="" type="checkbox"/> AF <input checked="" type="checkbox"/> AS <input checked="" type="checkbox"/> EU <input checked="" type="checkbox"/> NA <input checked="" type="checkbox"/> OC <input checked="" type="checkbox"/> SA <small>More Filtering</small>		Audio Alerts: <input type="checkbox"/> DX <input type="checkbox"/> Needed Spot <input checked="" type="checkbox"/> Beep When Spotted Speak Details: <input type="checkbox"/> DX <input type="checkbox"/> Needed Spot			
<pre>To enable Telnet DX spotting, enter your call sign in the login field above and then click the check box to enable DX spotting. You can also optionally add a command to be sent automatically when you log in such as SHOW/DX to retrieve recent DX spots immediately when you connect. You can change the size of the DX spots list on the main form by adjusting the percentage above. Press Ctrl E from the main form to also display a band map. The color codes on the band map are: Yellow Bold = < 3 minutes Yellow = 3 - 5 minutes White = 5 - 10 minutes Light Gray = 10 - 20 minutes Gray = 20+ minutes Italics = New Multiplier / Entity (in programs where applicable - not in state QSO programs) Red = New Entity LoTW user (AC Log only - must enable ID of LoTW Users on LoTW setup form) Note these color codes only apply to the band map, not the list on the main form. Also, only the last 200 spots are held in RAM, so during busy times, depending on your filtering, you may not see any gray spots. You can display the band map horizontally or vertically by clicking the Horz / Vert button at the bottom of the map. The button disappears after five seconds, but you can</pre>					
Press Ctrl E from the main form to display the band map! Click here to learn more!					
Please type text to send here and then press enter: <input type="text"/> <input type="button" value="Send"/> <input type="button" value="Spot Last"/> <input type="button" value="Done"/>					

- Click *Telnet Host*
- Enter *dxspots.com*
- Enter 23 for *Telnet* port
- Use your callsign for *Telnet Login*
- ***Be sure to click Enable DX Spotting.***
- Other settings as desired.

RIG CONTROL AND AUDIO FOR DIGITAL MODES



- Generally requires separate cable and setup for CAT Control and Audio; however, some radios include an internal soundcard and use a single USB cable (7300).
- Sometimes, it is desirable not to use CAT Control and allow the Sound Device to control PTT using VOX.



