Go Power GP-PC-10/IP68 Potted PWM Solar Controllers User Manual

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Contents

DESCRIPTION

The charge controller protects the battery from being overcharged by the solar energy as well as from being overused by the loads.
The charging characteristics include several stages which include automatic adaptation to the ambient temperatures.

SYSTEM VOLTAGE

This product is intended for use at 12 V and 24 V system voltage

LOW VOLTAGE DISCONNECT FUNCTION

To prevent the battery against over-discharge this function automatically switches off the load output at a battery voltage lower than 11.0 V (12 V systems) or 22.0 V (24 V systems). As soon as the battery reaches a voltage of 12.8 V (12 V systems) or 25.6 V (24 V systems), the load output is switched on again.

REGULATORY INFORMATION

CE RoHS

OPERATION NOTES

WARNING: Indicates high voltage. Use caution when performing task.

⚠ **CAUTION:** Indicates a critical procedure for safe operation.

Note

NOTE: Indicates important information for safe and easy installation and operation. It is important the battery receives a full charge at least weekly. If not, the battery will get permanently damaged. The battery cannot receive a full charge if the loads are too large for the system.

Please read the instructions and warnings in this manual before beginning installation.

Please do not disassemble or attempt to repair Go Power! products. Go Power! charge controllers do not contain user serviceable parts.

WARNINGS & SAFETY INSTRUCTIONS

HIGH VOLTAGE RISKS

Operation of this device may produce a high voltage which could cause severe injuries or death in case of improper installation or operation of this device.

Do not touch any electrical conductors to avoid electrical shock.

Never work on live (energized) electrical equipment.

When working around a battery, do not allow tools to bridge the battery terminals or short circuit any part of the battery.

Use only tools that have insulated handles.

PV modules can generate high DC voltages!

MAINS AND CHARGING CURRENT RISKS

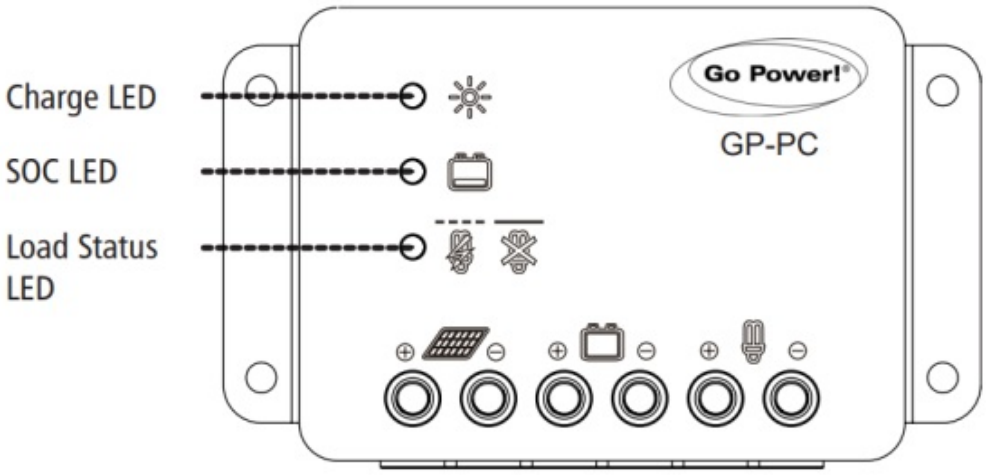
 Make sure the cables are always connected to the correct terminal. An electrical shock can be lethal.

DISPLAY FUNCTIONS

The controller is equipped with 3 LEDs to display the operating status.

In normal operation, the controller shows the charging status, the battery SOC status and the load output status.

CHARGE DISPLAY



Controller connected to battery, night detected (Green LED on)

Controller connected to battery, day detected (Green LED flashes)

No battery detected (Green LED off)

BATTERY SOC DISPLAY

When the battery voltage is indicated as low, it is recommended to use the remaining energy economically.

The charge controller will subsequently turn off the load.

OK (Yellow LED off) Battery voltage > 12V

Low (Yellow LED off) 12V > Battery voltage > 11.5V

Very Low (Yellow LED flashes) 11.5V > Battery voltage > 11V

LOAD STATUS DISPLAY

In case of deep discharge or overload/short circuit of load, the load output is switched off. This is indicated by:

Normal operation (Red LED off)

Low/high voltage disconnect (Red LED on)

Overload or short circuit of load (Red LED flashes).

INSTALLATION INSTRUCTIONS

BEFORE YOU BEGIN

Note

The controller is intended for indoor use only.

