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[Jim Carson](#)

Notes to self

Menu

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(Updated 2019-03-28)

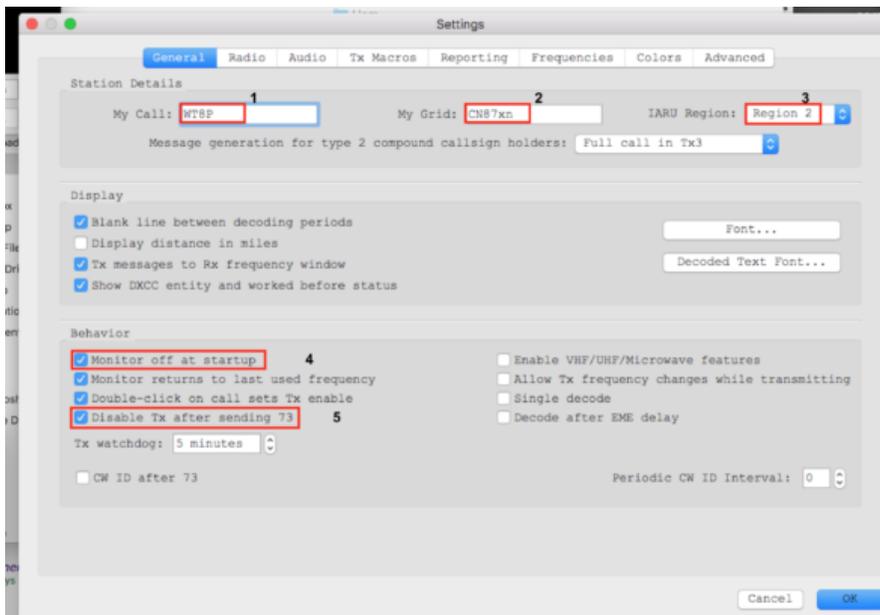
First, download and install the latest distribution from the [WSJT-X project page](#). The [documentation](#) is well-written and useful. The second release candidate features decoding improvements (*a priori decoding*) that increases the ability to work with weaker signals. It seems to work *awesomely*.

Second, verify your system clock is set accurately. Seriously. The FT8 cycles are 15 seconds, of which 12.6 seconds are transmit, 0.5 – 1 seconds of decode & lookup, and the rest left up to you to make a response. On Mac, this is done via command-line:

```
sudo ntpdate -u time.apple.com
```

On Windows, use [Dimension 4](#)

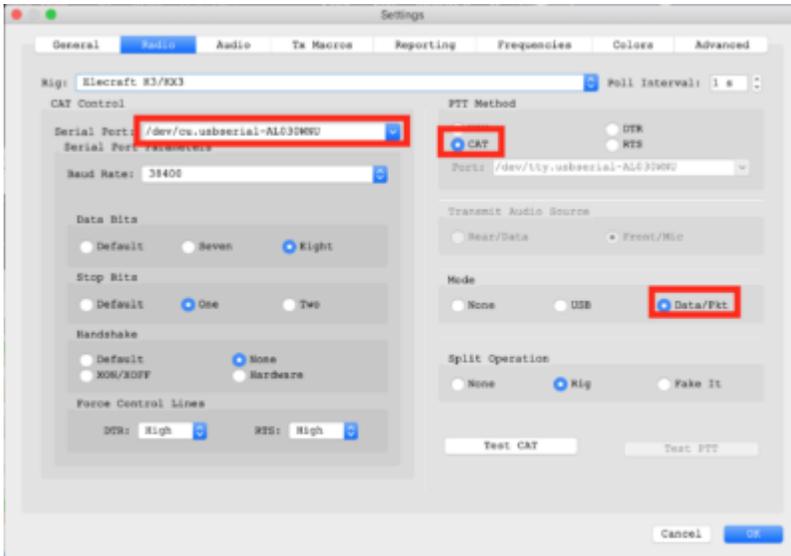
Edit the preferences. In the **General** tab:



FT8 – General Settings

1. Enter *your* call sign.
2. Enter your [Maidenhead grid](#).
3. This is optional, but if you choose your [IARU region](#), it'll help set up your frequency list later.
4. I like the program off by default as a reminder to set my system time.
5. There is some automation in place such that when it sends the “73” (“Best regards”), it'll stop transmitting until you reenable it again.

The **Radio** tab is going to vary depending on what you own.
For my Elecraft KX3:



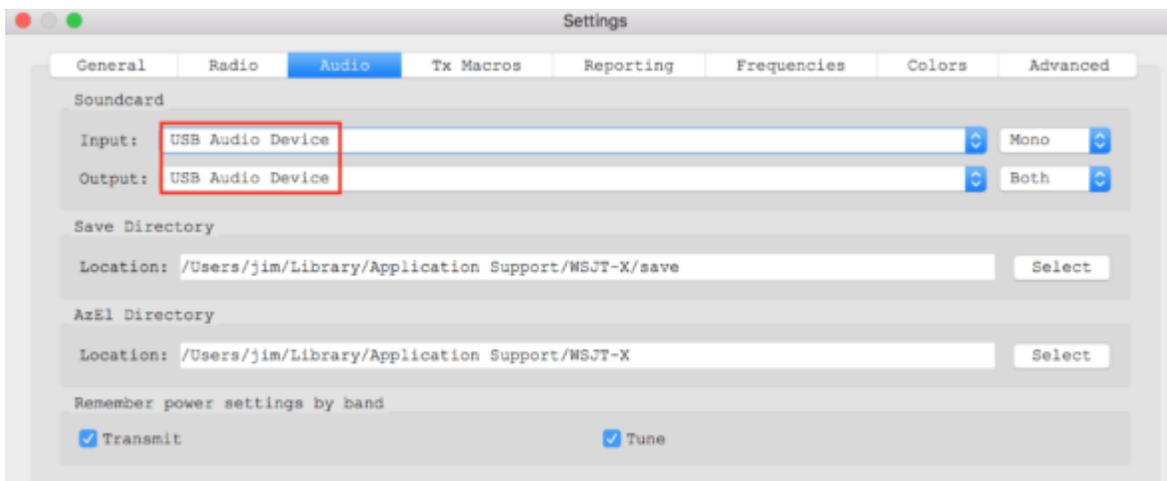
1. USB device for the control cable.
2. The computer controls the radio rather than using tones (like my HT does).
3. This tells the radio to use data mode, which disables compression, the RX/TX EQ, and uses a low error-rate ALC.

