

Issues and Considerations:

Power Needs – identifying how much power you need and at what amperage

- different radios/manufacturers have different power requirements.
- Newer radios use DC power – direct current as their power source, while many older radios use AC because the power supply is built in.
- an advantage to new radios without a power supply built in is less cost for the unit, and less weight
- also if something goes wrong with the power supply inside a radio the whole radio must be shipped off for repair; if separate, a different power supply can be used without taking the radio out of service
- some radios will stop operating if the power level falls below 12 volts, for example, while others may go down lower
- this is usually only an issue when using batteries, but if converting another power supply, say from a computer, to use with a radio, it may be a factor
- conversely, there may be issues with providing too much power – while most modern radios can operate at 13.8 volts, there may be radios which do not want more than 12 volts, for example
- know your power needs!

Amperage

Obviously when using batteries amps becomes an issue because we need to know how much draw our equipment has so we can know how long our batteries will last

- with AC power supplies we are not concerned about how long the power supply will last, but whether it has sufficient amperage to drive the radio and any other current draws
- a typical mobile radio which goes to 50 watts transmit power requires about 10-13 amps depending on the design
- a typical 100-watt base radio requires upwards of 20-22 amps continuous power, sometimes closer to 25 amps
- so for example, a 25 amp linear power supply could be insufficient for your 100 watt radio, depending on the radio's needs and whether or not the rated amperage is continuous or surge (25 amps surge and, say, 20 amps continuous)

- ⌘ I always recommend a power supply be rated higher than you think you will need to give you a cushion and to avoid running the power supply at maximum output
- ⌘ I like at least a 35 amp unit for a 22 amp radio, or if possible, a 50 amp unit
- ⌘ I believe they will last longer and give more of a smooth response

**Which Power Supply to Buy
(ideas from posts around the web)**

The short answer is, for ham radio use or any other use, buy the best power supply that does what you need and is within your budget. An additional thought is to carefully consider the

positive AND negative sides of each feature of the power supply. Also, use GENUINE end-user reviews to help guide you.

Determine Requirements – This is the most critical step. There may be many requirements. Your requirement may be specific to general. My requirements started with the specific. I needed to supply the radio with at least 22 amps continuous for full transmit power at 100 watts. The power supply needed to be able to convert AC power from a standard wall plug with a 20 amp circuit breaker into 13.8 volts DC. And the power supply needed to operate in full use for long periods of time. Cooling of the power supply would be an issue.

Determine Budget – Be realistic. You may have a \$25 budget but if that will only buy you a power supply that will quickly burn out it may not be worth spending the money on the equipment. I like to review options, get a high and low price and then shop features and quality and try to find the sweet spot of quality, features and price. Since this power supply was to be used for emergency communications on a routine basis I put the emphasis on quality. Budget was also a concern.

I reviewed the offerings at Amateur Equipment Supply (AES Milwaukee) and quickly located a feature rich, low priced offering that seemed like quite a nice deal. But Milwaukee was a good hour's drive away. A bit more research was needed.

If you haven't use <http://www.aham.net/reviews/> to research ham radio equipment, I strongly suggest you use it. With a grain of salt. Realize that people that write the reviews may not be the unbiased ham radio operators that you think they are. Some may be the best friends of the equipment manufacturers. Others may write for the direct competition of the equipment manufacturers. In general, if you read a good number of reviews of several products you can get a pretty good idea of the strengths and weaknesses of the products you are interested in. I did this for a particular MFJ power supply. My glee was dashed when I read that that cooling fan was about as loud as a 747 on take-off. I exaggerate of course, but you get the point. A quick review lead me to the power supply that I did eventually purchase.

