

Installation and Operating Manual

LCD Voltmeter S

No. 1256

The VOTRONIC LCD Voltmeter S is designed for voltage control of starter battery and board battery in campers, special purpose and intervention vehicles. The voltage (Volts) is displayed accurately in steps of 0.1 V.

Appearance and dimensions of the Voltmeter are 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 (solar computer, battery computer 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.

Installation and Connection:

Display Unit

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.

Terminals

Connection +Board

For the voltage measurement of the board battery a direct connection from this terminal to the positive pole of the board battery must be made. The cable is to be **protected** by means of a **3 A fuse** directly at the battery. The cable cross-section should be 0.75 mm², at least. This connection is also used for the current supply to the Voltmeter.

Connection +Start

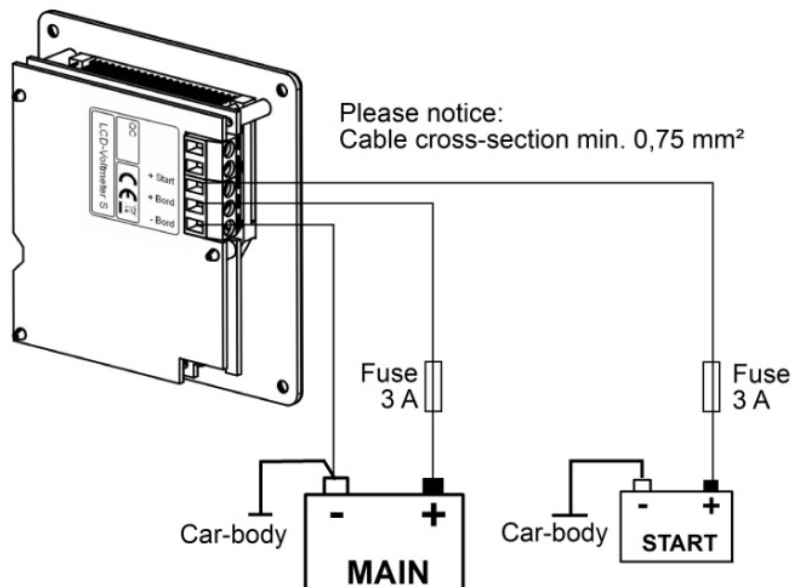
For the voltage measurement of the starter battery a direct connection from this terminal to the positive pole of the starter battery must be made. The cable is to be **protected** by means of a **3 A fuse** directly at the battery. The cable cross-section should be 0.75 mm², at least.

Connection -Board

For the voltage measurement of board battery and starter battery a direct connection from this terminal to the negative pole of the board battery must be made. The cable cross-section should be 0.75 mm², at least.

Tightening torque terminals 0.5 Nm!

Connection Plan



Initial Start-up

The Voltmeter is ready for operation, as soon as all electric connections are made and the voltage of the board battery is available at the corresponding terminal.

Basic Setting:

- The existing system voltage (12 V or 24 V) must be set.

Operation LCD Voltmeter S



Key 1: Changing the Volt displays,



Key 2: Display on/off.
Menu (3s)



Bargraph
10.5...15.0 V (21...30 V)

Display Unit

Activation, Deactivation

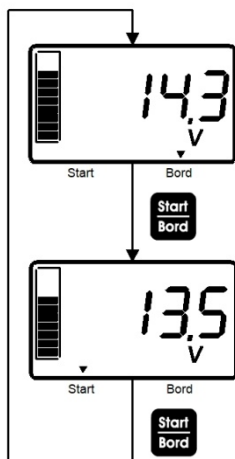
The unit is optimized for extremely current saving operation and offers three operation modes.

Stand-by: During stand-by mode the display is empty.

Display with and without illumination: As soon as the voltmeter 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 key. The proper function of the key will be effected by pressing the key a second time.