DATA A and AFSK A (Audio Data Modes)

Many audio-based data modes can be heard on the bands, including Pactor, Olivia, MFSK, JT65, etc. A computer, sound card, and appropriate software is required to use these modes. **DATA A** disables compression and RX/TX EQ, and optimizes transmit **ALC** for low bit error rate. Upper sideband is the default.

From the KX3 manual

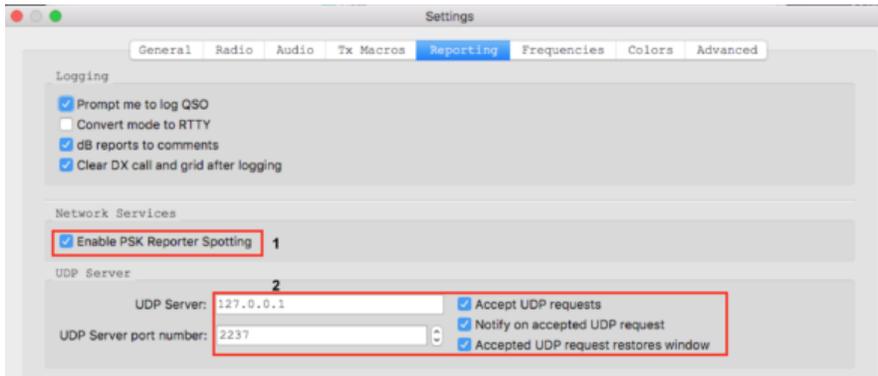
My Mac lacks a microphone, so I use an external USB dongle for both in and out. Generally, you want to use as little volume as necessary to avoid overloading the card.



FT8 audio

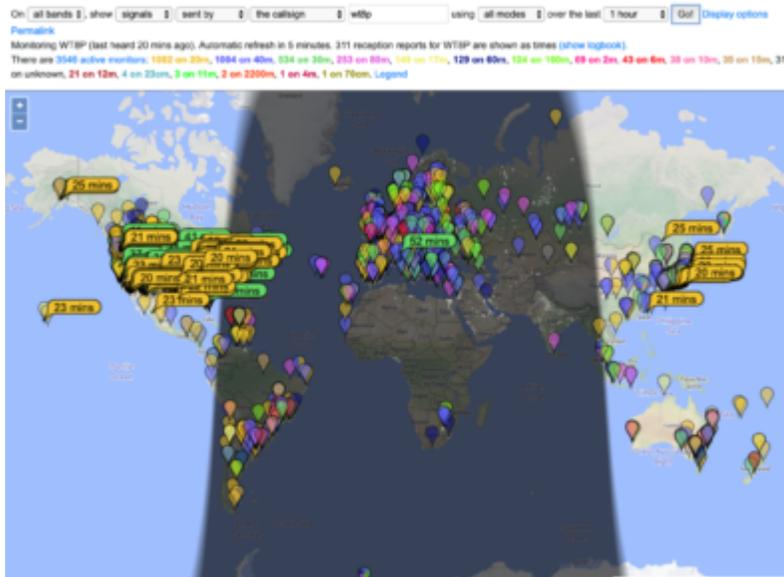
Generally, I run with ALC (Automatic Level Control) — the ALC gain on the radio -showing 4-5 bars. Some radios will require this off. Sound out from the radio (and into the sound card) is kept at a minimum. See below.

The **reporting** tab has two items of interest:



FT8 – Reporting

1. When you detect a station, upload it to this (free) [spotting service](#) This is a pretty nifty

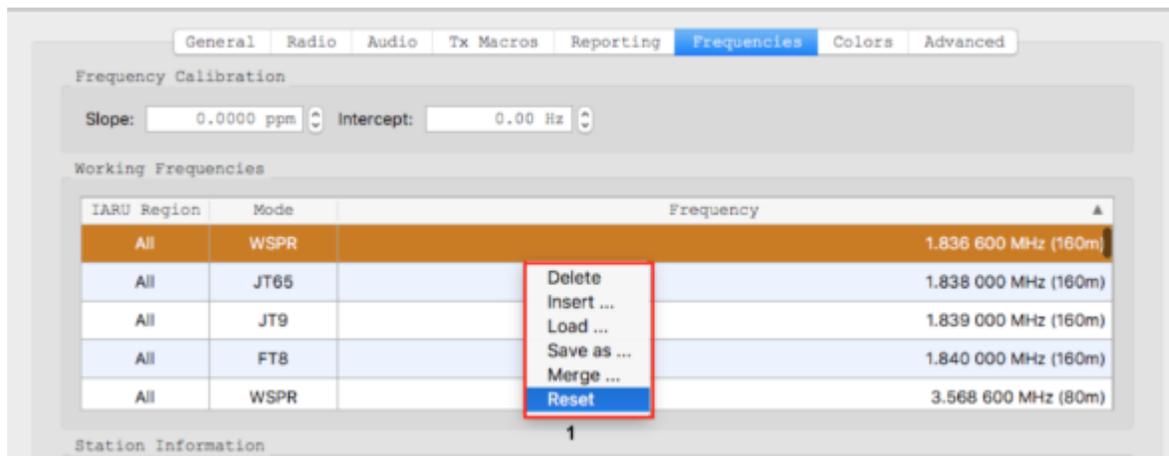


<https://pskreporter.info/pskmap.html>

This is very useful because it lets you see that your station is being received. The light purple arc is an estimate of where I'm being well-received.

