

ELAD Application Notes AN-006 Using FDM-DUO with two WSJT-X instances (Ver. 1.8.0)

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Introduction

This application note describes how to use VRX CAT Mode using the first and second channel to receive signals. It also shows how to use 2 WSJT-X at the same time.

To do this we need 3 software:

- FDM-SW2 downloadable from: <u>http://sdr.eladit.com/FDM-sw2%20Software/index.php</u> (must be ver 3.000 or later)
- VSPE downloadable from here: <u>http://www.eterlogic.com/Downloads.html</u>
- WSJT-X downloadable from here: https://physics.princeton.edu/pulsar/k1jt/wsjtx.html

1 VSPE Configuration

The first software we need to set up is VSPE as it follows:

🔖 Virtual Serial Ports Emulator (Emulation started)		
File View Language Emulation Device Help		
📄 😑 🕞 🗉 隆 🐂 🍢 🧞 🚮 🕻	0	*
Title	Device	Status
СОМ20	Connector	OK
COM20 => COM30	Splitter	OK
COM21	Connector	OK
COM21 => COM31	Splitter	Ready
(Tuesday, December 12, 2017) [COM20] Initializat	tionOK	
{Tuesday, December 12, 2017} [COM20 => COM30] In	nitializationOK (1)	
{Tuesday, December 12, 2017} [COM21] Initializat	tionOK	
{Tuesday, December 12, 2017} [COM21 => COM31] In	nitializationOK (1)	
Ready		http://www.eterlogic.com

You can choose the COM number you want.

2 SW2 Configuration

After VSPE, we need to set up SW2. Select the 2 channels option from the "Device Configuration" of the "Advanced" tab.

Next step is set up the Channels as it follows:

Setup	Setup
Tuning Step Tuning Audio Graphics Demod Settings Remote Ctrl	Tuning Step Tuning Audio Graphics Demod Settings Remote Ctrl
CAT CAT Mode Slave V	CAT CAT Mode Slave -
Channel1 Channel2	Channel1 Channel2
	RX1 Serial Port COM21 Baudrate 38400
RX2 Serial Port COM1 - Baudrate 4800 -	RX2 Serial Port COM1 Baudrate 115200 Image: Comparison of the series of th
RX3 Serial Port COM1 v Baudrate 4800 v	RX4 Serial Port COM1 v Baudrate 115200 v
RX4 Serial Port COM31 V Baudrate 38400 V	

The 2 Serial Ports are the connectors created with VSPE.

Then we have to set the audio AUX OUT:

-cup							
Tuning Step Tuning Audio Graphi	ics Demod Settin	gs Remote Ctrl	Advanced T	Mate/TMate	2 Station Memory	Recording Serve	er About
AGC Settings Fast Attack (ms) 1 × Medium Attack (ms) 5 × Slow Attack (ms) 10 ×	Decay (ms) 1 Decay (ms) 2 Decay (ms) 4	,000 🕹					
Audio Out			Volume Gain	Multiplier	1 🔹		
Main Output Device Speakers	; (Realtek High Defi	i •	🔽 Mute On	TX or CAT Ke	yed status		
AUX Output Device			Freeze S	bectrum On <i>I</i> eyed status	Aute		
Channel 1 Channel 2							
VRX1 📝 Enable AUX Out	Output Device	Line 1 (Virtual Au	udio Cable) 🔻	Mode Au	dio 👻		
VRX2 📄 Enable AUX Out	Output Device	Speakers (Realte	k High Defi 👻	Mode Au	dio 👻		
VRX3 🔲 Enable AUX Out	Output Device	Speakers (Realte	k High Defi 👻	Mode Au	dio 👻		
VRX4 📃 Enable AUX Out	Output Device	Speakers (Realte	k High Defi 👻	Mode Au	dio 👻		
Soundcard Play Buffer Size (ms) 300 🜩		V Mut	te the VRX no	ot selected		
					ОК	Apply	Cancel
					ОК	Apply	Cancel
ietup					ОК	Apply	
Tuning Step Tuning Audio Graph	nics Demod Settir	igs Remote Ctrl	Advanced T	Mate/TMate/	OK 2 Station Memory	Apply Recording Serve	Cancel
Tuning Step Tuning Audio Grapt AGC Settings Fast Attack (ms) 1 💭	nics Demod Settin Decay (ms)	igs Remote Ctrl	Advanced T	Mate/TMate/	OK 2 Station Memory	Apply Recording Serve	Cancel
Tuning Step Tuning Audio Grapt AGC Settings Fast Attack (ms) 1 Medium Attack (ms) 5 Slow Attack (ms) 10	nics Demod Settin Decay (ms) Decay (ms) Decay (ms)	gs Remote Ctrl 1,000 ∲ 2,000 ∲ 4.000 ∲	Advanced T	Mate/TMate;	OK 2 Station Memory	Apply Recording Serve	Cancel
Addio Graph AGC Settings Fast Attack (ms) Aedium Attack (ms) 1 👻 Slow Attack (ms) 10 🛫	nics Demod Settin Decay (ms) Decay (ms) Decay (ms)	igs Remote Ctri 1,000 ★ 2,000 ↓ 4,000 ★	Advanced T	Mate/TMate:	OK 2 Station Memory	Apply Recording Serve	Cancel
Tuning Step Tuning Audio Graph AGC Settings Fast Attack (ms) 1 1 Fast Attack (ms) 5 1 1 Medium Attack (ms) 5 10 10 Slow Attack (ms) 10 10 10 Audio Out IUse Soundcard audio out IUse Soundcard audio out	nics Demod Settin Decay (ms) Decay (ms) Decay (ms)	igs Remote Ctrl 1,000 堂 2,000 👻 4,000 👻	Advanced T Volume Gain	Mate/TMate	OK 2 Station Memory	Apply Recording Serve	Cancel
Audio Graph AGC Settings 1 Fast Attack (ms) 1 Medium Attack (ms) 5 Slow Attack (ms) 10 Audio Out Vise Soundcard audio out Main Output Device Speaker.	nics Demod Settir Decay (ms) Decay (ms) Decay (ms) s (Realtek High Def	gs Remote Ctrl 1,000 ∲ 2,000 ∲ 4,000 ∲	Advanced T Volume Gain	Mate/TMate/ Multiplier	OK 2 Station Memory	Recording Serve	Cancel
