

- **Battery deep discharge protection**
- **Light sensor**
- **0 ... 5 hour timer**

Dear Customer,

Thank you for buying our product. You have bought one of the most powerful, compact and reliable solar charge controllers 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 show 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.
- Use only solar cells as power source.
- To prevent a short-circuit between solar charger unit and battery, install a fuse on the positive battery 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.
- When recharging sealed lead acid batteries, switch off the gas-control (see Factory settings).
- Follow installation instructions strictly when connecting the unit!
- The unit should be disconnected in reverse order (see installation procedures).

DESCRIPTION OF OPERATION

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. The 12/24 V selector switch enables the solar battery charger unit to operate with the installed solar system.

The PSR10-LS solar charge controller switches 12 or 24V DC loads on (such as lights, pumps and motors) automatically at dusk. The operation time of the DC loads are controlled by a built-in timer. Both the light sensitivity and the operation time can be adjusted continuously (with trimmer potentiometers), hence adjusting the unit to your specific requirements. The light sensor can individually be extended with a piece of cable. The PSR10-LS unit can also be used as an ordinary solar charge controller.

12/24 V selector switch (Jumper)

The unit can be used with both 12 V and 24 V photovoltaic solar systems. All system components (PV modules, batteries, inverter, DC loads) must have the same voltage (12 or 24V) rating!

Protection against deep-discharging

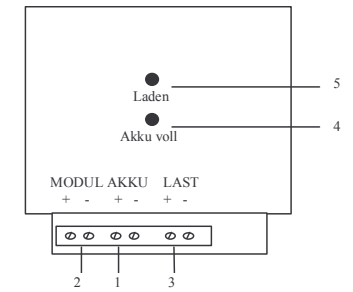
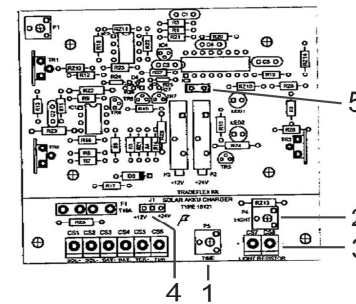
Lead-Batteries need to be protected against deep discharging, otherwise damage can occur to the battery cells. The solar battery charger unit protects lead-batteries from deep discharging by disconnecting the DC loads when the battery voltage drops below the factory-set voltage level. As soon as the batteries are recharged by the solar panels, the load is automatically reconnected.

Protection against overcharging

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.

Connection and Operating-elements

1. +/- Terminal/Pole lead-battery
2. +/- Terminal/Pole solar module
3. +/- Terminal/Pole load
4. Green LED: lead-battery fully charged
5. Red LED: lead-battery is being charged



1. Timer (trimmer pot., between 0 ... 5 hours adjustable)
2. Light sensitivity (trimmer)
3. Light sensor terminals (cable can be extended up to 10m)
4. 12 / 24V selector (jumper)
5. Timer switch-off (jumper)

Using the PSR10-LS unit as an ordinary solar charge controller, you should first:

1. Pull off the jumper beneath the cover (5)
2. Remove the light sensor from the terminals

Installation - Warning: Make sure that the Terminals/Polarities correspond!!!

The solar charger unit should be placed in proximity to the battery and be sufficiently protected against the weather. Make sure 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 operational voltage. Please check each component before installation, when in doubt contact a specialist! When placing the light sensor separately by using a piece of cable, make sure to choose a dry installation spot for the sensor. Take careful attention of the following installation instructions:

1. Connect the battery to the corresponding terminals on the solar charger unit. To prevent voltage drop in the cables, the use of min. 4 mm² cable diameter is recommended (up to 5m). Only when a separate "short-circuit-protection" is installed, can the battery be operated without a fuse. Otherwise a fuse must be connected to the battery + terminal/pole in order to prevent a short circuit in the wiring connected to the charge controller. Both components must be installed close together in the same room.
2. Connect the solar module to the corresponding terminals of the solar charger.
3. Connect the load to the solar charger unit. The connection-terminals are printed on the solar charger housing.
4. Adjust light sensitivity and timer when required. Turning the corresponding trimmer potentiometers clock-wise will adjust less light sensitivity (2) and adjust longer setting time (1).

Specifications

Nominal voltage:	12 / 24 V
PV module current:	10 A
DC load current:	10 A
Max. power use:	3 mA
Final charging voltage cut-off:	13,8 V / 27,6 V
Battery deep discharge protection:	
Disconnection voltage:	10,5 V / 21 V
Reconnection voltage:	12,5 V / 25 V
Temperature range:	-25°C up to +50°C
Dimensions (L × W × H):	95 x 95 x 35 mm
Weight:	240 g

Delivered: Solar Battery Charger Unit with Operating Instruction; photo-resistor