2. There are supplementary utilities that can listen to the connection and automatically log for you. For example, I have [JT-Bridge](#) act as a layer to do lookups then instruct MacLoggerDX to upload them to QRZ.com. (Yes, this is overly complex.)

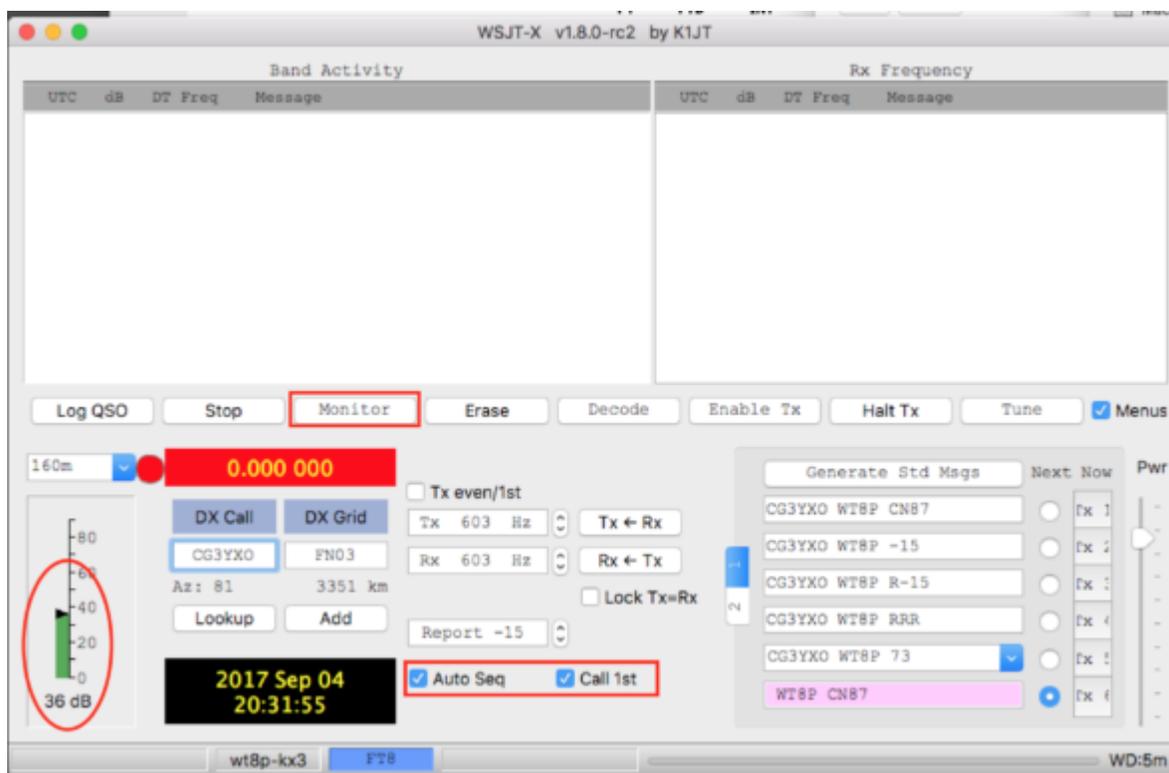
Finally, the first time you use wsjtx, or if you update, you'll need to load in **frequencies**. Right-click on the main window and select Reset. I skim through these to remove bands my radio doesn't support (e.g., 2200m, microwave frequencies):



FT8 – Frequencies

Right click and save these just in case you want to start over.

Okay, now that that's set up, in the **main window**, there are three areas of interest:



FT8 – Main

Select the “Monitor” button to start listening. The waterfall should start showing activity if there are users on. Once a full 15-seconds has elapsed, you should start seeing those signals being decoded.

On the bottom, left is a meter showing input levels. You want it to be in the green, ideally around 25-30db. If it's too quiet, the bar will be red meaning you're not getting enough signal. If it's too loud, the bar will turn yellow indicating oversaturation.

The other two tick boxes are assistive automation. Auto Seq will progress through the calling sequence on each cycle. It's necessary on FT8 because of the rapid cycle times (and my lack of cat-like reflexes). The Call 1st is used when you're calling CQ – it will automatically select the first response (either by time or, in the event of a tie, the sub-frequency you're monitoring followed by the order of sub-frequency).

The standard messages, on the bottom, right, are automatically generated when you respond to someone (by double-clicking on their CQ) or someone responds to you.

So now, here's how a sequence works. The top quarter and bottom half of the graphic below are WSJT-X. Sandwiched in the middle is a third-party listener, JT-Bridge, that does lookups of people and lets me know if they're in a geographic area of interest.

First, I have the Monitor button (in green) selected, so it's listening. On the waterfall graph, outlined by the red rectangle are 15-second bursts of transmissions from NA4M calling CQ. To respond, I double-click on the CQ at 02:05:45. (With JT-Bridge, I can also click on the one with the little number "3" next to it).

That action does the following things:

- a) Pre-loads a set of standard messages (shown below) for the exchange.
- b) Enables transmit (the Enable Tx button, currently off, because I'm doing this post-exchange)
- c) Populates the Rx Frequency side with what's happening on my receive frequency.

You'll see in step (2), I respond, but he doesn't acknowledge. He repeats his CQ 30 seconds later. I respond in step (3). When he acknowledges me with my signal strength in step (4), the line turns purple to let me know that someone's talking with me. At that point, I return back to him with R-09 signal strength. At step (5) he acknowledges receipt, and then exchange regards.