Tuning Step Tuning Audio Graph AGC Settings Fast Attack (ms) 1 1 Fast Attack (ms) 1 5 5 Slow Attack (ms) 10 10 10 Audio Out Illus Soundcard audio out Main Output Device Speaker AUX Output Device Speaker	nics Demod Settin Decay (ms) Decay (ms) Decay (ms) s (Realtek High Def	igs Remote Ctrl 1,000 ↓ 2,000 ↓ 4,000 ↓	Volume Gain Volume Gain Volume Gain Volume Gain Volume Gain Volume Gain	Mate/TMate Multiplier	OK 2 Station Memory 1 vyed status Aute	Apply Recording Serve	r About
Tuning Step Tuning Audio Graph AGC Settings 1 Image: Comparison of the set of th	nics Demod Settin Decay (ms) Decay (ms) Decay (ms) s (Realtek High Def	igs Remote Ctrl 1,000 ∲ 2,000 ∲ 4,000 ∲	Advanced T Volume Gain Whate On Freeze S or CAT Ke	Mate/TMate/ Multiplier [TX or CAT Ke pectrum On <i>h</i> eyed status	OK 2 Station Memory	Recording Serve	r About
Tuning Step Tuning Audio Graph AGC Settings 1 Image: Comparison of the set of th	nics Demod Settin Decay (ms) Decay (ms) Decay (ms) s (Realtek High Def	igs Remote Ctrl 1,000 - 2,000 - 4,000 - 1 -	Advanced T Volume Gain Volume Gain Volume Gain Volume Gain Volume Gain Volume Gain Volume Gain Volume Gain Volume Gain	Mate/TMate/ Multiplier (TX or CAT Ke pectrum On A eyed status	OK 2 Station Memory	Recording Serve	r About
Audio Graph AGC Settings 1 Fast Attack (ms) 1 Medium Attack (ms) 5 Slow Attack (ms) 10 Audio Out 10 Audio Out Speaker AUX Output Device Speaker AUX Output Device Channel 1 Channel 1 Channel 2 VRX1 Enable AUX Out VRX2 Enable AUX Out	nics Demod Settin Decay (ms) Decay (ms) Decay (ms) Secay (ms) Secay (ms) Secay (ms) Secay (ms) Secay (ms) Secay (ms) Decay (ms) Decay (ms) Secay (ms) Decay (ms) Decay (ms) Secay (ms) Seca	igs Remote Ctrl 1,000 - 2,000 - 4,000 - 1 - Line 2 (Virtual A Speakers (Realter	Advanced T Volume Gain Volume Gain Mute On Freeze S or CAT Ke udio Cable) V	Mate/TMate/ Multiplier (TX or CAT Ke pectrum On A eyed status Mode Au Mode Au	OK 2 Station Memory	Recording Serve	r About
Audio Graph AGC Settings 1 Fast Attack (ms) 1 Medium Attack (ms) 5 Slow Attack (ms) 10 Audio Out 10 Audio Out Speaker: AUX Output Device Speaker: AUX Output Device Channel 1 Channel 1 Channel 2 VRX1 Enable AUX Out VRX2 Enable AUX Out VRX3 Enable AUX Out	nics Demod Settin Decay (ms) Decay (ms) Decay (ms) Setting Decay (ms) Setting Decay (ms) Setting Decay (ms) Setting Decay (ms) Decay (ms) Setting Decay (ms) Setting Seting Setti	igs Remote Ctrl 1,000 (*) 2,000 (*) 4,000 (*) i • Line 2 (Virtual A Speakers (Realter Speakers (Realter	Advanced T Volume Gain Image: Comparison of the comparison of	Mate/TMate/ Multiplier (TX or CAT Ke pectrum On M eyed status Mode Au Mode Au Mode Au	OK 2 Station Memory 1 ved status Aute dio v dio v	Recording Serve	Cancel

