SOLARREM QUICK START OPERATION MANUAL

INTRODUCTION

Congratulations on the purchase of your SolarRem unit. This quick start manual provides information for the safe installation and operation of your SolarRem unit. Detailed, and supplementary technical information, including performance data, is found in the detailed manual and data sheets. Information about system sizing, design, safety, and operation are available from your SolarRem distributor.

Your SolarRem unit is constructed using high quality materials and processes which results in a durable product intended for many years of useful service. We appreciate your patronage and welcome suggestions to improve our products and service.

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EQUIPMENT SUPPLIED

The SolarNAPL unit comes partially assembled on a pallet with the following components:

1. Control box mounted to the air receiver tank
2. Solar Panel (either a 60 Watt or 100 Watt unit)
3. Pre-assembled mounting brackets and fasteners for securing the solar panel to the control box and to a 2" steel pole.
4. Battery, battery box, mounting bracket and fasteners
5. Float level switch and connecting cable
6. In addition, you may have also purchased a pneumatic pump, hosing and support cable.

UNIT SETUP

The SolarNAPL unit can be set up on the ground, or pole mounted on at least a 4-inch Schedule 40 steel pole secured a minimum of 1/3 its length into a hole backfilled with concrete. In each situation, the SolarNAPL unit must be secured to ensure it does not get knocked over and sustain damage to the unit or the solar panel assembly.

The solar panel and unit should be installed in an area free of any full or partial shading of the panel, as the solar panel will lose considerable output even if only partly shaded. Structures, trees, chimney fences and other potential shading objects should be avoided. Also the prospect of vandalism should be considered.

Remove the equipment from the pallet and support the control box and air receiver tank. Assemble the Solar mounting bracket together and place on top of 4 inch pole.

With assistance, raise the SolarRem unit to the mounting pole, and fasten in place to the steel pole using the 4 inch conduit clamps secured to the unit through the uni-strut channel.

If you have been provided with the battery mount bracket,(optional) connect it to the steel pole using the same universal pipe clamps and assembly. Place and secure the battery box and battery onto the mounting bracket, or the ground. You are now ready to adjust the solar panel into position, connect the wiring and start the SolarRem unit.

SOLAR PANEL ADJUSTMENT AND BATTERY CONNECTION

We recommend the solar panel be adjusted to the following angles for optimum operation of the unit. With the solar panel horizontal to the ground, tilt the end from the front of the control box downwards to the desired angle. The solar panel must be facing south. We recommend use of a compass.

Flat – Plate Collectors Facing South at Fixed Tilt	
Season	Tilt Angle from Horizontal
Spring	Latitude
Summer	Latitude – 15 degrees
Fall	Latitude
Winter	Latitude + 15 degrees

Connect the battery and solar panel terminals to the wires provided (Battery: red to positive, black to negative– Solar Panel: using the red/black molded cable with molded connector. Plug into side of the solar panel If all wiring is connected correctly, you will have power cycling through the unit, and the photovoltaic controller will be active. The supplied battery is an AGM type Deep Cycle marine battery

DOWN-HOLE PNEUMATIC PUMP AND RECOVERY TANK INSTALLATION

The installation of the down-hole pneumatic pump should be as per proper field engineering protocol. Ensure all safety guidelines and requirements are in place. Connect the air supply line between the pump and SolarNAPL unit. Connect the venting line on the pump (if supplied) and discharge to a suitable location as required. Connect the discharge line between the pump and the product recovery tank. Ensure the discharge line is properly secured to avoid surface spills.
Install the float level switch inside the product recovery tank and ensure it is free of all obstructions. Connect the cable between the float and the SolarNAPL unit. Turn on the unit, and check to ensure the float is in the lower position, and there is no HIGH LEVEL signal shutting the SolarNAPL unit down.

Ensure the product recovery tank and all interconnecting cables are properly secured to avoid spilling of recovered product. In the event of a spill, notify the authorities immediately and undertake appropriate remediation efforts.

START UP OF THE SOLARREM UNIT

Once the SolarNAPL unit is properly installed and wired, power should be on to the PLC and controller interface. Make sure the outside Shut-Off button (right side of control box) is initially pressed to the OFF position. Also, the SolarRem unit will not operate unless the recovery tank float is connected and at a low level condition. The table below shows keys for navigating on the controller interface.

Function Keys For Navigating on Optimate PLC Controller

Press Key		Function
F1		System Start
F2		System Stop
F3		Resets Counters to "0", excluding compressor and PLC timers
F4		Non-Self Venting Pump Default Settings (Bladder Type)
F5		Self Venting Pump Default Settings
Menu		To Enter Menu Selection
Up		Up Arrow to scroll through list, or increase value
Down		Down Arrow to scroll through list, or decrease value
Clear/Abort		To Return to previous screen
Enter		To select Menu item, and accept new set point Data

Pull out the Shut-Off button. Then on the controller interface press the F2 STOP button. Next press the F3 RESET Counters button to set the recording counters to zero (except for PLC and Compressor total run times). If you have installed a Non-Self Venting pump, press the (F4) Yellow button, or for a Self-Venting pump, press the (F5) Black button. The factory preset pumping defaults are as follows:

SolarNAPL Pneumatic Pump Default Settings	
Non-Vent Pump Default	4 second SQUEEZE cycle
	6 second VENT cycle
	12 CYCLES Total
	2 hours RESTING Period
Self-Vent Pump Default	1 minute ACTIVE Air Cycle
	2 hours RESTING Period

Pull out the Shut-Off Button to the ON position. Press the F1 START button on the controller interface, and the SolarNAPL unit will start, with the compressor pump filling the air receiver tank, and the solenoid valve opening to discharge air to the pneumatic pump. On the initial start up (F1 button pressed), for a self-vent pump, the ACTIVE cycle occurs twice before the resting period, to allow for adequate air pressure buildup within the air receiver tank.