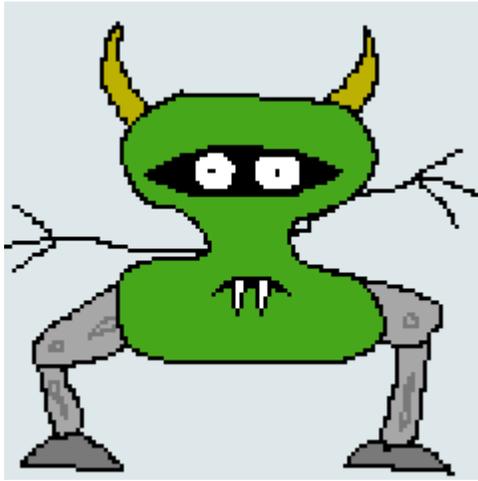
The screenshot displays the WSJT-X software interface. At the top is a 'Wide Graph' showing signal activity over a frequency range from 200 to 1800 Hz. A red box highlights a signal at approximately 1068 Hz. Below the graph is a control panel with various settings like 'Bins/Pixel', 'Start', 'Palette', and 'Adjust...'. The middle section shows a call log table with columns for Time, Call, State, Freq, dB, Distance, Entity, Name, Bearing, Band, Mode, Grid, CQ, ITU, and IOTA. A red arrow points from the highlighted signal in the graph to a call log entry for 'NA4M TX 1068 0'. Below the call log is a 'Band Activity' window with two columns: 'Band Activity' and 'Rx Frequency'. Red arrows point from the call log entry to a corresponding entry in the 'Rx Frequency' column. The bottom section of the interface includes a 'Monitor' button, a frequency display showing '18.100 000', and various control options like 'Tx even/1st', 'Auto Seq', and 'Call 1st'.

Time	Call	State	Freq	dB	Distance	Entity	Name	Bearing	Band	Mode	Grid	CQ	ITU	IOTA
0204	NA4M	TX	1067	9	1,760 mi	United States	PHILIP C	125°	17M	FT8	EM10	5	8	
0205	N6PAT	NY	686	-2	2,134 mi	United States	PATRICK J	82°	17M	FT8	FN13	3	6	
0205	KE8BG	NC	1639	-6	2,221 mi	United States	DUANE T	98°	17M	FT8	EM95	4	8	
0205	N8AWG	OH	1748	11	1,914 mi	United States	William	89°	17M	FT8	EN81	8	8	
0205	NA4M	TX	1068	6	1,760 mi	United States	PHILIP C	125°	17M	FT8	EM10	5	8	
0205	KD5R	LA	1570	2	1,868 mi	United States	Alan R	118°	17M	FT8	EM31	4	7	
0205	KE8BG	NC	1639	-6	2,221 mi	United States	DUANE T	98°	17M	FT8	EM95	4	8	
0205	N8AWG	OH	1749	9	1,914 mi	United States	William	89°	17M	FT8	EN81	8	8	
0205	NA4M	TX	1068	2	1,760 mi	United States	PHILIP C	125°	17M	FT8	EM10	5	8	
0206	NA4M	TX	1068	0	1,760 mi	United States	PHILIP C	125°	17M	FT8	EM10	5	8	

Buckle up, this goes faster than you'd think...

[Skip back to main navigation](#)

34 thoughts on "Setting up FT8"



1. **Patrick Elyn says:**

[2017-11-30 at 16:48](#)

Hello Jim,
Thank you for this information website about WSJT-X and his setup.
73 de ON6AT Patrick

[Reply](#)



2. **Jack says:**

[2017-12-20 at 08:00](#)

How do I manually insert a call sign I wish to contact? ie. I see a QSO with a DX station that is listed on the left side of the RX window. I want to copy or input that station in my right hand window. I have been copying and pasting then manually changing all the responses to reflect the station I'm trying to contact.

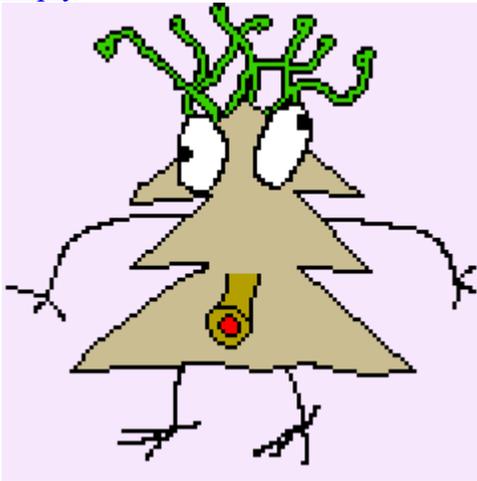
[Reply](#)



1. [jim](#) says:
[2018-01-13 at 11:20](#)

Jack – on the bottom right, click on the (2) tab (it's on the left side of the list of standard messages), you'll be able to enter in a free-form message or use a canned one.

[Reply](#)



2. [Kyle](#) says:
[2019-04-04 at 08:46](#)

You can't. Those 'left side' call signs are being decoded by others, not you. When YOU decode a station, it will 'right side.' Manually setting up a standard message to call a left side station is fruitless — you're not decoding him.

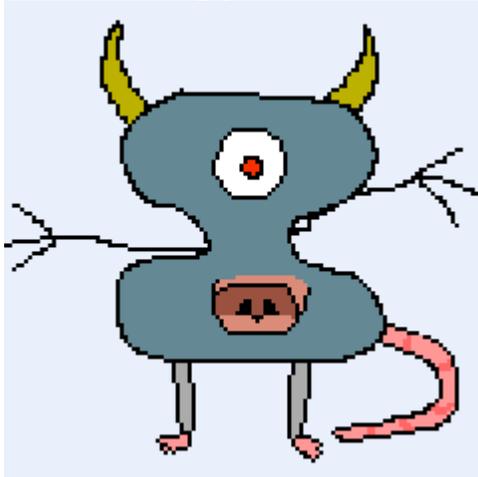
[Reply](#)



1. [sledge](#) says:
[2019-04-09 at 15:47](#)

You can also copy the call sign and paste it into the TX1 slot replacing the target call. Then just enable transmit and the next round you start calling that station. Keep your eye on it because it will keep going just like a CQ. So, call once and click the halt tx button. Using the 2 tab will also keep going if you don't hit halt tx.

