



Technician License Course

Chapter 5

Section 5.4

Power Supplies and Batteries



Power Supplies

- Most modern radio equipment runs from 12 volts dc.
 - Actual preferred voltage is 13.8 volts.
- Household ac power is 120 volts ac.
- Power supplies convert 120 volts ac to regulated, filtered dc.
 - If you use a lab-type 12 volt power supply, be sure it is adjustable to 13.8 volts.



Types of Power Supplies

- Linear:
 - Use iron transformers
 - Heavy (physically)
 - Do not emit RF, generally immune to strong RF
- Switching:
 - Electronics instead of transformers
 - Lightweight and small
 - Can emit RF if not properly filtered



Mobile Power Wiring Safety

- Car batteries hold lots of energy – shorting a battery could cause a fire.
- Special requirements for safe car wiring:
 - Fuse both positive and negative leads.
 - Connect radio's negative lead to negative terminal or engine block ground strap.
 - Use grommets or protective sleeves to protect wires.



Mobile Power Wiring Safety

- Special requirements for safe car wiring:
 - Don't assume all metal in the car is grounded; modern cars are as much plastic as metal.



Batteries

Great source of good battery information is:

<https://batteryuniversity.com/>



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- Create current through a chemical reaction



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 - Individual cells connected in series or parallel



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 - Storage



Batteries

- Energy capabilities rated in Ampere-hours



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 - Amps X time (at a constant voltage)



Battery Charging



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 - Over-charging will cause heating and could damage the battery.



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- Automobiles can be a good emergency power source by recharging batteries
- A 12-volt lead-acid station battery can be recharged by connecting it to an automobile's electrical system



Battery Charging

- Monitor battery temperature



Battery Charging

- Monitor battery temperature
- Make sure battery is well-ventilated



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 - NiMH (nickel-metal hydride)
 - Li-ion (lithium-ion)
- For emergencies, have a battery pack that can use disposable batteries (AA size).

Ham Radio License Course

Discovering the Excitement of Ham Radio



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Are there any questions?