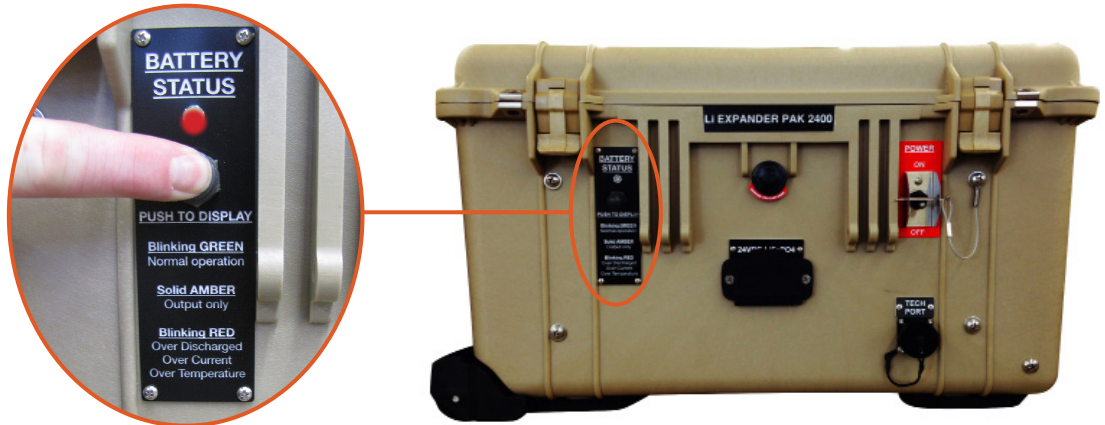


## Jump Starting Over-discharged 24VDC Li Expander Pak 2400s in a Bank



The Expander Pak 2400 **BATTERY STATUS LED** is activated by pressing the “DISPLAY” button.

### Overview

If the LED is **RED** on all AES Li Expander Pak 2400s in a system, the Battery Management System (BMS)\* has disconnected the batteries from service in order to protect them from further discharge, or to prevent a failure or damage due to a safety condition. The voltage at the Inter-Connect port terminals should read 0 VDC (even though the actual cell voltage is greater than 0). When the Li Expander Pak 2400s are connected to a charging source that is greater than the battery cell voltage (> 23 VDC), the BMS will automatically reestablish the connection between the Inter-Connect port and the battery cells. The battery will then begin charging. This procedure is called jump starting.

**NOTICE: DISCONNECT ALL LOADS from the AES PRIOR TO JUMP STARTING over-discharged 24VDC Li Expander Paks. Attempting to jump start Expander Paks while supporting loads will result in failure of the jump start protocols.**

**This Technical Bulletin provides protocols to jump start the Li Expander Pak 2400s in three different scenarios.**

### 1) Protocol to jump start all of the Li Expander Pak 2400s using an MEP-802A.

If the Li Expander Pak 2400s are over-discharged, and the AES has shut down, and the PRO-Verter 7000 and Power Hub 2400 will not function due to lack of DC power input. In this situation, the generator will not automatically start to recharge the batteries.

### 2) Protocol to jump start the AES Expander Paks using a HMMWV

The MEP-802A TQG should be the first choice for jump starting the Li Expander Pak 2400s, because this TQG is an integral part of the AES. However, if the MEP-802A TQG is nonfunctional or not available, a HMMWV can be used.

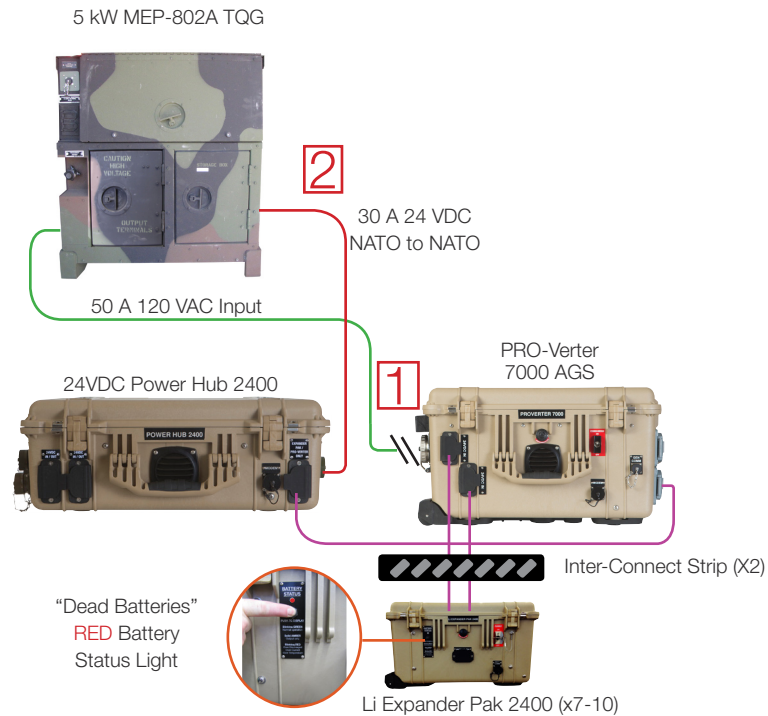
### 3) Protocol to jump start Li Expander Pak 2400s using a MEP-802A when one (1) or two (2) Expander Paks have a blinking **GREEN** Battery Status LED and the rest are over-discharged with blinking **RED** Battery Status LED

