

# User's Manual: TSV Accumulator

LFEV-Y4-2016

## [Getting Started](#)

[Start Up and Shutdown](#)

[Charging](#)

[Low Current Output](#)

[High Current Output](#)

## [Controls and Navigating Menus](#)

## [FAQ](#)

[Why isn't the LCD display on?](#)

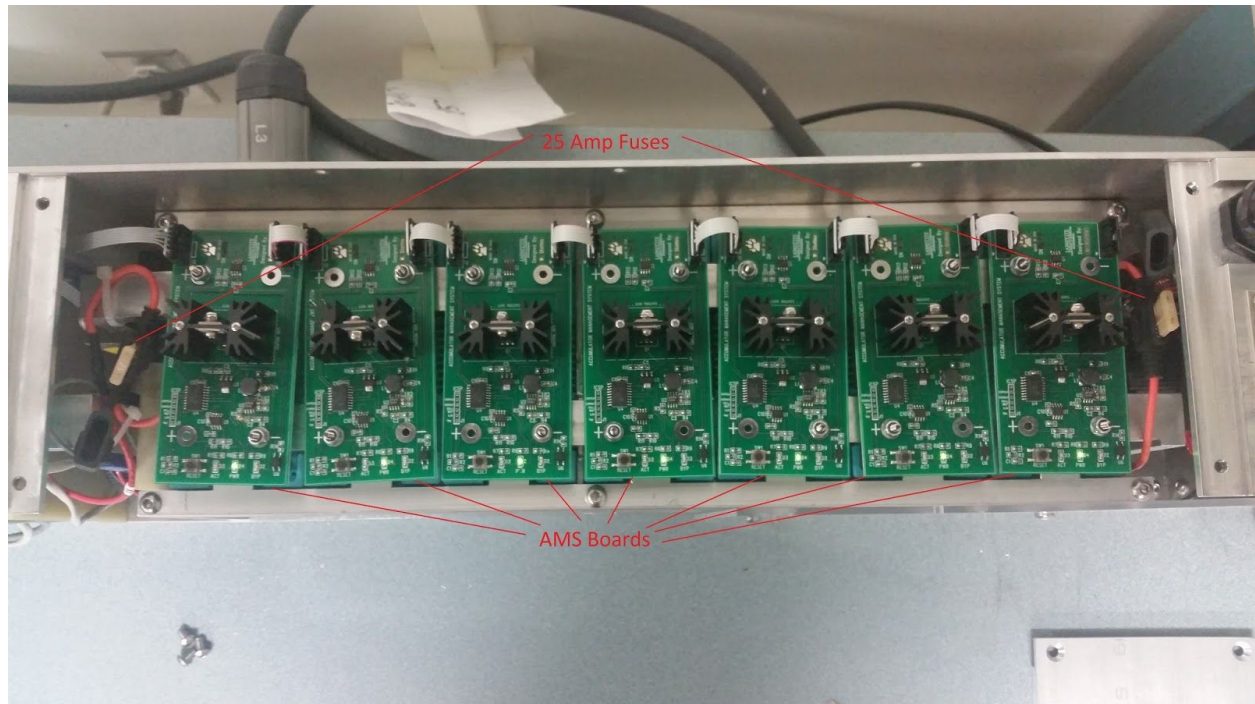
[The accumulator has two good 25 amp fuses but still won't turn on. What is the problem?](#)

[The two 25 amp fuses are good and a 5 A USB source doesn't start the PacMan computer. What now?](#)

# Getting Started

## Start Up and Shutdown

To bring the PacMan computer online and enable the accumulator, all that is required is to ensure that there are two 25 A blade fuses installed. The fuse holders are located under the lid, one at each end of the pack:



Shutdown for short term storage is accomplished by removing both of these fuses. For long term storage, to prevent any current from being drawn from the cells, all the fuses and all AMS boards may be removed.

