National Greening Fire Team

RENOGY 400W SOLAR KIT

Helpful Information Before You Apply

Included in the Renogy 400W premium solar kit:

- 4 - 100W Solar Panels (for harvesting solar energy)
- Rover 40 Amp Charge Controller (to protect the batteries from overcharging)
- BT1 Module (to monitor the system)
- 4 sets of Z brackets (for mounting the panels)
- 3 - Solar Y Branch Connectors (to connect the panels)
- Cables: AK-20FT-10, TRAYCB-8FT-8, ANLFUSECB-8 (for connecting panels to charge controller)
- Fuses: 10A In-Line FUSE, ANL 40A FUSE (to protect the system)

What can be powered with a 400W Setup?

Item	**Draw per hour (W)**	**Charges Per Hour of Direct Sunlight**
BK Radio- 6 Bay Charger	76	5
Cell Phone	12	33
Tablet	30	13
Laptop	50	8
Headlamp	5	80
42" LED TV	100	4
Light Bulb	11	36
CPAP	65	6

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Not Included and Required for Operation:

Deep Cycle Batteries

- Recommended – **200Ah minimum**
- LiFePO4 (Lighter, efficient, most expensive) or lead-acid
  - LiFePO4 cannot be taken on an airplane and not readily found in local settings.
  - Lead-acid batteries more readily found near incidents.
  - Ideal set-up would be to have solar system strategically located as to not have to fly.
- Some of the many options available:
  - Preferred Battery Option (LiFePO4)
  - Additional Vendor for LiFePO4

Battery Monitor

- Team's choice
- Any model will do a decent job, however with solar power the Charge Controller will help monitor battery charge levels to prevent overcharge.

Inverter or Inverter Charger – if utilizing any AC power (120V)

- Recommended **500W - 2000W Pure Sinewave**
- Hooking up larger inverters with a major load (A/C system or multiple coffee makers) will drain the battery quickly.
- Smaller inverters are capable systems and do not drain batteries as fast.
- Larger inverters require larger wire and fuses for battery hook-up.
- Some of the many options out there:
  - Redodo Large inverter
  - Renogy System Inverter
  - Victron Small inverter

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Additional Fuses (to protect the system and you)

- Fuse
  - Blue Sea 5105 200 Amp Fuse suitable for Redodo and Renogy Inverter (can work for Victron
  - Blue Sea 5101 100 Amp Fuse suitable for Victron Inverter
- Fuse Block

Battery Cables (to connect to the inverter)

- Team's Choice
- Redodo comes with #8 gauge wire, suitable for short distance hook-up, will need increased gauge size if distance exceeds 2 feet.
- Renogy comes with #4 gauge wire for 3 feet, increase wire gauge if exceeding 3 feet.
- Victron requires #4 gauge wire between battery and inverter

Volt Meter/Multimeter

- Team's Choice
- Must be capable of reading 200 Volts DC and AC
- Batteries make good arc welders, so exercise caution to avoid short circuits.
- Volt Meters permit testing batteries, inverters, and charge controllers
  - Helpful for efficiency and safety
- Recommended options:
  - Klein 600V Auto Ranging Digital Multimeter
  - Fluke 115 Field Technicians Digital Multimeter - Fluke is considered Gold-Standard but comes with a higher price tag.

Questions, Comments, Feedback

Please reach out to sm.fs.greeningfire@usda.gov

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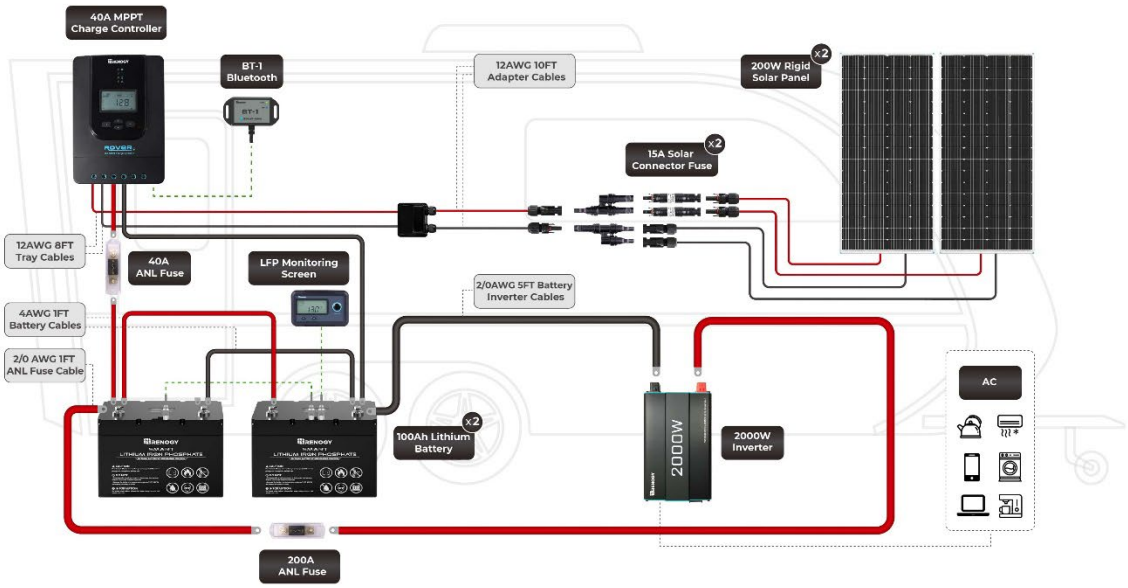
Example Wiring Diagrams: (Diagrams from Renogy)



