SolarPRO plug'n'play™ 21 Amp charge controller

Installation and Operation Instructions

IMPORTANT! – Please read before installing:

- When working around batteries and other electrical equipment, please observe industry standard and manufacturer's safety procedures.
- Install the controller to your solar charger in low light conditions to reduce the risk of electrical sparking. Cover the solar panel if needed.
- Make connections in a well-ventilated area free from flammable gases or vapors.
- For 12 Volt systems, ALL connections should be in PARALLEL: Negative (-) to Negative (-), Positive (+) to Positive (+),
- DO NOT attempt to recharge NON-RECHARGEABLE batteries.
- Always CONNECT the charge controller to the battery FIRST. When disconnecting the controller from the battery, DISCONNECT the solar panel first, DISCONNECT the battery LAST.
- DO NOT use more than a total of 315 Watts (21Amps) of solar power with the SolarPRO 21 Amp charge controller.
- This charge controller is designed to regulate 12V photovoltaic (solar power) systems. DO NOT use this controller to regulate any other type of power sources such as wind generators, alternators, etc.
- The controller should be installed within 5 feet (1.5m) of the battery in a cool, dry and well-ventilated area. To extend this distance, please refer to the wiring chart below to avoid any power loss due to voltage drop.

PRODUCT DESCRIPTION AND FEATURES

- Overcharge protection for 12V batteries
- Ideal for solar systems from 15 Watts up to a maximum 315W (21Amps)
- Built-in battery voltage indicator
- Battery Reverse polarity indicator light
- Bad battery connection indicator light
- Advanced digital charging circuitry (pulse type)
- Battery type selector switch for Lead acid or Gel cell batteries

INSTALLATION *Quick and Easy!*

Step 1 – CONTROLLER OUTPUT TO BATTERY CONNECTION

Install the controller within 5 feet (1.5m) of the battery in a cool, dry and well-ventilated area that is easily accessible, usually around the battery compartment or in the cabin area of your boat or RV. To extend this distance, please refer to the wiring chart below labeled "Recommended Wire Gauge - Charge Controller to Battery" to avoid any power loss.

Connect the charge controller's "To Battery" Negative (BLACK or -) connection to the Negative (-) terminal of the battery. Next, connect the controller's "To Battery" Positive connection (RED or +) to the Positive (+) terminal of the battery.

Step 2 - CHARGE CONTROLLER TO PANEL CONNECTION

Connect the solar panel's output power cable to the charge controller's input or "SOLAR PANEL" terminals. Start by connecting the Negative (-) wire of the power cable (usually black) to the charge controller's Negative (-) black terminal. Then, connect the Positive (+) wire of the power cable to the Positive (+) red terminal connection of the controller.

MULTI-PANEL CONNECTION

•Multiple 12V solar panels can be connected together in order to increase the total output of your system. Connect each solar panel's output terminals to the controller input in PARALLEL: Negative(-) to Negative(-), Positive(+) to Positive(+). Make sure the total output current of your system does not exceed 21 Amps.

•If using our award-winning SolarPRO Plug'n'play™ panels, simply connect the plug'n'play corner of one panel to the next using the quick-connect cable provided.

CHARGING STATUS LIGHTS

There are three (3) LED status lights that indicate the charging status of the controller: Red "**ON**", Yellow "**CHARGING**" and Green "**FULL**".

How to read the lights:

1) All LEDs lights are off: Insufficient voltage from solar panel to activate the controller (normal under low light conditions).
2) Red "ON" LED lit (only): Charge controller is activated but not yet charging the battery (normal under low light conditions).
3) Red "ON" and Yellow "CHARGING" LEDs lit: Charge controller is activated and charging the battery.
4) Green "FULL" LED lit: Full charge has been reached, a small "float" charge continues to optimize battery when needed.

BATTERY VOLTAGE TESTER

Press on the red "**PUSH**" button and hold for 2 seconds then let go. There are four (4) lights that indicate voltage of the battery as well as a "REVERSE POLARITY" indicator light. Once the "PUSH" button is activated, the controller will display the voltage status of the battery and reset automatically to "CHARGING" mode after about 15 seconds.

Press the "**PUSH**" button if you wish to reset the controller manually back into charging mode.

BATTERY TYPE SELECTOR

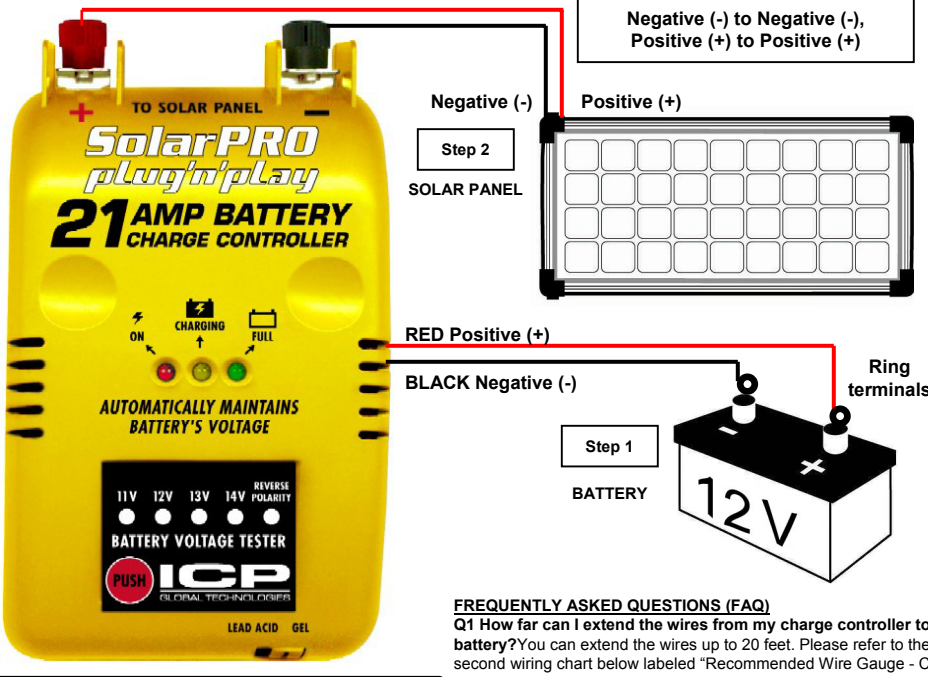
Select between Lead Acid and Gel Cell.

