MANUAL
Model: PPT 12/24-30
Solar Converters Inc. – Rev. C

Warning: Before connecting power cable to this unit, evaluate the PV and load voltage and set the unit's voltage select jumpers accordingly. See signal connections for proper wiring of voltage select termination.

Warning: This unit operates from multiple **hazardous** energy sources. Ensure that all power sources are inactive before making any connections to this unit. Ensure proper procedures and the appropriate electrical codes are followed. To be serviced and operated only by qualified personnel.

QUICK START:

While it is recommended that the manual be read in detail before operating this unit, for the experienced technician, this section describes a quick system set up.

Power Connections:

PV –	to	PV - Terminal
Pump +	to	Load + Terminal
Pump –	to	Load - Terminal

Float Switch: 1) **If the float switch closes contact to turn pump off**, connect float switch to the "Closed" float switch control. Anything connecting the closed Float Switch connections together will shut off the pump.
2) **If the Float Switch opens to turn the pump off**, remove the jumper in the Float Switch open position and connect the float switch to the "open" float switch control. Anything that opens this connection will turn the pump off.

Select operating voltages

12 V panels running a 12 V motor:	Do not put small wire in PVset and Loadset terminals
24 V panels running a 12 V motor:	Put a small wire in PVset terminal only.
24 V panels running a 24 V motor:	Put small wires in PVset and Loadset terminals.

Ensure the Float Control is in the middle position. This control can be used to turn the motor on/off irrespective of float switch position.

Connect Last: **Ensure Pump is clear and safe to operate**
Power Connection: PV +   to   PV + Terminal

1.0 Specifications

Input Voltage: 0 - 50 DC volts PV Array, nominal operating approx. 15/30 V for 12/24 V panels respectively
Current: 0 - 25 DC amps nominal,
NOTE: The unit will not turn on until it sees the nominal PV operating voltage on its input.

Output Voltage: 15/30 V for 12/24 V motors respectively (**Adjustable with on board grey potentiometer**)
Current: 35 amps continuous, (provided sufficient solar power), 40 amps capability

Connection: Power: AWG # 6 Terminal Block
Signal: max. AWG # 24 terminal block

Efficiency: >94% over 20% charging load,

Transient protected - input and output

Normally open or closed float switch control

Timeout delays for empty well and low sunlight to prevent possible damage to pump

Temperature range: -40 C to +50 C

Start Current: 50 Amps for 10 seconds

Over current Protected

2.0 Power Connections

2.1 Ground

It may be beneficial to connect the case of the device to ground reference to optimize its transient protection and minimise any potential interference with other equipment.   Note the case is not connected to any of the unit's connections.

2.2 Pump Connection

Using wire of sufficient amperage for the PUMP load connection #10 AWG or better connect the positive of the PUMP to the Load + Power lead. Similarly connect the negative of the PUMP to the Load -.

2.3 Float Switch Connection

Connect the Float switch to the Float switch terminals. The motor will shut off if 1) anything shorts the "closed" terminal or 2) opens the "open" terminal.   Note there is a jumper in the Open terminal

2.4 Input Power Connection

Using a wire of sufficient amperage for the input power (min. #10 AWG) connect the negative of the solar panel to the PV- terminal.

NOTE: (Do this last only when the pump is clear and safe to operate and AFTER the signal connections are in place). Use a panel disconnect switch or cover the panel when making this connection

Using a wire of sufficient amperage for the input power (min. #10 AWG) connect the positive of the solar panel to the PV+ terminal.

3.0 Voltage Set-up

This unit can power a 12 or 24 V pump from 12 or 24 V respectively solar panels. The unit can also power a 12 V pump from 24 V panels. To set the voltage, put small wire in either the PVset or Loadset terminals.

Select operating voltages
12 V panels running a 12 V motor: Do not put small wire in PVset and Loadset terminals
24 V panels running a 12 V motor: Put a small wire in PVset terminal only.
24 V panels running a 24 V motor: Put small wires in PVset and Loadset terminals.

4.0 LED

LED's indicate the operating state of the unit as well as the approx output power.

Float Off: The unit is commanded to be off by the float switch

Power Limited: The unit is putting maximum available power into the load. **Note:** when this light is off, there is more power available than being put to the motor and the unit is regulating the output voltage to protect the motor from excessive voltage

Overload: The unit is current limiting its output. The motor is likely stalled or damaged or the lift is too high. Investigate the cause of this and contact your dealer.

