VOTRONIC

Installation and Operating Manual

LCD Solar Computer S No. 1250

Precise display of all important values, adapted to VOTRONIC SR- and MPP-solar controllers 12 V and 24 V.

The following values are displayed:

- Charging current (A)
- Solar battery voltage (V)
- Solar power (W)
- Solar current meter (Ah and Wh)

The LCD Solar Computer S has been particularly designed for operation in connection with all VOTRONIC solar controllers since serial number 13V01.0000. A large display with time-controlled illumination ensures excellent legibility. The solar charging current, the solar power and the voltage of the solar battery are displayed. The instantaneous capacity of the solar modules is constantly displayed as bar graph in steps of 10 % at the margin of the display.
The current meter function counts the "yielded" ampere hours and watt hours, thus simplifying the control of the solar system. The counter values can be reset to zero at any time and at discretion.

The dimensions of the unit are perfectly adapted to the VOTRONIC modular system. The VOTRONIC modular system includes the tank display units (fresh and sewage water, as well as feces), the LCD series (battery computer, voltmeter and thermometer), as well as the switch and fuse panels.

Please read the mounting instructions and operating manual including the safety regulations completely prior to starting connection and start-up.

The included control cable is specifically designed and tested for this application. It has to be used necessarily for a proper function of the device. Using a seemingly similar cable can cause malfunction, which is not covered by guaranty.

Installation and Connection

The small mounting depth (approx. 27 mm) of the electronic system allows flush mounting into furniture boards to ensure, that an optimum installation place can always be chosen. The clear opening of the cutout is min. 71 x 66 mm to ensure safe alignment of the front panel. Please use the delivered drilling jig, which has been designed to consider combination with further display panels.

If possible, the rear cutout opening should be covered with electrically nonconducting material to ensure efficient protection of the electronic system and full utilization of the storage space, which might be located behind.

The delivered control cable of 5 m length is used to connect the display unit to the VOTRONIC Solar Controller (connection "Solar Display"). The connection is executed ready to be plugged in, and the cable should be laid according to the safety instructions.

Now the unit is ready for operation.

If the length of the control cable is not sufficient for connection of the connection unit, the cable extension of 5 m length, order No. 2005, being available as accessory can be used. The total cable length is then 10 m.

Initial Start-up:

Connect the solar controller according to the instructions to be ready for operation, and make the plug-type connection between display and VOTRONIC Solar Controller. Now, also the Solar Computer is ready for operation.

Operation

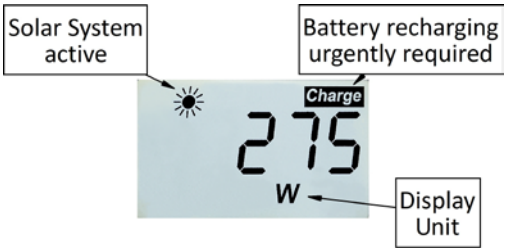
Button 1: Next page of Display.
Adjustment of illumination (3 s)

Button 2: Previous page of Display.
Adjustment of illumination (3 s)

Button 3: Display on/off.
Reset (3 s)

Display Contrast

The background illumination can be adapted in steps of 10 % according to the requirements. For this the Display has to show the battery voltage. Pressing the right button for 3 seconds activates the adjustment of the backlight. Each further brief press of the right button changes the brightness. The setting is automatically saved after a short time and the display will return to normal operation.

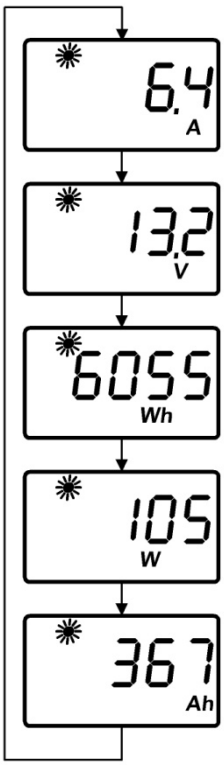


Activation, Deactivation

The solar controller supplies current to the solar computer. The unit is optimized for extremely current saving operation and offers three operation modes.

Stand-by: During stand-by mode the display is empty. Only the "Charge" symbol will be displayed in case of discharged battery and the sun symbol in case of activated solar controller.

Display with and without illumination: As soon as the solar computer is operated, the display illumination will be switched-on and will remain activated for 3 minutes. If there is no operation during this time, the illumination will be switched-off automatically. The display continues showing the same data. The display illumination is reactivated by pressing any button. The proper function of the button will be effected by pressing the button a second time.



Solar Displays

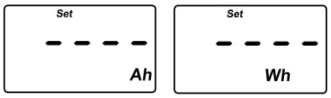
Use the button 1 to change to the next page of the measured and displayed values of the solar system. The buttons 1 or 2 are used to change to the next or previous page of the display.

