Ham Tips

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DC Power Supply Connection Alternatives

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The accessories shown above provide convenient ways to quickly connect your radio to various power sources. Seen clockwise from the upper left are adapters for powering a radio from a vehicle's cigarette lighter socket, an AC power supply, and a storage battery. The cable at the lower left is a factory-supplied power cable that was modified to work with these accessories.

What is the most important component of your station? Antenna? Transceiver? Computer? If you said a source of power, congratulations you guessed correctly. Even when you own the best communications equipment in the world, it's totally worthless if you don't have a means of powering it.

In this Ham Tip, we'll explore several ways of powering your station. One way would be to buy four power cables with a different termination on the power source end of each one. A better way, in my opinion, is to use one power cable with adapters for each possible power source.

Mobile Station Sources

The preferred method of powering a mobile radio is to run a dedicated power line directly to the battery. That's fine for a permanent installation but for occasional use, or a temporary hook up in someone else's vehicle, it's possible to use the cigarette lighter socket or a power port instead.

The radio's power cable simply plugs into the CigBuddy adapter which is plugged into the cigarette lighter socket. I found mine at Powerwerx (powerwerx.com).

CAUTION – If you're going to get power from a cigarette lighter socket or power port, check to see how much current you can draw without blowing the vehicle's fuse. Then, if necessary, reduce the current drawn by the radio by backing down the radio's RF output power so you don't exceed it.

For example, the power port in my Subaru Forester is fused at 20 Amps. Allowing a safety factor of 2, that means the radio shouldn't draw more than 10 Amps. Since my Yaesu FT-8900R draws a maximum of 8.5 Amps in its highest power mode, I can transmit at the full 50 Watts if I absolutely needed to without blowing the fuse.

Base Station Sources

For a permanent base station installation, an AC power supply is usually the preferred source of power. The adapter shown in the upper right of the lead photograph was made from the factory supplied power cable.

The power cord that came with my FT-8900R was longer than I needed so I made this adapter by cutting off the end furthest from the radio six inches from the fuse and installed a Powerpole connector. The bare wires go into the jacks on the AC power supply and the Powerpole plugs into the cable going to the radio. I used two ty-wraps to keep the wires bundled together.

Another option would be to buy a connector that mates with the one attached to the radio and install it instead of a Powerpole connector. If you choose to go this route, then the longer power cable would not be necessary and could be stowed with the other adapters.

A base station can also be powered directly from a deep cycle battery. This is very similar to a field station application but usually has an AC power supply connected in some fashion to maintain the battery. Although there are several ways this can be achieved, they are outside the scope of this article.

Field Station Sources

When you take your radio into the field for an emergency deployment or public service event, commercial power may not be available. In this situation, you may need to get power from some type of battery. Deep cycle marine batteries are generally preferred for mobile radios. One thing to keep in mind is that in a pinch an automobile battery can also be used to power your radio.

The easiest way to connect to a marine or automobile battery is to use large alligator clips. The adapter shown in the lower right of the lead photograph is a commercial product I purchased from Powerwerx.

A Gel cell battery is often a good choice for powering handheld and other low power radios. They come in different sizes and have different terminals. Most have male Faston tabs but unfortunately they also come in different sizes. So if you're going to make an adapter for a Gel cell battery, make sure you buy mating connectors that are the correct size.

For handheld radios, it's probably more appropriate to terminate the radio end of the cable with a plug that mates directly with your radio rather than using a Powerpole connector.

Summary

Before installing the Powerpole connector on the end of the cable going to the radio, I twisted the red and black wires to minimizes the pickup and radiation of undesirable signals. Although the exact pitch isn't all that important, if you make it too loose, the wires tend to separate. On the other hand, if you make it too tight the cable becomes stiff and may be difficult to route. I found a pitch of 4 turns per foot was a good compromise. Before you install the Powerpole connector, you can try different pitches until you find one that works for you.

Incidentally, if you're into installing Powerpole connectors, the best tool I've found for this job is the TRIcrimp sold by Powerwerx. It beat all the others I've tried hands down.

Fuses should always be located near the source of the power and can be the same value as the ones supplied by the radio's manufacturer. Some factory power cables have fuses installed near the source end. If yours does not, an easy way to make the adapter for the AC power supply is to buy two ATO automotive fuse holders with flying leads. Strip the end of one lead to slide into the jack on the AC power supply, and then put the desired connector — Powerpole, 4-pin Molex, 6-pin Molex, coaxial, or T-style — on the other.

I recommend you keep all the power supply adapter accessories in one place like a zip lock bag or a small box so you'll know where to find them when you need them. Doing this also makes them easy to carry and stow.

Having multiple ways to power your radio is always a good idea. The methods discussed in this Ham Top are simple and inexpensive. Taking an hour or so to put together the adapters shown here is well worth your time, especially if you participate in public service or emergency communication events.

73 from KH6CQ

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