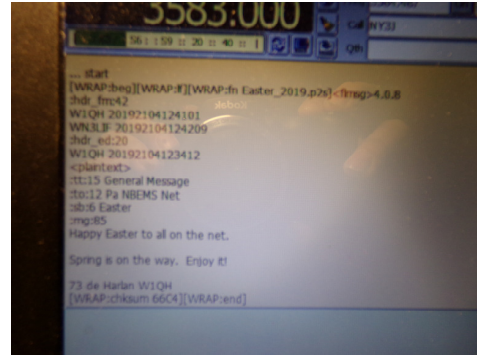


How do I?

An occasional series

This week: Transceiver and software interfaces for Advanced Users



Radio! Computers! Radio and Computers :(
Let's turn that frown upside down!

Or, How do I use my Yaesu FTDX1200 with both WSJT-X and FLDIGI?

Radio existed for close to 100 years without computers. It was all hardware. The separate receiver and transmitter combined into the transceiver. Vacuum tubes gave way to transistors. Radio Teletype or RTTY used a full sized commercial teletype machine as the interface. If you never saw one, they were about the size of a washing machine.

In the 1970s the personal computer was created and by the early 1980s clever amateur radio operators were trying to connect radios to computer sound cards. The sound card that comes built into many computers is not really ideal for our purposes. It does a good job saying "You've got mail!" and other "computer sounds" but may not have the sensitivity or some settings you want for world wide digital communications.

There are several standalone sound cards. Rigblaster and the Signalink are two of the



oldest and best known.



And some newer ones like this .
couple dollars on Ebay ® and have been written about in the amateur radio press. I
have one laying here to
worth the time. The
The **Easi-Digi** card
seems to be in small
about \$35. The new kid
price point is about the



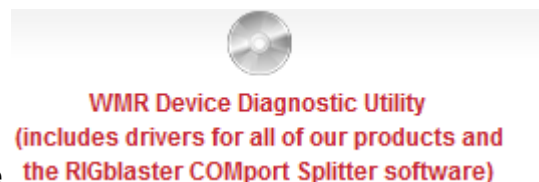
are very cheap. They are just a
test, but was never sure it was
owner assures me it works though.
seems like an improved version. It
scale production and retails for
on the block is the **DigiRig**. The
same as the



Easi-Digi and has been favorably
reviewed in the last 6 months or so. If I can borrow one I would like to play with it.

So now that we have our favorite Windows PC, sound card and a relatively modern
transceiver, we are ready to connect them so you too can experience the HF digital
modes!

From here I am going to presume you are familiar with basic computer operation and
can follow the instructions to physically connect your sound card to your computer and
radio and install the software.



One piece of software I find very useful is the

This combines a COM port splitter (where one physical USB port can function as two)
with some software that shows what is using what port. It also shows the GPS data if
you are using the WMR GPS unit to set the time on the computer.

I fell in love with digital modes while studying for my Technician license. They are the
reason I upgraded to General Class a couple years later. They are fun. I first used
FLDIGI with PSK31. PSK31 is a fast, “conversational” mode. About ten years later Dr
Joe Taylor K1JT introduced JT65 then JT9 then FT8 and FT4 using his software suite

WSJT-X. *FLDIGI* and PSK31 were a mainstream niche. JT65 was also, but FT8 has sold a lot of new radios and many amateurs only use FT8 and maybe FT4. It is not automatic radio, but it is computer assisted radio, ideal for multitasking. It also suits the personalities of many - get in, make the qso, move on. No hanging around talking about the weather or antennas. In the poor band conditions at the bottom of the solar cycle, it got a lot of folks on the air and is believed in 2020 to be 75% of **ALL** HF amateur activity. The Icom 7300 is probably the best selling amateur HF transceiver on the planet because of the relative ease of connecting it to a PC and getting on the air with FT8. The Kenwood 590SG and Yaesu FT991A are also popular HF radios with built in sound cards and internal antenna tuners.

One of the first uses of computers in ham radio is logging. Scott N3FJP has created a galaxy of contest logs built around his general logging program **AC LOG**. N1MM+ Logger is probably even more popular. It was my main contest logger but I found the N3FJP software was easier to make do what I wanted it to.

WSJT-X is the 800 pound gorilla at the moment. The current versions really need Computer Assisted Transceiver (CAT) control to function properly. Most HF radios designed after about 2004 can use CAT control. The original ones use a RS232 serial port. The newer ones, starting maybe 2015 or so, use USB control and often have a built in sound card so one USB cable is all that is needed from the radio to the PC.

