

# REMOTE STATIONS

DIGITAL CONTEST DINNER

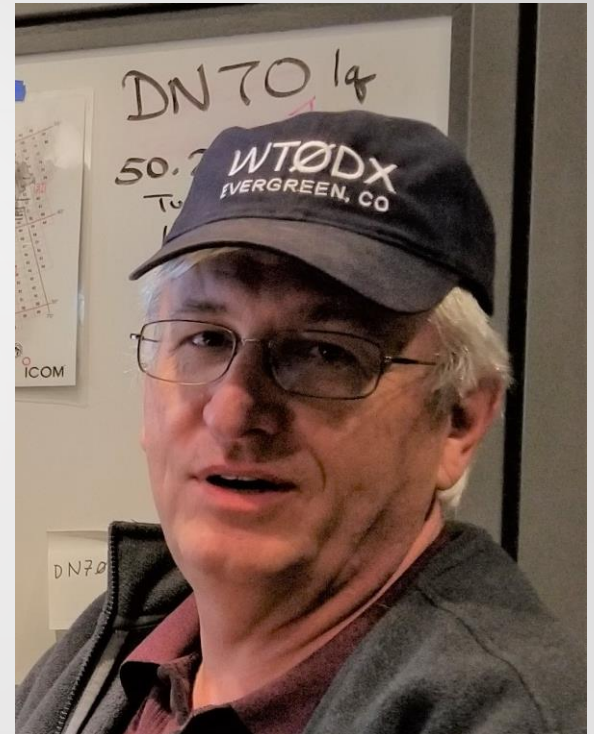
WILLIAM THOMAS WT0DX

5/18/23 V1.0



## 2 OVERVIEW

- Who is WT0DX
- Why have a Remote Station
- Remote Station Options
- Getting Started
- Operating Tricks
- My Remote Station
- Demo / Q&A / Appendix



### 3 WHO IS WT0DX

- Licensed since 1968 - Extra class
- WB8AVH, WB6FGR, WB9KPT
- Operated from many states...
- Sept 2018 Los Alamos, NM Remote
- June 2019 Denver, CO Remote
- Moved to Aurora, CO June 2020  
HOA Community
- **28,000+ remote contacts**



## 4 WHY REMOTE STATION

- **Reasons for having a remote station:**
- Remote access of your home station
  - In your house, on your property, or from another location
- Remote access of another station
  - Your second QTH
  - A friends station
  - Multi-operator contest, without being at the station
  - Remote access of “super stations” – DXCC / Contest
- Can't operate at home due to HOA / CCR restrictions, or QRN
- Operate while traveling or at vacation home
- Impress your friends!





