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# FlexRadio Remote HF Station Setup User Guide

**Remote HF Station Setup
User Guide**
FlexRadio Systems
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## Introduction

The staff at FlexRadio often get asked about building out a remote HF Station. So, I was asked to put some ideas together to get people thinking in the right direction. This is for today's ham radio operator to help automate his

station.

Also, by the time you read this, vendors may have changed and the design of the product may have also changed. You will have to do your own research.

Caveat: FlexRadio, in no way, supports or provides any warranties for any of the information shared in this document. It is just a collection of possible ideas and solutions. It is informational only.

**Goals**

The following items can be used to build a basic, reliable remote HF station with minimal investment. These are the basics that will be deployed to help ensure the radio is online and accessible via SmartLink.

Most of the items/ideas listed here are available off the shelf so that you don't have to build them or solder them.

It is assumed that the operator has a 1 or 2-feedline antenna system, an amplifier is not part of the solution, and there is no rotator.

- AC Power Supply on and off
- Flex 6000 soft power on and off
- Internet modem auto reboot

This guide is to be used as a starting point for building a station that allows managing some of the basic concerns, the ability to remotely reboot the radio and to have the internet modem reboot automatically.

Highly recommended is to have a Windows PC also near the radio on the same LAN network to allow remote diagnosing of problems and also reliable digital operations by accessing the PC via many of today's remote connection software solutions. This becomes much more important should you be away from the station for an extended period of time.

**Requirements**

- Internet – 2 Mb/sec upload network throughput via Cable, DSL, or Fiber. The performance characteristics of cellular or satellite networks are not suitable for reliable remote operations.
- WiFi is required to control the Kasa Web Switch.
- Flex 6000 series radios
- All devices on the same LAN Subnet
- Highly recommended – Windows PC on the local LAN network

## AC Power Control

**TPLink Kasa Smart WiFi Outlet**

The AC power will be controlled via a web switch.

Currently, FlexRadio sells the TPLink Kasa Smart WiFi Outlet. You will require one of these items that will be used to connect to your 12V DC power supply.

**FlexRadio Soft Power Control**

- TPLink Kasa Smart WiFi Outlet Min
- Digital Logger AC-powered relay
- RCA cable