WSJT-X is an fairly easy way to make a lot of contacts quickly. But it doesn't really play well with others. Most of us do not have the resources to dedicate one radio and computer to one mode.

I found setting up *FLDIGI* on my computer and using it without CAT control with my Icom 718 was pretty easy. But after a couple years I bought a Yaesu 857D; in part so I could use CAT control. It worked well *FLDIGI*. I was a late adopter of WSJT-X modes and really struggled to get the 857D to work and staying working with it. I then bought a Yaesu FTDX1200. It does not have an internal sound card. I use a Signalink. The Signalink has a USB connection to the computer and a separate cable running to the RTTY/DATA jack on the back of the radio.

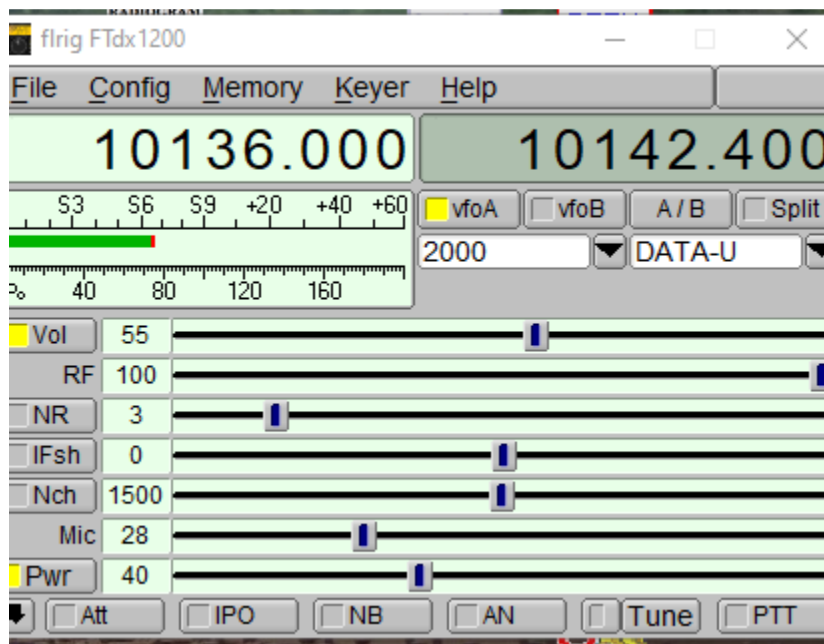


I use a LDG external tuner with mine as I find that on some bands it works better than the internal tuner. It has a cable to the tuner port on the radio. CAT control is via the CAT jack that I use with a USB to serial converter to connect to the computer. There are 2 cables into the computer as a result. See elsewhere in this series for articles on tuners, CAT control and USB cables and serial converters.

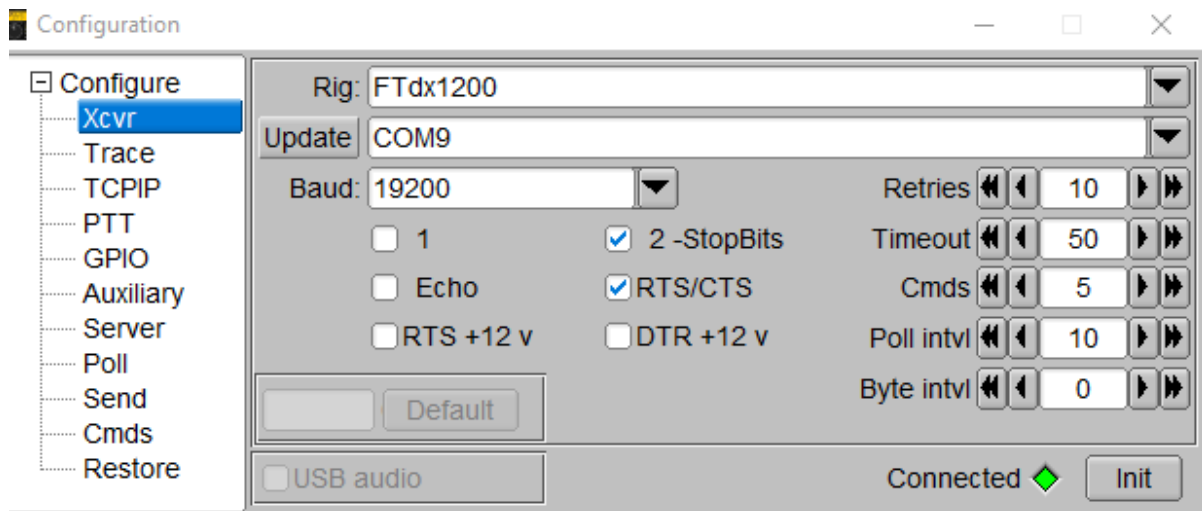
I spent hours trying to get WSJT-X and FLDIGI to play well. When I set it up, all I had for an Elmer was Andrew, AF3I. I could get FLDIGI to work. I could get WSJT-X to work. but if I wanted to change from one to the other, I was no longer playing radio; I was more of a computer tech than I like. A shout out to Jim W3LSN and the FTDX1200 groups.io for his assistance also!