## 5 REMOTE STATION OPTIONS

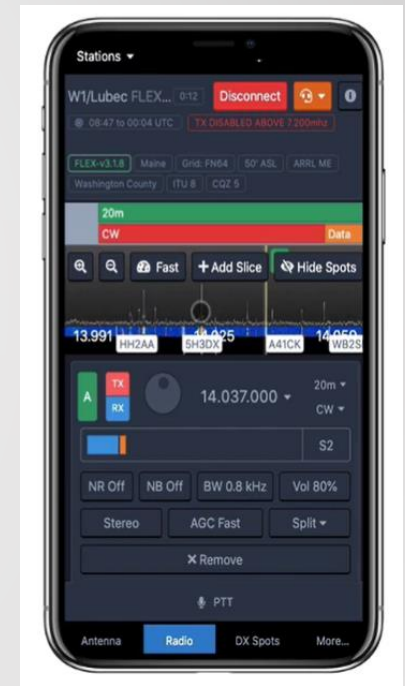
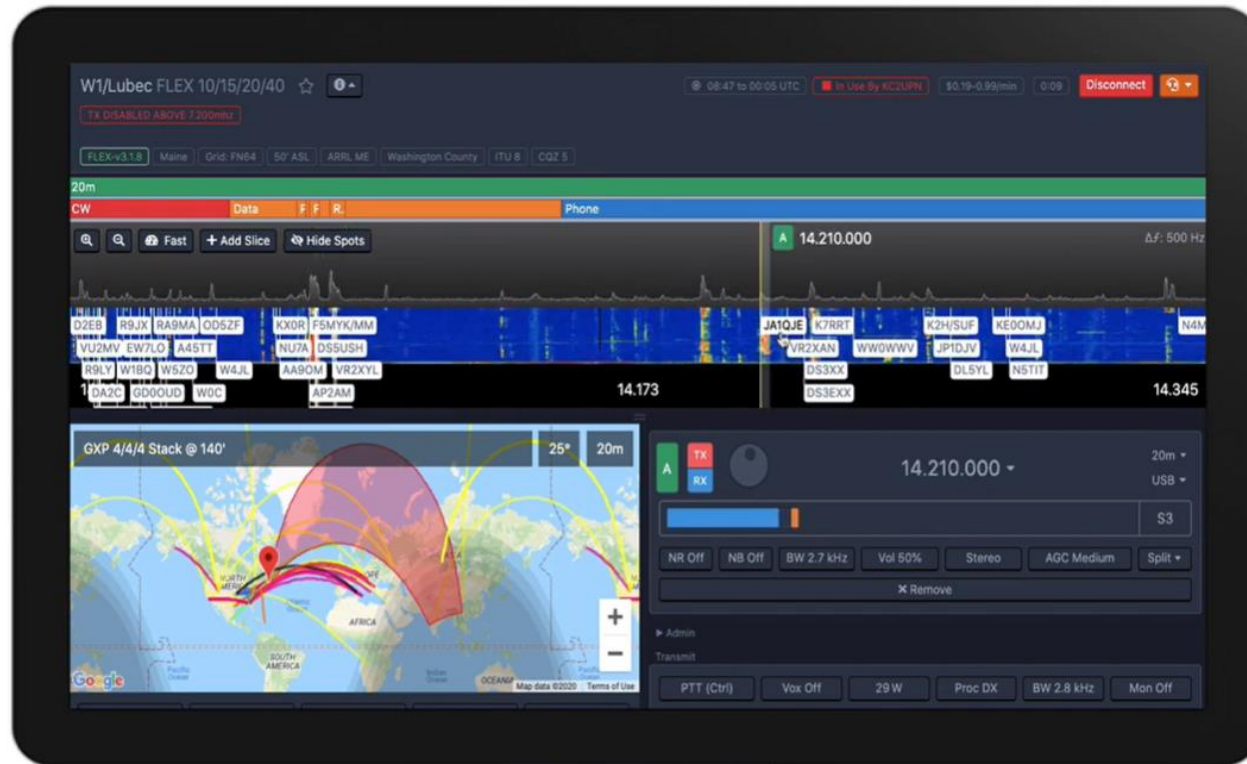
- **Four major ways to implement a remote station:**
- Web Browser access
- Software Programs
- Remote Front Panels
- Remote Desktop

## 6 WEB BROWSER ACCESS

- **RemoteHamRadio.com:** Operators have access to 40+ towers, 200+ antennas, and 20+ stations (with built in FT8)
- Subscription – lower cost for 2023
  - Premium DX \$20/mo or \$99/yr, plus \$.05-\$1.25/minute
  - Youth Network FREE (25 or younger)
- Chrome, Edge or Safari web browsers.
- Windows or Mac desktop application.
- Flex software or hardware.



