

“The Switcher”©
Operations Manual.

Safety Instructions

Battery Safety

RISK OF EXPLOSIVE GAS MIXTURES — WORKING IN VICINITY OF A LEAD-ACID BATTERY IS DANGEROUS. BATTERIES GENERATE EXPLOSIVE GASES DURING NORMAL BATTERY OPERATION. FOR THIS REASON, IT IS IMPORTANT THAT EACH TIME BEFORE USING YOUR CHARGER, YOU READ THIS MANUAL AND FOLLOW THE INSTRUCTIONS EXACTLY.

To reduce risk of battery explosion, follow these instructions and those published by the battery manufacturer and manufacturer of any equipment you intend to use in vicinity of battery. Review cautionary markings on these products and on engine. This equipment employs parts (switches, relays, etc.) that produce arcs or sparks. Therefore, if used in a garage or enclosed area, the unit MUST be placed not less than 18 inches above the floor.

Personal Safety

TO REDUCE THE RISK OF INJURY, YOU MUST READ AND UNDERSTAND THIS INSTRUCTIONAL MANUAL. THIS MANUAL CONTAINS IMPORTANT INFORMATION REGARDING THE OPERATION AND WARRANTY OF THIS PRODUCT.

Preparing to Charge

**Clean battery terminals. Do not allow corrosion to come in contact with eyes.
Add distilled water in each cell until battery acid reaches level specified by battery manufacturer.
This helps purge excessive gas from cells. Do not overfill.
Locate charger as far away from battery as cables permit.
NEVER place charger directly above battery being charged; gases from battery will corrode and damage charger.
NEVER allow battery acid to drip on charger when reading gravity or filling battery.
NEVER operate charger in a closed-in area or restrict ventilation in any way.**

Getting Started:

“The Switcher” is a compact, but very complex device to Charge batteries while supplying up to a 15A load. This device will charge lead acid or sealed lead acid batteries from 12V – 48V (7ah Min.), automatically, has terminal monitoring / logging capabilities and microprocessor programming allowing for a fully automatic charging session. Each section presented in this manual will explain the operational features of this device.