This also works with the Yaesu 857D but I found I had to use the Yaesu SCU-17 sound card and integrated CAT control. The same process works with the Yaesu FT991A as well. You may need to make adjustments to the COM port number or the baud rate.

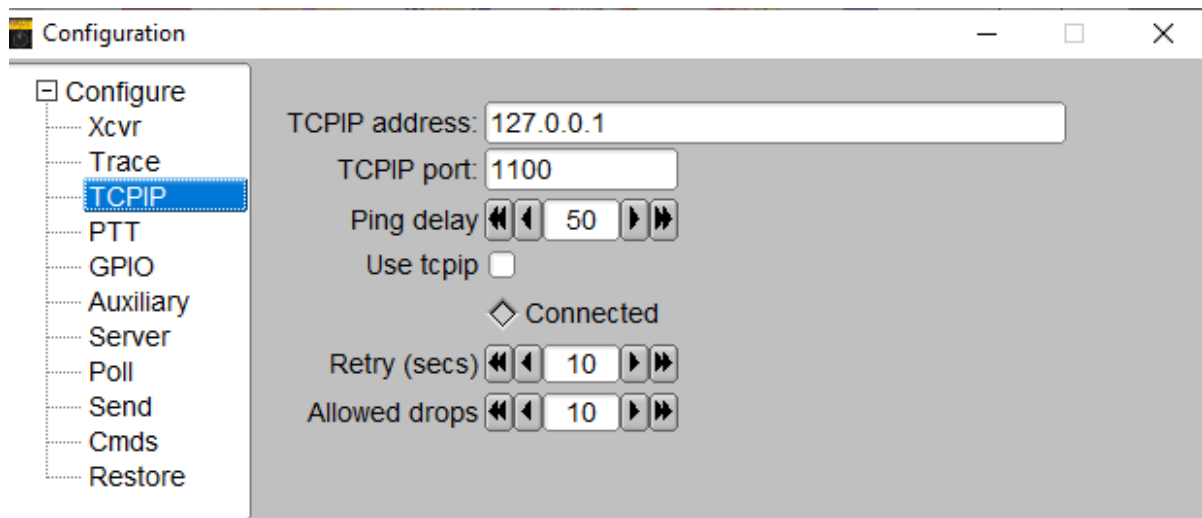
After the software is installed and the radio is connected. start with Flrig.



Flrig is part of the FLDIGI suite and is designed for CAT control. It works well. Click on CONFIG on the menu bar to get started . Omnirig and Ham Radio Deluxe are two other popular options.

