



Tips for Setting Up Your Remote Station

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Remote operation can be done from a station that's in another part of your home, or one that's in another country. How you set up your remote station will vary depending on its distance from your base station, so I've put together some tips to help you get started.

Choosing an Internet Connection

Regardless of how far away your remote station is from your base station, one of the most important components of operating remotely is having a good internet connection. In my experience, Ethernet connections to the gateway work the best. Wi-Fi might work fine, but keep in mind that remote operation involves a constant exchange of data, which requires relatively high internet speeds for downloading and uploading. If more than one person at a time is using your home Wi-Fi, it could cause your signal to drop, or it might cause increased latency (when your controls and screens are out of sync with what you hear or transmit). I replaced my internet provider's router with a third-party mesh router to help with eliminating dead zones, and I saw a dramatic increase in Wi-Fi coverage and my remote operating performance. The original router couldn't provide the reserved IP addresses and designated ports that my equipment required.

It's also a good idea to reboot your modems and routers periodically. Reports seem to indicate that they accumulate stray information and can become

less efficient over time. Additionally, if you have trouble with your connection, your provider will likely send a refresh signal (which will reset your devices) and instruct you to unplug them for a few moments before reactivating them.

If you're operating remotely from another part of the country, you might think a smart switch can solve the connection problem, but remember, once you cut the power from the system at your base station, you don't have Wi-Fi to power it back on. However, this can be solved by plugging both your modem and router into a mechanical timer that's set to turn off and restore the power daily. Alternatively, there are a lot of inexpensive devices that have a battery backup, are digital, and activate your modem a few minutes before the router, allowing the modem to stabilize before the router powers up.

If your Ethernet cable is long, consider upgrading to a shielded Cat7 cable, which can be run outside. Some hams like to put a filter on either end, such as a pair of DX Engineering ISO-PLUS Ethernet RF filters. Depending on your setup, you might need to buy an Ethernet switch to handle the multitude of cables.

Regulating Your Power Sources

With 110 V smart switches, you can control your base station's power sources. I recommend sticking with one supplier; that way you'll only need one app on your phone to display all of the power toggles. You'll need to consider how to turn your amplifier on and off with 220 V for remote operating. Some hams choose to leave it on all the time, particularly with solid-state amplifiers. I prefer not to do this because I operate remotely from a location that's far away from my base station. Instead, I constructed a box with a relay and use a 110 V smart switch to trigger the relay, which



My base station is set up at my home in Connecticut.

closes the circuit on the 220 V line. The ability to switch equipment on and off will help protect it against power surges. Also, cycling it on and off periodically (such as with your modems and routers) can be beneficial.

Finding the Right Gear

Depending on your equipment, it might be useful to have a computer running at your base station or local area network (LAN). Software-defined radios (SDRs) get periodic updates, and their various functions are better accessed within your LAN. My base station computer runs 24/7 and is controlled with a smart switch. I have a screen-sharing program on it, as well as the utility programs for getting into the equipment. You also don't want to require a shared passcode. Computer updates can be set to only occur when you're home, which allows for uninterrupted remote access.

When operating remotely, you may still need to rotate your antenna. I use the Wi-Fi-version of an antenna controller by Green Heron Engineering (www.greenheronengineering.com), which connects well with my Yaesu rotator. I also downloaded a Great Circle Map (www.greatcirclemap.com) of my location and uploaded it to the antenna controller software.

For security reasons, some equipment might require reregistration if something goes wrong. For example, the transceiver at my base station needs to be manually turned on and off, so I wired a small relay to a smart switch, allowing me to close the circuit remotely. I also had to unplug my push-to-talk (PTT) button and plug in the wire for the relay before changing my location.

Depending on the brand of your smart switches, you can add a monitoring camera of the same brand. I can see my equipment's pilot lights with my camera, and a smart switch allows me to control

it, as well as a light in the room, to see everything during any time of day.

Shielding Your Equipment from the Weather

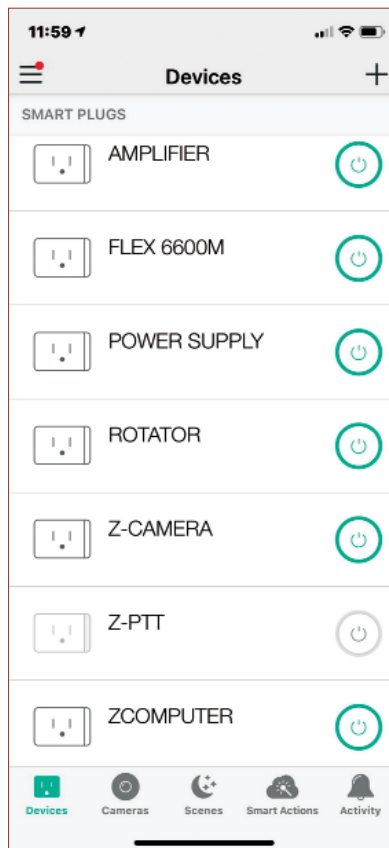
No matter what the distance is from your base station, remote operation is vulnerable to bad weather, particularly lightning. I'm not aware of a product that can protect your equipment as well as disconnect power. However, one approach is installing PolyPhasers on the coaxial lines to prevent RF surges. This can be done outside by adding a ground for each PolyPhaser, or inside if there's a suitable



My remote station is in southern Florida, where I operate using a FlexRadio Maestro or a computer.



If you don't want to constantly run your equipment at your base station, try creating a relay box. When operating remotely, I use a 110 V smart switch to trigger the relay and the circuit on the 220 V line.



I'm able to control my smart switches from my cell phone while operating remotely.

ground. The downside is that the gas-filled tube inside the suppressor, or the entire PolyPhaser, will eventually dissipate with near-strikes from lightning and have to be replaced.

Conclusion

Mobile operations have never been more accessible or adaptable, and more options are developed every year. For example, FlexRadio has software that allows you to operate remotely using Windows, iOS, and macOS. You can operate from anywhere by using a computer, laptop, tablet, or cell phone. I can use my cell phone to make a contact with a station in European Russia while I'm at the gym. When I leave the gym, my car's speakers pick up my phone's Bluetooth, and I can continue the contact hands-free, running the legal limit from the car. That can all be done without using a car whip antenna or any equipment other than my phone!

For those who still favor buttons and dials over computer screens, FlexRadio and Elecraft offer a device similar to remote hands-on mobile equipment. FlexRadio's Maestro Control Console is a copy of the FLEX-6000 series M transceivers, but it's only 2 inches thick and can operate on a battery with Wi-Fi.

Think outside the box — and the house — to design a remote system that fits your needs and goals.

All photos by the author.

Richard Ladisky, WB1J, has been a licensed ham radio operator for 64 years. He holds an Amateur Extra-class license and has operated AM, CW, SSB, RTTY, FT8, slow-scan TV (SSTV), and satellite. He holds award certificates for the ARRL DXCC #1 Honor Roll and DXCC Satellite. He was a high school teacher and administrator for 35 years; Bristol, Connecticut's Director of Homeland Security and Emergency Management for 34 years, and spent 3 decades as a freelance underwater photojournalist. He's now retired, but still enjoys traveling around the world to exotic places. Richard can be reached at wb1j@comcast.net.

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