## Charging

Charging is accomplished by connecting the TDK Lamda charger to the Anderson port with the provided charging cable. The charge cable should only be connected with the safety loop disabled or disconnected. Connecting the charge cable with the safety loop enabled and the pack alive LED blinking opens the relays to the high current output (TSV+ and TSV-). If the pack alive LED is not blinking, it is safe to charge.



Charging is plug-and-forget. The accumulator will stop charging automatically when the charge cycle is complete.

### **Low Current Output**

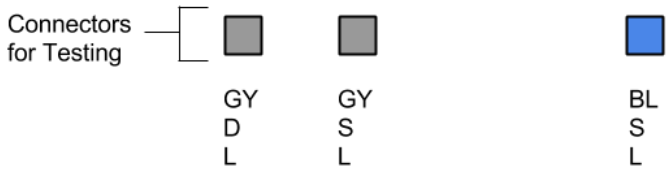
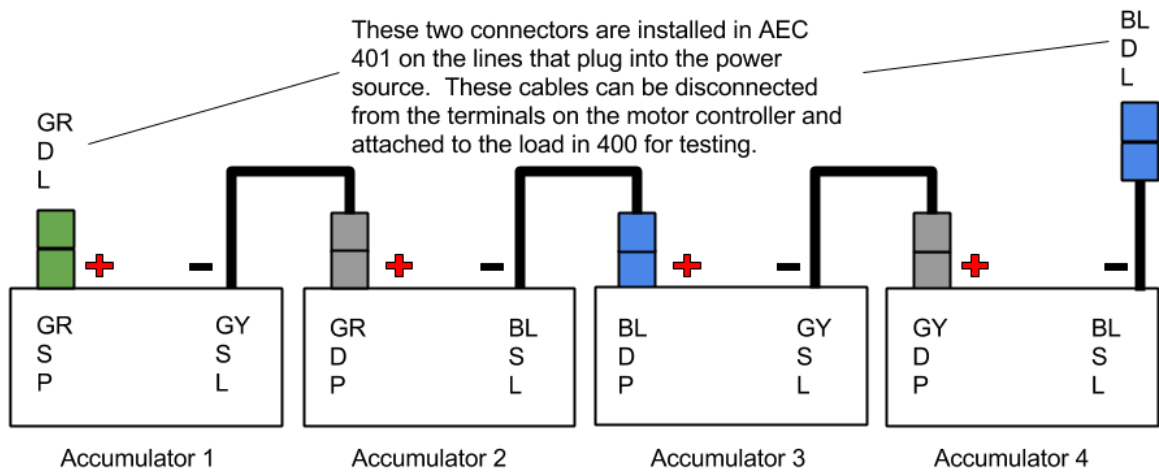
The accumulator may be used to power any device at 23 V and a maximum of 20 A. The device should be connected to the provided Anderson low current output cable. This cable is connected to the same port used for charging.

### **High Current Output**

The accumulator is designed to be used in a set of four in series, providing 100 V. The diagram below shows the mating pattern of the TSV+ and TSV- connectors to achieve 100V.

In addition to these connections, the accumulators must be connected to a working safety loop. The 4 wire safety loop cable from the GLV system should be connected the SLOOP plug near the TSV+ connector of accumulator 1. The TSV- SLOOP plug off each accumulator should be connected with a similar 4 wire cable to the TSV+ SLOOP plug of the next pack. The exception is the TSV- SLOOP plug of accumulator 4 should be populated with the provided jumper plug. If the safety loop is working properly the pack alive LED will blink, signifying that high current output is enabled.