The Battery Status Indicator LED, the battery, and its associated control and monitoring systems will AUTO RESET once normal operating conditions are reestablished.

## 1) Procedure to jump start the Li Expander Pak 2400s using an MEP-802A.

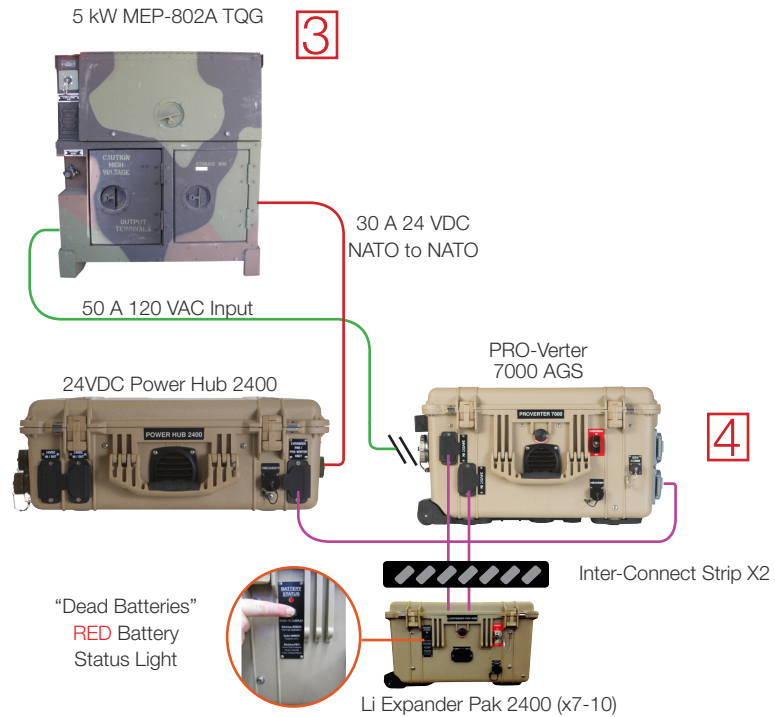
1. Disconnect the Power Cable between the MEP-802A TQG and the PRO-Verter 7000. DO NOT disconnect the Gen Comm Cable (not shown) between the Generator and the PRO-Verter 7000.

2. Connect a NATO to NATO cable to the NATO port on the MEP-802A TQG and the 24VDC NATO port on the Power Hub 2400.



3. Start the MEP-802A TQG using the manual start switch on the generator. Do not attempt to start the MEP-802A using the Remote function of the PRO-Verter 7000 control.