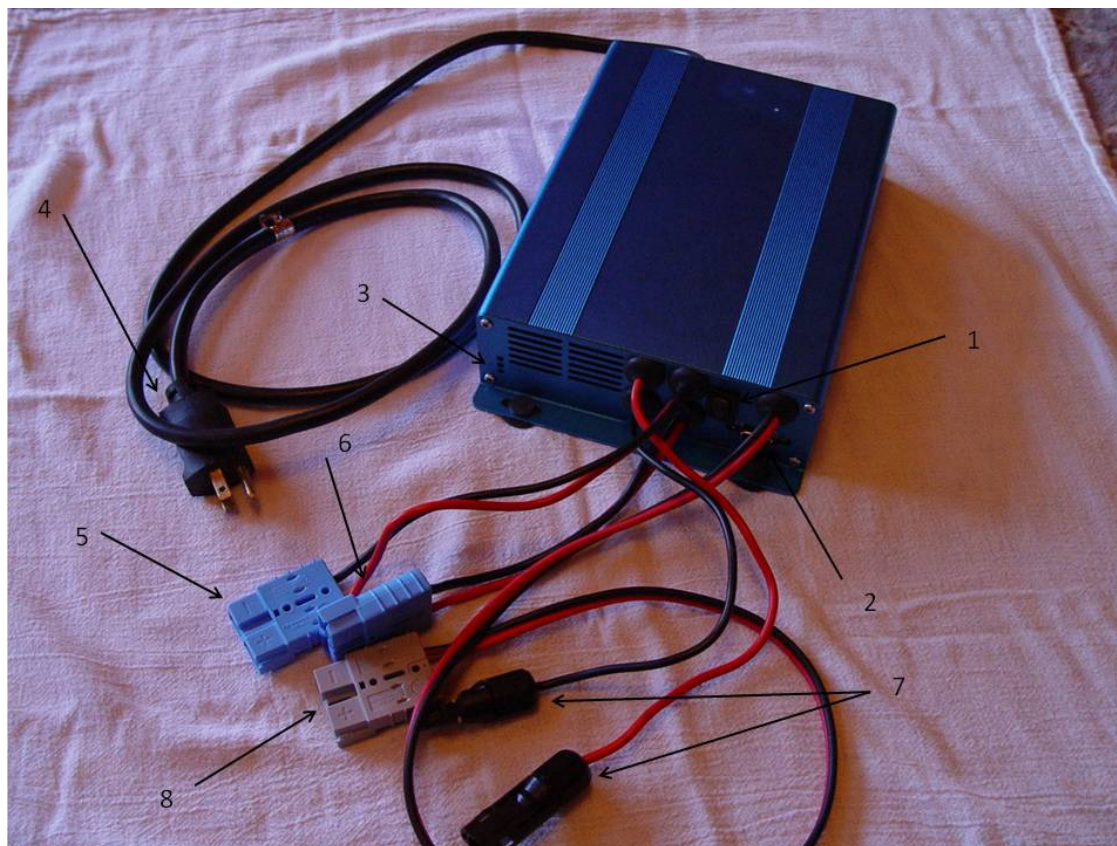


Fig. 1

The Components (Fig. 1):

1. On / Off Switch
2. Terminal connection
3. Status Lights
4. AC Input (90 – 264 Vac)
5. Battery Bank 1 Connection (Blue) 12 – 48V
6. Battery Bank 2 Connection (Blue) 12 – 48V
7. Solar Connection (when used with special Solar Panel)
8. Load Connection (Grey)

Connecting the Device: (See the load connection configurations at the end of this section).

1. Connect the Battery(s) (Banks) to Blue connectors (Fig. 1, 5 and 6). *****CAUTION***** OBSERVE THE CORRECT POLAIRITY WHEN PLACING THE CABLES ON THE BATTERY'S.
2. Connect one of the power source possibilities (Fig. 1, 4 or 7).
 - a. Note: If a solar source is to be used, a separately purchased special solar panel is required.
3. (Optional), Connect a 15A or less load to the Grey connector (Fig. 1, 8)

Energize the “The Switcher”:

When all of the connections have been placed correctly on the battery (Banks) and the Input source is plugged in, the “The Switcher” will begin Charging Battery (Bank 2). When Battery (Bank 2) becomes fully charged the “The Switcher” will automatically switch to charge Battery (Bank 1). During anytime in this operation, the Load can be energized. The source for the Load comes from the Battery (Bank) NOT being charged.

Resetting the “The Switcher”:

At any time, the device can be reset by turning off the On / Off switch.

RS232 Mode (Terminal Monitoring):

Connecting a Serial Cable to the Terminal connector (Fig. 1, 2) and with a PC / Laptop running HyperTerminal, the operation information can be displayed to the terminal screen. Configure Hyper terminal for 19200, 8, N, 1 and make a connection. Start “The Switcher” as described earlier in this manual and observe the Terminal screen. Hyper terminal also has a logging feature that can be used to store information during the charging process.

Below is a sample log output;

Welcome to MachineOfTime1

Charger - Switcher v1.2

Copyright MachineOfTime1 2011

Low Supply

Charging 12V Batt, Batt Volts=13.2, External Volts=61.8, Load Volts=36.8
Charging 12V Batt, Batt Volts=13.3, External Volts=61.2, Load Volts=36.8
Charging 12V Batt, Batt Volts=13.2, External Volts=61.8, Load Volts=36.8
Charging 12V Batt, Batt Volts=13.2, External Volts=61.8, Load Volts=36.8
Charging 12V Batt, Batt Volts=13.3, External Volts=61.8, Load Volts=36.8
Charging 12V Batt, Batt Volts=13.2, External Volts=61.8, Load Volts=36.8

Batts Charged!

Charging 36V Batt, Batt Volts=37.2, External Volts=76.8, Load Volts=12.8
Charging 36V Batt, Batt Volts=37.4, External Volts=61.2, Load Volts=12.8
Charging 36V Batt, Batt Volts=37.5, External Volts=61.2, Load Volts=12.8

Configuration Options:

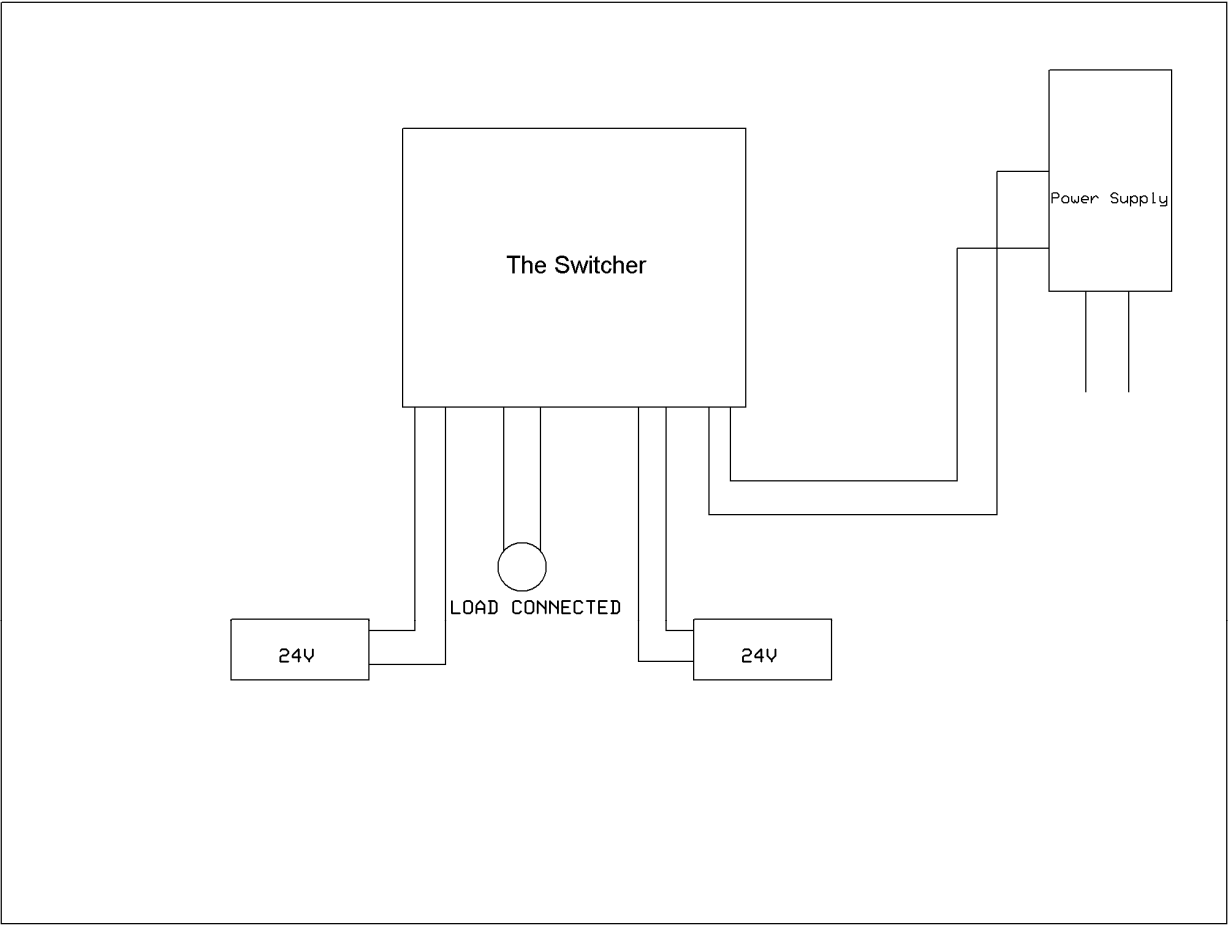


Fig. 2

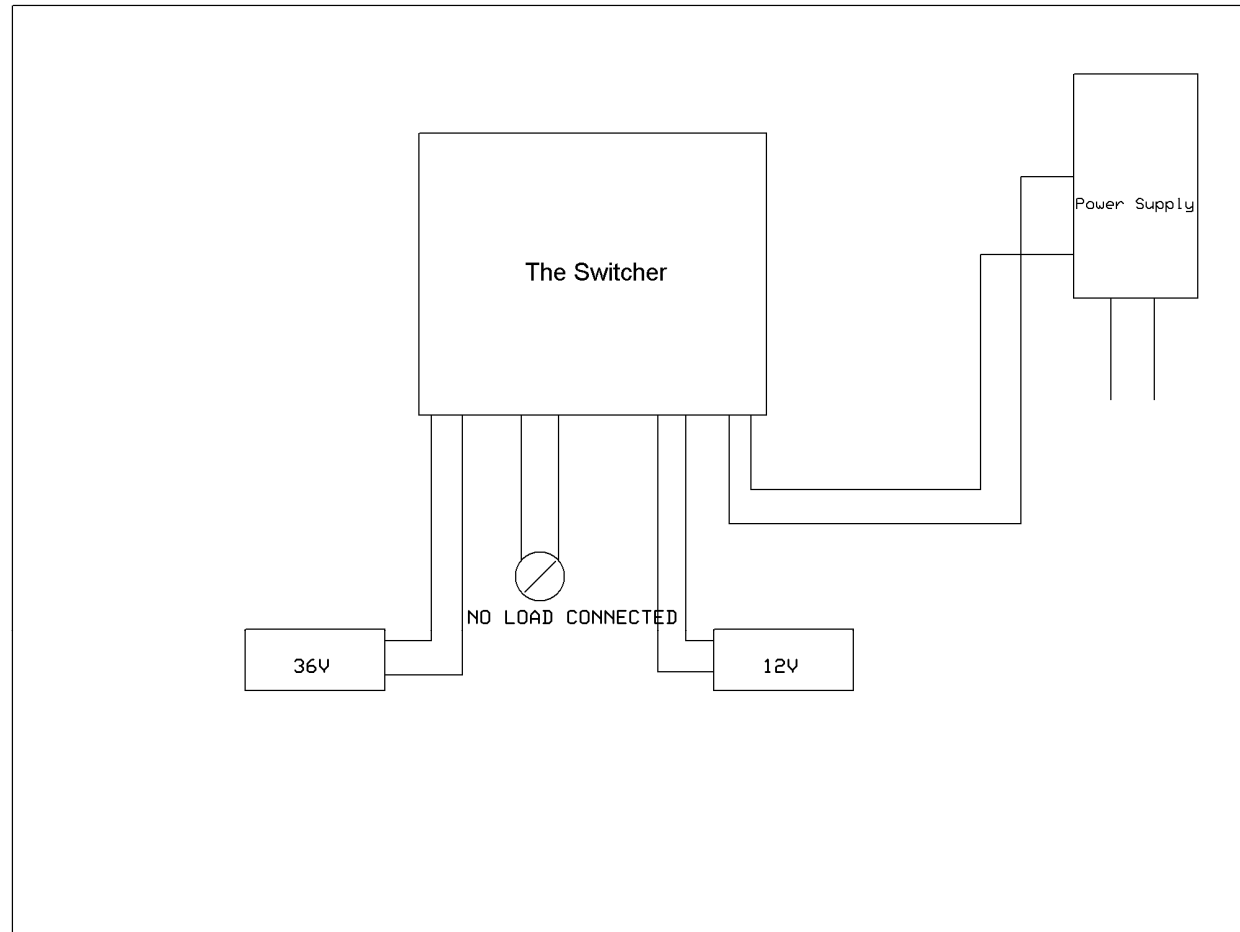


Fig. 3

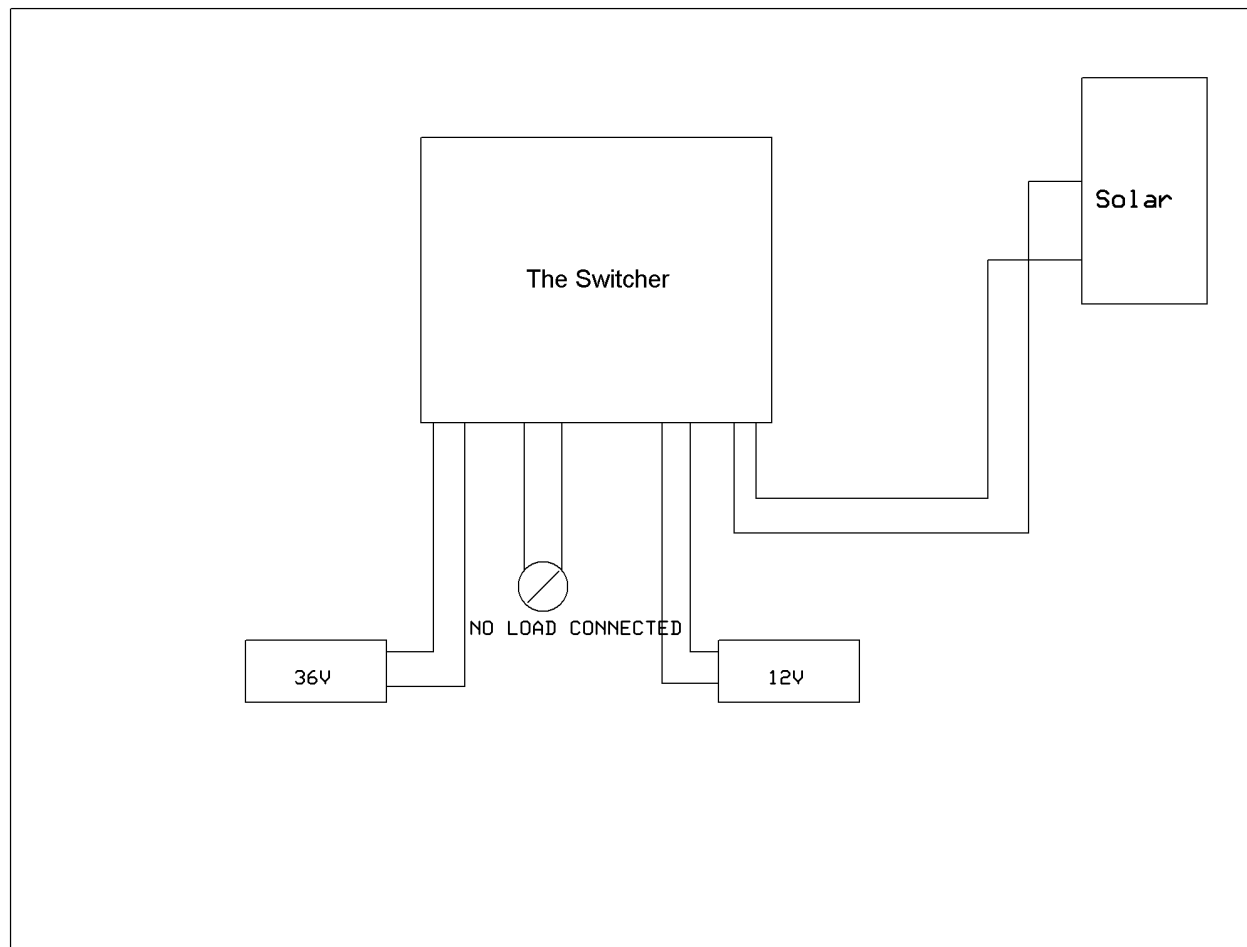


Fig. 4

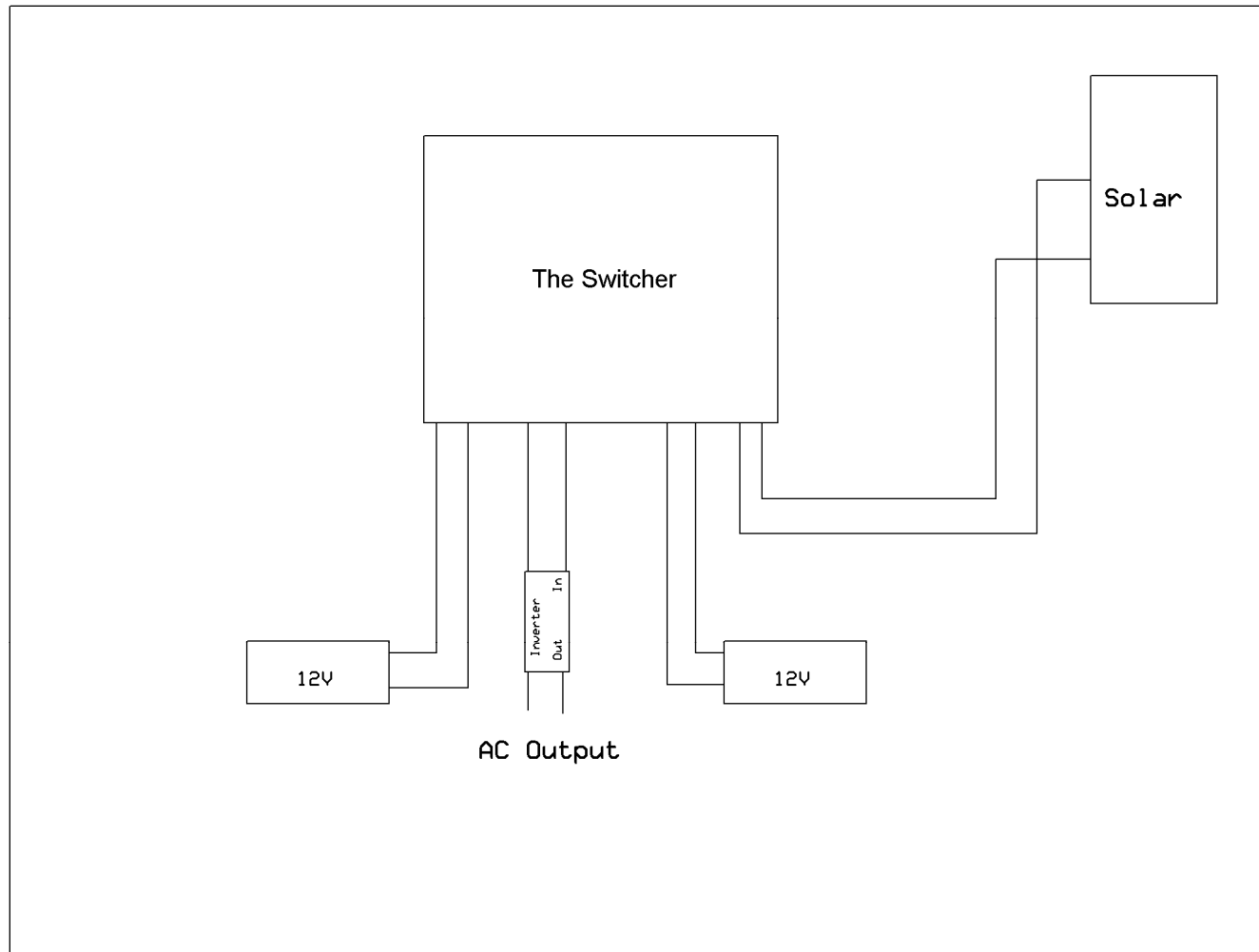


Fig. 5

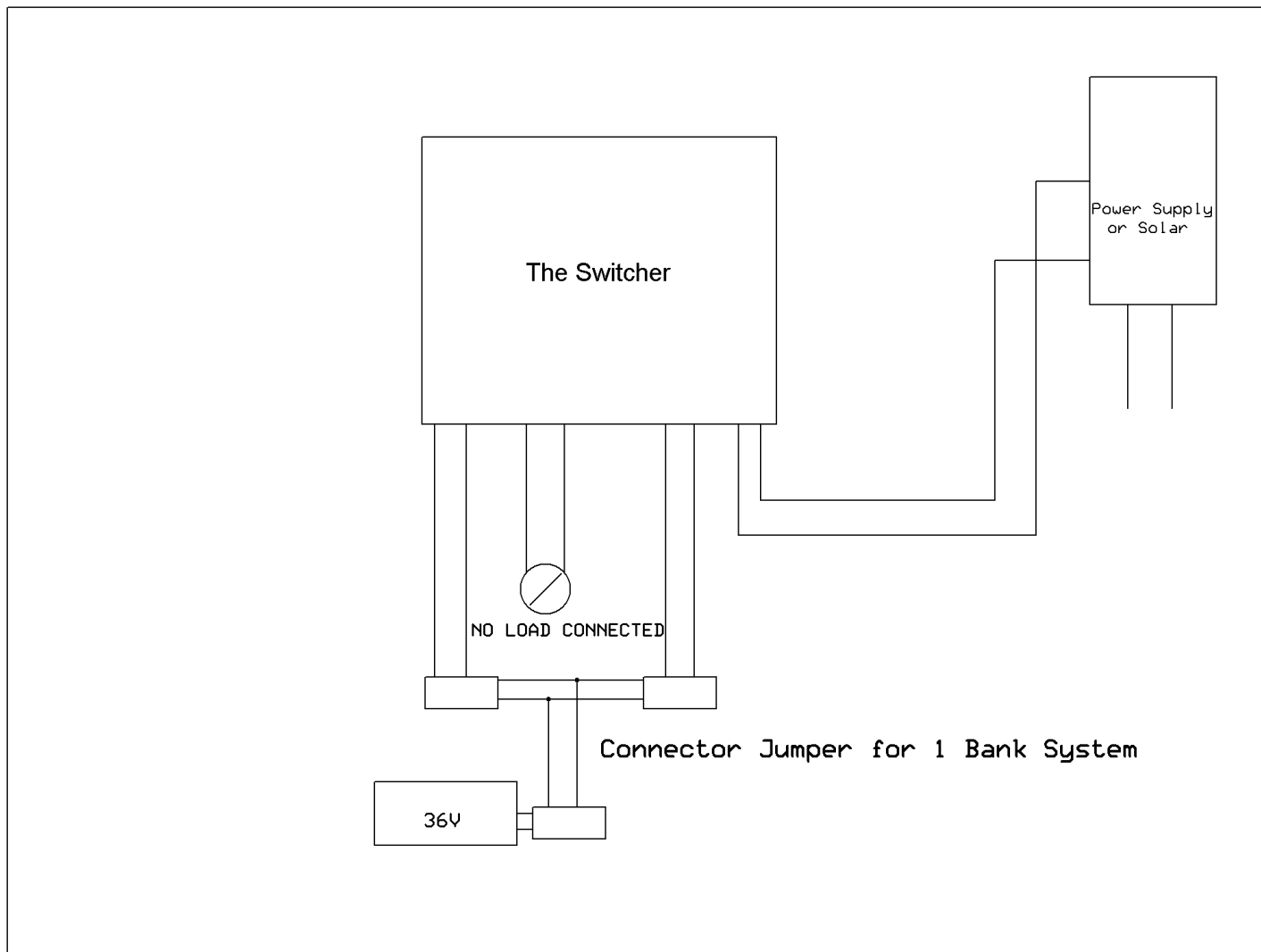


Fig. 6

Figures 2 – 6 illustrate the “Multi-Functions” of this device. There are many more, but the important consideration is that when connecting a “Load”, the battery banks must