300 🌲

Soundcard Play Buffer Size (ms)

Mute the VRX not selected

ОК

Cancel

Apply

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3 WSJT-X Configuration

We need 2 windows, one can be open in the usual way the second needs to be launched with the Command Prompt.



After the second WSJT-X open we can set the 2 programs in order to receive from both. When the 2 windows are opened we have to set 2 main things in each one.

Note: The following screenshots will be in the order: WSJT-X that use the first channel then the WSJT-X that use the second channel.

First one is in the "Radio" tab of the WSJT-X we have to set as it follows:

Settings	? ×
General Radio Audio Tx Macros Reportin	ng Frequencies Colors Advanced
Rig: Yaesu FT-897	▼ Poll Interval: 1s 🔺
CAT Control	PTT Method
Serial Port: COM30 🗸	© VOX ◎ DTR
Serial Port Parameters	
Baud Rate: 38400 🔻	Port: COM60 👻
Data Bits Seven	Transmit Audio Source Rear/Data
Stop Bits	Mode
One	🔘 None 🔘 USB 💿 Data/Pkt
Handshake None XON/XOFF Hardware	Split Operation None Rig Fake It
DTR: RTS:	Test CAT Test PTT
	OK Cancel

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The second one has to be connected to the second channel.

Settings	? ×
General Radio Audio Tx Macros Reporti	ing Frequencies Colors Advanced
Rig: Yaesu FT-897	💌 Poll Interval: 1 s 🌲
CAT Control	PTT Method
Serial Port: COM31	© VOX ◎ DTR
Serial Port Parameters	
Baud Rate: 38400 💌	Port: COM60 💌
Data Bits Seven	Transmit Audio Source
Stop Bits	Mode
Handshake None XON/XOFF Hardware Force Control Lines	Split Operation None Rig Fake It
	Test CAT Test PTT
	OK Cancel

Then it's necessary set the Audio input where we'll select the Line 1 in the first one

Settings							?	×
General	Radio	Audio	Tx Macros	Reporting	Frequencies	Colors	Advanced	Ц
Soundcar	d Line 1 (V	irtual Audio	Cable)			•	Mono 🔻	
Output:	Line (FDI	1-DUO Aud	io v1.04)			•	Mono 🔻	

And Line 2 in the second one.

Settings	-				_		?	x
General	Radio	Audio	Tx Macros	Reporting	Frequencies	Colors	Advanced	
Soundcar	rd							
Input:	Line 2 (Vi	rtual Audio	Cable)			•	Mono 🔻	
Output:	Line (FDN	1-DUO Aud	io v1.04)			•	Mono 🔻	