4. The PRO-Verter 7000 and the Power Hub 2400 will power up.





SOLAR STIK®

# Solar Stik® Technical Bulletin 1B

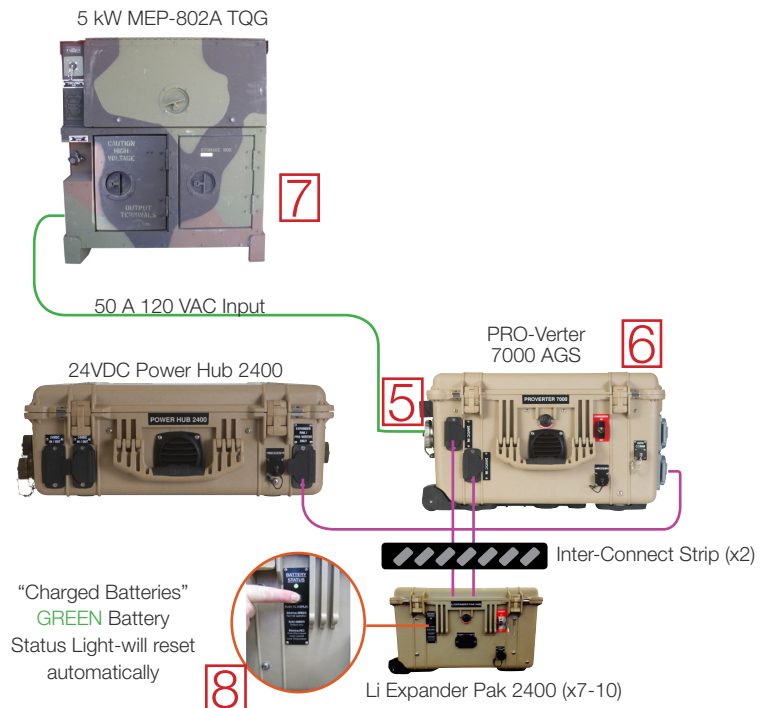
Effective Date 20150831

5. Let the batteries charge for at least 10 minutes or until the Li Expander Pak 2400s are charged enough to power the Power Hub and PRO-Verter independently. At this point, the Battery Status Indicator LEDs should flash **GREEN**. Shut down the MEP-802A, then reconnect the Generator 50 A 120 VAC cable to the PRO-Verter 7000 50 A port.

6. Restart the MEP-802A TQG using the PRO-Verter 7000 to continue charging the batteries. Set the PRO-Verter 7000 generator control from "On" to "Auto" so that the MEP-802A TQG will begin to charge the Li Expander Pak 2400s automatically the next time the SOC is low.

7. Disconnect the NATO cable from the Power Hub 2400 and the MEP-802A TQG.

8. The Status Indicator Light, the battery, and its associated control and monitoring systems will all AUTO RESET once normal operating conditions are reestablished.

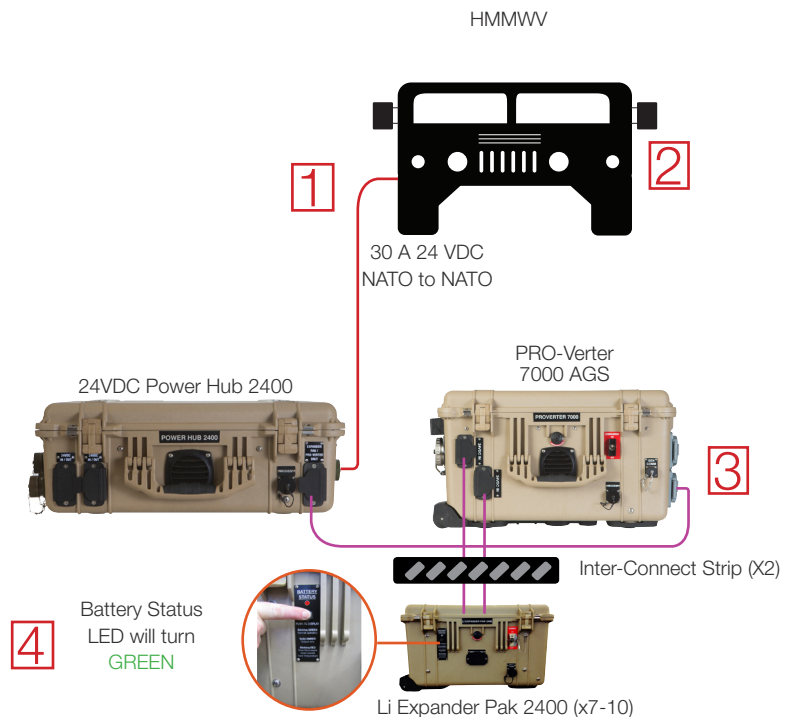


800.793.4364  
info@solarstik.com  
www.solarstik.com

## 2) Protocol to jump start the AES Expander Paks using a HMMWV

The procedure for using a HMMWV is provided in the event that an MEP-802A TQG (or AMMPS) is either not available or nonfunctional. Furthermore, this procedure can extend to most other alternative 24 VDC power sources and as such serves as an instructional example on how to use alternative 24 VDC power sources.

1. Connect a NATO to NATO cable to the NATO port on the HMMWV and the 24 VDC NATO port on the Power Hub 2400. Start the HMMWV.
2. The PRO-Verter 7000 and the Power Hub 2400 will power up.
3. Let the batteries charge until the Battery Status LEDs on all Expander Paks are **GREEN**.
4. Disconnect the NATO cable from the Power Hub 2400 and the HMMWV.



5. The Status Indicator Light, the battery, and its associated control and monitoring systems will all AUTO RESET once normal operating conditions are reestablished.

NOTE: Other options exist to restore charge to the Expander Paks depending on the cables and connections that are available. For example, it is possible to connect the HMMWV directly to the bank of Expander Paks using a NATO to Inter-Connect Cable. In this scenario, the Inter-Connect end of the cable would connect to an empty port on the Inter-Connect Strip.

