

# VOTRONIC

## Installation and Operating Manual

### LCD Solar Computer S

No. 1250

Precise display of all important values, adapted to all Votronic solar controllers.

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, ammeter 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)

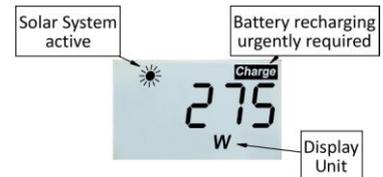


Button 3: Display on/off.  
Reset (3 s)

Reset 3s

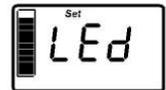
### Display Contrast / Reading Angle

The display is a high-contrast LC display. Depending on the angle of view, the contrast of the display might be too weak or too high (hidden characters are visible). The contrast can be quickly adapted by pressing the buttons 1 and 3 (increase contrast) simultaneously, or by pressing the buttons 2 and 3 (reduce contrast) simultaneously.



### Adjustment of the Background Illumination:

The background illumination can be adapted from bright to completely dark in steps of 10 % according to the requirements. Press any arrow button for 3 seconds. After that, the arrow buttons 1 or 2 are used to increase or reduce the brightness. Save the adjustment by pressing button 3.



### 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.

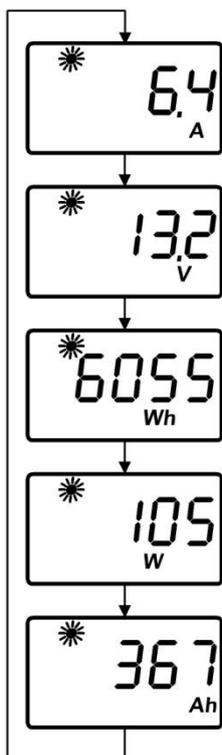
**Voltage:** The voltage rate (Volts "V") of the solar battery is displayed.

**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.

Function of Votronic controllers MPP 150, MPP 225, MPP 320, MPP 324, MPP 484:

- No sun: Solar power is not at disposal; the solar controller is in stand-by mode.
- Flashing sun: Proper operation of the controller. Control to "Maximum Power Point" (MPP).

## 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:

<b>System:</b>	
Nominal Voltage:	12 V and 24 V
Operating Voltage Range:	8...32 V (of Solar Controller)
Current Consumption:	3...30 mA, depending on illumination
<b>Display Unit (LCD Display):</b>	
Technology:	LC Display with specific segments
Representation Surface:	49 x 28 mm
Illumination:	white LED
Dimensions (mm):	80 x 85 x 24
Assembly Dimensions (mm):	approx. 66 x 72
Weight:	approx. 55 g

## Safety Instructions:



### Safety Regulations and Appropriate Application:

The VOTRONIC LCD Solar Computer 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 D-36341Lauterbach.



Disposal of the product in the normal household waste is not allowed.



The product conforms to RoHS. Thus, it complies with the directives for Reduction of Hazardous Substances in Electrical and Electronic Equipment.

Quality Management System  
DIN EN ISO 9001

### 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.

#### Delivery Scope:

- 1 ea. LCD Solar Computer S
- 1 ea. Control Cable, Length 5 m
- 4 ea. Fastening Screws
- 1 ea. Operating Manual
- 1 ea. Drilling Jig

#### Available Accessories:

- Control Cable Extension, 5 m Length      Order No. 2005
- Casing S      Order No. 2014

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