

WSJT-X Operation by W2HUV

You will need to install virtual audio cables such as Virtual Audio Cable (VAC) v4.15 on your PC in order to operate in the FT8 and FT4 modes unless you have an Elecraft K3 Remote or an ORB Control Device.

Installation of VAC v4.15:

1) Follow the link below, select “Self-Support” and then “Buy now”. Downgrade from v4.60 to v4.15 when you are given the opportunity. This is necessary because it has been reported that the use v4.60 results in distortion.

<http://secure.avangate.com/order/product.php?PRODS=1943611&QTY=1&LANG=en>

2) Open the “Virtual Audio Cable Control Panel”.

3) Under “Driver parameters”, select “Cables” 2 and click the “Set” button.

The window should appear as follows with Cable 1 selected:

Cable	MS	SR range	BPS range	NC range	Stm fmt limit	St buf	Vol ctl	Ch mix	PortCls	WM ctl	Current format	Rc stms	Pb stms	Signal	Oflows	UFlows
1	7	22050..48000	16..16	1..2	Cable range	Auto	Off	On	Off	Off	ExtPCM/48000/16/2(3)	1	1			
2	7	22050..48000	16..16	1..2	Cable range	Auto	Off	On	Off	Off	ExtPCM/48000/16/2(3)	1	0			5

That completes installation of the virtual audio cables.

Remaining Settings:

1) Open RCForb client and connect to the remote radio.

2) Select the “Virtual Devices” tab and look at the “Virtual K3” option. If the option is greyed out, it will be necessary to reinstall the client, this time, checking the “Virtual Serial Port Support” option.

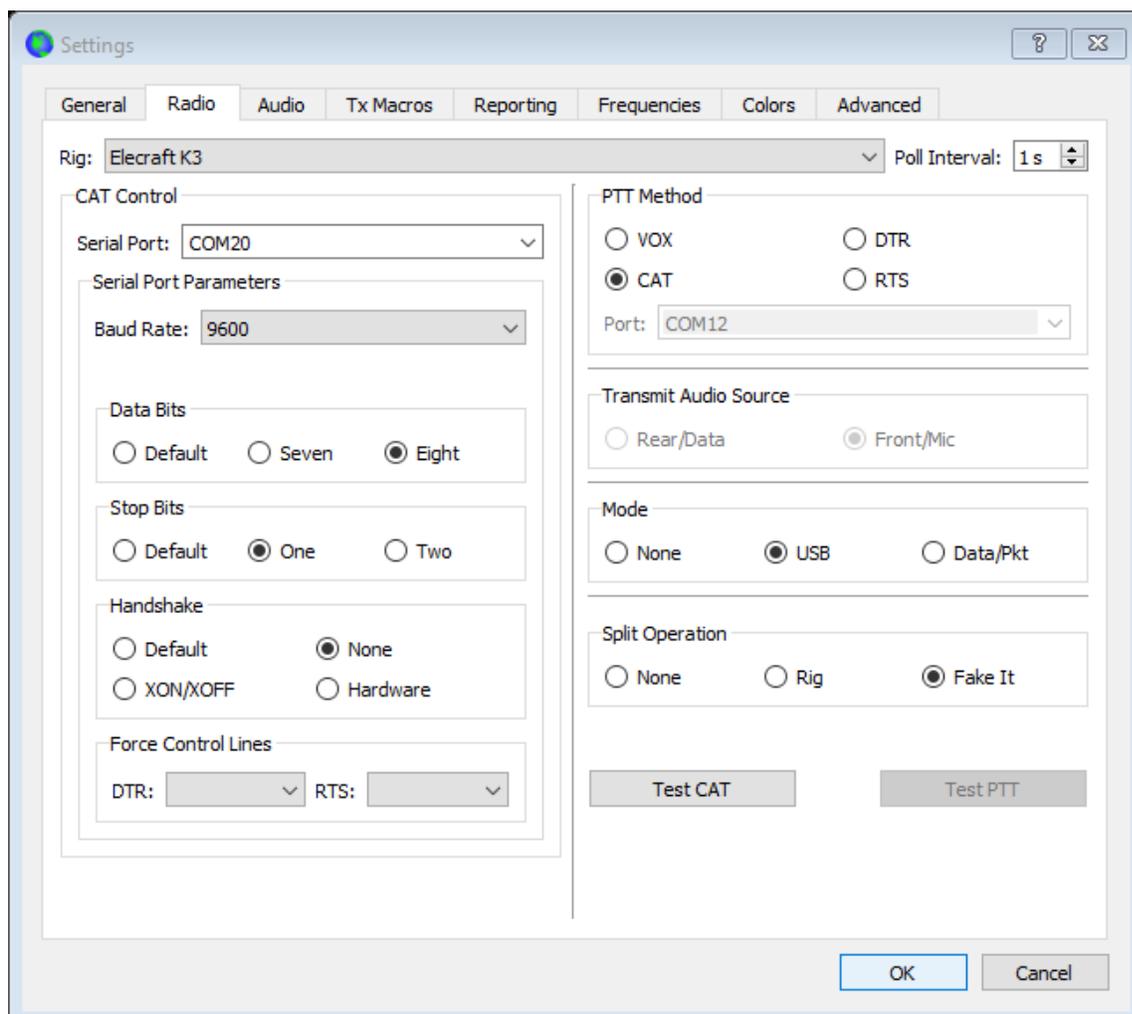
3) Turn on the “Virtual K3” option and select a COM port. COM20 is suggested because it is easy to remember and out of the way.