Protect the controller from direct sunlight and place it in a dry environment.

The controller and battery must be installed in the same room.

The controller warms up during operation; be sure it is installed on a non-flammable surface.

CONNECT THE CONTROLLER

Please verify that all the cable/wire connections are made properly and well insulated so that no water or humidity can get in. This avoids any bad or loose connections that would result in excessive heating or further damage.

1. *Connect the battery to the charge controller; Positive (+) & Negative (-).
2. Connect the solar modules to the charge controller; Positive (+) & Negative (-).
3. Connect the load to the charge controller; Positive (+) & Negative (-).

⚠ *Go Power! strongly recommends installing an inline fuse as close to the battery terminal as possible. See illustrated steps on the following page.

TECHNICAL DATA

TYPE	**GP-PC-10**	**GP-PC-20**
System Voltage	12/24A (Auto Detection)	
Max Charge/Load Current	10A	20A
Float Charge	13.8/27.6V (77˚F/25˚C)	
Main Charge	14.4/28.8V (77˚F/25˚C), 0.5h (daily)	
Boost Charge	14.4/28.8V (77˚F/25˚C), 2h Activation: Battery Voltage < 12.3/24.6V (at least every 30 days)	
Deep Discharge Protection, Cut-off Voltage Load Reconnect Level	11.0/22.0V 12.8/25.6V	

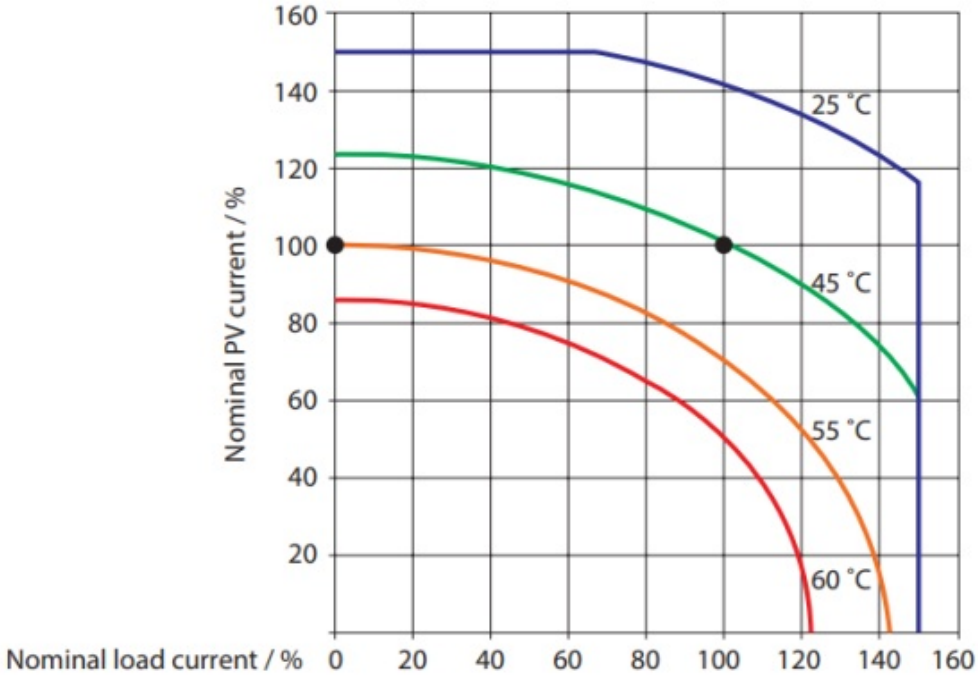
Overvoltage Protection	15.5/31V
Undervoltage Protection	10.5/21V
Max PV Panel Voltage	30/50V
Temperature Compensation	-4.2m V/K per 2V cell
Idle Self-consumption	4mA
Grounding	Negative Ground
Ambient Temperature	-40 to +140˚F (-40 to +60˚C)
Max Elevation	13,000ft (4,000m above sea level)
Battery Type	Lead Acid (GEL, AGM, Flooded)
Max Wire Cross Section	8AWG (10mm2)
Dimensions (W x H x D)	3.94 x 2.4 x 0.79 in (100 x 61 20 mm)
Weight	5.6oz (160g)
Type of Protection	IP68 (casing), IP21 (contacts)
Certifications	CE, RoHS, UL1741, CSA C22.2 No. 107.1-01

SAFETY FEATURES

SAFETY FEATURES	PV TERMINALS	BATTERY TERMINALS	LOAD TERMINALS
Reverse Polarity	Protected	Protected: Red LED on	Protected (1)
Short Circuit (2)	Protected	Protected (3)	Switches off immediately
Overcurrent	—	—	Switches off with a delay (4)
Reverse Current	Protected	—	—
Overvoltage	50V	31V	Switches off above 15.5/3 1V
Undervoltage	—	—	Switches off
Overtemperature	Reduces the charging current if overtemperature occurs and switches off the load i f the temperature reaches a higher level.		