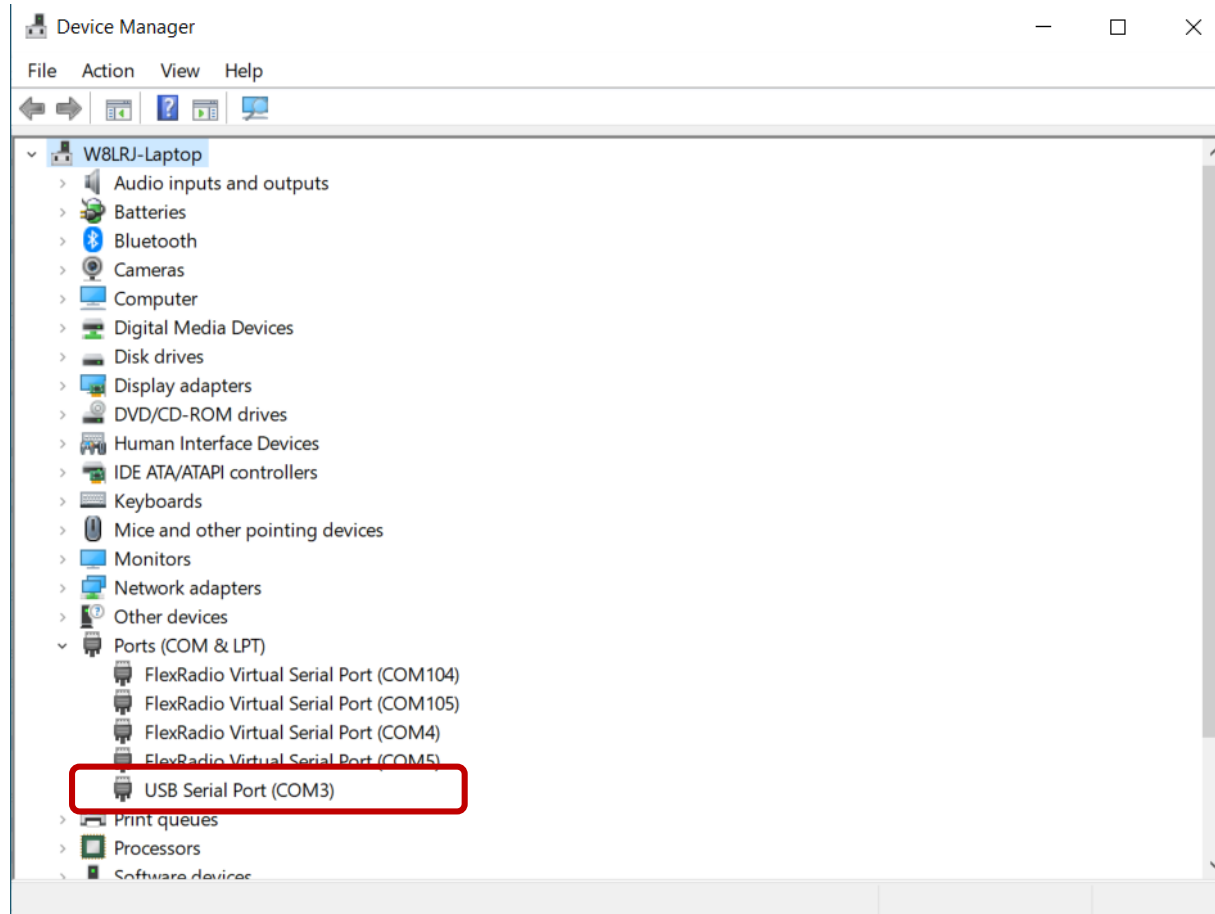
CAT CONTROL OPTIONS

- Let the logging program do rig control (as we did for *voice* logging) using a USB CAT cable.
 - a) Advantage: DX spotting, one click rig setting
- Let the digital software do rig control using a USB CAT cable.
 - a) Advantage: Logging software automatically updates
- Do not use CAT Control and let the Signalink or DigiRig control the PTT using VOX.
 - a) Advantage: Simple, best for VHF/UHF or older rigs with no CAT control

CAT CONTROL OPTIONS

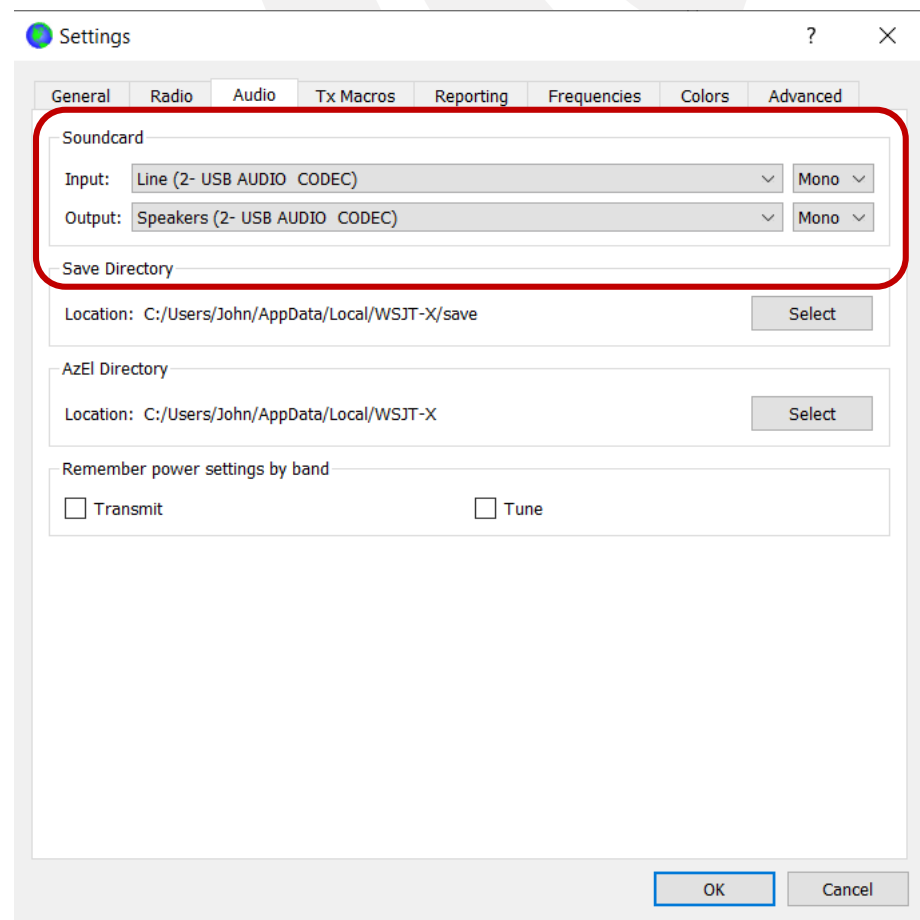
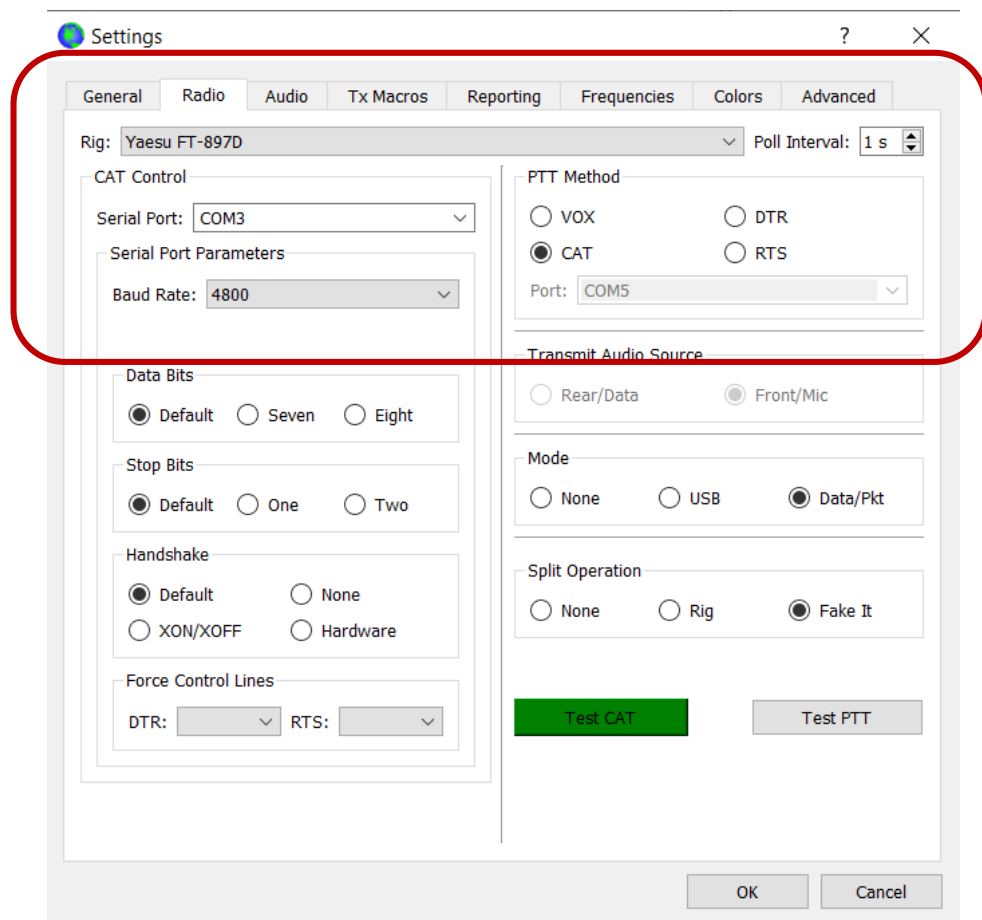
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DEVICE MANAGER