Remote WSJT-X Operation:

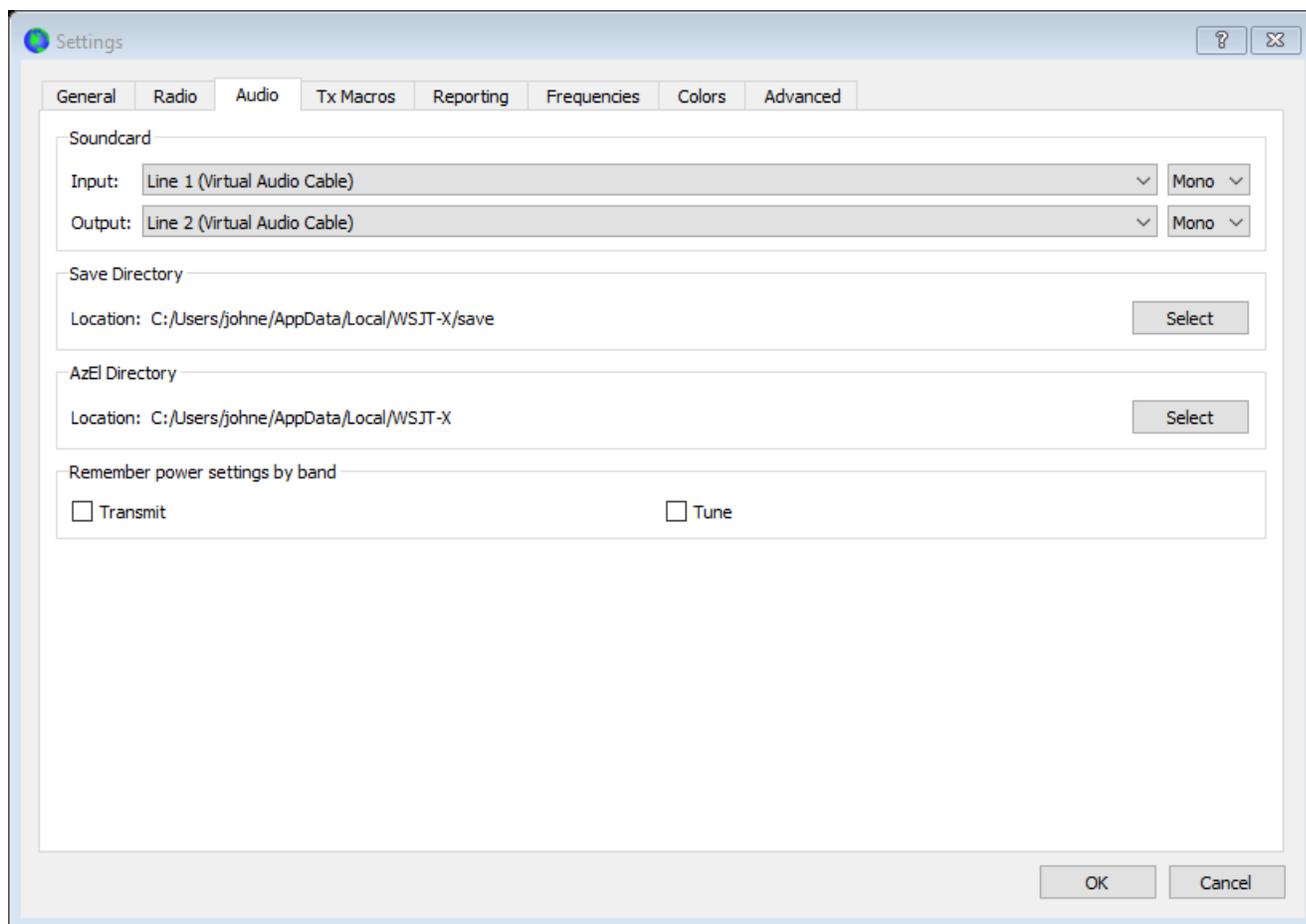
1) Open RCForb client and select the “Audio” tab. Set SPKR to “Line 1 (Virtual Audio Cable)” and MIC to “Line 2 (Virtual Audio Cable)”. Set both VOL and MIC audio levels at minimum and close the client.