Voltage Displays

Use the key 1 to switch between the voltage displays starter- and board battery. The bar graph on the left side visualizes the displayed voltage, depending on the set system voltage, in 0.5 V steps from 10.5 V to 15.0 V (at 12 V nominal voltage), and in 1.0 V steps from 21 V to 30 V (at 24 V nominal voltage). It does not represent a battery state of charge display (SoC, "battery fuel gauge").

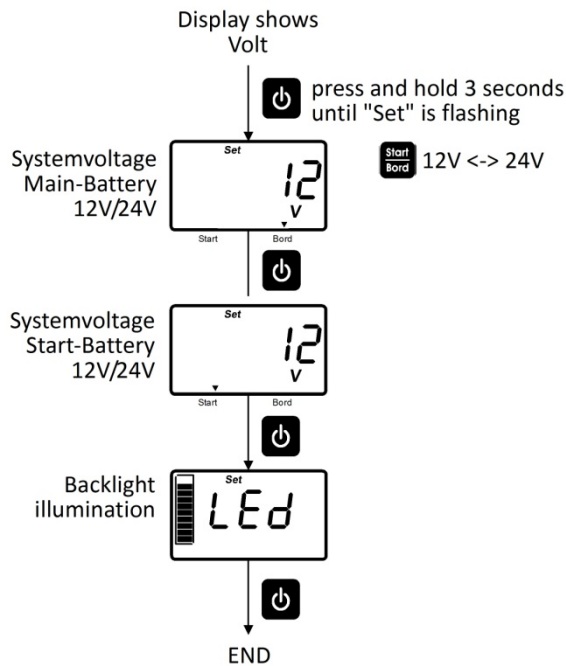


Voltage:

The voltage of the battery will be displayed.

The markings at the lower edge of the display point to the corresponding battery.

Voltmeter Settings:



The menu for settings of the Voltmeter functions can be called, if the display is set to Voltage (V) and the key 2 is pressed and held for more than 3 seconds until "Set" is flashing.

In the menu, key 2 is used to save the corresponding setting and to jump to the next menu item.

Adjustment of the **System Voltages**:

The nominal voltage rates for board and starter battery must be set once. Switching between 12 V and 24 V is possible for both.

Adjustment of the **Background Illumination**:

The background illumination can be adapted from bright to completely dark in steps of 10 % according to the requirements.

General Information:

Once a year:

- Check the connection cable for correct contact and damage.

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: Check!
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, 24 V
Operating Voltage Range:	8...32 V
Current Consumption:	1..0.30 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 Opening	
Electronic System:	approx. 66 x 72 mm
Weight:	approx. 55 g
Ambient Conditions, Humidity of Air:	max. 95 % RH, no condensation
Tightening torque terminals:	0.5 Nm

Notes:

Notes:

Notes:

Safety Instructions:



Safety Regulations and Appropriate Application:

The VOTRONIC LCD Voltmeter S had been designed according to the valid safety regulations.

Appropriate application is restricted to:

1. **Control of commercial types of lead storage batteries (lead-acid, gel, AGM), as well as LiPoFe, of the indicated nominal voltage and of connected consumers in fixed installed systems.**
 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.
 - Keep children away from the batteries.
 - Observe the safety regulations of the battery manufacturer.
 - Ventilate the battery room.
 - **Always use the same car fuses for replacement!**
 - **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 manufacturer's warranty is 60 months from delivery.
 - Improper use, operation outside the technical specifications, improper operation or third-party intervention will void the warranty or manufacturer's guarantee. No liability is accepted for any resulting damage. The exclusion of liability also extends to any services provided by third parties that were not commissioned by us in writing. Services exclusively provided by VOTRONIC Elektronik-Systeme GmbH, Lauterbach.



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.



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; 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.



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 Voltmeter S (Display)
- 4 Fastening Screws
- 1 Installation and Operating Manual
- 1 Drilling Jig

Available Accessories:

- Casing
- Order No. 2024

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