



Power Distribution [AC] to the House/Site

Note: The PlugOut systems are for OFF_GRID use only. The AC power connections to AC appliances should NEVER be connected to/from [flow to/from] the Utility Grid, for the safety of Utility workers trying to restore grid power over the "dead" lines.

Consult the PlugOut Set-Up Instruction for house/site connections and power measurements.

The PlugOut should connect to the Car as one of the mounting styles below.

Note: Where the PlugOut is not in the car trunk, a DC extension cable may be required.

Note: The PlugOut is essentially an indoor unit and does not like direct sun, rain, condensation, or freezing temperatures.

- Portable Unit: The PlugOut can sit anywhere it has DC cords to reach from the car to the unit. This DC connection can be up to 50ft.
- Fixed Unit: The PlugOut can be mounted on a wall in the garage or basement as desired. The DC cables connecting the car to the PlugOut can be up to 50ft total.

The Plug-Out inverters should connect to appliances by one of the methods described below.

Adhoc: An Adhoc AC wiring setup is usually done with a hierarchy of standard extension cords and power strips from the PlugOut transformer AC output port to the various connected appliances. Unplug any desired appliances from the house circuits and plug them into the adhoc wiring. This setup should not touch/connect to the house wiring or other sources of electricity [off-grid]. The PlugOut kit will need the appropriate 120v and 240v sockets installed at the PlugOut end, connected to the transformer output ports.

House wiring: A Pre-wired connection to house circuits/appliances should only be designed/installed by a certified electrician. Typically, you'll need a 'generator socket' on the house which is wired to a transfer switch and maybe a sub-panel near the house electric panel [the same as for any generator]. The generator socket is typically a 4-prong twist-lock 240/120v plug rated at about 30a [NEMA L14-30r] and is installed in the garage or somewhere convenient to PlugOut/generator use. The Plug-Out [AC power] output ports connects to the generator socket with a 4-wire [240/120v] 'generator cable' that has a twist-lock connector on the house side. In other cases, the PlugOut can be hardwired to the sub/panel.

The transfer switch allows only the generator OR the grid to input power the panel/subpanel. Transfer switches can be manual or automatic. Manual switches are less expensive but require more intervention to work correctly... you'll have to switch input to the generator and turn off/on the non-essential circuit breakers by hand. Automatic switches make the cutover to generator input automatically [some require manual switch back to grid]

Adding a subpanel with the transfer switch means various critical household circuits are pre-wired to it so that the generator can [automatically] only feed the subpanel circuits when power goes out. This precludes having to adjust individual circuit breakers manually. Subpanels with transfer switches cost only a few hundred dollars but rewiring the emergency circuits over to the subpanel may cost a thousand dollars or more. Again, please consult a certified electrician to help design and install the needed house circuits.

In any case, you'll need to be sure the emergency [adhoc/subpanel/circuit breaker] enabled circuits [appliances] will not exceed the power supply limits of the car and PlugOut. See the Load Wattage Planning Guide for more information.

Battery Extender: As a solar battery extender, the PlugOut acts as a battery charger from the car [hybrid/plugin]. The PlugOut's DC Battery Ports are connected to the Solar Battery terminals. This requires access to the Solar Battery DC terminals. The 3kw unit provides charging for a 24v battery, the 5kw unit provides for 48v battery sub-system. Note that many packaged battery systems do not allow such DC-based access, so please research your battery vendor. In general, you'll need a DC-coupled battery system. Most AC-Coupled battery systems do not allow direct 3rd party DC charging access to the battery.

Typically, the solar and any other power source [like PlugOut] charge the battery directly via a hardwired charger device. The solar PV and inverter/charger would be designed to keep the battery charged and house supplied with AC power. PlugOut would be connected and activated manually as a supplemental charging source when the solar battery goes low. To connect the car to the PlugOut [car OFF], simply plug together the car-side cable to the PlugOut's inverter-side cable, then turn the PlugOut and car ON.

In some cases, like off-grid residences/ structures, the PlugOut can play a more central role as the primary inverter for the solar battery to the appliances. Solar panels would charge the battery directly via solar charge controllers, and any other power source like the grid would have its charge controller. When car power is needed to charge the battery, the DC cable can be connected from the car to the PlugOut. This design needs to be configured by a certified electrician.