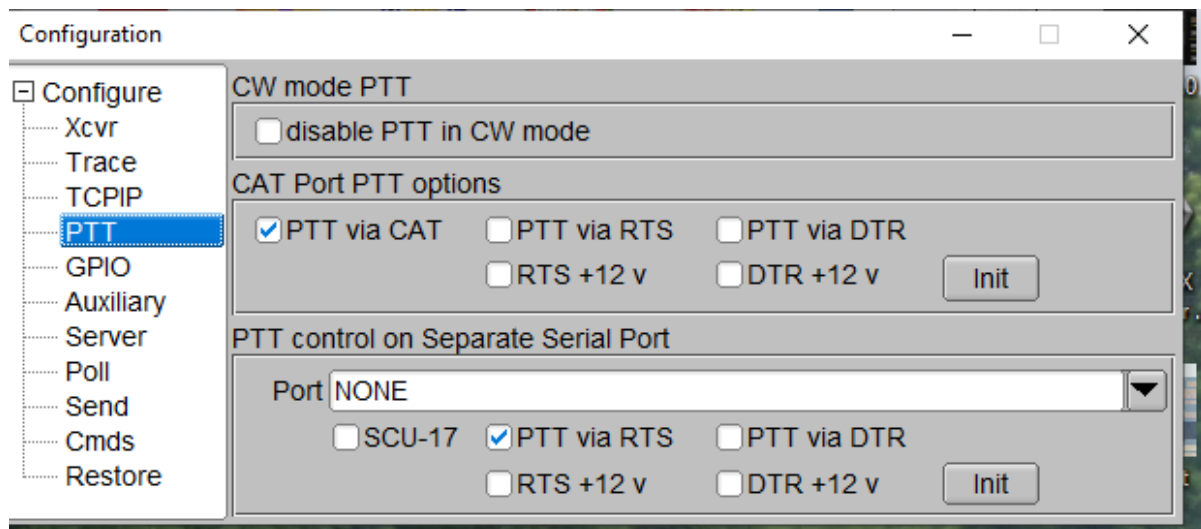


Select the rig from the drop down list. If yours is not shown, there may be a substitute. Select the COM port from the drop down list. The BAUD rate must be identical here and in the radio menu settings. Not sure why I use 19200, but it works. Yaesu is pretty simple: 2 stop bits, RTS/CTS. For the poll interval and retries I use the defaults although the numbers above may be slightly different. When you are ready, click the INIT button and you should be rewarded with a green diamond. A red one means you need to check your settings. The FTDx1200 does not have a built in sound card, so the USB audio is grayed out. On the FT991A, it will be visible and you can select it.

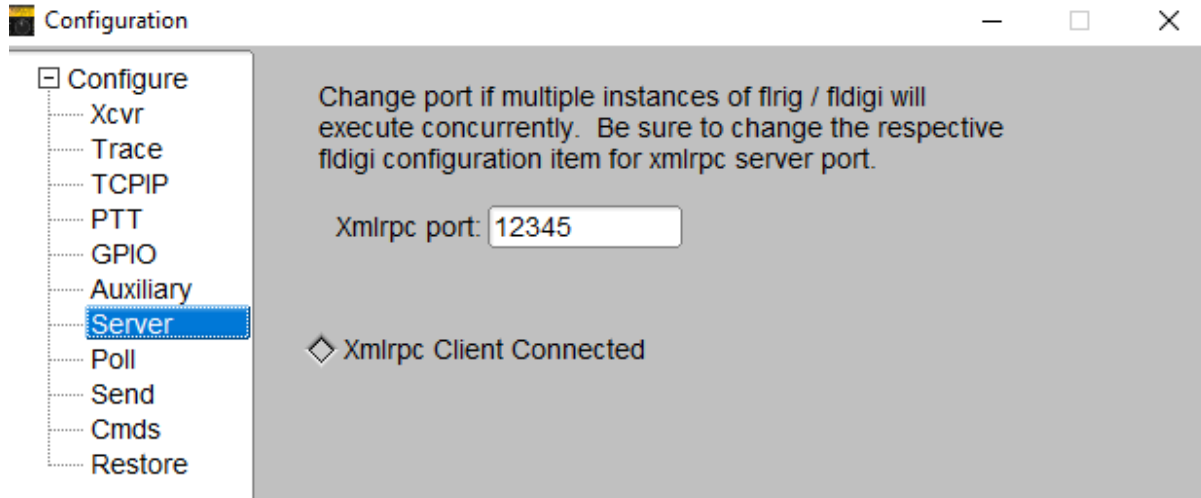


We need it to talk to our other software so go to the TCPIP menu and make sure the address and port is correct.

Then open PTT:



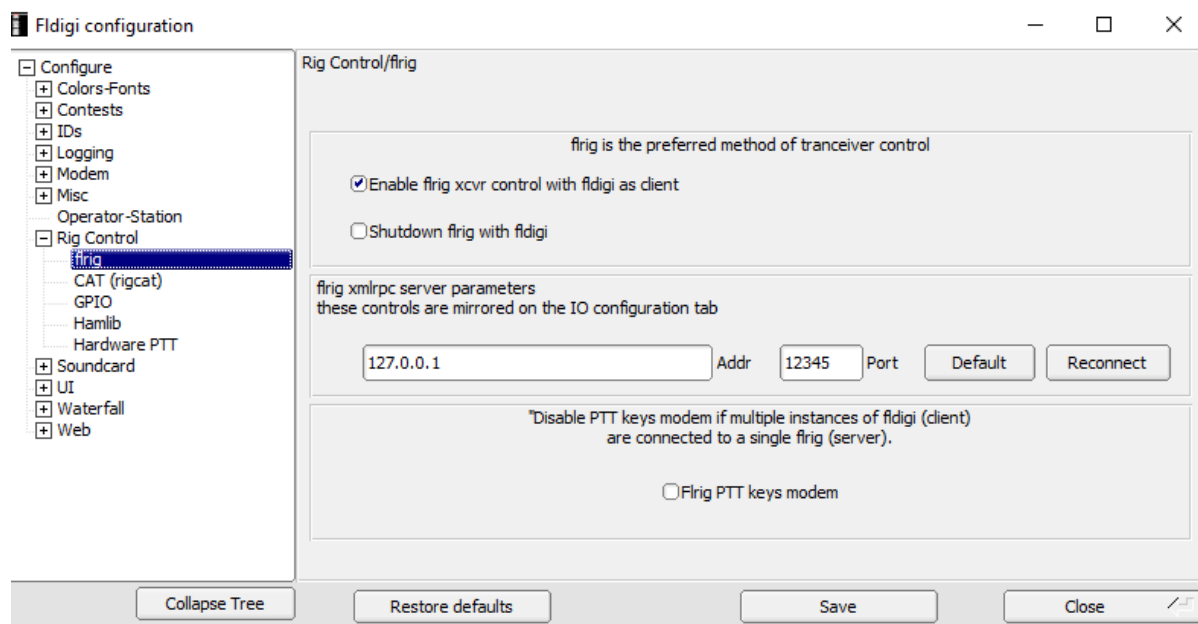
Then select the server



Step 2: FLDIGI

Now open the FLDIGI program

Go to the configuration menu and select Rig Control. Easy peasy!



From the main FLDIGI window, you can now change the frequency and the change will be sent to the radio. Tweak the tuning knob on the radio and the frequency shown in FLDIGI will change.

FLDIGI has a built in log, that works, but you run AC Log from N3FJP. And yes, you can export from FLDIGI but why make a 1 step process 2?

Open N3FJP logger and go to the setup menu and select the rig. In my case, when not using FLRIG, I have N3FJP control the rig. The Yaesu NEWER settings work. I think the default is 4800 baud so I change it to 19200 to match the rig. Everything else is the same as in FLRIG. You can test the CAT here to make sure it works. Please do so! All done? Great!

Now we need to set the API to port 1100 so it listens for FLRIG. We are using Amateur Contact Log as the API server for other N3FJP programs as well, so follow the selections below.

Server API - Allow any properly coded program to connect

API Server Functionality - Use this section to enable other programs, including other N3FJP Software programs, to connect to this one.

I often receive requests from folks who would like to interface their digital or logging programs with my logging software. To accommodate those requests, I have added easily implemented Application Program Interface (API) functionality, to enable any other program to do just that!

If you have a program that you would like to see interfaced with my software, please contact the developer(s) and refer them to this page:

<http://www.n3fjp.com/helo/api.html>

[Please click here for the detailed API specifications.](#)

☒ **TCP API Enabled (Server)** Port

Server Running = True Port = 1100

WSJT-X Interface

☐ **Listen for WSJT-X**

To color WSJT, in WSJT click Settings > Reporting > Check Accept UDP Requests.

Client - Only used from N3FJP contest software to AC Log

API Client Functionality - Use this section to enable N3FJP Contest Software to connect to Amateur Contact Log, to see if the entity you are working in the contest software is confirmed in AC Log.

To use this function:

Host Port

☐ **Enable Entity Confirmation Check via API**

Disconnected

All right! You now have AC Log, FLRIG and FLDIGI connected and working.

When you go to start a radio session, open FLRIG, then FLDIGI, then N3FJP in that sequence. When you log a contact in FLDIGI it will simultaneously log it in AC Log. How cool is that?

Now let's do WSJT-X. I know you can follow these screen shots Dennis Wage provided the N3FJP groups.io when helping someone with CAT control issues on an Icom 7610 and Icom 7300.

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[Please click here for the detailed API specifications.](#)

☐ TCP API Enabled (Server) Port 1100

Server Running = False Port = 1100

WSJT-X Interface Sec Elapsed: 11

☒ Listen for WSJT-X

Configure

To color WSJT-X in WSJT click Settings > Reporting > Check Accept UDP Requests.

Client - Only used from N3FJP contest software to AC Log

API Client Functionality - Use this section to enable N3FJP Contest Software to connect to Amateur Contact Log, to see if the entity you are working in the contest software is confirmed in AC Log.

To use this function:

Host Shack

Port 1100

☐ Enable Entity Confirmation Check via API

Disconnected

Done

WSJT Configuration

Port

☒ **Color Duplicate Calls**

☒ Dups are digital mode specific

Color unconfirmed entities:
In AC Log, evaluated by Settings >
New QSL Alert options.