## 7 WEB BROWSER ACCESS



## 8 SOFTWARE PROGRAMS

- **Ham Radio Deluxe:** Widely used rig control, logging, satellite, digital modes
- **Win4Icom, Yaesu, K3Suite:** Full featured radio control, audio server, spectrum display, CW keyer and interface to other software.
- **RemoteHams.com:** Free to sign up. RCForb Client SW. Server SW to set up your own station as a remote. Public stations – W7DXX, K8EA...
- **N4PY:** Rig control software for transceivers. Controls many other devices.
- **Icom RS-BAI:** Tailored to modern Icom radios, audio, spectrum display
- **RemoteTX:** Raspberry Pi appliance at the station, Icom, Yaesu, Elecraft, Yaesu Rotators, annual subscription
- **Others – See Appendix**



# 9 SOFTWARE PROGRAMS

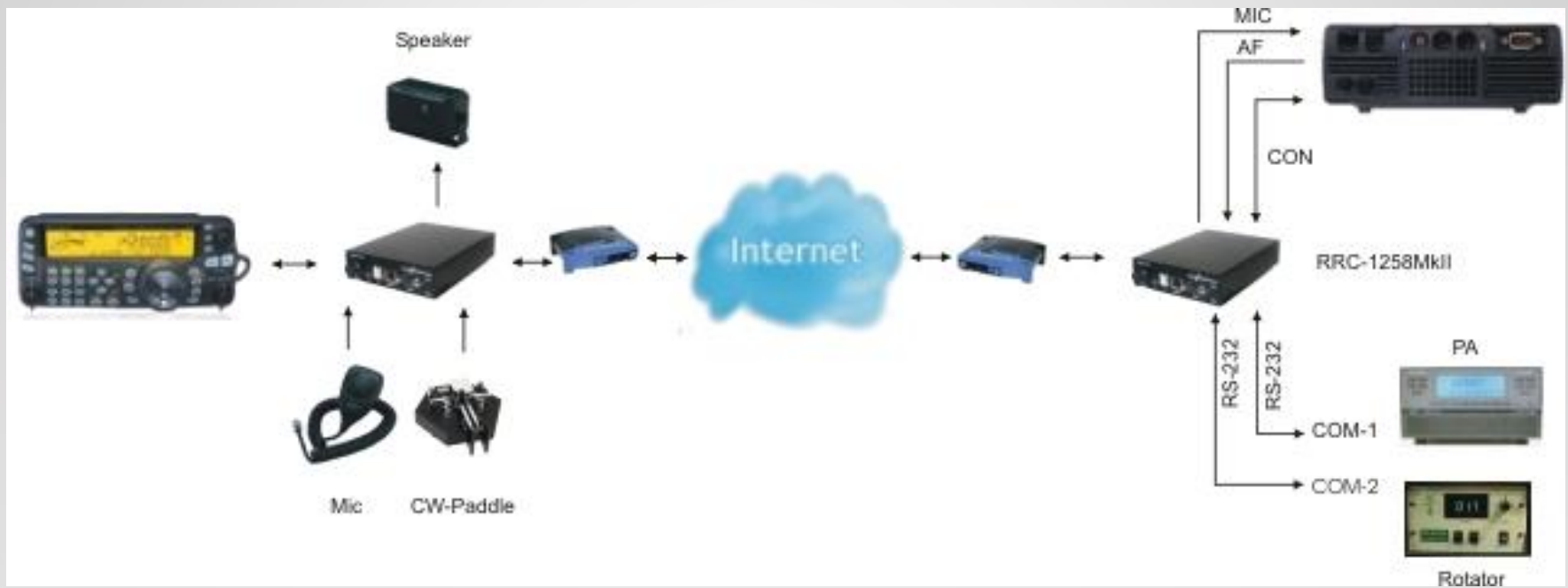


## 10 REMOTE FRONT PANELS

- **RemoteRig RRC-1258MkII**
  - Use a pair of Microbit RemoteRig “modems” to transfer audio, radio control and some station control
  - Kenwood, Yaesu, Icom, Alinco, Elecraft with separable front panel or twin operation
- Can also use PC at operator location
- Cost ~\$500 for a pair



# II REMOTE FRONT PANELS



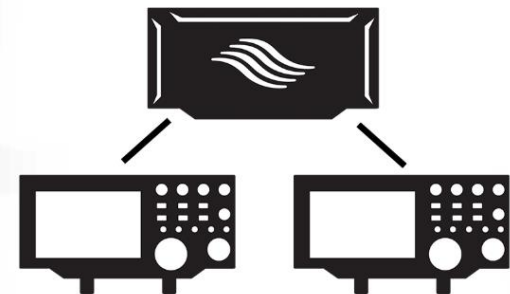
## 12 REMOTE FRONT PANELS

- **FlexRadio Maestro** front panel, now with multiFLEX
- Works with Flex 6400, 6600, 6700
- Maestro, PC, MAC and iPad Operation