[Reply](#)



3. **Tom says:**

[2018-01-10 at 06:35](#)

Thanks for an explanation that makes sense to a newbie.
Tom KJ9P

[Reply](#)



4. **Matt Cero says:**

[2018-01-13 at 10:35](#)

Very helpful sir. Would you please let me know all the radio "width" settings and all of the radio settings best suited for FT8?

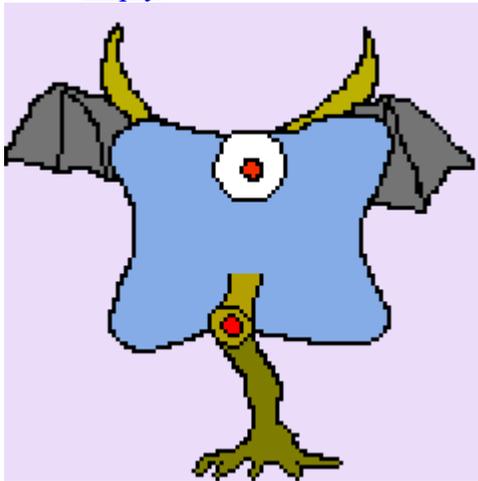
[Reply](#)



1. [jim](#) says:
[2018-01-13 at 11:14](#)

Matt – most folks use 2.5KHz. If I'm trying to reach someone whose signal is really difficult to hear, because there's a nearby strong signal, I'll use the notch filters to refine it.

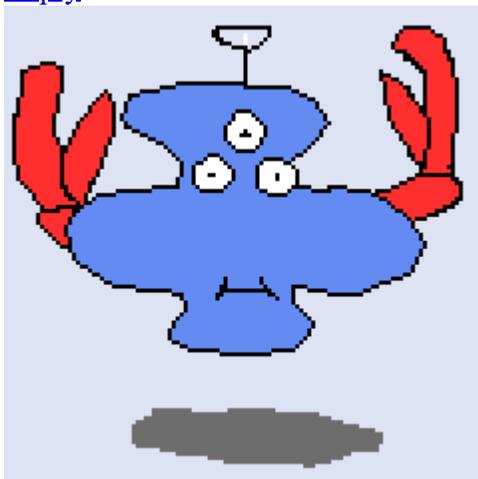
[Reply](#)



5. [John Salsgiver](#) says:
[2018-02-15 at 15:42](#)

DE KB3SVJ John: Jim, Thanks so much for the easy to understand set up guide. I'm new to digital and the Official guide was over my head.

[Reply](#)



6. [Tom Fitzpatrick](#) says:
[2018-04-24 at 07:49](#)

Hi, I have FT8 all set up using a hp computer K3 and an outboard sound card. It's receiving great and PTT keys the rig, but I'm not getting any output from the computer to the rig on transmit?

[Reply](#)

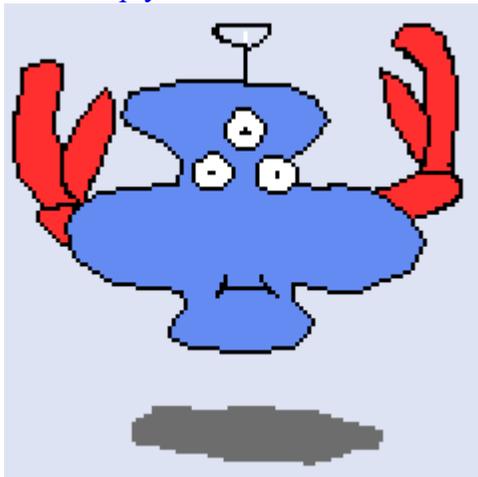


1. [jim](#) says:

[2018-04-24 at 16:59](#)

Tom – my initial guess is the volume is not high enough to drive the radio. On the bottom, right of the WSTJX screen is a little slider that you can use to adjust the output from the app. Failing that, you may also try bumping up the output volume a little bit and also verifying that the device is correct. (For my KX3, I use CAT control rather than PTT.)

[Reply](#)

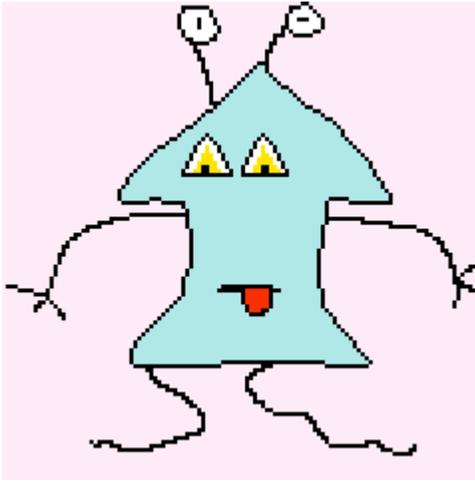


7. **Tom Fitzpatrick** says:

[2018-04-25 at 11:40](#)

I'm using an outboard sound card. Still not getting anything out of the computer??

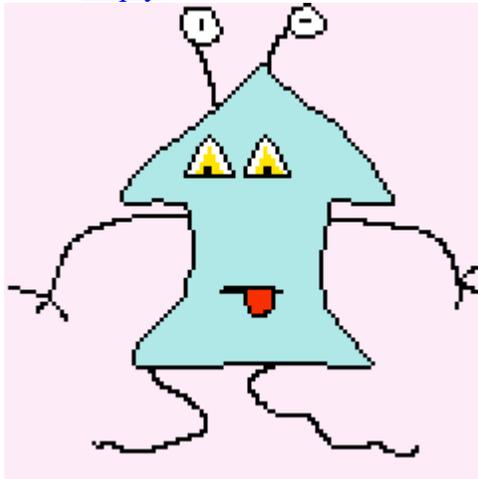
[Reply](#)



1. [Fred](#) says:
[2018-07-21 at 08:24](#)

Tom try setting vox instead of cat in the radio tab. That worked for me.