☒ **Countries**

☒ **Grids**

☒ **Watch List**

Watch List forecolor =
Duplicate forecolor if dupe

☐ Speak Watch List call sign

AC Log Only

☒ **States**

Settings

General Radio Audio Tx Macros Reporting Frequencies Colors Advanced

Logging

☒ Prompt me to log QSO

☐ Log automatically (contesting only)

☐ Convert mode to RTTY

☐ dB reports to comments

☒ Clear QX call and grid after logging

Op Call:

Network Services

☒ Enable PSK Reporter Spotting ☐ Use TCP/IP connection

UDP Server

UDP Server: ☒ Accept UDP requests

UDP Server port number: ☐ Notify on accepted UDP request

☒ Accepted UDP request restores window

Secondary UDP Server (deprecated)

☐ Enable logged contact ADIF broadcast

Server name or IP address:

Server port number:

But the object is to be able to use either. I find if I do what Dennis does, to use FLDIGI I have to change a whole bunch of settings in N3FJP, then change them back.

I want simple, even if it means a little more work up front. So I still use JT Alert with WSJT-X to log to N3FJP.

Start with WSJT-X

Go to settings and select FLRIG as the transceiver. For CAT control type select VOX. Thanks JIm! It seems counter intuitive, but you want FLRIG to control the CAT, not WSJT-X. I use the rear data jack and select Fake It so the software is using one VFO. I have the rig to split mode, but for me, the FTDX1200 is hard to tell when it is in split or not. Your mileage may vary!

Settings

?

×

GeneralRadioAudioTx MacrosReportingFrequenciesColorsAdvanced

Rig: FLRig FLRig

Poll Interval: 2 s

CAT Control

Network Server:

Serial Port Parameters

Baud Rate: 19200

Data Bits

☐ Default

☐ Seven

☒ Eight

Stop Bits

☐ Default

☐ One

☒ Two

Handshake

☒ Default

☐ None

☐ XON/XOFF

☐ Hardware

Force Control Lines

DTR:

RTS:

