

WolmaCor Power Panel V1

Owner's Manual



1. Introduction.....	3
2. Safety Warnings.....	3
3. Features.....	3
4. Indicators.....	4
5. Contents.....	4
6. Installation.....	5
6.1 Mounting the unit.....	5
6.2 Wire size.....	5
6.3 Connecting the battery.....	5
6.4 Connecting 12V loads.....	5
6.5 Connecting 220VAC/240VAC.....	5
6.6 Connecting the DC to DC charger.....	5
6.7 Connecting the solar panel.....	5
7. Operation.....	6
7.1 Temperature Control.....	6
7.2 Battery Type.....	6
7.3 Battery Maintenance.....	6
7.4 Battery Monitor.....	6
7.5 12VDC outputs and loads.....	6
7.6 220VAC/240VAC to 12V charger.....	6
7.7 DC to DC 12V charger.....	6
7.8 MPPT solar charge controller.....	6
8. Troubleshooting.....	7
9. Specification.....	8
10. Warranty.....	9
11. Wiring Diagram.....	9
12. Layout and Description.....	10

Introduction

The WolmaCor Power Panel is a complete power managing system developed for leisure and off-road use in remote areas, where utility power is not always available. The unit has the ability to charge rechargeable 12V Lead Acid and LiFePo4 batteries from 220VAC/240VAC (Mains), 12V DC and Solar panels. The 220VAC/240VAC to 12V charger is a 20Amp multi-stage charger. The DC to DC charger (Vehicle), is a 20Amp charger and the solar charge controller, is a 360W charger with MPPT. The unit has a Digital Battery Monitor with the ability to display battery voltage and current. A battery under voltage lockout unit is standard, disconnecting all loads if the battery voltage drops below 11V, thus preventing the battery from being damaged. 220VAC/240VAC Outputs are provided with a SA 3-pin socket. All 220VAC/240VAC outputs come via an earth leakage and 10Amp circuit breaker. A dual battery switch is not required in the towing vehicle because the WolmaCor Power Panel will not discharge the towing vehicle's battery.

Safety Warnings

- Do not open the unit while connected to power. The internal circuitry contains high voltages and may result in shock.
- Do not connect or work on any wiring if the unit is connected to power.
- Use the unit for its intended purpose.
- Only use with 12V Lead Acid batteries of 70Ah or higher capacity or LiFePo4 batteries.
- Select correct battery type.