These items are used to control the soft power up and down of the Flex 6xxx radio by making use of the Remote RCA connector on the back of the radio. The Kasa Smart Control is an iOS application that allows you to control multiple power outlets from your iOS device. (insert Android if appropriate).
This allows the operator to remotely control power to the radio and 12VDC power supply.
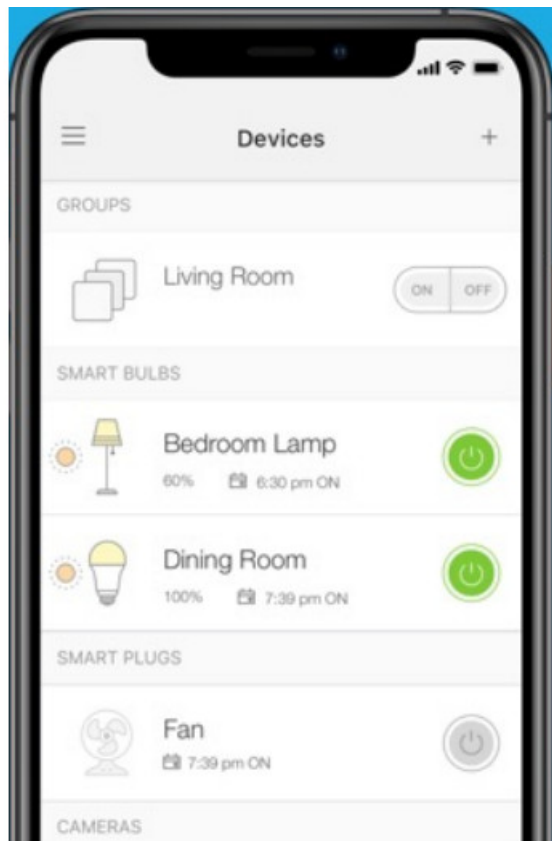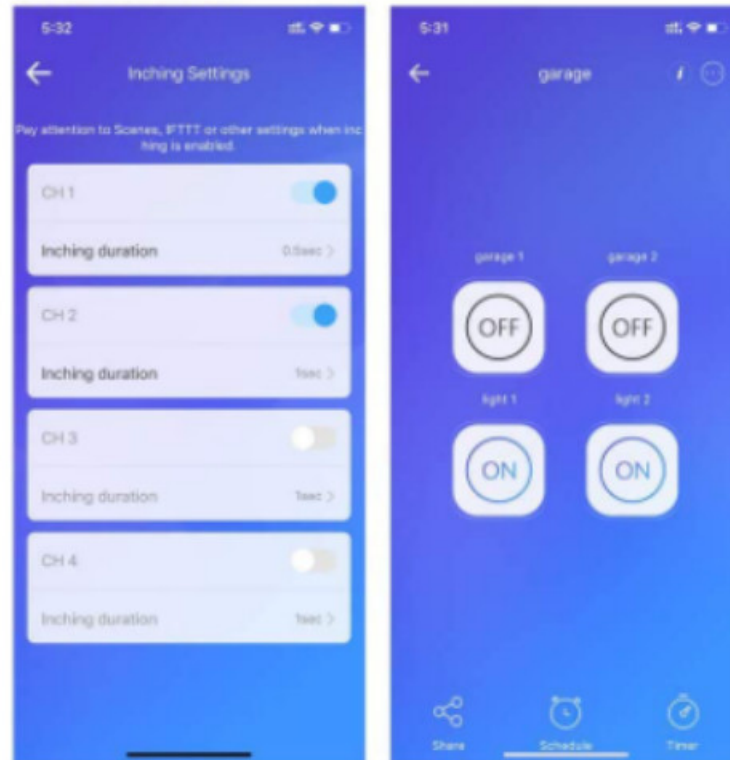
**4 Port Web Switch**

MHCOZY 4CH WIFI RF Smart Switch Module

- 4 Channel remote switch
- 2.4Ghz WiFi
- Remote PTT control with an RCA Cable
- Remote 12VDC accessory control
- Other devices

Available on Amazon for about $25

## Internet Modem Monitoring

NetReset – Digital Timer
**[NetReset-Digital Timer Outlet Automating Modem and Router Reboot](#)**
Net Reset Turns Modem on 2 Mins Before Router Providing
Most Secure, Fast, and Reliable Internet. 24-Hour Timer.
If your internet connection fails, a smart home becomes a
problem. The best solution proved to be the simplest. As the
FBI says, the most effective way of auto-correcting home network issues, mitigating malicious cyber-attacks and is
by routinely cycling power to your modem and router.
**Note:** These items have not been tested.


**ezOutlet5 – Internet Enabled IP & WiFi Remote Power Switch with Reboot**

- Monitors Internet Connectivity and Cycles Power Outlet when Broadband (DSL, cable, satellite, FiOS, etc) Connection is Lost
- Automatically Restart Remote Equipment such as Modems, Routers, PCs, or Security Cameras when they Crash, Freeze or Lock-Up
- Connects to your LAN via 2.4G WiFi or 10/100 Ethernet
- Schedule Multiple Automatic Power Cycles (e.g. ON at 6 AM, OFF at 9 PM)
- Free Monitor & Control App for iPhone / iPad /Android Phones & Tablets or use Cloud & Web Interfaces Note: These items have not been tested.
- Amazon.com: ezOutlet5 – Internet Enabled IP & WiFi Remote Power Switch with Reboot (AC Power/Single Outlet/iOS/Android/Cloud/Web Controllable) – Newest Model
- ezOutlet5 – Internet Enabled IP & WiFi Remote Power Switch with Auto Modem/R…