PTT Method

☒ VOX

☐ DTR

☐ CAT

☐ RTS

Port: COM3

☐ Rear/Data

☒ Front/Mic

Mode

☐ None

☐ USB

☒ Data/Pkt

Split Operation

☐ None

☐ Rig

☒ Fake It

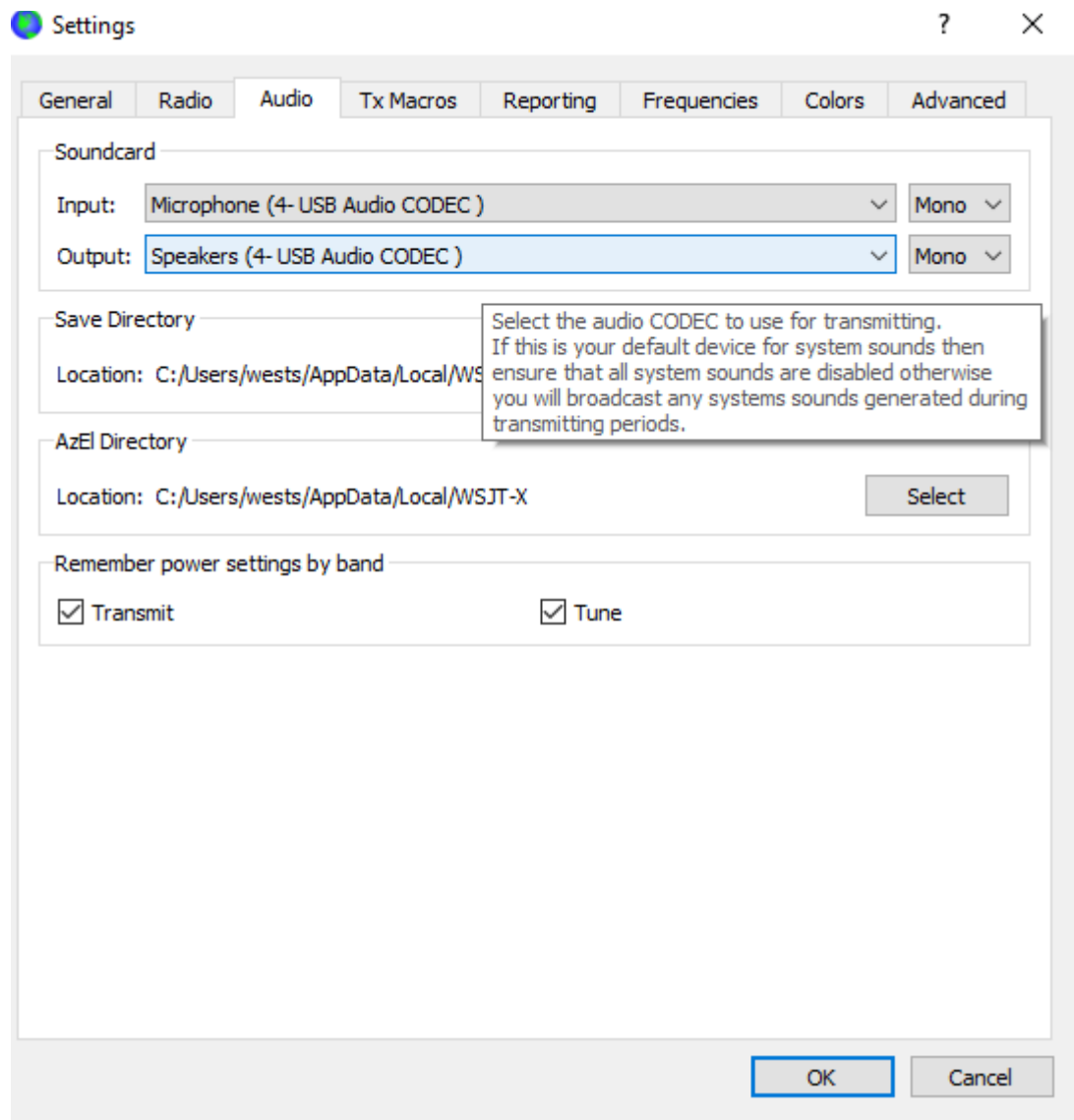
Test CAT

Test PTT

Serial port data rate which must match the setting of your radio.