### multiFLEX

2 Operators, 1 Radio





## I3 REMOTE DESKTOP

- Shack computer to control your station
- Use your favorite logging programs / rig control programs - even if they don't have any "remote" capability
- A "remote desktop" program to connect into your shack
- On your local computer you "see" the shack computer and can control the station
- **Splashtop**, AnyDesk (?), (~~TeamViewer~~), RemotePC, Chrome Remote Desktop, Windows Remote Desktop, RealVNC...
- **This is what I use for my remote station**



## 14

## REMOTE DESKTOP

WT0DX Dual Monitor  
Remote Desktop

## 15 REMOTE DESKTOP EQUIPMENT

- Transceiver with computer control - CAT
- Audio interfaces - Direct USB or sound card adapter
- CW interface – See Appendix for options
- PC for the shack (boot on power up) - Connected to transceiver
  - Good Video GPU with memory
- Remote power control - Wi-Fi or IP - AC controlled outlets
- Good internet connection - Upload



# 16 REMOTE DESKTOP SOFTWARE

- Radio control
- Operating software
- Audio link
- CW, Digital Voice keyer
- Amplifier, Antenna tuner
- Antenna switch
- Rotator control





# 17 REMOTE DESKTOP GETTING STARTED

- Determine how to interface your equipment to the computer
- Select the software you want to use
- Determine power control technique
- Configure Internet / Routers as needed
- If possible, do a trial on your LAN before WAN (Internet)
- Work with a buddy who has done this before...



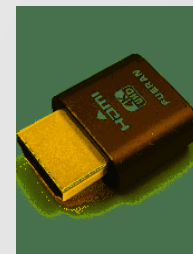
## 18 INTERNET, LATENCY, ROUTERS

- You need a “good” Internet connection!
- Internet Enabled Remote Power Switch with Reboot
- Latency needs to be considered
  - Computers
  - Sound cards, CW interface, Footswitch
  - Internet modems, Wi-Fi AP, Routers, Switches...
- Routers
  - Router Firewalls: Opening ports for remote software
  - Windows Firewalls
  - A buddy can help, or Google



## 19 OPERATING TRICKS

- Start simple, control your transceiver remotely
  - Then add more devices and software
- Try a digital mode first, may be simpler than CW or SSB
- Use a Macro recorder / player such as TinyTask to start and shut down all your software
- Make sure you have an AC power control solution
  - Your Computer or Software may freeze
  - You may need to start the transceiver again
  - Power down during storms
- For remote CW check out WinKeyer Remote
- Multiple monitors: Dummy headless monitor plugs