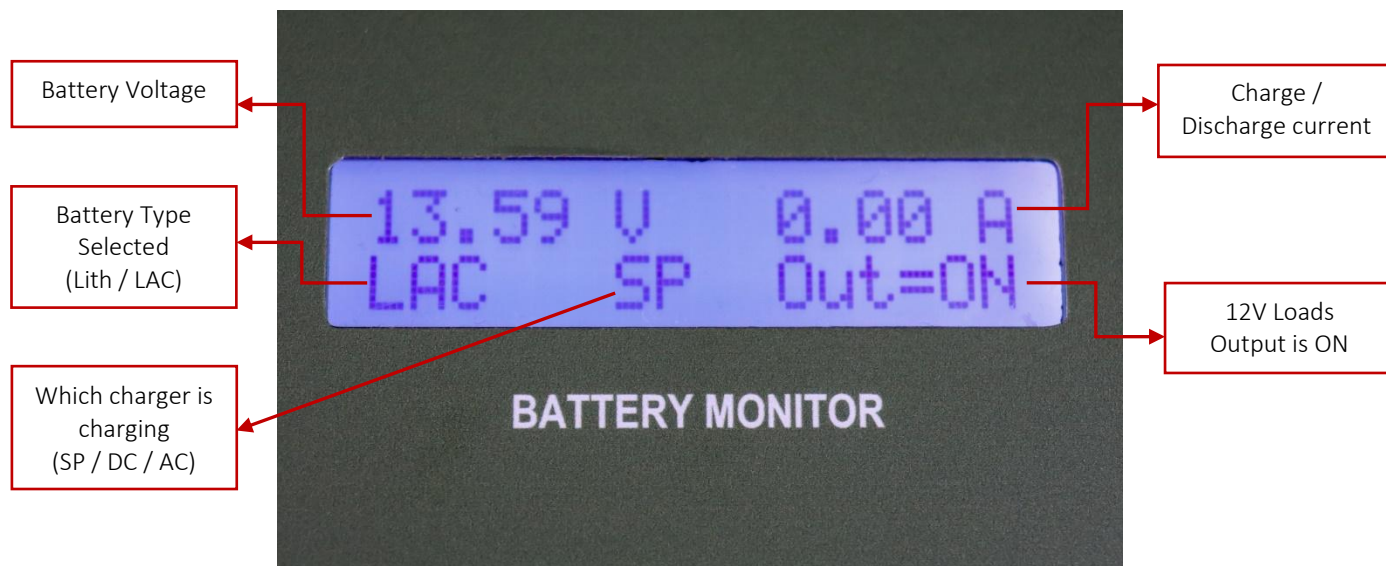
Features

- 220VAC to 12 Volt 20Amp Multistage Lead-Acid/LiFePo4 Battery Charger with Fast and Trickle charge indicator.
- 220VAC Earth Leakage and 10A Circuit Breaker.
- Digital Voltage and Current Monitor.
- USB charging port.
- Battery under voltage lockout to prevent deep cycling and damage to battery.
- Battery low and blown fuse indicator.
- Integrated 360 Watt MPPT Solar Charge Controller.
- Integrated 20A DC to DC Charger.
- Integrated Dual Battery function eliminating external Dual Battery Switch.
- LED charge source indicator.
- Integral thermostatically controlled cooling fan.
- Can operate from any combination of 220VAC, Battery or Solar Panel.
- Short circuit protection on all outputs.
- Supplied with all connectors required.
- Easy to install.
- Warranty of two years.

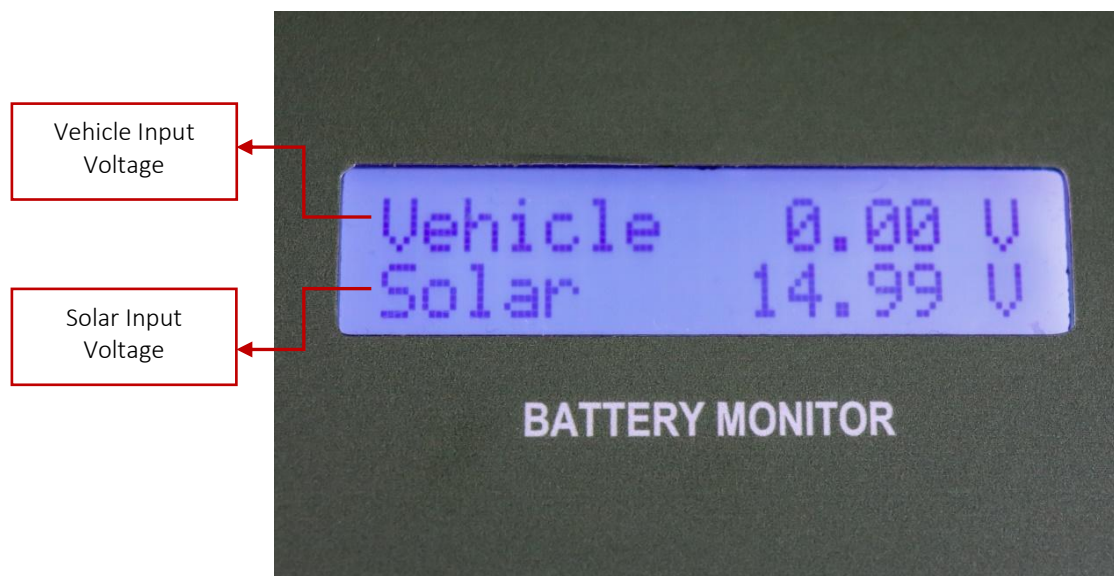
Indicators

Charging source and fault conditions are indicated by LCDs on the front panel.

