



These slides, and more, are at my website k6ufo.com

Remote Radio

- Remote Access to Your Amateur Radio Station

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FlexRadio Systems MAESTRO è la nuova console di controllo per i ricetrasmittitori della serie 8000 che permette l'uso immediato dell'apparato.

Friday, 3:15 – 3:55 PM, Room Charter Oak A-B-E

Rule Number 1: Follow the Rules!

There are Operator Rules, Station Rules, Award Rules, Contest Rules, ...

- Operator must be licensed in transmitter country or have a reciprocal permit.
- Transmitters must be controlled by a licensed operator and meet transmitter requirements in location country (power limits, timers, posted license, contact info.)
- DXCC Award Rule 9. - All contacts from stations within the same DXCC entity.
 - All TX and RX of a station located within a 500-meter diameter circle.
- Remote receivers are widely available, but not allowed for nearly all awards or contests. Only 2nd receivers at your transmitter site.
- You can't use remotes in two countries to apply for one award or contest.
- You CAN operate from two countries and apply for two different awards or entries.
- You can't use an East Coast Remote AND a West Coast Remote for a single entry in a contest. (You CAN use East and West both in ONE DXCC country for DXCC.)

Using **OTHER people's stations** is useful when traveling, or when no station is allowed at your residence.

Many Receive-only sites on the web: websdr.org globaltuners.com sdr.hu and many RemoteHams.com sites.

RX and TX stations: (you may need to upload a copy of your license, join a club, pay dues or dollar\$)

- A [friend or club station](#) setup for remote access, espec. owners of a FlexRadio-based station. Many contest stations: N6RO, W7RN, W4AAW
- [RemoteHams.com](#) has many shared stations and club stations globally.
- [RemoteHamRadio.com](#) Commercial operation, free trial - then pay, very high quality stations available in USA, Puerto Rico, and Haiti.
- [BeLoud.us](#) New commercial operation, plans for stations in USA, Ecuador and Bonaire,

Setting up Your Station for remote access:

There is no one perfect solution. It depends on what you want to do

Modes: Voice, CW, Digital? CW by keyboard only, or need key or paddle?

How much equipment will you haul around and setup?

How fast setup? Do you need to be on in 1 minute from a Smartphone, Tablet or Laptop? Or will you take time to setup a Control Head, edit the router to open ports, have special equipment, keyers and paddles, extra screen to control antennas, rotators...

Will station be used at home AND remotely, or dedicated to remote? How much re-configuration to go from local use to remote use? Will you do it every day before going to work? Do you need full band-changing, or is a “preset” on one band/mode sufficient?

Is the station easily accessible (in the garage), or a 4 hour trip to the hills?

Are you willing to keep a PC on-line at remote station, or does everything have to be extended across the internet?

How much “reset” ability do you need? Is anyone on-site to help?

Four Basic Needs for Remote Operation

- 1. Audio In and Out to radio:** Access to MIC/SPKR, Line In/Out, or audio over USB. Just like for digital modes (FT8, AFSK).
- 2. Radio Control:** To read and set radio Freq., Mode, PTT ... Need a radio with a serial port, CAT, CI-V, or USB control.
- 3. Station Control:** AC power outlets, antenna switching, rotators, tuners, amplifiers, ... Equipment must be highly automatic, or have PC control, or over-the-web control.
- 4. “Good” Internet service:** Up and Down speeds over 0.5 Mbps, Low delay under 200ms, low packet loss, low jitter or variation, a “publicly routable IP address” for the radio end (dynamic or static IP.)
(ADSL or cable = good, Satellite or cellphone internet = bad.)



...and your patience and willingness to deal with problems.