Current: The instantaneous current rate (Amperes "A") of the solar system is displayed.

Voltage: The voltage rate (Volts "V") of the solar battery is displayed.

Solar Power Counter: The power being generated by the solar system is counted continuously and will be displayed as ampere-hours (Ah), as well as watt-hours (Wh). If the value 9999 Wh is exceeded, the display changes to kWh.

The counter readings can be separately reset to zero at any time. If the corresponding counter value is displayed, the reset can be effected by pressing the button 3 for more than 3 seconds until (Set ----) is displayed.



Power: The instantaneous Power (Watts "W") of the solar system is displayed.

Operating State Solar Controller (Sun Symbol):

Depending on the solar controller, the operating state of the solar controller is indicated by the sun symbol.

- No sun: Solar power is not at disposal; the solar controller is in stand-by mode.
- Full sun: Solar power is at disposal, maximum possible charge
- Flashing sun: The controller limits the current because of a full or almost full battery to avoid battery overcharging. For determination of the possible solar power, the battery must be discharged by a consumer (such as lighting) until the solar controller supplies full power, and the sun symbol stops flashing.

General Information

Cleaning:
We recommend to use a damp microfibre cloth with pure water or, if required, with water with a few soap.
Take care that no liquid flows along the display screen or the edges of the front panel!

Never use solvents, aggressive household cleaners, and scratching or abrasive agents or objects to clean the front panel and particularly the display itself.

Trouble-Shooting:

No display at all:

a) Reverse battery, fuse released Check!
b) Battery is totally discharged, below 7 volts Recharge immediately!
c) Connection cable is interrupted, damaged, or it is not inserted: Check!

"Hieroglyphs" on the display:

a) The internal check programs of the unit have found an (memory) error:
Withdraw the cable connector for 10 seconds. After that, an initial start-up is to be executed as described above.

Technical Data:

System:

Nominal Voltage	12 V and 24 V
Operating Voltage Range	8...32 V (of Solar Controller)
Current Consumption	3...30 mA, depending on illumination

Display Unit (LCD Display):

Technology	LC Display with specific segments
Representation Surface	49 x 28 mm
Illumination	white LED

Dimensions	80 x 85 x 24 mm
Assembly Dimensions	approx. 66 x 72 mm
Weight	approx. 55 g

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Declaration of Conformity:
In accordance with the provisions of the statutory requirements and the relevant directives, Electrical Equipment (Safety) Regulations 2016, Electromagnetic Compatibility Regulations 2016, The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012 this product complies with the following standards or normative documents:
BS EN55014-1; BS EN61000-6-1; BS EN61000-4-2; BS EN61000-4-3; BS EN61000-4-4; BS EN62368-1; BS EN50498, BS EN IEC 63000.

Safety Instructions:

Safety Regulations and Appropriate Application:
The VOTRONIC LCD Solar Computer S has been designed according to the valid safety regulations.

Appropriate application is restricted to:

1. **Use in combination with a VOTRONIC Solar Controller with a nominal voltage of 12 V or 24 V.**
2. **Technically faultless condition.**
3. **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.**
4. **With a rear insulating cover of the display unit.**

- **Never use the unit at locations where the risk of gas or dust explosion exists!**
- Open-air operation of the unit is not allowed.
- Cables are always to be laid in such a way that damage is excluded. Observe to fasten them tightly.
- 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 user is not able to draw from the manual, which characteristic values are valid for a unit or which regulations are to be observed, a specialist is to be consulted.
- The user/buyer is obliged to observe any construction and safety regulations.
- **The unit is not equipped with parts, which can be replaced by the user.**
- Non-observance may result in injury or material damage.
- **Never use solvents or aggressive household cleaners for cleaning of the display!**
- 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:
In accordance with the provisions of Directives 2014/35/EU, 2014/30/EU, 2009/19/EC, this product complies with the following standards or normative documents:
EN55014-1; ~~EN55022 B;~~ EN61000-6-1; EN61000-4-2; EN61000-4-3; EN61000-4-4; EN62368-1; EN50498.

The product must not be disposed of in the household waste.

The product is RoHS compliant. It complies with the directive 2015/863/EU for Reduction of Hazardous Substances in electrical and electronic equipment.

Quality Management System
DIN EN ISO 9001

Recycling:
At the end of its useful life, you can send us this device for professional disposal:
You can find more information about this on our website at **www.votronic.de/recycling**

Delivery Scope:
1 LCD Solar Computer S
1 Control Cable, Length 5 m
4 Fastening Screws
1 Installation and Operating Manual
1 Drilling Jig

Available Accessories:

Control Cable Extension, 5 m Length	Order No. 2005
Casing S	Order No. 2024

Subject to misprints, errors and technical modification without notice.

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