[Reply](#)

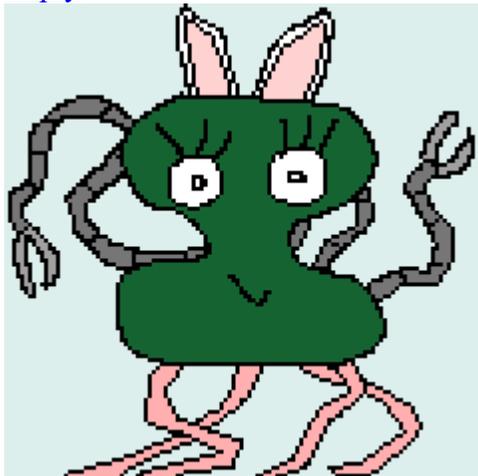


8. [Fred](#) says:
[2018-07-21 at 08:22](#)

Jim

Thanks for the helpful info. I use a Mac and finally figured out how to use the internal log. How ever I have a list of about thirty previous contacts that I would like to add to the log. Do you know how to do that?

[Reply](#)

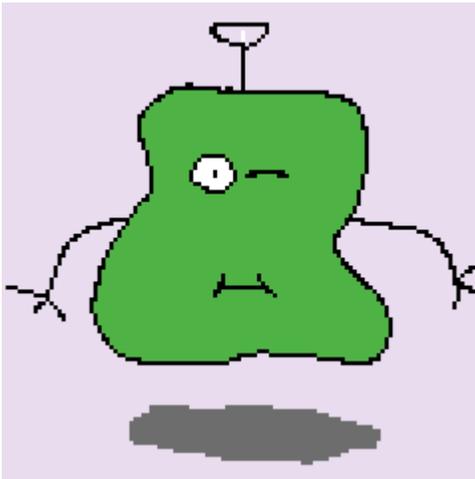


9. [Pete Thomas](#) says:
[2018-08-10 at 01:48](#)

Oh2EUU Pete

Installed and set up FT8 yesterday Everything works until my third message is sent, after that it does not progress to the final messages, but repeats sending the third message over and over

[Reply](#)



1. **Arvind Mallya** says:

[2018-11-08 at 08:59](#)

I have had the same issue, I suspect the contacted station does not send a message and the software keeps sending as it does not see a far end acknowledgement. I also found that sometimes the data call does not terminate when I send a 73 as the far end did not see it and acknowledge. Maybe someone can tell me if that is the case-K16MOI

[Reply](#)



10. **Bill Broadley** says:

[2018-09-28 at 19:23](#)

I couldn't quite figure out, or at least wasn't sure.

Are you driving the KX3 directly over USB and not using a signallink/similar usb sound card?

Is there one USB cable between your KX3 and computer or two?

[Reply](#)



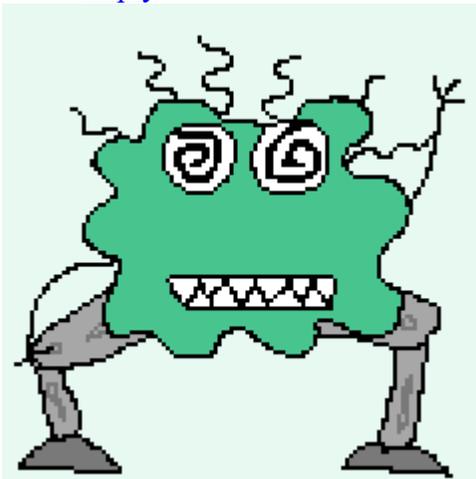
1. [jim](#) says:

[2018-09-28 at 19:37](#)

Bill – I have two USB connections between my KX3 and the computer. The first is a USB sound dongle (On Amazon, I've had success with these: B00IRVQ0F8, B001MSS6CS, or B01D3BDJ2I; Avoid these: B01HPMHOY0, B072BMG9TB). The second is the control cable that comes with the KX3 to change frequencies & toggle transmit (FT8 must be in CAT mode).

Jim

[Reply](#)



11. **Milton de Rezende** says:

[2019-02-08 at 13:56](#)

Even with 100 watt no one answers my calls. I get it perfectly, but when I give a click nobody answers The clock is right. The ALC is correct, I leave in USB but the program does not decode. Thank you very much. Milton PY2CYE

[Reply](#)



12. **Jol Martyn-Clark** says:
[2019-02-19 at 13:42](#)

Can I run a jack to jack leads from pc to KX3. audio out, Mic in, directly.

[Reply](#)



1. **jim** says:
[2019-02-19 at 13:50](#)

Jol – Yes you can. The USB dongle is the alternative for those who can't have a MIC in connection to our computers.
73, Jim

[Reply](#)



13. **Jez** says:
[2019-04-01 at 10:15](#)

Just followed your guide. My Mac doesn't have a mic port either so I'm using a usb sound card.

Ive got a programming cable plugged in to the radio (857D) and the software can control the radio. I have no micro phone port so I'm using usb sound card . I run a cable from audio jack from the radio to microphone in and I can decode signals.