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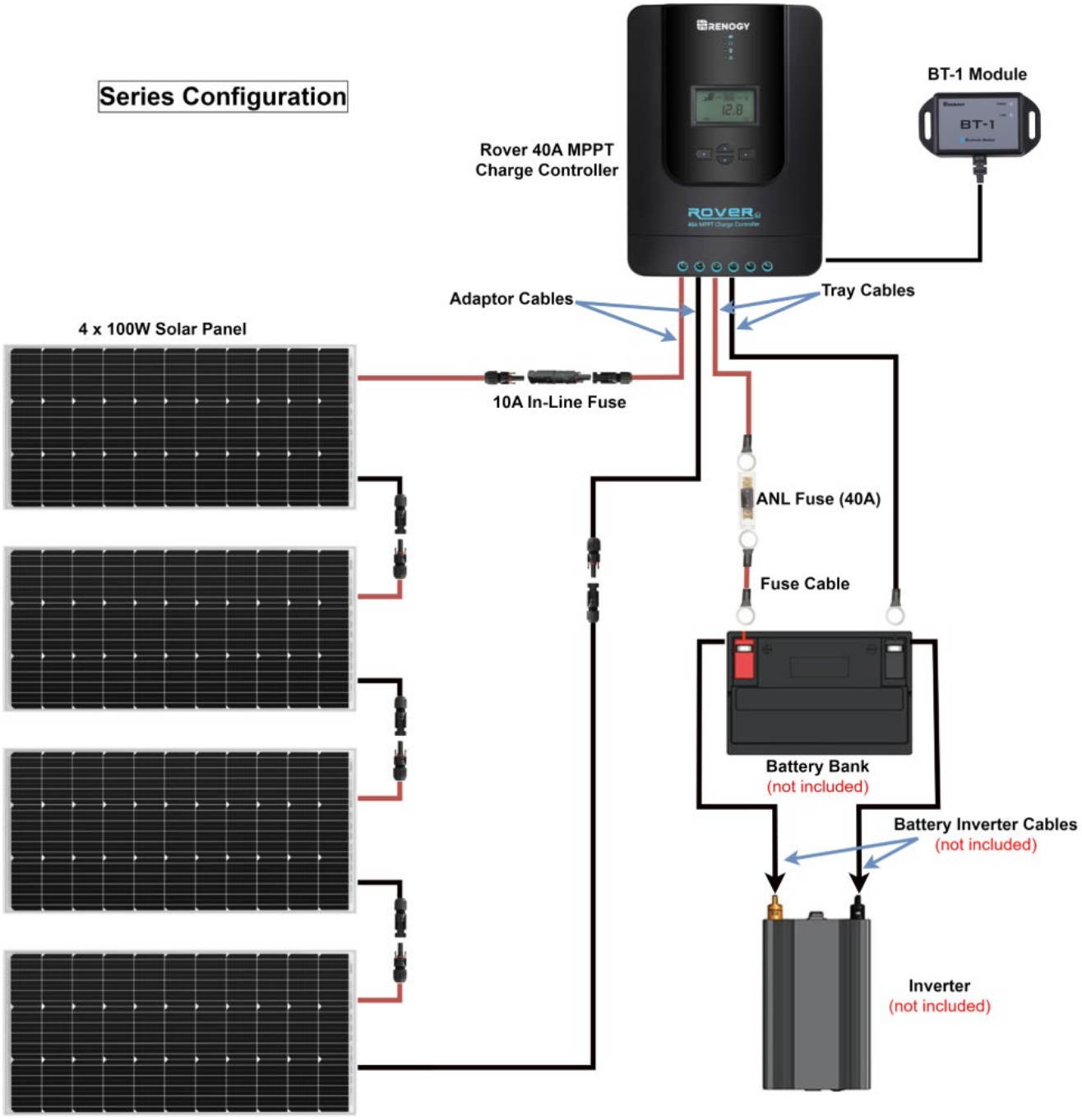

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