OK

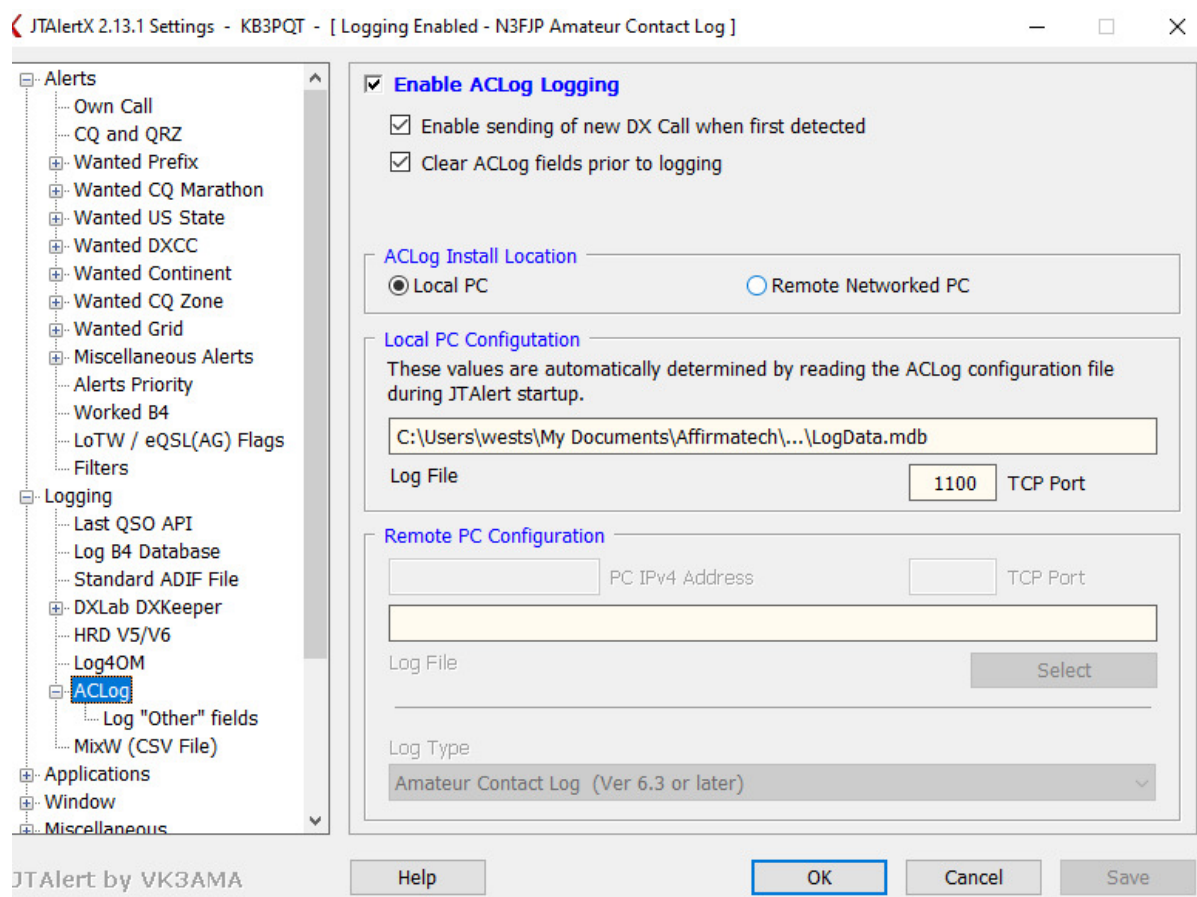
Cancel



Make sure your sound card is set for the Signalink or other outboard card.

When you know that works, proceed to JT Alert

The object is to 1) log from WSJT-X directly to AC Log and 2) use the reporting functions in JT Alert to track needed grids, etc.



At this point you should be able to use FLRIG and N3FJP with either FLDIGI or WSJT-X.

What? You want another trick? What if I told you that you can install and set up a N3FJP log like the Winter Field Day Log and not have to spend a lot of time?

Ok, let's get started. Download the WFD log and register it. Open the log. Go to the TCPIP settings and set it to connect to N3FJP AC Log. Open AC Log and minimize it.

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☐ TCP API Enabled (Server) Port

Server Running = False Port = 1100

WSJT-X Interface

☐ Listen for WSJT-X

Configure

To color WSJT, in WSJT click Settings > Reporting > Check Accept UDP Requests.

Client - Only used from N3FJP contest software to AC Log

API Client Functionality - Use this section to enable N3FJP Contest Software to connect to Amateur Contact Log, to see if the entity you are working in the contest software is confirmed in AC Log.

To use this function:

Host Port

☐ Enable Entity Confirmation Check via API

Disconnected

Done

When you open the radio tab on the setup menu, your settings will be there.

Select Rig:
com2
com 735
Kenwood
Kenwood2
K3FJPA
Icom Tec Argonaut VI
Icom Tec Eagle
Icom Tec Fnt Pnl
Icom Tec Omni VI
Icom Tec Omni VII
Icom Tec Orion
Icom Tec Pegasus
Yaesu - Older
Yaesu 100D
Yaesu 757 GX II
Yaesu 890
Yaesu 891
Yaesu 900
Yaesu 920
Yaesu 920A
Yaesu 990
Yaesu 991
Yaesu 1000
Yaesu 1000 D
Yaesu - Newer

Com Port:
COM4
COM3
COM9

Baud Rate:
☐ 1.2 ☐ 2.4 ☐ 4.8 ☐ 9.6 ☐ 11.5 ☐ 14.4 ☒ 19.2 ☐ 28.8 ☐ 38.4 ☐ 56

Parity:
☐ Odd ☒ None ☐ Even

Connection Power:
☐ None ☒ RTS ☐ DTR ☐ Both

Mode Determined By:
☒ Rig ☐ Frequency ☐ Don't Use
☐ Mode by Frequency: Return All Mapped Modes

Data Bits:
☐ 7 ☒ 8

Stop Bits:
☐ 1 ☒ 2

Radio Polling Rate:
☐ 100 ms ☐ 500 ms ☒ 2 sec ☐ 10 sec

☒ Use Frequency on Main Form ☐ Convert Command to Hex
☐ Return LSB / USB ☐ Immediately Execute Commands
☐ Show Frequency Change Form on Startup
☐ 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 in Hz:
☐ Enable Ctrl Key Keyboard Tuning | Invert Keyboard Tuning Up / Dn + / -
☐ Block Band Overlap

Command to Read Frequency:
FA:

Command to Read Mode (if required):
MD0:

Frequency:

Mode:

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.html>

[More rig interface help and settings!](#)

Unprocessed data returned:
Converted from hex:

Multi Radio Configuration: (Main Form Ctrl + X)
Rig 1:
Rig 2:
Rig 3:

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:

This is much longer than our usual articles. For more information please see:

<https://www.radioclub-carc.com/resources/>

<http://www.westmountainradio.com>

<http://www.tigertronics.com>

<https://www.yaesu.com/>

<https://www.icomamerica.com/en/>

<https://www.kenwood.com/usa/com/>

<https://www.triplite.com/>

<https://digirig.net/product/digirig-mobile/>

https://www.ebay.com/b/Easy-Digi/40059/bn_7023309424

<https://www.physics.princeton.edu/pulsar/K1JT/>

<https://sourceforge.net/projects/flidigi/>

Catch 'ya on the air!