TAKING DMR DEVICES MOBILE

We have discussed using primarily 4 devices

- DV4Mini
- BlueDV
- DVMega/Raspberry Pi
- OpenSpot

How do we take these mobile?

- Base your power source decision on
  - Volts/amps needed for the device(s) you are powering
  - Length of time you want to power the device; some devices use power faster than others
  - Type of portability you need
  - Environment you will keep the power source stored; use caution when storing auxiliary batteries in warm/hot temperatures; consult battery manufacturer for requirements
  - Desire to recharge power source while using the device
  - Physical size of power source
  - Portability of power source

- Base your internet connectivity on
  - If I use my cell phone, do I get a lot of phone calls that would interrupt my device?
  - Use a cell hotspot if you don’t mind the additional cost; share minutes on cell plan
  - Vehicle built-in wifi; also additional charge to wireless bill; can share minutes on cell plan
  - Wifi stability: some devices may require an external antenna to be stable
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Suggested power sources for taking your device portable. . .

(We will skip the basic power cord, tablet, notebook options as most understand how to power these devices)

Keep in mind there are numerous choices when it comes to power sources. Choose which one you like best and that best fits your needs as previously discussed.

Portable power sources. . .

- Large capacity
- 3 USB Ports
- Supports “Pass Through”

Good option to have: find a power source that supports “Pass Through” as it allows you to supply charging power to the power pack without interrupting the power to your device. This is especially important to a Rpi so it does not cause a reboot.
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Portable power sources...

Patriot FUEL 9000mAh 2-Port Portable Charger, Emergency Back Up Battery, External Battery, Power Bank with Smart Charge Technology for iPhone 6 5s 5c; iPad Air 2 mini 3; Galaxy S6, Galaxy S5, Galaxy S4; Note 4 3; Nexus 6; LG, Android Tablets and More (Black & Silver)

https://www.amazon.com/Patriot-Portable-Emergency-External-Technology/dp/B00X8SVTG0/ref=sr_1_3?ie=UTF8&qid=1471107397&sr=8-3&keywords=power+pack+with+pass+through

Hardened Power Systems

DHAP Mini Mega (Yellow)

DHAP Mini Mega Self Powered Enclosure - Yellow
SKU: PB0445-YLW

$100.00

- Clamshell case, pre-wired with:
  - DC-DC buck converter
  - Low-draw voltmeter
  - DC coax socket for external power supply (12v)
  - Recessed on-off switch
  - Battery compartment wire in (2) serial/(2) parallel
  - SMA antenna lead with right-angle for the DVMega
  - Custom DVMega mounting bracket to secure dvmega to Rpi

- You will need:
  - Rpi, either B+, 2 or 3
  - DVMega dual or single band
  - 2 or 4 18650 Lithium batteries (preferably mfg by Dulex
  - Antenna w/SMA right-angle connector

Taking DMR Devices Mobile

Supply for 12volts (use with DHAP) . . .

- Great for those who travel extensively and use auxiliary battery to keep devices powered remotely
- Powers devices when car is running and charges auxiliary battery
- Immediately switches power from auxiliary battery to devices when car is stopped
- Switches power quickly enough to avoid reboot of device
- Switches power back to car battery when car is again started and begins to charge auxiliary battery
- Caution: consider storage environment for auxiliary batteries

ISOpwr - Auxiliary Battery Isolator
#58401-1044  $89.95

Supply car power to RPi and allow proper shutdown. . .

- Supplies power to two USB ports
- Web site provides instructions for programming RPi for proper shutdown when ignition is turned off

3A CAR SUPPLY / SWITCH

$28.99

3Amp car supply which senses your ignition and safely shuts down the Pi / Pi 2 / Pi 3 when your car turns off. This unit comes with two USB ports (next to each other, not stacked) which are switched simultaneously. The unit communicates with the Pi over two GPIO wires and uses an easy to install script on the Pi. You must wire the unit to your battery and switched 12V source (ignition). Comes with 18 inches of ground and power wire (18 gauge).

Shipping in US:

http://www.mausberrycircuits.com/collections/car-power-supply-switches/products/3a-car-supply-switch
Converting 12volts to 5volts/2amps...

- Converts 5-36V to 1.25-32V
- Adjusts amperage
- Output has wire terminal or USB

**Yeeco DC DC Power Supply Buck Voltage Regulator Power Converter Constant Voltage & Current volt& Converters Adjustable 5-36V to 1.25-32V Step Down 5A 75W LED Driver LED Voltmeter Display USB Output**

*Price: $15.18 & FREE Shipping*
*Note: Not eligible for Amazon Prime.*

**DROK® DC-DC Buck Voltage Converter 4.5-40V 12V to 5V/2A Step-down Volt Transformer Stabilizer Voltage Regulator Module Power Supply Switch Inverter Board with LED Voltmeter 5V USB Charger**

*Price: $8.22*  
*Sold: $6.99 Prime*

*You Save: $2.23 (28%)*

- Integrated voltmeter, buck voltage converter and 5V USB charger port, multifunctional and practical.
- Wide voltage measuring input range: DC 4.5-40V, with self calibration, high accuracy.
- "Output Enable" button for USB output and "low power" button for low power-consumption mode.
- With reverse connection, over-current and over-temperature protection, hence safe for use.
- With LED indicator for USB power supply and wiring terminals, easy and convenient operation.

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https://www.amazon.com/gp/product/B00XM8SM66/ref=oh_aui_detailpage_o05_s00?ie=UTF8&psc=1

https://www.amazon.com/DROK-Converter-Step-down-Transformer-Stabilizer/dp/B00IWOPS8K/ref=sr_1_5?ie=UTF8&qid=1471146668&sr=8-5&keywords=drok+step+down+with+usb
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Internet connectivity...