2) Right click speaker at end of Windows task bar. Select “Open Sound settings”. Set “Output” to “Line 1 Virtual Audio Cable” and “Input” to “Line 2 Virtual Audio Cable”.

3) Open WSJT-X and configure the “Radio” tab settings as shown below. Note that the rig is an Elecraft K3. This is because the Cat Control Serial Port indicated is for the “Virtual K3” turned on in Step 3) in the previous section. The Mode selected must be USB because the RCForb server does not support the IC-7300 SSB data mode. Each transmission is preceded with a command to select the USB mode. Split Operation may be set to “Rig” or “Fake It” to allow WSJT-X to change the transmit frequency as needed to keep the tones well within the 2.7 KHz transmit bandwidth of a typical transmitter. “Fake It” is preferred because less handshaking is required, making it more reliable. The difference is that it changes the VFO A frequency between RX and TX instead of switching between VFO A and VFO B.



4) Configure the “Audio” tab settings as shown below:

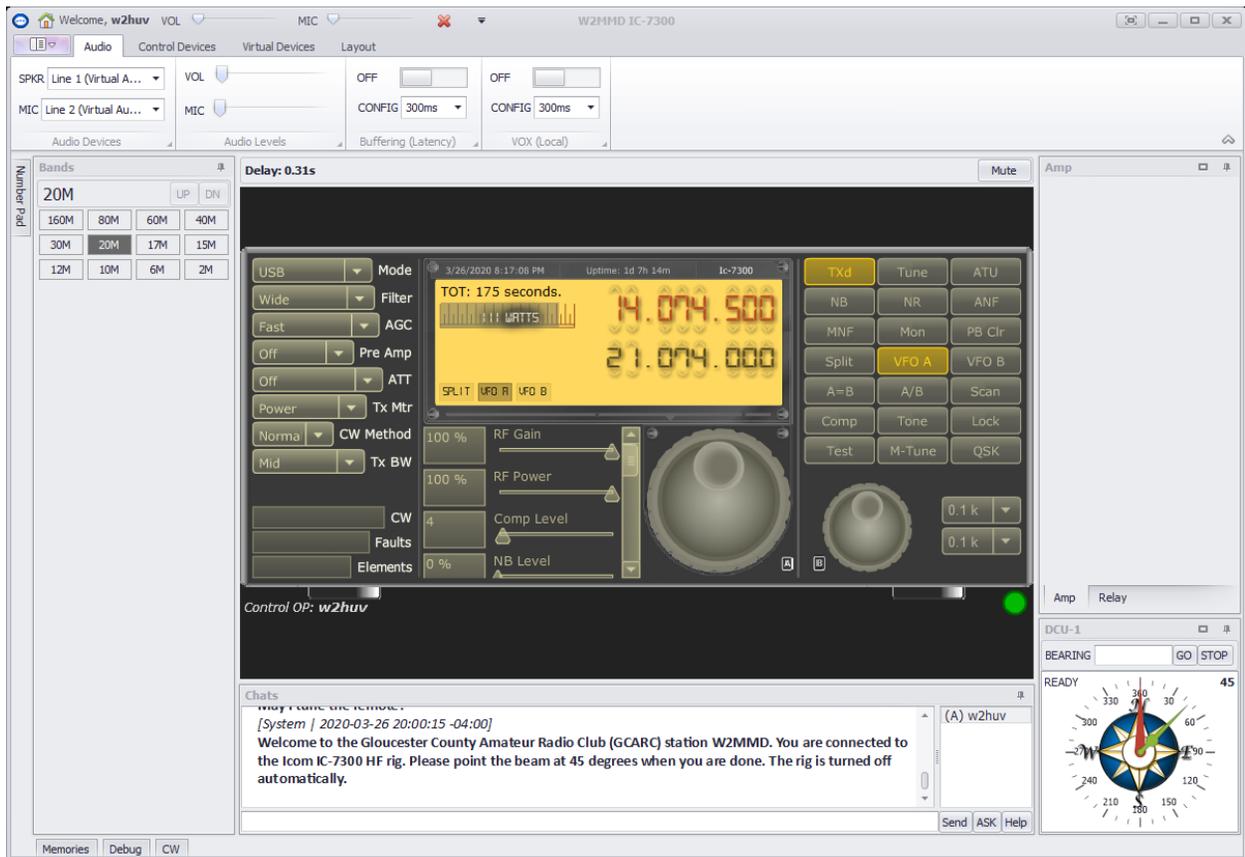


5) Open the RCForb client, connect to the remote, turn on the radio and refer to the screen shot on the next page.

6) The following radio settings are needed for WSJT-X operation: Mode, USB; Filter, Wide; AGC, Fast; Pre Amp, Off; ATT, Off; Tx BW, Wide; RF Gain, 100%*; RF Power, 100%*; Comp Level, NB Level, and NR level, minimum.

* You may adjust the RF Gain and RF Power as desired later.