## Recommendations

**Remote PC (highly recommended):**
FRS does recommend that the Operator install a remote PC (desktop or laptop) at the remote station to allow for remote access maintenance. This can be used to update the  software on the FlexRadio 6xxx. Other options are it allows remote access to your Router should any changes be required.
At the same time, digital mode operation can be executed on the remote PC and this provides a much more reliable Digital mode of operation by not sending SmartSDR  DAX data over the internet. Streaming DAX data can consume a significant amount of upstream bandwidth and impact the user experience.
Remote access to the PC can be achieved by using any of the following software tools (but not limited to).

- Chrome Remote Desktop
- TeamViewer (risky as TeamViewer may lock you out if they think you are a commercial operator)
- Any desk

Watch: HF Remote – Why a PC at the remote end? – Flex Radio

**UPS – Uninterruptible Power Supply**

A UPS is highly recommended to be installed for any computer, router, or modem. A UPS is not required on the Radio power supply but it doesn't hurt if you have one that is big enough for 2000-watt power surges from SSB voice peaks.
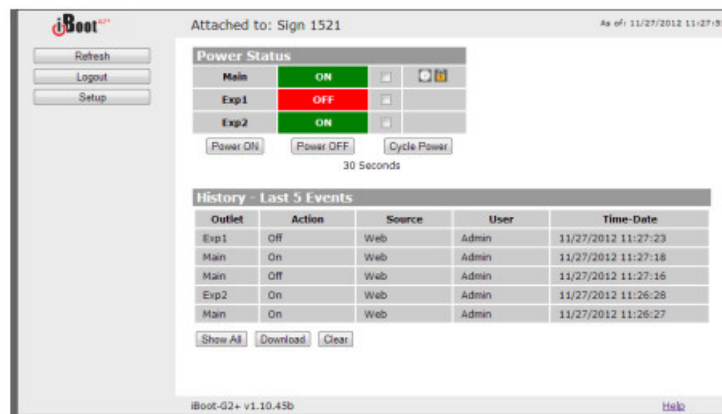
## Drawing Overview
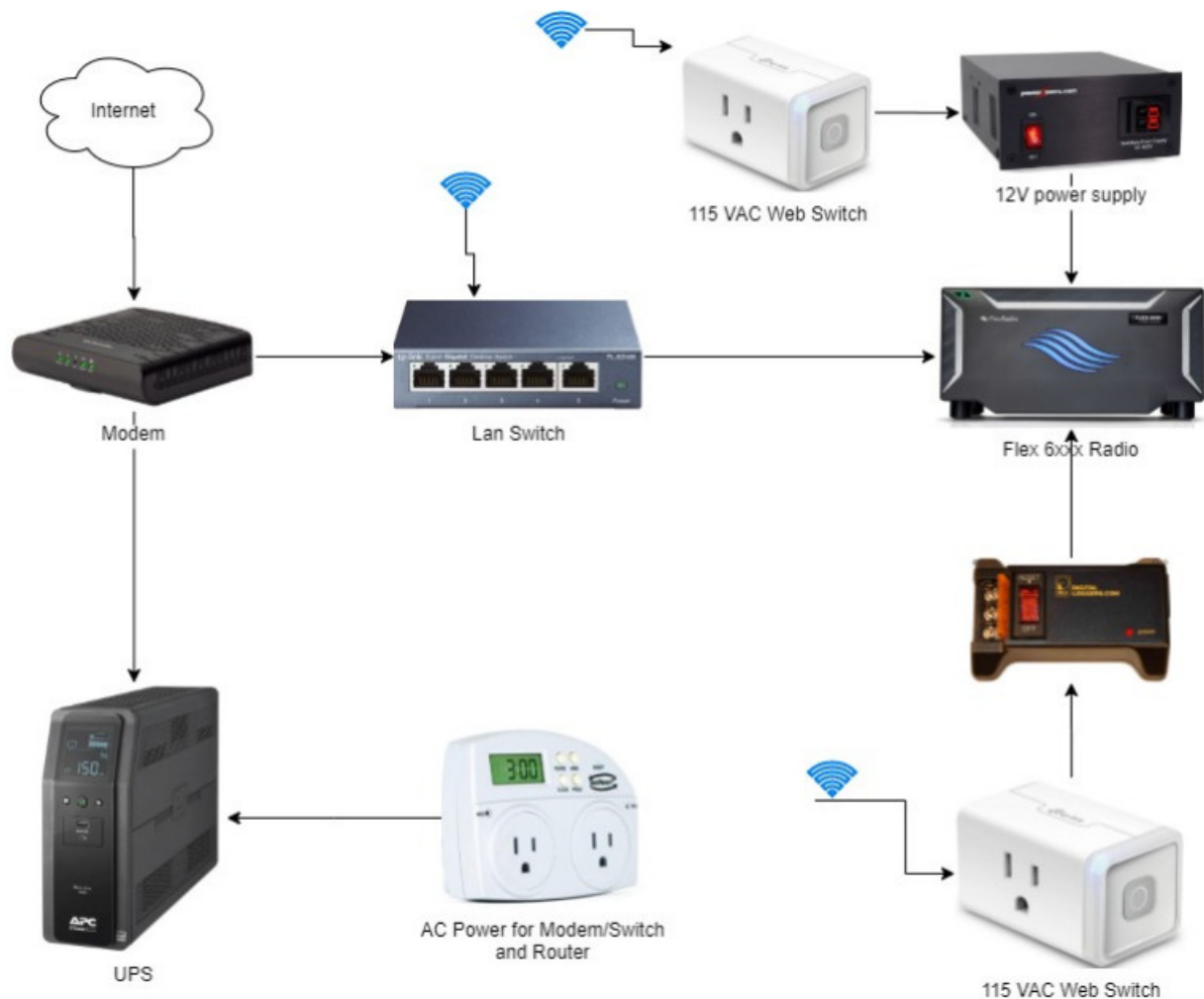