Menu 1



Menu 2



Contents

- 1x WolmaCor Power Panel V1.
- 1x Electronic Owner's Manual (supplied via e-mail)
- 1x Brad Harrison (grey) connector (Including terminals) for Aux Battery
- 1x Brad Harrison (red) connector (Including terminals) for Car/DC to DC charger.

Installation

1.1 Mounting the unit:

- Install the unit in a dry place where it is not exposed to rain or water.
- Install the unit with a 5cm clearance around the unit to allow ventilation.
- Mount the unit on a sturdy support structure.

1.2 Wire sizes

- Use at least 10mm² panel wire from **vehicle battery to tow bar**.
- Use at least 10mm² panel wire from **tow bar to WCPPV1 vehicle input connector**.
- Use 2.5mm² panel wire from **fridge to WCPPV1 for distances up to 2 meter and 4.0mm² panel wire for distances more than 2 meter**.
- Use 4.0mm² panel wire from **auxiliary battery to WCPPV1 for distances up to 2 meter and 6.0mm² panel wire for distances more than 2 meter**.
- Use at least 2.5mm² panel wire from **WCPPV1 to pump and sockets**.
- Use at least 1.5mm² panel wire from **WCPPV1 to lights**.
- Use 4.0mm² panel wire from **Solar Panel to WCPPV1 for distances up to 10 meter and panel power up to 150W**. Use 6.0mm² panel wire from **Solar Panel to WCPPV1 for distances up to 10 meter and panel power up to 360W**.

1.3 Connecting the battery:

- Use the Brad Harrison (grey) equivalent connector for connecting the battery.
- Make sure the wires are crimped tightly in the terminals and that the terminals are inserted all the way inside the grey housing and clips into position.
- The connector must be plugged into the Aux Battery input on the bottom on the base of the power panel. Make sure the connector is plugged in securely.
- More than one 12V battery may be connected in parallel to increase total capacity (connect positive to positive and negative to negative).
- Use the same type of battery when connecting more than one battery.
- Total time, in hours, to charge flat batteries will be approximately 1.2x Total Battery Capacity divided by 20A. Thus, for 2x 100Ah batteries and a 20A panel charging time will be: 1.2x200/20=12 hours
- Fit a 50A fuse close to the battery positive terminal to prevent a fire hazard should the position wire short to the trailer chassis.

1.4 Connecting 12V loads (12V outputs):

- Connect each load to the specified output (Lights, Fridge, Pump and Sockets).
- Unscrew the screw on the top of the connector, insert the wires and tighten the screw thoroughly to make sure the wires do not come out.
- When inserting the wire into the connector, make sure all the wire strands enter the connection opening to prevent shorts.

1.5 Connecting 220VAC/240VAC:

- Connect the 220/240VAC INPUT cable, coming from the WCPPV1, to the 220/240VAC input Main Supply.
- Connect the 220/240VAC Output cable, coming from the WCPPV1, to 220/240VAC outlets (multiplugs, etc.)

1.6 Connecting the DC to DC charger:

- Use the Brad Harrison (red) equivalent connector for connecting the DC To DC charger input to the car.
- Use wire size as specified in **wire sizes**.
- Make sure the polarity is correct

1.7 Connecting the solar panel:

- The solar panel **can be a 12V or 24V** panel with open circuit voltage **less than 50V**
- Two or more 12V / 24V solar panels may be connected in parallel (positive to positive and negative to negative) to increase power to 360W
- Connect the solar panel to the solar input on the 10-way connector strip. Make sure the polarity is correct.

- Use wire size as specified in **wire sizes**.
- When inserting the wire into the connector, make sure all the wire strands enter the connection opening to prevent shorts.

