

VOTRONIC

Installation and Operating Manual

Solar Controller SR 100 Digital

No. 3028



Please read the operating manual thoroughly prior to use, connection and start-up of the solar controller.

The VOTRONIC Solar Controller SR 100 had been specially adapted to the requirements of the range camper, caravan and boat, but it is also suitable for other self-contained solar systems. The unit will be connected between solar module and solar battery, it is designed for 12 Volt systems and it works maintenance-free. An operation in parallel and floating mode with (automatic) mains chargers, wind power systems or petrol-driven generators at the same battery is possible without any problems.

Features:

- Careful battery charging by continuous operation as pulse-width modulated shunt switching controller.
- Operation with lead-acid or lead-gel batteries with a minimum capacity from 12 V / 30 Ah.
- Least own electricity consumption in quiescent condition of only 2 mA (0.002 Amperes).
- The integrated adapted on-board mains suppression filter ensures unproblematic parallel operation with the dynamo of the vehicle, mains chargers, wind- and petrol-driven generators etc. at one battery.
- Protection against reverse battery and overload by built-in fuse.

Functions:

1. Reverse Current Protection:

The reverse current protection avoids discharge of the battery by the solar module in case of insufficient solar power (such as during the night). The light-emitting diode (LED) "Charge" is extinguished. As soon as the solar power is sufficient, the LED "Charge" will be lighting and charging of the battery will be started.

2. Overcharge protection:

With increasing battery capacity, the solar controller effects an automatic limitation of the battery charging voltage to the cut-off voltage and decreases the average charging current down to trickle charge current. This process is indicated by the LED "Full", which will be glowing dimly first and which becomes increasingly brighter after that, while the brightness of the LED "Charge" will be reduced more and more. If the battery voltage is reduced by current consumption, automatic charging will be effected immediately, which is indicated by the two light-emitting diodes. Thus, the battery is always kept on the best possible charging state.

3. Temperature Control:

Optimum charging is ensured by the temperature sensor being integrated in the SR 100, which effects an automatic adaptation of the cut-off voltage of the battery to the prevailing temperature.

4. Indicator lamps "Full" and "Charge":

These light-emitting diodes (LED) are indicating the current operating state by varying brightness.



In case of unattended operation, the battery might be totally discharged due to too many consumers and lack of solar power. We recommend protecting the battery by means of the following appliances:

Votronic	Battery Protector 40	(Rating 12 V / 40 A)	Order No. 3075
Votronic	Battery Protector 100	(Rating 12 V / 100 A)	Order No. 3078



Open acid batteries and batteries being „maintenance-free according to EN / DIN“:
Check the acid level periodically!!



Recharge totally discharged batteries immediately!
Store only fully charged batteries and recharge them periodically!

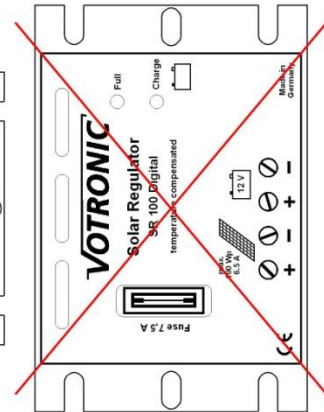
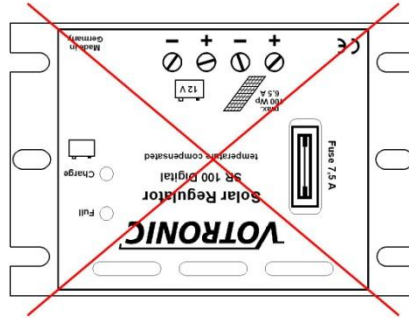
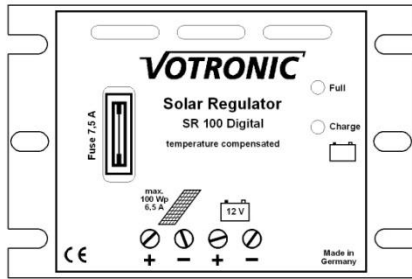
Installation:

The controller is mounted at the two casing flanges **near the battery** to ensure that the length of the connection cable to the battery is as short as possible. It must always be protected from direct sunlight and humidity. Always ensure sufficient ventilation of the unit (also in the wider environment). **Never "wrap up" the unit!**



The solar controller SR 100 should be installed on an even, horizontal or vertical surface. If being installed vertically, always observe the correct fitting position. Any other fitting position is not admissible!