After these configurations you should receive in both Windows

WSJT-X v1.8.0-rc2 by K1JT				×	
File Configurations View Mode Decode Save Tools Help					
Band Activity		Rx Frequency			
UTC dB DT Freq Message	UTC dB	DT Freq Message			
074145 -9 0.3 617 ~ CQ NA F4AWT JN24 !France ^				*	
074145 -14 0.7 701 ~ EASWO ONAREB 73 074145 -4 0.1 885 ~ CQ DM9EE J041 !Germany					
074145 -16 0.2 989 ~ DK50PA SQ3TSM 73 074145 -4 0.1 1072 ~ 924Y F6A0N R-19					
074200 -19 -0.8 990 ~ RR TU GL 73					
Log QSO Stop Monitor Erase Stop	Wide Graph	h	lan 2 mer		×
40m - 7.074 000	200	400	600	800	1000
Tx even/1st (07:42:00 40					
-80 Tx 1642 Hz ↓ Tx ← Rx 07:41:45 40	n				
60 Az; 316 569 km Rx 1642 Hz 🔄 Rx ← Tx 07;41:30 40	m				
-40 Lookup Add V Lock Tx=Rx					
-20 Report -15 👳				and the second second	1
L 201/ Dec 14	2 🚖 Start 0 H	z 🚔 🛛 Palette 🛛 Adjust	Flatten 🔲 Ref Spec 🕞		Spec 30 % 🚔
67 dB U/:42:17	0 JT9 🚔 N Avg 2	Default	Cumulative		Smooth 1
Receiving FT8 Last Tx: TUNE			2/15 WD:5r	n	
WSJT-X - FT897 v1.8.0-rc2 by K1JT					
Band Activity	Rx Frequency				
UTC dB DT Freq Message UTC dB D	T Freq Mes	sage			
074145 -12 0.2 1070 ~ CQ DO2STA JO40 ^		~			
074200 -6 0.4 490 ~ W6MKO LAZXPA JP33 074200 -20 0.1 589 ~ UAOFO EA1AKS -24					
074200 -3 0.3 756 ~ JA1NCZ ON6SM JO21					
074200 -4 -0.2 885 ~ CO DG00FZ J050					
074200 -4 -0.2 885 ~ CQ DG00FZ J050 074200 -7 0.4 970 ~ EATUM STOP QR					
074200 -4 -0.2 885 ~ CQ DEGOFZ JOS0 074200 -7 0.4 970 ~ EA7UW STOP QR 074200 -20 0.3 790 ~ CQ N1UK FM05 ~ ~ <		-			
074200 -4 -0.2 885 ~ CQ DEGOPZ J050 074200 -7 0.4 970 ~ EA7UW STOP QR 074200 -20 0.3 790 ~ CQ NUK FM05 ~ < III	Halt Tx	une V Menus			
074200 -4 -0.2 885 ~ CO DEGOPZ J050 074200 -7 0.4 970 ~ EATUR STOP QR 074200 -20 0.3 790 ~ CQ NIUK FM05 III * * Log QSO Stop Monitor Erase Decode Enable Tx S0m 3 57/3 0.00 © WSJT-X -	Halt Tx Ti T897 - Wide Grap	une V Menus			x
074200 -4 -0.2 885 ~ CO DEGOFZ JOSO 074200 -7 0.4 970 ~ EA7UW STOP QR 074200 -20 0.3 790 ~ CQ N1UK FMOS	Halt Tx Ti FT897 - Wide Grapi 200	une V Menus h 400	600	800	
074200 -4 -0.2 885 ~ Co DEGOPZ JOSO 074200 -7 0.4 970 ~ EA7UW STOP QR 074200 -20 0.3 790 ~ CQ NUK FMOS	Halt Tx Ti FT897 - Wide Grapi 200	une V Menus h	600	800	
074200 -4 -0.2 885 ~ Co DEGOPZ JOSO 074200 -7 0.4 970 ~ EA7UW STOP QR 074200 -20 0.3 790 ~ CQ NUK FM05	Halt Tx Ti FT897 - Wide Grapi 200	une V Menus h 400	600	800	
074200 -4 -0.2 885 ~ CQ CQ DGOOPZ JOS0 074200 -7 0.4 970 ~ EA7UW STOP QR Transform Transform 074200 -20 0.3 790 ~ CQ NUK FMOS Transform Transform 0 0.5773 000 000 Transform Transform Transform Transform Transform 80m 0 0.5773 000 000 Transform Transform 0000 Transform 00000 0000 00000 0000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000 000000 000000 000000 000000 000000 0000000 000000 000000	Halt Tx Ti T1897 - Wide Grapi 200 1 1 1 n	une V Menus			
074200 -4 -0.2 885 ~ CQ DGOOPZ JOSO 074200 -7 0.4 970 ~ EA7UW STOP QR 074200 -20 0.3 790 ~ EA7UW STOP QR 074200 -20 0.3 790 ~ EA7UW STOP QR 074200 -20 0.3 790 ~ EA7UW STOP QR 0 0.3 790 ~ CQ NIUK FMOS ~ Image: Control of the state of the s	Halt Tx Ti TT897 - Wide Grap 200 1 1 1 n	une V Menus h 400		800	
074200 -4 -0.2 885 ~ CQ DEGOPZ JOSO 074200 -7 0.4 970 ~ EA7UW STOP QR 074200 -20 0.3 790 ~ EA7UW STOP QR 074200 -20 0.3 790 ~ EA7UW STOP QR 0 0.3 790 ~ Q NIUK FMOS * Log QSO Stop Monitor Erase Decode Enable Tx 80m 3.573 000 ✓ Tx even/1st ✓ Controls Ø7.42:00 60 100 DX Call DX Grid Tx 1421 Hz Tx -Rx ✓ Controls 60 40 Lookup Add ✓ Lock Tx =Rx Ø7.41:45 80 200 2017 Dec 14 ✓ Auto Seq Call 1st Bins/Pixel	Halt Tx T TB97 - Wide Grap 200 n n 2 Start 0 H	une V Menus h 400 z Palette Adjust	600 Flatten □ Ref Spec		1000 Spec 30 % 🐑
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Halt Tx T TB97 - Wide Grap 200 n 7 2 Start 0 H 0 JT9 $\stackrel{\circ}{\to}$ N Avg 2	une V Menus h z S Palette Adjust Default	600 F I I I I I I I I I I I I I I I I I I I		1000 Spec 30 % *

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ELAD APPLICATION NOTES



And the frequencies are independent to each other.

It is recommended to activate one "Enable TX" at a time to avoid the overlay of the transmissions.