Your SolarRem unit is now operating.

CHANGING TIMING PARAMETERS (ACTIVE AND RESTING CYCLES)

To change the timing parameters, press the F2 STOP button. Next press the MENU button, and with the UP/DOWN arrow keys, scroll to the Non-Vent, Self Vent or Resting period parameters as required. Select the item to be changed by pressing the ENTER key to reach the next menu level.

Press ENTER a second time for the Self Vent Pump and Resting Time. For the Non-Self Venting Pump selection, use the UP/DOWN arrow keys to scroll through the Non-Self Venting Pump choices, then press the ENTER key a second time to reach the adjustable timers.

You will be prompted with the current timer setting. Use the UP/DOWN scroll arrows to change the time, and press the ENTER key to accept the new set time. After pressing the ENTER key, use the ESCAPE/ABORT key to return to the START menu, then press the F1 START key to restart the SolarNAPL unit.

A complete flow chart of the Menu Tree is shown below, and detailed further in the full O&M Manual.

RECORDING OF INFORMATION REGISTERS

The Information Registers are obtained from scrolling through the menu under the Menu Tree of INFORMATION REGISTERS. Use these for recording the initial start settings of the SolarNAPL unit, and verifying the operation during return site visits.

Operator Controller Interface Main Key Selections	
Screen Display	**Description**
SolarREM Technology SLCT Menu or F1:Strt	Displays at all start up situations and is the default view screen
SolarREM: STARTING Press F2 to STOP	Displays when non operator start from internal PLC countdown
SolarREM: RUNNING SLCT F2/OFF to STOP	Displays when the SolarRem unit is operational
Tank: Hi LEVEL STOP EMPTY TANK + ON/OFF	Displays when the high level float, located in the product storage tank, is activated and stops the pumping operation. Confirmed by the Red Light on top of the SolarRem Control Box.
You Have Selected F3 Resets Counters to 0	Confirms the reset of counters (excluding pump hours and PLC days) when the (F3) Blue Button selected.
You Have Selected F4 NonVent Pump Default	Converts current mode of operation to a bladder type pump operation (must vent air back through the solenoid). Sets operation based on 12 squeeze/vent cycles and a resting period of 2 hours between cycles. (F4) Yellow Button selected
You Have Selected F5 Venting Pump Default	Converts current mode of operation to a self venting type pump operation (air vents through pump). Sets operation based on an active air time of 1 minute, and a resting period of 2 hours between cycles. (F5) Black Button selected.
Stop Button Pushed Pull to Restart Unit	Displays when the Red Emergency Stop button is pressed on the SolarRem Unit Box.

Operator Controller Interface Menu Functions		
Level I Menu	**Level II Menu**	**Comment**
Information Register	# High Level Alarms	Resetable display of the high level alarm conditions from the product storage barrel high level float
	Well Discharge Cycles	Resetable display of the total cycles of discharged air to the discharge point. One cycle is one active period and one resting period
	# Loss of Power	Resetable display of the total power shut down from a low battery condition, resulting in the shut-off of the power to the PLC
	# of Times OFF pushed	Resetable display of the power off condition from pressing the external Emergency Power Off button.
	# of Compressor Starts	Resetable display of the total compressor pump starts to refill the air receiver tank.
	PLC ON Run Days	Non-Resetable timer to display the total duration in days of the PLC operational. Used for maintenance purposes.
	Compressor Run Hours	Non-Resetable timer to display the total compressor pump running hours. Used for maintenance purposes, as the expected compressor pump life around 500 running hours.
SLCT NONventing Pump	Vent Bladder Time	Sets time the air is vented back through the solenoid, relaxing the bladder and allowing it to refill with product. (Time is set in seconds)
	Bladder Squeeze Time	Sets time the air is discharged to the bladder pump to squeeze the product up the pump discharge line. (Time is set in seconds)
	Set Squeeze Cycles	Sets total vent/squeeze cycles during active product removal cycle. Can be adjusted for optimizing product removal with quantity available.
SLCT SELF Vent Pump	SLCT Air Cycle Time	Sets the air discharge time during the active cycle to the pneumatic pump. This also removes the nonventing cycle options. (Time is set in 0.1 min. increments)
Set RESTING Time Off	Rest / Recovery Time	Sets the resting time between active cycles to allow product recovery or resting time. (Time is set in 1.0 minute increments)

For specific, or additional information, as well as all maintenance information, please refer to the full Operation and Maintenance Manual