Vertical fitting position of the controller:



Start-up:



ALWAYS DISCONNECT THE POWER SUPPLY TO THE BATTERY PRIOR TO WORKING ON THE ELECTRIC SYSTEM TO AVOID SHORT-CIRCUITS!

The correct polarity (+ and -) of solar module and battery must imperatively be observed (see connection plan)!

1. Withdraw the unit fuse.
2. Establish the connection to the battery.
3. Establish the connection to the solar module.
4. Reinsert the unit fuse (car fuse 7.5 A (brown) into the fuse holder of the SR 100).



If several small solar panels are used, they are connected in parallel, i. e. the plus connections (+) are connected to each other and the minus connections (-) as well. Please observe the connection plan.

**Now the solar controller is ready for operation.
Further actions or maintenance of the unit are not required.**

Technical Data:

Nominal Voltage:	12 V (Lead Battery)
Cut-off Voltage:	14.2 V @ 20-25 °C (light-emitting diode "Full" is lighting)
Capacity of Solar Module (recommended / max.):	12-100 Wp / 100 Wp
Capacity of Solar Module (recommended/max.):	0 - 6.5 A / 6.5 A
Max. Voltage Solar Module:	26 V
Own Electricity Consumption:	2 mA (0.002 A) in quiescent condition
Dimensions:	90 x 60 x 29 mm
Weight:	60 g



Safety Regulations and Appropriate Application:

The solar controller has been designed according to the valid safety regulations.

Appropriate application is restricted to:

1. **Charging of lead-gel or lead-acid batteries of the indicated nominal voltage and the supply of the consumers being connected to these batteries in fixed installed systems.**
 2. **With solar modules up to maximum capacity (Wp).**
 3. **The indicated cable cross sections at the charging ports and at the module input.**
 4. **With fuses of the indicated capacity near the battery to protect the cabling between battery and charging ports.**
 5. **Technically faultless condition.**
 6. **Installation in a well-ventilated room, protected from rain, humidity, dust, aggressive battery gas, as well as in an environment being free from condensation water.**
- **Never use the unit at locations where the risk of gas or dust explosion exists!**
 - **Never operate the controller without battery.**
 - Cables are always to be laid in such a way that damage is excluded. Observe to fasten them tightly.
 - **The connection cables of the solar modules have always to be lead from below to the solar controller to ensure that penetrating humidity cannot reach the controller in case of failure, and to avoid destruction of the controller.**
 - Never lay 12 V (24 V) cables and 230 V mains supply cables into the same cable conduit (empty conduit).
 - Check live cables or leads periodically for insulation faults, points of break or loosened connections. Occurring defects must be remedied immediately.
 - The unit is to be disconnected from any connection prior to execution of electrically welding or work on the electric system.
 - If the non-commercial end-user is not able to recognize the characteristic values being valid for a unit or the regulations to be observed, a specialist is always to be consulted.
 - The user/buyer is obliged to observe any construction and safety regulations.
 - **Except for the fuse, the unit is not equipped with parts, which can be replaced by the user. Always use replacement car fuses of the indicated capacity!**
 - **Keep children away from the solar controller and the batteries.**
 - Observe the safety regulations of the battery manufacturer.
 - Deaerate the battery room. Protect the unit from aggressive battery gases.
 - Ensure **sufficient ventilation** of unit and module!
 - Strictly observe the instructions of the manufacturer for installation of the solar module.
 - Non-observance may result in injury or material damage.
 - The warranty period is 24 months from the purchase date (against presentation of the sales slip or invoice).
 - The warranty will be void in case of any inappropriate utilisation of the unit, if it is used beyond the technical specification, in case of improper operation or external intervention. We do not assume any liability for any damage resulting hereof. The liability exclusion is extended to any service being executed by third, which has not been ordered by us in writing. Service is to be effected exclusively by VOTRONIC Lauterbach.