- Use *Device Manager* to find the COM Port that your CAT control cable is using.
- If it isn't obvious, unplug the CAT cable and see which port goes away. Then plug back in to get the Port number.
- Same approach for voice or digital mode CAT control.

WSJT-X RADIO AND AUDIO





LOGGING FROM WSJT-X

- WSJT-X will talk directly to N3FJP, but it is very clumsy.
- Let WSJT-X do rig control and let another program do all the logging to N3FJP.
- Examples include:
 - a) Gridtracker (Windows, Mac, Linux)
 - b) JT-Alert (Windows only)
- These programs also add functionality like tracking awards (WAS, DXCC), various QSO displays, QRZ lookups, and Chat functions.

FLDIGI RADIO



Fldigi configuration

- [-] Configure
 - [+] Colors-Fonts
 - [+] Contests
 - [+] IDs
 - [+] Logging
 - [+] Modem
 - [+] Misc
 - Operator-Station
 - [-] Rig Control
 - frig
 - CAT (rigcat)
 - GPIO
 - Hamlib**
 - Hardware PTT
 - [+] Soundcard
 - [+] UI
 - [+] Waterfall
 - [+] Web

Rig Control/Hamlib

Use Hamlib Defaults

Rig: Device:

Retries: Timeout (msec): Baud rate:

Write delay (msec): Post write delay (msec): Stopbits:

Polling Interval (msec):

PTT via Hamlib command Mode delay (msec):

Audio on Auxiliary Port Sideband:

DTR +12 RTS +12 CW is LSB mode

RTS/CTS flow control XON/XOFF flow control RTTY is USB mode

Advanced configuration: Initialize

Collapse Tree Restore defaults Save Close

FLDIGI AUDIO



f Fldigi configuration

- [-] Configure
 - [+] Colors-Fonts
 - [+] Contests
 - [+] IDs
 - [+] Logging
 - [+] Modem
 - [+] Misc
 - Operator-Station
 - [+] Rig Control
 - [-] Soundcard
 - Alerts
 - Devices**
 - Right channel
 - Settings
 - Signal Level
 - Wav file recording
 - [+] UI
 - [+] Waterfall
 - [+] Web

Soundcard/Devices

OSS Device: []

PortAudio Capture: Line (2- USB AUDIO CODEC) Playback: Speakers (2- USB AUDIO CODEC)

PulseAudio Server string: []

File I/O only Device supports full duplex

Audio device shared by Audio Alerts and Rx Monitor [] Enable

Note: must be selected and enabled for Rx Audio monitoring!

Collapse Tree Restore defaults Save Close



WINLINK

- Amateur radio email program (email over RF).
- Becoming increasingly common in emergency communications.
- If used on VHF/UHF, normally only need to set up the audio and use VOX for PTT (through a Signalink or DigiRig).
- On HF, normally set up both CAT control for your rig and audio.
- There are several different transmission modes for Winlink messages (Packet or VARA on both VHF/UHF or HF) so ask questions if you try to set it up.
- See *gcares.net* for the various Winlink nodes in the Miami Valley.