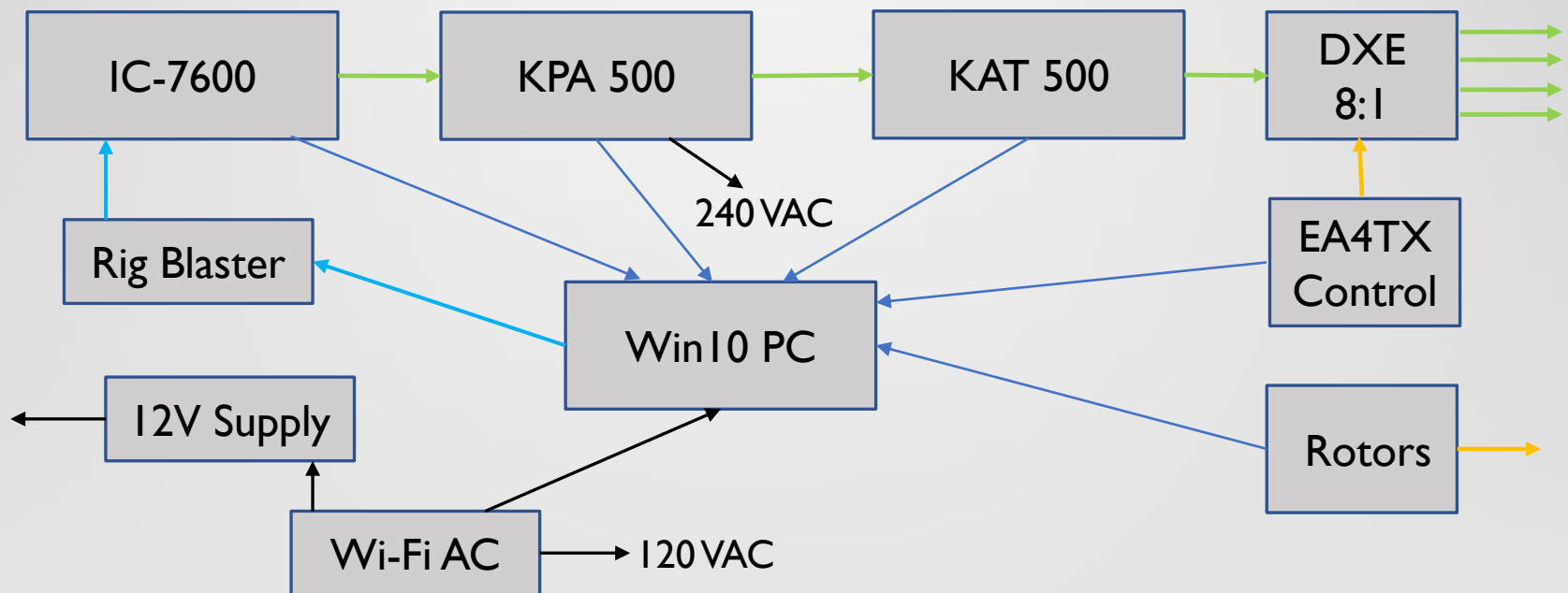
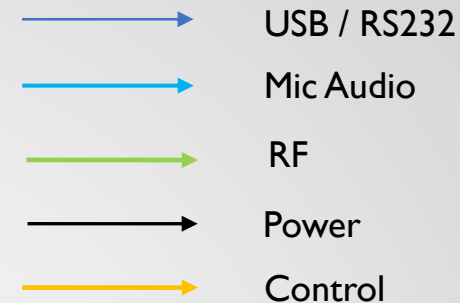


## 20 WT0DX REMOTE STATION

- Station located at local ham QTH: KT34XA at 90 feet, 7 el 6M Yagi at 95 feet, 2 el shorty forty at 100 feet, 80M Inverted Vee and a 160M Inverted Vee
- Icom IC-7600, Elecraft KPA500 Amplifier, Elecraft KAT500 Antenna tuner, Hygain Rotator controller / HamSupply Rotor EZ RS232, DXE 8 port Antenna switch / EA4TX controller, Rigblaster Pro (audio for SSB)
- Win 10 Computer software: Win4Icom, KAT500 Remote, KPA500 Remote, PST Rotator, EA4TX App, WSJT-X, JTAlert, Log4OM, N1MM+, Dimension4, TinyTask
- Comcast Internet via Ethernet
- Splashtop Business and AnyDesk Remote Desktop
- Wi-Fi AC Power controllers for Radio and Computer