7) The screen shot was taken during TX. Note that VFO A increased 500 Hz during TX. That's because the TX audio frequency was set at 2000 Hz in this example.



- 8) Open WSJT-X and refer to the screen shot on the next page.
- 9) Set the mode to FT8 and set the “Pwr” slider to the right at 50%.
- 10) Click the down arrow in the band selector to the left of the frequency display on the WSJT-X screen and select 20m. The displayed WSJT-X frequency and radio VFO A frequency should be 14.074.
- 11) The green vertical bar to the left in the WSJT-X screen shot should not appear. Increase “VOL” slightly on the RCForb client until the top of the green vertical bar is at about 40. Now decrease “VOL” or the radio “RF Gain” until the signal level when the “Decode” button is lit is about 30. You may omit the last step if desired because it is difficult to accomplish.
- 12) Toggle "Tune" on, observe “Power” level on rig and toggle "Tune" off. Increase or decrease the “Pwr” setting as desired.
- 13) Select “ALC” on the rig Tx Mtr.
- 14) Toggle "Tune" on, observe “ALC” level and toggle "Tune" off. Verify that that “ALC” level is zero. Decrease the “Pwr” setting slightly and repeat if “ALC” level is not zero.

Note: Don't be alarmed if you receive a FA.ULT message during FT8 operation. The FA.ULT message is generated by the RCForb server when TX exceeds 10 seconds. It is assumed that the rig is being operated at 100% duty cycle, which is not the case. The message will clear before the next FT8 TX. The rig is unaffected.

Congratulations! You are ready to operate in the FT8 and FT4 modes.