~~Four~~ Two Recommended Ways to Implement Remote Access

1. ~~Web Browser~~

2. ~~Software Programs~~

3. Remote Desktop Software

4. Remote Front Panels

-RemoteRig

-FlexRadio Maestro

Remote Access has been successfully implemented in four ways:

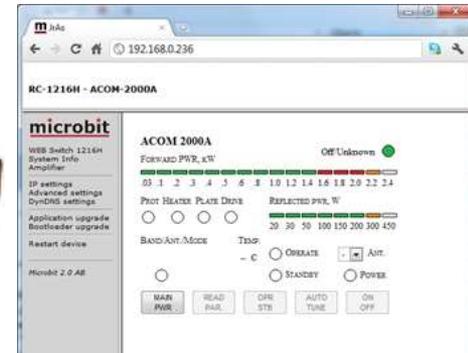
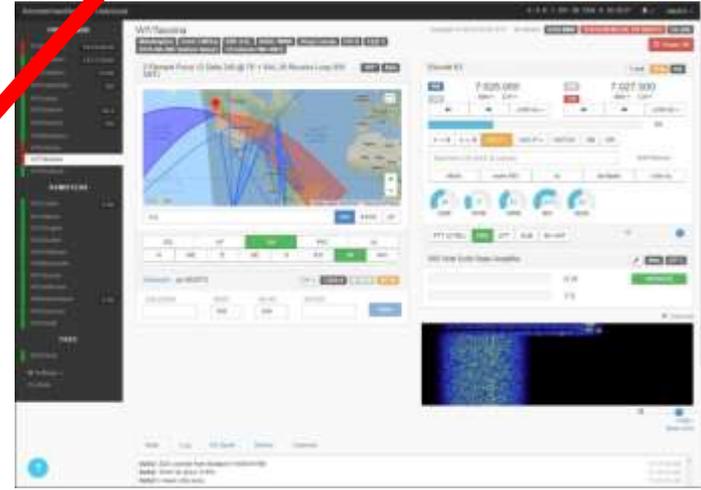
#1. Web Browser

Either RemoteHamRadio.com which runs entirely in Chrome browser, or with your devices with their own web server for remote access:

- RemoteQTH.com remote server,
- Elecraft KPA500 Remote Program,
- Remoterig.com Webswitch or rotator or amp control,
- ControlbyWeb.com WebRelay,
- Hamation Control Center,
- Green Heron Everywhere software, ...

- + **Lots of specific control, many devices.**
- **Lots of diverse interface, hard to bring together.**

**Too Complex,
Hard to Maintain**



#2. Software Programs



RemoteHams.com is both a software Program (RCForb) and a community of users & stations. Many stations free to use, some are “membership”. Wide range of capability and reliability. You can use the server software to offer up your own station. See, QST Magazine, April 2017, p30: “DIY Remote Radio Now”

ICOM’s RS-BA-1 IP Remote Control software. \$99.



Too limited,
Different User Interface

See also: Kenwood Radio Control Program ARCP-480, Ham Radio Deluxe, TRX-Manager, DF3CB software FT2000RC, N4PY Software, ...

#3. Remote Desktop software

Set up your shack PC to control your station. Use any software - even if it doesn't have any "remote" ability: N1MM+, Logger32, DXLab, WSJT-X, ...