## 21 WT0DX REMOTE STATION WIRING



## 22 WT0DX REMOTE STATION



Remote Station

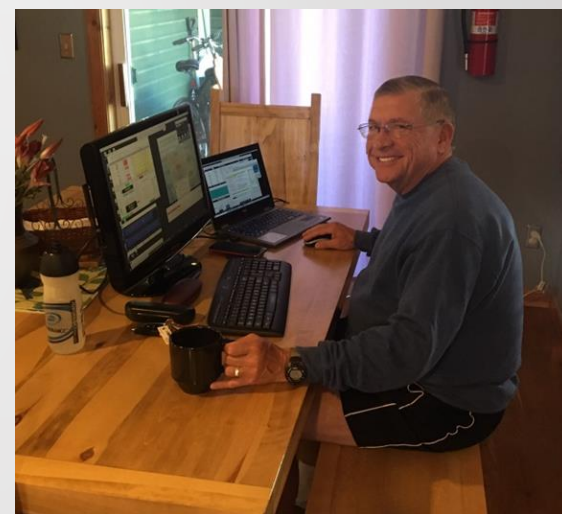


Home Operation

- Operated from Sand Key, FL condo, Crested Butte vacation home, Los Alamos, NM son's house, various hotels on the road
- iPad, iPhone or HP notebook computer with external monitors

## 23 REMOTE OPERATION: CRESTED BUTTE CO VACATION

- Operated from vacation rental home
  - From 6/25 – 7/25 2019
  - Made hundreds of contacts
  - Local DSL internet “good enough”
  - HP notebook plus external monitor
- CQ WWVHF Contest 7/20-21 2019
  - Paul NO0T visited and operated his remote station at the same time
  - True head-head competition!



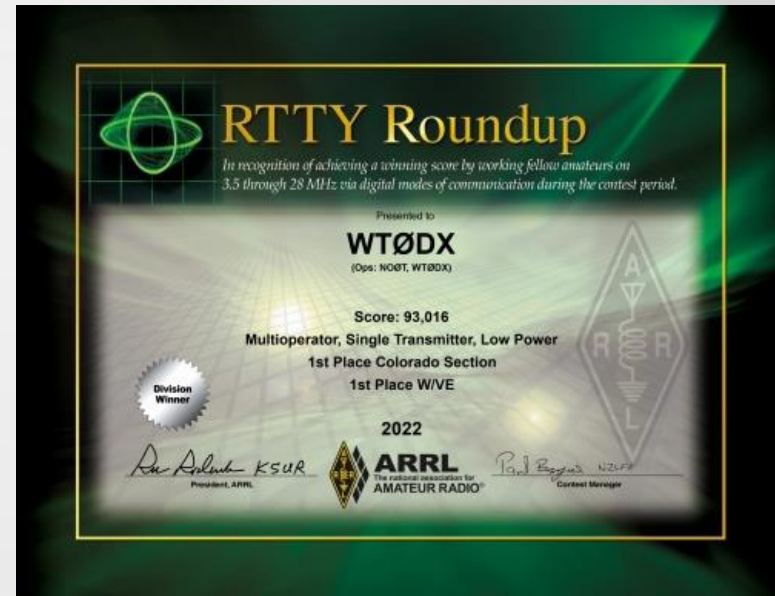
Paul NO0T



## 24 WT0DX CONTEST RESULTS



- 2020 FT Roundup
  - Placed 2<sup>nd</sup> WW, #1 North America
  - Top 10 WW across all categories
- 2021 ARRL RTTY Roundup
  - 4<sup>th</sup> Place in M/S LP
- 2022 ARRL RTTY Roundup
  - 1000+ Contacts RTTY/FT8/FT4
  - 1<sup>st</sup> Place in M/S LP
- Operating Multi-Op is easy with a Remote Station
  - 2-3 hour shifts, meals, sleep





## 25 AND FINALLY...

- Remote stations are fun to build and operate
  - Start small then grow functionality
- Clubs are building remote stations for the benefit of members
- Keep the driving distance reasonable, or have a buddy onsite
- Add your software to the computer Startup sequence
- Now helping to build a remote station at DSES

DSES Haswell, CO



Photo Credits WA2JQZ

## 26 DEMO / Q & A

- Demo of remote station WT0DX
- You can email WT0DX at: [wt0dx1@gmail.com](mailto:wt0dx1@gmail.com)
- Thanks to Mark K6UFO for some of this content
- Please contact WT0DX to share this presentation