Start Delay: The unit has sensed the voltage to the motor has dropped to under 40 % and has shut off the motor for 3 minutes to save brush life. **Note:** Shorting the reset terminals together defeats this condition.

Power Level: These LED's give a representation of the output power of the unit compared to its rating. They indicate voltage level of the output.

Pump On: The unit is applying power to the pump motor

Well Dry? The unit is sensing low motor current, likely from no water being lifted or an open pump cable.

Dry Delay: The unit has sensed low current and irregular for over 3 seconds indicating the well is dry. The unit has shut off for 20 minutes to allow the well to refill and protect the pump *from* running in a dry condition. **Note:** Shorting the *Override* terminals together clears this condition.

5.0 User Controls

The unit has no user controls. It has a couple control functions for test purposes.

Float Control: This control is used to override the float switch control and turn the pump on/off irrespective of float tank switch**. In normal operation, leave the switch in the middle position.**

Reset: On the right side of the unit is a terminal block with the two terminals marked **reset.** Shorting the pins together defeats the start delay. For many uses, start delay is not required; hence shorting these terminals together prevents operation of the start delay circuits.

Override: On the right side of the unit is a terminal block with the two terminals marked override. Shorting the pins together defeat the dry delay. For many uses, dry delay is not required; hence shorting these terminals together prevents operation of the dry delay circuits.

WARRANTY

The product is warranted to be free from defects in material and workmanship for a period of one (1) year from the date of purchase by a retail customer. The purchase date must be evidenced by a valid and original sales receipt. In lieu of sales receipt, factory will use code date on its label. Removal of the Solar Converters Inc. label or serial number will void the warranty.

Product liability, except where mandated by law, is limited to repair or replacement at the manufacturer's discretion. No specific claim of merchantability or use shall be assumed or implied beyond what is printed on the manufacturers printed literature.   No liability shall exist from circumstances arising from the inability to use the product, or its inappropriateness for any specific purpose or actual use, or consequences thereof for any purpose**. It is the user's responsibility to determine the suitability of the product for any particular use**. Solar Converters Inc. shall not be liable for any damages or any kind including without limitation, special, incidental or consequential obligations and liabilities of Solar Converters Inc. and the remedies of Buyer set forth herein shall be Solar Converters Inc. sole and exclusive liability.

Failure to provide a safe and correct installation, safe operation, or care for the product will void the warranty. Personal safety, and compatibility with any other equipment is the ultimate responsibility of the end user. Any returned product that shows significant evidence of abuse may not be covered by this warranty. Installation must be preformed by a person with qualification to insure safe and effective operation and the installation thereof certifies that the installer has the technical qualifications to do so.

Solar Converters Inc. cannot guarantee the compatibility of its products with other components used in conjunction with Solar Converters Inc. products, including, but not limited to, solar modules, batteries, and system interconnects, and such loads as inverters, transmitters and other loads which produce "noise" or electromagnetic interference, in excess of the levels to which Solar Converters Inc. products are compatible. Solar Converters Inc. shall not assume responsibility for any damages to any system components used in conjunction with Solar Converters Inc. products nor for claims for personal injury or property damage resulting from the use of Solar Converters Inc. products or the improper operation thereof or consequential damages arising from the products or use of the products.

The warranties set forth herein are Solar Converters Inc. sole and exclusive warranties for or relating to the goods. Seller neither makes nor assumes any warranty or merchantability, any warranty fitness for any particular purpose, or any other warranty of any kind, express, implied or statutory. Solar Converters Inc. neither assumes nor authorizes any person or entity to assume for it any other liability or obligation in connection with the sale or use of the goods, and there are no oral agreements or warranties collateral to or affecting the sale of the goods.

<u>WARRANTY CLAIM PROCEDURE</u>

In the event of product failure, follow this warranty claim procedure.

    1. Make sure the problem you are having is actually due to the suspected product and not some other part of the system. You may call technical support for advanced troubleshooting assistance.
    2. If you determine that a Solar Converters Inc. product is actually defective, describe on paper, in detail the exact nature of the failure.
    3. The product must be accompanied by proof of the date of purchase satisfactory to Solar Converters Inc.
    4. Return the product and description to the business office address, along with your address and a daytime phone number. Purchasers must prepay all delivery costs or shipping charges as well as any other charges encountered, in shipping any defective Solar Converters Inc. product under this warranty policy. **No shipment will be accepted Freight Collect.**
    5. Any return shipment from Solar Converters Inc. will be via Canada Post. Foreign shipments will ship best way. Special shipping arrangements are available at the customer's expense.