TROUBLESHOOTING

RED 12V Light Flashing: Indicates poor or no battery contact. Inspect connections for any sign of corrosion or loose wires.

RED 'Reverse Polarity' light ON: Indicates incorrect wiring to the battery. For 12 volt DC applications, always connect in parallel: **Negative (-) to Negative (-), Positive (+) to Positive (+).**

Wiring diagram



Recommended Wire Gauge Chart

Recommended Wire Gauge to Limit Voltage Drop to 0.5V

Panel to Charge Controller Wire Length (ft)	Solar Panel Output 50W	75W	100W	150W	200W	225W	300W
0 to 10	12	12	12	12	12	12	12
10 to 20	12	12	12	10	10	10	10
20 to 30	12	12	10	8	8	8	8
30 to 40	12	10	8	8	6	6	6
40 to 50	10	10	8	6	4	4	4
50 to 60	10	8	8	6	4	4	2

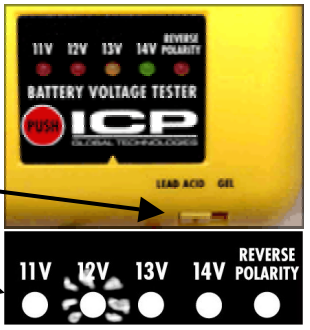
Recommended Wire Gauge to Limit Voltage Drop to 0.3V

Charge Controller to Battery Wire Length (ft)	Solar Panel Output 50W	75W	100W	150W	200W	225W	300W
0 to 5	12	12	12	12	12	12	12
5 to 10	12	12	12	10	10	8	8
10 to 15	12	12	10	8	8	8	6
15 to 20	12	10	10	8	6	6	4

Charging Status Lights



Battery Voltage Tester/Status Lights



FREQUENTLY ASKED QUESTIONS (FAQ)

Q1 How far can I extend the wires from my charge controller to my battery? You can extend the wires up to 20 feet. Please refer to the second wiring chart below labeled "Recommended Wire Gauge - Charge Controller to Battery".

Q2 How do I use the built-in battery voltage tester on my 21 Amp Charge Controller?

First, make sure that the charge controller is properly connected to the battery and the red "ON" LED is lit. Your solar panel does not have to be connected to the charge controller for the voltage tester to work (the ON light will not be lit in this case). Second, press the "PUSH" button down for about 2 seconds, then let go. If your solar panel is connected the yellow "CHARGING" LED will turn off and the voltage lights above the "PUSH" button will light up as follows:

Below 11 Volts: no LED will light up
Between 11 Volts and 11.9V: only the 11V LED will light up
Between 12 Volts and 12.9V: the 11V and 12V LEDs will light up
Between 13 Volts and 13.9V: the 11V, 12V and 13V LEDs will light up
Over 14 Volts: the 11V, 12V, 13V and 14V LEDs will light up

Q3 I have been charging my battery for some time, but the green "FULL" LED has never come on. Is there anything wrong?

No. The green "FULL" LED indicates that the battery has reached the maximum voltage allowable under charging and that the charge controller has cut off the charge from the solar array to the battery. The green "FULL" LED will only come on when the battery voltage reaches 14.4 volts (14.2 volts for gel cell). However, it is not necessary for a battery to reach this voltage to be considered fully charged. In fact, most battery manufacturers consider an open circuit voltage (taken at the battery terminals at least 30 minutes after the charge has stopped) of 12.8V to 13V to be a fully charged battery.

GENERAL SPECIFICATIONS

- **Model Number:** 10018
- **Maximum Input Power:** 315 Watts (21 Amps)
- **Maximum Solar Array Open Circuit Voltage (Voc):** 25 Volts DC
- **Cut-in Voltage:** 13 VDC
- **Cut-out Voltage:** 14.2 VDC (gel cell) / 14.4 VDC (lead acid)
- **Dimensions:** 5.5" x 3.25" x 1.5" / 140 mm x 83 mm x 38 mm
- **Weight:** 0.5 lbs / 230 g
- **Operating Temperature Range:** 14ºF to 104ºF / -10ºC to 40ºC

WARRANTY

Please register online at: **www.icpglobal.com/html/warranty.asp**

ICP Global Technologies (ICP) grants the original purchaser of this product a **limited two (2) year warranty** against any defects of materials or workmanship.

This warranty does not cover installation or costs derived thereof. ICP shall not be responsible for any costs due to removal, shipment, re-installation or any other loss due to warranty servicing. The maximum liability to ICP under this warranty shall not exceed the purchase price of this controller. This warranty does not cover any controller, which has been damaged by misuse, neglect or improper installation. ICP shall not be responsible for any damage to persons or property caused by misuse or improper handling of this product. Some states do not allow exclusion or limitation of accidental or consequential losses so the exclusions may not apply to the purchase. This warranty gives you specific legal rights and you may have other rights, which vary from one state (or province) to another.

If warranty service is required, please contact beforehand the dealer or distributor who sold you the unit. For further assistance, contact ICP's customer service department at customers@icpglobal.com . **Please note that ICP will accept no return without prior authorization.** The original proof of purchase is required for warranty validation.

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