

Nominal voltage:  
Charging current (solar panels):

max. load:

max. power use:

Temperature sensor:

Final charging voltage:

normal

gassing deactivated

temperature compensation

Deep-discharge disconnection:

constant

reset voltage

Gas regulation:

gassing activation voltage

final gassing voltage

temperature compensation

Fuse:

Temperature range:

Measurements:

Weight:

12/24V - 8 A

12/24 V

8 A

8 A

2-5 mA

in-built

13,7 V / 27,4 V

14,1 V / 28,2 V

-4 mA/K/cell

11,1 V / 22,2 V

12,6 V / 25,2 V

12,4 V / 24,8 V

14,5 V / 29 V

-3 mA/K/cell

10 A

-25°C - +50°C

98 x 88 x 35 mm

120 g

12/24V - 6 A

12/24V

6 A

6 A

2-5 mA

in-built

13,7 V / 27,4 V

14,1 V / 28,2 V

-4 mA/K/cell

11,1 V / 22,2 V

12,6 V / 25,2 V

12,4 V / 24,8 V

14,5 V / 29 V

-3 mA/K/cell

6,3 A

-25°C - +50°C

98 x 88 x 35 mm

120 g

## Delivered:

Solar Battery Charger Unit with Operating Instruction



## GB Environmental protection information

When no longer in use, this product may not be deposited in the normal household waste but should be brought to a collection point for the recycling of electrical and electronic appliances. A symbol on the product, the operating instructions or the packaging draws attention to this.

The materials are recyclable as marked. By re-use, recycling or another form of using old appliances you are making an important contribution towards the protection of the environment. Please ask your local authorities for the appropriate disposal point.

**PSX SOLAR BATTERY CHARGER UNITS**      **12/24V - 8A**      **model nr: 199**  
**12/24V - 6A**      **model nr: 182**

- with automatic 12/24V switching
- Dynamic protection against battery deep-discharging
- Gas-formation control (gas control)
- Temperature compensated charging
- SMD construction

Dear Customer,

Thanks you for buying our product. You have bought one of the most powerful, compact and reliable units of its class. Please read the operating instructions carefully before use.

## WARNING!!! Safety Instructions!!!

- Do not use the unit:  
In places which are dusty, damp. In a high humidity area (over 80% rel. humidity), at temperatures above 50°C. In areas containing inflammable materials (liquids/solvents, gas).
- Do not immerse in water.
- Use only in closed, dry areas.
- Should the unit fail to operate, or shows signs of not operating properly unplug immediately and make sure that the unit is not put into further operation. Do not use the unit when visible signs of damage - due to transport or inadequate storage are noticeable.
- To prevent the risk of explosion by overcharging, install the battery in a well-ventilated place.
- When recharging sealed lead acid batteries, switch off the gas-control (see factory settings).
- Use only solar cells as power source.
- Follow installation instructions strictly when connecting the unit! The unit should be disconnected in reverse order (see installation procedures).
- To prevent a short-circuit between Solar charger unit and battery, install a fuse on the positive terminal/pole.
- Equipment, which on account of its function must not be switched off by means of load disconnection (e.g. navigation lights), must be connected directly to the battery and fused.

The use of lead-batteries is common for the storage of solar energy (photovoltaic solar systems). Lead-batteries require protection against overcharging and deep discharging. This unit satisfies both requirements. Via the automatic 12/24V switching, the solar charging regulator is adapted to the installed system.

## 12/24 V Chargeover:

The unit can be used with both 12 V and 24 V photovoltaic solar systems. System equalisation takes place automatically. All system components (pv modules, battery, dc load) must be in the same voltage range (either 12 or 24V).

### Protection against battery deep discharging

Lead-Batteries need to be protected against being deep-discharged, otherwise damage can occur to the battery cells. The solar battery charger unit protects lead-batteries from deep discharging by disconnecting the DC loads when the battery's voltage has decreased to a certain voltage level. As soon as the batteries are recharged by the solar cells, the load is automatically reconnected.

### Protection against overcharging

Exceeding the final charging voltage (13,7V DC) leads to the formation of gas, which damages the batteries. The amount of gas depends on the temperature. The inbuilt temperature-sensor automatically regulates the final charging voltage in accordance with the temperature in the area of use/operation. The battery is not fully charged when the final charging voltage is reached. The charging current should not be completely switched off, instead reduced, so that the final charging voltage is not exceeded. This is accomplished by the Solar Charger Unit. The charging process - „IU-charging“ recharges the batteries evenly and quickly. The „IU-charging“ is achieved by a very quick temporary short-circuiting procedure - also known as the pulse-width modulation (PWM) shunt procedure!