The normal startup sequence before you start operating WSJT-X is as follows: Open RCForb client, connect to remote radio, turn it on and open WSJT-X. It won't hurt to leave WSJT-X running when you switch to another mode.

Please address all questions, comments and issues to w2huv@arri.net.

The screenshot displays the WSJT-X v2.1.0 interface. The top menu includes File, Configurations, View, Mode, Decode, Save, Tools, and Help. The main window is divided into two panes: Band Activity on the left and Rx Frequency on the right. Both panes show a table of activity with columns for UTC, dB, DT, Freq, and Message. The Band Activity pane shows a list of received messages, with some highlighted in green. The Rx Frequency pane shows a list of transmitted messages, with some highlighted in yellow. Below the panes is a control panel with buttons for CQ only, Log QSO, Stop, Monitor, Erase, Decode, Enable Tx, Halt Tx, and Tune. A central display shows the current frequency (14.074 000) and a signal strength indicator (S). To the right of the frequency display is a list of messages to be transmitted, with a 'Generate Std Msgs' button and a 'Next' button. The bottom status bar shows 'Receiving', 'FT8', and 'Last Tx: UA0SC W2HUV FM29'.

UTC	dB	DT	Freq	Message
003330	-12	0.7	1752	~ 9M2TDX K6QGV DM13
003330	-11	0.6	1904	~ CQ W0MU DM79 U.S.A.
003330	-2	0.8	2090	~ K2UT KP4JRS +01
003330	-11	0.9	2191	~ CQ KA6DOY EM16 U.S.A.
003330	-5	1.1	2350	~ CQ CO2YQ EL83 Cuba
003330	-12	0.9	1897	~ N6FVY WZ5A EM40
003330	-10	0.7	2383	~ BI4IIZ W2XI R-22
----- 20m -----				
003345	-2	0.7	202	~ W5WUT KE0GSZ 73
003345	-13	0.3	731	~ KC0PCQ AC6YY R-09
003345	2	0.0	853	~ CQ HS5XWY OK03 Thailand
003345	-12	1.0	954	~ W1WAB KA5KEH -20
003345	-9	0.2	1037	~ NN8M CO8RBD -16
003345	0	0.7	1103	~ YB1NWE KC2TN FM29
003345	-24	0.7	1291	~ W6BVB WB4KTF EM10
003345	-9	1.0	1485	~ W2XI BI4IIZ RR73
003345	-6	0.7	1592	~ N7NM ROQAF PP42
003345	-8	0.7	1743	~ N7NM BH8MDV -09
003345	-11	0.6	2090	~ KP4JRS K2UT R-05
003345	6	0.7	2259	~ CQ HI3Y FK49 Dominican
003345	-19	0.6	1898	~ CQ N6FVY CM95 U.S.A.
003345	-24	0.7	2950	~ WW5WOW/IMAGE

UTC	dB	DT	Freq	Message
003200	4	0.4	1137	~ CQ UA0SC OO22 AS
003222	Tx		2000	~ UA0SC W2HUV FM29
003230	2	0.2	1136	~ CQ UA0SC OO22 AS
003245	Tx		2000	~ UA0SC W2HUV FM29

Control Panel:

- CQ only
- Log QSO
- Stop
- Monitor
- Erase
- Decode
- Enable Tx
- Halt Tx
- Tune
- Menu

Frequency: 14.074 000

Mode: 20m

TX Settings:

- Tx even/1st
- Tx 2000 Hz
- Hold Tx Freq
- Rx 1137 Hz
- Report 4
- Auto Seq
- Call 1st

Message List:

- Generate Std Msgs
- Next
- Now
- UA0SC W2HUV FM29 (Tx 1)
- UA0SC W2HUV +04 (Tx 2)
- UA0SC W2HUV R+04 (Tx 3)
- UA0SC W2HUV RR73 (Tx 4)
- UA0SC W2HUV 73 (Tx 5)
- CQ W2HUV FM29 (Tx 6)

Status: Receiving FT8 Last Tx: UA0SC W2HUV FM29 11/15 WD:5m