Do I need another cable from the usb sound card to the back of the radio?
If I do can you recommend one

73's jez

[Reply](#)

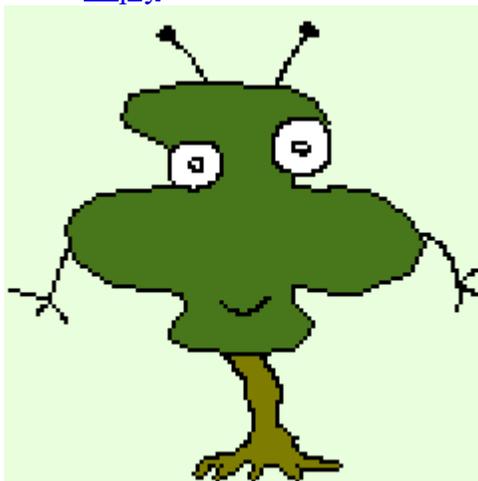


1. [jim](#) says:
[2019-04-01 at 11:53](#)

Jez – I think you may want something like [this](#), which may free you from having a separate USB stub. There is a home brew option ([for example](#)), **but it does not provide any isolation.** (Its author subsequently moved to a Signalink.)

73,
Jim

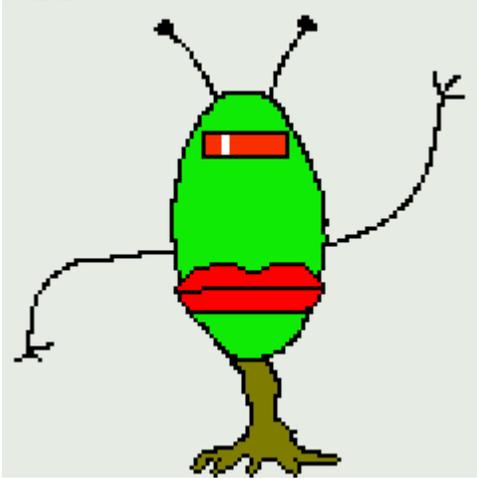
[Reply](#)



14. [Grahame Booth](#) says:
[2019-04-06 at 22:46](#)

I can't get the color tab to function. That is, colour call signs that I have already had contact with. With default settings just get green, red, yellow. Clicked load ADIF file but nothing changes. Can you help please? Using Win and WSTJ-X v2. Thank you!

[Reply](#)



15.

Stu says:

[2019-05-02 at 06:34](#)

I am using a MacBook Pro, an Icom 7300, and WSJT-X 2.0.1 Darwin. Everything looks good except no power out and a loud tone comes from the MacBook speaker. I looked at the Audio tab in Preferences and I don't have a choice of Audio Codec, just internal microphone, etc. I own a Signalink USB interface but am not using it. Someone told me that with a 7300, a Signalink is not needed. I am confused/frustrated. Can you help please? Thank you. -Stu WA6BTK

[Reply](#)



1.

[jim](#) says:

[2019-05-02 at 07:43](#)

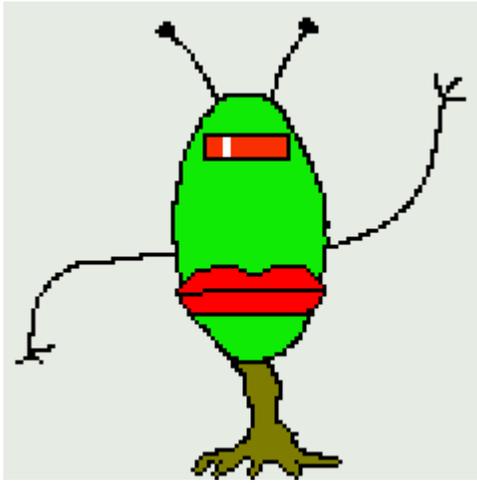
Stu, You are correct that the 7300 has a built-in sound card. I think you may simply need to install the ICOM driver from this site:

<https://www.silabs.com/products/development-tools/software/usb-to-uart-bridge-vcp-drivers>

With that, and a USB connection between your 7300 and your Mac, you should see it as a sound device, which you'll then select in WSJT-X -> Preferences -> Audio.

Jim WT8P

[Reply](#)



1. **Stu** says:

[2019-05-02 at 11:37](#)

Hi Jim,

Thank you for your reply. I downloaded the above driver and now I'm getting several messages: hamlib error, can't connect, etc. etc. Unlike earlier today when I finished installing WSJT-X, my MacBook won't control the 7300 now. I still copy other stations on the waterfall but that's all. When I test the CAT, it goes red and says the above. I am partially lost now. I feel like the Lone Ranger because everyone is saying FT8 is awesome and they love it. I can't seem to get off the starting line. What am I doing wrong? Thanks. Stu

[Reply](#)



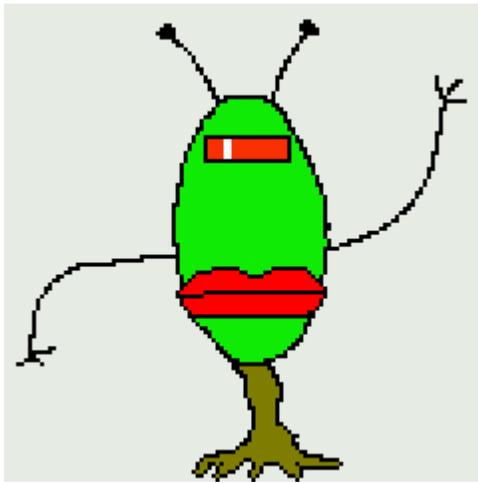
1. **jim** says:

[2019-05-02 at 12:19](#)

It could be baud rate? I will have to research later, after work, but Rick Bono NO5V has a tutorial on the settings for the 7300:

<https://bonoradio.files.wordpress.com/2017/05/icom-7300-setup-with-wsjt-x.pdf>

[Reply](#)