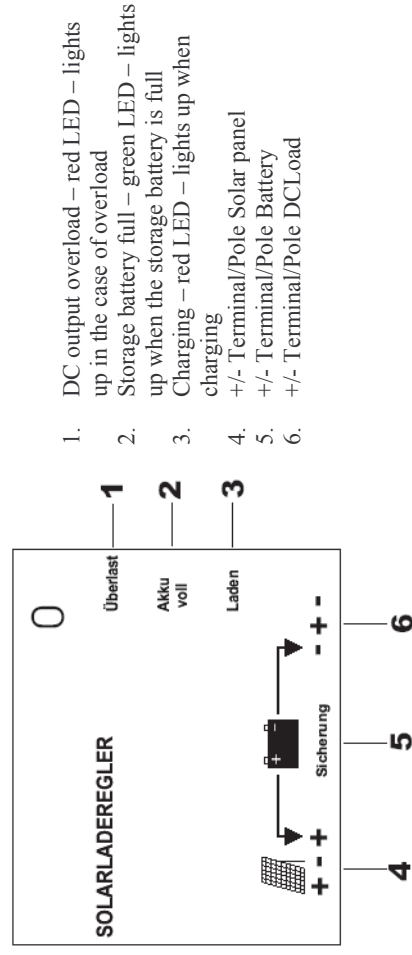
### Gas control

An over-extended use of lead-batteries without a controlled gas-formation can lead to the development of damaging lead-sulphate layers. The Solar Charger Unit controls the gas-formation and therefore prevents the development of lead-sulphate. This process depends upon the temperature and is regulated by the in-built temperature-sensor. Warning: While recharging and using sealed lead-acid (Gel) batteries or while charging any batteries on boats, the gas-control must be deactivated. (See Factory settings)

### Temperature compensation

The temperature compensator circuitry adjusts and regulates the final charging voltage and gas-formation of the batteries in accordance with the temperature in area of use. The sensor is built-in.

### Connection and Operating-elements



### Warning:

Should the dc output terminals/poles be reversely connected to the load, can units >10A fused be damaged. Each individual load device must be fused separately.

### Factory settings

Upon delivery is the Solar Charger Unit installed as follows:

- Gas control active (see Gas control)

The above functions can be turned off at any time.

### Warning!!!

When recharging *sealed lead acid batteries* make sure that gas control is deactivated!

Make sure that the 12 / 24V selector switch is in the correct position.

De-activate as follows:

### Gas control de-activate

1. Remove the 2 screws on the solar charger unit and carefully remove cover.
2. Look for a U-shape wire marked as "JP1" on the printed circuit board. Carefully clip this wire and make sure that the two parts of the wire are no more in contact. Now the gas-control is deactivated. Re-activation is only possible by soldering the two parts together again.

### Installation - Warning: Make sure of the right polarity!!!

The solar charger unit should be placed in close proximity to the battery and be sufficiently protected against the weather. Take care to place the battery in a well-ventilated place. To guarantee that the unit functions properly it must be connected to the solar generator, the lead-battery and the load.

Each part of the system - solar generator, lead battery, DC load and solar charger unit - should have the same nominal operating voltage (12 or 24V). Please check each component before installation, when in doubt, contact a Specialist! Take careful attention of the following installation instructions:

1. Connect the battery to the corresponding terminals on the solar charger unit. To prevent voltage losses in the cabling, please use min. 2,5 - 4 mm<sup>2</sup> cable diameter. Only when an additional "short-circuit-protection" device is already installed, can the battery be operated without a fuse. Otherwise must a fuse be connected to the battery -terminal/pole in order to prevent possible short circuit of the battery cables. Both components must be installed close together in the same room.
2. Connect the solar module to the corresponding terminals on the solar charger.
3. Connect the load to the solar charger unit. The connection diagrams are printed on the solar charger.

### The Solar System fails to function - possible reasons.

Battery terminals are reverse connected: The fuse has blown, replace with a same type.

Module terminals are reverse connected: Avoid at all costs!!!

Load terminals are reverse connected: The equipment can be seriously damaged before the fuse blows. Batteries contain considerable amounts of electrical energy. A short-circuit can result in a large build-up of heat leading to FIRE!