1. Controller can protect itself, but any connected loadsmight be damaged.
2. Short circuit: >4x – 6x nominal current
3. Battery must be protected by a fuse, or it might be permanently damaged in case of short circuit.
4. >200% nominal current disconnect with 3s delay.

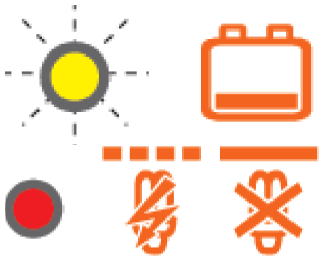
GP-PC SOA (SAFE OPERATING AREA)



ERROR CODES

WARNING

The combination of multiple error conditions may cause damage to the controller. Always remove the fault condition before you begin connecting the controller!.

Error	Display	Reason	Remedy
Loads are not supplie	 Red Led on	Battery is low	Load Will Reconnects as soon as battery is recharg ed.
	 Red LED flashing	Overcurrent/short circuit o f loads/over temperature protect	Switch off all loads. Remo ve short circuit. Controller will switch on load automa tically after max 1 minute
	 Red LED on and yellow L ED fast flashing	Battery Voltage > 15.5/31 V	Check if other sources ov er charge the battery. If not, controller is damaged
		Battery cables or battery f use damaged, battery sho ws high internal resistanc e	Check battery wires, fuse s and battery
Battery is empty after a s hort time	 Red LED on	Battery does not have suff icient capacity	Replace battery or increase battery bank
No battery connected	 Green LED off	No battery connected	Connect batteries
Battery reverse poalrity	 Red LED on	Battery is connected with reverse polarity	Reconnect with correct po larity

LIABILITY EXCLUSION

The manufacturer shall not be liable for damages caused by use other than as intended and instructed in this manual. The manufacturer shall not be liable if there has been service or repair carried out by any unauthorized person, unusual use, wrong installation, or bad system design.

WARRANTY STATEMENT

The Go Power! warranty is valid against defects in materials and workmanship for the specific product warranty period. It is not valid against defects resulting from, but not limited to:

- Misuse and/or abuse, neglect or accident
- Exceeding the unit's design limits
- Improper installation, including, but not limited to, improper environmental protection and improper hook-up
- Acts of God, including lightning, floods, earthquakes, fire and high winds
- Damage in handling, including damage encountered during shipment.

A warranty shall be considered void if the warranted product is in any way opened or altered. The warranty will be void if any eyelet, rivets, or other fasteners used to seal the unit are removed or altered, or if the unit's serial number is in any way removed, altered, replaced, defaced, or rendered illegible.

WARRANTY RETURN PROCEDURE

Before contacting Go Power!'s customer service department, please read the "frequently asked questions" section of our website to troubleshoot the problem. If trouble persists:

1. Email Go Power!™ Technical Support team at **techsupport@gpelectric.com**

   or
2. Return defective product to place of purchase schematics or replacement parts for any of its electronic products.

Unless approved by Go Power! management, all product shipped collect to Go Power! will be refused. Test items or items that are not under warranty, or units that are not defective, will be charged a minimum bench charge of ($50.00 US) plus taxes and shipping. A 15% restocking charge will be applied on goods returned and accepted as "new" stock.

An RMA number (Return Materials Authorization number) from Go Power! Customer Service is required prior to returning any Go Power! products. Go Power! reserves the right to refuse any items sent to Go Power! without an associated RMA number. To obtain an RMA number, please contact: **customersupport@gpelectric.com** .

OUT OF WARRANTY

Go Power! electronic products are non-repairable, Go Power! does not perform repairs on its products nor does it contract out those repairs to a third party. Go Power! does not supply schematics or replacement parts for any of its electronic products.

Customer Support

Worldwide Technical Support and Product Information **gpelectric.com**
Go Power! Dometic
201-710 Redbrick Street Victoria, BC, V8T 5J3
Tel: 1.866.247.6527

Documents / Resources

	Go Power GP-PC-10/IP68 Potted PWM Solar Controllers [pdf] User Manual GP-PC-10 IP68, GP-PC-20 IP68, Potted PWM Solar Controllers, GP-PC-10 IP68 Potted PWM Solar Controllers, GP-PC Series