# APPENDIX

Links to hardware, software, websites, presentations and other useful stuff

## 28 SOFTWARE

- Win4Icom: <https://icom.va2fsq.com/>
- Ham Radio Deluxe (HRD): <https://www.hamradiodeluxe.com/>
- N4PY Software: <http://www.n4py.com/>
- Icom RS-BAI:  
<https://www.icomamerica.com/en/products/amateur/hf/rsba1/default.aspx>
- Kenwood ARCP-480:  
[https://www.kenwood.com/i/products/info/amateur/ts\\_480/arcp480.html](https://www.kenwood.com/i/products/info/amateur/ts_480/arcp480.html)
- DF3CB FTDXRC: [DF3CB.com :: FTDXRC :: CAT & Remote Control Software](#)
- Splashtop: <https://www.splashtop.com/>
- AnyDesk: <https://anydesk.com/en>
- RemotePC: [Remote Access - Fast, Secure and Easy | RemotePC™](#)



## 29 HARDWARE

- AC Control – Amazon or other retailers
  - Wi-Fi AC Outlets (Kasa HS103P2)
  - Internet Enabled IP Remote Power Switch with Reboot (ezOutlet3)
- Flex Radio Maestro: <https://www.flexradio.com/maestro/>
- RemoteRig RRC-1258MkII: [https://www.remoterig.com/wp/?page\\_id=1051](https://www.remoterig.com/wp/?page_id=1051)
- WinKeyer Remote: <https://www.hamcrafters2.com/VVKremoteX.html>
- MFJ-1234COS RigPi Software: [MFJ-1234COS, RigPi Operating System v3.0 | MFJ Enterprises Inc](#)
- Yaesu SCU-LAN10: [Yaesu SCU-LAN10 Network Remote Control System SCU-LAN10 \(dxengineering.com\)](#)
- Hamsupply Rotor Control: <https://www.hamsupply.com/products/>
- EASY-ROTOR-CONTROL (ERC): [Vibroplex | EASY-ROTOR-CONTROL](#)
- Monitor Dummy Plug (Display Emulator): Amazon search for Dummy Plug

## 30 WEBSITES

- Remote Ham Radio: <http://www.remotehamradio.com/>
- RemoteHams.com: <http://remotehams.com/>
- RemoteTx: [RemoteTx – Operate Anywhere](#)
- K6UFO Remote Station Presentations:  
<https://www.qrz.com/db/K6UFO>  
<http://www.k6ufo.com/>
- W0QL Blog (solar powered remote station):  
<https://w0qlremotebase.wordpress.com/>
- W7DXX Remote Station: [W7DXX Super Remote](#)