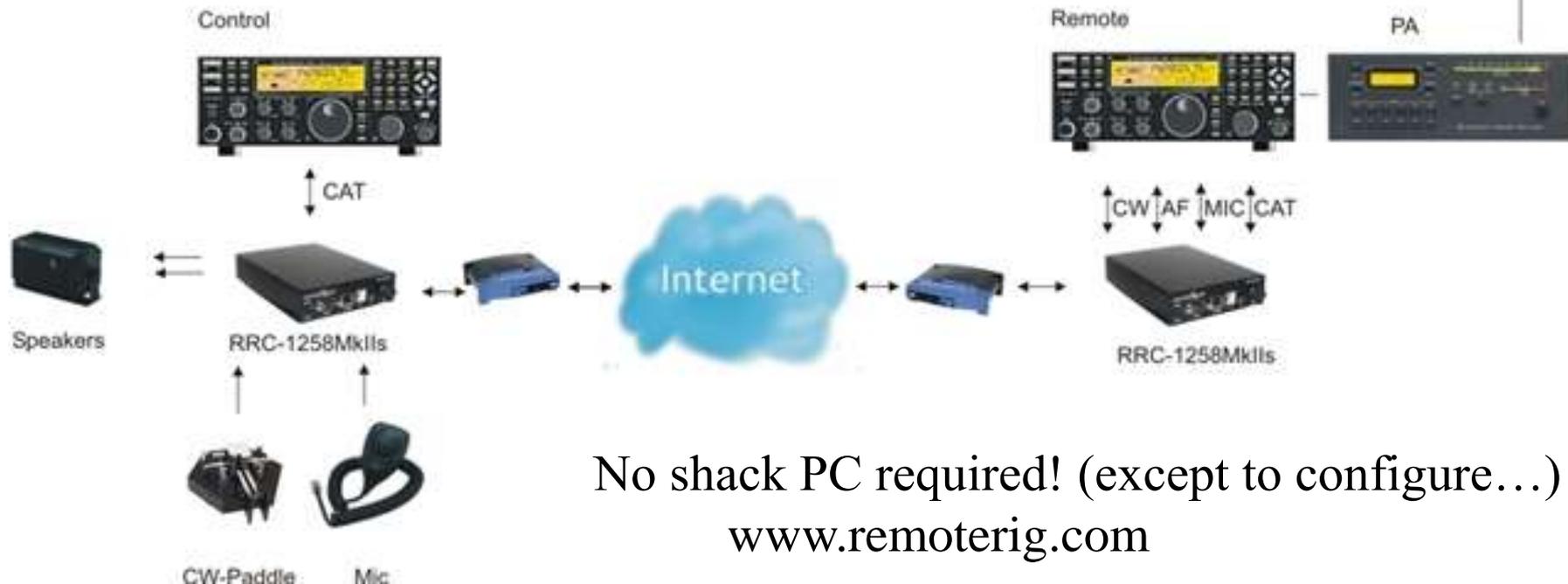
Then, use the "remote desktop" software to "connect-in" to your shack PC. You "see" the shack desktop, and control the station, just like being there.

There are many good free "Remote desktop" programs (also called VNC):
TeamViewer,
Chrome Remote Desktop,
Windows Remote Desktop,
Splashtop,
...others that don't include audio...



- + Use any software in the station.
- + Audio decoding for FT8 is best at station.
- Needs the most internet speed.

#4. Remote Front Panel - Microbit RemoteRig



No shack PC required! (except to configure...)
www.remoterig.com

Use a pair of RemoteRig “modems” to send audio and control signals to station.
Can use with: Radio with a detached front panel, “control heads” (Elecraft K3/0-Mini), “twin” radios, PC program or Android App.

- + **No shack or remote PC to operate.**
- **Expensive?** (\$500 a pair, plus a control head or 2nd radio)
- **Hard to configure the 1st time.**

#4. Remote Front Panel - FlexRadio Maestro

A FlexRadio Maestro (wireless or wired) connects across a local network or the internet to control a FlexRadio station. Can also control from a PC program or App on smartphone or tablet. Remote access is “built-in” to the SmartSDR software.



- + Good support, one vendor.
- + No shack PC required.
- Expensive?

FlexRadio Systems
Software Defined Radio

Win PC runs digitals

Maestro

FlexRadio Systems **MAESTRO** è la nuova console di controllo per i ricetrasmittitori della serie 8000 che permette l'uso immediato dell'apparato **senza bisogno del PC**, tramite connessione alla rete LAN anche WIFI, oppure direttamente all'apparato.

FlexRadio Systems **MAESTRO** è un moderno e funzionale pannello radio dotato di schermo touch, pulsanti e manopole, connessioni per microfono e tasto/paddle con il quale usare l'apparato senza rinunciare alla operatività tradizionale di una qualsiasi apparecchiatura radio, oltre che a permetterne la remotizzazione in qualsiasi punto coperto dalla vostra rete LAN.

What are the REAL problems?



Station Control: The control of “everything else”: AC power outlets, antenna switching, rotators, tuners, amplifiers, RX-only antennas, watt meters, ...

