



COLD WEATHER VOLTA ESS MANAGEMENT

M-POWER ENERGY STORAGE SYSTEM (ESS)



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It's getting COLD in parts of this big, beautiful country, so let's explore some cold weather scenarios and tips/tricks related to your M-Power Energy Storage System (ESS).

When the ESS gets too cold (Volta gauge blinking blue slowly), it will NOT charge but it WILL discharge. With a bit of planning, it is relatively simple to use and store your vehicle safely in cold weather.

The most effective way to keep core ESS temperatures above freezing is the 110V heating pad on the energy pack. When the M-Power ESS and the inverter is on OR the vehicle is plugged into shore power, the heatingpad is automatically controlled. The ESS can withstand below freezing temperatures, no problem, but when below freezing (Volta gauge blinking blue slowly), it can not take a charge. So, if the ESS is below freezing, it will need to warm to operating temperature before use. If the Volta gauge is slowly blinking blue, reduce all power draws and reference the scenarios below.

MONITORED DAILY DRIVER SCENARIO:

The best way to maintain optimal operating temps when using your MODE4x4 daily is to leave the inverter on allowing the ESS to control its temperature automatically with the heating pad.

MONITORED COLD WEATHER STORAGE PLUGGED INTO SHORE POWER: (*"Monitored" means checking the state of charge daily.*)

Always turn Volta off so that if shore power is disconnected, the system will not discharge and risk damage.

Connect to shore power, and the ESS will come on (green Volta light comes on). 110V will pass through the inverter allowing the heating pad to draw from shore power. This will maintain core temperatures.

Here's the trick: Check the SOC daily to make sure it does not go below 10% because, in extreme conditions, if ESS cores get so cold that the heating pad cannot keep up even while plugged in, they will not take a charge. If the system is plugged in, it will stay awake trying to warm the ESS, possibly risking damage.

UNMONITORED COLD WEATHER STORAGE:

Store your MODE4x4 in the cold without power connected:

- Charge the M-Power system between 75% and 90% SOC.
- Turn off all electrical loads.
- Turn the M-Power system off (Volta button not illuminated green).
- Do not connect a shore power cord.
- Check the system every 30 days by turning the M-Power system on, verifying SOC is above 75%, and then turning the M-Power off. If the system is too cold, it may not operate, which is normal. The system will work again when the internal temperature rises above freezing temperatures.

RECOVERING ESS FROM BELOW FREEZING TEMPERATURES:

If your ESS system gets below freezing (Volta light blinking blue slowly), bringing the system above freezing must be done properly to avoid damage. Ideally, plug into shore power and allow the heating pad to bring the ESS to safe operating temperatures (Volta light goes green). Depending on how cold it is, this may take some time. The Energy Pack is a large, very dense metal enclosure which may not have enough stored energy to bring itself back to operating temperature. Remember, you can discharge when too cold, but you can not charge when too cold by any means (inverter, shore power, alternator, solar, etc). In this extreme scenario, the MODE4x4 ESS will need to be brought to operating temperatures to be used.

NOTE: Plugging the heating pad directly into a 110V source is not recommended.

NOTE: In very extreme cold conditions (-4 degrees F or more), the ESS may enter a "cold fault" state where the gauge will blink red constantly. Do not leave the ESS plugged into shore power in this state as the ESS is too cold to discharge OR charge and will need to be warmed up first. Leaving it plugged into shore power risks damage to the ESS.