## 31 OTHER SOFTWARE TOOLS

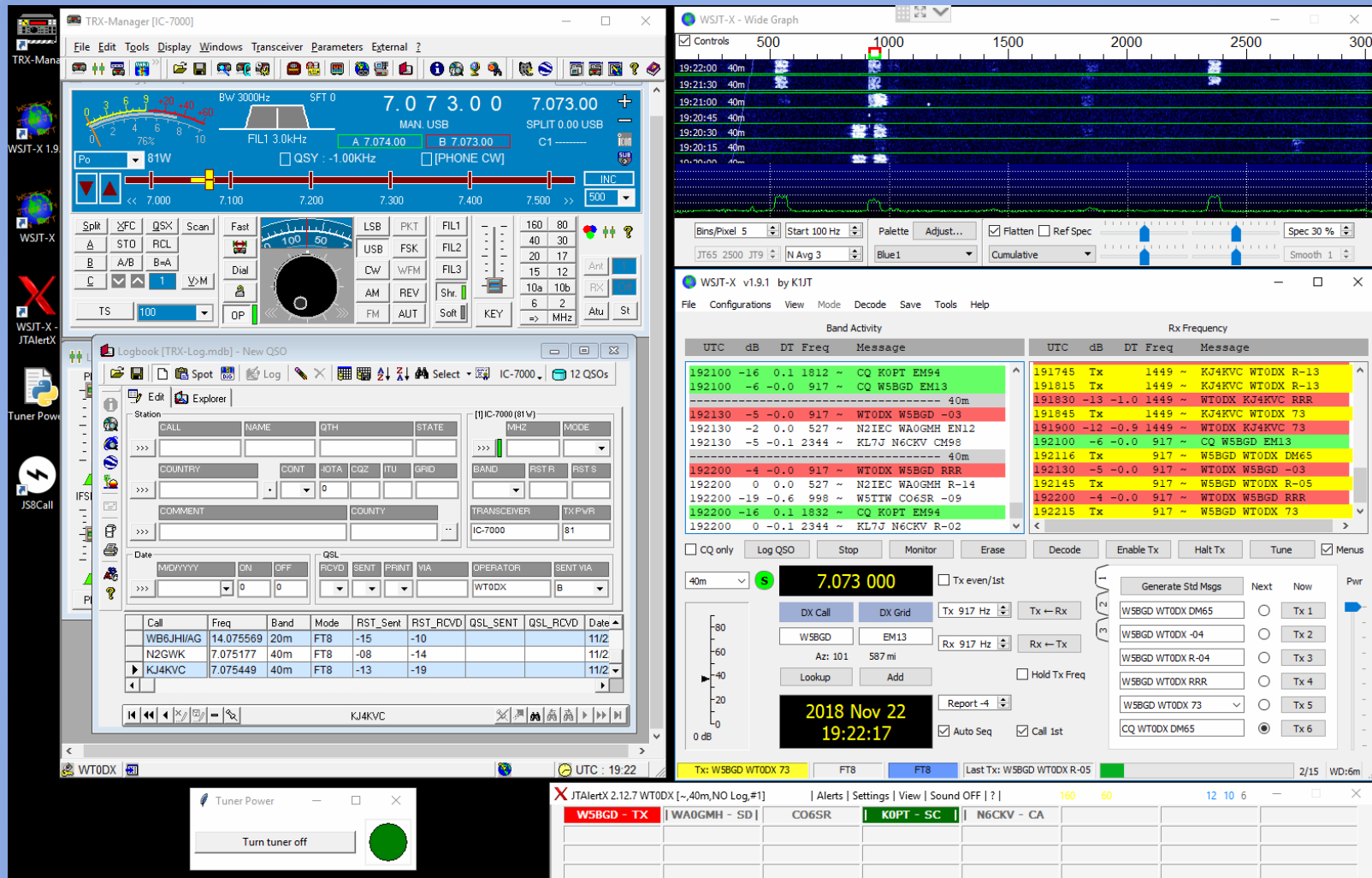
- WSJT-X: <https://physics.princeton.edu/pulsar/k1jt/wsjtx.html>
- JTAlert: <https://hamapps.com/>
- PSTRotatorAZ: [https://www.qsl.net/yo3dmu/index\\_Page346.htm](https://www.qsl.net/yo3dmu/index_Page346.htm)
- TinyTask: [TinyTask – Official site \(thetinytask.com\)](http://thetinytask.com)
- Skype: <https://www.skype.com/en/>
- Linphone: <https://www.linphone.org/>
- DF3CB Remaud: <https://www.df3cb.com/remaud/>
- Node Red: [nodered-hamradio@groups.io](http://nodered-hamradio@groups.io) | [Home](#)
- CATSync: <https://catsyncsdr.wordpress.com/>
- SDR Console: <https://www.sdr-radio.com/console>

## 32 NODE RED REQUIREMENTS

- Download the current supported version of Node Red and Documentation – <https://nodered.org/docs/>
- Local Computer or Raspberry PI
- Get a current copy of VSPE to create your virtual com ports and com splitters  
<http://www.eterlogic.com/Products.VSPE.html>
- Get and Install a Node Red Flow
  - Ask if anyone has done that Flow already – lots out there free
  - Join [nodered-hamradio@groups.io](https://nodered-hamradio@groups.io) – lots of advice and flows







WT0DX Los Alamos, NM Remote Station 2018