Operation

1.1 Temperature Control

The internal temperature is controlled by a fan that turns on if critical components reach a certain temperature. The cooling fan will turn off if the temperature drops below the set temperature. This operation is normal and is designed to extend the life of critical components.

1.2 Battery type

- Ensure that the correct battery type is selected with the selector switch below the battery monitor marked “LITH”.
- Select Lead-Acid for all AGM, GEL, Calcium and flooded batteries.
- Select LiFePo4 for Lithium Iron Phosphate batteries.

1.3 Battery Maintenance:

Keep the battery on charge when stored or not in used. Switch OFF all loads and leave the 220VAC/240VAC to 12V charger ON. If the battery is left connected to the panel without it being charged, the battery will slowly be drained, even if all loads (12V outputs) are OFF.

1.4 Battery monitor:

The battery monitor is switched ON and OFF with a switch below the display, marked “ON/OFF”. This is the main switch for the 12V loads, if this switch is OFF all the 12V loads and the monitor will be off. The “MENU” can be used to switch between menus that will display different information. If the battery is being discharged, the monitor will display a negative current value (example “-2.45”). If the battery is being charged, it will display a positive current value (example “2.45”).

1.5 12VDC outputs and loads:

All 12VDC outputs are supplied with power via an under-voltage lockout unit and is controlled by a 12V “ON/OFF” switch located on the front lid. If this switch “ON/OFF” is turned OFF, all 12V outputs will be OFF. The under-voltage lockout unit has a turn on level of 12.00V and turn OFF level at 11.0V. If the master switch is ON and the battery level drops below 11V, all outputs will be switched OFF and the display will indicate that the outputs are OFF. When the battery voltage increases above 12.00V, the outputs will turn on automatically and the display will indicate that the outputs is ON. All 12V outputs are fitted with an automatic resettable fuse that will open if that specific output is overloaded and will close when the overload disappears.

1.6 220VAC/240VAC to 12V charger:

This is a multi-stage charger. The earth leakage and circuit breaker must be switched ON. The status of the AC charger will be indicated by the LCD display. The charger will control the fan inside of the power panel to regulate its internal temperature. When the battery is full, the charger will go into “trickle charge” mode.

1.7 DC to DC 12V charger:

The DC to DC charger will start charging automatically when the vehicle’s 12V Input voltage reaches 13.3V and will stop charging when it drops below 12.7V. The DC to DC charger status is indicated by the LCD display. The charger will control the fan inside of the power panel to regulate its heat sink temperature. The DC to DC charger will not operate if the 220VAC charger is switched ON

1.8 MPPT Solar charge controller:

The MPPT solar charge controller will work with solar panels with maximum rating of 360W. The solar panel open circuit voltage must not exceed 50VDC. When a solar panel is connected and charging it will be indicated on the LCD display. The solar charger will only switch ON if the 220VAC/240VAC charger is switched OFF and the vehicle voltage is below 12.7V.

Troubleshooting

Problem	Check the following
Battery Monitor not working:	- Check whether the monitor is switched ON. - Check battery connections (connectors and terminals).
No 12V outputs switching ON(Lights, Fridge, Pump, Sockets):	- Check if master 12V ON/OFF switch is ON. - Cycle master 12V ON/OFF switch (switch OFF and then ON). - Check battery connections (connectors and terminals).
Lights output not switching ON:	- Check if master 12V ON/OFF switch is ON. - Check if lights switch is switched on. - Check lights wiring.
Fridge output not switching ON:	- Check if master 12V ON/OFF switch is ON. - Check fridge wiring.
Pump output not switching ON:	- Check if master 12V ON/OFF switch is ON. - Check if pump switch is switched ON. - Check pump wiring.
Sockets output not switching ON:	- Check if master 12V ON/OFF switch is ON. - Check sockets' wiring
220VAC/240VAC to 12V charger not working.	- Check if charger ON/OFF switch is ON. - Check if earth leakage and 10A circuit breaker is switched ON. - Check if 220VAC is present (the lamp above earth leakage will indicate if 220VAC is present). - Check 220VAC mains input connections.
DC to DC 12V charger not working.	- The DC to DC charger will only switch ON if the DC to DC Charger input voltage from vehicle is above 13.3V and remains above 12.7V after switching ON. - The 220VAC charger must be switched OFF for DC to DC charger to work. - Check DC to DC input wiring, connections and polarity. (see diagram). - DC to DC charger input wiring incorrect diameter. If the wire diameter is too small it can cause a voltage drop across the wire, large enough for the input voltage at the DC to DC charger to drop below 12.7V and switch OFF. Once OFF the voltage will again increase to 13.3V or more and the charger will switch ON again and repeat the ON/OFF cycle with a 5 second interval.
Solar charge controller not working.	- Check solar input wiring, connections and polarity. - If 220VAC to 12V charger and DC to DC charger is ON, the solar charge controller will not work.