Look for “automatic” or “computer-controlled” (needs a PC in shack).
(Trust, but verify)

Make your station as automatic as possible, then solve remaining devices...

Eliminate things that require you to manually switch, plug or adjust them.



A "killer" problem when remote is when something needs to be reset or unplugged. There are more of these than you think.



There are solutions to the REAL problems:

AC Power switching: WeMo Mini Smart Plug \$26, or DLI Web Power Switch \$170



Antenna switching: The radio's ANT 1/2 button, or band decoders & coax switches.

Rotators: Control box with a serial port, use logging software or PstRotatorAz sw.

Tuners and amplifiers: If manual tune, use on one band switched-in by antenna switch. If auto-tune: use anywhere. Use in Automatic-mode or with control sw on shack PC, or over internet if remote-capable sw.

Other devices can be controlled across the internet with serial port extenders, “web” relays and switches, computer controlled switches, ...

Latest Developments in Remote Access:

ARRL DX Contest, SSB 2019 Mar 2 Claimed Scores

SOAB HP

Call	SO2R	Remote	QSOs	Mults	Op	Time	Score	Club
8P5A(W2SC)	x		7400	287	47	6,371,400	NCCC	
P49Y(AE6Y)	x		6280	286	40	5,388,240	NCCC	
KH7XS(K4XS)			6490	269	45	5,237,430	FCG	
ZF9CW(K5GO)			6165	272	44.5	5,030,640	CARS	
NP2P(N2TTA)	x	x	4381	246	41	3,220,226		
TO5A(F5VHJ)	x		4107	237	37	2,920,077	CDXC	
W2RE(@W1/EASTPORT)	x	x	2314	317	43	2,200,614		
VY2ZM	x		2172	323	38	2,104,668	YCCC	
N1UR	x		2166	314	40	2,001,352	YCCC	
CE2LR			3155	209	25	1,977,558	LUCG	

Remote stations are being used in all major contests: ARRL DX, CQ WW, Stew Perry, CQ WPX, Sprints, QSO Parties...

Hundreds of remote stations on-the-air.

Thousands of remote stations in existence.

Newer “SDR” radios seem particularly well-suited for remote operation: FlexRadio, Apache ANAN, Expert Electronics SunSDR, ...

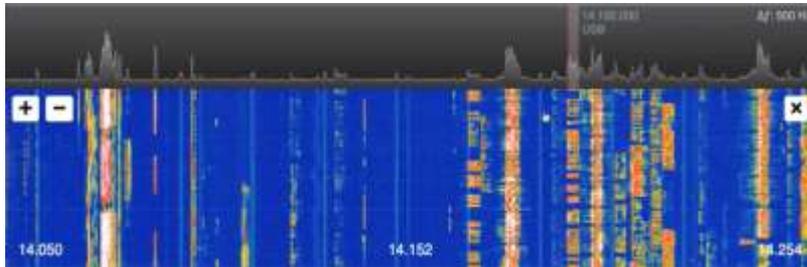
Elecraft has a control head “K3/0-Mini” and provides good support of the RemoteRig boxes, and the RemoteHams.com system. Elecraft also has “remote” utility software for its K3 radios and KPA amplifiers.

“Traditional” manufacturers are providing the “weakest” solutions: Icom RS-BA1, Kenwood ARCP-480, Yaesu-nil...

Latest Developments in Remote Access:

Automatic and remote antenna switching and control being well supported by Green Heron Engineering, HamPlus, Hamation, Array Solutions, DX Engineering, RemoteQTH.com, EA4TX, 4O3A, microHam, ...

Writelog contest logging program has built-in remote control of another Writelog program. This allows remote operation without changing any cables or settings (if you use Writelog, and your antenna switching is automatic). www.writelog.com/category/remote-control



RemoteHamRadio.com showing Beta of remote panadapter/waterfall display running in Chrome web browser – no plugins, no extra hardware or software. (aka, “full waterfall over internet”)

Q & A

What are your questions and concerns?

Maybe someone here can help!

Thank you!