I ended up with an Astron 35M. The 35 means that it will do as much as 35 amps on an intermittent basis and will do 25 amps continuously. 25 is a good number for my use. I need 22 for the radio. That leaves 3 for a bit of cushion and / or ability to have another low amperage device – say my APRS tracker – connected to it as well. My “nice to haves” are the two power meters – one for voltage and one for amps being used – that the unit has. Additional options I considered as less important were adjustment controls for voltage and additional terminals and a cigarette lighter socket. I did not get those. Some hams feel that the more things you have to go wrong on equipment, the more that will.

If I had a larger budget I likely would have bought a still larger amp – just for the future uses I am not aware of right now. At the same time, when I talked to a person at AES Milwaukee that did not sell me the unit, he said he had one for decades and it is a good reliable workhorse. THAT is what I wanted. Also very simple to operate. One switch – it's either on at the correct voltage or it's off.

If my prior ham radio power supply had not kicked the bucket like it did I would have had time to do more shopping on the internet. THAT probably is THE way to buy a power supply. I chose not to wait for the delivery time, etc.. I wanted mine in-service for the long weekend. For my purposes, I am quite happy with the ham radio power supply that I purchased after a good amount of use. I hope that you will be happy with all of your purchases as well.

My new power supply does not require a cooling fan and emits no noticeable ham radio frequency interference!

Power supplies for general ham use can be classified into two basic types. Linear and Switching.

Linear type power supplies are the old school, heavy weighted, transformer based power supplies. They are generally thought to be quiet (in terms of RF hash), and pretty reliable. By their design, its a simple circuit, easy to repair and generally bullet proof. My first ones were Astrons (30A and a 70A).

The second type, switching have begun to really catch on. They're noted by their size (smaller), weight (lighter), and power (equal or higher). Most are listed as constant through their rated currents, compared to linears which are generally rated only to a certain percentage of their max current for a limited time. I supposed heat and such being the biggest factor.

Early switching supplies were troubled with the RFI they produce when switching. This initially was dealt with by shifting the switching with an adjustment knob on the supply. Although some still have this knob, I think that most have really just solved the noise problem all together. Some are more quiet than others, but generally they're all suitable for your use.

Prices are a bit less for switchers, plus their weight and size make them very attractive. I've had good luck with the MFJ Might Lite (yes, MFJ), the Jetstream (great pricing), and the Samlexes. You can't really go wrong with either type, just so long as you always spend a little extra and get a size bigger than you think. Minimum of 20A to run an HF rig, so get a 35A+ and you can run that rig comfortably, or run it and an HT or 2M rig at the same time.

I have a number of supplies, many of which are noted here, but I also have a [PowerWerx 30A switching supply](#) that is really great. Basically all of its features combine to give it at least one if not many advantages over comparable supplies:

- It is super small: about 1/8 the volume of a typical ATX power supply for a computer.
- It has binding posts on the back, and the powerpole connectors up front can handle the max output current.
- The power cord is removable and uses a standard IEC plug.
- It is dual voltage which makes it ideal for travel especially given its size.

One thing nobody has mentioned is that many high current switching supplies (many of which are in use by amateurs) have poor protection against failure. If the 'switching' part of the supply fails, the output can rise to the regulated input voltage and destroy equipment. I do not know if the PowerWerx supply has adequate protection, and it's not something that any of the major

manufacturers advertise. Although such failures are extremely rare it is something I always mention because I feel that manufacturers are being lax here.

Big fan of my Astron VS-35M, have only had it about 8 or 9 months, but it ran my IC-718 and now my Flex 3000 flawlessly. It is perhaps a little overkill for what I run since I don't do a lot of weak signal or digital work, but it provides very clean and stable power since it is a linear and pairs well with the very sensitive receiver in the flex.

OTOH, modern high end switching supplies are clean enough that you'll likely notice zero difference between a switching and linear supply aside from the weak signal / digital modes, and the switching supplies are much lighter and more efficient. For a standard 100W HF Rig, you can't go wrong with any of the major units out there... Astron, Samlex, and Alinco all make some pretty solid units. Much better suited for portable operation too, as a 25-35 amp linear supply weighs more than a lot of HF rigs do.