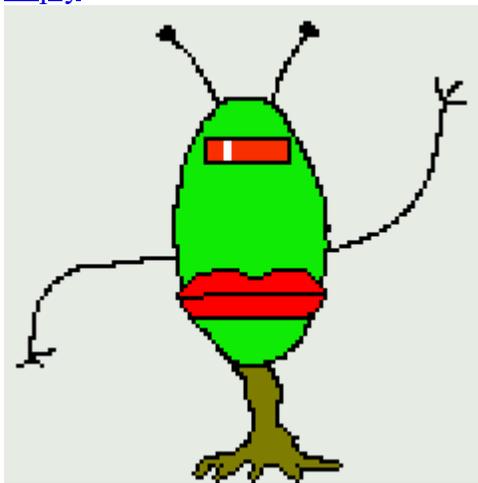


16. **Stu says:**

[2019-05-02 at 11:51](#)

Sorry for taking up time on this site, but I have another problem. Since installing either the WSJT-X or the driver (not sure when this problem started), the 7300 will abruptly shut itself off for about two seconds. The the 7300 will turn itself on again and be fine for roughly 10 minutes and then will shut itself off again. Do you have any idea what's happening? Thank you, again. –Stu

[Reply](#)

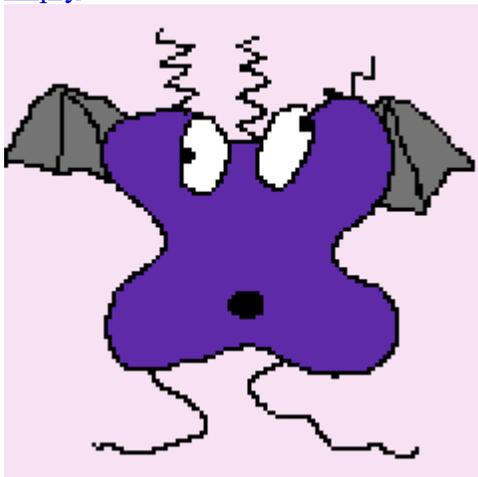


17. **Stu says:**

[2019-05-02 at 20:43](#)

I did a full reset on the 7300 and the off/on/off problem seems to have gone away. But the hamlib connect error still remains. I looked at the NO5V tutorial and I'm set the way the video shows.

[Reply](#)

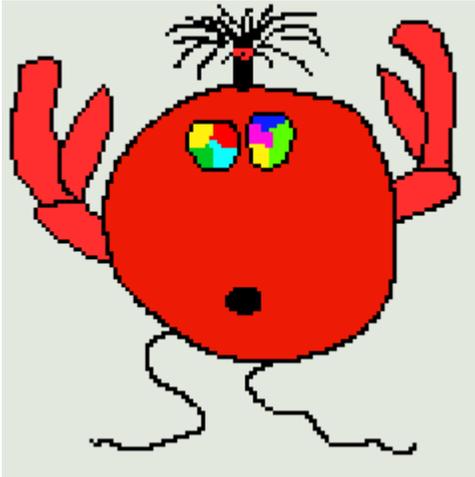


18. **PuJo says:**

[2019-06-17 at 12:42](#)

My first try at WSJT-X FT8 and when everything is up and running, the KX3 goes into split mode. Is this correct? If not, how do I change it?

[Reply](#)



1. [Gary](#) says:

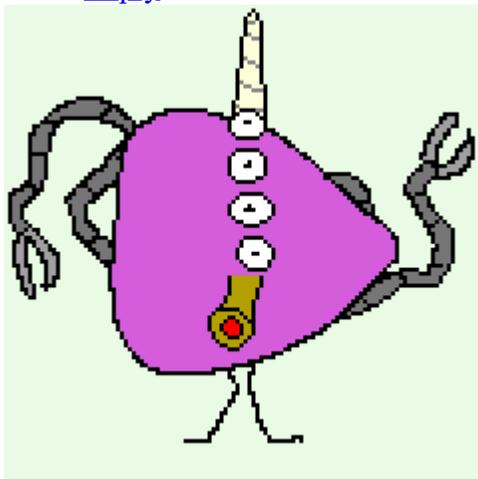
[2019-08-02 at 01:42](#)

Split mode is normal when your TX frequency (the red goalpost) is towards the left or right sides of the waterfall. It's not easy to explain why ... but I've tried, with a diagram: see page 20 of the FT8 Operating Guide (<https://bit.ly/FT8OP>).

73

Gary ZL2iFB

[Reply](#)



19. [Mike Cox](#) says:

[2019-09-15 at 05:04](#)

Jim, thanks for your tutorial on ft8. I am almost there on getting things working. My problem at this point is whenever I double click on a call sign in either window (band activity or Rx frequency) the program closes.

I am using WSJT-X v 2.1.0, on an iMac, with a Signalink USB, to a Yaesu 450-D.

Thanks in advance for any insight you may have.

Mike Cox KI5DF

[Reply](#)



1. [jim](#) says:

[2019-09-18 at 19:44](#)

Mike – When it crashes, do you get a stack trace of any kind – that may narrow it down. Things I'd look at (which you probably have) – version of the OS (needs to be 10.10 or higher). The signalink should be plug and play, but it would be worth double-checking that WSJTX is showing it as an audio device for input and output.

[Reply](#)

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I've been learning Morse Code through CW Academy. One of the things my instructor has encouraged is getting on the weekly contest, CWT, which runs three weekly, one-hour sessions each Wednesday: 1300Z (6am PST) – mostly 20M, some 40M 1900Z (noon...

[Continue reading “CWT – a CW Contest”...](#)

[Morse Runner](#)

General advice to get started on single call mode in Morse Runner (Ken Tucker, WF6F, Jim Carson, WT8P): Accuracy is more important than speed. Wait until the sending station is done transmitting before you respond. If you respond over him,...

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(Notes to self, Continued from part 1.) Sault Ste Marie – I'd originally planned to spend a full day in Sault Ste Marie, but that fell apart when I opted to go to Mackinac Island the second time. Since I...

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Finding a time that all of the family schedules line up, and is not so last-minute that activities are sold out or excessively expensive, led to an over-accumulation of vacation time at the end of the year. As I'm less a...

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