be the same voltage unless the load can handle the highest and lowest voltage configured banks. The Load must NOT draw more than 15A.

Charging & Switching Table:

Battery Connected		Charges to & Switches at
12V		13.5V
24V		28V
36V		40.5V
48V		54V

Fig. 7

Status Lights

Indication	Probable Cause	Solution
Green / Yellow Flashing	Low input from Solar Panel	Plug AC power cord in or wait for sunlight.
Green / Red Flashing	Fuse Blown or Battery connection	Replace Fuse, Reconnect Battery Connection.
Green / Yellow / Red Flashing	Unit is Overheated or the Restoration process is finished	Unit will cool and correct this condition. Insure proper venting. Turn unit off, then on for another restoration
Green Solid	Battery is Charged	N/A
Green Flashing	Bank 1 is Charging	N/A
Green Flashing / Yellow Solid	Bank 2 is Charging	N/A

Product Details:

Output Power	101 - 200W
Output Type	Single
Input Voltage	90V-264Vac / 70VDC
Output Voltage	60-72Vdc
Output Frequency	47Hz-63Hz
Output Current	2.1A
Type	The Switcher
Housing material	Aluminium
Output type	Single output with Pulse current
Advantage	PF>0.95
Keyword	Switcher, Golf Cart Charger, Solar Charger
Width Input	90vac~264vac / 70Vdc
OEM	acceptable
Efficiency	92%

NOTE: “The Switcher” is used for experimentation and Lab types of situations. No warranty exists.

LIMITATION OF LIABILITY. IN NO EVENT SHALL THE INVENTOR BE LIABLE FOR ANY INDIRECT, INCIDENTAL, CONSEQUENTIAL, SPECIAL, RELIANCE, PUNITIVE OR ENHANCED DAMAGES OF ANY KIND OR NATURE WHATSOEVER (INCLUDING BUT NOT LIMITED TO ANY LOST PROFITS, LOST SAVINGS, OR BUSINESS HARM) ARISING OUT OF OR RELATING TO THE USE OF THE SWITCHER UNITS EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.