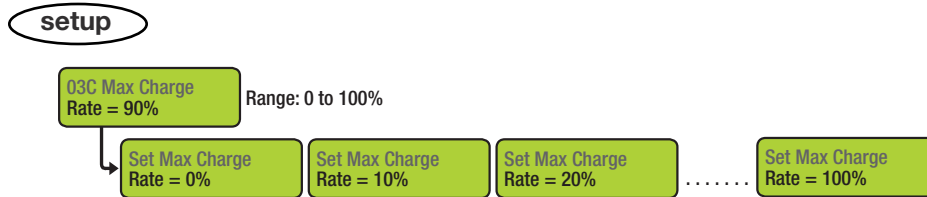
### 3) Protocol to jump start 24VDC Li Expander Pak 2400s using a MEP-802A when one (1) or two (2) Expander Paks have a blinking GREEN Battery Status LED and the rest are over-discharged with blinking RED Battery Status LED

The procedure to jump start the AES Expander Pak battery bank when all seven (7) of the batteries are over-discharged and display a RED blinking Battery Status LED was described previously in this Technical Bulletin.

If the over-discharged condition does NOT affect the entire bank of Expander Paks [i.e., one (1) or two (2) of the Expander Paks in the system has a GREEN Battery Status LED], it is likely that Expander Paks with the GREEN LED can be used to jump start the Expander Paks that are blinking RED through a controlled process.

The maximum 24 VDC charge current setting at the PRO-Verter is 110 A, but the output is reduced to 90% at the factory so the charger output is 100 A. If only one Expander Pak in the bank is functioning, then up to 100 A of the PRO-Verter's charging current would be directed into a single Expander Pak, exceeding the rating of the Pak's 50 A circuit breaker. If the breaker is tripped, the PRO-Verter will go into fault mode and all Expander Paks will have blinking RED LEDs.

To jump start the system with one (1) or two (2) functioning Expander Paks, it must be charged very slowly. To reduce the charging current from the PRO-Verter, use the LCD user interface SETUP button to navigate to 03C which is the MAX CHARGE RATE setting (see menu map below).

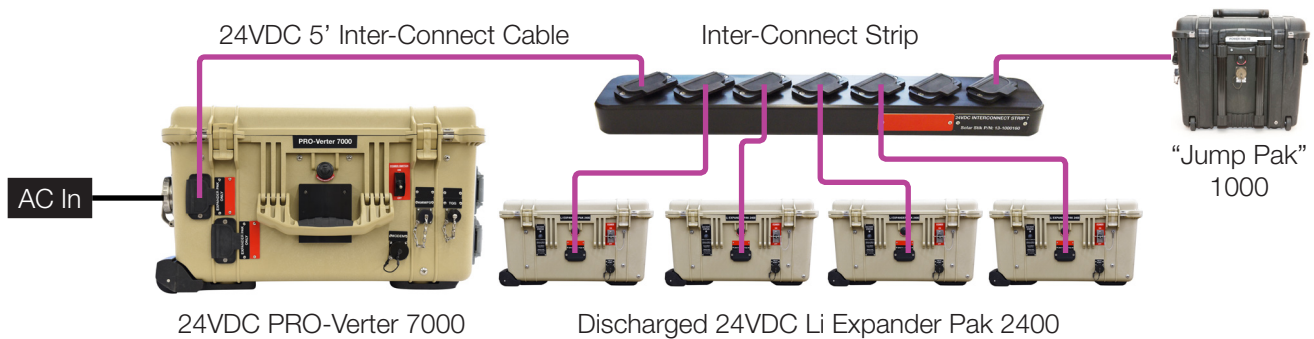


The PRO-Verter's charge rate should be reduced to 10% for each functioning Expander Pak in the circuit.

For Example:

- One (1) Expander Pak with flashing GREEN Status LED = 10% MAX CHARGE RATE
- Two (2) Expander Paks with flashing GREEN Status LED = 20% MAX CHARGE RATE

Solar Stik is providing Jump Paks to be used to restart AES that have reached a state of over-discharge as described on page 1 of this TB.



Step 1 - Connect the System together as shown above.

Step 2 - Activate all Expander/Jump Pak switches.

Step 3 - Activate PRO-Verter (make sure it is connected to an AC power source).

Step 4 - Check STATUS Indicator on Expander Pak 2400s. When indicators are flashing **GREEN**, the Jump Pak can be removed and the normal charging process resumed.



800.793.4364  
info@solarstik.com  
www.solarstik.com