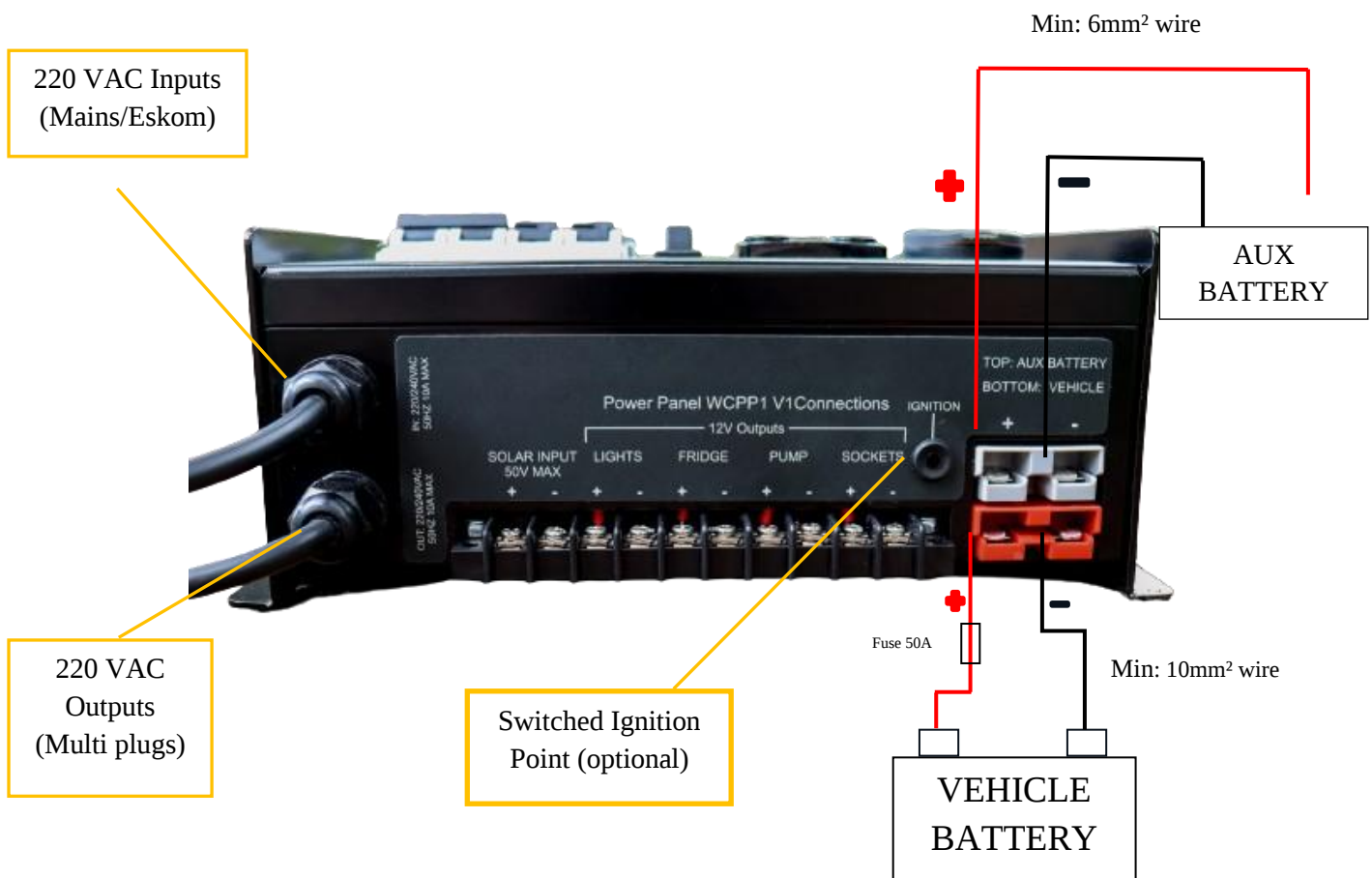
Specifications

Operating ambient temperature	-20°C to +45°C
Mass	3500 gram
Dimensions	235(W)x235(D)x100(H) mm
220VAC Charger	
Input voltage	180VAC to 265VAC 40Hz to 70Hz
Fast charge current	20 Amp Maximum
Fast charge voltage LAC	14,4V +/- 0,1V
Trickle charge voltage LAC	13,6V +/- 0,1V
Lithium charge voltage	14,4V +/- 0,1V
Vehicle DC Charger	
Input voltage (Vehicle GND&POSITIVE)	12,5VDC to 16VDC
Ignition sense switch ON	> 13,2V
Ignition sense switch OFF	< 12,8V
Fast charge voltage LAC	14,4V +/- 0,1V
Trickle charge voltage LAC	13,6V +/- 0,1V
Lithium charge voltage	14,4V +/- 0,1V
Charging current	20 Amp maximum
Input current	28A maximum
Drain from vehicle battery	20mA
Dual battery switch	NOT REQUIRED
Solar Panel Charger	
Input voltage	14VDC to 50VDC
Power input	360W maximum
Control method	Maximum Power Point Tracking
Fast charge current	20 Amp
Fast charge voltage LAC	14,4V +/- 0,1V
Trickle charge voltage LAC	13,6V +/- 0,1V
Lithium charge voltage	14,4V +/- 0,1V
Charging current	Depends on Solar Panel Wattage
Battery Monitor	
Voltage Range	9,0 to 20 Volt
Voltage Accuracy	+/- 0,1 Volt
Current Range	0,1A to 50A
Current Accuracy	+/- 0,1A
Dedicated USB charging port	