## Other Hardware to Consider

**iBoot G2**
**[iBoot-G2+ Expandable Network Power Switch](iBoot-G2+ Expandable Network Power Switch)**

Model iBoot-G2+ has the extra features you need to make even fewer site visits. Control up to three independent outlets to protect even more devices.

iBoot will save you time and money by reducing costly downtime. Just point your browser to the iBoot, login and you are one click away from bringing that failed system back to life. iBoot will even detect failed systems and take immediate action.

It has an auto-ping feature that will verify the modem/router's accessibility as required for an outage.

Note: I would like to recommend this, but we need to test it to see if it will control all 3 devices (12V power supply, Radio software reboot, and the modem/router).

## SONOFF Web switch
This switch is good it has its own write-up.
**A Remote Relay Switch for Powering on a FLEX-6000 –FlexRadio**
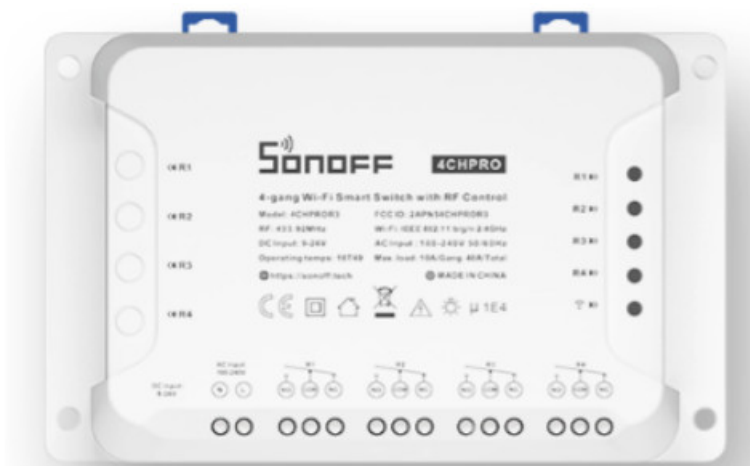