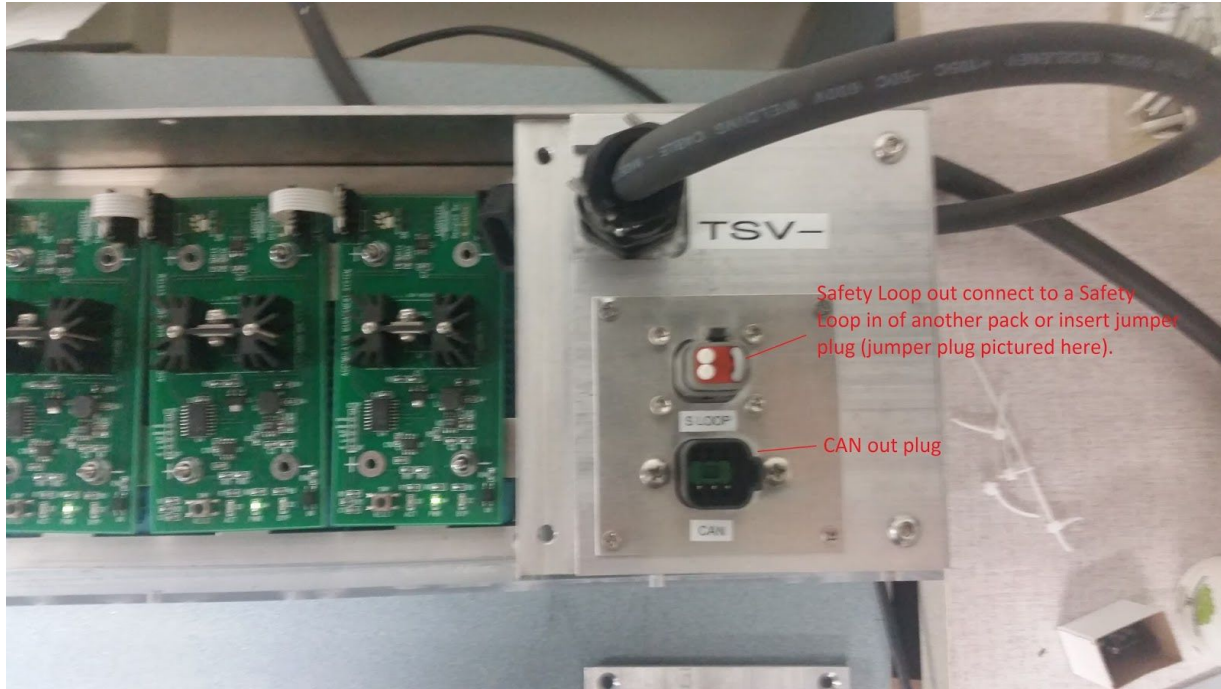
The packs should be connected to a VSCADA computer during high current output to collect data over CAN. CAN cables should be connected in the same pattern as safety loop cables, and in place of a jumper plug (if a pack is the end of a CAN bus) a plug with a 120 ohm resistor between pin 1 and 2 should be used.



KEY  
 BL - Blue      S - Source  
 GR - Green    D - Drain  
 GY - Gray     P - Panel Mount  
 L - Line, for connection to a cable







## Controls and Navigating Menus

The pack controls are simply an up and down button to cycle through the top level display and each of 7 cell displays. Pictured below is the top level screen:



Cycling down with the down button displays cell 0:



Cycling down from cell 0 displays cell 1 and so on. Cycling up with the up button displays the previous screen. A third push button is unused.

If the computer is not operating properly, a reset button is available near the other push buttons.

## FAQ

### **Why isn't the LCD display on?**

The accumulator isn't activated. Check for two 25 amp fuses under the lid (see getting started).

### **The accumulator has two good 25 amp fuses but still won't turn on. What is the problem?**

The accumulator may be completely dead. Plug a 5 A USB power source into the Rescue/Prgm plug and then connect the TDK Lamda Charge to charge the accumulator. The 5 A USB power source may be disconnected as soon as charging starts successfully.

### **The two 25 amp fuses are good and a 5 A USB source doesn't start the PacMan computer. What now?**

There is a 5 A fuse on the PacMan computer. Disconnect the 5 A USB source and remove one 25 A fuse. Replace the 5 A fuse. Then replace the 25 amp fuse and check the LCD display to ensure the computer has started. If this doesn't resolve the problem, contact a qualified technician.