Voltage	5VDC
Battery Under Voltage Lockout	
Lockout voltage	<11 +/-0,1 Volt
Auto turn ON voltage	>12 +/-0,1 Volt
Battery Connection	
50A Brad Harrison style connector	
Outputs	
Pump	1x 12 Volt 11 Amp maximum
Fridge	1x 12 Volt 11 Amp maximum
Lights	1x 12 Volt 11 Amp maximum
Sockets	1x 12 Volt 25 Amp maximum
Total Load Output (Pump, Fridge, Lights, Sockets)	Max 25 Amp
220 VAC	1x 3-pin 220VAC 10 Amp Switched Socket
	1x 220AC 10A for Multiplugs
Inputs	
AC	220VAC 50Hz 10A max
Vehicle	50A Brad Harrison style connector
Solar	Connector block with screw terminals

Warranty

Power Panels will be replaced or repaired if a failure occurs within two years, from the date of purchase, as a result of faulty materials or workmanship provided that the product is returned to the seller with proof of purchase. Replacement or repair shall be at the discretion of the manufacturer. This warranty excludes failures which result from misuse of the product. The manufacturer and/or seller shall not be liable for personal injury or consequential damages that may result through the use of this product. Lightning and water damage are excluded from this warranty.

Wiring Diagram



Layout and Description