- Use with Rpi
- Connect to router in shack
- Connect to hotspot for mobile use

Edimax EW-7811Un 150Mbps 11n Wi-Fi USB Adapter, Nano Size Lets You Plug it and Forget it, Ideal for Raspberry Pi / Pi2, Supports Windows, Mac OS, Linux (Black/Gold)

- Supports 150 Mbps 802.11n Wireless data rate - the latest wireless standard. Permits users to have the farthest range with the widest coverage. (Up to 6 times the speed and 3 times the coverage of 802.11b.)
- Power Saving designed to support smart transmit power control and auto-idle state adjustment
- Supports WMM (Wi-Fi Multimedia) Standard so you can let different types of data have higher priority. It would allow better streaming of real-time data such as Video, Music, Skype etc
- Includes multi-language EZmax setup wizard
- Spec Standards IEEE 802.11n; backward compatible with 802.11b/g Wi-Fi Certified. Security 64/128 bit WEP Encryption and WPA-PSK, WPA2-PSK security; WPS compatible IEEE 802 1X
- Port 1 x 2.0 USB Type A, Wireless Data Rates Up to 150 Mbps. Modulation OFDM: BPSK, QPSK, 16-QAM, 64-QAM, DSSS. Frequency Band 2.4GHz - 2.4835GHz, Antenna internal chip antenna
- Channels (FCC) 2.4GHz: 1-11. Power Input USB Port (Self-Powered). Dimensions 0.28” x 0.59” x 0.73”. Temperature 0 - 40 degree C (32-104 degree F); Humidity 10 ~ 90% Non-Condensing. System XP/Vista/Win7, Mac, Linux


Use with OpenSpot

- Connect to hotspot for mobile use
- Use in shack or connect wired

TP-LINK TL-MR3020 3G/4G Wireless N150 Portable Router, AP/WISP/Router Mode

- Interface: 1 10/100Mbps WAN/LAN Port, USB 2.0 Port for 3G modem, a mini USB Port for power supply.
- Button: Quick Setup Security Button, Reset Button, Mode Switch
- External Power Supply: 5VDC/1.0A
- Wireless Standards: IEEE 802.11n, IEEE 802.11g, IEEE 802.11b
- Ships in Certified Frustration-Free Packaging
- Compatible with Select ATT/Verizon/Sprint/T-Mobile USB Modems

https://www.amazon.com/TP-LINK-TL-MR3020-Wireless-Portable-Router/dp/B00634PLTW/ref=sr_1_5?s=pc&ie=UTF8&qid=1471148227&sr=1-5&keywords=att+wireless+hotspot+4g
Cellular hotspot for internet connectivity... 

• For mobile or pedestrian use
• Some units have antenna connections

**AT&T Unite 4G LTE Mobile WiFi Hotspot (AT&T)**
by AT&T  
[Rating: ★★★★★]  56 customer reviews | 51 answered questions

Price: **$49.89**  [Prime]

**Only 6 left in stock - order soon.**
Want it Tuesday, Aug. 16? Order within 19 hrs 43 mins and choose Two-Day Shipping at checkout. Details
Sold by Energy Electronics and Fulfilled by Amazon.

- Share a connection with up to 10 WIFI devices.
- Improved battery life of up to 10 hours of continuous use. Has a Micro USB Port.
- The device is intended to work with AT&T's network.
- No Contract Required.
- Up to 10 days of standby battery life. Any of these devices sold as Used will require a SIM Card.

https://www.amazon.com/AT-Unite-Mobile-WiFi-Hotspot/dp/B00BLTCZ70/ref=sr_1_1?s=pc&ie=UTF8&qid=1471148227&sr=1-1&keywords=att+wireless+hotspot+4g

**Verizon MiFi Jetpack 4620L Verizon Wireless Wi-Fi 4G LTE Hotspot Modem**
by Novatel Wireless  
[Rating: ★★★★★]  163 customer reviews | 127 answered questions

Price: **$73.90**  [Prime] | FREE One-Day

**Note:** Available at a lower price from other sellers, potentially without free Prime shipping.

**In Stock.**
Want it tomorrow, Aug. 14? Order within 12 hrs 22 mins and choose Same-Day Delivery at checkout. Details
Sold by Fiero Technology and Fulfilled by Amazon.

- Verizon Wireless Only - MiFi 4G LTE Hotspot
- Connect Up To 10 WIFI-enabled Devices In 4G and Up To 5 Devices In 3G
- Compatible With All Major Operating Systems Including Windows, Mac OS X, Android, and iOS
- Battery life: Usage-Up to 5hrs - Weighs only 3 oz
- Interactive OLED Display Shows Connection Status, Number Of Users Connected, and View SMS Alerts.

https://www.amazon.com/Verizon-Mifi-Jetpack-4620L-Wireless/dp/B0089P1RIM/ref=sr_1_1?pc=UTF8&ie=UTF8&qid=1471149051&sr=1-1&keywords=verizon+wireless+hotspot+4g
Setup with sealed lead cell auxiliary battery.

(Below is one design for someone who is constantly in a vehicle; there are multiple ways to accomplish the same results.)

- Provides method to power devices with car battery while car is running
- Automatically switches to auxiliary battery when car is turned off
- Charges auxiliary battery with alternator when car is running while also powering devices
- Option to use 12v power out of ISOpwr if desired for 12v device
- This design is for convenience; keeps from having to continually remove devices for charging

CAUTION: Consult manufacturer for sealed lead cell battery based on physical environment; temperature requirements must be adhered to.