## $3 Remote Solution (from Hackaday)
Make your router reboot automatically when internet connection is lost ESP8266 01 and single relay – not plug and play

## Accessories

### Amplifiers
You will want to invest in an amplifier that a solid-state no tune amplifier, such as the FlexRadio PGXL.
The PGXL integrates with a FlexRadio 6000 seamlessly and allows legal limit power. As well, all the health of the amplifier is shown within the SmartSDR application.
Other amplifiers may also function, however, you will have to discuss that with your dealer/vendor.
240VAC Power Control
One of our hams recommended this switch.
Suraielec WiFi Pool Timer, Outdoor Indoor Smart Switch, 40 AMP, 2HP, 120, 240, 277 VAC:
**Remote 220-240VAC Switch — FlexRadio Community**



**Further discussions can be found here:**
**https://community.flexradio.com/categories/remote-operation**

### Antenna Switching
The 403A 2×8 antenna switch works very well with a FlexRadio solution as it is a LAN based device. When coupled with a Flex 6600 or a 6700 it allows both ANT 1 and 2  access to up to 8 unique antennas.
Other solutions are available (again, ask in the FlexRadio Community) and they will even integrate well into the CAT/BCD data available directly from the rear of any Flex  6000 series radio.

## Lightning Mitigation

### Hardware Solutions

Unfortunately, there really isn't a very good or comprehensive solution. Like any ham shack, you do need to do all the standard precautions. What we really need is an application that will throw the antenna feedlines out the window when needed. Sadly, that isn't very practical today.



The Dual Antenna Disconnector by Paradan Radio is a good start but it will not survive a direct lightning strike. This device requires a switch 12V DC to turn on and off. If you use a Web relay to turn on and off your DC power supply then this can be wired directly to the power supply and ground your antennas when you turn off your station power supply.

### Publications

Ward Silver N0AX has a book that every amateur should read and own. You can find it in the ARRL Book Store. "Grounding and Bonding for the Radio Amateur"
There is also a YouTube video: **https://youtu.be/sF6F2cjPWqc**
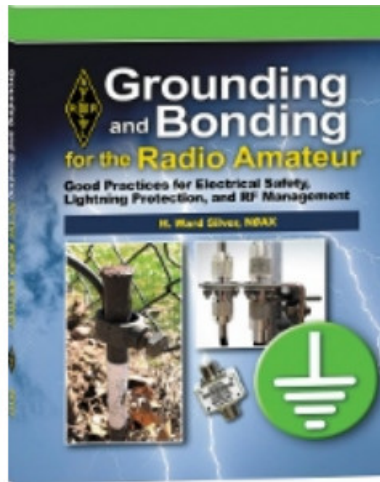
## Other Resources

**FlexRadio Community**
The FlexRadio Community is a good resource for asking questions for many areas as it relates to the operation of your FlexRadio station.
**https://community.flexradio.com/**
There is a very active community discussion group as well:
**https://community.flexradio.com/categories/remote-operation**
**Other Resources**
Using Node-Red for Station Automation
**https://groups.io/g/nodered-hamradio**
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## Documents / Resources

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| FlexRadio<br><br>A Beginner's Guide to<br>Remote HF Station Setup<br><br>FlexRadio Systems<br>Revised Edition 10/2019<br>May 2022 | **FlexRadio Remote HF Station Setup** [pdf] User Guide<br>Remote HF Station Setup, Remote HF, Remote HF Setup, Station Setup |

## References

- **a** **Amazon.com. Spend less. Smile more.**
- **≋** **FlexRadio Community**