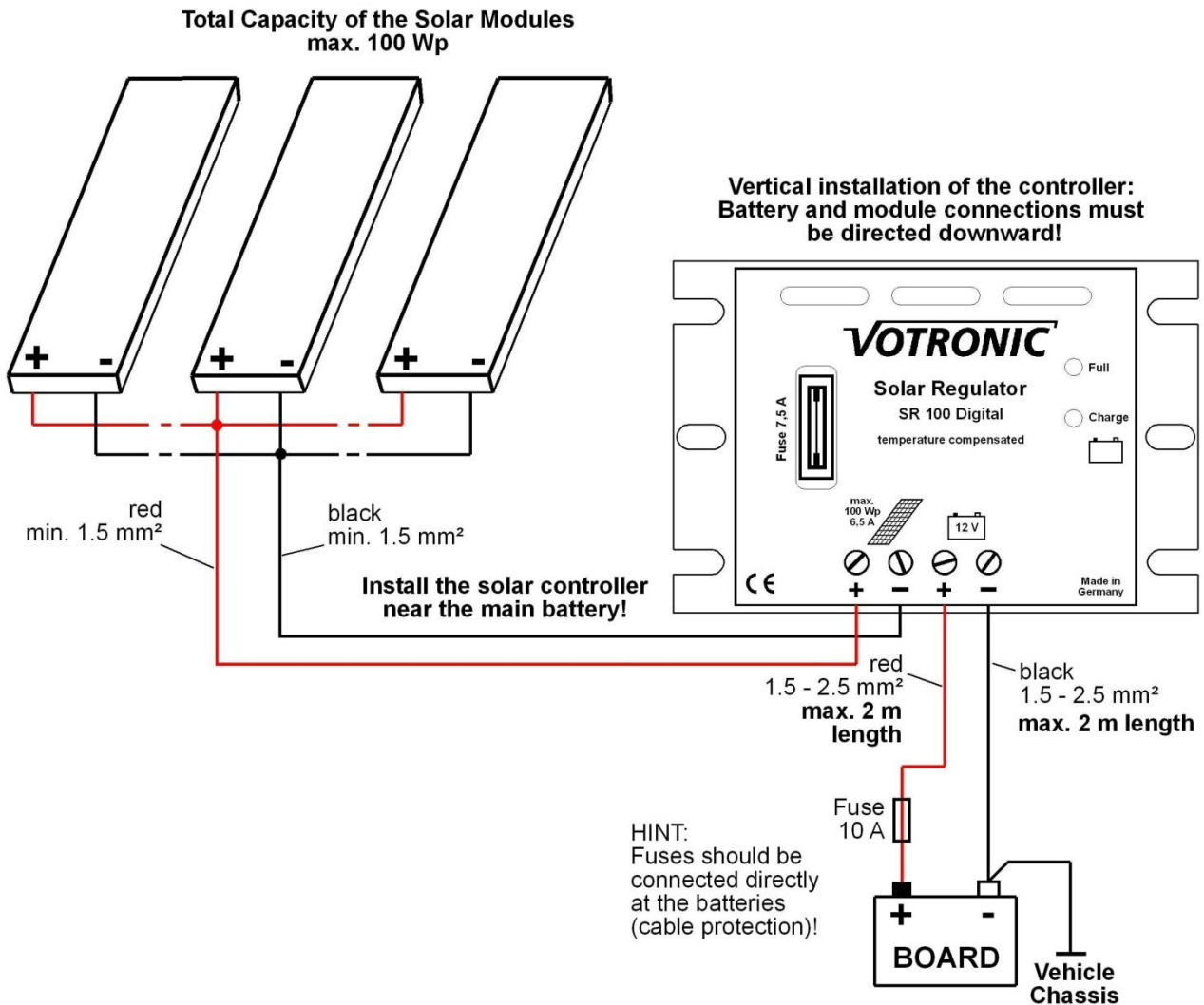
Declaration of Conformity:

According to the stipulations of the regulations 2006/95/EG, 2004/108/EG, 95/54/EG this product corresponds to the following standards or standardized documents: EN55014; EN55022 B; DIN14685; DIN40839-1; EN61000-4-2; EN61000-4-3; EN 61000-4-4.

Quality Management
System

DIN EN ISO 9001

Connection Plan 12 V:



Observe:

1. Wrong polarity of the battery, unit overload etc. might result in damage of the unit or releases the unit fuse.
Only use car flat plug fuses 7.5 A (code colour brown) for replacement!
2. Never operate the controller without battery.

Delivery Scope:

- Solar Controller
- Installation and Operating Manual

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